

SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

Code : A (Plant)5/84
Cat. No.: 1491

Title: Planting setts versus transplants

1. Particulars of the project

<u>This crop</u>	:	Plant
<u>Site</u>	:	La Mercy
<u>Region</u>	:	North Coast Coastal
<u>Soil system</u>	:	Umzinto
<u>Soil form/series:</u>	:	Swartland
<u>Design</u>	:	Randomised block
<u>Variety</u>	:	NCo376 & N12
<u>Fertilizer/ Ameliorants</u>	:	<u>N</u> <u>P</u> <u>K</u>
At planting		94 38 82
Top dressed		- 32 150

Soil analysis: Date: 2.4.84

pH	O.M.%	Clay%	P.D.I.
5,35	-	38	-
ppm			

P	K	Ca	Mg	Zn	Al
13	102	1447	>220	1,1	-

Age: 16,4 m Dates: 2.4.84-13.8.85

Rainfall: 1165,5 mm L.T.M.: 1212,8 mm

Irrigation: NIL

2. Objectives:

To compare yields and crop growth patterns of cane planted as

- (i) Conventional setts
- (ii) transplants

3. Treatments:

1. NCo376 planted as conventional setts with a 30% overlap.
2. NCo376 planted as transplants (from small size trays) at 0,5 m spacing.
3. NCo376 planted as transplants (from large size trays) at 0,5 m spacing.
4. N12 planted as conventional setts with a 30% overlap.
5. N12 planted as transplants (from small size trays) at 0,5 m spacing.

3.1 Notes on treatments:

- Setts and transplants received 2 ℓ of water per m at planting.
- Transplants were approximately 3 months of age at planting.
- Mature filtercake was used as the rooting medium in the trays.
- Trays; Small size tray compartment dimensions: 43 mm x 43 mm x 100 mm
Large size tray compartment dimensions: 50 mm x 50 mm x 100 mm

4. Rainfall (mm):

M	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1984/5	111,9	87,0	21,6	128,0	67,5	13,5	95,3	70,6	56,0	134,9	327,0	8,8
LTM	72,2	47,7	11,7	37,8	54,0	99,4	100,9	113,4	96,0	144,1	117,9	94,3
1985	0,0	26,0	11,6	2,1	3,7	1165,5 mm Total						
LTM	72,2	47,7	11,7	37,8	54,0	1212,8 mm Total						

5. Results

5.1 Yield and crop characteristics at harvest

Treatment	tons cane ha ⁻¹	Suc. % cane	Tons Suc. ha ⁻¹	Stalk pop. x10 ⁻³ ha ⁻¹	Stalk length cm
Setts (NCo376)	95,6	14,99	14,4	122	182
Transplants (NCo376) S	103,5	14,88	15,4	135	189
Transplants (NCo376) L	94,8	15,16	14,4	135	181
Setts (N12)	94,7	15,35	14,6	144	184
Transplants (N12) S	93,5	15,37	14,4	154	179
Mean	96,4	15,15	14,6	138	183
CV %	5,7	3,2	7,6	3,9	4,4
LSD (0,05)	8,4	0,75	1,7	8,4	12,4
LSD (0,01)	11,8	1,05	2,4	11,7	17,4
NB. S = small trays L = large trays					

5.2 Third leaf analysis at 6 and 11 months.

Treatments	6 months Oct.				11 months Feb.			
	N	P	K	S	N	P	K	S
Setts (NCo376)	1,90	0,20	0,88	0,17	1,98	0,22	1,26	0,18
Transplants (NCo376) S	1,85	0,20	0,91	0,17	1,97	0,22	1,24	0,17
Transplants (NCo376) L	1,88	0,21	0,92	0,16	2,02	0,21	1,13	0,18
Setts (N12)	2,03	0,21	1,28	0,17	1,77	0,19	1,18	0,14
Transplants (N12) S	1,93	0,21	1,23	0,15	1,79	0,19	1,14	0,14

6. Comments on results

6.1 General: Rainfall was 96% of L.T.M. and was particularly well distributed during the early months of growth. Average yields were 96 tc/ha which is 5,8 tc/ha/month and 8,2 tc/100 mm gross rainfall.

Third leaf data showed that the initial application of K was insufficient in the NCo376 but that levels were above the threshold following the second topdressing of the trial in February 1985.

6.2 Crop Yields: There were no statistically significant yield differences between planting methods although NCo376 transplants from small trays were apparently superior to both conventional planting and transplants from the larger trays. There was no evidence that responses with N12 were any different to those with NCo376. These results confirm previous reports that yields of autumn planted transplants can equal those of cane planted in the conventional way.

6.3 Stalk length and population: Stalk populations were significantly ($P=0,05$) increased in both varieties when transplants were used. Stalk lengths were not significantly affected and were generally slightly reduced in the transplanted cane with the exception of the NCo376 transplants from small trays.

