Module 1

Learner Guide

Farm Business Management

Course Name	National Certificate: Animal/Plant Production NQF 4 SAQA ID: 48979/49009
Module Name	Module 1: Farm Business Management Learner Guide
Module Code	19100 and 20100
Version No	4
Unit Standards	116286, 116291, 116319, 7468, 116302, 116290, 116315, 119472
NQF Level	4

Table of contents

Dear Learner

This Learner Guide contains all the information to acquire all the knowledge and skills leading to the unit standards:

ID:	**Unit standard title:**
116286	Give an overview of the industry structure
116291	Participate in the development and management of an agri business plan
116319	Prepare a whole farm budget and establish a proper integrated information system for an agri-business
7468	Use mathematics to investigate and monitor the financial aspects of personal, business, national and international issues
116302	Assume co-responsibility and participation in human resource management
116290	Establish a plan for the monitoring, safe use and maintenance of equipment, implements, technology and infrastructure
116315	Recognise agri/ecotourism within the strategic environment
119472 (8968)	Accommodate audience and context needs in oral communication

You will be assessed during the course of your study. This is called formative assessment. You will also be assessed on completion of this module. This is called summative assessment. Before your assessment, your assessor will discuss the unit standards with you.

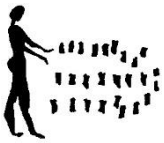
It is your responsibility to complete all the exercises in the PoE Workbook. The facilitator will explain the requirements of each exercise with you. You will also be expected to sign a learner contract in your assessor guide. This contract explains responsibility and accountability by both parties.

On the document "Alignment to NQF", you will find information on which qualification this unit standard is linked to if you would like to build towards more credits against this qualification.

Please contact our offices if you would like information with regards to career advising and mentoring services. Office: 051-4511120

Enjoy the learning experience!

KEY TO ICONS

	Important Information
	Quotes
	Personal Reflection
	Individual Formative Exercise
	Group Formative Exercise
	Summative Exercise
	Activity

Alignment to NQF

Element of programme	
1. Name of programme	Farm Business Management
2. Purpose of the programme	Form part of the qualification to equip learners in Animal Production
3. Duration of the programme	6 days of facilitation; 300 notional hours
4. NQF level	4
5. NQF credits	30
6. Specific outcomes	See Unit Standard Guide
7. Assessment criteria	See Unit Standard Guide
8. Critical cross-field outcomes	See Unit Standard Guide
9. Learning assumed to be in place	See Unit Standard Guide
10. Essential embedded knowledge	See Unit Standard Guide
11. Range statement	See Unit Standard Guide
12. Recognition of Prior Learning (RPL)	RPL can be applied in two instances: ✓ Assessment of persons who wish to be accredited with the learning achievements ✓ Assessment of learners to establish their potential to enter onto the learning programme.
13. Learning Materials	Learner Guide, Assessor Guide with Model Answers, Facilitator Guide, Learner PoE Workbook and US guide.

14. Links of the programme to registered unit standards, skills programmes, or qualifications	Registered qualification: Title: National Certificate: Animal Production ID: 48979 NQF: Level 4 Credits:163 Title: National Certificate: Plant Production ID: 49009 NQF: Level 4

Unit 1

Overview of Agri Industry in South Africa

Unit Standard	
116286	Give an overview of the industry structure
Specific Outcomes	
SO1: Explain the historical and current framework structure of the industry. SO2: List media published from time to time within, for, about, on and on behalf of the industry SO3: List all relevant Government Departments that affect the specific industry. SO4: Name all legislation pertaining to the specific industry. SO5: Name and describe supportive resources, associations, groups, networks and services available to assist members of the industry. SO6: Describe the various relationships within the industry as well as between the specific industry and its components and others within and outside of the sector.	

INTRODUCTION

South Africa has a dual agricultural economy, with both well-developed commercial farming and more subsistence-based small-scale production.

Covering 1.2-million square kilometers of land, South Africa is one-eighth the size of the United States and has seven climatic regions, from Mediterranean to subtropical to semi-desert.

This biodiversity, together with coastline 3 000 kilometers long and served by eight commercial ports, favours the cultivation of a highly diverse range of marine and agricultural products, from deciduous, citrus and subtropical fruit to grain, wool, cut flowers, livestock and game.

While 12% of South Africa's land can be used for crop production, only 22% of this is high-potential arable land. The greatest limitation is the availability of water, with uneven and unreliable rainfall. Around 1.3-million hectares are under irrigation, and around 50% of South Africa's water is used for agriculture.

Agricultural activities range from intensive crop production and mixed farming in winter rainfall and high summer rainfall areas to cattle ranching in the bushveld and sheep farming in the arid regions. Maize is most widely grown, followed by wheat, sugar cane and sunflowers. Citrus and deciduous fruits are exported, as are locally produced wines and flowers.

South Africa is not only self-sufficient in virtually all major agricultural products but is also a net food exporter. It is also the leading exporter of protea cut flowers, which account for more than half of proteas sold on the world market.

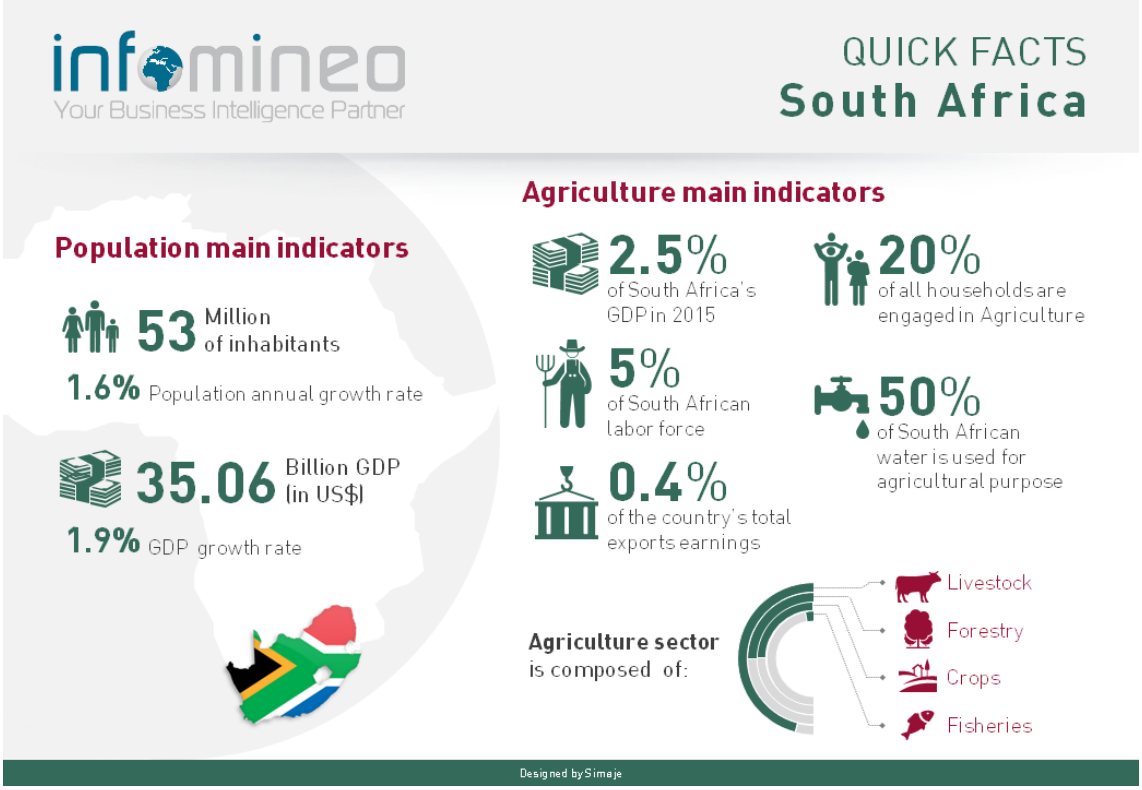
Other important export groups are wine, citrus, maize, grapes, sugar, apples, pears and quinces. Important export products include agro-processing products, such as under matured ethyl alcohol and hides and skins.

AGRICULTURE AND THE ECONOMY

Agriculture as a percentage of GDP has decreased over past five decades, currently contributing around 2%. This implies that the economy is maturing, moving towards the secondary and tertiary sectors.

However, farming remains vitally important to the economy with approximately 750 000 people formally employed in the sector – although it's estimated that around 8,5-million people are directly or indirectly dependent on agriculture for their employment and income.

Agriculture Sector



South Africa classifies 79.4% of its land as agricultural, with the permanent pasture accounting for 69.2%— suitable for grazing and livestock farming.

Types of Commodities in the Agri Economy

Cereals and grains

Overall, Agriculture contributes 2. 4% to South Africa's gross domestic product (GDP). The Grain industry is one of the largest subsectors in the South Africa, producing about 30% of the country's total gross agricultural production. Maize, wheat and sunflower account for the largest area of farmland. Up to 15,000 farmers produce maize, most of whom are in the northwest, northern, and eastern Free State, the Mpumalanga Highveld and KwaZulu-Natal

midlands. The country is the top maize producer in Africa and 12th in the world, behind some of the world's largest producers such as the US, Argentina, Brazil, and Mexico among others.

Maize, the country's most important crop, is a dietary staple, a source of livestock feed, and an export crop. Government programs, including generous loans and extension services, have been crucial to the country's self-sufficiency in this enterprise.

Wheat is produced mainly in the Western Cape and the eastern parts of the Free State. Average wheat production has been constant over time against a steady increase in consumption, leading to remarkable rise in imports to meet local demand. Barley which is another important grain especially in the brewing industry is produced mostly on the southern coastal plains of the Western Cape. The region accounts for over 98% of the country's barley production.

Vineyard (Fruits)

South Africa is a major producers and exporter of some of the highest quality of deciduous fruit and citrus. Western Cape and in the Langkloof Valley in the Eastern Cape are the main deciduous fruit growing areas. Important export groups are wine, citrus, grapes, apples, pears and quinces. The industry's export earnings account for more than 10% of South Africa's total agricultural export's earnings.

Fresh fruit finds a good market in Europe because it matures during the northern hemisphere's winter. Deciduous fruits, including apples, pears, and peaches, are grown primarily in areas of the Western Cape and the Eastern Cape, where cold winters and dry summers provide ideal conditions for these crops.

Pineapples are grown, primarily in the Eastern Cape and KwaZulu-Natal. Tropical fruits—especially bananas, avocados, and mangoes—are also grown, especially in the northeast and some coastal areas. More than half of citrus production is exported in most years.

Million tons of grapes are used domestically in South Africa's renowned wine industry, which dates back to the seventeenth-century vineyards introduced by French Huguenot immigrants. More than 100,000 hectares of land are planted in vineyards, centred primarily in the Western Cape. Smaller vineyards are also found in the Northern Cape, Free State, and Northern Province.

Sugarcane

Sugarcane is also an important export crop, and South Africa is the world's tenth largest sugar producer. South African sugar industry ranks among the top 15, out of the 120 main sugar producing countries in the world. Sugarcane production mainly stretches across two provinces of Mpumalanga and KwaZulu-Natal and is grown by over 24,000 registered growers. Sugarcane was first cultivated in mid-nineteenth-century Natal. Production is still centered there, but sugar is also grown in Mpumalanga, where irrigation is used when rainfall is inadequate. Processing of the cane in these regions is through about six milling companies that are operating in the cane-growing areas.

Livestock Industry

The livestock is the largest agricultural sector in South Africa. The country is home to about 14 million cattle and almost 30 million sheep. Overall, the country's livestock production has kept pace with the local demand for the red meat while the milk production has been relatively constant. However, imports of dairy products exceeded exports in the last decade.

The case is different from poultry subsector which has seen significant increase in production over the last 20 years. Despite the remarkable significant increase in poultry production, the country is still unable to meet the massive increase in local demand for white meat. Consequently, chicken is currently one of South Africa's largest agricultural imports.

South African Production Strategy

In order to put the South African Agricultural Production Strategy in perspective it is necessary to consider the salient features of the sector. The agricultural production environment is dualistic and has the following features:

Commercial agriculture

Made up of less than 33,000 farming units; Covers a production area of approximately 82 million hectares; Is responsible for more than 99% of South Africa's formal marketed agricultural output. There has been a significant increase in the concentration of farm holdings as a result of smaller and less efficient farms, unable to take advantage of increasing economies of scale, being forced out of the sector. Despite the decrease in the number of farming units,

output from commercial agriculture has continued to grow, implying an increase in the efficiency of production. Export growth has exploded, especially in the horticultural sector.

South Africa's agriculture sector is one of the world's most productive and robust sectors. The country is not only food self-sufficient but also a net food exporter, making it one of the less than ten countries (the US, Argentina, Canada and Australia among others) globally that exports food regularly. The country's commercial farming is well developed despite the fact that majority farmers are still engaged in subsistence-focused practices especially in the rural areas.

The sector has however become more sustainable in environmental terms.

Smallholder agriculture

Consists of 1.3 million farming households; Farm an estimated 14 million hectares of agricultural land; Is concentrated principally in the former homeland areas of the country, thus marginalized into regions of poor productive land, with little or no infrastructural support, and water resources. The smallholder farmers thus typically have low levels of production efficiency and engage in agricultural production to supplement their household food requirements, with surplus sold at local markets.

Smallholder farmers' production inefficiency is further related to their lack in sufficient farm management skills for example natural resource management, production and infrastructural management. This is further exacerbated by poor support services directed at smallholder farmers for example financial services, technical support, access to transport and other support infrastructure.

Subsistent agriculture

- There is currently a lack of sufficient data regarding the subsistent sector.
- Subsistent farmers practice agriculture mainly for household consumption. However, recent studies have shown an increase in dependence on market purchases by both urban and rural households, in some cases reaching 90% of the food supplies.
- Subsistence and smallholder agriculture can however play an important role in reducing the vulnerability of rural and urban food-insecure households, improving livelihoods, and helping to mitigate against high food price inflation.

Production numbers

- The value of primary agricultural production in South Africa showed an increase of 3.2% and was estimated at R288.6 billion in 2018, according to the Economic Review of the South African Agriculture 2018.
- The gross income of producers for the year ended 31 December 2018 amounted to R281 835 million, compared to R278 531 million the previous year; an increase of 1.2%. This can be attributed to the increase in prices and production levels of horticultural and animal products, particularly of subtropical fruit, citrus fruit, pigs slaughtered, poultry meat, milk and eggs.
- Data reflect the increasing importance of horticultural exports as a share of total agricultural output.
- Variations in crop production are largely derived from the variability in maize production, which is in turn influenced by climatic conditions, producers 'willingness to plant, and in industry average yields.
- Farmers' willingness to produce, in turn, is influenced by the profitability of production, i.e. price offers, both domestically and internationally, and the suitability of the natural resource base. The trade-offs between these factors influence the affordability and availability of food.
- Self -sufficiency levels are currently below domestic consumption requirements for most principled food commodities and are supplemented by increasing import levels. On average, agricultural production increased by 30 % over the mentioned period, while the population increased by 32 %.
- Research conducted by South Africa 's competition commission further suggests that an increase in anti-competitive behaviour, negatively impacts food productivity, food availability and affordability within the country. High food prices may therefore not be a function of low levels of production, climate change and profitability alone.

AGRICULTURE CONTRIBUTION TO THE ECONOMY

Gross Domestic Product

South Africa's gross domestic product (GDP) contracted by 1,4% in the fourth quarter of 2019. The only contributors to growth in the fourth quarter were mining, finance and personal

services. The biggest losers were agriculture, forestry and fishing (-7,6%), transport (-7,2%), construction (-5,9%), electricity (-4,0%) and trade (- 3,8%).

Based on the fourth quarter data the economy grew by only 0,2% in 2019. With two consecutive quarters (q3 &q4) of negative growth, accordingly, South Africa is in a technical recession. This was also the case in the first half of 2018. Given the broader economic context, the growth rate of 0,2% was not a surprise. The February 2020 budget estimated growth of 0,3% for 2019.

Delayed rains and warm weather conditions had an incumbering impact on the production of field crops, whilst the output of horticultural products also declined. On a year-on-year basis, agriculture declined by 6,9%.

The re-emergence of load shedding caused further disruptions for output in agriculture and the rest of the economy. Furthermore, drought, low dam levels and water restrictions curtailed irrigation activities. The outbreak of foot-and-mouth disease and the temporary moratorium on auctions caused further disruptions.

South Africa's gross domestic product (GDP) contracted by 2% in the first quarter of 2020. The only contributors to growth in this quarter were agriculture, finance, and general government services. The biggest losers were mining (-21,5%), manufacturing (-8,5%), electricity (-5,6%), construction (-4,7%), taxes (less subsidies (-3,7%) and trade (-1,2%).

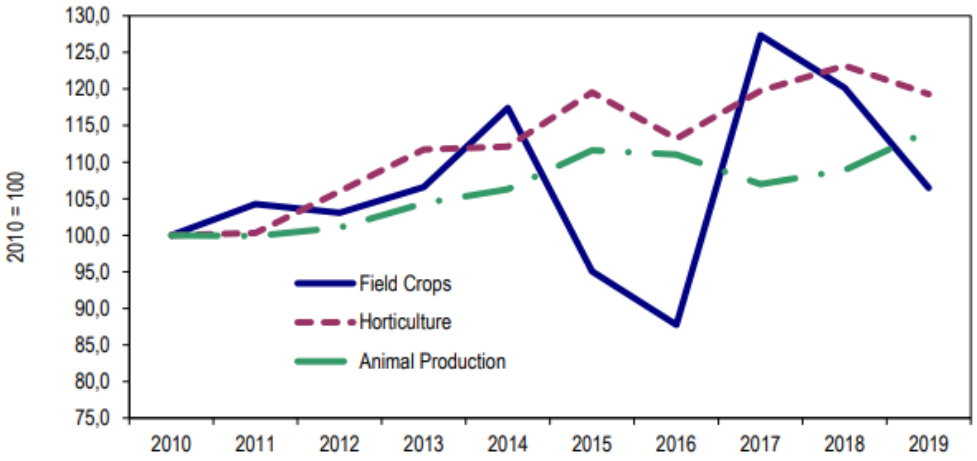
The output in the agricultural, forestry and fisheries sector grew by approximately 28% on a quarterly basis (1st quarter 2020), contributing 0.5% to GDP. This good performance can be attributed to the recovery of major subsectors in agriculture, namely field crops, the fruit industry and the livestock industry despite the outbreak of foot-and-mouth disease in November 2019 and the disruption to trade and auctions.

The outlook for production in 2020 could be different. Good rains over the summer crops as well as winter crop areas, can improve yields. The Crop Estimates Committee estimates the 2020 summer crop production at approximately 17,8 million tons. The estimated commercial maize harvest of 15,5 million tons is expected for 2020, which is approximately 38% more than the 2019 crop. South Africa has always been an exporter of agricultural and food products. With domestic maize consumption of approximately 11 million tons, which is far less than the 15 million tons expected, much needed foreign exchange can be earned through exports. There is also optimism for improvements in the grape and fruit industry. Note that the long-term economic effects of the Covid-19 pandemic are still unclear.

Overview of the Main Commodity Branches in Agriculture

The estimated physical volume of agricultural products moved sideways (-1,37%) in 2019 compared with the previous year. The volume of field crop and horticultural production was 11,4% and 3,2% lower than the previous period while animal production was up by approximately 5%.

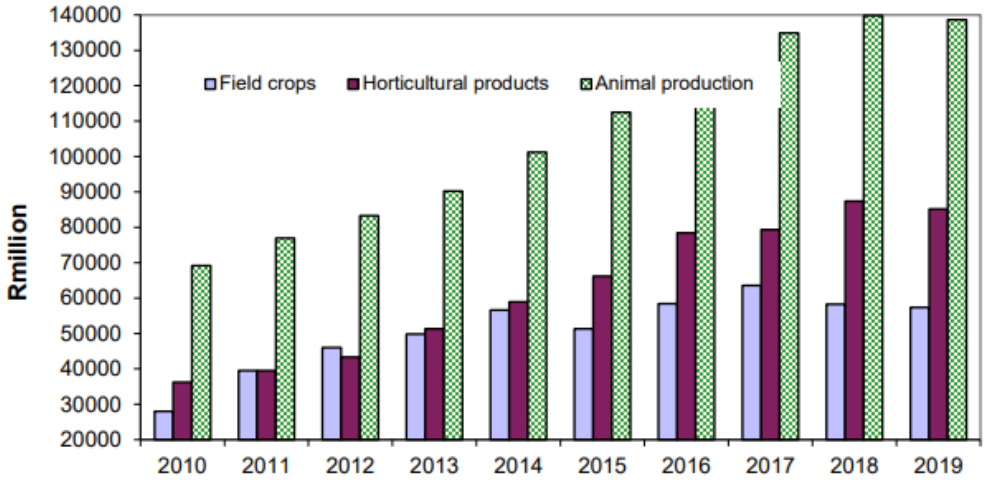
Volume index of agricultural production, 2015 to 2019 (2010 = 100)



Source: Data adapted from DALRRD: Directorate: Statistics and Economic Analysis (2019) and own calculations.

Total gross income has increased by 9% per year over the past 15 years – showing how important the agricultural sector is – to R281 191 million in 2019.

Gross income from agricultural products (Rmillion)



Source: Data adapted from DALRRD: Directorate: Statistics and Economic Analysis (2019) and own calculations

The gross income derived from field crop production decreased by 1,5% from R58 251 million in 2018 to R57 373 million in the year ended 31 December 2019. This can be largely attributed to a decrease in wheat (11,2%), oats (46,1%), barley (21,3%), hay (72,2%), dry beans (15,6%), tobacco (33%), groundnuts (66%) and soya beans (24,7%). Good news is that income from maize increased by almost 15%.

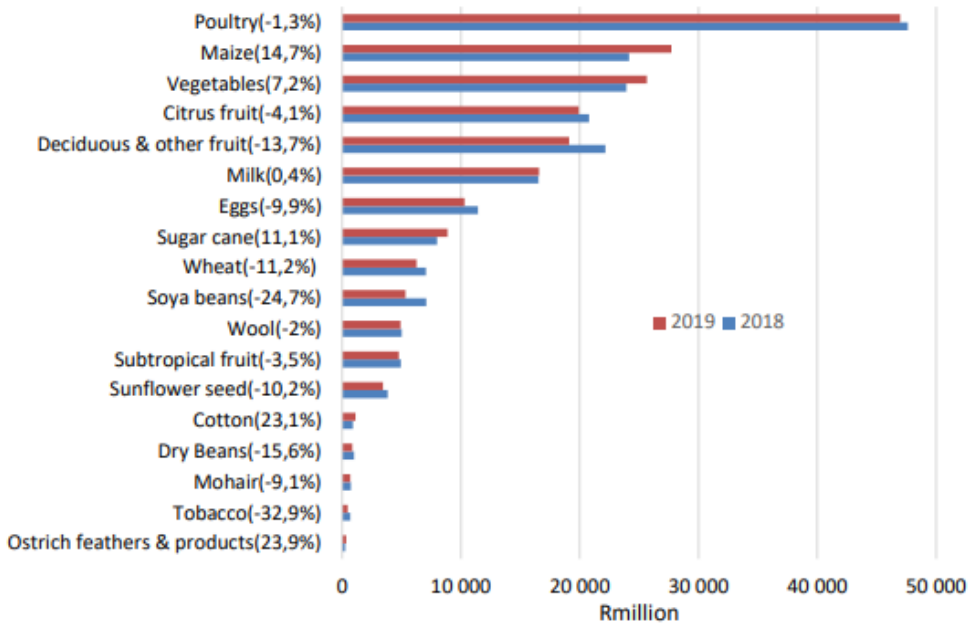
In die case of horticultural products, gross income for 2019 (R85 174 million) was approximately R2 188 million or 2,5% lower than in the previous year while the terms of trade strengthened from 1,02 to 1,05 in 2019 due to higher producer prices.

Income from citrus, subtropical fruit and deciduous fruit decreased by 4,1%, 3,5% and 13,7% respectively, while gross income from rooibos increased by 13,1% to R882,1 million. This was largely the result of increased production and higher exports. This situation can change for the better in the coming year as newer orchards (citrus, nuts and other) already established, come into production. Flower and bulbs generated an income of R1 867,9 million during 2019.

Due to closures and limited international export opportunities as a result of the global coronavirus pandemic and closure of markets, the flower industry is in dire straits. South Africa's main destination for flowers is the Netherlands with R769,8 million worth of exports during 2019. The tobacco and alcohol industry are other victims of the coronavirus. As a result of the ban on the sale of these products, the loss in taxes during the lockdown was between R14 billion and R15 billion. This is a loss the country cannot afford.

The income earned from animal production contracted by approximately 1% and amounted to R138 645 million. Income from ostrich feathers, sheep and pigs slaughtered increased by 24%, 4,2% and 17,1% respectively. However, it has not been a good year for the animal production industry, especially for wool and mohair. These farmers are already struggling due to drought conditions in parts of the country, as well as the negative impact on production stemming from the outbreak of foot-and-mouth disease. For South Africa, the challenge in this case was trade-related, where China as South Africa's biggest importer (71%), temporarily stopped buying our wool. The impact of the coronavirus is felt across the global value chain, with production, logistics and sales brought to a stop. The effect of the pandemic on the fibre industries is very uncertain.

Gross income of certain agricultural products in 2018 in comparison with 2019



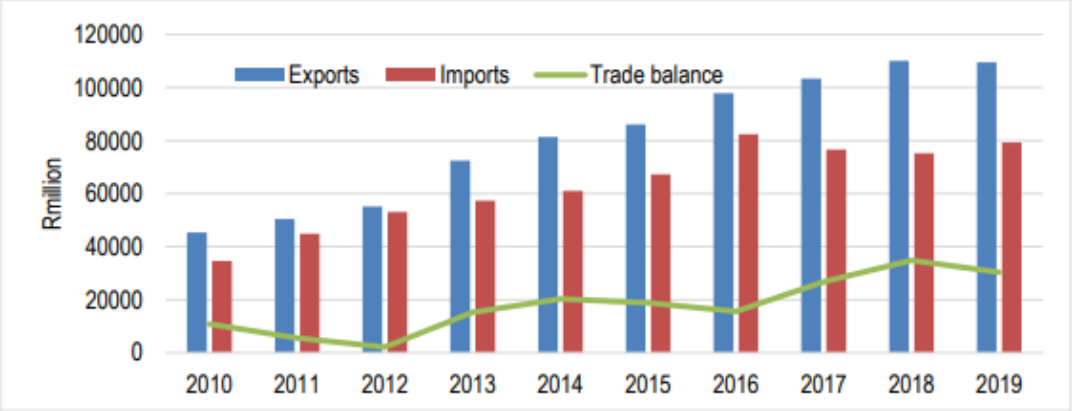
Source: Directorate: Statistics and Economic Analysis: DALRRD and own calculations

Earnings from slaughtered stock (cattle, sheep, goats and pigs) remained constant and earned R49 917 million during this reporting period (2018 compared to 2019). Prices received for slaughtered stock decreased by 3,8%. More bad news is that the producer prices received by farmers did not keep pace with the prices paid for farming inputs, in this case the terms of trade for animal production weakened from 1,11 to 1,01.

Agricultural Trade

The estimated value of imports for 2019 came to R79 217 million, an increase of 5,3%. The total value of agricultural exports contracted by almost 1% from R110 035 in 2018 to R109 514 million in 2019. The balance of trade in agriculture averaged R18 023 million over the past 10 years (from 2010 until 2019), reaching an all-time high of R34 810 million in 2018 and a record low of R2 117 million in 2012.

Agricultural imports and exports (SA Customs Union) Rmillion



Source: Directorate: Statistics and Economic Analysis: DALRRD and own calculations

Agricultural Trade - Exports

Table below shows the value of exports as well as the percentage growth in exports over the past 5 years in some of the most important export products. One of the main reasons for the growth in exports was the steady weakening of the rand against the currencies of our major trading partners. From Table 4, it is clear that the fruit industries had the fastest growth in exports. Citrus is currently South Africa's most important agricultural export product. South Africa also applied for market access for citrus to the Philippines, and prospects are good that this is going to be finalised before the 2020 season. Apart from citrus, wine and grapes are also important. Notwithstanding the problems experienced with the export of wool over the past year, the product's performance over the 5-year period was not bad at all. About 70% of South Africa's wool is exported to China.

Exports and export growth

Product	2015 R million	2019 R million	% growth
Citrus	13 804.5	19 627.0	42,2
Grapes	7 499.3	9 153.6	22,1
Wine of fresh grapes	8 365.7	8 740.6	4,5
Apples, pears and quinces, fresh	6 678.2	7 710.8	15,5
Other nuts, fresh or dried	3 983.0	5 944.5	49,2
Wool	3 284.4	4 397.4	33,9
Fruit, nuts and other edible parts of plants	2 272.6	2 807.0	23,5
Fruit juices (including grape must) and vegetable juices	2 762.0	2 654.6	-3,9
Other fruit, fresh.	986.1	2 365.0	139,8
Food preparations	2 050.6	2 242.8	9,4
Undenatured ethyl alcohol	1 548.5	2 132.3	37,7
Maize (corn)	1 085.3	2 108.8	94,3
Dates, figs, pineapples, avocados, guavas, mangoes and mangosteens	1 270.0	1 472.9	16,0
Apricots, cherries, peaches (including nectarines), plums and sloes	1 485.7	1 465.2	-1,4
Preparations used in animal feeding	842.3	1 267.5	50,5
Cereal groats, meal and pellets	728.0	899.2	23,5
Seeds, fruit and spores, of a kind used for sowing	533.6	891.4	67,0
Meat of bovine animals, fresh or chilled.	698.0	854.9	22,5
TOTAL: Agriculture exports	86 089.8	109 514.1	27.2

Source: Directorate: Statistics and Economic Analysis: DALRRD and own calculations

The Netherlands (R11 976 million) was South Africa's top export destination for agricultural products, followed by the United Kingdom, China, Mozambique, China, USA and Malaysia with R4 225 million in exports.

During 2019, South Africa's agricultural exports totalled around R109 514 million, which should be seen against the R281 191 million gross income of the agricultural sector. This is an indication that export earnings contribute almost 40% to agriculture's gross income.

Agricultural Trade - Imports

The total value of agricultural imports increased by 5,3% from R75 225 million in 2018 to R79 217 million in 2019.Rice (R6 485 million), meat and edible offal of poultry (R6 093 million), wheat (R5 650 million), alcohol products (R4 402 million), palm oil (R3 904 million) and food preparations (R2 789 million) accounted for the highest imports in terms of value.

Important import products during 2019

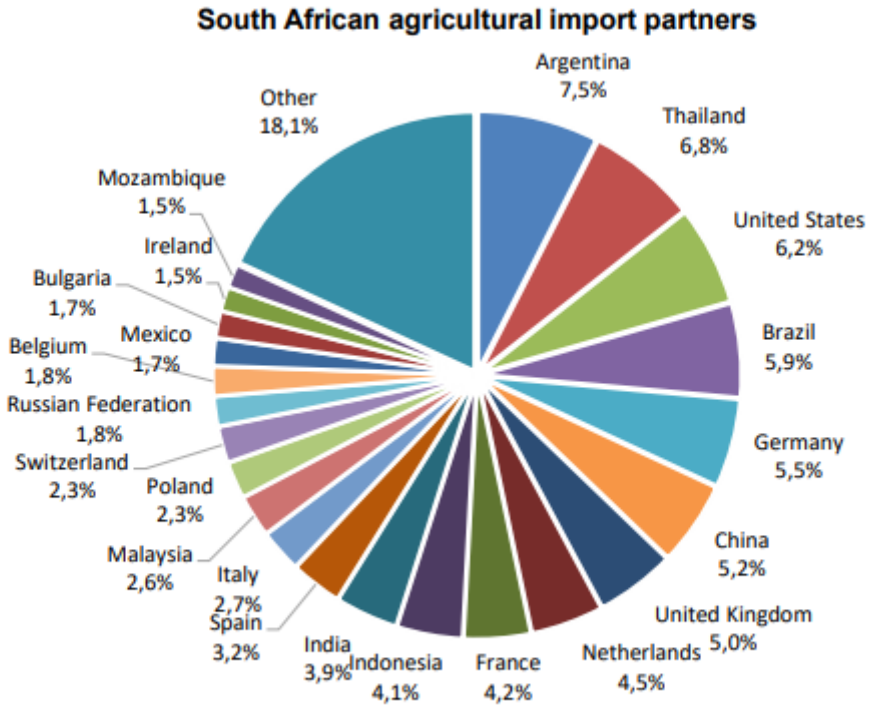
Product	Rmillion
Rice	6 485.3
Meat and edible offal of poultry	6 092.7
Wheat and meslin	5 650.0
Undenatured ethyl alcohol	4 402.1
Palm oil and its fractions	3 903.9
Food preparations	2 789.0
Sunflower-seed, safflower or cotton-seed oil	2 558.4
Beer made from malt	2 234.5
Oilcake	1 917.5
Maize (corn)	1 899.6
Preparations used in animal feeding	1 777.4
Guts, bladders and stomachs of animals	1 734.4
Fruit juices (including grape must) and vegetable juices	1 625.1
Chocolate and other food preparations containing cocoa	1 551.7
Cigars, cheroots, cigarillos and cigarettes, of tobacco or of tobacco substitutes	1 468.7
TOTAL: Agricultural imports	79 216.6

Source: Directorate: Statistics and Economic Analysis: DALRRD and own calculations

The five largest trading partners for South Africa's imported agricultural products during 2019 were Argentina (R5 960 million), Thailand (R5 423 million), United States (R4 890 million), Brazil (R4 656 million) and Germany (R4 376 million). Approximately 14% of the total value of South Africa's agricultural imports during 2019 was from Argentina and Thailand (combined).

The total trade in agricultural products (imports and exports) accounted for about 67% of the gross income of agriculture. This gives an indication of the degree of exposure that local agriculture has to the international market, whether through exports or imports.

Please keep in mind that the South African agriculture must be internationally competitive despite relatively limited government support (±3%), as compared to many of our trade partners. The weak international demand for South African agricultural products is another constraint that could affect the agricultural sector due to the lockdown and coronavirus pandemic. However South African farmers are very resilient. Despite the numerous challenges faced by the sector, we are a net exporter of food, and our farmers work hard to ensure South Africa's food security.



Source: Directorate: Statistics and Economic Analysis: DALRRD and own calculations

Covid-19 impact on Agriculture

With South Africa in a national lockdown, farmers can continue to produce food and ensure food security. Farming operations are undoubtedly complicated by the lockdown regulations. However, it is important to focus on managing your operations and supporting your staff throughout this period. At the same time, you should not lose sight of potential new opportunities, rather plan to position your farming business for growth when economic activity picks up. COVID-19's negative impacts, in terms of human life and economic costs, cannot be negated. However, by changing our perspective, we can use this adversity to be stronger and better positioned for the future

The Agricultural sector in South Africa – SWOT on Different Sectors

Source: https://bizconnect.standardbank.co.za/sector-news/agriculturearticles/reference-documents/the-agricultural-sector-in-south-africa

KPMG's study of the agriculture sector in South Africa for the Small Enterprise Development Agency (Seda), "Research on the Performance of the Agricultural Sector", includes a SWOT analysis of three main products:

- field crops
- horticultural products
- animals/animal products

These results contained in the report are helpful for developing a strong business strategy as they point out the most prominent strengths and weaknesses, as well as the opportunities and threats in the marketplace, when it comes to each agricultural sub-sector.

1. The field crop sub-sector

Strengths

- Maize is the primary food of 80% of the country's population and will maintain strong growth
- South Africa is one of a few countries that produces white maize with significant potential for export
- Significant maize-yield improvements have resulted from stable production on irrigated land
- Demand for maize is linked to rising demand in livestock as yellow maize is the main feedstock
- Tobacco continues to be in demand in international countries

Weaknesses

- Steady decline in planted area of maize
- Farmers are financially constrained in the period between planting and harvesting
- Input costs for farmers are rising
- Maize prices are volatile
- Farmers are not cost competitive when compared to other sugar producing countries
- Preferential trade agreements and high export tariffs for sugar farmers
- Declining cotton prices and the perception that the industry is not profitable
- Increased smoking laws, high tax rates and high input costs are slowing the demand for tobacco

Opportunities

- Creation of biodiesels will improve demand for oil seeds
- Biodiesels have the potential to lower farmer's input costs by using it to meet their energy requirements
- Sugarcane-based renewable energy could assist Eskom with cogeneration of power
- Cotton farming can create numerous jobs as it is labour intensive
- South African cotton is one of the world's finest, giving the country a distinct advantage
- Tobacco sector and government partnership is helping emerging farmers to enter the commercial space

Threats

- Rising prices of yellow maize places added pressure on the animal feed sector
- Maize exports need to be monitored to ensure that domestic demand is met
- Reducing profit margins for farmers may result in a reduction in production to remain profitable
- Competition from cheaper imports may hurt the domestic production market
- Major sugar producing nations subsidise the production of sugar with the overproduction eroding the global price of sugar
- Crop diseases can severely affect farmers' production levels and profitability

2. The horticulture sub-sector

Strengths

- The climatic diversity of the country is suitable for the cultivation of a wide variety of fruits and vegetables
- Citrus industry is export-orientated, and SA is firmly established as one of the leading citrus producers in the world. Infrastructure and climate is suited to maintaining this position
- Off-season production suits the European market and ensures demand for South African fruit

Weaknesses

- Small-scale fruit and vegetable farmers do not have sufficient access to credit, transport and storage infrastructure and markets and experience difficulty participating in commercial agriculture
- Small-scale farmers lack access to advanced farming technologies thus reducing their global competitiveness
- The subtropical fruit industry is cost-intensive and requires high levels of investment required during non-bearing seasons

Opportunities

- Asia and the Middle East are forecast to become major markets for South African table grapes
- Niche markets for rooibos and honey bush tea as well as for essential oils set to increase especially as people get more health-conscious
- Increasing demand for organically grown fruits and vegetables
- Growing market for ornamental and cut flowers
- Training of emerging and communal farmers to combat crop-related diseases

Threats

- Rising input costs
- Fruit and vegetable farmers are particularly prone to crops being affected by pests and diseases
- The citrus industry does face serious international competition and farmers will need to become increasingly cost-competitive

3. The livestock and animal product sub-sector

Strengths

- Livestock farming comprises 40% of the country's agricultural output and is a major component of the sector
- Approximately 80% of agricultural farmland can be used for the farming of livestock and as such farmers combine livestock and crop farming
- Poultry is a fast-growing convenience food and has healthy future demand
- Help is available for small-scale farmers with financing issues

Weaknesses

- Weak demand due to the effects of the global financial crisis
- South Africa is an importer of red meat and with potential rise in demand
- Small-scale farmers do not have the research and market information needed to commercialise their products
- There are many financing backlogs
- Financing options for small-scale farmers have high interest rates and repayments

Opportunities

- Communal farming has the potential to help local producers meet domestic demand

- Access to viable and affordable financing options
- Providing small-scale farmers with the technical skills and information to tap into commercial markets

Threats

- Influx of cheap poultry will reduce production levels for local producers
- Rising feed prices are likely to affect local producer costs
- Avian flu' could deter growth in the industry and would affect both poultry and ostriches
- Foot and mouth disease is a major concern

Legislation in Agriculture

South Africa's agricultural sector is overseen by the Department of Agriculture, Forestry and Fisheries, which also has the responsibility of ensuring access to sufficient, safe and nutritious food by the country's population.

The Department's core mandate is contained in Section 37(ii) of the Constitution. It is currently responsible for more than 30 pieces of legislation.

Underpinning the scope of the Department's mandate is the understanding of agriculture, as being inclusive of all economic activities related to farming.

Because the agricultural sector is continuously subjected to changes in the production and marketing environment, the policy and legislative environment changes regularly through amendments and sometimes replacement of legislation.

Laws administered by the Department of Agriculture, Forestry and Fisheries (DAFF)

Find "Legislation and legal procedures" under the "Resource Centre" option at www.daff.gov.za.

- Agricultural Laws Extension Act, 1996 (Act 87 of 1996)
- Agricultural Laws Nationalisation Act, 1998 (Act 72 of 1998)
- Agricultural Pests Act, 1983 (Act 36 of 1983) introduces measures for the prevention and combating of agricultural pests.
- Agricultural Produce Agents Act, 1992 (Act 12 of 1992) provides for the establishment of an Agricultural Produce Agents Council (APAC) and fidelity funds. There is currently an amendment bill affecting this.
- Agricultural Product Standards Act, 1990 (Act 119 of 1990) provides for control over the sale and export of certain agricultural products and other related products, with a view to the maintenance of certain standards regarding the quality of products and packing, marking and labelling.
- Agricultural Research Act, 1990 (Act 86 of 1990) establishes the Agricultural Research Council (ARC)
- Animal Diseases Act, 1984 (Act 35 of 1984) – repealed by Animal Health Act, 2002
- Animal Health Act, 2002 (Act of 2002) provides measures to promote animal health and control animal diseases. It assigns executive authority about certain provisions of the Act to provinces, regulates the importation and exportation of animals, establishes animal health schemes, and provides for connected matters.
- Animal Identification Act, 2002 (Act 6 of 2002), regarded as "the first line of defence against livestock theft", deals with the compulsory marking of livestock.
- Animal Improvement Act, 1988 (Act 62 of 1988) provides for the breeding, identification and utilisation of genetically superior animals in order to improve the production and performance of animals in the interest of the Republic; and to provide for matters connected therewith.
- Animals Protection Act, 1962 (Act 71 of 1962) consolidates and amends the laws relating to the prevention of cruelty to animals.
- Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) (CARA) provides for control over the use of natural agricultural resources to promote the

conservation of soil, water sources and vegetation, and the combating of weeds and invader plants.

