



Information Sheet

9.12 Roguing

In agriculture, the term 'roguing' refers to the practice of identifying and removing plants with undesirable characteristics from fields. This includes diseased plants and rogues i.e. unwanted volunteers and off-type varieties. It is an essential routine requirement for the elimination of diseases such as smut (Figure 1) and mosaic (Figure 2), and for the removal of unwanted varieties from Certified and Approved Nurseries. This practice is also effective in managing smut in commercial fields in most situations, when done correctly.



▲ Figures 1 and 2: Smut and mosaic infected sugarcane stools.

Roguing to reduce the spread of smut

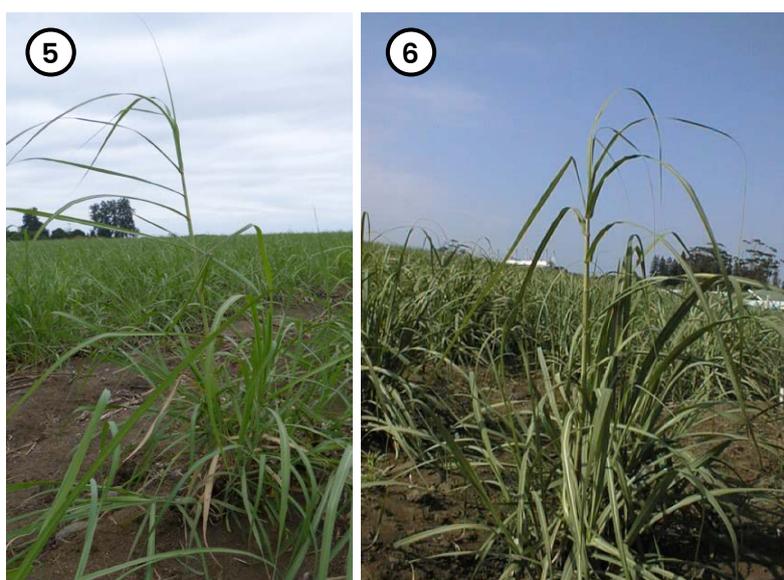
In terms of clauses 77 and 78 of the Sugar Industry Agreement (2000), the Local Pest, Disease and Variety Control Committees must monitor sugarcane in their Control Areas and, with the approval of SASA, specify hazard levels and remedial operations for selected pests and diseases. Smut is one of these diseases and compulsory remedial operations for this disease include routine scouting, and roguing and crop eradication when hazard levels are exceeded.

When sugarcane is infected with smut, a long, black whip-like structure emerges from the top of the shoot over time (Figure 3). These whips produce billions of infectious spores (Figure 4) that are well adapted to wind dispersal but can also be spread in rain and irrigation water. The purpose of roguing is to remove smut whips and eradicate infected plants from the field before the whips mature. This minimises the dispersal of spores within fields and to surrounding fields and farms, slowing down the rate of infection. When roguing is done properly and is carried out by all the growers in an area, the operation can substantially reduce levels of smut and maintain the disease at a low incidence.



▲ Figures 3 and 4: Emerging smut whips.

Roguing is most effective, easier to perform and has less impact on production when carried out in the early stages of crop development. This is usually from 8-12 weeks after planting or harvest (depending on growing conditions), when the cane is just above ankle height and the first flush of whips is likely to appear. Ideally, roguing should start when stools are at the 'incipient whip' stage, i.e. before whips begin to emerge (Figures 5-6). Note that emerging and mature whips are easy to identify but field workers will require special training to recognise incipient whips.



▲ Figures 5 and 6: Incipient whips.

The most effective time for roguing is after the first spring rains and before the cane canopies. Roguing can continue until the canopy is about 1.5 m in height but becomes more difficult and less effective at this stage. Since infected cane produces whips over an extended period, several roguing operations are usually required in each crop. Roguing is generally not feasible when smut levels are high. A crop eradication order will be issued when smut exceeds area-specific hazard levels.

Three methods of roguing are practised in the South African sugar industry – manual (or stool roguing), chemical (herbicide roguing), and whip roguing (not recommended) .

Manual / stool roguing

Infected stools are physically dug out using a hoe or similar implement.

