



Information Sheet

9.3 Mosaic

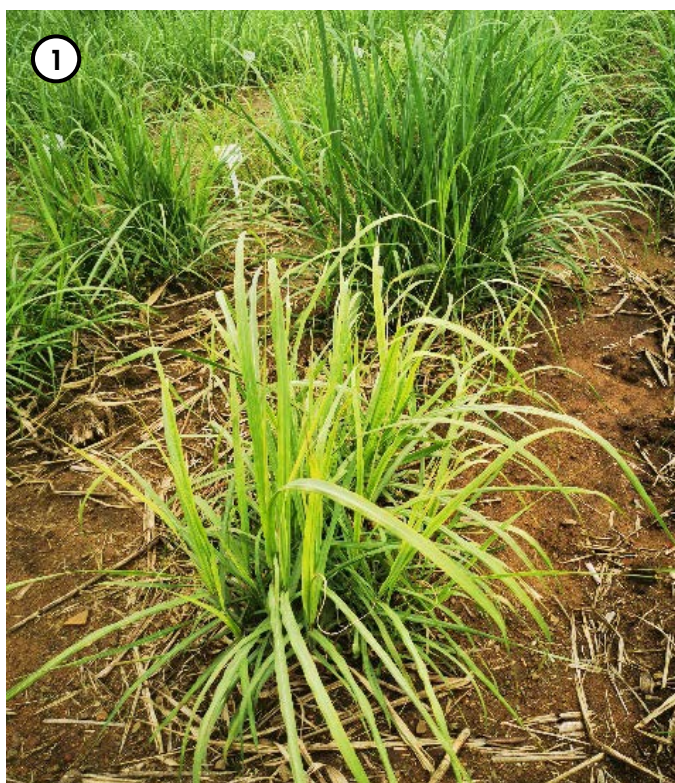
Importance

Under the terms of the Sugar Industry Agreement (2000), Clause 77, mosaic 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).

Mosaic, caused by *Sugarcane mosaic virus* (SCMV), occurs throughout the South African sugar industry. While the disease is most common in the cooler, southern and high altitude inland areas of KwaZulu-Natal, serious outbreaks can, however, occur periodically in all parts of the industry. Mosaic can cause substantial yield loss in susceptible varieties.

Symptoms

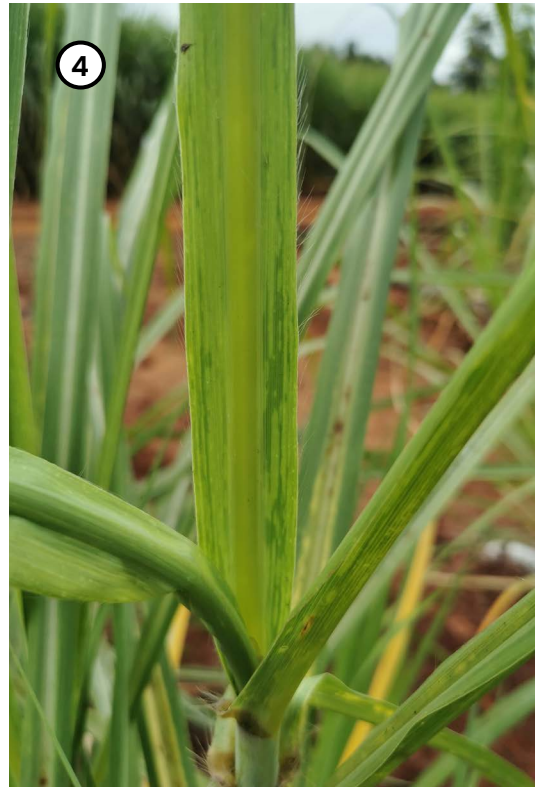
- Infected stools often have a yellow-green appearance (Figure 1).
- A mottled, often subtle pattern of dark green islands on a pale green background, best seen towards the base of rapidly growing young leaves as they unfurl from the spindle (Figures 2-6).
- Symptoms are not always easy to recognise, particularly on older leaves, in bright sunlight, under poor conditions for growth and on certain varieties.



