



Information Sheet

2. DISEASES

2.11 Smut

Under the terms of the Sugar Industry Agreement (2000), Clause 77, smut is a legislated disease. As such, the disease must be reported to the Local Pest, Disease and Variety Control Committee and must be managed according to the rules prescribed by the Committee (Clauses 78-80).

Smut is an important disease of sugarcane in South Africa and is caused by the fungus *Ustilago scitaminea*. It is widespread and most severe in the northern irrigated areas of the sugarcane industry and in northern Zululand, but can occur in all areas. Smut development is favoured by long, dry and warm winters followed by good spring rains.

Symptoms

- Dark brown, whip-like structures ('whips') usually develop from the top of infected shoots and stalks or side-shoots. The whips vary in length from a few centimetres to a metre or more and may extend high above the canopy. Whips usually begin emerging when infected cane is two to four months of age.
- Before whip emergence, infected shoots may have small, erect spindle leaves, thin stalks and elongated internodes ('incipient whips').
- Severely infected stools tiller profusely and eventually degenerate into clumps of grass-like, unmillable shoots.

Spread

Smut is spread by spores that are particularly well adapted to aerial dispersal, but can also be spread in rain and irrigation water. Up to one billion spores can be released from a single whip each day.

Smut is also spread by planting infected seedcane. Newly planted cane can become infected after planting in soil that is contaminated with smut spores. The buds of standing cane can also become infected, but the fungus will remain dormant unless the buds swell. In most cases, these stalks are sent to the mill and there is no consequence of this type of infection. However, smut will develop if the cane is used as seed. In addition, if the stalks sideshoot after damage to the growing point through frost, chemicals, pests or other diseases, smut whips may develop on these sideshoots.

Effect on yield

Smut infection results in a reduction in cane tonnage and juice purity: losses of between 0.3 and 2.0 tons cane per

hectare per 1 000 whips have been recorded. Losses are most severe in susceptible varieties grown under poor conditions and increase with successive ratoons, especially if the disease is not managed effectively.

Management strategies

- Plant resistant varieties, particularly in the smut-prone northern regions of the industry (refer to SASRI Variety Information Sheets for smut resistance ratings). It is important to note that resistant varieties alone are not sufficient to control the disease and other management strategies must be routinely implemented.



Mature whip.

- Plant disease-free seedcane. Seedcane nurseries must be inspected for diseases such as smut and mosaic regularly and infected stools must be removed (see SASRI Information Sheet 9.1).
- Rogue affected fields routinely to maintain low levels of smut (see SASRI Information Sheet 2.5). In most situations, smut can be contained in intermediate and susceptible varieties by intensive roguing. In smut-prone areas, roguing proved to be inadequate in reducing smut levels in the highly susceptible variety NCo310. For this reason, the variety was degazetted and more resistant varieties were recommended.
- Ensure that crop eradication is effective before fields are replanted so that smut does not persist in volunteers.
- Plough out severely smutted fields. When heavy infections warrant eradication, the crop should be thoroughly ploughed in. The field should be fallowed for a minimum of three months after the last volunteer has been removed (6 to 9 months in total) before being replanted with healthy seedcane. It is advisable to plant a green manure or cover crop during this break from cane. Where possible, fields should be irrigated two weeks before replanting to induce germination of smut spores in the soil. In the absence of host plants, the young fungal growth will not survive.
- Use a fungicide when seedcane of susceptible varieties is heat treated. In areas where smut is common, seedcane that is heat treated to control RSD may be more readily infected with smut. In these areas, heat treated seedcane of susceptible varieties should be protected with a fungicide. Currently Bayleton is registered for use in sugarcane and should be added to the hot water treatment tank at a rate of 1 kg of 25% wettable powder per 1 000 litres water (250 ppm active).



Incipient whip, elongated stalk with no whip visible.

By Sharon McFarlane (Pathologist) September 2011