If done correctly, the infected base of the plant is removed so that no further whips are produced from it during the current or following seasons. However, stool roguing is often difficult and time-consuming, particularly when the soil is hard. In many cases, the infected shoots are simply cut off at the base and much of the infected plant is left in the ground to re-grow, providing a source of smut spores later.

It is recommended that teams work in pairs, one person to identify infected stools and to cut off emerging whips and the other to dig out the stool. It is also advantageous having additional people to collect and replace filled bags for the roguing teams.

Procedure

- Cut emerging and mature whips from the infected plant (Figure 7). Immediately place each whip upside down in a bag to limit the amount of spore spread during the operation. Incipient whips do not need to be cut.
- Dig out the infected stool with a hoe or mattock (Figure 8) and transfer to the bag (Figure 9).
- Bags of whips and stools should be taken as far from the sugarcane fields as possible for burning. Infected material must not be left in or beside the field.



▲ Figures 7, 8 and 9: The manual roguing process.

Chemical / herbicide roguing

A 10% solution of glyphosate is used to kill infected stools.

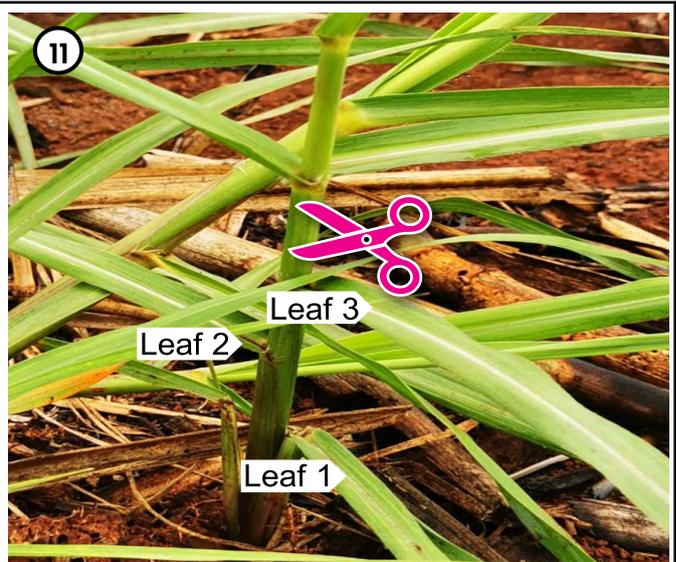
Chemical roguing is a quick and efficient method and increases the likelihood of completely killing infected stools. The method is less labour intensive than manual roguing. Field workers must be well trained in the procedure and permanent staff should be allocated for this operation. A hand sprayer (Figure 10) or 5L spot sprayer that delivers coarse droplets under low pressure, reduce the risk of drift. Standard knapsacks should not be used. The infected, treated stools should die within about 4 weeks.



Figure 10: Equipment required for chemical roguing ▲

Procedure

- Cut incipient, emerging, and mature whips from the infected plant with secateurs. Ensure that the whip is removed but leave some green leaf material (at least three leaves where possible) for the application of the herbicide to be effective (Figure 11).
- Immediately after cutting from the infected plant, transfer each whip upside down into the bag to limit the amount of spore spread during the operation (Figure 12).
- Hold the remaining leaves in a gloved hand and give a full cover spray with a 10% solution of glyphosate, taking care not to spray or contaminate neighbouring healthy plants (Figure 13).



▲ Figures 11, 12 and 13: The chemical roguing process.

Notes on using glyphosate for roguing:

- Follow label recommendations regarding surfactants and health and safety requirements.
- Rain or irrigation within 4 - 6 hours of application can reduce the efficacy of glyphosate.
- Wind speeds of over 10 km / hour will increase the risk of drift to neighbouring stools.
- High quality ammonium sulphate (2%) should be used to treat salts in the water. A buffer is not necessary if ammonium sulphate is added to the tank mixture.

Whip roguing (not recommended)

Infected shoots (i.e. whips and incipient whips) are plucked from the row at soil level.

While less demanding per operation than stool and chemical roguing, this method has the disadvantage that the infected base of the plant remains to produce new whips in the current and subsequent seasons. This practice should only be considered if fields are to be eradicated after harvest.

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