



Harvest and Market the Crop

Handout 5

Safe Use of Pesticides

Pesticides

Pesticides are toxic chemicals that are used to protect crops, to control household pests and nuisance insects, and to eliminate vectors of human and animal diseases. Vectors are organisms that carry pathogens from one host to another.

Classes of pesticides are commonly named after the pests that they help to control, for instance insecticides control insects, herbicides control weeds, fungicides control fungi, and rodenticides control rodents.

Since pesticides can be extremely harmful, they should be applied, handled and stored in accordance with the instructions given on the label or on the manufacturer's safety data sheet for the product. Because of the potential health hazards associated with pesticides, application rates should be controlled to limit the number of residues on produce and only pesticides approved for use on a specific product or in food processing facilities should be used.

Registration of a pesticide is a scientific, legal and administrative process to enable authorities to control quality, use levels, labelling, packaging and advertising. Data required for registration of a product include its chemical and physical properties, effectiveness, toxicity for assessment of human health hazards and a prediction of the environmental effects that it may have.

Pesticides should be used only when needed and only in the amounts that will adequately control pests. Minimising the amount of pesticide used reduces costs and helps to protect the environment. The pesticide label is the ultimate source of information for determining the proper application rates for a specific pesticide.

It is recommended that growers document and verify that the pesticides used come from certified distributors, and that competent authorities approved their usage.

Pesticide Handling

Pesticide handling should be controlled through every phase, from acquisition through storage to use in the fields. It is very important that the persons in charge of handling these products are aware of the possible danger that they hold, and follow the instructions printed on the label or on the information page that usually accompanies the product.

Pesticide Application

The instructions for application of a particular pesticide should be read carefully before using the product. Information such as restrictions for its use, application rates, approved doses, number of applications and minimal intervals between applications should be carefully considered. Pesticides are supplied in liquid, solid, or gaseous forms. It is important to follow label instructions for the mixing, loading and handling of the specific pesticide being used and the actual conditions of use. The amount

of pesticide concentrates needed to treat a specific site should be carefully calculated. The water used to prepare pesticides should be free of pathogenic organisms.

Special attention should be paid to spray equipment, pumps and nozzles used to apply pesticides. To minimise the potential for over or under treatment, accidents and spills, they should be calibrated for accuracy and checked frequently for malfunctions. Spray equipment should be regularly washed to prevent possible contamination of fruits or vegetables with compounds not authorised for that commodity and to avoid accidental overdosing.

Warning signs should be posted on fields that have recently been treated with pesticides to prevent workers or visitors from inadvertently coming in contact with treatment chemicals. Such signs should only be removed after the established re-entry period into the field has passed so that residual levels are at an acceptable level.

Pesticide Storage

The amount of pesticide on hand should be kept to a minimum by buying only what is needed for the season or for the specific application. The pesticide storage facility should:

- Be properly identified and signposted
- Be away from animal shelters, human habitations and all water sources
- Have a concrete floor to facilitate clean up in the event of a spill or leak

Pesticide Residues

High levels of pesticide residues on crops may be a hazard to humans who eat the produce. To regulate pesticide residues, a legal limit known as the maximum residue limit (MRL) is developed for each pesticide. The MRL is the maximum level of residue of a chemical substance that is legally permitted to remain in or on a crop when sold. This limit is used to provide reasonable assurance that the consumer will suffer no adverse effects from consuming the product, even over a lifetime of exposure.

Although strict adherence to MRLs might not be feasible for some countries because of economic constraints, those countries relying on food export profits should monitor for and comply with these MRL levels in order to maintain credibility as responsible exporters. The Citrus Growers' Association of Southern Africa publishes and updates a document called The Recommended Usage Restrictions for Plant Protection Products. This document indicates the MRL for all plant protection products that is registered for use on in South Africa, and the withholding period for each product. The withholding period is the length of time before the fruit is harvested that the product must not be applied in order to ensure that the residue levels will be within the acceptable range when the fruit is harvested. Although this will give a good guideline to all fresh fruit the specific regulations need to be obtained for a specific fruit.

If the guidelines contained in this document are strictly adhered to and the pesticides are applied in the correct dosages, the risk of exceeding MRLs is limited.

Pesticide Disposal

Instructions and restrictions on pesticide disposal are available from the product's manufacturer and may also be established by local environmental regulations.

Empty pesticide containers should be washed multiple times and taken to an appropriate place for disposal. Empty, properly rinsed containers can be disposed of at most sanitary landfills. In view of the persistent, volatile nature of many pesticides, disposal by burning or burying on the farm is discouraged. Never dispose of pesticides or pesticide containers in unused wells or near water sources.

Excess spray and rinse water from cleaning of equipment can be sprayed on sites or crops listed on the label.

Training and Documentation

Records of training for the proper handling and application of pesticides should include:

- Employee's name
- Experience or employment date
- Position or job performed by the employee
- Date of training
- Training topics
- The institution responsible for training and instruction records or certificates
- Signature of trainer

Pesticide records must contain information on:

- Crop data (variety, planting date, etc.)
- Name of pesticides used
- Place of application
- Dosage
- Application dates
- Time period before harvest
- Name of the person responsible for the application

Date of last equipment calibration