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**SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION**

Code No: SC1/87

Cat No : 1699

Title: Seedcane germination - summer

1. Particulars of project

This crop : Plant
 Site : Pongola Field Station
 Region : Northern Area
 Soil system : Komatipoort
 Soil form/series: Hutton/Shorrocks
 Design : Randomised blocks x
 4 reps
 Variety : N17
 Fertilizer/ : N P K
 Ameliorants :
 i.f. 20 60 -
 t/d 60 - 150
 80 60 150

Soil analysis Date: 4.10.1988

pH	O.M.%	Clay %	P.D.I
6,21	-	<30	-

ppm

P	K	Ca	Mg	Zn	Al
33	134	665	284	-	-

Age: 11,1 mths Dates: 19.10.88-21.9.89

Rainfall: 630mm 105% of LTM: 598mm

Irrigation: 732mm

Rainfall: 73% efficient

2. Objectives:

To test Ethrel as a spray and dip treatment for the improvement of N17 germination in summer and winter.

3. Motivation:

N17 has a record of poor germination under irrigated conditions and any method of improving this would be advantageous. Ethrel has been shown in glasshouse trials to improve bud germination in intact stalks and in setts.

4. Treatments

1. Whole stick chopped in the furrow - no Ethrel
2. Whole stick chopped in the furrow - sprayed with 0,5% solution
3. Chopped setts - dipped in 0,5% solution
4. Whole stick in furrow - sprayed with 0,5% solution
5. Whole stick in furrow - no Ethrel.

4.1 Notes on Treatments

- ° N17 seedcane, which had hard young buds and was considered excellent quality, was stripped and then whole sticks laid end to end in two adjacent lines in each furrow. Each pair of sticks was laid such that a top of one was near to the base of the adjacent stick.
- ° All cane in treatments 1, 2 and 3 was chopped in the furrow into 300-600 mm length.
- ° All treatment 3 setts were removed, dipped in Ethrel solution (50 ml/10%) and replaced in the furrows.
- ° The cane in treatments 2 and 4 was sprayed in the furrow with Ethrel solution (same concentration as dip). This was done using a CP3 knapsack fitted with a 8004 fanjet with a 0,4 m swath and output of 20,4 mls/second and a walking pace of 1 m/s. This was applied in one direction only and hence was unlikely to have wetted the cut stalk ends adequately.
- ° The soil was very wet at the time of planting.
- ° Adjacent plantings of three varieties were used as a commercial observation. These setts were stripped, chopped and dipped in Panocrine plus Phoxim.

Rainfall, LTM, Irrigation (mm)

Months	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	TOTAL
1988-89	43	62	114	19	202	82	20	9	55	11	13	0	630 mm
LTM	26	97	77	117	86	74	42	20	9	8	16	26	598 mm
Irrigation	61	61	122	122	61	0	122	0	61	61	61	0	732 mm

5. Results

Table 1: Ratings on germination % and stunting on 22/11/88, 33 days after planting and shoot counts on 7/11/88 and 21/11/88, 18 and 32 days after planting

Treatments	% Germin.	Stunt	Counts X10 ³ ha ⁻¹	
			7/11	21/11
			18 days	32 days
T1-Whole stick chopped i.f.-No Ethrel	68	2,6	9	138
T2-Whole stick chopped i.f.-sprayed 0,5% solution	76	3,0	8	169
T3-Chopped setts -Dipped 0,5% solution	69	2,4	8	159
T4-Whole stick i.f. -Sprayed 0,5% solution	67	3,3	7	154
T5-Whole stick i.f. -No Ethrel	56	2,8	18	141
Mean	67	2,8	10	152
Commercial N17 - No Ethrel	66	3,4	-	-
Commercial N14 - No Ethrel	85	5,0	-	-
Commercial NCo376 - No Ethrel	76	3,4	-	-
No Ethrel *	62	2,7	13,5	140
with 0,5% solution	71	2,9	7,6	161

Stunting : 1 = Very severe, 5 = No stunting
* Commercial excluded

Table 2: Yield and other crop characteristics at harvest

Treatments	t ha ⁻¹ cane	Sucrose % cane	t ha ⁻¹ sucrose	Stalk counts X10 ³ ha ⁻¹	Stalk length (cm)
T1-Whole stick chopped i.f.-No Ethrel	132	14,27	18,7	124	277
T2-Whole stick chopped i.f.-spray 0,5% solution	108	14,07	14,9	117	255
T3-Chopped setts -Dipped 0,5% solution	111	14,15	15,6	130	260
T4-Whole stick i.f. -Spray 0,5% solution	123	14,46	17,8	111	275
T5-Whole stick i.f. -No Ethrel	111	14,47	15,8	121	274
Mean	117	14,29	16,6	121	268
CV %	10,9	4,3	8,4	12,6	6,5
SE of Treatment Mean	± 6,35	0,31	0,69	7,61	8,73
SED	± 8,98	0,43	0,98	10,78	12,35
LSD (0,05)	19,57	0,94	2,14	23,48	26,91
(0,01)	27,40	1,33	2,99	32,89	37,69

5. Results

Table 3: Third leaf % dm analysis at 3,9 months sampled on 15.2.89

Treatments	Age 3,9 months (15.2.89)					
	% dm					ppm
	N	P	K	Ca	Mg	Zn
T1-Whole stick chopped i.f.-No Ethrel	1,90	0,21	1,20	0,24	0,24	20
T2-Whole stick chopped i.f.-sprayed 0,5% solution	1,75	0,20	1,31	0,21	0,22	19
T3-Chopped setts -Dipped 0,5% solution	1,79	0,21	1,37	0,20	0,21	22
T4-Whole stick i.f. -Sprayed 0,5% solution	1,89	0,21	1,29	0,25	0,25	20
T5-Whole stick i.f. -No Ethrel	1,89	0,21	1,27	0,23	0,25	21
SED	± 0,073	0,012	0,16	0,036	0,023	1,79
LSD (0,05)	0,16	0,027	0,35	0,078	0,051	3,90

6. Comments

Germination (Ratings and counts) (Table 1)

Visual observation showed no marked or obvious differences between treatments in shoot numbers or stunting, although stunting ratings were variable.

Shoot counts showed slightly lower numbers in plots which did not receive any Ethrel 32 days after planting.

Germination and growth of observation areas showed some difference between varieties but N17 in observation plots was the same as in the experiment.

Crop measurements

At harvest the pattern of population differences was completely different to that observed 32 days after planting and was variable.

Stalk length differences also showed no logical pattern.

Yield

In spite of some differences in cane and sucrose yields between treatments reaching a level of statistical significance the pattern was not logical and interpretation is difficult. However, the highest yielding plots were those which received no Ethrel but which were chopped in the furrow and were thus the closest to commercial planting.

Conclusion

The lack of response to Ethrel suggests that this project should be terminated.