



Information Sheet

8.8 Yellow Sugarcane Aphid (YSA)



Yellow Sugarcane Aphid (YSA) originated from the Americas where it initially was a pest on sorghum and later, sugarcane. Over time, it spread over most of the world's sugar-producing countries. It was first noticed in South Africa in 2013 at Umfolozi, Pongola and UpperTongaat having arrived in North Africa in the mid-2000s. . Initially, it occurred sporadically, which made research difficult. In 2017, it started occurring in large numbers on the KZN North Coast and also in Mpumalanga from 2018, with very high infestations in places. It would appear that the pest adjusted to the South African conditions over a short period of time.

SASRI is already busy with, or has completed, the following research:

*Yield loss • Varietal resistance • Transfer of sugarcane mosaic virus • Tests on insecticides
Natural predators • Potential of using remote sensing with drones to detect YSA*

Biology

YSA overwinters on various grasses. Numbers increase rapidly in spring and usually reach peak population during mid-November to February/March, after which numbers gradually decrease.

YSA occurs on sugarcane in dense colonies on the underside of older (bottom) leaves which will change colour and start to senesce. They will move up to the next leaves as soon as the bottom leaves cease to be a suitable source of nutrition. Reproduction is asexual and numbers can increase rapidly over a short period. Females can produce 1-5 nymphs daily over 22 days. Nymphs take 18-22 days to reach maturity. Sexual reproduction can take place in the winter under very cold conditions but is unlikely in coastal sugarcane.



Symptoms

- It feeds on the underside of leaves next to the midrib.
- It feeds on older/lower two or more leaves.
- Initially symptoms look like water stress.
- Typically, the leaves turn yellow, red or purple (see left).
- Infests both young and older cane.
- Symptoms on grasses are yellow or purple leaves.

Yield loss

It has already been established that sugarcane mosaic is not transferred by YSA. From literature and initial local research results, it would appear that yield loss can be as much as 6% if two leaves are damaged at 3 months of age. Chloroses and death of three or more leaves can lead to yield loss of up to 19%.

Susceptibility

Due to it being a new pest, there is limited information regarding susceptibility of local varieties. Growers will be kept up to date as research progresses and new information becomes available. All varieties can be infested by YSA, but it is already clear that in the irrigated north N57 and N23 are very susceptible and to a lesser extent N14, N26 and N19. Under rainfed conditions, N16, N37, N54, N62 and N63 are also rated susceptible.

Other factors that may predispose fields to become infested by YSA:

- Plants with moisture stress (dry or waterlogged) are very susceptible.
- Plants grown on sodic or saline soils.
- Plants grown on soils with sub-soil acidity.
- Excessive nitrogen application.
- Deficiencies in phosphate and potassium.
- Undulating terrain with on slope temperature inversions.



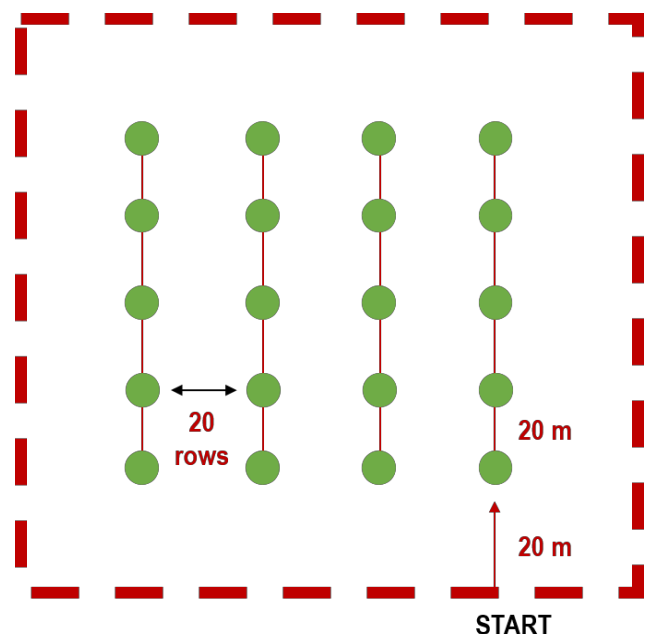
▲ Yellowing of leaves on the lower section of the sugarcane stalk due to YSA infestation.

Scouting for YSA

Effective control of YSA is only possible if done before the pest reaches peak population and when the cane is still young. Therefore, growers are advised to scout for YSA from spring.

- Select several fields at 2-4 month age, with susceptible varieties. **Pay special attention to fields with previous YSA outbreaks and fields next to natural vegetation and grass.**
- Start scouting in the spring (August to September), before symptoms are visible.
- Initially, scout fields every two weeks and then weekly from early summer.
- Take note of obvious visible aphid presence and symptoms on sugarcane.
- Also take note of aphid symptoms on the first stools in the row and on grasses on field verges.
- The following more intensive scouting method can be adopted to detect low level infestations at an early stage and to assess infestation severity:

- Select several sampling blocks per field, depending on field size.
- Per scouting block, select at least four rows which are at least 20 metres apart.
- Select five sugarcane stools per row, again at least 20m apart.
- Inspect one stalk per stool intensively.
- Inspect every mature leaf (fully open).
- Note the presence or absence of aphids on the stalk as a whole.
- At each sample block (20 plants) record the total number of leaves inspected and the number of leaves with aphids (at least 1 adult and a nymph).



→ Calculate the %YSA infected leaves:
$$\frac{\text{Number infested leaves}}{\text{Total number leaves inspected}} \times 100$$

If aphid infestation is detected, one must determine if the initial infestation is going to develop to a level where damage will be done. A few general rules to follow:

- If less than 15% of the leaves are infested, **no control** will be required.
- If more than 30% of leaves are infested, **control is recommended**.
- Do a second inspection 5-7 days later if infestation is 15% - 30%. Control is recommended if infestation increases.
- Infestation is suppressed by resistant varieties, optimal nutrition, optimal irrigation and the presence of natural predators.

Chemical control options

Preventative control (8-12 week control)

- Bandito® GR in the furrow of fields planted in spring and early summer or applied next to the rows and washed in with irrigation for ratoon crops. Also controls thrips and nematodes.
- Imidacloprid applied in the furrow for thrips control from November will also help with YSA control.

Reactive control (infestation above threshold)

- At an early stage of infestation, apply Bandito® GR directly next to the cane row during spring/early summer to allow for washing in with rainfall or wash in with irrigation. Also controls thrips and nematodes (*8-12 week control*).
- Spray a registered insecticide on leaves. Target the infested leaves (bottom leaves on the plant).
- Registered insecticides are: Allice (acetamiprid), Actara (thiamethoxam) and Ampligo (l-cyhalothrin & chlorantaniliprole (*2-4 week control*)).
- Spray plants on edges of fields to prevent spread.
- Note that only two applications of Actara or Allice are allowed per season.
- Withholding periods are: Bandito and imidacloprid – 163 days, Allice – 56 days, Actara – 6 months, Ampligo – 23 days.

There are natural predators that do attack YSA.



▲ Natural enemies such as ladybugs or ladybird larvae and beetles (Coccinellids) are regularly found feeding on YSA in sugarcane.

Field hygiene

- Effectively control grassy weeds in the fields.
- Keep grasses on verges short.
- Ensure field staff are aware that YSA can stick to clothes, especially within fields with high level of infestation. This can result in further spread to uninfested fields.
- Wear clothing to which the insects cannot stick, or clothes impregnated with permethrin. Wash clothes daily.
- Disinfect tractors and implements after use in infested fields.

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