V + A(x)

RmcI/cvp
9 April 1991

SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

Code No : RVT WG/88
Cat No : 1759

Title : Effect of white grub on the yield of sugarcane varieties in the midlands.

1. Particulars of the project

This crop : Plant

Site : Phoenix Wattle Co

Region : Mistbelt

Soil system : Umzinto Midlands

Soil form/series: Inanda/Inanda

Design : Latin Sq (split plots)

Variety : See treatments

Fertiliser/ Ameliorants : **N P K** As per FAS

Soil analysis Date: 9/7/1990

pH	OM (%)	Clay (%)	PDI
	N.cat		
5,35	4	> 30	

ppm

P	K	Ca	Mg	Na	Al
80	161	851	78		

Age : 19,2 months

Dates : 2/12/88 - 9/7/90

Rainfall : 1830 mm

LTM : 1695 mm

Irrigation : Nil

Rainfall 2/12/88 - 9/7/90

Rainfall (mm)	J	F	M	A	M	J	J	A	S	O	N	D
1988												167
1989	76	230	49	96	14	15	32	1	49	97	*429	90
1990	79	91	230	59	17	8	1					
LTM	131	135	122	64	43	20	22	44	94	110	131	121

2. Objectives

To measure the relative susceptibility of different varieties to white grub infestation.

3. Treatments

3.1 Varieties

3.1.1 NCo376

3.1.2 N11

3.1.3 N12

3.1.4 N16

3.2 Insecticide

Shelldrite at 6,3 l product ha^{-1} sprayed directly onto the seedcane in the cane row prior to covering.

4. Method and results of white grub sampling

4.1 Method

Sampling was conducted in August, November and at harvest in July at 8,5, 11 and 19,2 months of age respectively. Two holes, each approximately 30 cm x 30 cm x 25 cm deep, were dug in the cane rows of each plot, the stool and soil removed, and the total number of larvae and beetles recorded. Plot size is 6 rows x 7,5 m x 1.0 m row spacing. Five plots (six plots of NCo376) were sampled per variety per treatment and the results are tabled below.

4.2 Results

	Date sampled	Rows sampled	Samples per plot	No of plots sampled	Variety	No of whitegrub recorded					
						Control			Treated		
						Larvae	Beetle	Total	Larvae	Beetle	Total
1.	17/8/89	2nd +	2	6	NCo376	2	1	2	2	0	2
		4th	2	5	N11	2	0	2	1	0	1
		Nett	2	5	N12	5	0	5	2	0	2
		Rows	2	5	N16	7	1	8	1	0	1
	Total			21				17			6
2.	2/11/89	on	2	6	NCo376	2	0	2	1	5	6
		guard	2	5	N11	5	6	11	0	0	0
		rows	2	5	N12	9	6	15	5	8	13
			2	5	N16	5	2	7	2	4	6
	Total			21				35			25
3.	10/7/90	1st +	2	6	NCo376	1	0	1	1	0	1
		3rd	2	5	N11	1	0	1	1	0	1
		Nett	2	5	N12	2	0	2	1	0	1
		Rows	2	5	N16	1	0	1	0	0	0
	Total			21				5			3

5. Result

Yield and crop characteristics at harvest

Yield Components / Variety		NCo 376	N11	N12	N16	Mean	LSD 5%	LSD 1%	CV %
Stalk data									
Pop x 1000 ha^{-1}	C	162	156	156	178	163			
	T	161	157	145	182	161			
	Mean	162	156	150	180	162			
Height (M)	C	1,81	1,81	1,80	2,04	1,87			
	T	1,89	1,91	1,78	2,06	1,91			
	Mean	1,85	1,87	1,79	2,05	1,89			
Yield data									
Cane t/ha	C	108	111	92	135	111			
	T	116	111	92	136	114			
	LSD 5%	(9)	(9)	(9)	(9)	(5)			
	Mean	112	111	92	136	113	11	16	7,4
Pol % cane	C	10,4	10,3	11,6	10,7	10,8			
	T	10,2	10,1	11,6	10,3	10,5			
	LSD 5%	(1,1)	(1,1)	(1,1)	(1,1)	(0,5)			
	Mean	10,3	10,2	11,6	10,5	10,7	1,4	2,0	9,5
Suc t/ha	C	11,2	11,5	10,7	14,4	12,0			
	T	11,8	11,3	10,6	14,0	11,9			
	LSD 5%	(1,4)	(1,4)	(1,4)	(1,4)	(0,7)			
	Mean	11,5	11,4	10,7	14,2	11,9	2,2	3,1	13,3
(t/suc/ha)% of NCo376		100	99	93	123				

6. Comments on results

6.1 Rainfall was above the long term mean and fairly well distributed throughout the crop period.

6.2 **White grub:** The levels of white grub infestation were low at all the three sampling dates and the numbers, which peaked at the November sampling were markedly lower in July at harvest. Of the total number of recorded white grubs, the treated plots accounted for 37% and the proportion by variety was as follows:

N12 (42%), N16 (25%), N11 (18%) and NCo376 (15%).

At the low levels of infestation recorded, white grub had no effect on the performance of the varieties.

6.3 **Varieties:** It has been reported elsewhere that N12 does not perform well on humic soils and in cool, misty conditions and the results of this plant crop are similar to those from a trial (EVT 4/86) at Upper Tongaat which is also on an Inanda soil form. This trial site (Phoenix Wattle) is situated on a relatively cool, south facing aspect and N16 has significantly (P = 0,01) outyielded N12 (+ 3,5 t suc/ha) and produced substantially more sucrose than NCo376 and N11 which had similar yields.

6.4 The trial continues into the first ratoon and the treatments have been re-applied to this crop.