SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: NT 18/80/R1

Cat. No.: 1255

TITLE: Nematicides on very weak sands at Mposa

1. Particulars of project

This crop	:	1st Ratoon
Site	:	Moba Planters
Region	:	Zululand
Soil system	:	Fernwood
Soil series	:	Maputa
Design	:	Randomised block
Variety	:	N8 and NCo 376

Fertilizer	:	N	P	K
20.03.80		82	-	82
28.05.80		82	-	82
		164	0	164

20.03.80 : Dolomitic lime broadcast at 1 t/ha

Soil analysis: Date 10.03.1980

pH	O.M.%	Clay %	P.D.I.
6,34		2	

ppm

P	K	Ca	Mg	Zn	Al
49	26	149	63	-	-

Age: 19,8 months Dates: 26.02.80-21.10.81

Rainfall: 1 623 mm L.T.M.: 1 693 mm

	J	F	M	A	M	J	J
1980			25	43	28	25	15
	A	S	O	N	D		
	28	200	32	93	27		
1981	J	F	M	A	M	J	J
	280	56	24	77	245	91	18
	A	S	O				
	93	135	87				

2. Objectives

1. To assess the response of N8 and NCo 376 grown on very weak sands to nematicides.
2. To compare the efficacy of Temik when applied in the furrow with its application over trash.
3. To compare the responses to Vydate at different rates.

3. Treatments

1. Control
2. Temik 20 kg/ha (15G) (on previous Temik treated plots)
3. Temik 20 kg/ha - over row + trash
4. Temik 20 kg/ha - in furrow + trash
5. Vydate 12 ℓ/ha
6. Vydate 10 ℓ/ha
7. Curaterr 30 kg/ha (10%G)
8. Temik 20 kg/ha (T20)
9. Temik 20 kg/ha (on previous Methyl bromide treated plots) (T20)

4. Comments on treatments

1. In treatment 3, Temik was applied over the trash blanket.

2. In treatment 4, a hoe was used to draw a furrow next to the cane line into which Temik was applied covered with soil and then covered with trash.

3. The treatments in the 'plant crop' differed to those in the 1st ratoon as shown below. The numbering of plots was the same in both crops.

Changes in treatments for 1st Ratoon

Plant		1st Ratoon
1. Control		1. Control
2. Temik 20 kg/ha		2. Temik 20 kg/ha
3. Temik 20 + Temik 20	re randomised to	3. Temik 20 - over trash
4. Temik 20 + Vydate 8 ℓ+4 ℓ	treatments 3 & 4	4. Temik 20 - in furrow + trash
5. Temik 20 + filtercake 50 t/ha	re randomised	5. Vydate 12 ℓ/ha
6. Curaterr 30 kg/ha	to treatments	6. Vydate 10 ℓ/ha
7. Curaterr + filtercake 50 t/ha	5, 6, 7 & 8	7. Curaterr 30 kg/ha
8. Vydate 12 ℓ/ha		8. Temik 20 kg/ha
9. Methyl Bromide 255 kg/ha		9. Temik 20 kg/ha

5. Results

a) Main trial (N8)

Treatment	Tons cane ha^{-1}	Pol % cane	Tons sucrose $/ha^{-1}$	Stalk heights (cm)	Stalk population x 1 000
Control	20	14,0	2,8	141	75
T20	36**	13,9	4,9**	171**	90*
T20 OR + trash	35**	13,7	4,8**	171**	87*
T20 + trash	43**	14,2	6,1**	177**	90*
V12	25	13,6	3,3	152	80
V10	27	13,8	3,7	157*	81
C30	33**	13,9	4,6**	165**	86*
[T20]	29*	14,6*	4,1*	157*	82
(T20)	52**	13,9	7,5**	188**	100**
Mean	33	13,9	4,7	164	86
C.V. %	17,3	3,0	17,5	6,8	6,0
L.S.D. (0,05)*	7,4	0,5	1,0	12,8	7,5
L.S.D (0,01)**	10,0	0,7	1,4	17,2	17,1

b) Observation plots (NCo 376)

Control	11	13,7	1,5	71	80
T20	13	13,7	1,7	75	83
Mean	12	13,7	1,6	73	82
C.V. %	17,4	4,3	19,6	4,5	11,8
L.S.D. (0,05)	NS	NS	NS	NS	NS

6. Comments

Visual assessments showed no difference between the 'in furrow' Temik treatment and the 'over trash' Temik treatment. At harvesting however the difference of 8 tons cane in favour of the 'in furrow' treatment was significant (P=0,05).