- Fencing Act, 1963 (Act 31 of 1963) consolidates the laws relating to fences and the fencing of farms and other holdings.
- Fertilizer, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act 36 of 1947) regulates the registration of fertilisers, stock feeds, agricultural remedies, stock remedies, sterilising plants, and pest control operators, and provides for control over the acquisition, disposal, sale and use of fertilisers, farm feeds, agricultural remedies and stock remedies.
- Genetically Modified Organisms Act, 1997 (Act 15 of 1997) provides for the regulation of GMO activities in South Africa.
- Groot Constantia Trust Act, 1993 (Act 38 of 1993)
- Kwa-Zulu Cane Growers Association Act: Repeal Act, 2002 (Act 24 of 2002)
- Liquor Products Act, 1989 (Act 60 of 1989) provides for the sale and production of certain liquor products, including their import and export.
- Livestock Improvement Act (Act 25 Of 1977) – see Animal Improvement Act, 1998
- Marine Living Resources Act, 1998 (Act 18 of 1998) provides for the conservation of the marine ecosystem, the long-term sustainable use of marine living resources and the orderly access to exploitation, use and protection of certain marine living resources; and for the exercising of control over marine living resources in a fair and equitable manner for the benefit of all the citizens of South Africa. An amendment (2016) recognises small scale fishing as a sector.
- Marketing of Agricultural Products Act, 1996 (Act 47 of 1996) authorised the establishment of regulatory measures to intervene in the marketing of agricultural products, including the introduction of levies on agricultural products; and to establish the National Agricultural Marketing Council (NAMC).
- Meat Safety Act, 2000 (Act 40 of 2000) – replaces the Abattoir Hygiene Act (Act 121 of 1992). It provides for measures to promote meat safety and the safety of animal products; establish and maintain essential national standards in respect of abattoirs; regulate the import and export of meat and establish meat safety schemes.
- National Fire Danger Rating System as per the National Veld and Forest Fire Act, 1998 (Act 101 of 1998)

- National Forest Act, 1998 (Act 84 of 1998) allows for an exemption for the use and handling of protected trees and their products; and authorises the Minister to establish a trust, in respect of state forests under certain circumstances.
- National Veld and Forest Fire Act, 1998 (Act 101 of 1998) reforms the law on veld and forest fires and repeals certain provisions of the Forest Act, 1984 (Act 122 of 1984).
- Onderstepoort Biological Products Incorporation Act, 1999 (Act 19 of 1999)
- Performing Animals Protection Act, 1935 (Act 24 of 1935) regulates the exhibition and training of performing animals and the use of dogs for safeguarding. There is a Performing Animals Protection Amendment Act 4 of 2016.
- Perishable Products Export Control, 1983 (Act 9 of 1983) provides for the control of perishable products intended for export from South Africa and for the continued existence of a statutory board to bring about the orderly and efficient export of perishable products from the country.
- Plant Breeders' Rights Act, 1976 (Act 15 of 1976) aims to strengthen the protection of intellectual property rights relevant to new plant varieties, which in turn positively impacts on the competitiveness of South Africa's agricultural sector. An amendment bill is in the pipeline.
- Plant Improvement Act, 1973 (Act 53 of 1973) provides for the registration of establishments where plants and propagation material are sold and packed, for the introduction of schemes for the certification of certain propagation material, for the requirements to which plants and propagation material sold for the purposes of cultivation must conform and for quality control over plants and propagation material imported or exported.
- Sea Fishery Act, 1988 (Act 12 of 1988) provides for the conservation of the marine ecosystem and the orderly exploitation, use and protection of certain marine resources; and provides for the exercise of control over sea fisheries.
- Societies for the Prevention of Cruelty to Animals Act, 1993 (Act 169 of 1993) provides for the control over SPCAs (by the National Council of Societies for the Prevention of Cruelty to Animals).
- Subdivision of Agricultural Land Act, 1970 (Act 70 of 1970) regulates the subdivision of agricultural land and its use for purposes other than agriculture. Investigations are conducted by the provincial department in support of the execution of the Act.

- Veterinary and Para-Veterinary Professions Act,1982 (Act 19 of 1982) provides for the establishment, powers and functions of the South African Veterinary Council; the registration of people practising veterinary and para-veterinary professions and control of the practising of veterinary and para-veterinary professions and was amended in 2012.

BILLS

- Agricultural Produce Marketing Agencies Bill
- Agricultural Product Standards Act Amendment Bill
- Aquaculture Bill
- Disaster Management Amendment Bill
- Fertiliser and Feeds Bill
- Land Use Management Bill
- Liquor Products Amendment Bill [B10-2016]
- National Animal Pounds Bill
- National Bill for Agricultural Training Institutes of South Africa
- National Forests Amendment Bill [B11-2016]
- National Veld and Forest Fire Amendment Bill (B22-2016)
- Plant Health (Phytosanitary) Bill
- Plant Improvement and Plant Breeders' Rights Bills [B8-2015, B11-2015]
- Preservation and Development of Agricultural Land Framework Bill [X-2016]

Contact Legal Services at DAFF – 012 312 7373. Find copies of the legislation at www.daff.gov.za/doaDev/sideMenu/acts.html.

Some other laws which affect agriculture

Agrarian reform

See also the "Labour, staff and education" subheading

- Broad Based Black Economic Empowerment Act, 2003 (Act 53 of 2003) **amended by Act 46 of 2013**
- Communal Land Rights Act, 2004 (Act 11 of 2004) (CLaRA) **– struck down by Constitutional Court in 2010**

- Communal Property Associations Act, 1996 (Act 28 of 1996)
- Development Facilitation Act, 1995 (Act 67 of 1995)
- Distribution and Transfer of Certain State Land Act, 1993 (Act 119 of 1993)
- Interim Protection of Informal Land Rights Act, 1996 (Act 31 of 1996)
- Land Administration Act, 1995 (Act 2 of 1995)
- Land Reform Labour Tenants Act, 1996 (Act 3 of 1996) (LTA)
- Land Titles Adjustment, 1993 (Act 111 of 1993)
- Upgrading of Land Tenure Rights Act, 1991 (Act 112 of 1991)
- Property Valuation Act, 2014 (Act 17 of 2014)
- Provision of Land and Assistance Act, 1993 (Act 126 of 1993)**, amended by Act 58 of 2008**
- Restitution of Land Rights Act, 1994 (Act 22 of 1994)**. An Amendment Act 15 of 2014 was declared invalid by the Constitutional Court in July 2016.**
- Rural Development and Land Reform General Amendment Act, 2011 (4 of 2011)
- State Land Disposal Act, 1961 (Act 48 of 1961)
- Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013) (SPLUMA)
- Transformation of Certain Rural Areas Act, 1998 (Act 94 of 1998)

BILLS

- Communal Land Tenure Bill
- Communal Property Associations Amendment Bill
- Expropriation Bill [B4-2015]
- Extension of Security of Tenure Bill [B24-2015]
- Land Management Commission Bill
- Land Tenure Security Bill
- Regulation of Agricultural Land Holdings Bill
- Restitution of Land Rights Amendment Bill [introduced as a private member's Bill in 2017]

Crops and livestock

- Animal Matters Amendment Act, 1993 (Act 42 of 1993)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Medicines and Related Substances Act, 1965 (Act 101 of 1965)

- Stock Theft Act, 1959 (Act 57 of 1959)
- Sugar Act, 1978 (Act 9 of 1978)

Disaster

The **Disaster Management Act, 2002 (Act 57 of 2002)** and the **National Disaster Risk-Management Framework of 2005** address agricultural risk management and climate change and are supplemented by climate change-related policies and programmes.

Financial, tax and property

- Administration of Estates Act, 1965 (Act 66 of 1965)
- Companies Act, 2008 (Act 71 of 2008)
- Co-operatives Act, 2005 (Act 14 of 2005)**, amended by Co-operatives Amendment Act, 2013 (Act 6 of 2013)**
- Co-operative Banks Act, 2007 (Act 40 of 2007)
- Deeds Registries Act, 1937 (Act 47 of 1937)**, amended in 1957, 1993, and another Amendment Bill is in the pipeline**
- Employment Tax Incentive Act, 2013 (Act 26 of 2013)
- Estate Duty Act, 1955 (Act 45 of 1955)**, amended many times**
- Income Tax Act, 1962 (Act 58 of 1962)**, amended by Act 18 of 2009**
- Land and Agricultural Development Bank Act, 2002 (Act 15 of 2002)
- Land Survey Act, 1997 (Act 8 of 1997)
- Local Government: Municipal Property Rates Act, 2004 (Act 6 of 2004)**, the "land tax", amended by Act 29 of 2014**
- Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002)**, amended by Act 11 of 2005.**
- National Small Business Act, 1996 (Act 102 of 1996)**, amended by Act 26 of 2003**
- Prevention of Illegal Eviction and Unlawful Occupation of Land Act, 1998 (Act 19 of 1998)
- South African Schools Act, 1996 (Act 84 of 1996)

BILLS

- Deeds Registries Amendment Bill [X-2016]

- Mineral and Petroleum Resources Development Amendment Bill [B15-2013]

Firearms

- **Firearms Control Act, 2000 (Act 60 of 2000)**, amended by Firearms Control Amendment Act, 2006 (Act 28 of 2006)

Labour, staff and education

- Adult Basic Education and Training Act, 2000 (Act 52 of 2000) (ABET)
- Basic Conditions of Employment Act, 1997 (Act 75 of 1997)
- Compensation for Occupational Injuries and Diseases Act, 1993 (Act 130 of 1993) **and amended by Act 61 of 1997**
- Employment Equity Act, 1998 (Act 55 of 1998)
- Extension of Security of Tenure Act, 1997 (Act 62 of 1997) (ESTA)
- Labour Relations Act, 1995 (Act 66 of 1995) (LRA)
- Labour Relations Amendment Act, 2014 (Act 6 of 2014) (LRAA)
- Upgrading of Land Tenure Rights Act, 1991 (Act 112 of 1991)
- Occupational Health and Safety Act, 1993 (Act 85 of 1993)**, amended by Act 181 of 1993**
- Sectoral Termination 13: Farm Worker Sector **– see Basic Conditions of Employment Act**
- Skills Development Act, 1998 (Act 97 of 1998)
- Workmen's Compensation **– see Compensation for Occupational Injuries and Diseases Act**
- Unemployment Insurance Fund (UIF)
- Pay As You Earn (PAYE)

BILLS

- Compensation for Occupational Injuries and Diseases Amendment Bill
- Labour Laws Amendment Bill [PMB6-2015]
- Occupational Health and Safety Amendment Bill
- Unemployment Insurance Amendment Bill

Marketing and exporting

- Consumer Protection Act, 2008 (Act 68 of 2008)

- Customs And Excise Act, 1964 (Act 91 of 1964)
- Foodstuffs, Cosmetics And Disinfectants Act, 1972 (Act 54 of 1972) **– includes the Labelling and Advertising of Foodstuffs regulation changes**
- Health Act, 1977 (Act 63 of 1977)
- Intellectual Property Laws Amendment Act, 2013 (Act 28 of 2013)
- International Trade Administration Act, 2002 (Act 71 of 2002)
- Preferential Procurement Policy Framework Act (PPPFA) **– to be repealed**
- Wine And Spirit Control Act, 1970 (Act 47 of 1970)

BILLS

- Border Management Authority Bill [B9-2016]
- Protection, Promotion, Development and Management of Indigenous Knowledge Systems [B6-2016]
- Public Procurement Bill [to replace the Preferential Procurement Policy Framework Act (PPPFA)]

Note also that there are various provincial ordinances.

Occupational Health and Safety Act

Sectoral Determination 13: Farm Worker Sector

Every employer on whom this sectoral determination is binding must keep a copy of the sectoral determination or a summary, available in the workplace in a place to which the farm worker has access.

This is part of the Basic Conditions of Employment Act, 1997, and it deals specifically with Farm Workers in all farming activities in the Republic of South Africa. It is available on www.labour.gov.za. Find details of minimum wages here.

Sources of information – Agricultural Legislation in SA:

www.daff.gov.za/daffweb3/Resource-Centre

http://libguides.wits.ac.za/c.php?g=145268&p=952475

http://www.agribook.co.za/

ORGANISATIONS SUPPORTING AGRICULTURE IN SOUTH AFRICA

Farmers may voluntarily be part of organised agricultural structures through local farmers' associations and/or through commodity organisations.

At grassroots level, commercial farmers are members of their local farmers' associations, through which they address local agricultural issues and liaise with officials and organisations on matters concerning their members. The farmers' associations delegate members to represent them in their respective provincial agricultural unions. The provincial agricultural unions address matters affecting farmers in the province as a whole and liaise with higher organisations. The provincial agricultural unions in turn delegate members to represent them on national bodies.

Included in the category of Organised Agriculture are the commodity organisations which serve and represent farmers producing a specific commodity, e.g., maize, beef, cotton. Some of the organizations supporting farmers in SA are:

African Farmers' Association of South Africa (AFASA)

AFASA is a body of African farmers that aims to commercialise the developing agricultural sector and ensure meaningful participation of black people in the mainstream commercial agribusiness sector. For more information, visit www.afasa.za.org

Agri SA

A federation of agricultural organisations, Agri SA was established in 1904 as the South African Agricultural Union and consists of several provincial and commodity organisations. Through its affiliated membership, it represents a diverse grouping of farmers. Agri SA's policy advocacy includes work on trade negotiations, industrial policy, taxation, financing, land reform, labour laws, training, farmer development, environmental affairs, water rights and water pricing, other input-related issues, farm safety, law and order, infrastructure, technology development and transfer, statistical information and local government.

For more information, visit: www.agrisa.co.za

National African Farmers' Union (NAFU)

- The National African Farmers' Union (NAFU) was established in 1991 with the aim of creating a "home" for thousands of black farmers who had previously been excluded from the mainstream of agriculture.
- At the time of its formation there was no black farmer organisation operating at national level in South Africa. Between 1979 and 1991 the only organisation which attempted to address the needs of black farmers at national level was NAFCOC. This organisation eventually facilitated the formation of the National African Farmers' Union.
- The historical issues associated with the poor state of agriculture among black South Africans are well documented. Inter alia, the following factors handicapped black farmers:
- Black people could not buy land within the borders of South Africa. They were confined by law to the homelands which are known to have marginal agricultural potential. Over-population in these areas resulted in the degradation of the environment and in widespread poverty.
- Lack of funding resulting from misdirected policies as well as from inadequate land tenure.
- Inadequate extension services and training.
- Inaccessible markets.

The broad aims of NAFU are:

- To lobby for policy reforms aimed at levelling the field in all agricultural matters with particular reference to land acquisition, agricultural funding, market access and public policy
- To lobby for the provision of appropriate services e.g. extension, marketing and credit to members
- To identify, quantify and address the needs of members
- To facilitate the provision of training
- To empower women and young people so as to enable them to participate fully in farming activities.

The Executive Director, NAFU, P O Box 9624, Centurion 0046.
President: Mr Motsepe Matlala.
Tel (012) 672 9301. Fax: 012-6729309.

The Agricultural Research Council

The Agricultural Research Council is a public entity that conducts research with partners, develops human capital and fosters innovation to support and develop the agricultural sector. It was established in 1990 and is the principal agricultural research institution in South Africa. Its core mandate is to conduct research, drive research and development, drive technology development and the transfer of information to promote agriculture, contribute to a better quality of life, ensure natural resource conservation and alleviate poverty.

For more information, visit www.arc.agric.za

Institute for Poverty, Land and Agrarian Studies (PLAAS)

PLAAS undertakes research on land and agrarian reform, poverty and natural resource management in South Africa and the southern African region.

For more information, visit www.plaas.org.za

COMMODITY / PRODUCER ORGANISATIONS

Each agricultural commodity in agriculture in SA has one or several Commodity/ Producer Organisations representing their industry. Examples of these commodity / producer organizations include Grain SA, VinPro, RPO.

Producer organisations (POs) (e.g., Milk Producers Organisation of South Africa, National Emergent Red Meat Producers Organisation, South African Sugar Association, South African Table Grape Producers' Association, and so on) go hand in hand with the increasing attention placed on the value chains (or supply chains) that connect farmers with consumers. Such value chains demonstrate the interrelatedness of the production, transportation, processing and marketing of farm products. Improving the coordination of activities of different actors (such as firms) in the chain can reduce transaction costs, help guarantee product quality and safety, and enhance the design of marketing strategies. Producer organisations are considered

instrumental in increasing the value generated throughout the chain, such as by ensuring that the quality of products is in line with the standard demanded.

They can also mobilise support from other stakeholders and can help farmers negotiate a fair share of the total profit generated.

Major changes are taking place in the markets for agricultural products. The liberalisation of markets in many developing countries, including the dismantling of state-controlled marketing boards, has led to increased competition. The rise of international specialty value chains, such as those for organic and fair-trade products, has provided an impetus for the formation of new PO's. Fair trade arrangements result in a premium price only for farmers who are organised. The growth of supermarkets as major outlets for food products has led to the restructuring of supply chains because supermarkets tend to work with preferred suppliers that can offer them products of high volume and consistent quality. As individual producers are hardly ever large enough to supply all the stores in a supermarket chain, there is a need for organisations to collect, sort, grade and perform quality control of products from different producers.

The World Development Report, Agriculture for Development (WDR 2008) makes the case for producer organisations as key actors in agricultural development. The report argues that they are a major part of institutional reconstruction, one that uses collective action to strengthen the position of smallholders in the markets for farm inputs and outputs. By reducing transaction costs, strengthening bargaining power and giving smallholders a voice in the policy process, POs are a fundamental building block of the agriculture for development agenda.

Enhanced product quality is key for getting market access in modern chains. POs can help their members achieve this in various ways.

- They can provide information to farmers about customers' quality requirements. Particularly with international chains, this includes assessing the many options for international certification schemes.

- PO's can implement quality control systems.

- They can organise and facilitate innovation processes targeted at reaching higher product quality by, for instance, providing technical assistance to improve on-farm production methods.

- Finally, PO's can go beyond facilitating the production and marketing process and take on the processing and marketing functions themselves.

Producer organisations can take many forms, ranging from formal institutions, such as cooperatives, to informal producer groups and village associations. A number of typologies have been developed that distinguish POs on the basis of their legal status, function, geographical scope and size.

Organisations that provide economic services include cooperatives that process and/or market the products of their member farmers. A typical example is the dairy cooperative, which processes the raw milk supplied by farmers into less perishable dairy products. POs can give smallholders a political voice, enabling them to hold policy makers and implementing agencies accountable by participating in agricultural policy making, monitoring budgets and engaging in policy implementation. Such advocacy organisations, or farmer unions, may lobby local, regional or national policy makers on behalf of their members. Multipurpose organisations, particularly those at the community level, often combine economic, political and social functions. They provide farm inputs and credit to their members, process and/or market their products, offer community services and carry out advocacy activities.

POs exist at the village, regional, national and even international level. Both commodity-specific organisations and advocacy organisations often have both local and regional/national branches. Multilayer POs are structured as federations, with the lower-level organisations being members of the higher-level organisation.

All POs are characterised by two principles: utility and identity. The utility principle ensures that PO's are useful to members and that members are actively committed to achieving jointly agreed upon objectives. The identity principle refers to the fact that members usually share a history and a geographical space, that they have agreed upon a set of rules that govern internal relations among members, and external relations with the outside world, and that they have a common vision of the future, both for themselves and for the group. This shared identity is a strong social mechanism that supports continued interactions among the members of the organisation.

Agricultural Publications in South Africa

Apps

A shortened form of "application software", an app is a computer programme designed to run on cell phones and tablets. In the beginning, an app offered basic services on your phone: access to emails, stock market, the weather, calendar included. Quickly, other information was

added – an alternative way to receive media content, for example, and there are now billions of apps available including several thousand agriculture-related ones.

Apps can also work with other technology, like probes inserted into the soil to let you know what the groundwater level is. Apps can identify major pests and diseases in crops, help plan fertiliser applications and meet soil nutrient needs, give you access to operator manuals and materials from training courses etc. Popular apps include My New Holland, Cropalyser, Just In Time Nutrient Calculator, PANNAR Sprout and AgDNA.

Crop outlook and weather/climate apps can also assist government departments and insurance companies to anticipate unfavourable conditions. They can also determine problem areas, scale of damage and appropriate disaster management interventions.

Books and Journals

Strategic approach to Farming Success by Dr Wimpie Nell and Mr Rob Napier. This book is designed to assist the farmer/management team in thinking strategically and imaginatively about the future of the farming business. Write to wimnell [at] farmingsuccess.com or call 082 882 9777. Read about the book at www.farmingsuccess.co.za.

Finance and Farmers, now in its fifth edition, goes a long way in helping you to manage your risks more effectively. To order a copy, phone 011 636 6162.

Kejafa Knowledge Works is a publisher and distributor of agricultural books. Visit www.kejafa.com. Visit the African Land-Use Training (ALUT) website too, to see which publications they have in store – www.alut.co.za. Numerous other role players like Agri connect and Media 24 (Landbou weekblad) stock some publications as well.

Provincial Departments of Agriculture also stock publications and reports. Take a look at the "Agric publications" option at www.kzndard.gov.za for example. Contact details for the provinces can be found in the "Agriculture in the Provinces" chapter.

Journals

- The *South African Journal of Agricultural Extension*, published annually by the South African Society for Agricultural Extension (SASAE), at www.ajol.info (African Journals Online),
- *African Crop Science Journal, African Journal of Food and Nutritional Security,* and *African Journal of Range and Forage Science*.

- www.tandfonline.com,Taylor & Francis online.

Cell phones

Cell phones offer amongst other things instant access to market information (e.g. SAFEX prices) and mobile money transfers, technology allows you to open/close gates from your cell phone, to begin/end irrigation and more. There are also the security advantages: you can reach loved ones and trace their whereabouts through the location of their phone.

DVDs

- African Land-Use Training supply DVDs to assist you. These include *Successful meat goat production, Successful chicken production, Successful pig production* and *Successful hydroponic production*. Visit www.alut.co.za.
- Dicla Training Centre supplies agricultural DVDs. See www.diclatraining.com.
- Kejafa Knowledge Works is a distributor of agricultural DVDs (and books). Visit www.kejafa.com.
- Training DVDs for deciduous fruit farmers by SA Orchard can be accessed at www.saorchard.co.za.

The Internet

Using the internet brings a world of information to the farmer. Increasingly, the Internet plays a role in how you shop and market what you have to sell. It connects you to people and what happens in the world.

Important websites for farmers include those of bodies that represent them (organised agriculture and industry associations), media, weather and markets. Examples include:

- www.agrisa.co.za, http://vrystaatlandbou.co.za/ and www.kwanalu.co.za, websites of three farmer unions. See the "Organised agriculture" chapter for a complete list.
- Industry bodies like www.grainsa.co.za and www.potatoes.co.za
- Agricultural business – www.agbiz.co.za, www.vkb.co.za and www.bizcommunity.com/Agriculture
- www.landbou.com – agricultural media offering news and articles; agricultural product prices; agro company share prices; SMS service with livestock auction prices; agricultural news on WAP site; photo albums; a veterinary Q&A column; financial Q&A column; agricultural blogs; forums for discussions; classified adverts online; a data

bank of farm prices for the past decade, and more. Similarly, see www.farmersweekly.co.za.

- www.weathersa.co.za – weather
- Efficient provincial government websites like www.kzndard.gov.za and www.elsenburg.com.
- Find Internet World Stats: Usage and Population Statistics at www.internetworldstats.com.

Leaflets and booklets

- Leaflets and booklets are available from the Departments of Agriculture (both national and provincial). To view some of these, visit www.daff.gov.za (under "Resource Centre" or the Provincial Departments of Agriculture websites like www.kzndard.gov.za and www.elsenburg.com (find details in the "Agriculture in the Provinces" chapter).
- Find the Info toons at www.agis.agric.za/efarmer.

Libraries and Agricultural Museums

Institutions of learning offering agricultural degrees/diplomas have libraries, as do the different Agricultural Research Council Institutes. Departments of Agriculture – be they provincial or national – have libraries. The contact number for the Department of Agriculture, Forestry and Fisheries library is 012 319 6896.

The contact details for the National Library of South Africa can be found at www.nlsa.ac.za.

A further source of agricultural information are museums. We have listed three of them here:

- Willem Prinsloo Agricultural Museum Tel: 012 736 2035 www.ditsong.org.za/willemprinsloo.htm
- Bathurst Agricultural Museum Tel: 046 625 0055
- Worcester Museum Tel: 023 342 2225 http://worcestermuseum.org.za

There are also agricultural museums in Bloemfontein and Lichtenburg.

Magazines

Weekly – General

- *Farmer's Weekly*www.farmersweekly.co.za
- *Landbouweekblad*www.landbou.com

Monthly – General

- *Food & Beverage Reporter*http://fbreporter.co.za
- *ProAgri* Tel: 012 809 0150 www.proagri.co.za

Commodity

Several commodity-specific magazines are published on a regular basis. Some examples are *SA Graan/Grain*, *Pluimvee/Poultry Bulletin, Dairy Mail, PORCUS, AFMA Matrix, Winelands, South African Sugar Journal, SA Studbreeder/Stoetteler, Veeplaas* .

Government and Agricultural Unions

- *DAFFnews*– the official newsletter of the Department of Agriculture, Forestry and Fisheries.
- Provincial Departments of Agriculture put out their own publication e.g. *AgriProbe* in the Western Cape. Contact Magrieta de Lange for information at 021 808 7613 or find the "AgriProbe" option at www.elsenburg.com).
- Agri SA and the TAU SA also have regular newsletters. Find these on their websites, www.agrisa.co.za and www.tlu.co.za.

Banks and Agribusiness

- Banks put out publications covering agricultural topics e.g. *AgriReview*, the free, monthly publication from Standard Bank. Find information and previous copies on the bank websites.
- The Agribusinesses also have their own publications e.g. *Afgriland*.

Development-sector specific

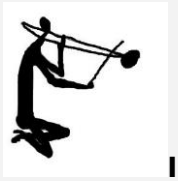
- *Die Plaaswerker/The Farmworker www.agripromo.co.za*
- *Pula Imvula*www.grainsa.co.za (available in English, Afrikaans, Sesotho, Tswana, Zulu and Xhosa)

Radio

- Radio Sonder Grense (RSG) informs listeners to agricultural developments in Afrikaans. Visit www.rsglandbou.co.za for more information.
- Radio Elsenburg on RSG (Radio Sonder Grense) broadcasts nationwide: 100 – 104FM. Listen on Fridays at 04h30 and 12h30; and Saturdays at 11h45. Find the "Rado Elsenburg" option at www.elsenburg.com.
- Listen to Radio Pretoria on weekdays at 5h35 for agricultural news. For enquiries, visit www.pretoriafm.co.za.
- Grain SA runs agricultural programmes for emerging farmers. Call 086 004 7246 or take the "Farmer Development" option at www.grainsa.co.za for more information.
- Find Landbou Radio at www.amaplasi.co.za
- The KwaZulu-Natal Department of Agriculture and Rural Development broadcasts technical agricultural information on eleven radio stations, reaching some seven to eight million listeners every week. The schedule of technical broadcasts is listed below. For further information contact Vuyani Dlamini at vuyani.dlamini [at] kzndard.gov.za.

Group Formative Exercise 1A

Individual Formative Exercise 1B



Individual Formative Exercise 1C

Unit 2:

Farm Business Management

Unit Standard	
116291	Participate in the development and management of an agri business plan
Specific Outcomes	
SO1: Demonstrate an understanding of the general management functions within an agri-business. SO2: Use a systems approach to structure an agri-business plan. SO3: Structure a rolling agri-business plan. SO4: Structure an agri supply chain to optimise the production to marketing flow. SO5: Implement an information system as planning and management support. SO6: Demonstrate an understanding of and implement risk planning within the monitoring process.	

INTRODUCTION

Let's talk about designing a business plan.

What is an Agri-Business plan?

Agri-Business plan is a detailed short term and long-term goal plan, which includes activities and outcomes within a certain time frame to produce a viable income within a specific agricultural environment.

What kinds of aspects would we consider to formulate a business plan?

- Available land
- Available finance x Available labour and equipment
- Available market
- Transport x Occurrence of pest and disease infestations.
- Weather and climatic information – year on year.
- Costs of agricultural inputs x Yield data
- Prevailing economic conditions in the sector, country and internationally.
- Production costs per crop.
- Soil and fertilisation costs and applications.
- Pest and Weed Control application programs and statistics x Collection of Non-target species data
- Crop quality margins x Agronomic data
- Profit margins per cultivar / per crop / per block / per orchard / per Hectare
- Good comprehension of Risk factors: natural (hail, flooding etc) and artificial (unexpected pest incidences, unexpected prices / crop margins, labour issues etc.).

GENERAL MANAGEMENT FUNCTIONS WITHIN AN AGRI-BUSINESS

An agricultural set up

The farmer should be motivated, diligent and not too old. He must be equipped with certain skills e.g., literacy (not crucial), ability to plan, disciplined to keep records and observe the

timeliness of farming operations. He must be dedicated towards farming for profit in a sustainable manner to ensure the viability of farming for future generations.

Basic activities in an agricultural set up include:

- The basic activities in an agribusiness is determined by how big the business is, if it is a long established business,
- The type of produce produced (crops, packaging, poultry, small animal husbandry etc.),
- The number of inputs required making the business function successfully and the availability of infrastructure, finances and labour.
- In the case of a potato crop manager, one would expect the manager to organize and delegate certain activities to a supervisor, who will in turn delegate these tasks to the labour or technical staff.
- Depending on the level of authority, a person doing this unit standard is most probably responsible for delegating tasks to minors and to see that all activities continue regularly as required within the set up.

Example:

In the case of a potato manager the following activities need to take place:

• Deliver inputs in the business plan of the business if it is not your own design, and suggest changes to the planned activities for the particular season.

• Check your involvement in the production cycle with regards to the production activities.

Planning starts one year prior to planting:

- Select the most suitable cultivar
- Order certified seed potatoes for planting – consider the long-term crop rotation system involved.
- Start preparing the soil, take decisions and delegate tasks to prepare the soil.

Before planting:

• Take soil samples and send it for analysis

• Do pre-planting fertilisation when required.

• Do tillage of fields to control weeds and volunteer plants.

• Clean and sterilise storage and seed potato handling equipment before the delivery of seed potatoes.

• Organise seed potato delivery

• Do inspection on seed potatoes

• Treat seed potatoes with fungicides and/or sprouting stimulants.

With planting:

• Prepare seedbed and furrows

• Apply fertiliser and granulated pesticides

• Plant at correct temperatures (e.g., 13-16 C)

• Start nematode control if necessary

• Vegetative growth period:

• Apply irrigation as required

• Apply post-emergence herbicides

• Apply surface fertilisation and ridge before canopy closes

• Monitor pests and diseases

At tuber initiation period:

• Control soil-water content

• Continue spraying

• Check nutrient status of plants by leaf analyses if necessary.

Tuber bulking period:

• Control irrigation – reduce to strength tuber skin,

• Continue leaf spraying – pest and diseases

• Schedule foliage killing practices

• Control soil tillage to limit tuber moth damage

Harvest:

• Train and control staff during harvest

• Harvest in the prescribed manner • Select and sort potatoes in the storage shed • Pack and market all potatoes

Activities in an agricultural set up

The activities of a person in an agri-business would not be only to see that the above actions take place, but often also to organise or facilitate the processes that will see to the functioning of the above activities.

These would include those processes one can consider as management processes.

A manager in an agribusiness would not only supervise and delegate, but also often also organise and plan and facilitate the activities.

These include:

1. Purchasing stock (seedlings, seed, cattle etc) and making important decisions about the crop cultivars or different types of cattle.

2. Finding finance to produce the crop or cattle, after being involved in the planning and budgeting of the season's produce.

3. Selecting labour and negotiating payment to do the job or to farm the crop/cattle if it is new or additional labour.

4. Organising servicing of equipment.

5. Organising and paying service providers, e.g., contractor to work the land – ploughing, planting etc.

6. Organise transport for labours.

7. Delegating tasks concerning planting, pest control and harvesting to a supervisor or labourers.

8. Manage labour issues like UIF, leave, pension, medical, incentives, bonuses etc for labour or staff.

9. Pay levies to the authorities, e.g., SDL levies.

10. Pay rent of land, electricity, water, diesel, petrol etc.

11. Control and facilitate the financial management of the business which would include the updating of a cashbook, invoices and payments made, communication with a bookkeeper to provide a financial statement at the end of the financial year, complete tax returns, pay dividends as required and keep an asset register in communication with the bookkeeper.

12. Purchase or rent equipment.

13. Purchase packaging material.

14. Monitor markets and when the best time will be to deliver to the market.

15. Communicate with staff, market agents, transport people, extension services, agricultural suppliers and agents.

16. Keep ahead on the available resource material on the crop/cattle.

17. Keep record of the harvest.

18. Advise on packaging and storing of produce.

19. Arrange for packaging and storing of produce.

20. Arrange transport and pay for it.

21. Manage the delivery to the market.

22. Keep records to calculate net-profit.

23. Manage the payback of loans and interest to the financial institution.

A SYSTEM APPROACH TO STRUCTURE AN AGRI-BUSINESS PLAN

A business plan

In order for an agri-business to function successfully, it is necessary that the manager, entrepreneur and/owner of the farm have a business plan. If you are not able to compile a business plan, it is important to obtain assistance to set up a project proposal of each crop or produce on the farm that will form part of the overall business plan.

It would be easier to compile a project plan for each crop, and a final income statement can then be done accordingly.

Preparing a business plan helps to develop a clear and precise description of all the different aspects of the farming operation. In the business plan, the farmer can determine the potential profitability of the planned activities and explain it to other people, e.g., when applying for a money loan.

The available market for your produce needs to be sourced and determined on what basis you are required to supply the produce. For example, with cotton, the market is an "always available market" since South Africa produces less than the required amount of cotton on demand by Spinners and textile companies. Cotton farmers are in the lucky position that cotton is a cash crop and that they can always sell their produce. The price they would receive is unfortunately in some instances, related to the international market, and they do not always obtain a good price, per kg. for their produce. In the case of other crops like vegetables, the grower needs to determine which time would be the best time for him to sell his crop and plan accordingly, otherwise he/she would have an excess of produce and may run at a loss.

Source different types of packaging, since this would not only influence your input costs, but also the price you could get for your produce. A neat well-packed produce will often get a higher price. Consider different private markets or communal markets, like vegetable stalls, local greengrocers or start your own offset platform. Discuss storage of produce at silos and obtain the necessary documentation for it..

Reasons for business planning:

- Planning guide
- Proof of management skills
- Communication tool
- Complete cost calculation
- Identification of good / bad points related to the farming operation.

Aspects to be included in business plan:

- ✓ Business overview: Name of person/s who prepared the documentation / business name / type of business / background summary
- ✓ Marketing plan: E.g. type of industry involved and where operation fits, pricing, trends, etc.

- ✓ Human Resource: E.g., diagram of management and employees, number of employees, compensation and benefits, training of labour, etc.
- ✓ Production activities: E.g., land, buildings, equipment needed for operation, material and supplies, timing of activities, soil conservation and maintenance, etc.
- ✓ Financial Plan: E.g., Income, cash flow summary, loan summary, possible risks, etc.
- ✓ Objectives: Short-, Medium- Long-term objectives and related problems
- ✓ Attachments: Documents to support business plan calculations, e.g., farm map, photos, previous financial statements, Identification book, etc.

The farmer should set up an outline of how much cotton he would like to produce on what size of field.

He must be able to recognise the infrastructure available to himself, and what inputs are needed, financially and support services. The available workforce (labour) is an important factor to recognise, since he needs labour to plant, for weeding and harvesting. Will his family contribute, or will he make use of association members, friends etc.?

In addition, a general business plan should contain:

- o the area fenced in and measured;
- o inputs required; infrastructure available (tractors, implements, spraying equipment and irrigation equipment);
- o infrastructure shortcomings (how is he going to compromise or fulfil his needs?);
- o funding available;
- o dates and format of application and extending facilities;
- o availability and access to Chemical depots;
- o delivery to markets (market availability)
- o and the possible outcome reflected in yield.

The business plan should also contain: variety of produce, pest control, weed control, training, contractor services, a physical budget and rational budget, reflect possible savings and include a winter programme to manage his fields.

STRUCTURE A ROLLING AGRI-BUSINESS PLAN

Critical success factors

Critical success factors (CSFs) imply the identifying of those matters that must just work out to ensure that the organisation will achieve its mission.

The advantages of identifying CSFs are;

- they are simple to understand and they intensify the focusing on major concerns;
- they are easy to communicate to co-workers;
- they are easy to monitor and they can be used in concert with strategic planning methodologies.

Using critical success factors as an isolated event does not represent critical strategic thinking, but when used in conjunction with a planning process, identifying CSFs is extremely important because it keeps people focused. Clarifying the priority order of CSFs, measuring the results and rewarding superior performance will improve the odds for long-term success as well.

There are four basic types of CSFs according to Rockart. They are:

- Industry CSFs resulting from specific industry characteristics;
- Strategy CSFs resulting from the chosen competitive strategy of the business;
- Environmental CSFs resulting from economic or technological changes; and
- Temporal CSFs resulting from internal organisational needs and changes.

Things that are measured get done more often than things that are not measured. Each CSF should be measurable and associated with a target goal. You do not need exact measures to manage.

Primary measures that should be listed include critical success levels (such as number of transactions per month) or, in cases where specific measurements are more difficult, general goals should be specified (such as moving up in an industry customer service survey).

Example of Critical Success factors for Company XYZ:

Critical Success Factor	Source of CSF	Primary Measures & Targets
1. Increase customers	Industry	95% customer retention rate; 15% new customers per year
2. Install PC-based customer service hot line	Strategy	90% of customer queries answered in 1 hour
3. Increase customer service reps	Strategy	3 reps per 100 customers
4. Restructure capital structure	Environmental	Lower cost of capital by 2%
5. Raise employee morale and productivity	Temporal	Increase employee retention rate to 95% / year.

When setting standards, raising standards often raises results (and the reverse is also true).

Critical Success Factor (CSF) is a business term for an element which is necessary for an organization or project to achieve its mission. For example, a CSF for a successful Information Technology (I.T.) project is user-involvement. A company may use the critical success factor method as a means for identifying the important elements of their success.

The term 'critical success factor' was first coined by Rockart (1979). He defined it as "the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organisation."

A plan should be implemented that considers a platform for growth and profits as well as take into consideration the following critical success factors:

- Money factors such as positive cash flow, revenue growth and profit margins that is applicable in all agribusinesses. (In animal husbandry, field crops, poultry, piggery etc.)
- Acquiring new customers and/or distributors -- your future.
- Customer satisfaction -- how happy are they?
- Quality -- how good is your product and service? (Important in an agribusiness.)

- Product and/or service development -- what's new that will increase business with existing customers and attract new ones? -your customers can be the available market or people you sell your produce to.
- Intellectual capital -- increasing what you know is profitable.
- Strategic relationships -- new sources of business, products and outside revenue.
- Employee attraction and retention -- your ability to extend your reach.
- Sustainability -- your personal ability to keep it all going

A critical success factor is not a key performance indicator or KPI. Critical Success Factors are elements that are vital for a strategy to be successful. KPIs are measures that quantify objectives and enable the measurement of strategic performance.

For example:

KPI = number of new customers and CSF = installation of a call centre for providing quotations, if you render a service as an agribusiness, or the centre can be installed as a communicative channel with people interested in your products. So many important matters can compete for your attention in business that it's often difficult to see the "wood for the trees". What's more, it can be extremely difficult to get everyone in the team pulling in the same direction and focusing on the true essentials. That's where Critical Success Factors (CSFs) can help.

CSFs are the essential areas of activity that must be performed well if you are to achieve the mission, objectives or goals for your business or project. By identifying your Critical Success Factors you can create a common point of reference to help you direct and measure the success of your business or project. As a common point of reference, CSFs help everyone in the team to know exactly what's most important. And this helps people perform their own work in the right context and so they pull together towards the same overall goal. D. Ronald Daniel first presented the idea of CSFs in the 1960's. It was then built on and popularised a decade later by John F. Rockart, of MIT's Sloan School of Management, and has since been used extensively to help businesses implement their strategies and projects. Inevitably, the CSF concept has evolved, and you may have seen it implemented in different ways. This article provides a simple definition and approach based on Rockart's original ideas.

Rockart defined CSFs as:

- ✓ "The limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organisation. They are the few key areas where things must go right for the business to flourish. If results in these areas are not adequate, the organisation's efforts for the period will be less than desired."
- ✓ He also concluded that CSFs are "areas of activity that should receive constant and careful attention from management."

Critical Success Factors are strongly related to the mission and strategic goals of your business or project. Whereas the mission and goals focus on the aims and what is to be achieved, Critical Success Factors focus on the most important areas and get to the very heart of both what is to be achieved .

It is never as simple as setting and achieving new performance targets. You should already appreciate the value of a foundation in proper planning, preparation and design efforts before starting any process improvement program. You should also understand that the most important element of any business system transformation is to identify the business drivers for change and the Critical Success Factors (CSFs) early in the program. You must acknowledge that successful transformation (change) programs require careful planning and preparation.

The five Critical Success Factors listed are based primarily on leadership effectiveness, clear performance management goals and well-designed Transformation (Change Management) plans.

CPI Critical Success Factors:

- Strong Executive leadership and alignment

• Executives/farm managers/owners must communicate the reason(s) behind the Transformation program and establish a sense of urgency.

• Executive leadership and support must be visible early in the Transformation program stage and be reinforced throughout.

• Executive leadership must clearly define the program or farming objectives.

- Clear and measurable goals
- Goals of the Transformation program must be in line with the organisation's strategy, and they must be measurable.
- Executive leadership and support must clearly define the criteria for measuring progress toward program objectives.

- Actionable business case and performance measures
- Program benefits and returns on investment must be clearly defined and approved of by the key stakeholders.
- Organisational and individual performance measures must be aligned to the objectives of the Transformation program.

- Clearly defined roles and responsibilities
- Key stakeholders, internal and external, must be identified early in the program.
- Roles and responsibilities need to be clearly defined.

- Well-designed execution and continuous improvement plan

Transformation (change) Management must be an integral part of the program.

- The execution strategy and implementation plan must be well defined and clear to all stakeholders.
- Program milestones must be designed to deliver programmed goals and objectives.
- Impact-individuals need to be trained and ready for their new assignments.

The following table lists the transformation Phases, and discusses their benefits and effect on the transformation program. Details for each phase and its associated tools and templates are provided:

Phases	**Benefits**	**Effect on the transformation program**
Define Business Drivers	Identifies business drivers and reason(s) for change early in the program or farming business These drivers can be key staff e.g., managers, bookkeeping, shareholders etc.	Identifies program champions and develops the foundation for organisational buy-in.
Architect & Align	Align Transformation program goals with the organisation's business strategy.	Ensures early alignment of the initiative with the existing organisational strategy, and capabilities.
Vision Develop	Identifies the key business drivers, organisational goals and performance measures.	Reduces the risk of initiating Transformation programs without clearly defined performance measures.
Current State Understanding	Provides a clear map of the existing processes and identifies potential areas for improvement.	Identifies root causes and reasons behind process bottlenecks early and the key features of future state processes.
Future State Design	Defines the renewed processes and identifies required organisational assets needed to enable continuous improvement e.g., consider harvesting equipment or any other	Confirms the Business Case and develops the foundation for developing the Implementation Road Map.

	infrastructure in the form of capital items.	
Road Map Development	Defines in detail the Future State Implementation Road Map such as critical milestones and early wins.	Reduces program management risks and identifies required steps to accomplish key milestones.
Execution	Delivers the early and ongoing benefits of the Transformation program	Delivers business objectives and secures the organisational buy-in.
Continuing Improvement	Initiate the required processes to improve, monitor and control the new and renewed processes on continuous bases.	Institutionalise steps and procedures needed to continuously improve the renewed processes.

