



National Diploma Farm Business Management

Handout 8 Red Meat in a Green Environment



Red meat in a green environment

by Nicolette Hall and Prof Hettie Schönfeldt



Ethics is becoming increasingly important. Indeed, consumers are increasingly suspicious about the food industry and how their food choices may affect the environment. The result is that consumers are increasingly opting for products produced in an environmentally sustainable way.

In 2011 the world's population reached 7 billion, and it is projected to grow to more than 9 billion by 2050, much of which will be concentrated in low-income countries. Population growth and increased food demand place strain on the environment to produce higher volumes of food while natural resources are decreasing. Furthermore, in South Africa, there is a rapid shift in consumer classes from low-income groups, who consume mainly staple foods and some variety, to middle-income groups (refer to *Red Meat/Rooivleis* Vol 4, No 3, p91). The emerging middle classes can afford more meat, fruit and vegetables. This means nearly 80% more meat, 60% more cereal and 30% more roots and tubers will have to be produced by 2050.

As the demand for red meat rises, the industry is increasingly facing new risks, such as consumer concern over red meat's role as a sustainable food choice.

Sustainability and human health

Since humans adopted an agricultural lifestyle about 10 000 years ago, our sustainability has been intimately tied with food production. Agriculture feeds more than 7 billion people globally, and advances in agricultural technology over the past 40 years have increased productivity to feed an additional 4 billion people, while using less than 10% more land. Unfortunately, more than 800 million people around the world are suffering from food insecurity, malnutrition or hunger owing to insufficient access to nutritious foods. In South Africa, about one in four pre-school children suffer from nutrient deficiencies during their

developmental years and are too short for their age (stunted). These nutritional deficiencies significantly influence brain and body development, severely affecting their productivity in later years of life.

The environmental effect of human diets correlates with the amount of food and energy consumed. Yet, humans need all the different essential nutrients from the food they consume. As a result, national food-based dietary guidelines recommend the consumption of a variety of foods. In South Africa, our food-based dietary guidelines recommend that fish, chicken, lean meat or eggs be eaten daily.

Globally, the quality in addition to the quantity of the food consumed remains in the spotlight. Focusing on nutrient-dense choices should therefore be more important than eliminating or discriminating against specific food groups. If a reduction in meat consumption is considered, all potential effects of reduced meat intake should be taken into account. Red meat contains many important nutrients for good health and is an important contributor of nutrients to the South African diet. When meat is reduced, it is often compensated for by an increase in the consumption of other foods types, which might not be beneficial to the environment.

In terms of environmental impact, a study in France found that when fruit and vegetables were isoenergetically (similar in energy content) substituted for meat, either no or greater effects on greenhouse gases were observed as significantly more fruit and vegetables were needed to maintain the energy and nutrient requirements of the diet. In terms of nutrient adequacy, a 75 kg male needs to obtain an average of 0,66

g protein per kg bodyweight (± 50 g protein per day). Consuming 50 g dietary protein from lamb or mutton meat would produce 2 kg CO₂ equivalents during the production process. Obtaining the same amount of protein (50 g) from apples for instance, would produce more than double this amount at 4,5 kg CO₂ equivalents.

Local scenario

While 12% of South Africa's land can be used for agricultural production, only 22% of this is considered high-potential arable land. The greatest limitation of the remaining 78% is the restricted availability of water owing to uneven and unreliable rainfall. Traditionally, inhabitants of these regions rely mostly on domestic grazing animals. This is seen particularly with sheep grazing on semi-arid lands, such as the Karoo, or cattle ranching in the bushveld. Livestock production in these areas positively contributes to the available food supply, population health and the economy.

Apart from livestock production on semi-arid lands contributing to increased food production in South Africa, focus should also be placed on local breeds. These local breeds have adapted to our unique environment, have a higher resistance to pests and disease, while forming part of the local agro-ecosystems. These locally bred animals have a lower carbon and water footprint than many international breeds.

Red meat is a nutrient-dense food choice and is important for brain and body development of children. In South Africa, about one in four pre-school children suffer from nutrient shortages during their developmental years often making them too short for their age.

Sustainable diets are defined by the Food and Agricultural Organisation of the United Nations (FAO, 2010) as:

- having a low environmental impact
- contributing to food and nutrition security and the healthy life for present and future generations
- protective and respectful of biodiversity and ecosystems
- culturally acceptable, accessible, economically fair and affordable
- nutritionally adequate
- safe and healthy
- optimising natural and human resources.

Impact on environment

In a report by the FAO published in 2006 entitled *Livestock's Long Shadow* it was reported that the agricultural sector is the largest user of land and water and is responsible for 18% of global greenhouse gas emissions. This report is frequently quoted in the press, but it has been criticised as it was suggested that livestock produce more greenhouse gases than transportation. National reports in general classify agricultural processes at lower levels within the overall carbon portfolios; dwarfed by large transportation and energy-sector contributions, especially in developed countries.