6.4 Future: The trial will continue to obtain 1st ratoon data after which it will be terminated.

AGK/IS
18 March 1986

SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

Cat No : 1491
Project No :
Code No : A(PLANT)5/84/R1

Title : Planting setts vs transplants - Residual effects

1. Particulars of project

This crop : 1st ratoon
Site : La Mercy
Region : North Coast - Coastal
Soil system : Umzinto
Soil form/series: Swartland
Design : Randomised blocks
Variety : NCo376 and N12
Fertilizer/Ameliorants : N P K
t/d Kg ha⁻¹ 141 20 141

Soil analysis							Date: 13.08.1985	
pH	OM %	Clay %	PDI					
5,19	-	> 30	-					
ppm								
P	K	Ca	Mg	Zn	S	Al		
12	138	1230	>220	0,9	35	1		
Age:		14,7 months						
Date:		(13/8.85 - 4/11/86)						
Rainfall:		1038 mm						
81% of LTM:		1289 mm						
Irrigation:		Nil						

2. Objectives: To compare the effects in the 1st ratoon of cane planted as conventional setts with that planted as transplants.

3. Treatments

1. NCo376 - conventional setts with 30% overlap.
2. NCo376 - transplants (from small size trays) at 0,5 m spacing.
3. NCo376 - transplants (from large size trays) at 0,5 m spacing.
4. N12 - conventional setts with 30% overlap.
5. N12 - transplants (from small size trays) at 0,5 m spacing.

Small size trays dimensions = 43 mm x 43 mm x 100 mm
Large size trays dimensions = 50 mm x 50 mm x 100 mm

4. Rainfall (mm)

Table 1

Month	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
1985-1986	4	28	269	76	86	119	37	161	74	0	30	1
LTM	32	93	128	110	95	155	129	101	66	42	13	35
1986	36	35	78	5	TOTAL : 1038 mm							
LTM	54	93	128	15	TOTAL : 1289 mm							

5. Results

Table 2 Yield and Crop Characteristics at Harvest

Treatments	t ha ⁻¹ cane	Sucrose % cane	t ha ⁻¹ sucrose	Stalk Counts X10 ³ ha ⁻¹	Stalk length (cm)
1. Setts (NCo376)	96	13,89	13,4	137	188
2. Transplants (NCo376) S*	96	13,97	13,5	140	186
3. Transplants (NCo376) L	87	13,43	11,7	137	176
4. Setts (N12)	104	14,21	14,8	177	186
5. Transplants (N12) S	91	14,50	13,2	164	174
Mean	95	14,00	13,3	151	182
CV %	11,4	4,6	14,1	5,9	5,0
SE of treatment means ±	5,43	0,32	0,94	4,42	4,51
LSD (0.05)	16,74	0,99	2,89	13,60	13,90
(0.01)	23,45	1,39	4,05	19,05	19,46

* S = Small trays L = Large trays

Table 3 Eldana Damage

Treatments	% Stalk damaged	Total E/100 stalks	% Joint Bored
1. Setts (NCo376)	60,5	28,5	10,25
2. Transplants (NCo376) S	60,0	37,5	8,92
3. Transplants (NCo376) L	59,5	35,0	9,17
4. Setts (N12)	45,5	13,0	6,78
5. Transplants (N12) S	51,5	26,0	8,15
Mean	55,4	28,0	8,65

Table 4 : Third leaf % dm analysis at 5,6 months sampled on 30/1/1986

Treatments	% dm						Zinc ppm	Ratio N/S
	N	P	K	S	Ca	Mg		
1. Setts (NCo376)	1,83	0,20	0,95	0,16	0,24	0,23	22	11,8
2. Transplants (NCo376) S	1,89	0,20	0,99	0,17	0,24	0,23	21	11,4
3. Transplants (NCo376) L	1,84	0,21	0,98	0,17	0,23	0,22	23	10,8
4. Setts (N12)	1,64	0,17	0,90	0,15	0,27	0,23	16	10,9
5. Transplants (N12) S	1,68	0,17	0,86	0,16	0,30	0,24	15	10,5

6. Comments

General: Rainfall was below that of the long term mean except in the third and eighth months after harvesting when 269 mm and 161 mm fell respectively. Yields were on average 6,5 tc ha⁻¹ month⁻¹ and 9,1 tc ha⁻¹ 100 mm⁻¹ of gross rainfall.

Cane yields: There was no statistically significant evidence of differences between treatments in either variety. Gaps were apparent in some plots and variability was reasonably high. No difference had been detected in the plant crop and therefore it is unlikely that the small apparent differences in this first ratoon are real. (Transplants from large trays with NCo376 and small trays with N12 showed slightly lower cane and sucrose yields and stalk length measurements).

Leaf analysis: Results of leaf analyses taken at 5,6 months of age show low potassium values for all treatments. The soil level was 138 ppm K (310 kg K ha⁻¹) and in spite of this 141 kg K ha⁻¹ was top-dressed.

7. Conclusion

There is no evidence of differences in growth between transplants and conventional setts in the plant or first ratoon crops.

8. Future

This trial has been terminated.