AN AGRI SUPPLY CHAIN TO OPTIMISE THE PRODUCTION TO MARKETING FLOW

Organisation of the pickers

Organisation of the whole labour force will contribute greatly to smooth running and high productivity.

Administration arrangements

An efficient bookkeeping system must be used to record the cotton picked and the earnings of each picker. An accurate mass meter that can be hung and can indicate the mass of the cotton separately from the mass of the picking container is essential. The labourers' confidence can be gained by daily checking the calibration of the mass meter in their presence.

A numerical system of identification of pickers works well. Recording is kept to a minimum and the problem of more than one labourer with the same name is eliminated. The allocated number is then used to identify the bags of picked cotton.

A card system, with the name, identity number and picker number on each card, is sometimes used. The daily mass of picked cotton and the earnings are recorded on this card. Alternatively, this information can be recorded in a suitable book. However, the day and date must be clearly recorded to avoid any uncertainty at a later stage.

Since the record of the labourers' earnings is in the producer's possession, the books or cards must be kept in a safe place. It is assumed that the cotton producer will carry out any other administrative duties concerning the recruitment of labourers as required by law.

Co-ordinating team size

The size of the team influences discipline and productivity. A team that is too large becomes chatty and this affects the picking rate. A team of about 40 is ideal. Collect a team from among individuals who have about the same work rate. Better supervision is possible if the slow pickers are grouped together. Special training and encouragement of these workers will also lead to a better picking rate. As the best pickers are then not inclined to wait for the slower ones, they also pick more.

Organisation in the field

Before picking commences, each picker should understand exactly what is required of him as unnecessary talking and walking about wastes time and energy. Where the field is far from the living quarters, the labourers should be transported to the field. Each labourer is given containers or a number of empty plastic bags to pick in. Tickets marked with the labourer's number are issued so that each bag with cotton can be labelled.

A factor, which requires careful consideration, is the time when the picking should start and when it should stop. Traditionally the pickers start work soon after sunrise. At this stage the cotton is usually still damp from dew, and it must first be dried out before it can be weighed and baled. In the early morning the picking rate is slow due to the cold and wet conditions.

Unnecessary walking about in the cotton fields wastes time and unpicked cotton is knocked down. Where row lengths are short it is advisable to allocate a number of rows (4 to 8, etc.) or blocks to each picker as his daily task. Each block is then allocated to a picker. Fields with very long rows can be picked from both sides to reduce yield losses and make better use of labour.

The practice of overfilling and compressing the bags with seed cotton is a waste of good picking time. Use three or four bags rather than one bag. The loosely filled bags are also carried and emptied easier. Dry leaves and pieces are crushed into fragments if the cotton is over compacted. Cotton containing too much of these leaf fragments can be downgraded. As soon as a bag is full and has been lightly compacted (7 to 10 kg per bag) a numbered identification ticket is attached to it.

During the course of the day the supervisor carries these full bags to the end of the field and places them in the row of a particular labourer. In the late afternoon only the cotton that was put out into the sun to dry, needs to be collected and bagged.

In the case of large teams, it is impossible to store the cotton overnight to measure the mass the following morning. The only way to prevent the various pickers' cotton from mixing is to measure the mass in the late afternoon. However, if the team size permits, the mass of the day's harvest should be measured the following morning while the cotton in the field is still too wet to be picked.

Summary

• Labour for cotton picking is becoming more difficult to obtain and available labour must therefore be used more efficiently.

• Teach the labourers ways to improve their productivity.

• Train labourers to work with both hands.

• Not more than four bolls should be picked at a time and deposited immediately into the picking container.

• Train the labourers to pick only the inside halves of two adjacent rows.

• Use containers that stay open and ensure that they are always close to the picker.

• Wearing the picking bags attached to the body increases the picking rate.

• Pick cotton carefully so that it remains as clean as it was on the plant, thereby retaining its good grades.

• Do not waste time trying to clean seed cotton by hand.

• Picking should commence as soon as three or more bolls per plant are open. To leave the cotton on the field for longer than necessary results in a lowering of the grade and increases yield losses.

• Determining the mass of the previous day's harvest in the early morning is less time consuming. Big teams sometimes make this impracticable.

• Keep efficient records of cotton harvested and look after these records carefully. A picking team of more than 40 are too big to manage. Where possible, group the labourers so that those with the same picking ability work together. This makes better supervision of poor pickers possible and improves the output of the better pickers.

The farmer should assign a responsible person to co-ordinate these activities.

The planning of farm production activities can be done with an activity sheet by matching the activities within a specific time frame that the activity should be done. In order to assign different activities to a specific person or labourer, a column can be designed where the appropriate person would sign on completion of the activity.

Performance indicators can be designed for each group of activities e.g., for weed control, pest control, land preparation, financial management etc.

These indicators would include criteria to which the worker has to comply with:

- Was the activity (harvesting) performed in good time?
- Was the activity performed correctly?
- Were instructions to workers given satisfactorily?
- Was reporting on the activity done to management
- Did the person use all available tools to his/her availability?
- Did the person show dedication and responsibility?

It is a good idea to choose a "staff member of the month" and put his/her photographs up in the staff room or in the shed on the wall, in order to praise staff members and create a feeling of appreciation for their work. Some award is recommended in the form of financial gain, or even in the form a giving a labourer an afternoon "off". Check with the Department of Labour for labour legislation concerning contractual requirements

The specific environment of the industry influences the distribution of the cotton that was harvested in this example. A number of ginneries or markets are available in different regions. The farmer or learner doing this unit standard should have a good understanding of the available markets and how to reach these markets. Transport should be arranged via

contractors and the cost should have been included in the original budget. On delivery to the gin, the farmer would obtain a quality grading for his/her cotton and be paid accordingly.

AN INFORMATION SYSTEM AS PLANNING AND MANAGEMENT SUPPORT

Implementation of business plan

The implementation of the business plan or operationalisation of activities will be listed in the business plan under "outputs". The farm manager can then assess these activities. The initial implementation and outcomes of the assessment on performance should be communicated to labourers and farm managers involved. A business plan in an agribusiness for mentorship training in cotton production would include the following aspects:

Mentorship of a farm-training programme.

- ✓ Project justification.
- ✓ Background Information.
- ✓ Description of the mentorship implementation plan.
- ✓ Time allocated.
- ✓ Support by the Institutional Framework.
- ✓ Mention institutions involved, e.g., S ACPO as well as the ginners, spinners and other processors, ARC etc.
- ✓ Project justification - Describe
    - Present situation.
    - Expected results of the project
    - Target beneficiaries
    - Development objectives
    - Long-term objectives •
    - Immediate objectives
- ✓ Activities

• Output 1: Technical training:

• Output 2: Practical training:

- Output 3: Mentor -learners will be assessed
- Output 4: Dissemination & publication

✓ Co-operation with other institutions/individuals
✓ Inputs
✓ Assumptions and risks (discuss risks of the crop) e.g., cotton. Farmers depend on rain to produce. The estimated yield of the crop can therefore be influenced by natural phenomenon. The crop can be ruined by natural causes or by illness or diseases that can affect the learners' performance.

Project review, reporting and evaluation

Describe when the production practice will be reviewed e.g., twice per year and reports on progress will be compiled annually.

Market analysis

Discuss what was presently done and produced in the crop environment, e.g., how many hectares produced, biggest competitors, time of the season etc.

- Market value indicates the production income, profit etc. Training by applying the "Best Management strategies" can enhance yields and income per capita, as well as the size of the annual cotton harvest.
- Market value & return imply and discuss the return on investments. These can be found as a result of a cotton training programme, the market value reflecting the number of small-scale farmers trained and increased production and the possible 20% increase in value of profit of crop with applying of best management principles.
- Existing competitors: None, as the infrastructure for training already in place.
- Alternative products: Discuss whether other cultivars should be tried or follow a crop rotation system instead.
- Market penetration: Consider and discuss different market possibilities.
- Accounting and auditing: Discuss Auditing during a financial year.
- Project implementation plan: Discuss the development and implementation of the project plan.

- Assessment Process: – discuss the introduction of a Quality assessment plan for your farm by means of:
  • Keeping record of yields/animals
  • Attendance lists of labourers and activity sheets (log sheets) to stipulate when activities are done.
  • Performing an initial assessment on the farm, looking at level of skills training of farm workers and labourers, infrastructure, available chemicals, service providers, finance etc.

Assessment refers to "the process of collecting sufficient evidence about the performance and the related understanding of a person and making a judgment about whether it conforms to the needs of the production cycle. These should be communicated to the farm staff

What is Benchmarking

Benchmarking is the process of determining who is the very best, who sets the standard, and what that standard is.

What can I Benchmark

You know you need to benchmark, but you are just too busy doing other unimportant things. Well, if you don't benchmark and implement improvements based on it, you will find yourself out of business! (Then you'll have plenty of time to benchmark, but it will be too late). Most of the early work in the area of benchmarking was done in manufacturing, like the example above. Now benchmarking is a management tool that is being applied almost anywhere, even in agriculture.

- Who is the best sales organisation?
- Is it the most responsive customer service department or the struggling manufacturing operation?
- Is it a farmer running his farm according to best management practices or a farmer with no skills trying to produce something on his farm?
- How do we quantify that standard?

Related Issues

Once we decided what to benchmark and how to measure it, the objective is to determine what do we have to do to achieve that?

Benchmarking systematically compares one organisation's business practices and standards to another industry leader in order to create new and improved business practices and standards that lead to a better product or service. Benchmarking can help your business become an industry leader in a farming practice as well.

There are four types of benchmarking: internal, competitive, functional and generic.

Internal refers to benchmarking between business units within the same company while competitive benchmarking compares one business with its competitor.

Functional benchmarking involves comparing similar processes within an industry and generic benchmarking compares business operations between industries that are unrelated. In most cases, benchmarking refers to the competitive type of benchmarking, measuring products, services, and practices against competitors.

How does benchmarking work?

Businesses of all sizes can benefit from benchmarking, but it is especially useful for small to medium sized businesses. Smaller businesses benefit because benchmarking can help them avoid reinventing the wheel. By examining the standards and practices of leading industries, the small companies can adapt these to suit their own needs. More on benchmarking can be found on: www.agribusinessonline.com

In 1997 the Euro Retailer Produce Working Group (which includes most of the supermarket chains in Europe) started working with the goal of setting the rules and procedures necessary for setting the Good Agricultural Practicas (GPAs) applicable to their suppliers of fresh fruits and vegetables. They focused on decreasing the food safety risks and ensuring an objective tracing system to verify the implementation of the GPAs.

Nowadays it is quite common to find a wide variety of fresh produce in supermarkets without knowing what their different origins are. This, plus concerns about “mad cow” disease and the use of transgenic, has led supermarkets to assure consumers about the safety of the food they consume. The Eurepgap protocol was created with the purpose to guarantee this. It is a norm recognised by international certifying standards, and it is aimed at producers to focus on key

production aspects that will ensure the sustainability of safe products. It is estimated that currently 70% of European buyers demand this certification.

OPERATING IN THE AGRI VALUE CHAIN

Definition: A value chain can be described as the interlinked value-adding activities that convert inputs into outputs which, in turn, add to the bottom line and help create competitive advantage. The chain of activities gives the products more added value than the sum of added values of all activities.

The value chain concept provides a way of understanding relationships between businesses, methods for increasing efficiency, and ways to enable businesses to increase productivity and add value. Value-chain approaches in the agriculture sector are a vehicle for linking small businesses to markets and are essential for improving South Africa's economy and reducing poverty.

In order to understand your value chain, you could draw a simple diagram that shows the key processes and inputs that contribute to your final product. In general, the value chain of most agribusinesses looks like this:

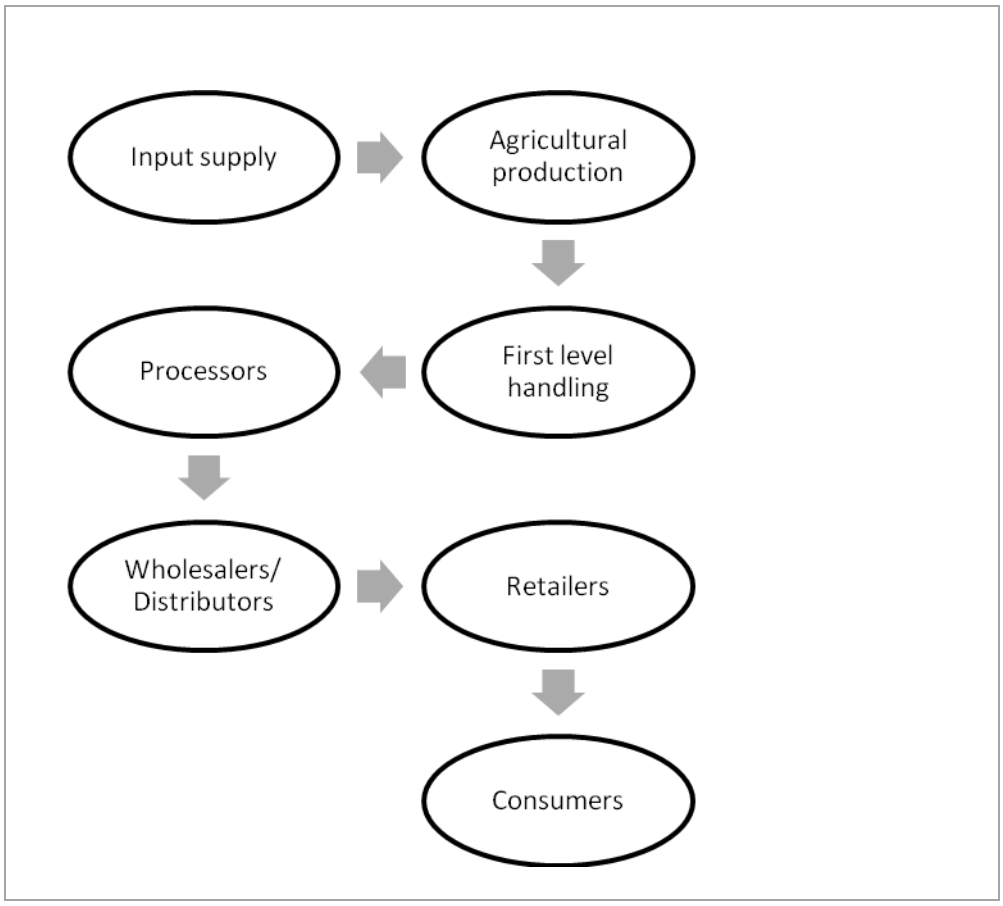


Figure 1.2: Typical agribusiness value chain

How does the value chain work?

At its simplest, a value chain is an activity path through an organisation. It tells you what the organisation does and the order in which it does it. It should also tell you something about how it does it.

Capturing the value generated along the chain is the new approach taken by many management strategists. For example, a fruit farm that needs its products to be packed will require its pack house to be located nearby its farm. This will maintain the quality of the product and minimise the cost of transportation.

A value chain can be a very helpful tool for understanding the difference between two organisations that appear to be functioning in similar ways in the same sector. This is because organisations can construct their value chains in very different ways. A different design of the value chain, by which we mean a different activity path through the organisation, might simply indicate a different way of doing things, or it might generate notable competitive advantage.

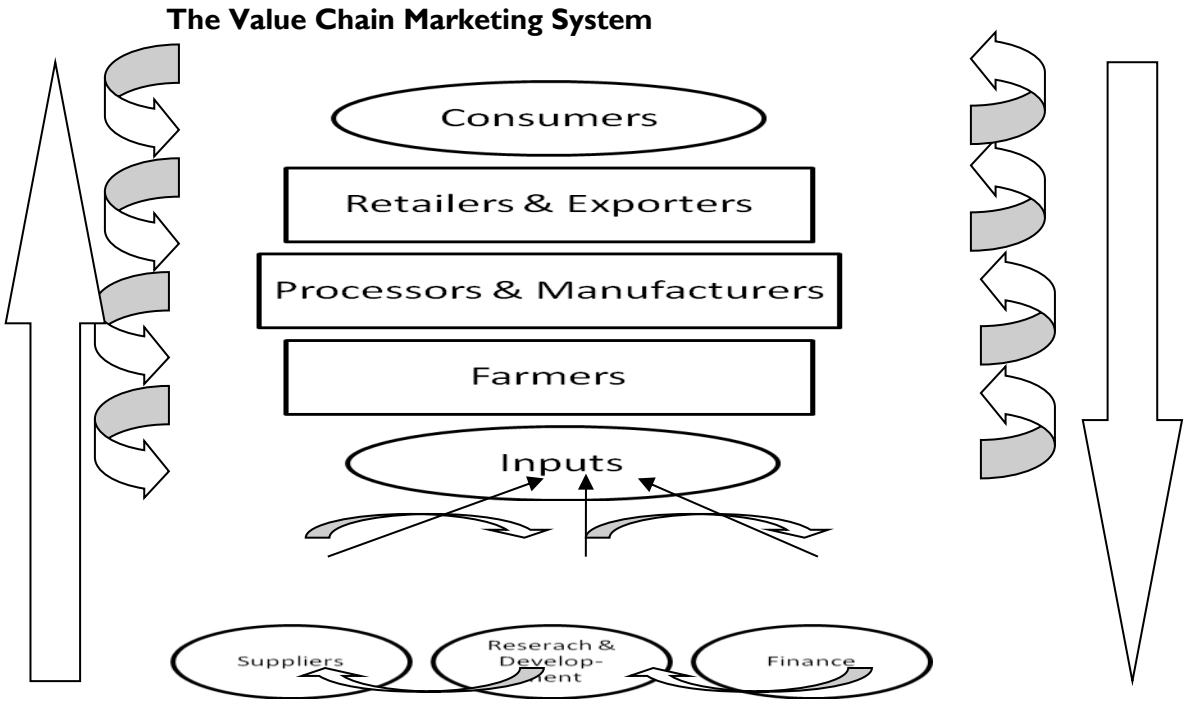


Figure 1.3: The value chain marketing system

In a Value Chain marketing system, farmers are linked to the needs of consumers, working closely with suppliers and processors to produce the specific goods required by consumers. Using this approach, and through continuous innovation and feedback between different stages along the value chain, the farmer's market power and profitability can be enhanced. Rather than focusing profits on one or two links, players at all levels of the value chain can benefit. Well-functioning value chains are said to be more efficient in bringing products to consumers and therefore all actors, including small-scale producers and poor consumers, should benefit from value chain development.

The market is based on integrated transactions and information. Consumers purchase products that are produced according to their preferences. The farmer becomes the core link in producing the products that the consumers desire.

Research and development, whilst including techniques targeted at increased production, is also focused on consumer needs, and attempts to take account of all of the links, and dependencies in the value chain, e.g. processing, environmental and social costs or considerations, as well factors such as health impacts, education and learning.

Communication is in both directions. It is important that both consumers and processors are made aware of factors limiting production, just as much as farmers and other producers are made aware of consumer requirements.

The value chain can help answer questions regarding:

- How the products you produce, reach the final consumer
- The economic relationships between players in the chain
- How this structure is likely to change over time
- The key threats to the entire value chain
- The key determinants of your share of the profits created by the chain.

Value chains can be used to identify sources of increased efficiency and also to facilitate 'benchmarking' of how competitors create value and how their activities compare with yours. Value chain analysis has four underlying elements:

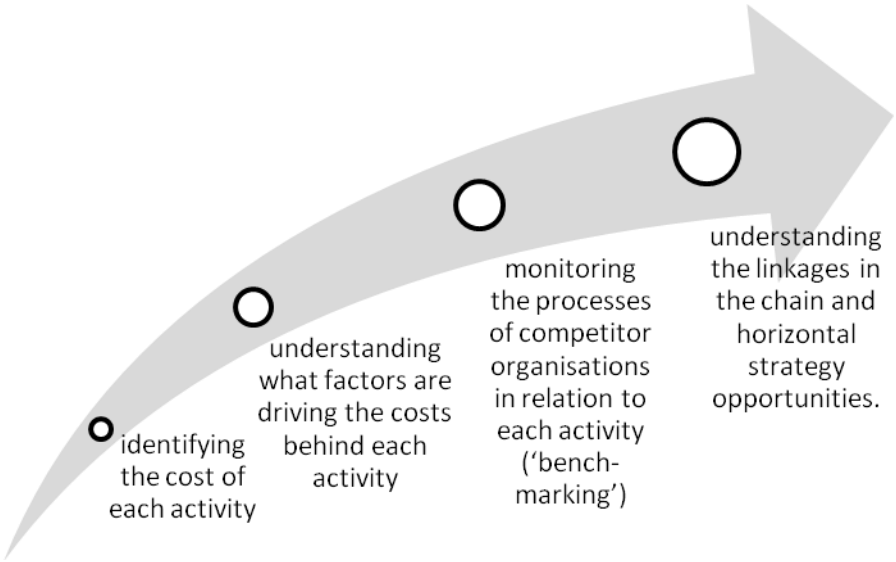


Figure 1.4: Underlying elements of value chain analysis

You may find that even a very simple overview of an organisation's value chain gives a great deal of insight into its relative strengths and weaknesses. It is also the case that imaginative approaches to reconstructing ('reconfiguring') the value chain can release new ways of clustering resources and therefore new types of capability within organisations.

Analysis of the value chain enables us to identify where an organisation's distinctive capabilities are based. They may arise from clear advantages in particular functions (e.g., R& D, manufacture), or from the integration of individual functional capabilities. These distinctive capabilities give rise to core competencies, which are what make the organisation what it is. They are the key to the continued success of the institution, and effective strategies need to recognise and build on them.

Value chain analysis, together with an understanding of an organisation's key capabilities, can provide a basis for decisions about whether to integrate all stages of the value chain within the same organisation or to enter into partnerships with other organisations better equipped to deliver some of those stages. Equally, value chain analysis may allow an organisation to make decisions about whether to extend its activities up or down the value chain. Certain activities on any value chain might add a high proportion of financial value to the finished product or service: these are known as high value-added activities.

Examples are:

- Diversify enterprises
- Market outside the commodity supply chains
- Emphasise direct marketing and premium specialty markets
- Consider forming a cooperative with other farmers
- Add value through on-farm processing

The structure of the value chain will have a direct impact on you and your direct competitors' profitability.

To a large extent, the amount of profit that can be obtained by you is dependent upon the final value that your entire value chain delivers to the consumer. It is also important to realise that your value chain also competes against other value chains that may be delivering products and services to the same customers that your chain delivers to. Agricultural businesses that focus only on the firms nearest to them in the value chain are not likely to anticipate major structural changes that can dramatically impact their profitability.

Principles in establishing a strong value chain:

- Start small and grow naturally
- Make decisions based on good records
- Create a high-quality product
- Follow demand-driven production
- Get everyone involved
- Keep informed
- Plan for the future
- Evaluate continuously
- Preserve
- Capitalise adequately
- Focus

The role of the producer in the value chain

The producer is a pivotal part of the value chain. They convert inputs into outputs (e.g., fruit, wheat, milk, etc.) thereby adding value to the final product. The decisions they make regarding how to use resources (land, seed, cattle, labour, technology, soil, fertiliser, chemicals, equipment etc) and farming techniques, skills and processes will determine the value that is added at this stage in the value chain. Therefore, they should always seek to farm efficiently and effectively so as to maximise value.

Value will be maximised if the farmer produces high quality and volumes of product at the lowest possible input cost.

Apart from focusing on the final product, value can be added by using and selling by-products from the production process. For example, peach pips can be sold to landscapers to use in gardens or inferior grade fruit can be juiced or dried for resale.

Each part of the supply chain adds value in a similar manner by using their resources, skills, techniques, etc. to add maximum value to the value chain. Value can be added by producing something, such as cheese, or by offering a service that enhances the overall value of the outputs from the values chain, e.g., marketing.

Value add to raw product- vertical integration in the value chain

Value added agriculture is a process of increasing the economic value and consumer appeal of an agricultural commodity. It is an alternative production and marketing strategy that requires a better understanding of the rapidly changing food industry and food safety issues, consumer preferences, business savvy, and teamwork.

The more value you add to your raw product, the more appealing it will be to customers and the more they will pay for it. As farmers struggle to find ways to increase farm income, interest in "adding value" to raw agricultural products has grown tremendously. The value of farm products can be increased in endless ways:

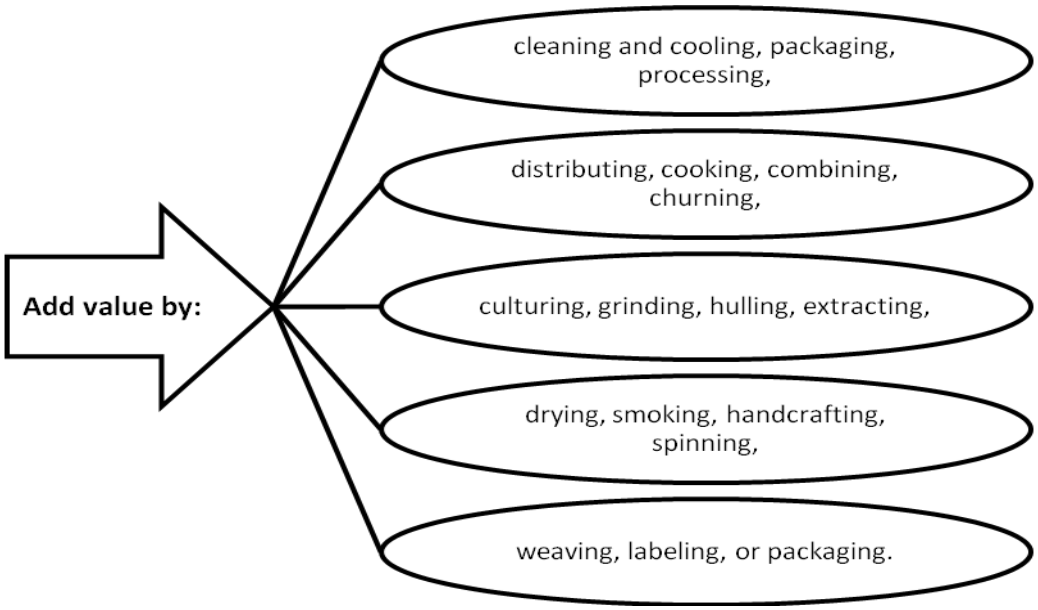


Figure 1.5: Value adding activities to raw agricultural products

Today, more than ever, adding value means "selling the sizzle, not the steak." The "sizzle" comes from information, education, entertainment, image, and other intangible attributes. Because of the many regulations involved with food processing, some people may choose to add value in other ways. On a larger scale, producer-controlled processing for energy, fibre, and other non-food uses are options. On a smaller scale, items such as flower arrangements, garlic braids, grapevine wreaths, willow baskets, wheat straw weavings, sheep and goat milk soaps, and wool mulch are a few examples. In addition, ideas for providing entertainment, information, and other services associated with direct marketing are abundant.

Obtaining competitive advantage in the value chain

A Competitive advantage can be defined as an advantage that a firm has over its competitors, allowing it to generate greater sales or margins and/or retain more customers than its competition. There can be many types of competitive advantages including the firm's cost structure, product offerings, distribution network and customer support.

Success in the long run requires all of the above, plus the added advantage that comes from whatever it is about your operation that cannot be copied or can only be copied with great difficulty or expense. For example, focusing on your location will attract buyers who want to "buy local." Tell the story of your farm—no one else will have quite the same story.

However, there is a growing need for farmers to become market oriented. In other words: find out first what the market most likely wants and try to produce according to market specifications/demands. Reasons are that consumers have specific demands on quality, food safety and the social conditions under which the products are grown. After they have gained this knowledge, they will decide to whom and how to sell their product. If they do so, there is a better chance that they will get a better price for the product.

THE SYSTEMIC AGRI PRODUCTION SYSTEM

DEFINITIONS

Production systems involve the use of a variety of production practices that are employed to produce a crop of the highest possible standard in terms of quantity, quality and size, in order to achieve production objectives. Coordinating the production systems requires effective production management.

Production practices are the actions and processes carried out to achieve production objectives, such as fertilization, irrigation, pest and disease control, pruning and harvest.

Production objectives are measured in term of yield (how much), export percentage, fruit size and external and internal quality.

Production management is the management of production systems and production practices.

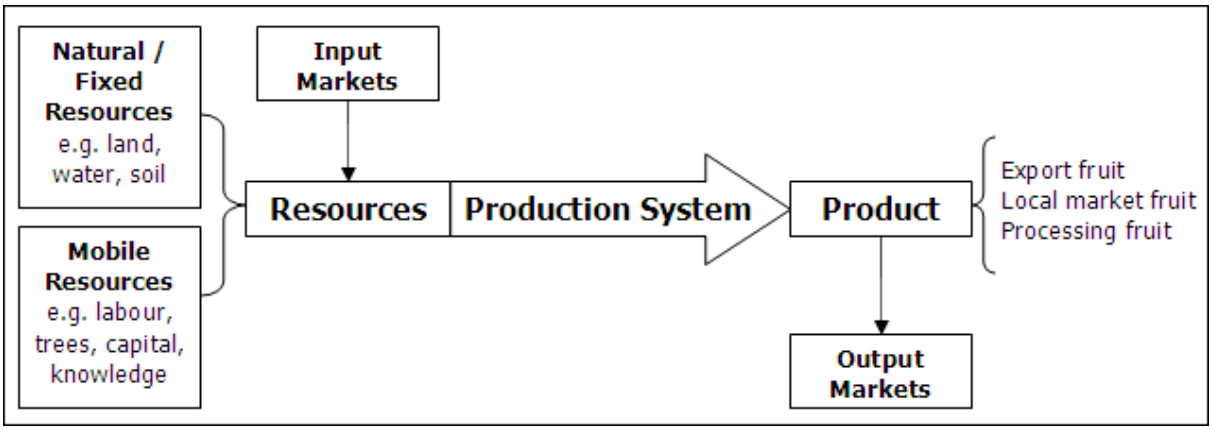


Figure 1.6: Production Conversion demonstrates the conversion process involved in, as an example, citrus production, where resources (inputs) are converted by a production system to a product, being citrus fruit (output).

Knowing the output market is essential. The requirements of consumers, wholesalers, and retailers (market demand) determine many of the decisions that are taken in respect of production practices. Getting the highest possible return for the product that is produced will ultimately determine the commercial success of the farming operation.

Example:

In South Africa, about 60% of commercially grown citrus is exported as fresh fruit. Of the balance, about 25% is sold on the local market and 15% is sent for processing at juice factories. Yet over 90% of total revenue is generated from exports. For this reason, production practices are geared toward maximising the export pack-out percentage by ensuring that the requirements of foreign consumers are met.

A production manager (farmer) must stay on top of all the latest developments on the international market. This information drives the decisions made regarding all aspects of production, from cultivar selection to the selection of chemicals, to the timing of the harvest. All these decisions are strongly influenced by market demand.

Increasingly, the higher paying markets are insisting that producers demonstrate their knowledge of and compliance with environmental regulations. These regulations are in some cases legally enforceable and in other cases set as entry requirements to output markets.

Good agricultural practices (GAP) regulations aim at meeting consumers' needs for products that are of high quality, that are safe to eat, and that are produced in an environmentally and socially responsible way. Producers who apply GAP would minimise the use of chemicals to prevent harming the natural environment. This process is commonly known in the industry as Integrated Crop Management.

Natural Resources and the Production Plan

Resources include those inputs that are fixed in relation to a particular site, such as land and water. These are known as natural resources, while mobile resources include labour, capital, planting material and knowledge. We can always source more/additional mobile resources, but not fixed resources.

Natural resources are, by definition, limited. More land or more water cannot be produced, and available natural resources must therefore be treated with respect if the farming operation is to be successful. The availability of these resources to meet the long-term needs of the enterprise is of critical importance.

The potential of a certain site for production depends on its climatic suitability for the varieties to be grown and the status of the fixed or natural resources, specifically the availability of sufficient high-quality water and suitable soil.

All resources come at a cost and the scarcer the resource, the higher the cost. Land and water are scarce, expensive, and have to be used efficiently.

Only about 13% of South Africa's surface area can be used for crop production, which is referred to as arable land. Only 22% of this area is considered to be high-potential arable land. Suitable land is the primary fixed resource and without it, nothing can be produced.

Issues to consider when deciding whether or not land is suitable for the production of a specific crop include:

- Is the land of sufficient size to support the required plantings/animals?
- Is the land located in the right climatic area to support the desired varieties/animals?
- Is the land free from certain pests and diseases?
- Does the land have sufficient areas of the required soil type and quality?
- Does the land have a sufficient supply of high-quality water (as required by the crop/animals)?
- Is the land located close to sources of skilled and unskilled labour?
- Is the land situated at an appropriate and manageable distance from packing and transport facilities?

The systemic interaction between the Agri production process and the environmental factors

It is not possible to produce a crop to meet market specifications without applying certain practices or interventions. This is because the planting of large areas to a single crop upsets the natural balance in the first place. The farmer finds himself in competition with nature. A source of food which did not exist before is created for various pests and diseases. In addition to this, different crops have to be manipulated in various ways to bear high yields of uniformly sized harvest entities of the desired quality.

The challenge facing the production manager is therefore to:

- Achieve yield targets.

- Ensure the products meet market quality specifications in such a way that the process is sustainable and within the framework of Good Agricultural Practices (GAP)

Environmentally speaking therefore, production must be managed in such a way that the processes can be used repeatedly throughout the lifespan of the production area (field, orchard) and beyond. This is achieved by minimising the use of harmful production practices and applying those that have minimum negative impact on the environment.

Examples of such production practices include:

- Selecting varieties or animals best suited to the environment and climate.
- Using certified nursery material (in the case of trees and seedlings)
- Using pesticides with minimum impact on non-target insects.
- Minimising the use of soil tillage equipment; and
- Accurate and targeted use of fertilisers

Production practices are costly and some, especially broad-spectrum pest and disease control treatments, inorganic fertilisers and herbicides, can contaminate soil and run-off water. This causes pollution and reduces beneficial insect populations.

Production practices should therefore be carefully managed to achieve the desired production objectives with minimal harmful effects to the environment.

Optimizing resources to achieve outputs

Natural and mobile resources should be deployed in an effective manner. This means avoiding wastage, duplication and incorrect resource application and timing. For example, water, which is a scarce resource, should be applied at the right times and in the right amounts. To achieve this may require that other resources, such as soil, be properly selected and prepared and that the labour (another important resource) used to apply the water be adequately trained.

Resources can also be under-used. For example, the establishment of a new a production area (field/orchard/animal husbandry area) requires adequate capital to be available for the purchase of high-quality inputs (nursery materials/trees/animal breeding stock/irrigation system/required equipment). Capital is a resource which, if not available in a sufficient amount, can lead to an under-capitalised venture and likely failure.

In addition to the effective use of resources, appropriate systems, processes and procedures that enable the achievement of the highest income at the lowest cost, must be put in place. The highest income is achieved when resources are cost-effectively applied to optimise production and, in so doing, also enable the greatest possible proportion of yield to meet the demands and requirements of the best paying markets (either local or export).

THE PRODUCTION PLAN

The Production Plan encompasses all the details surrounding how your farm operation will produce products for market. It includes such things as land, buildings, equipment, supplies and processes, as well as laws and regulations that impact the business. Production is the core income producer for a farm, so this section deserves detailed attention.

- Land, Buildings and Facilities - Description of land and buildings used by the farm operation
- Equipment - Description of equipment, vehicles, machinery used in the farm operation
- Materials and Supplies - Description of materials and supplies used in farm production
- Production Strategies - Production procedures. What to produce, when to produce it, when to market it.
- Construction/Production Schedules - Schedule of production and schedule for construction of new facilities
- Environmental Assessment Plan - Soil conservation, water quality control, manure management, etc.
- Political and Legal Aspects of Production - Zoning, environmental policies, regulations and laws which effect production. Quality control and inspection requirements

Land, Buildings and Facilities

In this section you will include a detailed description of the land and all of the buildings used by the farm operation. This needs to be specific. For instance, rather than listing "barn" you should include the size of the structure and what activities will take place inside of it. Include things such as fencing in this description. The idea is to have a complete and detailed description of the physical facilities available. If there is an intent to lease land, that too should be included here.

Equipment

Here you will include each piece of farm related equipment. Tractors, implements, trucks and other vehicles that will be used as part of the farm operation are obvious things to list. Don't forget things like computers, printers, office equipment, etc. Also remember to list other equipment that will be used that might include hand tools, shop equipment, irrigation equipment and such.

Your buildings, facilities and equipment are generally depreciable assets. Having them listed in a business plan can be helpful come tax time.

Materials and Supplies

Include all materials and supplies necessary for the operation of the farm. Feeds and hay are obvious examples. Less obvious are fertilizers, soil amendments, gasoline and oil and other consumables, as well as materials that will be necessary for maintenance and repair. It is important to capture as many foreseeable expenses as possible

Production Strategies

It is important to not only identify what you are producing, but how you are going to produce it. Include projected schedules. Will you have spring or fall births? When and how will your produce be sent to market? How will your production expand over time? When will you know that you have achieved optimum size and production?

Construction/Production Schedules

By now you should have a vision of your farm's annual operations, as well as an idea of what it will look like over the long term. In this section include both. For instance, for a livestock operation, you will need to plan for breeding season and birthing season. You will need to plan for routine husbandry (shearing, worming, vaccinations, foot care, etc.). Experience has shown that it is helpful to have these things scheduled.

For the longer term, it is important to have an idea of when that new shelter will need to be built, the new paddock fenced, the pasture seeded, etc. Having a plan for these things will assist in controlling costs and budgeting.

Environmental Assessment Plan

In many areas of the country there is a growing emphasis on good stewardship of the environment. It is wise to have a plan in place for this. How will you manage manure? What steps will need to be taken to assure water quality, including run-off from pastures, stream protection, etc.? If erosion on your land could be a concern, what steps will need to be taken to control that?

Many areas will have access to Government Agencies (e.g., Soil and Water Conservation Districts) that can provide information to help with developing this part of the plan.

Political and Legal Aspects of Production

There have been many stories of people that have acquired what they thought was the perfect piece of land, only to discover later that local ordinance restricted the use they could put it to. To avoid that, these issues need to be explored before investments are made.

In this section, include an examination of any laws that could impact your production. These might include, depending on region, anything from stocking rates per acre to stream enhancement policies to irrigation rights.

Example of production plan

Land buildings and facilities expansion

1.	Location:	Abbotsford		
2.	Description:	Broiler Chicken Farm		
3.	Size:	10 acres		
4.	Current operations:	Birds per cycle	20 000 birds	
		Housing requirement	0.75 sq. Feet per bird	
		One double storey barn	40 ft x 210 ft (includes space for storage)	
5.	Expansion plan:	**1995**	**1996**	**1998**
	Birds per cycle	5,000	5,000	10,000
	New double storey barn (40 ft. x 100 ft.)	R60,000		
	Double storey addition (40 ft. x 100 ft.)			R60,000
	50% equipment installation	35,000		
	50% equipment installation			35,000
	Generator upgrade (75 KVA)	10,000		
	Quota acquisitions	100,000	100,000	100,000
	Total Costs	**R205,000**	**R100,000**	**R195,000**
6.	Land:	R 350 000.00		

Cost of facilities, 1994

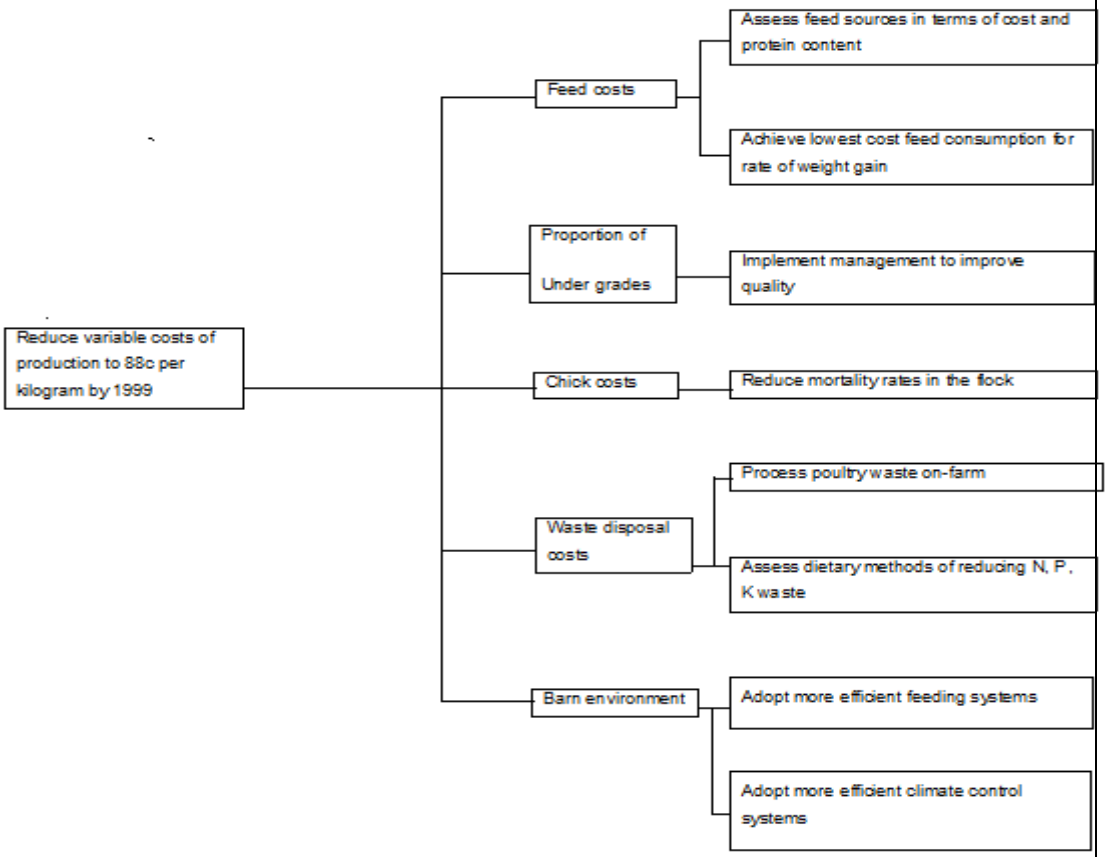
EQUIPMENT	NEW COST	REMAINING UNDEPRECIATED VALUE	UNDEPRECIATED VALUE PER LIVE KILOGRAM	ANNUAL DEPRECIATION PER LIVE KG
Poultry barn	R 100 000	R 85 006	R 0.327	R 0.013
Barn equipment	R 60 000	R 25 190	R 0.097	R 0.019
Backup generator	R 15 000	R 4 915	R 0.019	R 0.004
Incinerator	R 2 000	R 655	R 0.003	R 0.0005
Manure shed	R 18 000	R 16 589	R 0.064	R 0.0025
Clean-out tractor	R 12 000	R 2 017	R 0.008	R 0.0023
Quota	R 75 000	R 57 274	R 0.220	R 0.0116
TOTALS	R 282 000	R 191 646	R 0. 737	R 0. 0532

Materials, supplies and services, 1994

DESCRIPTION	1994 REQUIREMENT PER CYCLE	TOTAL COST	SUPPLIER	ORDER LEAD TIME
Chicks	20000	R10 192	Local hatchery	4 weeks
Feed	74 tonners over 42 days	R 20 160	Local feed company	1 week
Medication/ vaccinations	Coordinate with chick placement	R 900	Local veterinarian	As required
Chicken catching	Date required	R 740	Contract catcher	1 week

Waste removal	Date required	R 360	Contract handler	1 week
Processor	Delivery date		Local processor	2 weeks

Example: Production strategies



Construction schedule

WEEK	1	2	3	4	5	6	7	8	9	10	11	12
Select design	x											
Select site	x											
Blueprints		x										

Order components			x									
Land clearing				x	x	x						
Prepare base						x	x	x				
Pour foundation								x				
Building assembly									x	x	x	
Install equipment/utilities											x	x
Site clean up												x

Quota acquisition and production expansion schedule

YEAR	Birds per cycle				PROJECTED NUMBER OF PRODUCTION CYCLES PER YEAR
	QUOTA PURCHASE SCHEDULE	GIFT QUOTA	CUMULATIVE QUOTA	CUMULATIVE BARN CAPASITY	
Prior years	5 000	10 000	15 000		
2015		5 000	20 000	20 000	6.5
2016	5 000		25 000	25 000	6.5
2017	5 000		30 000	30 000	6.5
2018			30 000		6.5
2019	5 000	5 000	40 000	40 000	7.4
2020			40 000	40 000	7.4

SWOT and the production plan

It is important that the farmer is familiar with the opportunities and threats in the national and international environment, as well as knowing the abilities and potential performance of his farming business.

