

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: R89/81/R3

Cat. No.: 1300

TITLE: Ripener x lodged cane - Pongola

1. Particulars of the crop

This crop : Third ratoon
Site : Pongola Blk 12.26
Region : Northern irrigated.
Soil system : Komatipoort
Soil form/series : Hutton/Makatini
Design : Randomised block
6 reps.
Plot size (net) : 10m x 1,5 x 2 rows =
30 m²
Variety : NCo 376
Date & age at spraying : 27.4.82 -9,2 months
Date & age at harvest : 17.6.82 -11,9 mths.
Sampling dates : 17.3.82 (0 weeks)
17.4.82 (6 weeks)
17.6.82 (12 weeks)
Irrigation : April 61mm
May 61mm
Rainfall : 13mm
Total : 145mm

Spray method:

CP3 Knapsack and overhead boom
with two TK1 floodjet nozzles.

Pressure: 200 kPa

Volume/ha: 70 l

Weather at spraying:

Fine, warm, calm.
Dew on foliage.

Condition of cane at spraying:

Lodged cane : 6-8 green leaves.
Upright cane: 10-12 green leaves.
Well grown. 15-17 internodes.

Sampling technique:

4 stalks taken from each of 4 points
(2m apart) in net rows of each plot.
Sampling points advanced by 1m at
each sampling occasion.

2. Objectives:

1. To determine the response of lodged NCo 376 ratoon cane to Polado
2. To determine the effects lodging may have on the yields and quality of NCo 376.

3. Treatments:

1. Upright cane - not sprayed.
2. Lodged cane - not sprayed.
3. Upright cane - sprayed. (500 g product/ha)
4. Lodged cane - sprayed. (500 g product/ha)

Comments on treatments.

Cane was lodged by physically pushing stools over to an angle of about 45° following saturating irrigation. Very few stalks were broken in the process.

A storm on the following day flattened the partly lodged cane without affecting the upright cane.

Half the upright and lodged plots were sprayed with Polado, 6 weeks after lodging.

Means of Lodging, % leaf cover and Volumes sprayed at 6 weeks.

Treatments	Lodged Rating *	% Leaf cover	Volumes sprayed (£/ha)
Upright - not sprayed	1,0	100	-
Lodged - not sprayed	4,2	95,8	-
Upright - sprayed	1,0	100	70,5
Lodged - sprayed	4,5	85,8	70,5

(* 1-no lodging 5 - badly lodged)

Note: % leaf cover was simply a visual estimate on each plot.

4. Results.4.1 Sampling results.A. Effects of lodging.

Weeks from lodgings	Stalk mass g/stalk			Juice Purity %			Ers % cane		
	0	6	12	0	6	12	0	6	12
<u>Treatments</u>									
Upright (unsprayed)	676	753	1025	57,5	69,6	80,9	4,2	6,5	9,3
Lodged (unsprayed)	682	744	971	62,2	70,9	<u>82,4*</u>	5,3	7,0	10,1**
Mean	679	749	998	59,9	70,3	81,7	4,8	6,8	9,7
C.V. %	11,7	11,7	10,6	6,6	4,5	1,3	20,2	13,5	4,3
LSD (0,05)*	100,8	105,8	131,1	4,9	3,9	1,3	1,2	1,1	0,54
LSD (0,01)**	139,2	146,1	181,0	6,77	5,38	1,8	1,67	1,58	0,75

B. Effects of ripener (applied 6 weeks after lodging)

Weeks after spraying	Stalk mass g/stalk		Juice Purity %		Ers % cane	
	0	6	0	6	0	6
Upright unsprayed	753	1025	69,6	80,9	6,5	9,3
Lodged unsprayed	744	971	70,9	<u>82,4*</u>	7,0	<u>10,1**</u>
Upright sprayed	776	1047	70,7	<u>82,7**</u>	6,7	<u>10,7**</u>
Lodged sprayed	<u>660*</u>	995	71,8	<u>84,2**</u>	7,3	<u>10,9**</u>
Mean	733	1009	70,8	82,6	6,9	10,2
C.V.%	11,7	10,6	4,5	1,3	13,5	4,3
LSD (0,05)*	105,8	131,1	3,9	1,3	1,1	0,54
LSD (0,01)**	146,1	181,0	5,4	1,8	1,6	0,75

4.2 Results at Harvest.

Treatments	Cane t/ha	Ers % Cane	Ers t/ha	Stalk population x 10 ⁻³ /ha	Stalk heights cm
Upright unsprayed	123	9,3	11,4	143	280
Lodged unsprayed	116	<u>10,1**</u>	11,7	126	291
Upright sprayed	124	<u>10,7**</u>	<u>13,4**</u>	140	268
Lodged sprayed	<u>110*</u>	<u>10,9**</u>	12,0	123	<u>252*</u>
Means	118	10,2	12,1	133	273
C.V. %	7,7	4,3	8,9	12,8	11,7
L.S.D. (P=0,05)*	11,1	0,54	1,3	20,9	39,4
L.S.D. (P=0,01)**	15,4	0,75	1,8	28,9	54,4
<u>Group Means</u>					
Unsprayed	119	9,7	11,5	134	286
Sprayed	117	<u>10,8**</u>	<u>12,7*</u>	132	260
Upright cane	124	10,0	12,4	142	274
Lodged cane	<u>113**</u>	<u>10,5*</u>	11,9	<u>125*</u>	272
L.S.D. (P=0,05)*	7,9	0,38	0,93	14,8	27,9
L.S.D. (P=0,01)**	10,9	0,53	1,29	20,4	38,5

5. Comments.5.1 Effects of lodging.5.1.1. Cane quality.

During the first six weeks of lodging cane quality improved at a slower rate than in the upright cane. Thereafter changes in cane quality were similar for lodged and upright cane. (See fig.1)

The expected decline in cane quality due to lodging did not occur in this trial. This may be related to the relatively low Juice Purity % at the time of lodging (See Cat. No. 1258)

5.1.2. Cane Yields.

Cane yields in lodged plots were reduced by 6% on average. This may have been due to the cumulative damage to stalks

from lodging and from movement through the plots while sampling.

5.2 Effects of Polado on lodged cane.

5.2.1 Cane quality.

The response in terms of ers % cane from spraying lodged cane which had "turned up" was only 50% of that from spraying upright cane but there was a positive response to Polado in both situations.

5.2.2 Cane Yields.

Polado reduced cane yields by 5% which together with the yield reduction due to lodging negated the improvement in cane quality resulting in sucrose yields which were relatively unaffected.

5.3 Effects of Polado on upright cane.

Cane yields were not affected by Polado and consequently the improvement in cane quality increased sucrose yields by 2 tons sucrose per hectare.

RAD/IS
28th July, 1982.

Figure 1. Changes in cane quality from lodging and Polado.

