POSTER SUMMARY

INCIDENCE OF *FULMEKIOLA SERRATA* (THYSANOPTERA: THRIPIDAE) IN SOUTH AFRICAN SUGARCANE

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Abstract

During 2004 sugarcane thrips, *Fulmekiola serrata* Kobus (Thysanoptera: Thripidae) was recorded for the first time damaging sugarcane in Umfolozi in the South African industry. The cause of this outbreak is unclear. In all likelihood elevated temperatures played a major role. Rolled sugarcane leaf spindles and curled leaf margins are inhabited. Minute brown and winged adults move erratically when exposed. Whitish-yellow immature stages have red eyes. Feeding activity may cause young leaf tips to be tied together, while older leaf damage resembles scorched yellowish necrotic patches. Surveying showed 96.2% of fields were infested by *F. serrata*, with 67.2% of spindles infested. Thrips density industry-wide averaged 5.2 per spindle, ranging from 10.6 at Umfolozi to 0.4 at Noodsberg in the cooler Midlands.

Keywords: sugarcane thrips, *Fulmekiola serrata*, Thysanoptera, Thripidae, pest incidence, pest density, sap suckers

Incursion by thrips

In late 2004 the sugarcane thrips, *Fulmekiola serrata* Kobus (order Thysanoptera: family Thripidae) was first detected at Umfolozi (32º 08´E, 28º 31´S) in the South African sugarcane industry (Leslie, 2005). The pest has since proliferated and spread through the whole industry. Morse and Hoddle (2006) review factors and attributes of thrips pre-adapting them to an invasive lifestyle. There is a strong likelihood that the insect has been present in this region for many years but went undetected, because it is minute and has extremely cryptic habits. *F. serrata* is oriental in origin (Anon, 2001). It was probably introduced in sugarcane cuttings or by wind to Indian Ocean islands, and to many other countries and parts of the New World, and now Africa. The cause of the recent outbreak in South Africa is unclear. Above average summer and/or winter temperatures may have contributed to the rapid increase in numbers, and windy conditions may have favoured its spread.

Habits in sugarcane

All the life stages of sugarcane thrips inhabit the rolled leaf spindles and the curled margins of leaves where they imbibe plant sap. Such concealment provides favourable humid microclimates that reduce desiccation and presumably offer some protection from predators. When exposed the minute winged adults (about 1 mm) move erratically in a circular pattern and the species is probably thigmotactic: which means that it occupies narrow spaces that afford close physical contact with solid surfaces (Lewis, 1997). Immatures are whitish-yellow with red eyes. *F. serrata* is polyphagous on Poaceae (Anon, 2001).

In South Africa, feeding activity by this thrips is often noticed in young cane because the tips of the emerging leaves remains tied together. These symptoms might be present across the entire field. Injury on the open leaf surface of older leaves is pale yellowish necrotic lesions. The latter are often confused with heat scorch, nutrient deficiency, water stress, and herbicide damage (Leslie and Donaldson, 2005). At this stage, yield loss locally is not known, but it is very likely that damage affects yield adversely.

Research initiatives

The South African Sugarcane Research Institute has responded to the thrips invasion by fast tracking several research projects to collect local data on the subject. The information obtained from such research will be used to develop appropriate and practical post-invasion management tactics.

Initial research involved surveys to determine *F. serrata* regional incidence, and density measurements within fields and per plant (or leaf spindle). Fields were surveyed between October 2005 and March 2006. Five leaf spindles were cut from stalks in each quadrant of four-month-old cane and kept in zip-lock bags prior to processing. Rolled leaves were unravelled and washed off in warm soapy water to facilitate thrips extraction. The samples were filtered through a fine mesh to collect the thrips for counting under a microscope. Approximately 90 fields were surveyed per region. Mostly ratoon but also plant crops were surveyed. Variety disposition surveyed ranged among those widely grown in this industry. To survey fields, workers were instructed to cover as wide an area as possible without any conscious bias.

In 14 regions surveyed, almost all fields sampled (96.2%) were infested with *F. serrata* (Table 1). Average percentage infested spindles was 67.2%, varying from 13.4% at Eston to 44.7% at Malelane to 96.8% at Umfolozi. Density ranged from a minimum of 0.4 *F. serrata* per spindle at Noodsberg in the Midlands, to 10.6 at Umfolozi. Lower density was attributed to lower temperatures. In other regions, moderate densities were detected.

Table 1. Mean ± SE of population densities of *Fulmekiola serrata* on widely grown sugarcane varieties in South Africa, surveyed from October 2005 to March 2006.

Region	Total fields	Fields infested (%)	Spindles infested (%)	*F. serrata* number/spindle
Malelane	94	97.9	44.7	2.4 ± 0.5
Pongola	59	98.3	94.4	9.8 ± 0.9
Umfolozi	84	97.2	96.8	10.6 ± 0.8
Felixton	90	98.9	70.9	2.3 ± 0.3
Amatikulu	90	97.3	70.3	4.6 ± 0.3
Entumeni	90	97.8	66.0	3.1 ± 1.0
Maidstone	92	98.9	61.9	8.1 ± 1.2
Gledhow	85	100.0	64.4	3.4 ± 0.4
Darnall	90	100.0	71.6	8.3 ± 1.3
Eston	97	77.3	13.4	1.0 ± 0.2
Noodsberg	112	86.6	51.0	0.4 ± 0.05
Sezela	65	100.0	82.4	5.7 ± 0.6
Umzimkulu	104	100.0	85.9	7.3 ± 0.8
Total/Average	1152	96.2	67.2	5.2 ± 0.9

Further research involves investigations into possible control options include the efficacy of insecticides in field trials, and the effect of agronomic practices such as manipulation of planting date and variety choice on pest numbers.

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