Strengths, weaknesses, opportunities and threats are usually identified in the following areas of a farming business:

- Workforce
- Technical resources
- Financial information
- Natural resources
- Water
- Pastures
- Infrastructure
- Location of the farm

This is called a **SWOT ANALYSIS.**

STRENGTHS – **W**EAKNESSES – **O**PPORTUNITIES – **T**HREATS

STRENGTHS	**WEAKNESSES**
Strengths are within an organisation. It will look at products, processes, human resources, infrastructure, structures, administration, marketing, public relations and financial issues. These are all issues over which the farmer has control and that are working well and therefore contribute to the success of the farm.	Weaknesses are within an organisation. It will look at products, processes, human resources, infrastructure, structures, administration, marketing, public relations and financial issues. These are all issues over which the farmer has control but are not working well and undermine the farm's potential success.

OPPORTUNITIES	**THREATS**
These could be in any area, both internal and external. It could be improvements to internal systems to take advantage of a marketing opportunity. It could be an opportunity to upgrade equipment. Often the opportunities are identified through asking: 'How do we take advantage of our strengths?' ;'How do we overcome our weaknesses?' and 'What can we do to mitigate this treat?'	Threats are external forces over which the farmer has no control, but, by being aware of these issues, he can plan for a range of eventualities. The issues raised in this section also, therefore, can become key areas for development / improvement.

An example of a **SWOT** analysis is as follows:

Strengths	**Weaknesses**

• Product quality
• Early maturity
• Secure and plentiful water
• Excellent soils
• Good range of high-quality plant material
• Committed ownership
• Good technical production skills
• Good PR skills – well connected
• Labour plentiful
• Close to port / airport
• Innovative management
• Low per unit labour costs
• Labour literacy high (100%)
	• Labour skills poor
	• Imports of inputs difficult and costly
	• No EurepGap (environmental) compliance
	• No local factory outlet
	• Poor quality and unreliable machinery
	• Packhouse in bad condition
	• No regular management accounts
	• No market access to key markets
	  ○ Japan
	  ○ USA
	• High pest pressure
	  ○ Pests (identified and specific)
	• Low export percentage

• Good market potential	• Lack of available logistics to exploit early maturity of produce

Opportunities
• Expand production an identified and specific commodity into market gaps left by other farmers who no longer produce
• Reduce electricity costs
• Obtain EurepGap (environmental accreditation)
• Improve labour skills through training
• Upgrade equipment reliability
• Improve systems
  o Production and packing records
  o Human resource
  o Finance and reporting
  o Marketing
• Explore market niche opportunities
• Investigate lime production
• Investigate local processing
• Gain access to Japan
• Improve nutritional management
	Threats
	• Water availability
	  o Floods – medium risk
	  o Drought – low risk
	• Phytosanitary pests and diseases
	  o Identified and specific list
	• Management succession
	• Labour unrest
	• Political unrest
	• Security
	• Low market prices
	• Environmental requirements
	• Lack of management depth

Setting goals and objectives in your production plan

"Begin with the end in mind". This is a well-known phrase, which expresses the importance of starting off any project with a picture of how things should look once the work has been successfully completed. For large scale and long-term undertakings, this picture is referred to

as the vision. For smaller and shorter scale operations, this picture takes the form of specific outcomes and is commonly referred to as objectives or goals.

A **vision** can be seen as a farmer's dreams in action. It is the situation that the farming business strives for in the future, having a clear picture of how the farming business will change over time.

Goals and objectives are necessary to convert the vision of the farm into measurable performance areas.

Long term goals indicate a desired outcome or milestone which the farming business is striving to achieve in the future.

When formulating long-term goals, it is important that the number of goals should be limited to about three to five.

Areas to pay attention to in formulating long term goals are:

- The farming business's growth
- Business performance
- Sustainability
- Succession

When formulating short-term objectives, the following questions must be answered: **WHAT** must be done, at which **STANDARD** and **WHEN**?

Short term objectives are formulated to give guidance and set targets that the farming business should achieve, within one year or one production season.

Without clear objectives, the farmer will not know where the farming business is headed, nor how well it is performing.

Short term objectives have the following characteristics:

S – Specific

M – Measurable

A – Agreed upon by all stakeholders

R – Realistic or achievable

T – Time schedule

Some goals and objectives encompass a variety of challenges the most important of which are to:

Achieve per hectare yield targets – This means that the production per hectare must achieve the targets that have been set in the annual budget. Annual targets would vary from enterprise to enterprise.

Ensure the end products meet market specifications – The production manager must for example set production objectives to achieve the requirements of the markets. This could be in terms of size, colour or internal quality.

Ensure that the process is sustainable - This means ensuring that the environment is not adversely or unnecessarily disturbed by the production processes, for example by pest control chemicals, fertilisers etc., so that high levels of production can be sustained over the lifetime of the production area or enterprise.

Remain within the framework of Good Agricultural Practices (GAP)– GAP calls for care in the use of chemicals to ensure safety for all operators, the use of pesticides, fungicides and fertilisers in a systematic, careful and planned way, and the judicious application of water to prevent wastage, contamination and erosion.

Secondary objectives may apply to individual farming operations, but meeting the objectives stated above will ensure the overall success of the operation.

In order for it to be successful, goal setting requires open communication, motivation and the complete buy-in and understanding of the farm's objectives by everyone working on the farm.

It is important that when goals are set for the farm, there is an alignment between the goals for each agricultural system and the agricultural enterprise. If for example, the vision for your farm is to develop the farm for tourism, most of the activities on the farm should be directed towards achieving this overall goal.

Goals would maybe include developing a pet farm, having tractor driving fun days on the farm or maybe developing a picnic spot.

Long-term goal:	POSITIVE Increase of product
Main strategy (how?):	Increased reproduction levels
Short-term objectives ---Livestock	
Lambing procedures 135% Weaning percentage 130% Weaning weight 44kg	

Spring mating/Autumn Lambing – Dual-purpose sheep flock (3000 ewes – 4848 SSU)

WHAT	ACTION	BUDGETED STANDARDS	WHEN
Testing rams	Fertility tests	Sperm mobility (>90%)	May
	Mating dexterity	Interest in ewes Mating performed with libido and success	During mating
	Ewe: ram ratio	25-30:1	June
	Replacement rams	Weaning weight index of >110	June
Selecting of ewes	During lactation	Must have milk for three months	May to August
	After weaning	25% that grew the fastest and have no physical defects	August
	Fertility	Second time not conceived	After lambing season
	Weaning weight	42-45kg when weaned	After lambing season
Selection of lambs	Growth rate	300g/day	2-5 months
Nutrition	Fodder-flow planning	3% of body weight	August

		Dry material available	
	Planting of pastures	100ha pastures – yield 6 tons dry matter per hectare	September to March
	Purchasing programme of supplementary nutrition	• Winter licks (108 days) 120g/SSU/day=62,8 tons • Summer licks (215 days)30g/SSU/day=31,3 tons • Ram licks 400g/ram/day, 6 weeks prior to mating season (96 rams) = 1,6 tons • Lactating licks – 200g/ewe/day, 6 weeks during lactation = 25,2 tons	Continuous
Health programme	Dosage	According to health programme	Feb., April,July,Sept.,Dec.
	Dipping		May
	Inoculation		Dec., July,Aug.
	Foot-dip		March, April, June, Aug.
Protection against cold spells	Build shelter in the camp where the ewes will lamb	Large enough to give protection to 3000 ewes and 4050 lambs	March
Short-term objectives - Maize			
Average yield target	4 tons per ha		
Marketing strategy	R1350/ton		

WHAT	ACTION	BUDGETED STANDARDS	WHEN
Increase yield	Identify management zones	Vary inputs according to potential-low, medium, high and very high	August
Reduce production risk	Precision agriculture	Adopt variable rate technologies	September
	El Niño predictions	Avoid pollination during expected dry period	1st week of October
New Marketing strategy	Drawing up scenarios	Three-case scenario	September
	Sign contracts	At least 20% higher than total production cost per ton	October, January and June
	Average price	R1 350/ton	

RISK MANAGEMENT IN AGRI PRODUCTION

Agriculture today, and specifically farming, is a business faced with many risks. Issues such as climate change, skills shortage and the growth in the financial markets in terms of commodity products have increased the risks these businesses face. Even though agricultural businesses have more tools available to manage and mitigate risks, this has increased the complexity of risk decision-making.

The winners of tomorrow will be the farmers and agri businesses that are able to manage the risks inherent to their farming systems at a reasonable cost. The result of effective risk management practices in agriculture will have some significant benefits for society as a whole such as:

- ensure food security and stability of prices.
- result in a stable and profitable commercial farmer base to ensure that agriculture is able to provide in the food requirements of the future.

- assist in achieving long-term sustainability of the environment.
- reduce the negative effects of natural disasters (floods, droughts etc) on humans and the environment.
- reduce the need for taxpayer funded emergency aid packages.
- create jobs and sustainable employment; and
- improve the stability of farmer incomes and hence expenditure on farm inputs.

The result is economic stability in rural economies. The mentioned factors can also be termed 'Critical Success Factors' or 'Strategic Issue Analysis'.

Primary sources of risk in farming

Although the risks provided below have been separated into varying categories, to assist in the risk identification and management thereof, these risks are not independent. Indeed, some of the larger impacts on farming businesses are due to the interaction of the risks. Farmers should therefore approach risk management from a holistic viewpoint and should carefully consider the impact of even improbable risks.

PRODUCTION RISK

Production risk is defined as the overall uncertainty regarding production. Production risk includes contributing risks such as changes in the weather, crop performance, incidence of pests and diseases and machine efficiency. Currently the observed changes in the global climate are posing numerous and potentially significant risks to the production of crops, particularly those associated with water availability and quality as well as rising temperatures.

PRICE RISK

Price risk results from the unpredictable and competitive nature of the prices of both farming inputs and outputs. Changing prices of products can be observed on formal markets such as the various commodity and futures exchanges, physical markets where buyers and sellers meet or by way of the transactions between individual parties.

In respect of the prices of farming inputs farmers are largely price "takers", i.e. they have very little or no influence on the prices they pay and there are few risk management tools or instruments available to manage the risk.

For certain crops and products there exist several financial instruments and products whereby the farmer can affect price risk management. But for some the price risk associated with farming outputs can often only be managed to some extent through an effective marketing strategy. Certain producers can be price "takers" for outputs as well, e.g. milk producers.

POLITICAL RISK

Changes in government or to government policies relating to matters such as land reform, employment targets, subsidies, animal welfare, food and safety are often uncertain and may have a large impact on farmers.

FUNDING AND FUNDING LIQUIDITY RISK

A successful farming business has implemented a well thought through funding plan. Farming businesses can be exposed to cyclical cash flow patterns. Therefore, managing the funding risk of the farming business is crucial. The recent crisis has taught us that any business needs to plan its operational cash-flow and investments properly and put in place a funding plan that provides some comfort on the availability of the funds at the crucial times. Where substantial funding is required this should be secured well-ahead of time, so that the lack of available funding does not negatively impact the business.

CURRENCY RISK

The appreciation or depreciation of the South African Rand affects both import and export demand and domestic prices for competitively traded inputs and outputs. Currency risk can also have a significant impact on price risk, particularly where prices of inputs or outputs are referenced against a foreign currency, e.g., the price of maize in US$.

LEGAL RISK

A large number of farming activities have legal implications. Legal risk is inherent in contractual agreements and is always present in the form of environmental liabilities, food safety liabilities, etc.

PERSONAL RISK

Personal risks are those risks relating to the people who are involved with the actual management of the farm. They include farm safety, divorce, illness and death.

THE MANAGERIAL TASK OF A MANAGER ON THE FARM

Successful agricultural production management depends on the effective application of standard management principles and practices. It is similar to managing any other complex project – similar steps are followed. These steps are as follows:

- Define, understand and clearly state the overall goal or objective of the operation or project, for example define the standards to which the end product has to comply;
- List the actions needed to achieve the end result (*what has to be done)*
- Naming the individuals who are responsible for the work *(by whom)*
- The deadline dates by when the various tasks have to be completed *(by when);*
- Define ways of evaluating and measuring progress and use results of this constant review process to influence future planning and operations *(how will we know it is done/what will we do differently next time)*.

Planning

Definition: **Planning is** to formulate a scheme, a programme or method, to accomplish a specific goal within a specific timeframe, and with a specific purpose in mind.

If goals are long-term, meaning that it will take more than a few years to achieve, or strategic, meaning that they apply to the farming operation as a whole, the planning involved in achieving these objectives will likewise be long-term and strategic in nature. If, on the other hand, goals are short-term, such as applying fertilisation before a certain date, a short-term operational plan or action plan is required.

Planning is concerned with thinking through, and when necessary, listing, the steps and actions required to progress from the present situation to a desired situation. These steps are planned in chronological order, together with whatever resources are required to complete each step.

We plan our every-day activities automatically, such as getting up and dressed in the morning. However, when it comes to more complex actions or tasks we have to put more effort and

care into planning. For example, fixing a roof leak requires as a first step, a plan. This plan will include:

Fixing a leaking roof		
What?	Define the problem	The wind blew some of the tiles off the roof and the south-eastern corner now leaks.
What?	What has to be done to address the problem	Tiles have to be replaced, plus insulation sheeting replaced.
How?	How the problem should be addressed	
By whom?	Who is going to do the work?	Contractor: Mr Fixit (cheapest of 3 quotes/preferred supplier)
What?	What tools and materials needed	Tiles, sheeting, ladder
Where?	Where the tools and materials will be acquired	Builders' Warehouse (cheapest of three quotes)
How much?	The cost of tools, materials and labour	R1200
By when?	When it should be completed?	31 August 2005

Without planning there would be no step-by-step sequence of actions taking us from where we are to where we want to go. Our actions would be random, and we would waste time, energy and money in repeating certain steps and leaving out others, while compromising our chances of reaching our goal. In the process, we could do things that threaten the future of the business and harm the environment.

Scheduling

Definition:

Scheduling the management term that involves entering or drawing up a timetable for the completion of various stages of a complex project, or the coordination of multiple related actions or tasks into a single time sequence. Scheduling is most commonly used with regard to repetitive tasks, such as the application of irrigation.

A schedule indicates the intervals between, or frequency of, actions. For example, a class timetable shows when different subject lessons will be taught and the intervals between similar lessons. In the same way, a bus roster shows the regular arrival and departure times of buses. These are different kinds of schedules.

Scheduling is important because it provides the manager and her/his staff with a fixed programme for carrying out required actions or tasks. Once a schedule to an action has been set and communicated, the expectation is that it will be strictly kept to.

Organizing

Definition:

Organising means to arrange tasks in an orderly functional, structured, coherent and systematic manner to bring about harmonious or united action.

Proper organisation means that different resources for a specific task are available when and how they are required.

For example, consider the planting of a new citrus orchard. The production manager has to ensure that all the necessary resources for this operation are available in the situation and at the time they are needed. Part of the labour force would be allocated to preparing the orchard lay-out, while another would install the irrigation system, and a third group would be unloading the nursery trees from the truck. In all cases, the manager has to ensure that the labour force has the right equipment to carry out their tasks effectively. At the same time, the manager has to ensure that he has allocated his capital effectively between the different parts of the planting program.

Clearly, effective organisation has to be preceded by good planning.

Implementation

Definition:
Implementation is the act of carrying out the agreed plan according to an agreed schedule to achieve what has been agreed should be done.

A plan cannot be effectively implemented unless the necessary resources are available. It is equally important that the required infrastructure be in place. Infrastructure is a term that refers to permanent non-consumable items required to support the implementation process. This includes roads, rail and air links, equipment, tools, vehicles, fuel supply depots, vehicle maintenance facilities, chemical supply points, offices, storage rooms, pump houses, pack houses, etc. The production manager ensures that the necessary infrastructure is in place and makes the appropriate contingency arrangements when such facilities are not yet available.

As circumstances and conditions change, the implementation process has to be constantly measured, evaluated, reviewed and adapted.

Coordination

Most tasks and almost all projects involve the activities of more than one person. Production management is, by Definition, a process; the various aspects of which are carried out by different individuals with different skills.

We have already dealt with the concept of ***organising***, which is about the allocation of resources. Coordination is about bringing in the various players at the appropriate times and in the most effective way in pursuit of the agreed objective. Most projects and tasks require some form of coordination. Without it, aspects of the work could be unnecessarily repeated, and others lost.

Coordination is an important aspect of the agricultural production manager's job. In fact, virtually all that gets done by the staff in the production process is the result of the coordination of different tasks or inputs. For example, the application of a pest control spray requires that the production manager coordinates with the administration personnel to ensure that the chemicals are ordered and delivered in time, the maintenance department to ensure that the tractors and spray equipment are in good working order, and the labour force to ensure that enough workers are available to complete the task.

Monitoring

It is not enough to plan, organise, and implement a program. The process can only operate successfully when the feedback cycle is also operating. The feedback cycle involves:

- Control
- Feedback
- Adaptation
- Correction

The feedback cycle is a continuous process of measuring progress and evaluating it against the original objective(s). It is about asking:

- "Are we still on track?"
- "Are my original assumptions still valid?"
- "Do I need to adjust my goals, timeframes or implementation process in some or other way?"

The feedback cycle must be formalised and be part of the procedure for executing tasks. It may involve the use of short interval control measures. A short interval control measure is a progress check on a regular short interval basis, such as weekly or fortnightly.

One way of doing this is to break down the program into smaller short-term milestones and measure progress against these milestones on a scheduled basis. If any of the milestones are not met, a decision has to be taken on whether the implementation of the plan needs to be changed or whether the original plan needs to be adapted or corrected. The effectiveness of a pest control program can for example be monitored by carrying out frequent and systematic inspections of pest populations. Based on these results the programme can be adjusted to ensure that the original objective is met.

Figure 1.1 illustrates the management process chain, incorporating all the stages through to feedback and correction.

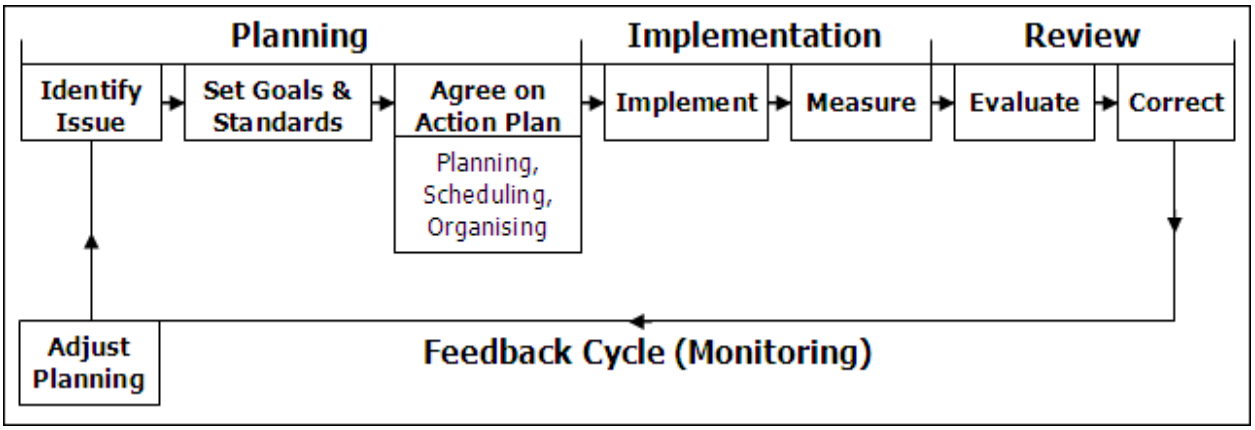


Figure 1.1: Management Process Chain

Decision Making

Definition:

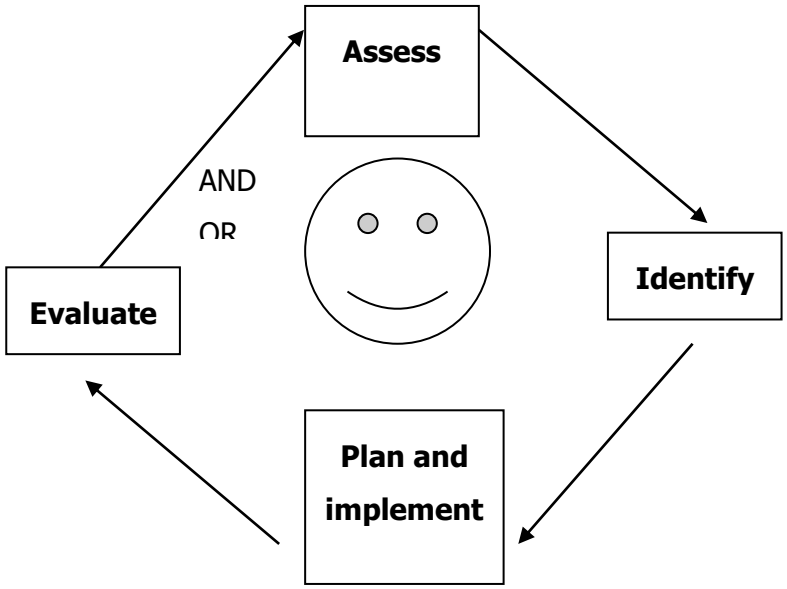
Decision-making is the cognitive process of selecting a course of action from among multiple alternatives. Common examples include shopping, deciding what to eat, etc

We all make decisions every day, both at home and at work. We make many decisions without much effort, and without concerning ourselves unnecessarily with what their impact will be. For example, we make decisions about what to wear, when to perform a task, what to eat, when to eat, and many other small, seemingly insignificant issues. But even for the smallest decision there are consequences and risk. As the risk associated with a decision increase, so the decision becomes more important.

In agricultural production, as in any other business, the level of decision-making is tied to the nature and level of the job. For example, the office cleaner has his tasks clearly and precisely described and performs his tasks according to this description without making very many decisions on her/his own. At the other end of the scale, the production manager is faced with many different situations, some requiring decision-making that carries long-term and serious consequences for production, and thus for the company. The production manager has to use her/his discretion more often and with greater consequence than the cleaner.

Decision-making is part of every facet of every business. Decisions are required when goals are set and when actions have to be taken to enable those goals to be met.

The Decision-Making Process



Step 1: Assessment	Step 3: Plan and Implementation Solution
• Become aware of the problem • Gather information about the problem • Identify the real problem / root cause • Formulate the problem and alternative statements • Look for the obvious	• Plan for implantation • Identify potential barriers • Identify potential consequences • Implement solution • Monitor to determine effectiveness and what should be changed or corrected
Step 2: Find Solutions	**Step 4: Evaluate Outcome**
• Identify alternative solutions • Gather information about solutions • Choose the most effective solution	• Has the problem been solved? • Has the goal been reached? • You learn from experience – both from mistakes and successes

Leadership

In order to manage, and therefore to deal with management issues such as planning and budgeting, organising, implementing, controlling and problem solving, it is important for manager so demonstrate good leadership qualities.

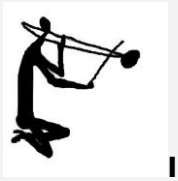
Leadership requires a range of abilities and characteristics and there are many good leaders with very different personality types. However, four key ingredients tend to be common in most successful leaders. These are their ability to:

- Give direction.
- Align people.
- Motivate and inspire people; and
- Introduce change

Good managers need to have leadership qualities in order to:

- Develop a vision of the future.
- Influence the creation of teams that understand the vision and goals;
- Energise people by understanding and satisfying their human needs; and
- Introduce new, more effective ways of doing things

Good leaders are usually emotionally mature, resilient, flexible and adaptable, persistent, results driven, energetic and decisive. They demonstrate the ability to take initiative, have a full grasp of the situations for which they are responsible, express their convictions and stimulate others to do the same, and encourage evaluation and feedback.



Individual Formative Exercise 2A

Individual Formative Exercise 2B

Individual Formative Exercise 2C

Group Formative Exercise 2D

Group Formative Exercise 2E

Group Formative Exercise 2F

Group Formative Exercise 2G

Group Formative Exercise 2H

Unit 3:

Farm Finance

Unit Standard		
116319	Prepare a whole farm budget and establish a proper integrated information system for an agri-business	
Specific Outcomes		
SO1: Prepare an integrated whole farm budget. SO2: Utilise sensitive analysis (what-if functions) to determine the economic and financial viability of a business. SO3: Develop an information system for a commercially driven agri-business. SO4: Utilise the information system to generate managerial information for improved decision-making.		
CCFO		
Identifying Working Organise	Communicating Demonstrating Collecting	Contributing Science

INTRODUCTION

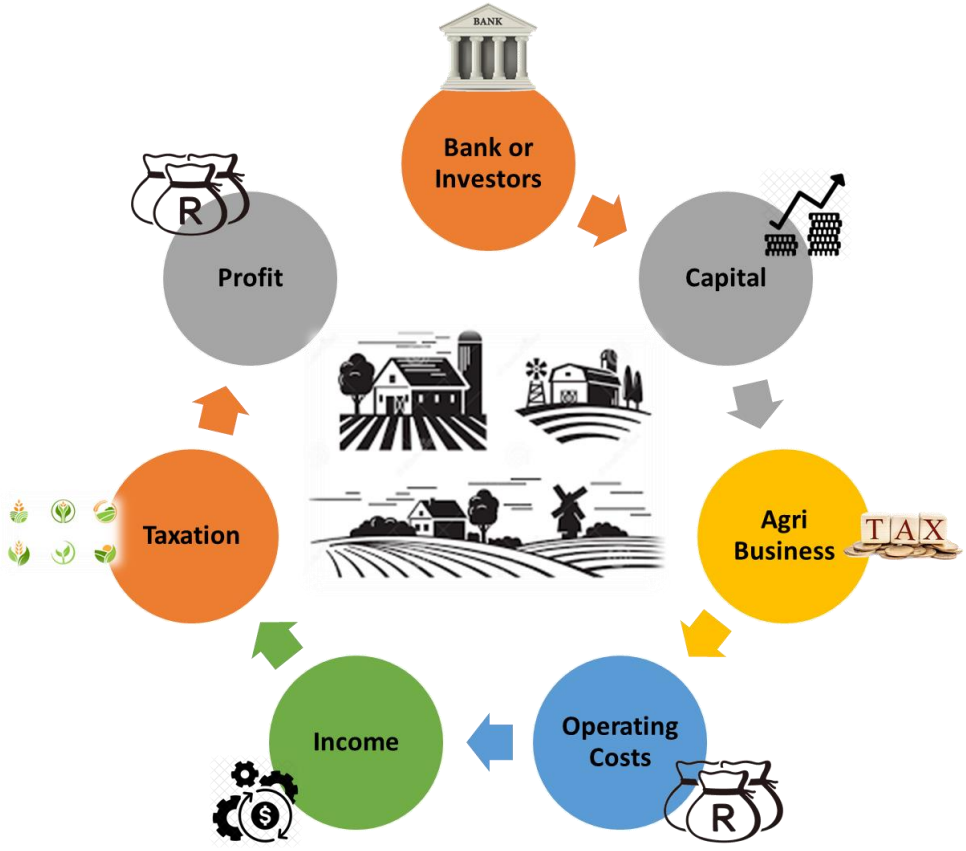
Let's talk about preparing for an integrated whole farm budget.

Agri-Business farm budget

An Agri-Business complete farm budget would entail the costing of a plan, which would include all farming operations per annum, with the aim of creating a viable income. The complete farm budget would include the up keeping of a cashbook and an income statement, while the farm income and Nett profit made annually is reflected on the financial statements.

THE FLOW OF MONEY IN AN AGRI BUSINESS

Sources of income generation:



WHERE DOES THE MONEY/CAPITAL GO TO IN AN AGRI-BUSINESS?

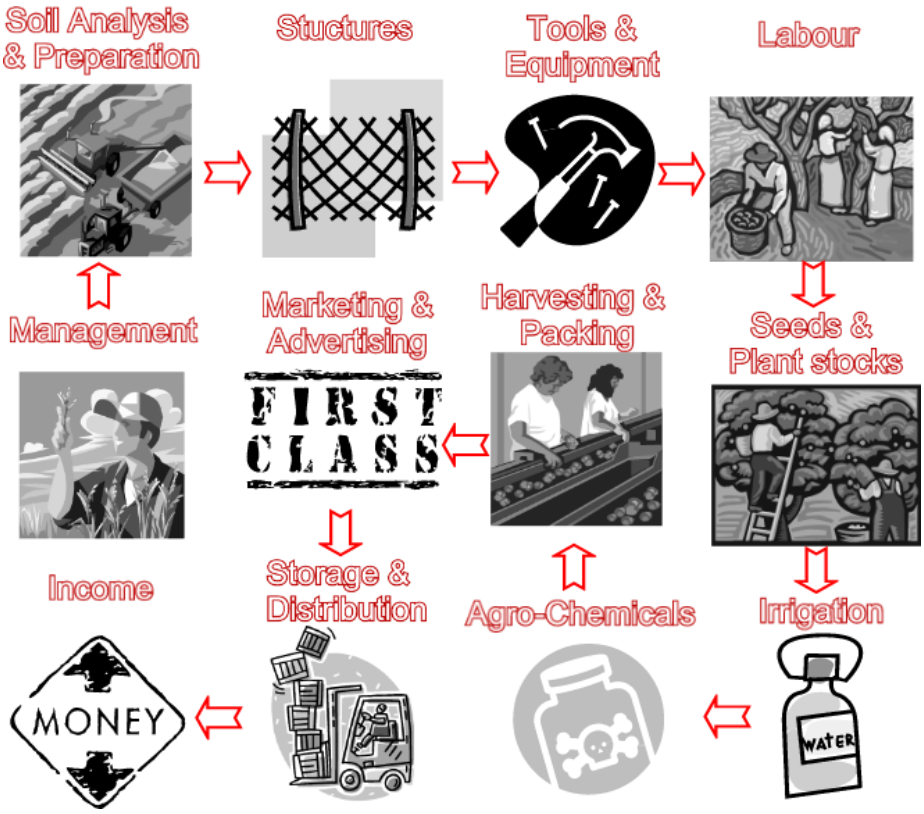
An Agri-business or farm will need money to pay for:

Land	Buildings
Machines	Loans
Labourers	Materials
Diesel, Oil, Maintenance	Commission to market agents
Office Supplies	Water and Electricity

We normally define the things we buy as follows:

Assets	Operating costs
• Assets are those things that you have to buy in order to produce, e.g. land, buildings, machines. • Assets are things you can re-sell. • Assets are usually expensive. • Assets are not bought regularly.	*(Operating costs are those things that are bought regularly (e.g. monthly or quarterly) to produce a crop)* • Materials. • Diesel, Oil, maintenance. • Commission to the market agents. • Office supplies. • Water and electricity.

THE FLOW OF COSTS IN AN AGRI-BUSINESS



GROSS MARGIN STATEMENT

In order to run a farm enterprise, one has to incur costs i.e. one has to buy farming requirements, and also pay for services rendered. Costs can be classified as direct costs, indirect costs, fixed and variable costs.

Fixed costs

Fixed costs are those costs, which cannot easily be allocated to the different enterprises or parts that make up the whole of the farm. These costs include transport, the monthly electricity account and rental or purchase payments. These costs are relevant to the farm as a whole. Fixed costs do not change if the size of the farming enterprise changes. **Fixed costs** will have to be paid continuously even if no production occurs.

These costs include:

- Depreciation in the value of vehicles and machinery

- Insurance premiums on fixed assets such as buildings and machinery
- Licenses
- Permanent labour
- Monthly payments for the property if money is still owed.
- Others

Variable costs

Variable costs are costs, which can be allocated to each individual section of the farming enterprise. These are costs that are needed for production and will only be incurred when production takes place. Variable costs will change as the size of farming enterprise is changes.

Variable costs are costs that vary with the extent of production of outputs. When output increases, more labour is needed, more irrigation may be required, and more fertilizer will be used. If the enterprise reduces, production costs will also reduce. The total variable costs increase as output increases and falls as output decreases.

Variable costs include, but are not limited to the following:

- Seed to plant crops
- Purchases such as fertilizers, chemicals
- Marketing costs such as packaging, materials
- Casual labour
- Transport
- Irrigation costs for field crops

Indirect costs

Indirect costs are those costs that are essential for the daily running of a business. They are also known as overheads or fixed costs as they remain the same irrespective of the extent of production. Included in these costs are rent, interest payments, electricity and water, municipal rates and taxes, communication costs and management costs.

Direct costs

Direct costs are those costs that are directly linked with the production of a crop. They are also called variable costs as they vary with the output. They would include materials (fertilizer, seed) and wages paid to temporary labour.

VARIOUS SOURCES OF INCOME GENERATION

Income – is the profit, earnings or returns received

Sources of Income

The sources of income for agri- business are very broad, but can be grouped into the following three categories:

- Income from crops.
- Income from livestock.
- Income from sundry farm activities.

Income from livestock

- Livestock sales - animals sold to markets.
- Livestock slaughtered for home consumption.
- Insurance received from livestock losses.

Income from sundry farm activities

- Income derived from contract work with existing surplus capacity.
- Bonus on turnover.
- Farm products sold which is difficult to allocate or of minor importance.
- Farm products sold which derive from the major source of income, e.g. eggs or milk.
- Sundry income from hiring out veld.
- Income from selling homegrown materials e.g. hay.
- Income from eco-tourism if it is a sideline.
- Sundry income from a fodder crop.
- The farmer selling his skills, such as survey or construction.
- Sale of indigenous seed, plants etc.

From the list above, it is obvious that there are many different forms of income generating on a farm. It is very important to determine the demand for various products. It is foolish to produce a vast quantity of a product if there is no demand for it. This would result in a loss of time and inputs that were invested in the product. Supplying a product depends on its demand; it is therefore possible to create the demand by following a marketing strategy.

Agri-business is normally a seasonal business. It sometimes takes a few years or seasons for a farm or agri-business to produce the product that it set out to produce.

However – there are "inputs" needed through the growth cycle. It is thus very important to plan very carefully – so that you make sure that when you eventually start making a profit that you also recoup all the accumulative expenses that you had previously incurred!

SELLING AT A PROFIT IN AGRI-BUSINESS

What does "selling at a profit" mean?

It means that we have gained more money at the end of a set period of time by producing a crop, than we used in the same period of time.

A loss is when the business:

- Spends more money than it earns.
- There is a shortage because expenditure exceeds income.
- The business is going backwards and is starting to lose money.
- If a business continuously makes a loss; there is a chance that it can go bankrupt.

Break-even is when the business:

- Income equals the expenses.
- Stands still and does not move forward.
- If anything should happen that would cause the business to have unforeseen expenses, it might put the business at risk of making a loss.

Profit is when the business:

- Income is bigger than its expenses.
- More money comes in than is spent.
- The business can pay all its expenses and there is still money left over.

- The business is going forward and will keep growing.

HOW TO PLAN FOR A PROFIT

Good financial planning involves constant planning around the building and protection of your assets and cash flow, for every phase of the agri-business' production cycle.

Financial planning revolves largely around when and where you spend your money, with the aim that you and your employees and shareholders will get the maximum long term benefits from your assets, and from operating this type of business.

Thorough planning is the only logical way to survive in today's fast-moving world.

Financial planning entails thorough analysis and revision of all aspects of a business' financial affairs and the preparation of personalised and comprehensive plans for that same business to achieve long-term financial security and growth.

You can make your money stretch if you:
Know what you want to do with your money.

Know where your money goes.
Know how to keep your money longer.
Plan your spending in advance.
Know and keep within your credit limits.

HOW TO KNOW WHEN YOU ARE MAKING PROFIT

To calculate whether you are making a profit or loss:

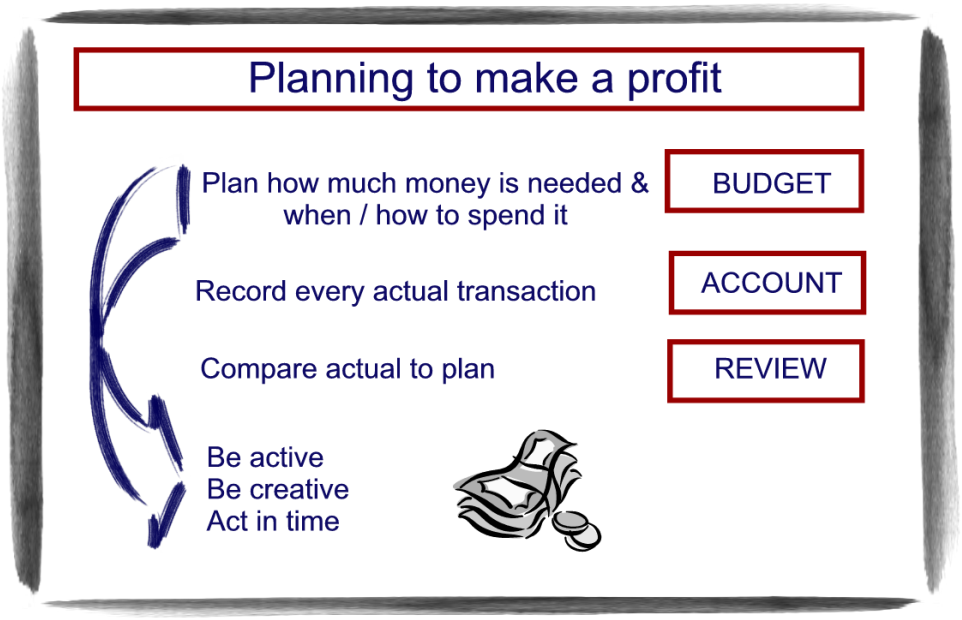
MONEY AT THE BEGINNING **-** EXPENSES

+ THE INCOME THAT YOU MADE FROM SELLING YOUR PRODUCE

= PROFIT (IF YOU END UP WITH A POSITIVE FIGURE)

OR

= LOSS (IF YOU END UP WITH A NEGATIVE FIGURE)



MANAGERIAL INFORMATION FROM RECORDKEEPING SYSTEM IN AN AGRI-BUSINESS

All the records that a business keeps are important information that is used to analyse the state of the agri-business. It is important to read and understand the information that is given in these reports. It will assist the owner to make decisions about the business.

Management will use the information recorded in the system to make important further business decisions. The management might want to know on a monthly and yearly basis if the business is making a profit. The management also wants to know if the assets and owner equity is growing year after year. The business management uses records to make the following decisions:

- Is the business profitable?
- Is the business growing?
- Where can we save on costs in the business?
- What can we do to maximise our income opportunities?
- What can we change in the future in order for our business to be more profitable?

THE GROSS MARGIN

Definition:

The **Gross margin** is defined as the amount that can be calculated by the difference between enterprise gross value of the product (Gross income) and the directly allocated variable costs.

Example:

- A financial budget for cotton can be calculated if the following is known:
- Field size of the crop (cotton), the estimated yield and the crop value per ton or per kg. If one assumes that you would get R3.10 per kg seed cotton, and all input costs adds up to a total of R5.561, then the Gross income would be R9300 @ 300kg per ha, (calculated at the above price of R3.10 per kg) and the Gross margin would be the difference between the Gross income and the input costs.

In this case an amount of R3 739.00.

THE INCOME STATEMENT

ELEMENTS OF THE INCOME STATEMENT

Farm Income

Refers to those items that represent the income of the farm business.

Farm Expenditure

Refers to the costs of operating a farm business. Some of the items can be allocated to the specific production enterprise and some cannot. Allocated costs include seeds, fertilizers, feeds, labour costs etc… Non-allocated costs (overhead costs) include permanent labour wage, telephone, fuel, repairs, electricity etc.

Net Farm Income

The net farm income is the income the farm generates after overheads have been deducted. It is calculated by deducting overheads from the total farm gross margin.

Net farm income provides a measure of performance and factors of production including management, capital, and land.

Farm Profit

This is the income that remains after all costs have been deducted.