▲ Figure 1: Mosaic-infected stool.



▲ Figure 2: Leaf symptoms.



▲ Figures 3-6: Mosaic symptoms.

Spread

SCMV is spread by:

- the distribution and planting of infected seedcane; and
- certain species of aphids feeding on sugarcane.

Aphid spread is most rapid when young cane (up to about 12 weeks after planting or harvesting) coincides with the period of peak aphid activity in mid-summer. The rusty plum aphid (*Hysteroneura setariae*) and the maize aphid (*Rhopalosiphum maidis*) are the most common aphid species involved in the spread of the virus. Recent studies have indicated that the yellow sugarcane aphid (YSA - *Sipha flava*) does not contribute to the spread of mosaic.

SCMV is not spread on farm equipment such as cane knives, harvesters etc.

Effect on yield

In a susceptible variety such as NCo376, for every 1% stalks infected with mosaic, a loss in yield of about 0.3% can be expected. Reductions in yield are mainly due to reductions in stalk mass and stalk population. Mosaic has little effect on cane quality. Noticeable losses in cane yield are likely when infection levels exceed 10% infected stools.

Causal agent and host range

Sugarcane mosaic virus occurs in several distinct strains. Currently the most common strain found in sugarcane in South Africa is SCMV strain D. This strain can infect a wide range of host plants in the Poaceae (grass) family, including the common grass weeds *Panicum maximum*, *Rottboelia exaltata* various *Sorghum* species, *Chloris*, *Digitaria*, *Eleusine* and *Paspalum*, as well as maize.

Varietal susceptibility

NCo376 and N19 are currently the most susceptible commercial varieties. NCo376 has been degazetted in most areas and N19 is losing favour. Mosaic has become increasingly common in N12. This variety is considered intermediate to mosaic but has been grown and exposed to the virus for approximately 40 years. As a result, mosaic has spread in N12 over time and mosaic-free seedcane is hard to find. Most of the newly released varieties have acceptable resistance to mosaic. Refer to *Information Sheet: Series 3: Variety Disease Ratings* for mosaic resistance ratings and speak to your Extension Specialist for advice.

Management strategies

Mosaic is not an easy disease to manage in the short term, mainly due to the occurrence of alternate host plants for the virus and aphid vectors. The main control measure in the long term is to change from susceptible to more resistant varieties.

General recommendations

- Plant resistant varieties. It is important to note that resistant varieties alone are not enough to control mosaic and other methods should be incorporated into your management strategy.
- Reduce the risk of serious losses due to pests and diseases by planting a range of varieties. No more than 30% of a farm should be planted to one variety.
- Plant healthy seedcane from a certified or approved source. NovaCane® plantlets provide a good source of healthy, true-to-type seedcane, if available. Seedcane nurseries must be meticulously rogued.
- Ensure that crop eradication is effective before fields are replanted so that mosaic does not persist in volunteers.
- As far as possible, plant and cut varieties that are prone to mosaic either early (before mid-October) or late (from February onwards) in high risk areas. By doing this, you will avoid having young cane during the period of peak aphid activity in mid-summer. Aphids prefer to feed on young cane.
- Keep fields as free from weeds as possible and slash grasses around field boundaries. Grass weeds are important hosts of SCMV and aphids.
- Many cultivated grasses including maize are hosts for SCMV and harbour aphid vectors. Where possible, avoid planting maize near your cane fields. If this is not possible, choose cane and maize varieties that have good mosaic resistance.

Notes on roguing

- **Seedcane fields:** The removal of infected stools in Certified and Approved Seedcane nurseries is required, provided mosaic levels do not exceed the accepted threshold for the category of seedcane. Fields exceeding the mosaic threshold may not be used as a source of seed.
- **Commercial fields:** Isolated or new outbreaks of mosaic, and fields with low levels of infection can be rogued. However, roguing in situations where the disease is common or at high levels is unlikely to be beneficial. Fields where mosaic is below the area threshold but persists despite repeated roguing should be considered for early eradication. Should levels exceed the threshold for the area, you will be required to eradicate the field. Replant these fields with a more resistant variety.

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