6. Comments - contd

The yields from the residual methyl bromide plots to which Temik was applied in the first ratoon were markedly superior.

The poor responses to both Vydate treatments were expected as the cane was stressed at the time of application.

The mean cane yield per hectare per month was 1,66 tons in this crop as compared with 3,39 tons in the plant crop.

Note: Multiple applications of Temik are planned for certain plots in the next ratoon in an attempt to 'revive' growth of the stools.

RAD/VJ
11 January 1982

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMOSTS' ASSOCIATION

Code: NT18/80/R2

Cat. No.: 1255

Title: Nematicides on very weak sands at Mposa.

1. Particulars of the project

This crop	:	2nd ratoon
Site	:	Moba Planters
Region	:	Zululand
Soil system	:	Fernwood
Soil form/series	:	Maputa
Design	:	Randomised block: 5 reps
Variety	:	N8 and NCo 376

Fertilizer/ Ameliorants	:	N	P	K
23.12.81		82	-	82
17.02.82		82	-	82
		164		164

Soil analysis: Date: 21.10.1981

pH	O.M%	Clay %	P.D.I
6,73	-	2	-

ppm

P	K	Ca	Mg	Zn	Al
51	30	168	59	1,4	-

Age: 10,1 months Dates: 21.10.81 to 25.08.82

Rainfall: 632 mm L.T.M.: 946 mm

Irrigation: Nil

2. Objectives

2.1 To assess the response of N8 grown on very weak sands to nematicides.

2.2 To compare the efficacy of Temik and Curaterr when applied in a furrow with their application over a trash blanket.

2.3 To compare the responses to Vydate applied at different rates with other nematicides.

2.4 To determine the response of NCo 376 and N8 to multiple applications of Temik applied at intervals of about eight weeks.

3. Treatments

3.1 Control

3.2 Temik at 20 kg/ha applied four times (80 kg/ha) - in a furrow (T20 M).

3.3 Temik at 20 kg/ha applied over row - with trash (T20 O.R.).

3.4 Temik at 20 kg/ha applied in furrow - with trash (T20 I.F.).

3.5 Vydate at 12 ℓ/ha (V12).

3.6 Vydate at 10 ℓ/ha (V10).

3.7 Curaterr at 30 kg/ha applied in furrow - with trash (C30 I.F.).

3.8 Curaterr at 30 kg/ha applied over row - with trash (C30 O.R.).

3.9 Temik at 20 kg/ha on previous Methyl Bromide plots ((T20)).

4. Comments on treatments

4.1 All plots were covered with trash.

4.2 For in-furrow applications, a hoe was used to draw a furrow next to the cane line into which the nematicide was placed, covered with soil and then covered with trash.

4.3 Plots of treatment 9 were fumigated with Methyl Bromide prior to planting.

4.4 Vydate was sprayed onto the cane foliage when the crop was four months old (eight leaf stage).

5. Results

a) Main trial with N8

Treatment	Tons cane /ha^{-1}	Pol % cane	Tons sucrose /ha^{-1}	Stalk heights (cm)	Stalk popu. (x 1 000)
Control	11	10,9	1,2	92	53
Temik 20M	35**	11,7*	4,1**	148**	94**
Temik 20 O.R.	32**	12,1**	3,8**	142**	92**
Temik 20 I.F.	37**	12,1**	4,5**	143**	106**
Vydate 12 ℓ	29**	11,8**	3,4**	132**	88**
Vydate 10 ℓ	27**	11,4	3,1**	129**	86**
Curaterr 30 I.F.	23**	11,6	2,6**	118**	72*
Curaterr 30 O.R.	22**	11,5	2,6**	118**	76**
(Temik 20)	38**	12,5**	4,7**	148**	102**
Mean	28	11,7	3,3	130	85
V.V.%	16,9	4,3	17,9	8,2	14,4
L.S.D. (0,05)*	6,1	0,64	0,77	13,7	15,8
L.S.D. (0,01)**	8,2	0,87	1,0	18,5	21,2

b) Observation plots with NCo 376

Control	10	12,1	1,3	54	70
Temik	29**	12,5	3,6**	85**	124**
Mean	19	12,3	2,4	69	97
C.V. %	10,0	4,0	8,4	7,9	6,6
L.S.D. (0,05)*	4,4	1,1	0,46	12,3	14,4
L.S.D. (0,01)**	8,0	2,1	0,84	22,6	26,3

c) Yields per month and per 100 mm gross rainfall for plant and ratoon crops of N8 and NCo 376

