

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 Upper Tongaat. 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 • Transmission of sugarcane mosaic virus • Tests on insecticides • Natural predators • Potential of using remote sensing with drones to detect YSA • Landscape and habitat diversity management

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. Adult aphids also demonstrate increased plant-to-



plant movement from the late afternoon (as UV index drops) into the night. Plant-to-plant movement occurs via the canopy itself, and also down the plant, along the ground to adjacent plants. They have been observed to move as far as four metres at a time.



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_

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.

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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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.



section of the sugarcane stalk due to YSA infestation.



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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.
 - \rightarrow Inspect one stalk per stool intensively.
 - \rightarrow Inspect every mature leaf (fully open).
 - → Note the presence or absence of aphids on the stalk as a whole.

Pests

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- → 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: <u>Number infested leaves</u> x 100 Total number leaves inspected

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:

- ightarrow If less than 15% of the leaves are infested, no control will be required.
- ightarrow 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.



Suggested timing of use for registered products considering instructions given in their respective product labels and conservation of natural enemies.

ACTARA® (thiamethoxam) and BANDITO® (oxamyl plus imidacloprid) are pre-emptive options for YSA control both of which are applied to the soil/stubble.

Thiamethoxam and imidacloprid are known to have plant physiological effects that help alleviate stress. BANDITO® is also a registered nematicide and is likely to be beneficial on sandy soils.

However, these active ingredients, oxamyl, imidacloprid and thiamethoxam, are more damaging to natural enemies than acetamiprid (ALLICE®; WONDERLAND®) and cyantraniliprole (BENEVIA®).

Pre-emptive use of ACTARA® and BANDITO® mitigates any negative effect of their active ingredients on natural enemies. Actives are taken up into the plant by the roots, move to the leaves but are not present on the leaf surfaces. In addition, natural enemies are not likely to be as abundant during early crop growth compared to later.

Foliar application against YSA is restricted to the use of ALLICE®, WONDERLAND®, AMPLIGO® and BENEVIA®. (NB: the pyrethroid component of AMPLIGO® is responsible for YSA control, it is however damaging to natural enemies).

AMPLIGO[®] and BENEVIA[®] are also registered for eldana control. If used for YSA control when stalk elongation has already commenced, protection against eldana infestation will be an added benefit.







Registered product(s)	Active ingredient(s): IRAC code	Application	Registered for control of:	Notes
ACTARA SC	Thiamethoxam: 4A	Plant cane furrow:	ΥSA	If applied for YSA control will also control
		Apply as a single in-furrow band application (30 to 50 cm wide), at planting, after placement of the seed cane, as the last operation before closing. Apply once only.		unips.
		Ratoon cane:		Likely to have a plant physiological stress alleviating effect.
		Apply between 7 and 30 days after harvesting. For bee safety, ensure that stubble is dry before applying the product. Apply as a broad band application over the cane rows. Apply once only.		4 - 8 weeks of control.
BANDITO GR	Oxamyl & Imidacloprid: 1A+4A	Plant cane furrow:	Thrips, YSA & nematodes	Likely to have a plant physiological stress alleviating effect
		Apply granules with the use of a mechanical granular applicator only after the planting sets have been placed in the furrow. Cover setts and granules with soil.		Applied pre-emptively or reactively after early detection of infestation.
		Ratoon cane soil:		8 - 12 weeks of control.
		Apply to moist soils in the rainy season. Band apply on the soil surface on both sides of, or over, the plant rows.		
ALLICE SP	Acetamiprid: 4A	Foliar ground application:	Thrips & YSA	Of the neonicotinoids, acetamiprid has
		Apply as soon as pest is noticed. Use a flat fan nozzle and direct the spray to the centre of the developing tillers for thrips or the lower leaves for YSA.		nigner activity against lepiaoptera. Ir appilea for thrips and/or YSA control, may also control eldana.
		Aerial application (thrips only):		2 – 4 weeks of control.
WONDERLAND	Acetamiprid: 4A	Foliar ground application:	YSA	If applied for YSA control, will control thrips, and may also control eldana.
		Apply as soon as pest is noticed. Use a flat fan nozzle and the spray must be directed to the lower leaves.		2 – 4 weeks of control.
AMPLIGO ESC	I-cyhalothrin & Chlorantraniliprole:	Foliar ground application:	YSA & eldana	l-cyhalothrin has a short-term knock- down effect on YSA. Chlorantraniliprole is
	3+28	Apply at the first sign of infestation. Direct the spray towards the lower parts of the cane where the pest is present. The		not effective against eldana.
		action for aphids is contact only.		
BENEVIA OD	Cyantraniliprole: 28	Foliar ground application:	YSA & eldana	If applied for YSA and/or eldana control, may also control thrips.
		Apply as soon as the pest is first noticed. Direct the spray towards the lower leaves of the cane where the pest is present. The use of Trend 90 or H & R Crop Oil can enhance control.		8 weeks of control.
ESC - Encapsulated	1 Suspension Concentrate; G	R - Granular; OD - Oil Dispersion; SC - Suspension Concentrate; SP - Solubl	e Powder.	

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Registered products for YSA control