This is calculated by deducting external factor costs from the net farm income. The farm profit is a measurement of the return or reward to the owner, management, capital and land.

SCHEMATIC DIAGRAM OF INFORMATION FLOW IN A FARM INCOME STATEMENT

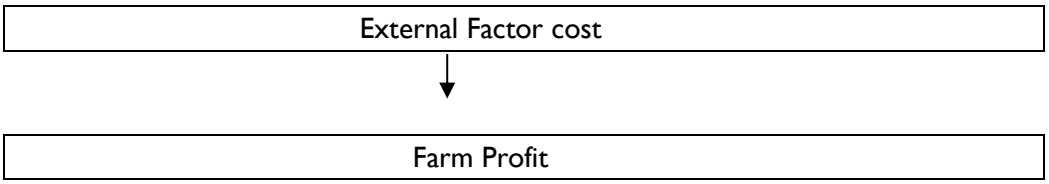
TOTAL FARM MARGIN

↓

Overhead costs	Including payment to management, interest on capital and lease or rental on land; electricity, water,
Variable costs	Fuel, oil, and lubricants Repairs and spares for vehicle and machinery Variable costs in respect of sundry farm income Others
Fixed costs	Depreciation on vehicle and machinery Insurance on fixed improvement, vehicle and machinery Licenses Regular labour, Repairs for fixed improvements. Others

Net Farm Income

↓



THE BALANCE SHEET

INTRODUCTION

A balance sheet is a statement summarizing the assets and liabilities of a business at a particular point in time. This time is usually at the end of the financial year. The primary function of a balance sheet is to measure the financial solvency of a business as it indicates the extent to which the assets match to the liability.

ELEMENTS OF THE BALANCE SHEET

A balance sheet is made up of three aspects: capital, assets, and liabilities. These three are related to one another as shown in the equation below:

Capital = assets – liability

Or

Assets = capital + liability

It is important to recognize that **assets** and **liabilities** are usually grouped according to their lifespan as follows:

Short-term/current

Medium term

Long-term

They have a strong impact on the results of financial analyses of a business.

BALANCE SHEET ANALYSIS

Balance sheets are used to establish the financial strength or weakness of the business concern. Furthermore, they are used to establish trends from historical information contained in the balance sheet.

Financial Ratio Analysis is used to gain overall financial view of a farm business as well as indicating financial progress.

Financial ratios are classified according to the following:

- Solvency
- Liquidity
- Growth

Definition:

Solvency

Solvency refers to the business's ability to meet its long-term obligations if it does not go bankrupt.

Liquidity

Liquidity measures the business's ability to continuously generate sufficient cash to meet its financial commitments. A decrease in liquidity will render the farm business unable to meet its short-term requirements, continue operations and expand. A business's cash in the bank is referred to as a liquid asset.

Growth

Growth of a business or farming venture is measured by the change in value of the business from one financial period to the next.

Assets - are economic resources that can provide potential service in the future. These are divided into non-concurrent assets that would include property, plant and equipment. In addition, there will be current assets, sometimes referred to as liquid assets, which includes the debtors and other receivables payments, bank balances and cash.

Short-term assets -current assets that management could convert to cash within the year (cash, receivables, stock)

Medium term assets – intermediate assets that would take longer than a year, but shorter than five years to convert to cash. Includes investments that have a set time frame to them - policies or actual intellectual property (work that can be patented but takes time).

Long-term assets - fixed assets like machinery, land, buildings, motor vehicles, computers, furniture and fixtures.

Liabilities - are obligations that the owner must pay to other parties such as creditors, employees

Short term liabilities - current liabilities- these are amounts that must be paid within a year. - Salaries and wages, taxes, short-term loans, money owed to suppliers of goods and services.

Medium term liabilities - are amounts owed on contract work carried out on research that does not have a specified time limit but will be paid for when the project is complete.

Long-term liabilities - these are debts that are due on long-term (more than one year) loans (mortgage) from the Land Bank. These are bank bonds on farmland and infrastructure, machinery and plants that are paid off over twenty years.

Owners' equity is the amount owed to the owner after the liabilities have been deducted. - For example, if the owner of a farm is worth R30 000 000 and owes the bank R20 000 000, you would subtract the amount owed on the farm from the owner's capital worthiness. This renders the owners' equity which would be R10 000 000. If the farm is a closed-corporation, the amount owing to the members' share after all amounts are deducted which is owed on the farm and other liabilities, is called the employees' own.

THE CASH FLOW BUDGET AND STATEMENT

INTRODUCTION TO THE CASH FLOW BUDGET

Cash flow is the money needed to run your company on a day-to-day basis. This is the money available after all the expected expenses have been covered, for unexpected expenses.

Cash flow statements are a tool that reflects the sources from which funds are generated during the accounting period as well as the purpose for which these were used.

The cash flow statements must be compiled for one year or at least until positive cash flow is achieved if not attained within the first year.

The most important feature of a cash flow budget is that only cash expenses and cash income are indicated at the estimated time of payment or receipt.

The cash flow statement reflects the source from which funds were generated during the accounting period. Cash flow is an important consideration when it comes to financing a business. The bank and monthly bank balance are important elements of a cash flow statement. A cash flow statement consists of three components: income, expenditure and bank balance.

Income consists of operating income, capital income and cash income.

Expenditure is classified as operating expenditure, capital expenditure and debt repayment.

Shortfall/surplus is calculated by deducting total expenditure from the total income.

The various components of a cash flow budget statement are:

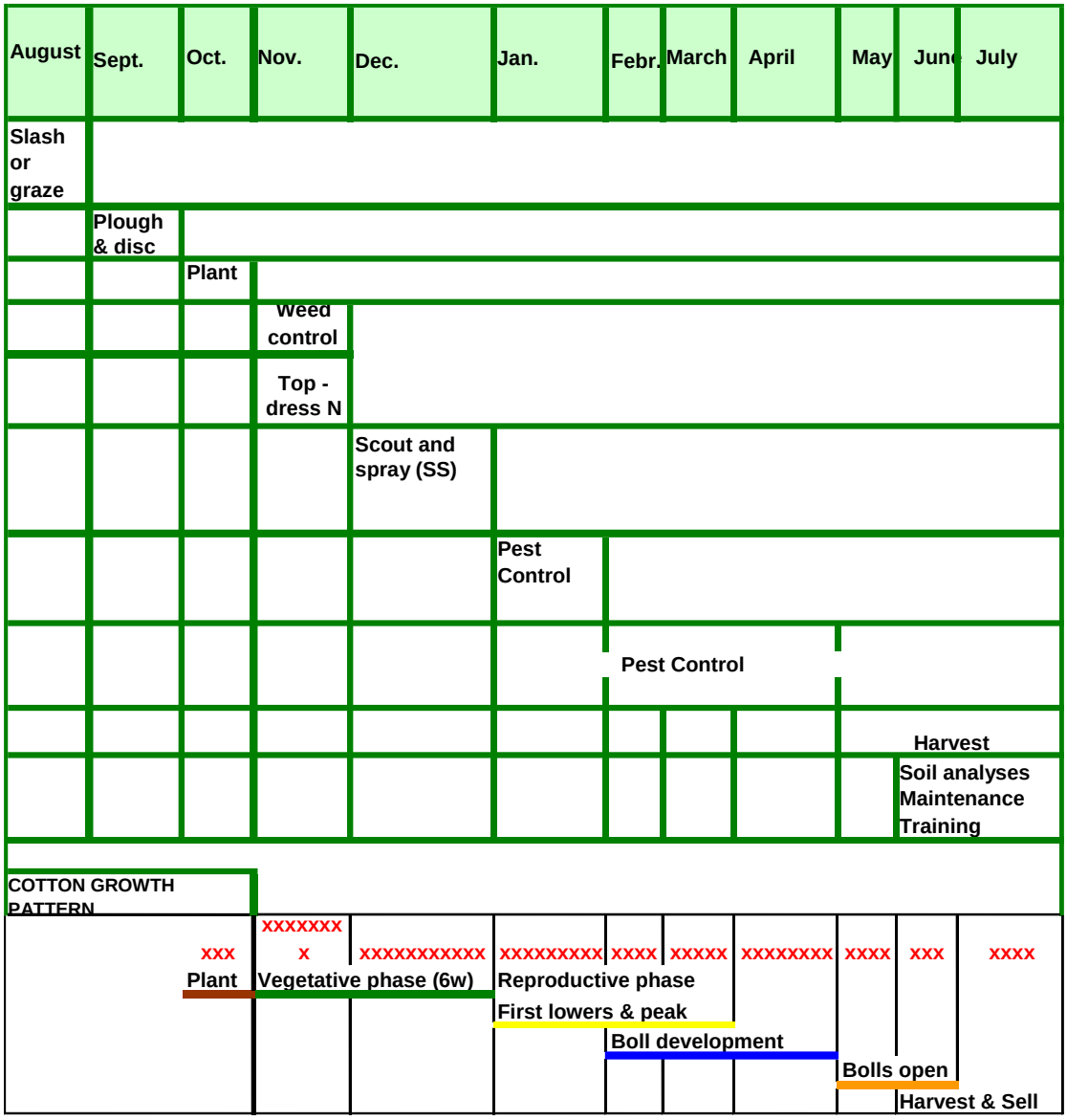
Opening cash balance	Farm Income
	Capital income
	Nonfarm Income
Farm Operating Expenses	Fertilizers
	Leases or rental
	Sprays
	Wages
	Repairs
Capital expenditure	Machinery
	Livestock
Other expenditures	Income statement
	Living wages
Scheduled debt payment	Interest
	Redemption
	Total cash outflow
	Closing cash balance

THE NEED FOR THE TWELVE-MONTH CASH FLOW BUDGET

In order to understand a cash flow budget, it is necessary for a farmer to understand which activities take place during the season, and the associated costs to complete these activities successful. For example, cotton is a cash crop. In order to set up a cash flow budget the farmer must have a cultivation programme in place as the crop will need attention

(insecticides, fertilizers, picking, ext.) at different growing stages, and therefore, cash must be available for every event according to the programme arranged beforehand.

EXAMPLE:



CRITICAL PATHWAY OF ACTIVITIES FOR COTTON PRODUCTION

The farmer should have a good knowledge of:

1. Length of the crop season.
2. In which months every activity should take place to produce the crop.
3. Plant development for each crop cultivated should be clear, in order to express good pest control, and optimum yields.
4. The farmer should set up an outline of the crop size he would like to produce.
5. He/she should be able to recognize the infrastructure available
6. Which inputs are needed, financially and support services?
7. Have a clear comprehension of the available workforce (labour)?
8. When a critical programme has been drawn up as above, the learner can compile cash flow statements. These are probably the most important aspect of the financial management of a farming business. Many farming-based businesses currently experience cash flow related problems. A 12-month cash flow budget predicts an estimate of cash needed for a year.

EXPENDITURE /CASH OUTFLOW	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	***Sep***	**Oct**	**Nov**	**Dec**	**Total**
Office lease	1 500	1 500	1 500	1 500	1 500	1 500	1 500	1 500	1 500	1 500	1 500	1 500	**18 000**
Traveling expenses	-	5 000	-	-	-	-	-	-	-	-	-	-	**5 000**
Training Equipment	-	3 500	-	-	-	-	-	-	-	-	-	-	**3 500**
Vehicle costs	30 000		-	-	-	-	-	-	-	-	-	-	**30 000**
Stationery	1 200	-	-	-	-	1 200	-	-	-	-	-	-	**2 400**
Admin costs	100	50	30	40	30	50	40	30	20	40	50	30	**510**
Telephone cost	500	450	300	250	500	250	200	250	100	250	150	100	**3 300**
Electricity	150	200	250	180	150	280	200	250	150	200	100	250	**2 360**
TOTAL EXPENDITURE	**33 450**	**10 700**	**2 080**	**1 970**	**2 180**	**3 280**	**1 940**	**2 030**	**1 770**	**1 990**	**1 800**	**1 880**	**65 070**
ACCUMULATED DEFICIT	**33 450**	**10 700**	**2 080**	**1 970**	**2 180**	**3 280**	**1 940**	**2 030**	**1 770**	**1 990**	**1 800**	**1 880**	**65 070**

- A Cash flow budget is a budget that breaks the yearly cash flow into twelve-month segments. This allows for greater control of the flow of cash.
- A cash flow statement presents the source and use of the funds of the enterprise according to operating activities, investing activities and financing activities.
- Operating activities describes the cash received for the product and cash payments made for production costs.
- Investing activities describes the purchasing of new equipment or expanding the operation.
- Financing activities describes the repayment of long-term loans.

Example:

Cash flow table for cotton production												
Item:	**Aug**	**Sept**	**Oct.**	**Nov.**	**Dec.**	**Jan.**	**Feb.**	**Mar.**	**April**	**May**	**June**	**July**
Plough		300.00										
Disc			200.00									
Seed			70.00									
Plant (Hand)			195.00									
Roundup			65.00	65.00								
Fertilizer LAN					95.00							
Labour weeding				35.00				35.00				
Labour spraying			35.00	35.00				35.00	35.00			
Jassid control (Mospilan)								60.00	30.00			
Stainer control (Fastac)								21.00	22.00			
Harvest										250.00	250.00	
Total:		**300.00**	**565.00**	**135.00**	**95.00**			**151.00**	**87.00**	**250.00**	**250.00**	
Cumulative		300.00	865.00	1,000.00	1,095.00			1,246.00	1,332.00	1,582.00	1,832.00	
Loan plus interest (13.5% comp.)		303.00	878.00	1,025.00	1,132.00	1,145.00	1,158.00	1,324.00	1,425.00	1,694.00	1,966.00	
Income:										1,550.00	1,550.00	

SITUATIONS AFFECTED BY FINANCIAL TRENDS

Investments

Money that is put away into a savings scheme so that it can:

- Grow and become more than the original amount
- Earn interest so that the money grows

An investment can be for a:

- Short term = less than 6 months
- Medium term = 6 to 36 months
- Long term = more than 36 months

The basic principle for any investment is:"the higher the return, the higher the risk'

What this means is that the more interest they promise you on an investment, the higher the risk is for you (the investor) to invest your money.

A good example of a risky investment would be if you invest money in the stock market i.e. buying and selling shares. If you do not know what is going on, when to buy, when to sell, you could end up losing all your money. However, if you know what is going on in the stock market and you can 'read between the lines', you will make much more money than you invested.

Safer investments usually bear a lower interest rate. A fixed deposit is a good example of a safe investment. You know your money is going nowhere and it will still be there at the end of your investment period

Unit trusts are less risky, but they are a long-term investment. Unit trusts are offered by financial institutions that collect amounts of money from many people. These institutions employ people who know the stock market very well and they are called fund managers. These fund managers buy blue-chip (safe and stable) shares with this collective amount of money. The value of the shares is then equally distributed amongst the initial payers. When you 'sell' your unit trust back to the financial institution, your return on investment includes **dividends** and **interest**.

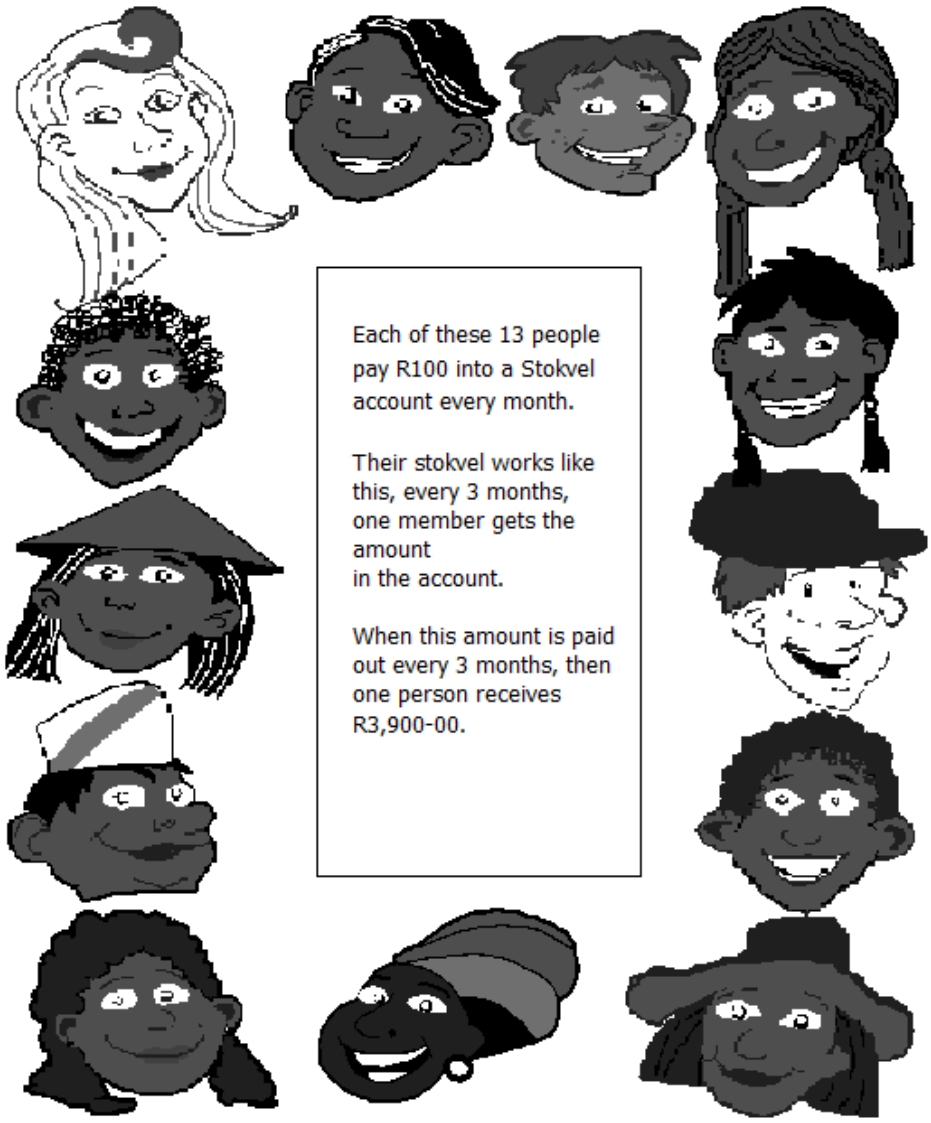
Dividends are money that is made from buying and selling the shares and **interest** is there turn on the money that you invested.

Unit trusts can be up the one day and down the next, so you still need to be very careful about when you buy or sell. The rule is to buy when the stock market is down and sell when it is up. Timing is very important.

Stokvels

A stokvel is usually when a number of people get together and 'club' together their money. Every member of the stokvel receives the money at a particular time.

Because a number of people contribute, the money and interest accumulate more rapidly than if you were saving on your own.



Inflation

Inflation is the average change in prices over a period of time. We often hear what the inflation rate is when we listen to financial reports over the radio.

If our inflation rate is 15%, then it means that this time last year something that cost R100-00 will now cost you R100-00+ 15%= R115-00.

Inflation can be a vicious wealth killer.

Example:

- Piet works at Hummingbird Milling. Piet wastes a lot of mealie meal every day, because he is not interested in his work. The company loses money. At the end of the year, they take a big knock for all Piet's wasting of mealie meal. This means less profit. Less profit means less money in the bank.
- Less money in the bank means less increase for staff. Less increase for staff means less comfort at home. Less comfort at home makes more miserable people. More miserable people become unhappier at work. Unhappy workers become less interested in what they do. Less interest becomes more waste.
- Hummingbird Milling knows all this and decides to put up the prices of their mealie meal to compensate for Piet's lack of interest. They put the mealie meal price up by R1-00. The stores that sell mealie meal to the public have to put up their prices and they do so by making mealie meal R2-00 more expensive.
- If this happens every day and everywhere, we will soon not be able to afford mealie meal, just because of carelessness.

ASSETS

An asset is an item that you acquire and that has a fixed value.

Appreciation of Assets

Something's you buy can grow in value. When something grows in value after you bought it, it means that it appreciates or increases in value. The following assets usually increase in value after you have bought it:

Property – To work out how much an asset appreciates, we first determine what the growth rate for such an asset is, and then we continue with working out its appreciated value.

Example:

Bheki has just bought a house for R500000-00. He wants to know what this house will be worth in 5 years' time.

First, he calls up a few local estate agents and asks by how many properties have increased in value in this particular suburb over the past 5y ears.

He gets the following answers:

Agent 1: 10%

Agent 2: 20%

Agent 3:

15% Agent 4:

12% Agent 5:

9%

He works out the average:

$$(10+ 20+ 15+ 12+ 9)\div 5 = 66 \div 5$$
$$= 13.2\%$$

Then he uses this average of 13,2% to work out the appreciation of his Property in one year:

R500000x13,2% = R66 000

Finally, he calculates this by multiplying R66000 by the number of years i.e.5 years.

66 000x5 = R330 000

Appreciation of Property in 5years = R500 000+ R330 000

= R830 000

Depreciation

Depreciation occurs more frequently than appreciation. Depreciation is anything that decreases in value. Good examples of things that depreciate are:

motor cars

cell phones

computers

machinery and equipment

At the end of each financial year, companies calculate the depreciation of an item.

There are two ways of calculating depreciation, namely:

- A fixed percentage of the original value (fixed method)
- A fixed percentage of the yearly depreciation amount.

Note: We only deal with the fixed instalment method.

Example:

Jack's Hardware has to present an account of the value of their assets (i.e., vehicles, furniture, etc.) in the business each year. After many years of experience, Peter, the bookkeeper knows that after a few years of using these items, they are worth nothing. Eventually, he writes them off. (Writing off means that' something is worthless to the business).

Jack's Hardware has a bakkie which they use for deliveries. They paid R 120 000-00 for it. Usually, they have to replace the bakkie every 5 years; otherwise it is more in the repairs hop than on the road. That means it has depreciatedatarateof20% per year (100%+5=20%)

To work out the depreciation over 5 years, we start with working it out for the first year:

$$\text{Depreciation per year} = {}^{10}/_{100} \times {}^{120000}/_{1}$$

$$= \text{R12 000.00}$$

Thenweworkoutthedepreciationover5years.

Valueafter5years = R120 000–(5x12000)

= R120 000– R60 000

= R60 000

FINANCIAL PLANNING

You now have enough background to develop your own financial plan and system for your farm. This will take time and is best done in a series of sessions back home. Put as much detail as possible to your plan and try and do accurate estimates – when required.

Follow the steps indicated below and use the My Farm Record Keeping Forms to record data.

Step 1: Estimate your income for the next year on current enterprises

Plan for income by using My Farm F2: Plan for Income

List all estimated and planned income per enterprise. Now decide in which months (often seasonal!) to allocate income.

List the planned income for enterprises in F1 and F5.

Note:

Plan for your profit by cutting your estimated income in half. One half is allotted for profit and the other for expenses.

If you have **fixed cost** in excess of the one-half mark/ or near to it, increase the 50% on costs to 75%- 80%.

It is important to plan your profit. One of your objectives would be to see your profit return a reasonable amount on your investment.

Step 2: Develop an account for family salaries

If early on you cannot pay yourself as much as you budget, you still should strive for a system that pays you for your labour, plus a return on your investment.

Plan conservative, yet realistic. If you do not plan for this, you will be tempted to draw money from the business income anyway. Plan this and stick to the amount budgeted!!!

Now list this as a cost item in F1 and F5.

Step 3: Develop an account for depreciation.

This is money you are setting aside to be able to replace or repair equipment and buildings when the time comes. Although in the early years, you may not be able to do so, it's a good idea to open an interest-bearing account into which to pay depreciation expense at the end of each year when you calculate depreciation. This will enable you to do replacements and repairs when required.

Start in early years by budgeting for small amounts – to get the habit going!

Now list this as a cost item on F1 and F5.

(Actual depreciation will be calculated and indicated in the My Farm F6: Income Statement at the end of the Financial Year or Mid-Year.)

Step 4: Monthly recording

All the planning is not worth much if you do not keep up your records of monthly income and expense!

Use My Farm F3: Monthly income and expense sheet to record **ALL** transactions with monetary value. It is critical for book-keeping purposes to record each and every little transaction – even the R5 nut that you have bought from the Hardware shop.

NB TIPS:

- Keep an envelope with you in your vehicle. Every time that you buy anything – put the slip into the envelope.
- Do weekly recording of income and expense based on your receipts and invoices/ cash slips. Monthly may be too much at a time.
- Once you have recorded all transactions staple your supporting documents (cash slips/ receipts and invoices) to together and file at the back of your Monthly income and expense sheet in a lever arch file.

Step 5: Record income and expense per enterprise

Transfer the transaction amounts recorded in your Monthly income and expense sheet into the My Farm F4: Monthly Income and Expense per Enterprise sheet.

This will enable you to build up an accurate database of production cost and profitability per enterprise – enabling you to make sound business decisions!

Step 6: Monitor on a quarterly basis to determine your financial progress against planned budget.

By making use of My Farm F5: Quarterly monitoring of income and expense you will be able to evaluate your progress against plan.

On a quarterly basis (1) calculate the total income and expense per line item and (2) transfer the total expense and income for the past three months into the Monitoring sheet (F5) relevant Quarter column.

Now calculate the Actual Year to date column by adding the totals per line item for the relevant completed quarters.

This will enable you to calculate the Percentage to Date of the itemized income and expenditure.

This information should enable you to plan your actions for the next quarter.

Yearend totals will provide valuable information, enabling you to:

(1) budget more accurately

(2) take relevant actions to re-align your farming operations

Step 7: Compile Income Statement and Balance Sheet

Based on your accurate and updated financial information it will, at the end of the financial year, be easy as pie to compile your Income Statement (F6) and Balance Sheet (F7).

You may also hand your financial records to an accountant to compile your Financial Statements.

THE FINANCIAL RESPONSIBILITIES OF AN AGRI-BUSINESS

There are many South African agricultural laws and Acts that govern the way in which a farmer operates on a farm. In groups of four, discuss these laws and provide your understanding of why they are in place. These laws and Acts include:

<u>Labour laws that refer to the following Acts:</u>

- Taxes: PAYE and income tax.
- Types of crops produced: Restrictions on the production of certain products (cannabis/dagga) or certain animals.
- Environmental legislation: The control of activities that concern the environment.
- Health and safety: Storage and dealing with livestock.
- Export and import: Certain crops and animals are not allowed to be imported or exported.
- Labour and industrial relations: These are laws that cover the relationship between employers and employees and the state.
- Basic conditions of employment Act of 1983.
- Occupational health and safety Act, 1993.

- Wages Act.
- Workmen's compensation Act.
- Unemployment insurance Act.
- Labour relations Act of 1995.
- Employment equity Act of 1998.
- Skills development levies Act of 1998.

Definition:

Income tax: A tax levied by a government on the income of individuals and business firms. Taxes on personal income and business profits are major revenue sources for South Africa. These taxes are applied to repair roads and infrastructure, pays for government hospitals and clinics, government services (policy, military), training subsidies, housing etc.

Definition:

Value added tax - it is the law of the country that tax must be included in the price of goods and services, commonly referred to as VAT.

Definition:

Workmen's compensation - this is an Act that forces employers to insure their employee's disablement or death caused by accidents while they are on duty or illness caused as a result of the kind of work that they do.

Definition:

Skills levy payments - this is a levy imposed by the government on all businesses and government institutions in the country. This levy is set up to accelerate the training and development of skills in all areas of the workforce and to ensure that South Africa becomes a world-trading competitor.

Aspects to consider

What kinds of aspects would we consider to formulate a complete farm budget? You as the farm manager will have a big input in the annual budget for your farm. Should you not be able to keep record yourself, you need some office assistance to keep record of all costs, receipts and daily bookkeeping.

In addition, you will need access to a bookkeeper, who you can trust, and preferably not a family member or friend, in order to see to transparency in the bookkeeping process. If you are not confident with prices and chemicals, obtain some assistance from your closest agricultural suppliers, e.g., Obaro and contact your extension or agent for chemicals in the area.

Update your price lists annually and ask the suppliers when they will increase their prices, so that you can prepare for any unforeseen costs.

The following issues are important and should be known to you in preparing the complete farm budget.

- Rent of the property or expenses to repay a bond on the farm?
- Interest paid on credit obtained by some or other financial institution?

Costs of annual labour: An asset register, which lists the value of the present assets, and a costing to any new assets, gained. A depreciation % should be decided on with your bookkeeper in order to depreciate some of those assets which will not be used on the long term. Also keep a list of consumables like bottles, paper, ink, packaging etc.

Transport costs: Price lists for the number of and kinds of chemicals you would use, these should include pesticides, herbicides, fungicides, fertiliser etc. Make room for unexpected costs here, should some pests occur that do not normally occur. Insurance fees for unexpected loss of income as a result of weather conditions (hail).

Costs of packaging: Yield and a market related estimate of what you will get when delivering your produce to the market. Prevailing economic conditions in the sector, country and internationally – see for example the SAFEX index on a regular basis to follow market trends. Profit margins per cultivar / per crop / per block / per orchard / per Hectare Service provider costs for soil preparation, soil analyses costs and other activities like costs towards planting if you will make use of contractors.

Labour costs: Salaries must be paid to staff and labourers. Overhead costs like telephone, water, and electricity consumables. A manager in an agribusiness would supervise and delegate, but will also organise, plan and facilitate the activities and also be responsible for setting up the farm budget.

COMMUNICATIVE STRUCTURES TO USE ON YOUR FARM

- Monthly meetings with staff
- Written reports to receive inputs from supervisors
- Revision of printed copies of the previous year's financial statements and associated risks
- Continuous training sessions to ensure quality

 **Individual Formative Exercise 3A**
 **Individual Formative Exercise 3B**
 **Individual Formative Exercise 3C**
 **Individual Formative Exercise 3D**

Unit 4:

Financial Instruments

Unit Standard	
7468	Use mathematics to investigate and monitor the financial aspects of personal business, national and international issues
Specific Outcomes	
SO1: Use mathematics to plan and control financial instruments SO2: Use simple and Compound interest to make sense of and define a variety of situations SO3: Investigate various aspects of costs and revenue SO4: Use mathematics to debate aspects of the national and global community	
Critical Cross-field Outcomes	
Organising Collecting	Communicating

INTRODUCTION

Organisations use financial instruments to offset potential losses that may be incurred in the future. Different instruments are used for different situations, but all have the purpose to minimise future losses and/or to cover the current situation of a company.

Examples of financial instruments used by companies to minimise risk, include:

- Stocks
- Exchange-traded funds
- Insurance
- Bonds
- Annuities
- Forward Contracts
- Options
- Future Contracts

The term **hedging** refers to the act of reducing a firm's exposure to price or rate fluctuations.

Public future markets were established in the 19th century to allow transparent, standardised and efficient hedging of agricultural commodities such as grains, metals, gas, electricity and oil prices; they have since expanded to include future contracts for hedging the value of energy, precious metals, foreign currency and interest rate fluctuations.

The calculations with regards to hedging instruments are normally done by financial experts in a business or even by actuaries. We will however for the purpose of this unit standard explain the calculations for the forward contract for currencies (simple form of options and futures)

TERMINOLOGY AND DEFINITIONS ASSOCIATED WITH FINANCIAL SITUATIONS

- ✓ **Assurance**

  Assurance is a term interchangeable with insurance, but generally used in connection with life business as assurance implies the certainty of an event and insurance the probability. The term "assurance" is used more commonly in Great Britain and South Africa. Assurance (insurance) is a contract whereby one party, the assurer/insurer, in return for a consideration, called the premium, agrees to pay to the other party, called the assured/insured, a sum of money or its equivalent in kind upon the happening of a specified event that is contrary to the interest of the insured. More simply, assurance is a contract to pay a specified amount on the happening of a specified event.

- ✓ **Insurance**

- ✓ A contract whereby one party, the insurer, in return for a consideration, the premium, undertakes to pay the other party, the insured, a sum of money or its equivalent in kind upon the happening of a specified event that is contrary to the interest of the insured (contingency). A means whereby the losses of the 'few' are distributed among the 'many'.

- ✓ **Annuity**

  An annuity is a contract that provides a regular payment – typically monthly – during the lifetime of the annuitant – or a fixed period if less. If the payments start at the outset of the contract, it is an immediate annuity. If they start at some point in the future, it is a deferred annuity. The annuity can be on more than one life and the amount payable may increase.

- ✓ **Arbitrage**

  Trading strategies designed to profit from price differences for the same or similar goods in different markets. Historically the term implied little or no risk in trade, but more recently it has come to suggest some risk of loss or uncertainty about total profits.

- ✓ **Bond**

  Also known as Gilts. An investment usually issued by the government, which offer fixed half-yearly payments for a specific number of years, and a predetermined capital payment at the end of that period. Bonds are bought and sold in the bond market. Bond prices vary with the interest rate.

- ✓ **Gilt**

  A financial instrument through which the government borrows money from the public in exchange for a fixed repayment plan. A bond issued by the government or semi-government institutions.

- ✓ **Exchange rate**

  The price at which one country's currency can be converted into another currency. If one US Dollar can be bought in South Africa for R6.00, this is the Rand/US Dollar exchange rate.

- ✓ **Futures contract**

  The contract trades on a futures exchange and is subject to a daily valuation ("marking to market") and settlement procedure. Upon expiry, settlement may result in the physical delivery of the underlying instrument, or simply cash.

- ✓ **Inflation**

  Inflation is the average rate at which prices (of products and services) increase over time. It gradually reduces the value of money for example, a loaf of bread, which cost 50c ten years ago, today costs R3. Increase in the general price level of goods and services generally measured by the consumer price index CPIX.

- ✓ **Option**

  An investment contract in terms of which one party has the option to trade in an investment on or before an agreed date at an agreed price. An option is a contract between two parties (a buyer and a seller) that gives the buyer the right, but not the obligation, to purchase or sell something at a later date at a price agreed upon today.

- ✓ **Present value**

  The current value of one or more future cash payments, discounted at some appropriate interest rate.

- ✓ **Stock exchange**

  A stock exchange is similar to an auction – buyers bid, sellers make offers and the shares are then sold at the price agreed on between the two.

FORWARD CONTRACTS FOR CURRENCIES

The foreign exchange market is a form of exchange for the global decentralised trading of international currencies. Financial centres around the world function as anchors of trading between a wide range of different types if buyers and sellers for currencies. For example, a business in South Africa may import goods from the United States of America and pay in US Dollars ($), even though its income is in Rand.

Forward Contracts:

One way to deal with the foreign exchange risk is to engage in a forward transaction. In this transaction, money does not actually change hands until some agreed upon future date. A buyer and seller agree on a exchange rate for any date in the future, and the transaction occur on that date, regardless of what the market rates are then. The duration of the transaction can be one day, month or year.

Example:

"A" will receive $10 000 in 3 months' time. The current exchange rate is R8,25 for $1. The market expects that the Rand will weaken over the next 3 months (maybe R7,90). "A" can cover this potential loss in a forward cover deal. "A" and "B Bank" agrees on R8,30 for $1 After the 3-month period on a specific date.

For "B Bank" to offer this rate, he uses an interest financial instrument/investment.

"A" must have controls and plans in place to evaluate the current markets to ensure efficiency of the financial instruments he uses.

Interest calculations:

In order to analyse the financial information of this unit, we first need to look at the calculations of simple and compound interest.

Interest is the cost of money. When money is borrowed, the cost involved in using the money is that the borrower will pay back more than the amount that was borrowed. This is true for a personal loan as it is for an investor who borrows capital. Interest is changed

for all kinds of 'charge' including loans, hire purchase, rental, lease agreements, credit cards, bank overdrafts, and even in case of late payments of accounts.

- The capital on which the interest is calculated at the beginning of the transaction is called the **principle (P)** or present **value (PV)**
- The rate of **interest (r)** is that percentage of the principle that is to be paid for each unit of time and is expressed as a percentage per year.
- The **time period (t)** is the period for which the money is borrowed and is expressed in years or a fraction of a year.
- The amount to be paid at the end of the term, that is, the principle plus the interest, is referred to as the **amount (A)**, or the future **value (FV)**.
- Interest can be calculated on the principle sum as:
    - Simple interest or
    - Compound interest

Simple interest

When simple interest calculations are done, interest is calculated on the principal sum only at the end of a specified period, such as at the end of a year. That means the interest is not available before the end of the term, and the interest is not added to the principal to earn interest on interest.

The standard formulae for calculating simple interest are:

$I = Prt$

$A = P (1 + rt)$

$A = P + I$

Where:

I = Amount of interest P = Principal A = Amount	r = Interest rate per annum expressed as a decimal t = Time in years or a portion of a year

Example:

See forward Contract deal in the previous example for "B Bank".

"B Bank" will make an investment with "C Bank" in the amount of R 82 500

(R8,25 x $ 10 000), for 3 months (90 days) at 7% interest per year.

A = P (1 + rt)

A = 82 500 (1 + (0,07 x 90/365)

= 82 500 (1,0173)

= R 83 924

The interest earned over the 3-month period is R 83 924 less R 82 500 = R 1 424

"B Bank" uses this to pay "A" his R 83 000 (R 8,30 x $ 10 000) and keep the profit. "B Bank"

Then uses the $ 10 000 for further financial deals.

Compound interest

When interest is not paid out, but is continuously added to the principal, the principal is continuously increasing, and we say the interest is compound. This means that the interest calculated in period 1 on the principal amount is added to the principal amount so that the interest calculated in period 2 is calculated on the increased balance. It can therefore be said that compound interest calculates 'interest in interest'. Compound interest will therefore be more than simple interest, even if the % of interest is the same.

Interest can be compounded once a year, semi-annually, quarterly, monthly or even daily. The time period, which is normally quoted as a yearly rate, should be adjusted to the number of interest periods per transaction. For example, if the interest is compounded quarterly, and the time period is 5 years, then the number of interest-compounding periods (n) is 5 x 4 = 20.

To obtain the period rate (i) from the yearly rate (r), the average rate per period method is followed: for example, if the annual rate is 6% compounded quarterly, the period rate is taken to be 6/4 = 1.5%.

N = no. of years x no. of compounding periods per year

I = annual rate / no. of periods per year

The standard formulae for calculating compound interest are:

$A = P (1 + i)^n$

$I = (A/P)^{1/n} – 1$

$T = \frac{\log A/P}{\log (1 + i)}$

Where:

A = Amount or future value

P = Principal or present value

i = Interest rate per period within a year expressed as a decimal

n = number of times per year interest must be calculated

Note: Doing compound interest calculations will require the use of the 'power' key on the calculator, which will be marked as either x^y or y^x, the 'root' key, which is usually marked as √, and the 'log' key.

Example:

Simon lends R 1 000 to Thandi. At a rate of 15% per annum calculated monthly, the amount she must repay at the end of 2 years is as follows:

The interest rate of 15% is the interest that is charged for the year. However, if the interest is to be calculated monthly, then the annual interest rate (15%) must be converted to a monthly interest rate by dividing by 12:

i = 15%/12 = 1,25%

The 2-year period should change to n = 12 x 2 = 24

$A = 1\,000 (1 + 1{,}25\%)^{24} = 1\,000 (1{,}0125)^{24} = R\ 1\,347.35$

Amount of interest paid: R1 347.35 – R 1 000.00 = R 347.35

Compound interest is used in mortgage loans and hire purchases and we need to repay the loan over the period of time, the following formula will apply:

$$R = P \frac{i}{[1-(1+i)^{-n}]}$$

Example:

Lerato successfully completed her studies and found a job as an IT technician. She wanted to buy a new Chevrolet Aveo. She needed to obtain financing from the bank to the value of R90 000 to buy the vehicle. The monthly compounded interest rate is 12%. She will amortize the loan by monthly payments over a period of 4 years.

$$R = 90\,000 \left[\frac{0.12/12}{[1-(1+.12/12)]}\right]$$

$$= 90\,000(0.02633835)$$

$$= R2370.05$$

Annuities

An annuity is a sequence of equal payments made at equal time intervals, such as instalment payments, pensions, insurance premiums, home loan payments, rent, etc. The time between successive payment (R) is called the payment interval, and the time between the first payment and the last payment is called the term of the annuity. The payment interval and the interest period always coincide, which means that, if the interest is compounded monthly, the payments will be monthly.

Annuities are classified into three main classes:

- Ordinary annuities certain refer to annuities where the regular payments are made at the end of each payment interval.
- Ordinary annuities due refer to annuities where the periodic payment (R) falls at the beginning of each payment interval.
- Deferred annuities refer to annuities where the first payment is not made at the end of the first interest period, but at some later date.

Ordinary annuities certain:

The regular payments made are at the end of each payment period. To calculate the future value or amount (A) of an ordinary annuity certain, we apply the following formula:

$$A = R \frac{(1 + i)^n - 1}{i}$$

To calculate the present value or principal (P) of an ordinary annuity certain, we apply the following formula:

$$P = R \frac{1 - (1 + i)^{-n}}{i}$$

Example:

Determine the amount of an annuity certain of R150 per quarter for 3 years if the money is worth 12% compounded quarterly:

$$A = R \cdot \frac{(1 + i)^n - 1}{i} = 150 \cdot \frac{(1 + 3\%)^{12} - 1}{3\%} = 2\,128.80 \text{ rands}$$

Ordinary annuities due

If the periodic payments fall at the beginning of each payment period (pay in advance), the following formulae apply:

To calculate the amount or future value:

$$A = R \frac{[(1 + i)^n - 1][1 + i]}{i}$$

To calculate the present value or principal:

$$R = \frac{Ai}{[(1+i)^n - 1][1 + i]}$$

Example:

An investment of R 200 is made at the beginning of a year for 10 years. If interest is 12%, how much will the investment be worth at the end of 10 years?

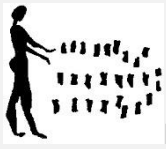
$A = R \frac{[(1 + i)^n - 1][1 + i]}{} = 200 \frac{[(1 + 12\%)^{10} - 1][1 + 12\%]}{} = 3\,930.92$ rand

i 12 %

Group Formative Exercise 4A

Individual Formative Exercise 4B

Group Formative Exercise 4C



Individual Summative 1

Unit 5:

Staff Management

Unit Standard	
116302	Assume co-responsibility and participation in human resource management
Specific Outcomes	
SO1: Participate in the development of Human Resources related to policy and procedures. SO2: Communicate the principle, practices, policies and procedures. SO3: Participate in the implementation plan of agreed policies, contracts and agreements applicable at the workplace. SO4: Contributes to the monitoring and evaluation of Human Resource principles, plans, practices, policies and procedures.	

HUMAN RESOURCE POLICY

In order to understand the concept of the word **policy,** it is necessary to investigate the process that leads to the formation of policies.