In the United Kingdom the contribution of the livestock sector has been determined at a lower rate of 8% of total greenhouse gas emissions. In the United States the Inventory of US Greenhouse Gas Emissions and Sinks: 1990 to 2009 (EPA, 2011) found that the agricultural sector (including cultivation and livestock production) accounted for only 6,3% of total greenhouse gas emissions. A recent report estimated the net contribution of livestock to greenhouse gases to be only 4,5%.

Agricultural activities contribute to emissions of greenhouse gases through a variety of processes, including enteric fermentation associated with domestic livestock, livestock manure management, rice cultivation, agricultural soil management and burning of agricultural residues. From these processes, agricultural soil management for cultivation of crops (for human or animal consumption) contributed most to green-



house gases (EPA, 2011). Direct livestock emissions (enteric fermentation and manure) contributed to less than 3% of total emissions in the US report (EPA, 2011).

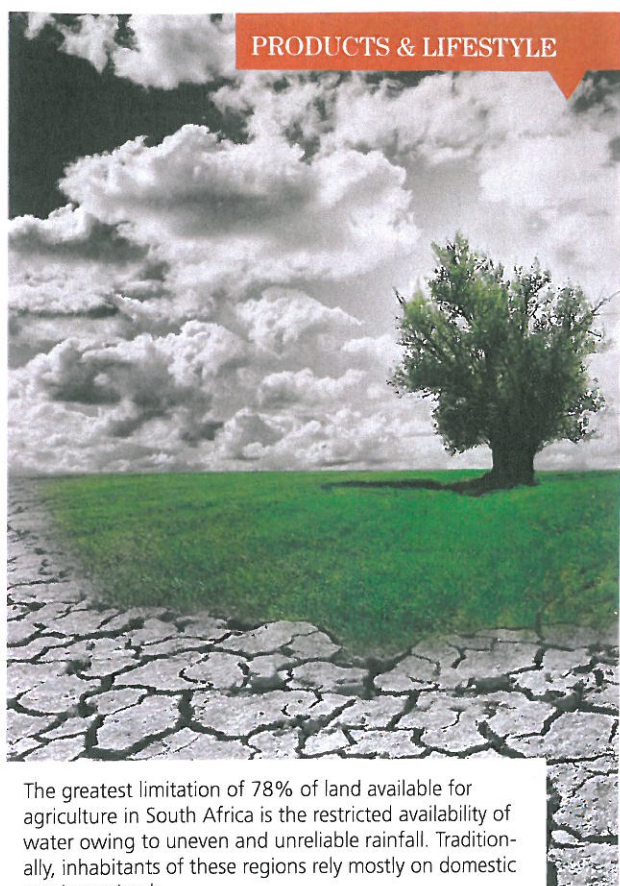
Currently, many different methods are used to measure and assess the environmental impact of animal rearing, making it difficult to compare results and set priorities for the continuous improvement of environmental performance along production chains. As a result, the FAO has established a multi-stakeholder initiative Partnership on the Environmental Benchmarking of Livestock Supply Chains through a consultative process, which started in October 2010, between the FAO's Animal Production and Health Division, and agriculture and food business representatives. The overarching goal of this initiative is to contribute to improved environmental performance of the livestock sector while considering social and economic viability. The partnership promotes an exchange of data and information, technical expertise and research geared towards improving and harmonising the way in which livestock food chains are assessed and monitored.

Activities planned for the first three years of the project include establishing science-based methods and guidelines on how to quantify livestock's carbon footprint, creating a database of greenhouse gas emission factors generated for the production of different kinds of animal feed, developing a methodology for measuring other important environmental criteria, such as water consumption and nutrient losses, and biodiversity, and initiating a communication campaign to promote the use of the knowledge obtained.

In 2012, Red Meat Research and Development South Africa (RMRD SA) launched a cross-cutting focus area on climate effect, adaptation and mitigation for sustainable livestock production in South Africa (www.rmrdsa.co.za). The challenge-facing research and development is to support livestock farmers in developing new and adapted technologies to attain production systems reducing greenhouse gas emissions, water use and waste.

Conclusion

Although livestock production has its environmental challenges, it can make positive contributions to other aspects of the environment, population health



The greatest limitation of 78% of land available for agriculture in South Africa is the restricted availability of water owing to uneven and unreliable rainfall. Traditionally, inhabitants of these regions rely mostly on domestic grazing animals.

and the economy. From a nutritional perspective, people from developing countries, such as South Africa, who have low energy or protein intakes may in fact benefit from increasing their intakes of livestock products.

Animal production can also contribute to economic viability and sustained livelihoods. Although the majority of people in semi-arid regions throughout South Africa and the rest of the continent sustain themselves primarily by growing crops, not all practice food production. Because of inadequate rainfall and high evaporation rates, average crop yields are often low, and the risk of crop failure is high. Traditionally, inhabitants of such regions rely mostly on domestic grazing animals. In South Africa this is seen particularly with sheep grazing on semi-arid lands, such as the Karoo.

Communicating the role of South African sheep meat as part of an environmentally sustainable diet is one of the focus areas of Lamb and Mutton South Africa. For more information and resources visit the website at www.healthymeat.co.za, or e-mail info@healthymeat.co.za. 