Crop	Treatment	Tons cane/ha/month N8	Tons cane/ha/month NCo 376	Tons cane/ha/100 mm rain N8	Tons cane/ha/100 mm rain NCo 376
Plant	Control	3,3	1,5	4,3	1,9
	Temik 20	3,9	3,0	5,1	3,9
	Temik 20+20	4,1	-	5,3	-
1st ratoon	Control	1,0	0,6	1,2	0,7
	Temik	1,8	0,7	2,2	0,8
2nd ratoon	Control	1,1	1,0	1,7	1,6
	Temik	3,7	-	5,9	-
	Temik - multiple	3,5	2,9	5,5	4,6

d) The mean yields of two ratoon crops to Vydate, Curaterr and to two methods of Temik placement

Treatment	Tons cane/ha	Pol % cane	Tons suc/ha
Control	15,5	12,5	2,0
Vydate 12 ℓ	27,0	12,7	3,4
Vydate 10 ℓ	27,0	12,6	3,4
Curaterr I.F.	28,0	12,8	3,6
Temik 20 O.R.	33,5	12,9	4,3
Temik 20 I.F.	40,0	13,2	5,3

e) Comparison of treatment means

Temik vs Vydate

	Tons cane /ha	Pol % cane	Tons suc. /ha	Stalk heights (cm)	Stalk popu. (x 1 000)
Temik	34,7	11,97	4,1	144,3	97,3
Vydate	28	11,6	3,3	130,5	87,0
Response	6,7**	0,37	1,24**	13,8**	10,3*
L.S.D (0,05)*	3,97	0,43	0,49	8,9	10.2
L.S.D (0,01)**	5,33	0,56	0,67	11,9	13,9

Temik vs Curaterr

	Tons cane /ha	Pol % cane	Tons suc. /ha	Stalk heights (cm)	Stalk popu. (x 1 000)
Temik	34,7	11,97	4,1	144,3	97,3
Curaterr	22,5	11,6	2,6	118,0	74
Response	12,2**	0,37	1,5**	26,3**	23,3**
L.S.D (0,05)	3,97	0,42	0,49	8,9	10,2
L.S.D (0,01)	5,33	0,56	0,67	11,9	13,9

Curaterr vs Vydate

Curaterr	22,5	11,6	2,6	118,0	74
Vydate	28	11,6	3,3	130,5	87
Response	5,5*	0	0,7*	12,5*	13,0*
L.S.D (0,05)	4,3	0,49	0,55	9,73	11,19
L.S.D (0,01)	5,8	0,67	0,73	13,06	15,03

6. Comments

6.1 Placement of nematicides

The placement of Curaterr did not affect its efficacy.

The response to Temik applied in a furrow appeared to be preferable (ns) than when applied over the row. This difference was consistent for two ratoons and was equivalent to about five tons cane per hectare per annum.

6.2 Vydate rates

The response to Vydate at 12 ℓ/ha and 10 ℓ/ha were similar.

The mean response in two ratoon crops to the two rates of Vydate was not different.

6.3 Multiple applications of Temik

There was no benefit from multiple applications of Temik compared with the standard in-furrow application with regard to N8.

6.4 Comparison of nematicides

The mean yields in response to Temik were significantly (P=0,01) better than from Vydate or Curaterr and Vydate was significantly superior to Curaterr at the 5% level.

The mean stalk heights and stalk populations were significantly higher for Temik and Vydate treatments when compared with Curaterr.

6.5 General

Responses to all nematicides were highly significant (P=0,01).

Hail damage to the foliage in April when the crop was six months old, had no apparent effect on the rate of growth.

Eldana damage was negligible in this ten month old cane.

Cane quality was significantly better in Temik treated plots and in plots treated with 12 ℓ/ha of Vydate.

Note: This trial has been terminated

RAD/VSJ
25 October 1982