- The Government creates legislation, which forms the framework for an act.
- An act is a set of guidelines, which companies or farms should use to set up their internal policies.
- A policy is a company's (farm "s) interpretation of how they will implement that law within the workplace.
- Procedure is the methodology behind the implementation of that policy

Definition:

Human Resource policy- is a company's interpretation of how they implement the law regarding the management of the human component within the company.

The policy will therefore describe all aspects that pertain to issues of concern to employees like

- The Farm's Interpretation of the Labour Legislation.
- Explains Salary and Wage System- Remuneration.
- Union Membership.
- Medical Aids and Benefits.
- Disciplinary policy.
- Employment equity policy, recruitment and selection policy.
- Job analysis, description and specification.
- Induction and Training
- Management of Performance

Seeing that the Human Resource Policy interprets the labour legislation in context of the farm operations, it is important to understand the basic labour legislation applicable in SA.

Relevant Labour Legislation

In the previous session we looked at the workers and their interpretation of the human resources regarding the policy employment conditions specific as a disciplinary measure. This session will focus on the role of the human resource policy and its relation to labour legislation. The session is comprised of an activity whereby learners are to investigate the content of legislation that is applicable to the questions posed.

The legislation that applies to the workplace includes:

- Basic conditions of employment act, 1983.
- Occupational health and safety act, 1993.
- Wage act.
- Workmen's compensation act.
- Unemployment Insurance act.
- Labour relations act of 1995.
- Employment equity act 1998.
- Skills development act of 1998.

These acts are valuable tools to empower you as employee in the workplace:

Your facilitator will provide you with a copy of the following:

The Basic Conditions of Employment Act, 1983

The act does not concern itself with wages but with conditions of employment.

It sets out the minimum conditions of employment covering those workers not covered by any other statutes or acts, bargaining council agreements etc.
It covers:

- Hours of work.
- Overtime and overtime pay.
- Work on Sundays.
- Contracts of employment.
- Termination of employment.
- Annual and sick leave.
- Protection from victimization.
- Record keeping by the employer.

Basic Conditions of Employment Act: Sectoral Determination 13: Farm Workers

This official piece of legislation applies the Basic Conditions of Employment Act to FARM WORKERS specifically.

It provides for, amongst others, the following matters:

- Wages
- Wage deductions

- Method of payment
- Leave types
- Hours of work
- Rest Periods
- Night Work
- Child labour
- Termination of employment
- Staff administration
- Overtime

Employment Equity Act of 1998

This Act sets out the conditions for the recruitment and selection of employees. This Act also deals with equality of workers regarding being treated fairly and without bias. This Act would form part of a workplace recruitment and selection policy. This policy would ensure the following points concerning employment:

- Fairness in selection policy and process.
- Taking into account the company's equity figures.
- Standard manner in which the advert is set out ensuring that nobody is excluded on grounds that are not pertinent to the function of the advertised position.
- Standard of short-listing that is open to staff and has set minimum criteria.
- Standard format for conducting interviews so that no artificial barriers are created.
- Establishing an interview panel that represents the diversity of the area in which the farm operates.
- Establishes a manner in which applicants can question why they were unsuccessful in an interview.
- Look at creating an environment that is conducive to the best possible feedback from the applicant.

Labour Relations Act of 1995

Unfair dismissal disputes in which unfair discrimination is alleged must be dealt with in terms of the Labour Relations Act. The Act deals with all issues pertaining between employer and employee.

CONTRACTS THAT GOVERN THE EMPLOYEE-EMPLOYER RELATIONSHIP

In the past, there was often no description of what you were expected to do in the workplace. Often the manager would just assign you a task to perform and this could be any type of work on a farm. This often resulted in devastating accidents as you were expected to work with dangerous equipment or chemicals and were not given the appropriate training. In the past these systems lead to disagreements and even unfair dismissal.

There was never any system in place against which you could compare how you were performing in your work. This meant that it was very hard to get promotion or develop your workplace skills, as the system did not allow for it.

Many farm workers were employed on a day-to-day verbal agreement and could lose their jobs for many different reasons. They had no sense of loyalty to the workplace and it was not in their long-term interest to give their utmost. Fortunately, there is legislation in place to protect both the employee and employer.

Employment Contract

By law you are obliged to enter into a written contract when appointing a worker on a permanent basis.

The following information should be included in such a document:

- the full name and address of the employer.
- the name and occupation of the farm worker or a brief description of the work for which the farm worker is employed.
- the place of work and where the farm worker is required or permitted to work at various places.
- the date on which employment began.
- the farm worker's ordinary hours of work and days of work.
- the farm worker's wage or the rate and method of payment.
- the rate of pay for overtime work.
- any other cash payments that the farm worker is entitled to.
- any food or accommodation payment that the farm worker is entitled to and the value of the food or accommodation calculated in accordance with clause 8.
- any other payment in kind received by the farm worker.
- how frequently wages will be paid.

- any deductions to be made from the farm worker's wages.
- the leave to which the farm worker is entitled to; and
- the period of notice required to terminate employment or if employment is for a specific period, the date when employment is to terminate.

Attendance Record

Law requires that you have a daily record of employee attendance. A basic system is required where employees can sign on for duty and sign off when they leave the premises. These documents can also be extremely helpful to support disciplinary action, overtime calculation and even to determine if an employee was on duty when injured!

Pay Slip

Employers must give workers the following information in writing when they are paid:

- Employer's name and address
- Worker's name and occupation
- Period for which payment is made
- Total salary or wages
- Any deductions
- The actual amount paid
- Employer's registration number with the Unemployment Insurance Fund and the contribution to the fund.
- If relevant to the calculation of pay:
    - Employee's pay and overtime rates
    - Number of ordinary and overtime hours worked
    - Number of hours worked on a Sunday or public holiday
    - The total number of ordinary and overtime hours worked in the period of averaging, if an agreement to average working time has been concluded.

The Job Description

A job description is a detailed description of the work an employer has assigned an employee. On a farm this may include the workers specific tasks according to season.

Step 1: Job analysis

Before a job description can be documented, the farmer has to do a job analysis; and can be best described by looking at the tasks involved in a job analysis:

- What job has to be done?
- Why must it be done?
- How must it be done?
- How much supervision is required?
- What tools and equipment are required?
- How much expertise is required?
- What physical strength is required?
- How much time is needed for certain aspects of the job?

Step 2 – Define job Objectives

Once the job analysis has been completed, the **objectives of the job** can be developed. Job Objectives refer to the purpose of the job. It also refers to the result that is sought by initiating the job. In order to develop the job objective, management must identify the following:

- What section of the farm will you work in?
- The job titles?
- Aims of the job.
- Most important duties?
- Working conditions- leave, hours of work, shifts, dangerous work, overtime, and wage?
- Equipment or tools required?

Step 3 – Define the Job Specification

The final step in developing job description is defining the **job specification**.

Job Specification is the detail that describes the personal qualities required of the person in a specific job. In order to develop Job specifications management must identify the following:

- The qualifications, skills, experience and personal qualities required.
- Whether a person works alone or in a team.
- Whether you deal with the public or not.
- Whether you have to be on standby or not.

The Performance agreement

This is an agreement by both parties that they agreed to a measurable delivery of service.

The Performance agreements make the worker's job visible. It is a power tool towards transparency. It is a systematic way of making the best use of resources. It defines what the basic purpose of a certain job is and in which direction effort should be directed.

The Performance agreement contains the on-going standards by which to judge the work on a farm and the end results. It is a management tool for performance appraisal. (Measuring how well work has been done). The performance agreement may also provide the framework for effective delegation.

Because it establishes acceptable levels of performance, the performance agreement serves as a continuing reference point that will help to identify and analyse strengths and weaknesses (development areas in the farm workers performance) in current performance and to formulate short-range development plans.

Performance agreements contain three key elements: Results, ways of achieving the result and how the result will be measured.

Performance Evaluation

Definition:
Personnel evaluation: To evaluate personnel is to analyse, interpret and determine the worth or quality of work completed, and the results achieved. This evaluation is made according to the job description and the performance agreement.

In order for personnel evaluations to be effective, prior agreement on job description and performance agreement is crucial. E.g., If a packer has agreed to pack 50 crates per day, the evaluation of performance becomes simpler as the packer would be in the position to self – evaluate.

Within a farming workplace, peer-evaluation can be effectively applied to determine work performance.

It must be re-emphasized that is essential that the worker can evaluate his or her own performance according to a set list of criteria, which is in the job description. This also means

that the employer can evaluate the employee. This allows for either party at any time to identify the need for capacity building to be able to perform at the set or higher levels.

The job description forms the basis for all other situations that arise on the farm - the job description will be a positive tool for both management and worker if used properly.

From the personnel evaluation it is also possible to determine the development needs of the employee.

In the farming environment it is important to transform inputs into outputs. Employees must have the knowledge and skills to do this effectively. If they do not have the required knowledge and skills, they have to be trained.

Sound Health and Safety Practice

People continuously try to **improve** and find **better health and safety protection measures**. This information is put together to form a standard, which is used to make up health and safety laws.

The main objective of the **Occupational Health and Safety Act** (No 35 of 1993) is to ensure that employees can perform their daily work without exposure to substances or conditions which will cause them death, disease or injury.

You need to make sure that you are aware of the rules that apply to health and safety in your workplace.

Duties of the employer:

The employer must provide and maintain healthy and safe environment for you the worker. He/she must:

- Take steps to **eliminate health and safety hazards** before issuing safety gear as a preventative measure.
- **Enforce** health and safety measures.
- **Provide information, instruction** and **training** to ensure health and safety of workers.
- **Act** on reported **unsafe** or **unhealthy conditions, behavior, or incidents** and **take steps to remedy** them.

Duties of the worker:

He/she must be sure to:

- Take care of his/her own health and safety. Obey all health and safety rules.
- Act responsibly so that others are not put at risk due to his/her behavior.
- Co-operate with the employer and the Health and Safety Rep so that he/she can comply with legislation.
- Report any unsafe or unhealthy behavior by the end of the shift during which he/she noticed it.
- May not interfere with or misuse any safety equipment or personal protective clothing.

Health and Safety Rights

- You have the right to know what machinery, equipment and substances you will be working with.
- You have the right to receive full and proper training regarding the use and proper care of equipment and substances.
- Free protective equipment and clothing as required by your job.
- A health and Safety Rep to take care of your interests.
- You have the right to refuse to perform certain tasks if your employer has not taken the necessary steps to ensure your health and safety.

As an example, the principles of the Occupational Health and Safety Act with regards to the storage of Agro-chemicals and fertilizers will be provided.

Health and Safety Representatives

What are health and safety representatives?

They are full-time workers nominated or elected and designated in writing by the employer after the employer and workers consulted one another and reached an agreement about who will be health and safety representatives. Furthermore, they must at least be familiar with the circumstances and conditions at that part of the workplace for which they are designated. Agreement must also be reached on the period of office and functions of the health and safety representative and must be settled amongst the employer and the workers.

How many health and safety representatives must be designated?

A representative must be designated for every workplace consisting of 20 or more workers. Therefore, where only 19 workers are employed, it is not necessary to designate a representative.

Health and safety representatives are entitled to:

- *Health and safety audits*

Representatives may check the effectiveness of health and safety measures by means of health and safety audits.

- *Identify potential dangers*

Representatives may identify potential dangers in the workplace and report them to the health and safety committee or the employer.

- *Investigate incidents*

Representatives may together with the employer investigate incidents, investigate complaints from workers regarding health and safety matters and report about it in writing.

- *Make representations*

Representatives may make representations regarding the safety of the workplace to the employer or the health and safety committee or where the representations are unsuccessful, to an inspector.

- *Inspections*

As far as inspections are concerned, representatives may –

- inspect the workplace after notifying the employer of the inspection
- participate in discussions with inspectors at the workplace and accompany inspectors on inspections
- inspect documents
- with the consent of his/her employer, be accompanied by a technical advisor during an inspection.

The Health and Safety Committee

What is the purpose of health and safety committees?

Members meet in order to initiate, promote, maintain and review measures of ensuring the health and safety of workers.

When must health and safety committees be established?

At least one committee must be established when two or more representatives are designated.

What do health and safety committees do?

The committees only deal with health and safety matters at the workplace or sections thereof for which such committees have been established. Generally, health and safety committees have the following functions:

- *Make recommendations*

  A committee must make recommendations to the employer about the health and safety of workers. Where these recommendations do not lead to solving the matter, the committee may make recommendations to an inspector.

- *Discuss incidents*

  A committee must discuss any incident that leads to the injury, illness or death of any worker and may report about it in writing to the inspector.

- *Recordkeeping*

  A committee must keep record of every recommendation to the employer and every report to an inspector.

Workman's Compensation

The Compensation Fund is the fund from which claims are paid to employees that are hurt in the cause of duty.

All employers who employ one or more workers in connection with their business or farming activities are required to register with the Compensation Fund.

Step 1: Fill in the form

Employers must fill in the W.As2 form. You can get the form at any labour centre or on the website – a copy is in your Personnel Administration File.

Employers must make sure that they complete all the questions on the form. If the Compensation Fund has to follow up on information that they did not complete, it may take a long time to be registered.

Step 2: Send in the form

When they send the form, employers must also include a copy of the registration certificate from the Registrar of Companies if they are a company or closed corporation; or their ID document, if they are sole owners of the business.

Employers can send the form by mailing it to:

PO Box 955

Pretoria

0001

How to Administrate and Injury on Duty

Step 1:

The moment an injury occurs, where an employee must get *outside medical treatment, part A* page 1 of the *Employers Report of an Accident (*W.Cl.2) form must be completed. Detach "Part B" (an automatic copy of "Part A" page 1) by tearing it at the perforation, hand "Part B" to the employee and request him/her to hand it to the doctor/hospital concerned. **In serious cases,** "Part B" must be handed to the emergency services personnel who have responded to the emergency call.

It makes sense to keep partially completed W.Cl2 forms and certified copies of all employee's identity documents in the First Aid Box, so that they are readily available when needed.

Step 2:

Once the employee has been taken care of, the employer must obtain the First Medical report (W.Cl.4) from the Doctor, complete page 2 of the W.Cl.2 form and send the completed pages

1 and 2, together with the W.Cl. 4 form and a certified copy of the injured employee's ID document to the Compensation Commissioner by fax to (012) 3244734 or post by registered post to The Compensation Commissioner to P.O. Box 955 Pretoria 0001 within 7 days of the incident occurring.

(Where the *First Medical Report* (W.CL.4) was not sent together with the employer's report of an occupational injury, it must be submitted to the Commissioner as soon as it is obtained.)

Step 3:

The Compensation Commissioner will send the employer a postcard (W.Cl.55), providing a claim number (reference number) which must be used on all correspondence relating to this matter.

Step 4:

Once the Compensation Commissioner has considered the claim and only when ***liability is accepted*** for payment of all medical expenses etc, will a postcard (W.Cl.56) be sent to the employer. Where a W.Cl.56 is not issued, it means that the Compensation Commissioner does not accept liability for any payment.

Step 5:

In cases of prolonged absence, a *Progress Medical Report* (W.Cl.5) form must be obtained **monthly** from the Doctor and submitted to the Commissioner as soon as it is obtained.

Step 6:

Once the Doctor handling the case is satisfied that the employee is fit for duty, the Doctor will issue a *Final Medical Report* (W.Cl.5), which must be sent to the Compensation Commissioner.

Please note that the *Progress Report* and *Final Report* are on the same form (W.Cl.5).

Step 7:

When the employee resumes work, a *Resumption Report* (W.Cl.6) must be completed and submitted to the Commissioner.

Only after every one of these forms has been submitted will the Compensation Commissioner make all of the payments and close the case.

Most problems that occur with the Compensation Fund is that the Employer does not send through the *Progress, Final and Resumption Reports*, therefore the Employer does not get the money from the Compensation Fund that was paid to the injured employee and the Doctors do not get paid.

Payments for IOD's

If an employee is injured on duty and is sent to the doctor/hospital, one of the following three payment criteria comes into operation:

1. If the employee is booked off due to an IOD for 3 days or less, the Compensation Fund **does not pay a cent.** Therefore, the employer does not need to pay the injured employee any payment.
2. If the employee is booked off due to an IOD for 4 days or longer, but less than 3 months, the employer pays the injured employee at **a rate of 75% of basic wages** only, from day 1 until the employee returns to work.
3. If the employee is booked off due to an IOD for longer than 3 months, the employer pays the injured employee at a rate of **75% of basic wages**, from day 1 for 3 months and **nothing thereafter**. Once the 3-month period expires, the injured employee must claim his money from the Compensation Fund himself.
4. It is important to remember that if the employer pays their employees in full for the IOD, the long-term cost to the company should be taken into consideration as it has been proved in practice, that where companies only pay as per regulations, their IOD rate is drastically reduced.

If you are unsure whether an incident is an IOD, submit your forms to the Commissioner and let them decide. The COID Act works on the proviso of "at the discretion of the Compensation Commissioner".

Individual Formative Exercise 5A

 **Group Formative Exercise 5B**
 **Group Formative Exercise 5C**
 **Individual Summative 2**

Unit 6:

Managing Farm Equipment and Technology

Unit Standard	
116290	Establish a plan for the monitoring, safe use and maintenance of equipment implements, technology and infrastructure
Specific Outcomes	
SO1: Develop a basic task related work program related to the scheduling and allocation of equipment and implements. SO2: Prepare and implement basic operational procedures for the cleaning, storage and proper maintenance of equipment, implements and infrastructure. SO3: Recognise, identify and solve problems related to the use of implements and equipment in an agricultural environment. SO4: Draw up plans to ensure that safety regulations are implemented as prescribed for the use of implements, agro-chemicals and equipment. SO5: Adapt equipment, implements and technology to suit different agricultural situations and processes.	

PLANNING TECHNOLOGY FOR YOUR FARM

Farmers are increasingly faced with the demand for input cost reduction, increasing yields and maintaining high levels of operational productivity and efficiencies while dealing with climate change and the need to protect the environment.

With mechanisation equipment one of the biggest contributors to input costs, proper planning and selection of equipment is essential to help ensure a profitable and sustainable farming operation.

The optimal use of the correct equipment and implements is necessary to optimise farming production and to maximise operational profit. All mechanisation actions need to be considered for the whole conventional farming value chain.

These actions are illustrated in **Figure 1**. Certain activities, like planting and harvesting, need to be done in a specific time window. Therefore, mechanisation is necessary to adhere to the time limits set.

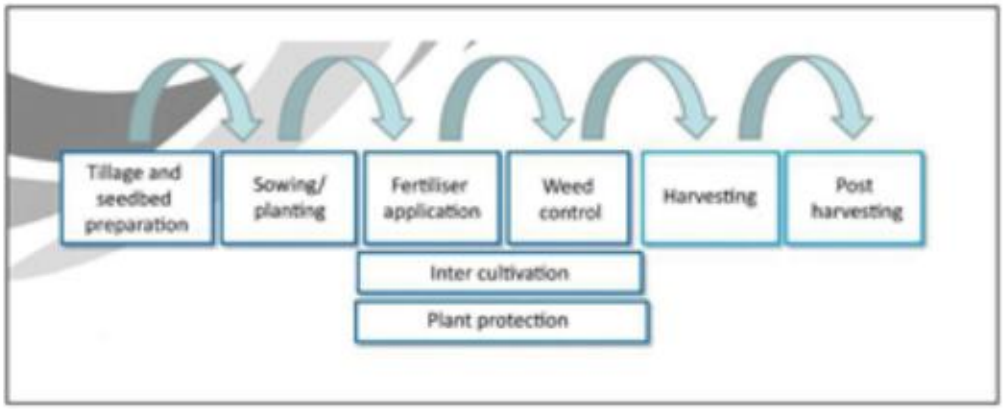


Figure 1: Mechanised solution for whole farming value chain.

To Mechanise farming activities, one needs to consider the following factors:

- Appropriate equipment to be used for timely crop production.
- Manufacturing and availability of machine or implement parts.
- Suitable capability and capacity for maintenance.

- Effective utilisation and operation (skilled operators and technical staff must be available and affordable).
- Favourable economic and financial conditions to support mechanisation.

PLANNING EQUIPMENT ACCORDING TO TYPE/USE

The planning and selection of tractors and implements for crop production can greatly impact the performance and profitability of the farming operation. The type and size of tractors and equipment used and matching of tractor engine power and capacity of implement can also influence energy efficiency.

During the peak period of the farming process, such as planting and harvesting, time constraints are a great concern, and enough tractors and implements are necessary to complete the actions within the specific time window. Too much surplus mechanisation capacity will increase the operational cost and thus reduce the profitability.

➢ Tractors

Tractors are the powerhouse for implements and are classified according to their capacity (engine power in kW) and type. The tractor type can be two-wheel drive, four-wheel drive or track laying traction.

It is, however, important to utilise the tractor's capacity in such a way that the tractor-to-implement match is optimised for good traction control and economic fuel consumption. It is also important to have enough capacity to do the work on time without having surplus tractors available when the operational time window is limited.

Function of a tractor

- Providing draught power for tillage tools through the drawbar or three point linked hitch system.
- Used for trailing and transportation of farm products.
- Power source – PTO, hydraulic and electrical output to drive other machines.
- Earth moving.
- Transport.

➢ Selection of Farm Tractors

It is important to select the appropriate size and numbers of farm tractors according to the mechanisation plan. The following factors can influence the tractor selection:

- Farm area to be cultivated.
- Type of crops to grow.
- Mechanisation activities necessary for the various crops on the farm.
- Soil structure and condition of terrain.
- Financial capability.

The 4x4 tractors have better traction performance than the 4x2s, hence better drawbar pull performance under poor terrain conditions. However, 4x4 tractors are more expensive (purchase and maintenance). It is more economical to select 4x2s for light-duty operations under better terrain conditions.

Other Implements and Farm Machinery

The selection of implements and machinery will be influenced by the following factors:

- The crop and production method: CA or conventional.
- Implement performance.
- Timeliness of operations.
- Power availability.
- Operation capacity.
- Machinery selection will depend on the performance characteristics, costs, and types of operation.

❖ Tillage Implements

Tillage is the agricultural preparation of soil by mechanical agitation of various types, such as digging, stirring or overturning. Tillage implements are classified in primary tillage implements and secondary tillage implements. Furthermore, tillage implements are also classified in conventional tillage and conservation tillage. Conservation tillage can also be divided into reduced tillage and no-till.

Conventional tillage practices require the most tillage operations while conservation tillage requires less or no tillage practices.

❖ Commonly used Implements For Conventional Tillage

Mouldboard plough

The mouldboard plough (**Photo 1**) is used for seedbed preparation and forms part of the primary tillage actions. It is one of the oldest of all agricultural implements and is generally considered to be the most important tillage implement in conventional tillage practices. Ploughs can be categorised into mounted and semi-mounted ploughs.

The drawbar power requirements for a four-share plough on sandy soils will be 48 kW or 12 kW/share, at a working depth of 250 mm, and a working speed of 5,9 km/h.

Disc plough

Disc ploughs (**Photo 2**) are most suitable for conditions under which mouldboard ploughs do not work satisfactorily, such as hard dry soils, in sticky soils where a mouldboard plough will not scour and in stony fields. Disc ploughs depend on their weight to penetrate into the ground and therefore are normally built from heavy material. Side forces are usually taken up by the land-wheel at the back of the implement.

The drawbar power requirement for a three-disc plough at a working depth of 250 mm is 45 kW or 15 kW/disc at a speed of 6 km/h.

Disc harrow

Disc harrows (**Photo 3**) rank close to the mouldboard plough in importance as tillage implements. Heavy duty disk harrows are used for primary tillage, for controlling weeds, and for cutting and mixing stubble or cover crops with the soil. Lighter units are often used in seedbed preparation subsequent to ploughing.

The power requirement to pull a light duty, 3 m cutting width disc harrow at a working depth of 150 mm in sandy loam soil at a speed of 8 km/h, is 50 kW. The power requirement for heavy duty offset discs with a cutting width of 3 m at 8 km/h is 80 kW.

Ripper or subsoiler

A ripper or subsoiler (**Photo 4**) is used to break through and shatter compacted or otherwise impermeable soil layers and to improve rainfall penetration. When practicing conventional tillage and using a plough, a ripper will be used to break through the plough pan when necessary.

The power requirement to pull a three-line ripper on average is 60 kW or 20 kW/teeth at a working speed of 7 km/h and working depth of 400 mm.

Cultivator

Cultivators (**Photo 5**) are used for weeding or seedbed preparation. This specific model is called a Vibro Flex tiller and is normally used at an operation speed of 12 km/h to get the vibrating effect and therefore maximum efficiency. It is also used to loosen the top layer of soil to allow faster germination and enhance plant growth.

Depending on the working width of the implement, power requirements may vary from 40 kW to 100 kW.

Cultivator (s-tine with roller)

This implement (**Photo 6**) is used for light duty weeding and seedbed preparation. The roller at the back is used to break up the clots to provide a fine seedbed for planting. The power needed to pull the implement ranges between 40 kW and 80 kW, depending on the working width.

PLANNING EQUIPMENT ACCORDING TO MACHINE PERFORMANCE AND COST

Putting together an ideal machinery system is not easy. Equipment that works best one year may not work well the next because of changes in weather conditions or crop production practices. Improvements in design may make older equipment obsolete. And the number of hectares being farmed or the amount of labour available may change.

Because many of these variables are unpredictable, the goal of the good machinery manager should be to have a system that is flexible enough to adapt to a range of weather and crop conditions while minimizing long-run costs and production risks. To meet these goals several fundamental questions must be answered.

First, each piece of machinery must perform reliably under a variety of field conditions, or it is a poor investment regardless of its cost.

Tillage implements should prepare a satisfactory seedbed while conserving moisture, destroying early weed growth and minimizing erosion potential. Planters and seeders should provide consistent seed placement and population as well as properly apply pesticides and fertilizers. Harvesting equipment must harvest clean, undamaged grain while minimizing field losses.

The performance of a machine often depends on the skill of the operator, or on weather and soil conditions. Nevertheless, differences among machines can be evaluated through field trials, research reports and personal experience.

Machinery Costs

Once a particular type of tillage, planting, weed control, or harvesting machine has been selected, the question of how to minimize machinery costs must be answered. Machinery that is too large for a particular farming situation will cause machinery ownership costs to be unnecessarily high over the long run; machinery that is too small may result in lower crop yields or reduced quality.

Ownership Costs

Machinery ownership costs include charges for depreciation, interest on investment, property taxes, insurance and machinery housing. These costs increase in direct proportion to machinery investment and size.

Operating Costs

Operating costs include fuel, lubricants and repairs. Operating costs per acre change very little as machinery size is increased or decreased. Using larger machinery consumes more fuel and lubricants per hour, but this is essentially offset by the fact that more hectares are covered per hour. Much the same is true of repair costs. Thus, operating costs are of minor importance when deciding what size machinery is best suited to a certain farming operation.

FACTORS THAT AFFECT THE SIZE OF MACHINERY NEEDED

Machinery recommendations must be based on the characteristics of each individual farm. The following factors influence machinery selection and are discussed in order of importance.

Number of Crop Hectares

As more crop hectares are farmed, larger-scale machinery is needed to ensure that planting and harvesting are completed in a timely fashion. An alternative is to acquire a second unit of some machines, if an additional tractor and operator are available.

Tillage Practices

The number of field days needed before planting is completed depends partly on the number of separate operations completed on each acre. Reducing the number of tillage practices performed or performing more than one practice in the same trip effectively decreases the amount of machinery capacity needed to complete field operations on time. Of course, machinery cost savings from reduced tillage must be compared to possible increased chemical costs and effects on yields.

Crop Mix

Diversification of crops tends to spread out the periods when timely completion of field operations is critical. For example, yield reductions due to late planting begin later for soybeans than for corn. Harvesting can also be completed over a longer time period. Thus, growing more than one or two crops reduces the machinery capacity needed for a given number of crop hectares. However, it may also require purchasing additional types of machinery, especially for harvesting.

Weather

Weather patterns determine the number of days suitable for fieldwork in a given time period each year. Although actual weather conditions cannot be predicted far enough in advance to be used as an aid to machinery selection, past weather records can be used as a guide. As a rule of thumb, weather is suitable for field work about 60 percent of the time in the spring and about 75 percent of the time in the fall. This does not take into account time off for holidays, Sundays or other occasions. Machinery selection should be based on long-run weather patterns even though it results in excess machinery capacity in some years and insufficient capacity in other years.

THE OPTIMAL USE OF IMPLEMENTS

Implement economy is determined by the optimal use of implements according to the task at hand. The revolutions per minute at which tractor engines are operated, travel speed in the field, and the load tractors pull all have a major influence on the fuel efficiency of the equipment. Running equipment at optimal speeds and loads can save significantly on costs like fuel, maintenance, breakdowns, etc.

Questions to Ask:

- Are you using radial tires, and are they properly inflated?
- Is your tractor properly matched to the implement you are using?
- Are you reducing the engine RPM speed when a larger tractor is used with a smaller implement?
- Is your tractor wheel slippage excessive?
- Is a change or reduction in tillage practices possible?
- Is fuel storage shaded?
- Have your engine fuel filters, and air cleaner been replaced or serviced as recommended by the manufacturer?
- Have your engine fuel injectors been cleaned and serviced properly?
- Are you using a timer on your tractor's engine heater?
  For optimal use of implements, the factors to immediately consider is Travel speed, Fuel efficiency and Size of machinery.

Travel Speed:

Field travel speed is a major factor in matching tractor to implement. For many operations, the most desirable travel speed is from 5 to 7 miles per hour (6.4 to 9.7 km/h) because most implements are designed to perform high-quality work at these speeds.

Travel speeds below 4 mph (6.4 km/h) result in low field capacities, poor soil mixing for tillage operations, and reduced life of the drive train except for certain operations, such as planting, where precise control is required. Operating equipment at high speeds generally increases implement maintenance, increases tire wear, and reduces the life of the implement. It can also break down soil aggregates, which leads to compaction. Field speeds may be limited by heavy yield, rough ground, operator skill, or downed crops. Irregular and small fields, overlap, and large machinery can affect field efficiency.

Fuel Efficiency:

Most tractor engines have the highest fuel efficiency when operated at or near their rated speed and load (maximum power). Primary tillage implements properly matched to the tractor achieve the best fuel efficiency in the field by pulling loads at the fastest speed possible within the acceptable speed range for the implement. This will also reduce the time requirements for field operations and shock loads on the drive train.

If tractor and implement are *improperly* matched with resulting partial engine loads, increasing travel speed by gearing up and maintaining a full throttle setting to achieve near maximum engine power will usually *increase* the fuel required. The additional power required for this increased speed and draft more than offsets the fuel efficiencies gained by running the engine at maximum power. While this common practice does not save fuel, it will reduce time requirements. This timesaving may be more valuable than the additional fuel required if more timely operations result in reduced crop losses.

Machine Size:

It is important to know that machine recommendations are affected by the characteristics of each individual farm. The following factors do influence machinery selection and need to be considered in the determination of tractor size, implement selection and costing of the whole operation.

- Size of the land to be cultivated – as the size of the land to be cultivated increases, the size of the machines also needs to increase in order to ensure that soil preparation,

planting and harvesting are completed in a timely fashion. This will also influence the choice of having more than one unit working the land.

- Availability of labour – The number of acres or hectares that can be completed per day is the most critical measure of machinery capacity, even more than machine width or size completed per hour. Increasing the labour supply by hiring extra operators or by working longer hours during critical periods may be a relatively inexpensive way of stretching machinery capacity.
- Tillage practices – The number of field days needed before planting is completed, depends partly on the number of operations per area of land. Reducing the number of tillage practices performed or performing more than one practice in the same trip effectively decreases the amount of machinery capacity needed to complete field operations on time.
- Crop mix – Diversification of crops tends to spread out the periods when timely completion of field operations is critical. For example, yield reductions due to late planting begin later for soybeans than for maize. Harvesting can also be completed over a longer period of time.
- Weather – Weather patterns determine the number of days suitable, or available for fieldwork in a given period/season each year. Historic information on weather patterns gives us a close enough guide to determine the window of opportunity for fieldwork.
- Risk management – The biggest risk on a yearly basis is in fact the weather patterns. Fluctuations in the number of suitable field days vary from year to year and are also the biggest cause of losses if not managed. Thus, finishing the job on time is essential and need to be planned accordingly.

ACTIVITY

Your facilitator will now explain a practical way to you how each of the above factors have an impact on your choice of machinery for the specific task at hand (type of soil, size of land, dry land vs. irrigated, etc.).

Be sure to make notes.

CONSIDERING PRECISION AGRICULTURAL PRACTICES

Precision agriculture, as the name implies, means application of precise and correct amount of inputs like water, fertilizer, pesticides etc. at the correct time to the crop for increasing its productivity and maximizing its yields.

- Precision agriculture management practices can significantly reduce the amount of nutrient and other crop inputs used, while boosting yields. Farmers thus obtain a return on their investment by saving on water, pesticide, and fertilizer costs.
- The second, larger-scale benefit of targeting inputs (in spatial, temporal and quantitative terms) concerns environmental impacts. Applying the right amount of inputs in the right place and at the right time benefits crops, soils and groundwater, and thus the entire crop cycle.
- Consequently, precision agriculture has become a cornerstone of sustainable agriculture, since it respects crops, soils and farmers. Sustainable agriculture seeks to assure a continued supply of food within the ecological, economic and social limits required to sustain production in the long term. Precision agriculture therefore seeks to use high-tech systems in pursuit of this goal.

Precision agriculture aims to optimize field-level management about:

- Crop science: by matching farming practices more closely to crop needs (e.g. fertilizer inputs).
- Environmental protection: by reducing environmental risks and footprint of farming (e.g. limiting leaching of nitrogen).
- Economics: by boosting competitiveness through more efficient practices (e.g. improved management of fertilizer usage and other inputs).

Precision agriculture also provides farmers with a wealth of information to:

- Build up a record of their farm;
- Improve decision-making;
- Foster greater traceability
- Enhance marketing of farm products
- Improve lease arrangements and relationship with landlords

Enhance the inherent quality of farm products (e.g., protein level in bread-flour wheat)

The process

Precision agriculture is usually done as a four-stage process to observe spatial variability:

- **Data Collection**

Geo locating a field enables the farmer to overlay information gathered from analysis of soils and residual nitrogen, and information on previous crops and soil resistivity. Geo location is done in two ways:

- The field is delineated using an in-vehicle GPS receiver as the farmer drives a tractor around the field.
- The field is delineated on a base map derived from aerial or satellite imagery. The base images must have the right level of resolution and geometric quality to ensure that geo location is sufficiently accurate.

- **Variables**

Intra and inter-field variability may result from several factors. These include:

- Climatic conditions (hail, drought, rain, etc.)
- Soils (texture, depth, nitrogen levels)
- Cropping practices (no-till farming)
- Weeds and disease

Permanent indicators (mainly soil indicators) provide farmers with information about the main environmental constants. Point indicators allow them to track a crop's status, i.e., to see whether diseases are developing, if the crop is suffering from water stress, nitrogen stress, or lodging, whether it has been damaged by ice and so on. This information may come from weather stations and other sensors (soil electrical resistivity, detection with the naked eye, satellite imagery, etc.). Soil resistivity measurements combined with soil analysis make it possible to measure moisture content. Soil resistivity is also a relatively simple and cheap measurement.

- **Strategies**

Using soil maps, farmers can pursue two strategies to adjust field inputs:

Predictive approach: based on analysis of static indicators (soil, resistivity, field history, etc.) during the crop cycle.

Control approach – information from static indicators is regularly updated during the crop cycle by:

- Sampling
- Weighing biomass
- Measuring leaf chlorophyll content
- Weighing fruit, etc.
- Remote sensing – measuring parameters like temperature (air/soil), humidity (air/soil/leaf), wind or stem diameter is possible thanks to Wireless Sensor Networks
- Proxy-detection: in-vehicle sensors measure leaf status; this requires the farmer to drive around the entire field.
- Aerial or satellite remote sensing: multispectral imagery is acquired and processed to derive maps of crop biophysical parameters. Airborne instruments are able to measure the amount of plant cover and to distinguish between crops and weeds.

Decisions may be based on decision-support models (crop simulation models and recommendation models), but in the final analysis it is up to the farmer to decide in terms of business value and impacts on the environment.

- **Implementing practices**

New Information and Communication Technologies (NICT) make field-level crop management more operational and easier to achieve for farmers. The application of crop management decisions calls for agricultural equipment that supports variable-rate technology (VRT), for example, varying seed density along with variable-rate application (VRA) of nitrogen and phytosanitary products.

Precision agriculture uses technology on agricultural equipment (e.g., tractors, sprayers, harvesters, etc.):

- Positioning system (e.g., GPS receivers that use satellite signals to precisely determine a position on the globe);
- Geographic information systems (GIS), i.e., software that makes sense of all the available data.
- Variable-rate farming equipment (seeder, spreader).

SOLVE PROBLEMS IN THE MALFUNCTIONING OF MACHINES

Recognition of a malfunction in a machine by the operator using his senses

Touch: When a machine or tool works at a higher temperature than normal, and the operator feels heat he may assume a malfunction

Smell: The smell of burning rubber or oil is normally one of the first signs of a defective machine

Hearing: Operators are normally very aware of the noise the equipment he/she is working with makes. Loose bolts and screws may cause rattles that is audible and can help with the identification of a defective implement etc.

Listen for noises and rattles

Touch and feel heat

Look for leaks, smoke, loose screws

Smell rubber, oil and smoke

Sight: Operators doing prescribed maintenance checks on their equipment may spot loose screws or leaks well before any damage may occur and may rectify the problem immediately. While operating a machine like a tractor the driver often see smoke or flames from under the bonnet and can switch off the machine instantly

Input vs. output: When machines and equipment do not run cost effectively e.g. when fuel or oil consumption increases but production rate stays the same one may assume the equipment is malfunctioning.

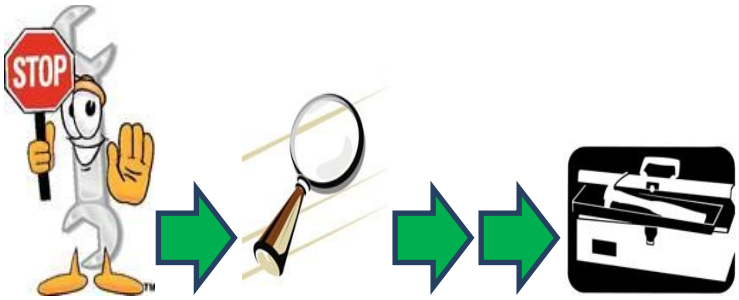
Appropriate action to prevent further damage

The following procedure will help operators to prevent further damage to their machinery in the case of a malfunction.

Stop: Make sure you come to a standstill and then switch off the motor of your machine/equipment.

Assess: Do an inspection of your machine to ascertain the cause of the malfunction.

Get help: Do an inspection of your machine to ascertain the cause of the malfunction, get a technician to help you. Make sure you report the incident to your dealer and see to it that your report is recorded.



Repair: Make sure the problem is repaired fully before using the tractor etc. again.

SAFETY AND TECHNOLOGY

Protective clothing for general hand tools

Hand tools are often used without any protective clothing. Spades and forks do not normally require protective clothing. A common exception is when working in muddy conditions when rubber boots must be worn. When using picks or hammers on material like rock, protective eyewear is recommended as rocks splinters can damage eyes. When working with cement or rough material like rocks or barbed wire leather gloves must be worn.

When using power tools like angle grinders, eye protection should be mandatory. Welding equipment has its specialised headgear to protect eyes from the very intense light during the operation. A leather apron must also be worn during welding. The farm manager should be aware of the safety needs of his/her workers and respond to that before it develops into a problem.

PROTECTIVE EQUIPMENT THAT MUST BE AVAILABLE:

These include:

- ☐ Overalls.
- ☐ Face shields.
- ☐ Rubber boots.
- ☐ Rubber gloves or leather gloves.
- ☐ Goggles.

THE SAFE USE OF MACHINERY

The Occupational Health and Safety Act determine the following regulations with regards to the safe use of machinery:

Safeguarding of machinery

1. Every employer or user of machinery shall:

    - Ensure that all machinery used by him, is suitable for the purpose for which it is used, and that it is installed, operated and maintained in such a manner as to prevent the exposure of persons to hazardous or potentially hazardous conditions or circumstances
    - In particular cause every exposed and dangerous part of machinery which is within the normal reach of a person to be effectively safeguarded by means of insulation, fencing, screening or guarding, except where an inspector has granted written permission for the omission of such safeguarding
    - Ensure that all safety equipment is kept in good working condition and is properly used
    - Ensure that the quality of material used in, and the construction, of the machinery or safety equipment is suitable for the purpose for which it was intended.

2. Where machinery constitutes a danger to persons, the employer or user of machinery concerned shall cause the premises in question to be enclosed, and where such premises are unattended the designated entrances to such premises shall be kept closed and locked.
3. Unless he has been authorised thereto by the employer or user of machinery, no person shall remove any safety equipment which relates to the machinery in question.

Operation of machinery

1. An employer or user of machinery shall ensure that every person authorised to operate machinery is fully aware of the dangers attached thereto and is conversant with the precautionary measures to be taken or observed to obviate such dangers.
    - If a person operates any machinery which requires constant attention in order to avoid accidents, he shall under no circumstances leave his post while such machinery is in operation, unless he is relieved by a person who is authorised and competent to operate such machinery.
    - An employer or user of machinery shall ensure that any machinery which requires constant attention in order to avoid accidents is under the supervision of a shifts man, who shall at all times be present on the premises while such machinery is in operation and no person shall attend or operate such machinery, except under the general supervision of a shifts man.
    - No person supervising machinery and no person operating machinery shall, without the permission of his superior, authorise any person to do his work.
    - If machinery threatens or is likely to threaten the safety of persons when it is unexpectedly set in motion or made electrically alive, the employer or user of machinery concerned shall take all reasonable precautionary measures in order to ensure that such machinery cannot be set in motion or made electrically alive, and any person intending to set such machinery in motion or make it electrically alive shall take reasonably precautionary measures to ensure that the safety of a person is not threatened or likely to be threatened.

If machinery in operation threatens or is likely to threaten the safety of persons, the person supervising or operating such machinery, or the employer or user of machinery concerned shall stop such machinery or cause it to be stopped.

TRACTOR MAINTENANCE AND CARE

The best ways to ensure good working order is to ensure **routine maintenance, repair** malfunction equipment and to use the **correct operating procedures**. The most important aspect to make note of is that activities on a farm are an on-going process and therefore maintenance and repair must also be seen from this point of view.

