Information Sheet

2. DISEASES

2.4 Mosaic

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).

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 occur periodically in all parts of the industry.

Symptoms

- A mottled, often subtle pattern of light and dark (normal) green, best seen towards the base of rapidly growing young leaves as they unfurl from the spindle.
- Infected stools often have a yellow-green appearance. Symptoms are not always easy to recognise, particularly on older leaves, in bright sunlight, under poor conditions for growth and on certain varieties.
- When viral concentrations within a plant are low, mosaic symptoms may not always be expressed (symptomless mosaic). This increases the risk of disease spread should the cane be used as seed.

Causal agent and host range

SCMV occurs in a number of 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 *Gramineae* (grass) family, including the common grass weeds *Panicum maximum, Rottboelia exaltata* and various species of *Sorghum, Chloris, Digitaria, Eleusine* and *Paspalum*, as well as maize and sugarcane.

Transmission

Mosaic is spread by the distribution and planting of infected seedcane and by certain species of aphids feeding on sugarcane.

The aphids *Hysteroneura setariae* and *Rhopalosiphum maidis* are the most common species involved in the spread of mosaic. Mosaic spreads most rapidly when young cane (up to about 12 weeks after planting) coincides with the period of peak aphid activity in mid-summer.

Varietal susceptibility

NCo376, N19 and N32 are the most susceptible of the commonly grown released varieties. Mosaic is now also prevalent in N12. This variety is considered intermediate to mosaic but has been grown and exposed to the virus for over 30 years. As a result, the virus has spread in this variety over time and due to low viral concentrations within plants, mosaic symptoms may not always be expressed. Most of the newly released varieties have acceptable resistance to mosaic.

Effect on yields

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.

Symptoms of mosaic: leaf colouring is mottled, usually showing dark green islands on a pale green background.

Management strategies

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

General recommendations

- Plant resistant varieties (Refer to SASRI Variety Information Sheets for mosaic resistance ratings). It is important to note that resistant varieties alone are not sufficient to control the disease and the other management strategies must also be implemented.
- 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 source. Tissue culture plantlets provide a good source of healthy, true-to-type seedcane. 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 either early (before mid-October) or late (from February onwards) in areas where there is a risk of mosaic. By doing this, you will avoid having young cane during the period of peak aphid activity in mid-summer.
- Keep fields as free from weeds as possible and slash grasses around field boundaries.
- Isolated or new outbreaks of mosaic and commercial fields with low levels of infection should be rogued. However, roguing in situations where the disease is common or at high levels in susceptible varieties is unlikely to be beneficial because of the general occurrence of SCMV on a range of host plants in the environment and because of the damaging effects of intensive roguing on yields. The best option in these situations is to replant, preferably with more resistant varieties.

A mosaic-infected plant, typically yellow-green in colour.

Updated by Sharon McFarlane (Pathologist) September 2011