

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: NT33/82/P

Cat. No.: ~~2859~~ 1397TITLE: Nematicides and Sencor on N8.1. Particulars of the project

This crop : Plant
Site : Emoyeni
Region : Zululand
Soil system : Berea
Soil form/series: Fernwood
Design : Randomised block
 6 replications
Variety : N8
Fertilizer : N P K
 07.12.82 (kg/ha): 47 - 47
 21.01.83 (kg/ha): 47 - 219
 94 - 266
 14.04.83: Broadcast 1 ton/ha Dolomitic
 lime

Soil analysis: Date: 10 December 1982

pH	OM %	Clay %	ppm			PDI
6,53	0,4	3				-
P	K	Ca	Mg	Zn	Al	
69	22	95	34	4,0	-	
Age: 12,0 months		Dates: 7.12.82-6.12.83				
Rainfall: 875 mm		LTM: 1 399 mm				
Dec	Jan	Feb	Mar	Apr	May	Jun
51	64	39	43	41	34	36
Jul	Aug	Sep	Oct	Nov	Dec	
95	144	31	114	183	0	

2. Objectives

- To determine whether the efficacy of granular nematicides is affected by:
 - Sencor applied pre-emergent
 - Sencor applied post-emergent
 - Dual and atrazine applied pre-emergent
- To continue to assess the effects of Sencor on N8 grown on very weak sands.
- To continue comparing the efficacy of Temik and Curaterr under various conditions.

3. Treatments

- Control (no nematicide) + Dual (2,5 l/ha) + atrazine (2 l/ha) pre-emergent
- Temik at 20 kg/ha + Sencor 2 l/ha - pre-emergent
- Temik at 20 kg/ha + Sencor 2 l/ha - post-emergent
- Curaterr at 30 kg/ha + Sencor 2 l/ha - pre-emergent
- Curaterr at 30 kg/ha + Sencor 2 l/ha - post-emergent
- Temik at 20 kg/ha + Dual (2,5 l/ha) + atrazine (2 l/ha) - pre-emergent
- Curaterr at 30 kg/ha + Dual (2,5 l/ha) + atrazine (2 l/ha) - pre-emergent

3. Treatments - continued

Notes on treatments:

Pre-emergent: The pre-emergent herbicide treatments were sprayed on the third day after planting. During the first three days after planting good rains fell. The spray was directed immediately over the row.

Post-emergent

The post-emergent treatments were applied 42 days after planting when the cane had three or four leaves. The spray nozzle was directed over the inter-row and away from the cane foliage.

Nematicides

These were spread over the cane setts in the furrow immediately before covering with soil. The setts were planted at a depth of 15 cm.

4. Results

Treatments	Cane t/ha	Sucrose % cane	Sucrose t/ha
Control	14	9,7	1,4
Temik/Dual + atrazine	40	10,9	4,4
Curaterr/Dual + atrazine	37	10,5	3,9
Temik/ Sencor pre-emergent	36	11,0	3,9
Temik/Sencor post-emergent	36	11,0	3,9
Curaterr/Sencor pre-emergent	22	9,8	2,1
Curaterr/Sencor post-emergent	27	10,0	2,8
Mean	30	10,4	3,2
CV %	21	6,4	24,4
LSD (P=0,05)	7,6	0,8	0,9
LSD (P=0,01)	10,4	1,1	1,3

5. Comments

Temik and Curaterr with Dual and atrazine (pre-emergent)

The responses to cane treated with Temik or Curaterr and sprayed with a pre-emergent treatment of Dual and atrazine were substantial at 26 and 23 tons cane ha⁻¹ respectively (186% and 164%).

There was no evidence of chlorosis or any other visible effects on the growth of cane treated with Dual and atrazine.

5. Comments - continued

Temik and Sencor

Both pre and post-emergent sprays of Sencor caused chlorosis in cane treated with Temik. Stalk heights and stalk populations were affected by the application of Sencor to cane treated with Temik and cane yields were reduced on average by 10% (4 tc/ha) when compared with yields from cane treated with Temik and sprayed with Dual and atrazine.

Curaterr and Sencor

Sencor pre-emergent

Emerging shoots were severely chlorotic and later developed necrosis. Many shoots died and surviving shoots were shorter than cane which had not been treated with a nematicide and had been sprayed with Dual and atrazine.

Bull shoots from surviving stalks appeared four months after planting and were not chlorotic. Because the bull shoots were taller than stalks of cane which had not been treated with a nematicide the average height of cane in plots treated with Curaterr and sprayed with pre-emergent Sencor was greater than untreated cane sprayed with Dual and atrazine.

Cane treated with Curaterr and pre-emergent Sencor yielded on average 41% less (15 tc ha^{-1}) than Curaterr-treated cane sprayed with Dual and atrazine, and only 8 tons cane ha^{-1} more than cane not treated with a nematicide and sprayed with Dual and atrazine.

Sencor post-emergent

Chlorosis developed within ten days of spraying cane which was growing well and was responding to the nematicide treatment. Necrosis developed but fewer stalks died than in cane treated with Curaterr and sprayed with a pre-emergent Sencor treatment. Stalk heights were not as severely affected as they were by the pre-emergent Sencor treatment (see Figure 1). Cane yields were slightly higher (5 tc ha^{-1}) than in plots treated with Curaterr and sprayed with a pre-emergent treatment of Sencor but yielded 27% cane (10 tc ha^{-1}) less than in plots treated with Curaterr and sprayed with Dual and atrazine (pre-emergent).

General

Despite the low rainfall recorded at this site for the duration of the trial (63% of LTM) responses to nematicides were highly significant.

Conclusion

The results indicate clearly that Sencor applied to cane grown in very weak sandy soils causes chlorosis and reduces cane yields substantially.

The results also suggest that Sencor and Curaterr interact and that the resulting phytotoxicity in sugarcane is most severe from pre-emergent sprays of Sencor.

Note: Further work may be necessary to determine whether Sencor and particularly Sencor and Curaterr affect ratoon crops grown in the weak sandy soils in a similar fashion as plant crops.

RAD/VSJ
7 February 1984