A clean tractor runs more efficiently and looks sharp while at work. Winter mud, grime and de-icing products should be removed to keep metal parts form corroding and rusting. Use a mild soap and hose or power washer to clean away mud and debris. Automotive degreaser is an effective way to remove greasy build-up on the engine and chassis. Don't forget the radiator screens and the underside of your tractor. Vacuum and wipe dust from inside the cab and wash cab widows to ensure the best view of your work. Give the tractor an occasional wax or polish to enhance the paint finish and add to the tractor's resale value.

Because smaller farm (or garden) tractors do not have a cabin to protect the seat, instrument panel, and metal components, it is a good idea to store it in a shed or garage. If you can't do this, keep rain out of the exhaust system, and cover the seat and instruments.

All the **different kinds of infrastructure** found on a farm **require routine maintenance** to ensure that the farming activities that they service can continue without hold ups. For example, an **irrigation system** is designed to supply water too if the nozzle becomes blocked, the result is that the plants being fed water by that nozzle will become stressed and potentially die.

Therefore, a farmer should get into the habit of routine maintenance checks of all machinery and equipment.

BASIC MAINTENANCE PROCEDURES

The manufacturer has specific instructions for basic care of your equipment, and they have the expertise to give you the best advice on how to do it.

If you don't have a manual, get one. Here are some items you should find in the Owner's manual:

- Maintenance schedule. This will tell you about the intervals for routine maintenance, including chassis lubrication, engine, transmission, and hydraulic oil change, filter changes, and other maintenance items.

- Specifications. This should be a table telling you the type of fluid for the transmission, hydraulic system, brakes, and engine coolant, as well as their capacities. Tyre inflation, bolt torques, and other information may be found under specifications or other sections of the manual.
- Location of lubricant points (grease fittings), fluid check dipsticks or sight glasses, and instructions on cleaning air and fuel filters.
- Basic operating instructions and other information specific to your tractor.

1. Check fluids regularly

Tractor usage is measured in hours, not miles, so the amount of use may be deceptive, and leaking components may cause failure of expensive parts.

- Check the engine oil
- Check the transmission fluid
- Check the coolant in the radiator
- Check the hydraulic oil
- Check the battery electrolyte

2. Check tyre inflation

Check the inflation pressure of the tyre with a gauge at least every 100 hours of operation. For the correct tyre inflation refer to the tyre inflation chart on the fender. If the tyres contain liquid ballast, use a special air-water gauge, and measure the tripe pressure with the valve stem at the top. The back tyres on farm tractors should be filled with ballast, especially if you are pulling an implement where maximum traction is required. Usually, this ballast is water with an antifreeze solution added.

Ballasting could be done in two manners:

- Ballasting with weights-

Attach the cast iron weight to the wheel disks. To install additional weights, install bolts in the previous weight and rotate the added weight to align bolts with weight holes. Tighten again after a few hours of service. Only use the necessary ballast and remove ballast as soon as it is no longer needed. Ensure correct tyre inflation after ballasting.

- Ballasting with water-

Water ballasting involves filling of water in rear wheels. Keep the water air ratio to 75:25. Never fill the tube complete with water. To fill jack the wheel up and hold the valve at 12'o clock position. Force fills the wheel with water. Then rotate the wheel to 10 o clock position and excess water will drain to the correct ratio of 75: 25. Fill the air to pressure of 14-16 psi.

3. Keep an eye on belts and hoses

If your tractor is equipped with a hydraulic system, it has high-pressured hoses and/or tubing, and failure of this fluid conduit can cause component (hydraulic pump) failure, loss of steering, or other problems. If a hose (or belt) appears damaged, worn, or cracked, replace it. If fittings or connections are leaking, tighten them or replace the seals.

4. Check the brakes

Free the brake pedal locking plate, while on seat and when the engine is running. Then place the transmission in gear, release the clutch and then move forward. Operate the brake pedals

individually. Hold and release and repeat this action 2-3 times till the pedal feels firm and does not sink. Engage the pedal bars together to stop the tractor evenly.

5. Watch the gauges

Keep an eye on the temperature, oil pressure, and tachometer.

- The temperature gauge should be marked with a normal operating range, but any time the indicator says the temperature is over 220 degrees F, the engine is running hot.
- If equipped with a diesel engine, the oil pressure should be between 40 and 60 PSI.
- The tachometer tells how many revolutions per minute the crankshaft is turning. Diesel engines are designed to operate at lower RPM and higher torque than gasoline engines, and "over revving" your engine or operating it at maximum RPM is not recommended.

6. Check the filters regularly

Most systems on tractors are equipped with filters to protect against dirt, water or other contaminants that could cause failure of the components.

Check the filter often. Tractors are often operated in very dusty conditions, and in some cases, the filters must be cleaned daily or weekly. Clean the air filter with a shop vacuum or with compressed air, never by washing it. Replace the air filter when it cannot be cleaned satisfactorily, or if the filter is damaged.

In dry air filtration systems, remove the filter element from the canister and look for a dusty spot along the flexible gasket where the elements may have been bent or not properly seated in the canister. This would mean that dust has found a path of least resistance, has passed the element and flowed into the engine, causing unnecessary wear. Crumpled filter elements also seal poorly and may be fractured, causing gaps between the pleats and the end caps. Dust unloader valves collect and store dirt that settles from dry air filter elements. If the rubber is dried, cracked or torn, a vacuum created by the engine can suck air and dirt into the flawed valve, bypassing the designed

dirty airflow path into the filtration system. Excessive dirt then collects in localized areas of the filter, causing restrictions and plugged elements.

7. Check the radiator screen

Tractors are often operated in conditions where debris may accumulate on the radiator, so they usually have a front screen or grill to prevent plant matter, insects, or pollen from clogging the radiator.

8. Lubricate your tractor

Tractors have many more moving parts that require greasing than do automobiles. If you see a part that moves, look for a grease fitting, and grease it. Use a grease cartridge pressure gun, clean the fitting, attach the hose, and pump grease until the associated seal begins to expand, or grease is seen oozing out of the attachment you are lubricating. Look for grease fittings on steering components, brake and clutch linkages, and three-point hitch pivot points.

Older tractors require specific lubricants in the gearboxes. Often, the hydraulic system and the transaxle share fluid, and using the wrong fluid can cause serious damage.

Remove the grease fitting and examine the interior. The grease should be shiny, tacky and clean. If the grease well looks dry, or the grease is lumpy, the unit has not been greased properly. If a component is loose and can be wiggled, excessive wear has taken place.

9. Seals and bearings

While on the topic of grease check the seals and bearings. A collar of grease on the wheel bearing will indicate either a failing wheel bearing, or one that needs to be properly seated by tightening the spindle nut. The collar is formed by lateral movement of the hub, which ploughs excess grease into a ring or collar. Usually, these collars mean bearing assemblies and seals need to be replaced because the lateral shifting has introduced dirt, grit and water past the seal into the bearing. A simple test to determine whether the wheel bearings are not properly seated, or are worn, is to bump the tyre with your knee. Even the slightest clunk indicates that there is a possible problem.

10. Examine the engine

A bad front or rear main bearing can cause a loss of oil and gives an idea of the age of the vehicle. Look for oil spots on the ground near machinery. Also look under the tractor, both in front of, and behind, the oil pan. Scattered fresh oil will indicate that the seals are probably worn out. Coincidentally, if the seals are worn, then the crankshaft bearings may also be worn, because they, too, have been in the engine since it was bought. Replacement of seals and bearings may be expensive.

11. Coolant

Examine the radiator fill area while the engine is cold as this will provide several clues to the engine, not just the radiator. A creamy white deposit on the underside of the cap indicates that exhaust gases may be leaking into the coolant systems. This could be caused by a leak in either the cylinder head gasket or water jacket.

Discoloured or flanking paint around the cap may indicate that the engine was overheated. Possible causes of this could be a lack of coolant, or that the thermostat or radiator has become plugged, or that there is a collapsed hose, a faulty water pump, or a major head gasket leak.

Look inside the radiator for signs of corrosion. Severe corrosion means that the radiator may need to be replaced. Also examine the outside of the radiator for damaged fins or signs of repairs. Stains along the fins usually indicate a leak. Squeeze the radiator hoses to see if they are cracked and brittle.

Never add water to the radiator or coolant reservoir tank.

12. Oil

Park the tractor on level ground. Pull out the dipstick. The oil level should be between the two marks on the dipstick. If the oil level is low, add oil through the oil filter hole until it reaches the "ADD" mark. Check the engine oil after every 10 hours of work. Change the engine oil and oil filters after the first 100 hours after every 250 hours or three months. Use the correct oil.

13. Engine and battery

Check how easily the engine starts. If it starts easily, the battery is probably in good condition. Let the engine idle and listen to the tone of the engine. The engine should run evenly without any rumbling or knocking sounds. The battery eye is on top of the battery. The eye shows three different colours, which indicates the condition of the battery:

Green: battery is fully charged

White: charging is required

Red: Add distilled water

Regularly clean the battery by wiping it with a damp cloth. To remove corrosion, the terminals can be washed with a solution of four parts water to one-part baking soda. Remove carbon deposits by gently rubbing it with fine emery paper and then add petroleum jelly.

14. Hydraulic systems

Hydraulic couplers that are capped and clean are a good sign of maintenance. If the couplers are capped, removal of the caps should reveal shiny metal and droplets of clean hydraulic oil. Uncapped, dirty couplers are often a clue to the fact that dirt or water may have entered the system, while rusty retainer balls indicate that couplers have been exposed to the weather.

The hydraulic control valves, also called spool valves, should be inspected to get an idea of how much use they have endured. Control levers that flop around and have poorly defined strokes have had plenty of use. Worn pivot pins are an indication that a valve has seen many cycles.

Fully extend the spools and check for longitudinal score marks, wiggle them a bit to see if hydraulic oil seeps out. If it is possible, run the engine bring the hydraulic system up to operating pressure and check for leaks. A valve under pressure should be capable of slowly and surely directing pressurized fluid to do work. If motors or cylinders chatter or operate erratically, internal valve problems may exist.

Very few of the older used tractors are supplied with external hydraulics. The following simple tests may be done to evaluate the hydraulic system:

- Hitch a heavy implement, lift it up and switch the tractor off. The implement should stay in the up position.
- Operate the lift a couple of times. The implement should go up and down smoothly.
- Change the speed of the hydraulic system from fast to slow and see if there is any response.

15. Steering

If the tractor has power steering, rock the steering wheel left and right while the engine is running. The front wheel should begin to move smoothly without any squeals from the relief valves. Rough movement of the wheels may indicate bent hydraulic cylinder rods, worn or seized knuckle joints, due to a lack of lubrication, or too little hydraulic fluid.

With manual steering, a hand movement more than a few centimetres left or right, before the front wheels start to move, may indicate worn steering gears (backlash), or worn pivot joint in the linkage.

Check the gearbox for lubricant leaks around the output shaft seals. Restricted steering wheel movement may indicate bent or twisted linkages or control arms, or poorly lubricated, binding joints.

16. Check for exhaust smoke

If the engine can be run, examine the exhaust smoke. At constant engine speed, black smoke may mean improper fuel, a faulty fuel injection system, incorrect engine timing, or a badly adjusted carburettor. White smoke improper at a constant engine speed could be due to a low engine temperature because of the tractor that was not warmed up or has a faulty thermostat, incorrect engine timing, or a coolant leak into the engine combustion chamber.

Even experts are fooled by exhaust smoke systems. Generally, continuous black smoke in diesels is an injection related problem. If white smoke persists, allow the radiator to cool and remove the radiator cap. Then, while the engine is running again, check for gas bubbles in the radiator that would be indicative of a coolant leak.

Blue smoke comes mainly from an excess of lubricating oil in the combustion chamber, resulting from deterioration of piston ring sealing or valve guide wear, indicating the need for a mechanical overhaul.

17. Drain the fuel tank and fuel filter

Open the fuel tank fitting to bleed accumulated water and sediment from the fuel tank. Tighten the fitting when clear fuel runs out. Open the fuel filter drain plug to bleed accumulated water and sediment from the filter. Tighten the drain plug when clear fuel runs from the drain plug.

To drain air from the fuel tank you loosen the fuel return line. Unscrew the hand primer on the fuel supply pump until it can be pulled by hand. Operate the hand primer until fuel flow is free from air bubbles. Simultaneously stroke the hand primer down and close the fuel return port. This prevents air from entering the system. Tighten securely. Lock the hand primer in position.

18. Replace a fuse

Never replace the fuse with a higher or lower rated fuse. If the original fuse is not carrying any electric load and continuous to blow, have the electric system checked by an expert . Replace a fuse by opening the fuse panel cover. Do not use metal wire instead of a fuse**.**

17-Point Checklist for Tractor and Machine Maintenance

1	Check fluids	
2	Check tyres	
3	Check belts and hoses	
4	Check breaks	
5	Check gauges	
6	Check filters	
7	Check radiator	

8	Check lubricants	
9	Check seals and bearings	
10	Check engine	
11	Check the coolant	
12	Check oil	
13	Check engine and battery	
14	Check hydraulic system	
15	Check steering	
16	Check for exhaust smoke	
17	Clean the fuel tank and filter	

EQUIPMENT REPLACEMENT

Reasons to replace machinery

The decision to replace an item of farm machinery can be made for several reasons.

Cost minimization. The standard rule for minimizing the long-run cost of equipment is to make a change when the annualized total cost of owning and operating the machine begins to increase. In the example shown in Figure 1, this happens in about the 10th year of ownership. At this point repair costs begin to increase faster than depreciation and interest costs decrease. However, the rate at which total costs rise is often very gradual. In this case, the total cost in year 10 is estimated to be R29,846 while the cost by the time the tractor is 15 years old is only R30,450.

Thus, while the rule of increasing total cost can give a general picture of when to replace a particular machine, it cannot give a precise answer. Note that the estimates for repair costs project them to increase gradually over time. In reality, though, repair costs tend to be quite variable from year to year, ranging from only routine maintenance items to a complete overhaul. Being able to anticipate when large repair costs will be needed is a key consideration in deciding when to replace a machine.

Reliability. Besides the standard machinery costs, most operators also consider **timeliness** costs in their replacement decisions. Timeliness costs occur when crops are not planted or harvested at the optimal time. They can be attributed to losses in yield, such as when corn or soybeans are planted too late to enjoy a full growing season, or a loss of quality, such as when

hay or silage is not harvested at its peak nutritional value. If a machine breaks down at a critical time, timeliness costs can be quite high. Timeliness costs are very hard to measure, however, and their importance depends on the weather in any given year. Nevertheless, they should not be ignored, especially in climates where the optimal planting or harvesting period is rather short, and for crops that are particularly sensitive to the effects of weather. Owning machinery that has a high probability of breaking down increases the risk of crop losses.

Pride of ownership. Many farmers take pride in owning and operating new, modern machinery. They may be willing to accept higher long-run costs in return. If the farm business is financially able to bear this cost, there is nothing wrong with "new paint." However, the operators should have a clear idea of how their own machinery costs compare with those of other operations and the scope of their opportunity cost from not having capital invested in other assets.

New technology. In some cases, a machine may be in perfectly good working order, but the introduction of new technology has made it obsolete. Newer models may do a better job of harvesting or planting or operate more efficiently. Care should be taken to distinguish new technology that can increase profits from changes that simply provide more convenience and comfort.

Need for capacity. When the number of acres of crops being produced increases significantly, operators may need to replace machinery with models that have higher capacity to complete planting and harvesting without serious timeliness losses. Likewise, when farm size is reduced, it may be possible to cut costs by downsizing the machinery set.

The farm machinery market. The market for farm machinery is subject to changes in supply and demand, just as for any other product. In particular, the demand for both new and used machinery is strongly affected by ups and downs in the farm economy. The operator who maintains a good capital reserve or borrowing capacity may be able to reduce long-run ownership costs by replacing machinery when dealers have excess inventory and are willing to offer deep discounts to make a sale. When the farm economy is below average, there may be bargains available in used machinery.

General replacement strategies

There are at least four general strategies that farmers can follow for replacing machinery.

Replace frequently. This approach minimizes the risk of breakdowns and costly repairs by trading key machinery items every few years. Even when repairs occur, they often will be covered by the original warranty. Operators who cover a large number of acres each year and would be severely inconvenienced by extended down time are most likely to follow this strategy. Although this is probably a more expensive approach over the long run, some of the extra costs are offset by fewer timeliness losses, the ability to farm more acres, and less need to invest in repair and maintenance tools and facilities.

Operators who trade machinery frequently may find that leasing or rollover ownership plans are more feasible for them than conventional purchase plans. These options are discussed later.

Replace something every year. A second approach is to try to replace one or two pieces of machinery every year. The goal is to spend about the same amount on new equipment each year. This avoids having to make a very large cash outlay in any one year. However, it also could result in replacing machinery before it is really necessary.

This strategy often is used by operators who prefer to finance machinery purchases out of their annual cash flow rather than with borrowed money. It works best when the net cash income of the operation is fairly constant from year to year or when significant cash reserves are available.

Replace when cash is available. A third approach is to postpone major machinery purchases until a year when cash income is higher than average. This keeps the machinery purchase from cutting into funds needed for other purposes such as family living and debt servicing. It also helps to level out income for income tax purposes, although the flatter federal tax rates and the ability to use income averaging have made this less of a consideration than in previous years. The biggest disadvantage of this strategy is that it is very hard to predict when extra cash will be available. Furthermore, a machine may become seriously unreliable before the business has sufficient funds to replace it.

Keep it forever. Finally, some operators simply hang on to machinery until it reaches the point where it can no longer perform its intended function and is not worth renovating. This may be the least cost approach in the long run, but it runs the risk of a machine failing at a crucial time or having to arrange financing on short notice. The operator also must be willing to use less than the latest technology. Some older items can be relegated to less critical uses, such as keeping a second planter for a backup unit or using an older tractor for jobs such as powering an auger or moving wagons. This strategy works best for operators who have

considerable flexibility in when they complete key field operations, and who have the skill, patience, and facilities to do their own repair and maintenance work.

It is clear to this point that recordkeeping with regards to equipment on a farm is of essential importance. To make sure that equipment is kept in good working condition and does not cost the farm more to maintenance than the value it adds, a replacement policy should be implemented. Steps to be followed when setting up the equipment replacement system on your farm:

- Keep a record of the total hours and kilometres your vehicle runs per day/week/month as well as an accumulative record.
- Compare this to the manufacturer's guideline on optimum hours/kilometres your vehicle can travel to remain productive.
- When the vehicle reaches the maximum hours prescribed by the manufacturer, make the cost-benefit calculation, comparing the cost benefit of your existing vehicle with the cost/benefit of purchasing a new one.

CLEANING YOUR EQUIPMENT

Cleaning equipment offers several benefits:

- It prevents dirt from entering the engine.
- It allows you to identify oil leaks, loose nuts, cracked housings and other faults more quickly.
- It enables you to work on the tractor more easily.

Precautions

- Let the engine cool off first – pouring cold water on a hot engine could crack the block.
- Cover the exhaust outlet with a tin to prevent water entering the exhaust system.
- Cover the alternator/generator with a plastic bag.
- Cover the instruments and don't point the hosepipe at them.
- Don't spray directly onto any lights.

Method

- Start by using paraffin to remove grease and oil.
- Clean and remove battery acid with clean, warm water.
- Wet the tractor with clean water.
- Wash it using a soft cloth and mild, soapy water.
- Dry it with a soft cloth.
- Polish it with a motorcar wax compound.

Undercover storage

Storing your tractor properly prevents sun and wind damage to the paintwork, tyres, seat and instruments. It also stops rain from finding its way into instruments, the electrical system and the seat. To build a suitable shelter, simply put up four poles supporting a thatched, plywood or tin roof. Use the same material to construct a wall on the side of the prevailing wind.

Group Formative Exercise 6A

Individual Formative Exercise 6B

Individual Formative Exercise 6C

Unit 7:

Agritourism

Unit Standard	
116315	Recognise agri/ecotourism within the strategic environment
Specific Outcomes	
SO1: Identify the strengths of the Agri/Ecotourism venture as part of the strategic plan. SO2: Identify the weaknesses of the Agri/Ecotourism venture as part of the strategic plan. SO3: Identify the opportunities of the Agri/Ecotourism venture as part of the strategic plan. SO4: Identify the threats of the Agri/Ecotourism venture as part of the strategic plan. SO5: Maintain, appraise and make recommendations on success factors within the strategic plan towards management.	

WHAT IS AGRITOURISM?

Definition: Agritourism is a commercial business at a working farm or agricultural operation conducted for the enjoyment of visitors that generates supplemental income for the owner. (www.agritourismsa.org)

Examples of Agritourism in SA

- Educational services provided by farmers e.g. bread making; cheese making; olive picking
- Nature reserve on farmers land
- Accommodation/Camping Fields
- Activities e.g. Hiking, Cycling; Fishing
- Farm Animal Touch Farms
- Game Farms
- Direct sales to tourists of produce
- Historic farms (cultural experiences)

The benefits of Sustainable Agritourism

- Provides additional income
- Appreciates in value
- Efficiently uses underutilized resources
- Preserves farmland
- Share agricultural heritage and rural lifestyle with visitors
- Maintains family attention and interest
- Provides an opportunity to meet people
- Provides a chance to play a role in community activities
- Promotes the agriculture industry

Responsible Environmental and Business Practices in Agritourism

Waste Management:

- Biodegradable detergents
- Green waste is compensated
- Recycling measures for waste

Water Management:

- Water saving fittings e.g. aerators that are fitted to taps
- Grey water that is re-used for the garden
- Reduced flush cisterns in toilets
- Jugs of water rather than bottled water

Responsible business practice:

- On-the-job training or Skills development plan
- Staff employed from local communities
- Support for local community initiatives
- Support for local producers

Energy Management:

- Lights are switched off when not in use
- Energy saving light bulbs are used
- Solar/wind or heat pump

GUIDING PRINCIPLES OF AGRITOURISM SOUTH AFRICA

- Assisting farmers to educate tourists on the practice of sustainable farming
- Building Environmental Awareness, including awareness of the importance of Biodiversity (Media)
- Empowering farm staff through tourism and entrepreneurship training (SETA's)
- Explaining to tourists the different farming ethics around farming methods, for example, organic farming
- Making local farm fresh products available for sale directly to Agritourists
- Share agricultural heritage with visitors
- Improve relationships between farmers and the local communities
- Assisting farmers with the marketing of agritourism

For purposes of your summative exercise to be done for this unit, let's recap what a SWOT analysis is. (for a comprehensive explanation, refer to Unit 1of this LG)

Strengths	Weaknesses

• Product quality
• Early maturity
• Secure and plentiful water
• Excellent soils
• Good range of high-quality plant material
• Committed ownership
• Good technical production skills
• Good PR skills – well connected
• Labour plentiful
• Close to port / airport
• Innovative management
• Low per unit labour costs
• Labour literacy high (100%)
• Good market potential
	• Labour skills poor
	• Imports of inputs difficult and costly
	• No EurepGap (environmental) compliance
	• No local factory outlet
	• Poor quality and unreliable machinery
	• Packhouse in bad condition
	• No regular management accounts
	• No market access to key markets
	  ○ Japan
	  ○ USA
	• High pest pressure
	  ○ Pests (identified and specific)
	• Low export percentage
	• Lack of available logistics to exploit early maturity of produce

Opportunities	**Threats**

• Expand production an identified and specific commodity into market gaps left by other farmers who no longer produce
• Reduce electricity costs
• Obtain EurepGap (environmental accreditation)
• Improve labour skills through training
	• Water availability
	  ○ Floods – medium risk
	  ○ Drought – low risk
	• Phytosanitary pests and diseases
	  ○ Identified and specific list

• Upgrade equipment reliability
• Improve systems
  ○ Production and packing records
  ○ Human resource
  ○ Finance and reporting
  ○ Marketing
• Explore market niche opportunities
• Investigate lime production
• Investigate local processing
• Gain access to Japan
• Improve nutritional management
	• Management succession
	• Labour unrest
	• Political unrest
	• Security
	• Low market prices
	• Environmental requirements
	• Lack of management depth

Annexure A –D (See at the back of learner guide)

Further reading that you can explore for purposes of the Summative exercise:

https://sustainabilityinstitute.net/.../research-publications?task.

https://www.news24.com/.../South-Africa/Agricultural-tourism-.

ecoatlas.co.za/view/association-of-agritourism-south-africa

https://www.farmersweekly.co.za › Business › Agribusiness

https://www.farmersweekly.co.za › Lifestyl

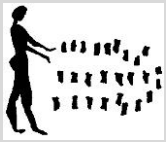
https://www.farmersweekly.co.za › Bottomline

www.tourismupdate.co.za/article/.../Sustainable-Agritourism

www.nstf.org.za/wp.../MsTaylorSustainableAgriTourism.pdf

Individual Formative Exercise 7A

Individual Formative Exercise 7B



Individual Summative Exercise 3

Unit 8:

Accommodate an Audience

Unit Standard	
119472	Accommodate audience and context needs in oral communication
Specific Outcomes	
SO1: Interact successfully with audience in oral communication SO2: Use strategies that capture and retain the interest of an audience SO3: Identify and respond to manipulative use of language.	
CCFO	
Identifying Working Organise Communicating Collecting Demonstrating Contributing	

INTERACTING SUCCESSFULLY WITH AN AUDIENCE IN ORAL COMMUNICATION

Introduction

We will be looking at how to interact successfully with an audience. The focus here is on oral (spoken) communication and we will look in particular at how to make this as effective as possible in a range of situations.

Definition of communication

Communication can be defined as "the exchange of thoughts, messages or information" (Encarta encyclopedia, 2000)

When we communicate, we give or exchange information by, for example, speaking (oral) or writing. To communicate can also mean to show or transmit a thought or feeling by writing, speech, or a gesture (non-verbal communication), so that this thought or feeling is clearly understood. To communicate can also mean to understand each other.

Examples of Oral communication

From the definitions given in the above example, we can see that interaction is a key concept in communication. When you communicate orally, you always do so with an audience - a person (or number of people) who hears what you are attempting to communicate. Notice that we have used the word attempting - not all communication is successful or effective. When people fail to communicate successfully or effectively, this leads to misunderstandings and misinterpretation. Our aim should always be to communicate as clearly as we can. To do this we need to understand a number of different elements about communication. Firstly, we need to understand that the person/people we are attempting to communicate with (our audience) is very important. Generally, even if we are quite shy, we have a number of friends or family members with whom we communicate in a relaxed and easy manner. These constitute small informal groups.

Groups and Group dynamics

Now, let us look at groups that are found in the work or study place. Basically, groups have one or more of the following features:

- Groups consist of a number of people who define themselves as belonging to the particular group.
- Groups generally meet regularly or for a specific length of time.

The group consists of individuals who interact with one another (both verbally and non-verbally)

- Different members take on different roles in relation to one another
- A group generally has a well-defined aim and a specific task to perform
- There is generally a group leader

A group has a **specific purpose** - the purpose might be to decide on a method for completing an assignment, to discuss a new hydration scheme in a particular area, or any other well defined aim.

A group has an **agenda** - a reason for meeting and a list of items that need to be discussed in order to fulfil its purpose.

A group will have a **procedure** to follow and a set schedule - for example the group may decide to have a preliminary meeting to discuss possible dates for reseeding and then to have follow-up meetings to finalise the procedure to be followed when doing the reseeding.

When a group is **meeting**, it is important that developments in the group are monitored - someone needs to record what is happening in the process.

A group must retain **focus** - people often get side-tracked in a group and wander off the topic at hand. Generally, the group leader needs to ensure that the group is reminded of why they are meeting and that the focus must be maintained.

A group needs to **draw conclusions**. It is pointless just having a general discussion without a conclusion being drawn, for example, the group may conclude that certain time periods are

unsuitable for reseeding and that they will have to do some research on the topic, then meet to finalise a date.

In order for effective communication to take place in a group setting, constant **feedback** must be given to members of the group so that they know how they are performing and how the group is progressing.

All members of a group, in order to feel that they have done an effective job, need to feel a **sense of ownership** in the group's final decisions. If this does not happen members of the group will feel bored and left out and not inclined to communicate.

How do we ensure that the contribution you make to the group is appropriate to the specific task at hand? In order to do this, you must keep in mind what the specific task is. When you are sure your contribution is related to the specific task, then go ahead and make your point clearly and concisely.

How do we ensure that the contribution you make is appropriate to the nature of the group? When you are going to contribute think of who your audience is. Is what you wish to say appropriate in terms of the nature of the group? If you feel it is, then make your point clearly and concisely.

Most importantly, how do we ensure that you promote effective communication, which in turn will promote effective teamwork? Remember that your audience is critical. Always bear in mind that for communication to be effective, your audience needs to understand exactly what it is you are trying to say. Communication is effective when the message you wish to convey is the message your audience receives. If you are not sure whether your communication has been clearly understood, try asking a question. The answer will usually indicate whether your communication has been effective. Effective teamwork happens when members of the team communicate their ideas and feelings clearly and listen to one another in an attentive and respectful manner.

Interviews and interview techniques

We have looked at group situations in some detail. We are now going to look at effective communication in an interview situation. An interview can be described as a specific type of interpersonal communication. The word "inter" actually means between. There are generally two people present at an interview - the interviewer, conducting the interview; and the interviewee, who is being interviewed. This person can also be referred to as the

"respondent". An interview is a process in which ideas, information and feelings are elicited by the interviewer from the interviewee for a very specific purpose.

Interviews take place in a wide variety of contexts. In the workplace for example you may conduct an interview with a prospective farm labourer in order to assess his/her suitability for a position you wish to fill.

For an interview to be an effective form of oral communication there are certain key elements that need to be in place.

An interview is an oral communication in which it is important that:-

- ❖ A relationship appropriate to the context is successfully established and
- ❖ A non-threatening opportunity for participants to share information is provided.

Let us look more carefully at what we mean by this.

If it is important that the people you are interviewing need to know that what you are discussing will not be used against them, or spread around, you need to gain their trust. You could do this by informing the interviewees that what they tell you will remain confidential.

If it is important that the person you are interviewing is clear and concise in their answers, then you need to provide or create a context in which you maintain a clear focus on the issue at hand. You could do this by requesting the interviewee to be as precise as possible when answering and to include only relevant information.

If you wish to communicate effectively with the interviewee in an interview situation it is very important that a non-threatening environment is created. Your tone of voice and manner should be friendly and encouraging and you should make every attempt to put the interviewee at ease. When interviewees do not feel threatened and feel that they are not under attack they will be more willing to share information. In this way communication will be more effective.

Now let us look at some key elements of an effective interview. For an effective interview you need to:

- Draw up a plan of what information you wish to receive and how you are going to do this.
- Do some background research into the person you are interviewing; as a minimum you need to know key facts like his/her name; age status; job position; etc.
- Sequence or order your questions in a logical manner. In order to do this, you must be very clear about what information you wish to elicit from the interviewee.

- Be prepared to be flexible - if an interviewee gives an unexpected answer or answers a question in such a way that your sequence is disrupted you must be flexible enough to accept the answer and still ensure that you maintain your focus. This means you must listen attentively and actively to all the responses. Organize the responses you have elicited in a clear and logical manner.
- Draw conclusions in a precise way. At the end of the interview, you must know exactly what information or data you have elicited and what you can conclude on the basis of this data.

Meetings and meeting procedures

Thus far we have looked at two forms of oral communication, namely that which occurs in groups and that which occurs in the interview situation. We are now going to look at a third occasion during which oral communication plays a vital role, in meetings.

In almost all work environments one is required to participate in meetings. The purpose of each meeting may vary, or you could be asked to attend regular set meetings on a weekly or monthly basis. As in all forms of oral communication, it is important that your participation in these meetings is effective. In order to communicate effectively in meetings, it is vital that the purpose and context of the meeting is clearly understood.

In order to participate in a formal meeting in an appropriate manner you need to be familiar with some key concepts related to meeting procedures and organization. Let us now look at some of these. Notice of the meeting: This is an oral or written communication that indicates the intention to hold a meeting; it will usually also stipulate the date, time and venue of the meeting. Agenda: This is a prepared list of items that are to be discussed at a meeting; an agenda will usually contain apologies from members who are unable to attend; confirmation of minutes (the written record) from the previous meeting; matters arising from the minutes; a list of items to be discussed at the present meeting; any other business; conclusion. Committee: This is a group of people who is accountable to a higher authority. Committee members can be voted for or appointed.

Example:

The Chairperson appointed Ms Mohammed, Mr. Parker, Ms September and Mr. Plaatjies to form a committee to compare the efficiency of different planting methods for grapes.

Minutes: This is the official written record of who was present at the meeting and what was said by people at the meeting; it will also record decisions made for action to be taken.

Example:

"After much discussion during which Ms Le Grange expressed her dissatisfaction with the present arrangements for staff transport, the meeting decided to purchase a dedicated mini-van that would operate after hours, transporting workers to their homes"

Point of order: This is a way of calling the attention of the Chairperson to the fact that you think an irregularity in procedure has taken place. The Chairperson is required to decide whether this is so or not. Chairperson: This is the person who runs (or presides over) the meeting. When addressing a point to the chairperson you are required to be formal and use the words "Madam Chair" or "Mr Chairman". The chairperson is in the leadership role during the meeting. He or she has to control the proceedings; he or she has to call for apologies; confirm the minutes of the previous meeting; make sure the agenda is followed; rule on points of order; exercise the casting vote in the case of a voting tie; sum up the decisions of the meeting; confirm the date of the next meeting and declare the meeting closed. Suggestion for learners: Think of a recent work meeting you have attended. How could the Chairperson have improved his/her chairing? Write up a few guidelines for ‘good chairing practice’. Motion: This is a proposal that is put to the meeting regarding an action or in order to show a certain attitude. Motions are proposed as positive statements.

Example:

Mr. Habib proposed the following motion: all plant order forms to be signed by the treasurer. The motion was seconded by Mr. Bezuidenhout. The meeting indicated by a show of hands that it was in favour and the motion was adopted.

These are some of the main components of a formal meeting. It is important that you understand all of these in order to participate effectively and appropriately in a formal meeting. Remember this is another example of oral communication and the context has to be clearly understood by you in order for effective participation to take place. In this way you will ensure that you are making a valuable contribution towards realising the objectives of the meeting.

Debates: - formal and informal

We are now going to move on to look at two other forms of oral communication, namely debate and negotiations. Again, in order to communicate effectively in these two arenas you will need to be aware of the context and the audience. Let us look firstly at what we mean when we say we are going to debate an issue. To debate means to talk or argue about an issue; to talk about something at length and in detail, especially as part of a formal exchange of opinion; Debates can be an organized or public meeting for discussion: or an argument. The word comes from the Old French "debat", originally from Latin "battere" meaning to fight. Debates can be formal or informal.

Formal debates follow certain set procedures. The topic for debate is always stated in the positive, e.g., "Genetic modification of plants is unhealthy". There are then two opposing speakers (or teams of speakers), one that supports the motion and one that opposes it. Both speakers are given an opportunity to put forward their ideas and then questions from the floor (the audience) are allowed. After that each speaker (or one member of the team) is allowed to sum up. Then the debate is adjudicated (judged) by an impartial source. The adjudicator must decide which side presented the strongest arguments. Finally, the proposed motion is either accepted or rejected.

It should be apparent to you that in order to convince someone of your side of the debate, effective communication is critical. Arguments need to be presented in a clear and unambiguous manner; research into the topic for debate needs to be done and effective listening skills need to be employed when listening to questions from the floor.

Negotiations: - definition and strategies

Another form of oral communication that often occurs in the workplace is negotiation. To negotiate is to discuss terms of an agreement; to attempt to come to an agreement on something through discussion and compromise. Negotiation takes place between two parties, which are attempting to decide what each party can offer the other in exchange for something they would like to have. Once again, context and audience are critical factors in this type of oral communication.

Friend-based negotiations

•One friend usually takes the early lunch break whilst the other takes the later lunch break. The friend who takes the later lunch break wants to change to the earlier lunch break for a week. In exchange she promises her friend that she will change the time of her lunch break for a week whenever the other friend requires this.

A group of friends want to start a saving scheme together. Some friends believe each member should contribute R50 a month whilst others feel that if they save R50 every two months there is a greater chance of the scheme succeeding. If the first group's suggestion works the payout will take place every month

Workplace negotiations

Management has decided that annual holidays are to be reduced by three days. The staff members are threatening to refuse to work on Saturdays if this happens.

The workers on a farm have had their lunch break shortened by 15 minutes, they are therefore claiming the right to a longer tea break; the manager has decided that Ms Dlamini is no longer required at the front

Successful Negotiations

There are certain key elements, which can determine whether or not negotiations are successful. Here are some important points to remember:- For negotiations to be successful, the negotiator needs to: x Get as much background information about the issue and the other parties involved in the negotiating process as possible; x Do an analysis of the needs of the other party in order to make sure you understand their point of view; x Ask as many relevant questions as possible, to ensure you understand the facts relating to the issue and a clear grasp of the attitudes of the opposing party; x Make positive statements about what you are prepared to do in order to encourage the other party to lower their demands; x Listen as attentively and actively as possible to make sure you understand exactly what the other party is asking for;

Pick up clues from non-verbal communication - remember that body language says a lot about how someone is feeling; observe closely to see whether the opposing party is being aggressive or tentative or firm in their approach; x Stress common interests before highlighting differences; x Be as flexible as possible; x Make sure that minor differences have been sorted

out before moving on to the bigger issues; x Keep a cool head and be as rational and logical as you can; do not allow emotion to cloud the issue; x Do not threaten the other party - always attempt to reach a compromise. x Make sure that neither side loses face or feels hurt or humiliated by the negotiating process. Once again we can see that effective communication will lead to a more positive outcome for all the parties represented in a negotiating process.

DIFFERENT SOCIO-CULTURAL CONTEXTS

We are now going to look at how the way we respond to the manner in which others express themselves is affected by and is sensitive to different socio-cultural contexts.

In South Africa we have a wide range of cultures. We are in the fortunate position since 1994 of being exposed to people from a range of different socio-cultural backgrounds both at work and in our social interactions. While this is generally a positive thing, which leads to an interesting diversity in our lives it, can lead to misunderstanding if we are not aware of differences in cultural contexts. Let us look more carefully at what we mean when we use the word "culture".

Culture refers to the system of values, beliefs, traditions and behaviour of a particular group. It also refers to the accepted social practices of a particular group of people which makes this group unique. In South Africa people often define themselves as belonging to a certain culture on the basis of language and ethnicity, as well as religious, geographical or political affiliation. We need to look at how communication is affected by cultural context. The sociocultural context in which we operate influences how we express ourselves. In South Africa we often have to engage in intercultural communication. This is communication between groups of people from different cultures.

When we are engaged in intercultural communication the following important points must be borne in mind:-

- People from different cultural groups might have different world views;
- People from different cultural groups might use different communication styles - both verbal and non-verbal;
- When people from different cultural groups communicate there is often an element of anxiety that they may be misunderstood;
- When people from different cultural groups communicate it is essential that they communicate very carefully;

- When people from different cultural groups communicate the results are not always completely predictable.

Example:

An elderly Xhosa man might object to being told how to plant grapes by a young English-speaking man. • In some African cultures it is considered impolite to make eye contact with a superior. This could be interpreted by a Westerner as a sign of shiftiness (sneakiness). • A farm worker whose home language is Sotho may feel very anxious about having to express herself in English to the person taking down her personal details f or UIF purposes. • A young urban person may use the word "cool" to indicate that everything is alright; if the audience is from a rural cultural group they may not understand this use of the word and take it literally. • You may believe that you have treated an older rural Tswana woman in a polite manner by being distant and formal; she may feel as if you have been abrupt and unfriendly.

Remember that our response to the ways that people from different groups express themselves is influenced by the socio-cultural context in which communication takes place.

Bearing this in mind here are some tips to ensure that you communicate successfully with your audience in an intercultural context:

- ❖ Avoid apathy (a don't care attitude): Be aware of and sensitive to sociocultural differences between yourself and others;
- ❖ Do not make assumptions: Never assume that what you have heard about other cultures is true - check this out for yourself;
- ❖ Avoid stereotyping: Do not fall into the trap of making generalised negative statements about a certain socio-cultural group;
- ❖ Be flexible and open: Do not resist change and always be open to new possibilities - listen carefully to new ideas and be prepared to change your old attitudes to those from different socio-cultural groups;
- ❖ Be aware of and sensitive to different world views;
- ❖ Be aware of and sensitive to the fact that others may speak a different language;
- ❖ Be aware of differences in non-verbal communication from different sociocultural groups;
- ❖ Rid yourself of prejudices: Some of us have strongly held negative beliefs about certain cultures - this is a terrible barrier to effective communication;

- ❖ Always attempt to build trust: Effective communication is more likely in an atmosphere of trust.

USING STRATEGIES THAT CAPTURE AND RETAIN THE INTEREST OF AN AUDIENCE

Introduction

The way you use your voice during a presentation can keep your audience at the edges of their seats, or make them fall asleep!

Use of voice

Firstly, we are going to look at how you can use your voice most effectively to ensure that you deliver presentations in a successful way. Our voices have an incredible range - we can vary our manner of speaking a great deal in order to ensure that our audience understand our message and is kept interested Let us now look at some key elements of our oral communication that relate to delivery.

Pace refers to the speed at which you speak; the degree of urgency or sharpness with which we deliver an oral communication. We can vary the pace of delivery. We can have a rapid fire delivery (fast pace), an even, well-modulated mode of delivery (medium pace) or a very deliberate rate of delivery (slow pace). Sometimes we may feel it is appropriate to use a different pace for different parts of our delivery.

Pause refers to a small break in our delivery. A pause is the verbal equivalent of a comma or full stop. Pauses can be used to emphasise an important point; in this case we would be pausing for dramatic effect; a pause can show that we have reached the end of one point and are about to move on to the next; a pause could indicate a small break between each item in a list of things; a pause could give the audience time to absorb the previous point. Stress is another element in oral communication.

To stress a word or phrase is to emphasise it. It is the equivalent in word processing of using the Bold function. We can stress the most important word in a phrase, or we can stress the

most important phrase in a sentence. Sometimes we will also inform the audience that we "wish to stress" an important point.

Volume refers to the amount of sound we make. We may speak very quietly (low volume) or use a middle range volume (medium volume) or we may speak very loudly (high volume). We must always choose the appropriate volume for our audience. It is important that we can be heard at all times, and it is generally inappropriate to shout at people. An intimate one-on-one context usually calls for a low volume. If, however we are addressing a large audience we may need to increase the volume until we are speaking relatively loudly. Intonation refers to the pitch of the voice: the rising (high) or falling (low) pitch of the voice when we say a word or syllable; or the rising and falling pattern of speech generally.

