

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: HW272/84/P

Cat. No.: 1580

Title: Variety sensitivity to EPTC

1. Particulars of the project

This crop: Plant cane

Site: C.F.S.

Region: N. Coast Coastal

Soil system: Berea

Soil form/series: Hutton/Clansthal

Design: Random blocks

Variety: N14

<u>Fertilizer/ Ameliorants:</u>	<u>N</u>	<u>P</u>	<u>K</u>
In furrow	78	-	78
Top dressed	98	-	98
			100
	176	-	276

Soil analysis: Date: 4.4.84

<u>pH</u>	<u>O.M.%</u>	<u>Clay%</u>	<u>Silt%</u>	<u>Sand%</u>
8,45	0,82	8	4	88

ppm

<u>P</u>	<u>K</u>	<u>Ca</u>	<u>Mg</u>
>80	53	>1800	58

Age: 15,9 mths Dates: (4.4.84-1.8.85)

Irrigation: Nil

Rainfall: (mm) : 1268 L.T.M.:1136

	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>July</u>	<u>Aug</u>	<u>Sept</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>
<u>Actual</u>	112	65	33	105	53	15	78	73	41	163	468	11	4
<u>L.T.M.</u>	58	58	18	26	51	73	100	110	102	145	131	104	58
	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug</u>	<u>Total</u>								
<u>Actual</u>	30	14	3	0	1268 = 112% of L.T.M.								
<u>L.T.M.</u>	58	18	26		1136								

Temik : 15 kg ha⁻¹

Application date: 3.4.84

Application details:

Applicator: CP, knapsack

Pressure: 2 Bars

Nozzle: APM Green floodjet

Output: 309 l ha⁻¹

Incorporation: Tractor-drawn rotary hoe

Depth : 200 mm

Weather conditions at spray:

Rainfall (mm) : Day of spray : 0
Days to first rain : 1
Amount of first rain : 0,3
Total in two weeks : 112

Sunshine hrs : 10,4

Temp. °C 8 am : 19,1

2 pm : 24,4

Rel. humidity % 8 am : 84

2 pm : 68

General conditions : Fine and clear to warm

2. Objectives:

To test the sensitivity of N14 to Eptam Super.

3. Motivation:

Commercial plantings of N14 had shown delayed germination and stunted growth after applications of EPTC + antidote as Eptam Super. A second formulation with twice the rate of antidote caused less damage. Although subsequent growth appeared acceptable a randomised experiment was considered necessary to clarify the extent of these effects.

4. Experimental:

An area of Clansthal sand at Umhlanga Rocks (C.F.S.) infested with Cyperus rotundus and cane was sprayed with Roundup at 5ℓ ha⁻¹ and subsequently spot sprayed to eliminate all cane and weed growth.

One day before planting herbicide treatments were applied by hand-operated knapsack sprayers (CP₃) followed immediately by a tractor-drawn rotary hoe covering a width of 1,4 m. Incorporation depth was 200 mm and a very fine tilth was created.

Double rates of each treatment were applied using two passes of the knapsack sprayer and rotary hoe.

The trial was planted on 4 April 1984. Temik nematicide was applied in the furrow and the whole trial treated with Lasso + atrazine to control weeds in all plots.

Plot size was 6 rows x 6m x 1,4 m gross and 4 rows x 4m x 1,4m net.

5. Results:

A. Visual effects

Table 1. Visual ratings of cane vigour taken at intervals after planting (and based on a 1-10 scale where 1 = very poor and 10 = very good growth) are shown in the table below.

Treatment	Cane Vigour ratings/Days after planting				
	51	85	100	153	182
Control	4,3	6,3	6,7	8,3	9,3
Eptam Super 7ℓ ha ⁻¹	2,0	4,3	6,3	6,3	9,0
Eptam Super 14ℓ ha ⁻¹	2,0	3,0	4,7	5,3	6,0
Eptam Super + Antidote 7ℓ ha ⁻¹	2,0	4,0	6,0	7,3	7,3
Eptam Super + Antidote 14ℓ ha ⁻¹	2,3	4,3	5,3	7,3	8,3

Table 2. Visual ratings of percent germination taken 96 days after planting showed the following results:

Control	88
Eptam Super 7ℓ	72
Eptam Super 14ℓ	55
Eptam Super + Antidote 7ℓ	65
Eptam Super + Antidote 14ℓ	68

Comments:

1. Examination of setts from each treatment indicated that where slower germination occurred in treated plots severe swelling occurred on the developing bud but this did not appear to affect the viability.
2. Obvious slower germination and stunting occurred in plots treated with Eptam Super, the most severe being the high rate without extra antidote. In time differences between treatments decreased as indicated by the ratings.

B. Crop growth measurements

Table 3. Crop growth measurements taken 1,5, 5, 9 and 12 months after planting.

Treatments	Stalk length(cm)				Stalk popln(1000ha ⁻¹)			
	1,5	5	9	12	1,5	5	9	12
Control	11	30	83	199	39	141	148	105
Eptam Super 7ℓ	10	26	83	214	26	158	145	100
Eptam Super 14ℓ	10	23	81	200	25	89	154	100
Eptam Super + Antidote 7ℓ	10	25	81	203	35	116	162	107
Eptam Super + Antidote 14ℓ	11	27	81	201	26	136	170	114

Comments:

1. The differences in stalk length and population which were apparent at 1,5 and 5 months of age were not obvious after 9 months.

C. Yield and crop characteristics at harvest

Table 4. Yield and crop characteristics at harvest

Treatments	Yield			Stalk length (cm)	Stalk popln (1000 ha ⁻¹)
	Cane tha ⁻¹	Sucrose % cane	Sucrose tha ⁻¹		
Control	105	15,54	16,3	204	99
Eptam Super 7ℓ	119	15,53	18,5	228	98
Eptam Super 14ℓ	104	15,67	16,3	208	94
Eptam Super + Antidote 7ℓ ha ⁻¹	107	15,78	16,9	209	102
Eptam Super + Antidote 14ℓ ha ⁻¹	104	15,31	16,0	208	99
C.V.%	4,1	3,2	6,9	6,0	5,9
L.S.D. 0,05	8,4	0,94	2,18	24	11
S.E. of difference	+3,7	+0,41	+0,95	+10,4	+4,8

Comments:

1. In spite of early visual symptoms of stunting no effects were apparent in crop growth measurements at harvest.
2. Similarly yields in treated plots were no worse than those from untreated control plots. The unexpected higher yields from treatment with Eptam Super at 7ℓ ha⁻¹ cannot be explained but are unlikely to be due to a treatment effect.

3. N14 is usually grown in the irrigated areas and is likely to be cut at a younger age than 15,9 months. However, measurements at 12 months of age suggest that no yield differences would have been produced if harvesting had been done at a younger age.

6. Conclusions

In spite of retarded early growth no yield reductions can be expected from the use of Eptam either with the single rate of antidote as Eptam Super or with the extra antidote and even at more than twice the recommended application rate for this soil type.

Early growth observations indicated that the formulation with double antidote rates had less effect on cane growth and therefore as a precaution this would be recommended if available for use with this variety.

PETT/SN
13 May 1987