Generally, we need to vary our pitch or intonation in order not to sound boring and monotonous. When we address an audience we always have a message to put across or convey. Whether or not we do this successfully will often depend not only on the content of our message but also on the delivery. The elements given above all refer to delivery. It is pointless preparing an excellent speech which we then deliver in a monotonous and boring way at an inappropriate volume - the message will not get across successfully

Non-verbal Communication

This topic is body language - also sometimes referred to as nonverbal communication. Our gestures, facial expressions, mannerisms, and the way we hold ourselves convey a number of messages to our audience.

Facial expressions are a very clear indicator of a wide range of emotions. For example, we can signal certain emotions by smiling to show happiness or pleasure, frowning to show anger or displeasure, raising our eyebrows to show disbelief or amazement, turning down the corners of our mouth to show disgust or disapproval, widening our eyes to show surprise. [You can check how effectively you use these expressions by looking into a mirror and attempting to show as wide a range of emotions as possible.] We can of course control our facial expressions in order either to not show any emotion or to show an emotion we are not feeling.

Example:

Non-verbal communication

Some examples of when you might disguise your feelings are • When you might be getting very bored in a meeting but need to appear interested and attentive. • When you are irritated by someone's attitude to you, but the context demands that you show a friendly positive response. • When you find something someone has said very amusing b

How do we ensure that our facial expressions are appropriate to the context in which we are operating? We need to be sensitive to our context in order not to convey an inappropriate message through our facial expression.

For example, it would be extremely inappropriate to indicate great joy and happiness at a funeral. It would also be very inappropriate to convey through our facial expression that we found a worker's responses to our questions extremely amusing; it would be inappropriate for us to show pleasure if a colleague gets hurt. Always be aware of the context in which you are operating. We also need to be aware of the topic which is being presented either by ourselves or someone else and ensure that our facial expressions are appropriate to this topic. If we are presenting a talk on the toll that HIV/AIDS is having in rural areas it would be extremely inappropriate to convey amusement. If we were required to negotiate a settlement between two colleagues it would be inappropriate to show anger and aggression.

When we are communicating orally we can use our facial expressions to help us convey our message effectively. We can also use gestures and body posture (the way we hold our body) in ways that help us to ensure our body language is appropriate to the context in which we are operating and to the topic we are presenting. Appropriate facial expressions, gestures and body posture can also help us reinforce the main ideas and attitudes we wish to convey to our audience. The definition of a gesture is a body movement made in order to express meaning or emotion, or to communicate an instruction.

Gestures send visual signs to onlookers and also transmit information. Some examples of gestures are:- throwing our hands in the air; touching our hair or clothes; wagging a finger in the air; wringing our hands; giving a "V" for victory sign; making an obscene hand gesture; punching the air in triumph, shrugging our shoulders, signalling to the waitress to bring the bill, and so on.

Our gestures can sometimes be unconscious, that is, we are not aware of making them. You should become as aware as possible of all the unconscious gestures you make which could get in the way of effective communication. For example, you may fiddle with a pen, you may keep touching your hair or clothes, you may constantly smooth your eyebrows or your moustache or play with your jewellery.

All these gestures, and others like them, can be very distracting to your audience and prevent your communication from being as effective as it could be. Ask friends or family or fellow students to assist you in becoming as aware as possible of unconscious gestures you make. Effective public speakers on the other hand, will consciously and deliberately use gestures in order to emphasise their main points and emphasise their attitude to issues.

Body posture or stance is the way we carry ourselves. Body posture often indicates what our attitude is to the interaction we are involved in and towards our audience. Body posture conveys information such as whether we are bored, attentive, relaxed or tense.

PLANNING FOR FORMAL ORAL PRESENTATIONS

Formal oral communications are always planned in the written form first in order to ensure that they are effective.

You need not write out the entire oral presentation word for word, but you need to have a very detailed plan of what you are going to say written down. This means you should plan what you are going to say in your introduction, in the main body of your oral communication, and how you are going to conclude.

The introduction is always important as this is how you capture the audience's attention from the start. A dull, boring introduction will cause the audience to lose interest and their attention may start wandering. You may want to briefly explain the purpose of your presentation and why you consider it important. You might want to use an amusing anecdote to put the audience at ease. You may want to use a startling example to grab everyone's attention.

Example 1: Rape is a bad thing. It is growing in South Africa. People are faced with a life sentence if they are found guilty of rape.

Example 2: Ladies and gentlemen, in the time it will take me to introduce this topic, another 5 women or children will have been raped. Think about that. This is the shocking nature of the enormous problem we all face in South Africa.

The plan for the **main body** of the presentation should be very detailed. You need to plan in terms of paragraphs, each one of which contains a separate important idea, or set of facts. You must ensure that there is a logical link between each of the ideas you wish to present.

The conclusion to an oral presentation represents your closing comments. It is the last impression you will leave with your audience.

You may want to briefly summarise what you have covered in the main body of your presentation, or you may wish to pose questions for the audience to think about. Always try to end on a high note and to create a good lasting impression. Plan your concluding remarks carefully.

When planning an oral presentation, you need to be prepared to practise it out loud in order to check how long it takes to present. You need to be very clear about what the time constraints for any oral presentation are and ensure that you stick to these. If an audience is expecting a 15-minute address on something and get either a 4-minute presentation or a 30 minute one they will feel dissatisfied, and your communication will not have been effective.

You also need to make sure that the content of your oral presentation is relevant to the context in which you are presenting and to the needs of your audience.

Let us say you have been asked to present a talk on "The issues surrounding genetic modification of plants." There is a great difference for example in how you would choose content for this presentation if it was for fellow learners or if it was for a meeting of gardeners who work in Stellenbosch residential area.

Use of visual aids

A visual aid can be defined as a visible instructional or educational aid; something such as a model, chart, film or video, that is looked at as a complement (addition) to a lesson or presentation. When you communicate orally with an audience by doing a presentation or a talk, it is often helpful to use visual aids, as these will enhance your presentation and make it more effective. You should always ensure that the aids you choose are appropriate to your topic and the context of your audience. You also need to ask yourself whether your choice of visual aids is really assisting the audience to understand what you are presenting.

Here are some examples of visual aids:

- Flipcharts
- Slide projectors
- Videos & Films

- Overhead projector transparencies
- Handouts
- Whiteboards
- Graphs
- Posters
- Photos
- Power Point presentations

When using visual aids there are certain key points to bear in mind. Always remember to:

- Ensure that the visual aids are clear and understandable;
- Prepare all your visual aids well in advance and know exactly where in the presentation you are going to use them;
- Make sure that all the equipment you will be using is in good working order and that you can use it competently;
- Ensure that the visual aids are suitable for the venue by checking that they are clearly visible from everywhere in the venue;
- Ask yourself whether these visual aids will make your oral communication more effective.

We are now going to look at how you can use three specific aids in order to enhance your oral communication.

The first is **cue cards.** These are an aid to your own presentation and are not shown to the audience. Cue cards contain a brief summary of the main points of your presentation. You can use short phrases or simply use key words written out on cards that may be referred to when you are making an oral presentation. The purpose of this is to help you avoid reading your speech and thus maintain better eye contact with your audience. You can simply refer to the cards from time to time as your guide. It is critical that your cue cards are relevant and will serve to remind you of what you want to say. Try writing out cue cards which can act as a prompt for that particular presentation.

Handouts are another useful addition to ensuring the effectiveness of an oral communication. A handout contains the most important elements of your presentation and are handed out to the audience; either to look at as you present - in which case you can refer them to particular

points on the handout; or to keep as a useful summary for their own benefit after the presentation.

Here are a few points to bear in mind when preparing handouts:-

- They should be neatly presented
- They should contain the main points of your presentation
- They should be complete enough to make sense as a document on their own.

Multi-media aids refer to the use of more than one medium in your presentation, for example a video is an example of a multimedia aid as it can be both an audio and a visual aid. You could also use CD's combined with slide shows, or tapes combined with a series of graphs presented on a flipchart. Make sure however that you do not overwhelm your audience and end up distracting them with too much technology! You must ensure that you are confident about the way to use the visual aids you have chosen, otherwise your audience will get distracted and instead of enhancing your oral presentation you will have detracted from it.

Audience interaction & continuity

We have looked at a range of techniques you can use in order to make your oral presentation as effective as possible. Now we need to move on to look at what happens in an actual presentation. How, while you are presenting, do you maintain continuity and interaction? Continuity refers to the flow of your presentation and interaction refers to what happens between you and members of the audience. Continuity needs to be maintained at all times and interaction is to be encouraged between you and your audience.

Here are some of the elements you need to be aware of. How do you respond to queries? Responding to queries in a positive way is critical. Members of the audience might ask you to tell them more about something you have said; may want to know where to go for more information; may query some of your opinions, and so on.

Always try to respond positively to a query. Thank the person for asking the question. Attempt to answer the question as clearly and as concisely as you can. If you are not sure of the answer do not pretend that you are - rather tell the questioner where he or she could find the answer or tell them you will get back to them with the correct answer.

If you are not sure that you have understood the question that has been put to you then reword it and check whether you have clearly understood what you are being asked. This is in order to ensure clear effective oral communication.

You may also try and reword information that is quite complex so that all members of the audience can follow. An example of this might be "HIV attacks the immune system. In other words, it stops the body from being able to fight off disease effectively." The way you time your speech or presentation is also important. Make sure that if you have two main points to put across, in order to be effective, you should allocate more or less equal time to both issues. Think back to the planned speech you gave. Were you aware of the timing issue? Timing techniques in your actual presentation are also critical. Never give the impression you are rushing over a point or are not prepared to give enough time to audience queries. This will lead to ineffective audience interaction.

Now let us look at how you should respond when you believe that audience contact is being lost. Let us think back to the section on body language. Remember that body language gives us clues to how people are feeling. You must, when presenting an oral communication, be responsive to your audience. Study their body language.

Here are some clues that contact is being lost:-

- Members of the audience are restless;
- People are looking at their watches;
- People are not maintaining eye contact with you;
- People are yawning;
- People are whispering to one another;
- People are scribbling on their papers, and so on.

This is the time for you to consider using some of the techniques we have mentioned above. You could:

- Reword your information;
- Ask a question;
- Ask for questions from the audience;
- Vary your pace (speed) of delivery;
- Ensure that your voice is varied in intonation;
- Project an air of confidence through your body language;

- Make good eye contact, and so on.

IDENTIFYING AND RESPONDING TO MANIPULATIVE USE OF LANGUAGE

Introduction

We will now look at identifying and responding to manipulative use of language. Every day of our lives we are confronted by a number of verbal messages encouraging us to make certain choices or believe certain things. We need to look carefully at how advertisers, reporters and politicians, to name a few, use language in such a way as to influence and manipulate us.

Manipulative language

What do we mean by "manipulate" and "manipulative"? In the context of language use, to manipulate means to control or influence somebody or something in a clever or devious way. It can also mean to change or present something in a way that is false but personally advantageous. Some examples of where we find manipulative language being used are news clips, political speeches, marketing material, and advertisements. Of course, in our daily interaction with friends, our peers and family, we can also experience manipulation, and may even at times attempt to manipulate others.

Example:

- The farmer manipulated the residents into believing that he had not harmed the environment by using pesticides as he emphasized only the positive aspects of pest control. •
- The producers of a solar energy device claimed that you would save thousands by using this instead of electricity but did not mention that the cost of the device was far beyond most people's budgets.
- The newspaper report manipulated the buyers to purchase advertised fruits by minimizing discussion on the loss of nutrients caused by genetic modification of those foods.
- The Manager of Canal Irrigation Services did not mention the disadvantage of the furrow method of irrigation where plants nearer the water source may receive more water than those further away, so that farmers were more likely to opt for this system of irrigation.

- Cape plc initially denied liability for causing asbestosis choosing to disregard the evidence of 7500 asbestosis victims in the Northern Cape where the asbestos plant was functioning, so that they could continue production.

Facts and opinions

In order to understand manipulative language, it is important that we learn to distinguish fact from opinion.

A **fact** is a statement about an object or event on which we can check up in order to ensure it is accurate.

An **opinion** on the other hand is a statement about an object or event which reflects what we think about it - what our opinion of it is. It is important to be able to distinguish between the two. Advertisers and politicians may often state opinions in such a way that they appear to be facts. Sometimes people have such strongly held beliefs that they think they are facts. Clever politicians and people who are trying to persuade us about something often use a blend or combination of fact and opinion. In order to avoid being manipulated we need to be clear about the difference between the two.

Omission of facts

Sometimes we are presented with messages or pieces of information which are incomplete. How do we make sure that the omission (leaving out) of necessary information is noted by us and how do we address this?

In order to avoid being manipulated and in order to form our own independent opinions about certain events or products we need as detailed a picture as possible. We need to be alert to what is not being said in the same way as we need to be alert to what is being said.

Sometimes information is deliberately omitted in order to present a certain point of view.

Sometimes we are given insufficient facts and information is omitted which could lead us to form incorrect opinions on something. This is often the case in a seemingly objective factual type of report. For example, if we hear of research that seems to prove something, we need to ask who did the research, on whom was the research done, where was it done, how does it compare with other research and so on. Only then can we make up our minds about the results.

There are many instances in political speeches, news reports, and advertisements where necessary information is omitted.

- **Persuasive language features**

You should by now have a reasonably clear idea about how persuasive the English language can be and how speakers (and writers) can use language to manipulate their audience into doing or believing things. We are going to look at three features or elements of language that particularly affect the audience's interpretation of spoken texts.

The first feature is **tone.**

Tone can be defined as a way of speaking; the way somebody says something as an indicator of what that person is feeling or thinking, e.g., "she spoke in a very sad tone about the death of her mother"; "she had a defiant tone in her voice when she argued with the vice-rector". It can also refer to the general quality or character of something as an indicator of the attitude or view of the person who produced it, e.g., "the optimistic tone of the news report"; "the salesperson adopted a very sincere tone when talking about the vacuum cleaner."

Obviously the general tone of the speaker will have an effect on his or her audience. An enthusiastic, optimistic speaker will be persuasive and could even be manipulative by making the audience feel happy and pleased about something when maybe they should be taking the issue more seriously, or asking more questions.

Similarly, an incredibly pessimistic speaker who is full of doom and gloom will affect his or her audience and may even manipulate them into feeling apprehensive and anxious about something which is actually not that frightening.

The next feature of language we need to consider is **style**.

Style can be defined as a way of doing something; a way of expressing something, especially a way regarded as expressing a particular attitude; e.g. "She has a very confrontational style when she speaks to a large audience". "He adopts a condescending (patronising) style when talking to his colleagues."

The style in which a speaker addresses his or her audience can also obviously have an effect on how the audience interprets what is being said. A persuasive style can be used to manipulate you, an exaggerated style can be used to stir up our emotions and stop us thinking clearly. A factual style could even bore us, but it could, if used in a manipulative way, convince us to do something or buy something. Try to take note of what style of speech good effective public

speakers use. Also, if you have recently been persuaded to buy something or to believe in something, think what style the person who convinced you used.

Lastly in terms of language features that affect audience interpretation, we are going to look at **point of view**.

Point of view is someone's personal opinion on a subject, shaped by his or her own character and experience, e.g. "Because she is a staunch Roman Catholic, Noleen has the point of view that abortion is a sin". "It is my point of view that women should get paid more than men because I think they work harder."

A point of view can be negative or positive. Your point of view can be pro (for) something or anti (against) something. It is very hard to have a neutral point of view. Political speakers often present their points of view as if they were facts when in reality they are simply opinions.

Advertisers also assume certain points of view are universally accepted whereas they are simply opinions. An example of this would be the way advertisers assume that we all have the point of view that to look younger than we are is a good thing. This is simply an opinion.

News reports can reflect a particular point of view. The way the facts are reported could be biased or slanted to reflect a particular point of view. Check this out for yourself the next time you listen to a news report.

Distortion of language

Let us now look at the idea of distortion of the spoken word.

Distortion in this context can be defined as misleading alteration; the altering (changing) of information in such a way that the audience is misinformed or misled. e.g., "When she gave her talk on World War II she distorted the facts by leaving out the role played by black soldiers."; "When he spoke about Jan van Riebeek's arrival at the Cape he distorted the facts by neglecting to mention that there were already people living in the Cape."

We can see from these examples that one way of distorting a presentation is to **omit** (leave out) certain key facts; another way is to only **select** information that reflects a particular point of view.

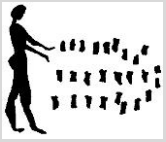
Group Formative Exercise 8A

Group Formative Exercise 8B

Individual Formative Exercise 8C

Group Formative Exercise 8D

Group Formative Exercise 8E



Individual Summative Exercise 4

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Annexure A

What is Agritourism?

Dru Rivers and her child pick a pumpkin at the family's Full Belly Farm pumpkin patch.

Farm/ranch recreation refers to activities conducted on private agricultural lands, which might include fee-hunting and fishing, overnight stays, educational activities, etc. This category of tourism is a subset of a larger industry known as agritourism. Agritourism is "a commercial enterprise at a working farm, ranch, or agricultural plant conducted for the enjoyment of visitors that generates supplemental income for the owner."

Agritourism and nature-tourism enterprises might include:

- Outdoor recreation (fishing, hunting, wildlife study, horseback riding).
- Educational experiences (cannery tours, cooking classes, or wine tasting).
- Entertainment (harvest festivals or barn dances).
- Hospitality services (farm stays, guided tours or outfitter services).
- On-farm direct sales (u-pick operations or roadside stands).

Agritourism is a subset of a larger industry called rural tourism that includes resorts, off-site farmers' markets, non-profit agricultural tours, and other leisure and hospitality businesses that attract visitors to the countryside.

Rural Tourism differs from agritourism in two ways. First, rural tourism enterprises do not necessarily occur on a farm or ranch, or at an agricultural plant, they do not generate supplemental income for the agricultural enterprise.

Potential Enterprises:

Outdoor Recreation:

- Horseback riding
- Wildlife viewing & photography

- Fee fishing
- Camping/picnicking (combined)
- Fee hunting
- Wagon/sleigh rides
- Cross-country skiing
- Game preserve
- Clay bird shooting
- Off-road vehicles

Educational Experiences:

- School tours
- Garden/nursery tours
- Winery tours
- Agricultural technical tours
- Historical agriculture exhibits
- Crop sign I.D. program
- Micro-brewery tours
- Exotic animal farm

Direct Agricultural Sales:

- On-farm sales
- Roadside stand
- Agriculture-related crafts/gifts
- U-pick operations

Accommodations:

- Bed & breakfast inn
- Farm/ranch vacations
- Guest ranch
- Youth exchange
- Elder hostel

Entertainment:

- Concerts or special events
- Festivals or fairs
- Petting zoo
- Hunting/working dog trials/training

Miscellaneous:

- Guide/outfitter operation
- Farmers' market
- Horse pack team

Annexure B

Pilot project shows potential for agricultural tourism in Wisconsin (Research Brief #6)

Posted December 1992

Agriculture and tourism — two of Wisconsin's most important industries — are teaming up in southwestern Wisconsin. A pilot project has found that tourists, rural communities, and some farmers could benefit from stronger efforts to promote and market agricultural tourism there.

In 1990, agricultural tourism project members surveyed 290 visitors to the annual Monroe Cheese Festival and 164 visitors to the Picnic on the Farm, a one-time event held in Platteville in conjunction with the Chicago Bears summer training camp. More than one-half of those surveyed responded favourably to a proposed tour, saying they would be interested in participating in some type of agricultural tour in southwestern Wisconsin.

Survey respondents reported that they would prefer to visit cheese factories, sausage processing plants, dairy farms, and historical farm sites, as well as enjoy an old-fashioned picnic dinner. The study also found strong interest in visiting specialty farms (strawberries, cranberries, poultry, etc.).

More than 75 percent of the Cheese Day visitors planned ahead for the trip, with 37 percent planning at least two months in advance. More than 40 percent of the visitors came to Monroe for two- or three-day visits. Many stopped at other communities on their way to Cheese Days. Visitors at both events indicated that they were there to enjoy themselves and were willing to spend money on food and arts and crafts. They also wanted the opportunity to experience the "country" while there.

The study found that planning around existing events should take into account what brought visitors to the area and provide additional attractions that will appeal to them. For example, visitors to Cheese Days said they were on a holiday and appeared to be more open to various tour proposals. Picnic visitors came specifically to see the Chicago Bears practice. They showed less interest in a proposed agricultural tour than Cheese Day visitors, but more interest in a picnic dinner.

The study identified three primary audiences for agricultural tourism: 1) elderly people who take bus tours to see the country; 2) families interested in tours that could be enjoyed by both parents and children; and 3) persons already involved in agriculture, including international visitors.

Agricultural tourism can serve to educate urban tourists about the problems and challenges facing farmers, says Andy Lewis, Grant county community development agent. While agriculture is vital to Wisconsin, more and more urban folk are becoming isolated from the industry. In fact, Lewis notes, farmers are just as interested in the educational aspects of agricultural tours as they are in any financial returns.

"Farmers feel that urban consumers are out of touch with farming," Lewis says. "If tourists can be educated on issues that concern farmers, those visits could lead to policies more favorable to agriculture."

Animal rights and the environment are examples of two issues that concern both urban consumers and farmers. Farm tours could help consumers get the farmer's perspective on these issues, Lewis notes.

Several Wisconsin farms already offer some type of learning experience for tourists. However, most agricultural tourism enterprises currently market their businesses independently, leading to a lack of a concerted effort to promote agricultural tourism as an industry.

Lewis is conducting the study with Jean Murphy, assistant community development agent. Other participants include UW-Platteville Agricultural Economist Bob Acton, the Center for Integrated Agricultural Systems, UW-Extension Recreation Resources Center, the Wisconsin Rural Development Center, and Hidden Valleys, a Southwestern Wisconsin regional tourism organization.

This past fall, Murphy organized several workshops with some Green and Grant County farmers, local business leaders, and motor coach tour operators to discuss how best to organize and put on farm tours. Committees were formed to look at the following: tour site evaluations, inventory of the area's resources, tour marketing, and familiarization of tours. The fourth committee is organizing tours for people such as tour bus guides and local reporters to help better educate them about agricultural tourism.

Green County farmers already have experience hosting visitors during the annual Monroe Cheese Days. Green county Tourism Director Larry Lindgren says these farmers are set to go ahead with more formal agricultural tours next year. The tours will combine a farm visit with a visit to a local cheese factory and a picnic lunch.

Another farm interested in hosting an organized tour is Sinsinawa, a 200-acre Grant County farm devoted to sustainable agriculture and run by the Dominican Sisters. Education plays a major role at the farm, which has an orchard, dairy and beef cows, and hogs.

Farm tours could be combined with other activities in the area such as trips to the Mississippi River and/or visits to historical towns or landmarks, Lewis says. The project will help expose farmers to the tourism industry and farm vacations as a way to possibly supplement incomes, he adds. While farm families probably wouldn't make a lot of money through farm tours, they would be compensated for their time, says Lewis.

Farmers could earn additional income through the sale of farm products, crafts, and recreational activities.

Below are results from the 1990 survey of Monroe Cheese Days and Picnic on the Farm visitors.

The first table shows the degree of interest in a proposed agricultural tour.

The second table shows how the visitors would rank various activities in the proposed tour.

Table 1: Interest in proposed tour		
	Percent of Visitors Attending	
Degree of Interest	Cheese Days	Picnic
Eager	30.9	13.8
Some Interest	47.2	54.1
Don't Feel Strongly	15.1	21.1
No Interest	6.8	11.0

Table 2: Interest in specific activities in proposed tour		
Activity	Cheese Days (Rank)	Picnic (Rank)
Cheese Factory Visit	1	2
Sausage Processing Visit	2	2
Dairy Farm Visit	3	5
Picnic Dinner	3	1
Historical Farm Visit	3	3
Crop Farm Visit	4	6

Annexure C:

Measuring Quality of Life: A Case Study of Agritourism in the Northeast

Abstract

Evaluation of Extension programs is critical for accountability and improved program effectiveness. However, measuring outcomes remains a challenge for many types of programs, especially those that aim to improve the quality of life of participants. The study reported here examined changes in quality-of-life indicators as part of a measure of farm viability. Farmers participated in agritourism trainings in the Northeast and impacts of the trainings were evaluated through an Internet survey 1 year later. The index developed to measure quality of life for the agritourism program may be adapted for evaluation of a wide variety of Extension programs.

Keywords: agritourism, quality of life, indicators, outcomes, evaluation

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Introduction

Evaluation of Extension programs has become increasing sophisticated during the past two decades, as expectations to report measurable outcomes have become the norm in many Extension systems. The need for evaluation of Extension programs has been emphasized in the

literature (Radhakrishna & Martin, 1999), and efforts to improve evaluations of Extension programs have yielded several studies measuring the effectiveness of programs (e.g., Guion, Turner, & Wise, 2004; Scott, Reed, Kubena, & McIntosh, 2007). Different types of measurable outcomes can be evaluated, ranging from short-term increases in knowledge to medium-term changes in behavior to long-term achievement of desired conditions (Chase & Kuehn, 2010). Long-term changes in conditions may include improved profitability, environmental standards, and quality of life.

Quality of life (QOL) is a central concern for individuals and communities (Chase, Boumans, & Morse, 2010), which makes it an especially important outcome to measure. However, QOL is a particularly difficult concept to measure as it has multiple definitions and meanings, and can be examined at several scales, ranging from an individual to a community to a country (Chase, Amsden, & Phillips, 2012). Costanza et al. (2007) describe QOL as "a multi-scale, multi-dimensional concept that contains interacting objective and subjective elements." To measure QOL, indicators are used that can be divided into subjective and objective categories. Subjective indicators reflect an individual's perceptions of satisfaction in several life domains, including work life, family life, social life, and leisure life. Objective indicators include external evaluations of income levels, family life, social life, and health (Sirgy, Rahtz, Cicic, & Underwood, 2000).

The goal of the study reported here was to evaluate the impacts of Extension programs on changes in quality of life. As such, the focus was on subjective quality of life indicators that reflect an individual's perceptions of satisfaction in work and leisure. This article begins with background on the case study, an Extension program to support agritourism in the Northeast. Methods for evaluating outcomes are presented, followed by results focused on QOL indicators. Discussion and conclusions assess the contributions of the QOL indicators and the need for further research and outreach to improve our ability to measure the impacts of Extension programs on quality of life of participants.

Background

Agritourism is defined as a commercial enterprise on a working farm conducted for the enjoyment, education, and/or active involvement of the visitor, generating supplemental income for the farm (Chase, 2008). Agritourism is important to quality of life for economic and cultural reasons, promoting experiential education, preserving traditional land use, and contributing to a rural sense of place. In many cases, agritourism allows farmers to diversify their core operations and keep farmland in production while preserving scenic vistas and maintaining farming traditions. Although agritourism is growing rapidly in the Northeast region,

the industry remains underdeveloped in many states, lacking technical assistance support, infrastructure, and networking opportunities to ensure best practices (Kuehn &Hilchey, 2001). To address these concerns, Extension educators and farmers in Northeastern states collaboratively developed a program of agritourism training modules consisting of workshops and follow-up technical support. With funding from a USDA Sustainable Agriculture Research and Education grant and additional resources, 19 workshops were held in 10 states (ME, MD, DE, VT, NH, NY, MA, CT, WV, RI) between January 2009 and March 2010. Evaluations were conducted on-site immediately following the workshops to assess short-term outcomes. An Internet survey was conducted 1 year later to assess medium- and long-term outcomes. Both the on-site and Internet evaluations included questions about improvements in farm viability, which was defined as increases in profitability and/or increases in quality-of-life indicators, including personal time and personal satisfaction.

To measure changes in QOL, an index of indicators was needed for the Internet survey. Researchers typically use indicators as a way to quantify quality of life concerns and considerations, rather than directly attempting to measure these abstract concepts (Wong, 2006). A literature review on quality of life revealed extensive works examining both subjective and objective aspects of quality of life, ranging from individual to county to national data (Sirgy, Rahtz, Cicic, & Underwood, 2000).

However, indicators measuring changes in quality of life as a result of an intervention (e.g., an Extension program) were not found through the extensive literature review. The most relevant study was the Iowa Farm and Rural Life Poll, which directly asked farmers about their perceptions of "quality of life" during the past five years (Arbuckle, Korsching, Lasley, & Kast, 2008). In this example, indicators were not used, and the meaning of quality of life was subject to interpretation by the respondent. This was effective for Iowa Farm and Rural Life Poll's objective because the same farmers were surveyed annually since 1982.

However, for the purpose of measuring impacts of a one-time Extension program on quality of life, an index of indicators with straightforward questions is needed. Our study addressed this need by developing such an index and applying it to an Extension program on agritourism in the Northeast.

Methods

A total number of 763 farmers, service providers, and others participated in the 19 workshops. A questionnaire was handed out at the end of each workshop (conducted between January 2009 and March 2010) to collect baseline data on farm operations and to assess the

knowledge gained from the workshop and the likelihood of adopting new practices. One-hundred-forty-three completed questionnaires were received from farm operators, 129 of which included contact information for farmers willing to complete an on-line follow-up survey, which was administered in January 2010. Five follow-up e-mail reminders were sent every 2 weeks after the initial mailing, following recommendations from the Tailored Design Method (Dillman, 2007).

The on-line survey included questions on demographics (gender, year of birth, number of people in household, years of education); involvement of household members in the business; perceived impact of the farmer's business on local networking and the community; and impact of the economy, weather, workshop, and family life on the business. Farmers were asked to describe any business income and expenses during the previous 12 months that resulted from the workshop or technical assistance received. Questions regarding how the respondent's business has impacted the local community and business networking used a five-point scale ranging from highly negative impact to highly positive impact. An identical scale was used to identify the impact of the economy, weather, workshop, and changes in family life on the business during the previous year. Respondents were asked to identify changes in seven variables related to personal time and personal satisfaction over the past year, using a five-point scale ranging from greatly decreased to greatly increased. To measure quality of life, a new set of indicators was developed based on related literature and our direct experience working with numerous agritourism stakeholders, including farmers, consumers, visitors, community members, and Extension educators.

A principal component factor analysis with Varimax rotation was used to identify factor composition for "changes in personal time" and "changes in personal satisfaction." The mean value for each factor was obtained by averaging the variables included in each factor (averaging was used to maintain the five-point scale and enable interpretation of results). Cronbach's alpha was used to identify the reliability of the two factors; an alpha of 0.7 or higher indicates adequate internal consistency of factors (Hair, Anderson, Tatham, & Black, 1998).

Results

Response and Demographics

Of the 129 surveys distributed to farmer participants at the workshops, 62 responded, for a response rate of 48%. Most of those owned a farmstand (32% of respondents; n = 62), u-pick operation (29%), farm-stay bed and breakfast (14%), greenhouse/plant nursery (11%), or Christmas tree farm (11%) or operated farm tours (10%). Smaller percentages (less than 8%)

of respondents owned a winery, retail store, or corn maze; functioned as Community Supported Agriculture (CSA); or sold maple products. Seventy-two percent of the respondents were female, 79% were married, and the average age was 55. The average respondent had 16 years of education, with 69% having 4 years or more of college education. The average household size of respondents was 2.5 people, ranging from one to six household members. Respondents indicated that household members were moderately involved in their agritourism business (i.e., most household members sometimes assisted with farm operations).

Impact Variables

Results indicated that 64% of farms had implemented agritourism improvements or new ventures. Examples included involvement in local schools, social media marketing, maple tours for the off-season, pairing and tasting events, and educational nature trails. Farm owners were asked how certain external elements (e.g., the economy, the workshop) affected their business and how their business affected others (e.g., networking opportunities among local businesses). The economy and the weather were identified as having a negative impact on the farm business during the previous year, both having a mean value of -0.61 (Table 1). In contrast, the workshop was identified as having a positive impact on the farm business (mean = 0.66); changes in family life had a slightly positive impact (0.21). Respondents indicated that their business had a positive impact on networking opportunities, marketing, the economy, job availability, and residents.

Time and Satisfaction Factors

QOL indicators included a series of questions about personal time and satisfaction. Over two-thirds of respondents reported increased enjoyment from sharing farm life and/or heritage with visitors, and 71% reported increased enjoyment from meeting new people through their business. Over half reported increased personal satisfaction from their business, while 45% reported no change, and 2% reported a decrease. However, the increases in QOL indicators were tempered by 29% reporting a decrease in the amount of free time they have, and only 9% reporting an increase in their free time after diversifying to include or expand agritourism on their farm. The majority of respondents (62%) reported no change in free time. Regarding the amount of time respondents spent with family during both work and free time, 72% reported no change, 16% reported an increase and 12% reported a decrease.

Principal components factor analysis revealed two factors: "changes in personal time" and "changes in personal satisfaction". Changes in personal time included the variables of "changes in the amount of time I spend with my family (during both work and freetime)" and "changes in

the amount of free time I have." The factor mean was -0.08, a neutral value indicating that the average respondent had neither increases nor decreases in their amount of family time or free time. The 29% reporting a decrease in the amount of free time was offset by those reporting increases or no change in the amount of free time combined with those reporting no change or increases in the amount of time spent with family during both work and free time. The reliability of this factor was moderately high at alpha = 0.722.

The "changes in personal satisfaction" factor included the variables "changes in the amount of personal satisfaction I receive from my business," "changes in my enjoyment in sharing farm life and/or heritage with visitors," "changes in my satisfaction with preserving the agricultural landscapes of my farm," "changes in the wages I receive from my business," and "changes in my enjoyment with meeting new people through my business." The factor mean was 0.64, a positive value that indicates that the average respondent had an increase in the satisfaction they received from their business. The reliability of this factor was high (alpha = 0.876).

Discussion and Conclusions

Improving quality of life is a central component of Extension's mission in many states. For example, the mission of University of Vermont Extension is "to improve the quality of life of Vermonters by providing research-based educational programs and practical information concerning Vermont communities, families and homes, farms, businesses, and the natural environment." ("UVM Extension", n.d., para.1). As the Cooperative Extension System celebrates its centennial anniversary, the impacts of Extension programs on quality of life through improvements to working landscapes, rural communities, and productive farms are evident to those of us working in Extension. However, Extension personnel are increasingly required to quantify these impacts in response to calls for accountability from the public and from the legislature. It is critical to develop ways to measure and quantify the long-term impacts of our programs and provide measurable results, especially for nebulous but important concepts like quality of life and community well-being.

A need exists, therefore, for the development of indices and indicators focusing on changes in quality of life as perceived by participants in a specific intervention, such as an Extension program. In addition, these impacts should be measured over the long-term and incorporate external variables (such as the economy and the weather) that are beyond the participant's control. To address this need, our study developed two primary indicators of quality of life, (changes in personal time and personal satisfaction) to measure the impacts of Extension programs on participants. Testing these indicators using an Extension program designed to support agritourism in the Northeast revealed high measures of reliability for both factors.

Another challenge for evaluation is to clearly attribute positive long-term impacts to Extension programs. By definition, long-term impacts happen over time, usually 12 months at least. Measuring these long-term impacts from Extension efforts can be difficult, especially while uncontrollable variables (e.g., the economy) continue to influence quality of life. Our study revealed that while the economy and weather did have a negative impact on quality of life for our survey respondents, the Extension workshops had a positive impact during the 12 months following the workshops. Respondents also revealed that their farm businesses had a positive impact on local networking opportunities, marketing, the economy, job availability, and residents during these 12 months, likely increasing the quality of life for others in their community. Although our study focused on the direct relationship between Extension programs and quality of life of participants, Extension efforts may have a broader impact on quality of life than originally considered as Extension clientele influence the quality of life of others in their communities.

In conclusion, the QOL indicators identified in our study proved useful for evaluation of the Northeast agritourism program as a case study; however, further examination of the index is needed as well as adaptation of the index to other types of Extension programs. The relative importance of QOL indicators should be measured, and methods for doing so have been developed (Andereck&Nyaupane, 2011). By including the relative importance, QOL indicators can be weighted and combined to create aggregate measures of quality of life for each individual. To examine transferability and further assess reliability, the QOL indicators must be adapted and applied to a variety of Extension programs. Comparison across Extension programs will not only improve the tools available for measuring QOL, it will also help us understand and document the far-reaching impacts of Extension programming on the quality of life of participants and their communities.

Acknowledgments

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Annexure D

Agritourism adds value to agriculture

11:30 (GMT+2), Mon, Monday, February 16, 2015

The Breedekloof Wine Route includes 22 wineries in the Rawsonville, Slanghoek, Goudini and Breede River areas.
Photo: Melody Botha

Annelie Coleman

South African farmers operate in a difficult agricultural and economic environment, and for many it has become imperative to find new ways of generating additional income. In a bid to do this, some have started to embrace tourism. Breedekloof Wine and Tourism CEO, Melody Botha, spoke to Annelie Coleman about the growing interest in agritourism.

To what extent has agritourism added value to your members' businesses and the region as a whole?

Agritourism, specifically wine-tourism, is one of the fastest-growing sectors in the ecotourism industry. There is nothing new about this form of travel, which involves staying on a farm and sampling the day-to-day lifestyle. On some farms, the goal is less about focusing on a unique holiday and relaxing in a beautiful setting, than fostering an understanding of the farming process through education and hands-on experience.

In the Breedekloof Wine Valley, 95% of the area's accommodation facilities are now situated on farms. Self-catering cottages and campsites can be found on the banks of rivers, nestled in vineyards or hidden in the mountains among the fynbos. Although we don't yet offer hands-on activities, we do provide visitors with a 'working farm experience', as well as give them access

to rivers and mountains, and hiking trails and mountain bike routes developed by the farmers.

Do you think the SA agriculture sector has grasped the opportunities presented by agritourism?

Agritourism, as it's broadly defined, involves any agriculturally-based operation or activity that brings visitors to a farm. Although I believe the South African agricultural industry has been hesitant to embrace agritourism, the sector's growth has skyrocketed during the past three years. Apart from on-farm accommodation, the region also has a number of festivals that are aimed at farming and harvesting activities, such as Hands on Harvest in Robertson.

What opportunities exist for agritourism in South Africa?

Agritourism could be a viable, alternative agricultural enterprise for farming communities. Producers in the Breedekloof Wine Valley have begun to embrace agri- and wine-tourism, and are offering hiking trails, mountain bike routes, horse riding, and a variety of accommodation options on their farms.

These activities could be developed still further to include involvement in daily farming activities as well as harvesting and pruning. (Picking cherries in Ceres is a good example.) Farmers could also increase their exposure by distributing brochures, forming networks with existing tourism establishments, encouraging the use of local and fresh produce, and providing good roadside signage.

Agritourism can help to enhance the demand for local produce, boost regional marketing efforts, and create value-added and direct marketing opportunities to stimulate local economic activity. We have a wide variety of agricultural activities in South Africa – livestock, dairy, grain, wine production, fruit growing, and more. All these can be developed into tourism ventures so that visitors can feel they are really part of the experience. Incorporating wildlife and conservation aspects into farm tours will also help to create awareness of South Africa's biodiversity and illustrate how farmers are looking after the land for the benefit of future generations.

What are the potential pitfalls that farmers have to look out for when embarking on an agritourism venture?

As with any tourism experience, it's important not to try to present something you are not, but rather ensure that every aspect of what you present is 100% authentic. We need to be

proudly South African and proud to be part of the farming community, allowing people to see and experience our way of life.

In the Breedekloof Wine Valley, we've realised that we need to focus on the stories we have to tell, as this is what makes us unique. We are proud of our heritage and our wines and this is the message we send out to visitors to our region.
Don't try to be everything to everyone; rather focus on what you know. Quality and service are non-negotiable. Link up with your local tourism organisations and/or wine routes so that funds, knowledge and experience can be pooled to market the region and develop the local tourism products. Training all employees is of the utmost importance and should be ongoing.

Visitors want to experience the unique atmosphere of a destination. You therefore need to create fresh, innovative experiences. Picking a bunch of grapes can be just that, or it can be part of a story, a life-changing experience that visitors will take with
them and relate to their friends. Travellers no longer believe what tourism organisations and marketing bodies tell them – they prefer referrals and listen to friends' experiences. The best form of marketing is having an ambassador, someone who believes in you and your product. This is one of the reasons that authenticity is so important.

Who are the typical clients that agritourism businesses should target?

Today's travellers no longer want traditional one-dimensional holidays. Instead, they want meaningful experiences that enrich their lives and broaden their perspective on the world. More travellers are searching for value-for-money holidays, combined with memorable experiences and interacting with locals. A good example is eating local food in the company of locals, as this gives visitors the chance to really 'experience' a destination.

Is your marketing predominantly aimed at international tourists?

I really believe in trying to attract South African tourists. In the Breedekloof Wine Valley we focus on the domestic market, including the greater Cape Town area, Gauteng and KwaZulu-Natal. However, with the growing popularity of our region, we also have an international following. Our focus is on people, especially families, who want to get out of the city and focus on nature.

A destination such as South Africa has a wealth of outdoor locations as well as great weather. Combining these with growing tourism activities such as cycling (which has been called 'the new golf'), health, lifestyle and wine-tourism, will ensure an enjoyable experience.

You mentioned marketing exposure earlier. Are there other ways in which agritourism operations can advertise their presence?

To begin with, agritourism should not be seen as separate from other tourism products. Limited resources and funding mean that farmers need to link up with regional and provincial marketing organisations when it comes to producing brochures, maps and other marketing material.

There is also the ever-growing importance of social media. According to eMarketer, social media users across the globe increased 18% in 2013 to more than 1,7 billion users. About 350 million photos were uploaded daily on Facebook in 2013, while Instagram had 58 million daily uploads, and WhatsApp 400 million images a day. The tourism sector has embraced social media, and those brands that actively engage their customers become increasingly popular.

Are there any other potential **spin-offs for the South African economy from agritourism?**

By combining tourism with the uniqueness and diversity of local agriculture, agritourism could create opportunities for local farmers to increase their revenue and enhance the viability of their operations. Importantly, this will benefit local communities by helping to increase employment opportunities.

Agritourism could also provide an excellent vehicle for educating the public about the importance of agriculture and its contribution to the country's economy. It would therefore clearly be to the advantage of local municipalities and government agencies to devote more resources to developing and promoting agritourism.

Just one way in which they could encourage agritourism is to reduce the red tape around signage and rezoning. This in itself would help to encourage farmers to get involved.