A IX

SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

Code : R95/83
Cat. No.: 1398

TITLE: Ripener Screening - Felixton (Late Season)

1. Particulars of the crop:

This crop	: Ratoon
Site	: Martin & Barnes Estate
Region	: Zululand
Soil system	: Alluvium
Soil form	: Dundee
Design	: Randomised block
Plot size	: 10 m x 4 rows x 1,4 m
Variety	: NCo 376
Date & age at spraying:	16 Nov; 11 mnths
Date & age at harvest	: 19 Jan; 13 mnths
Duration of crop	: 6 Dec '82-19 Jan '84
Sampling dates	: 16.11.83 (0 weeks) 14.12.83 (4,5 weeks) 18.1.84 (9 weeks)
Irrigation	: Nil
Rainfall	: 1282 mm

Spray method: CO_2 operated overhead boom with two TK 1,0 flood jets

Pressure: 200 kPa

Volume/ha: 71 ℓ

Weather at spraying:
Windy and very hot

Condition of cane at spraying:
10 to 12 green leaves
Very well grown
Purity % = 89

Sampling technique:
Four stalks taken at random from four pre determined points in 2 net rows. Sampling points advanced by 1 m on each sampling occasion.

2. Objectives:
   1. To assess the potential of two new compounds PP005 and HOE 2501 H as a ripener.
   2. To continue assessing the effects of Reverseal 9 as an additive to Polado.

3. Treatments:
   1. Control - not sprayed
   2. Polado at 400 g product/ha + Reverseal 9 at 350 mℓ/ha
   3. Polado at 500 g product/ha
   4. PP005 at 300 mℓ product/ha (=37,5 g a.i/ha)
   5. PP005 at 140 mℓ product/ha (=17,5 g a.i/ha)
   6. HOE 2501 at 2000 mℓ product/ha (=100 g a.i./ha)
   7. HOE 2501 at 3000 ml product/ha (=150 g a.i./ha)

4. Results

4.1 Results from samples taken

Dates and weeks after spraying / Treatments	ers % cane - changes from day of spraying			Purity %		
	16/11 0	14/12 4,5	18/1 9	16/11 0	14/12 4,5	18/1 9
Control	9,2	+0,1	-0,2	90,4	86,9	87,7
Polado 400 g + Reverseal	9,1	+2,3**	+1,4**	89,5	90,8	89,8
Polado 500 g	8,8	+3,0**	+1,2*	89,0	90,4	88,3
PP005 300 mℓ	9,8	+2,0**	+1,2**	90,7	91,6	91,4
PP005 140 mℓ	8,8	+1,5**	+1,0*	88,6	88,8	89,3
HOE 2501 2000 mℓ	9,3	+0,9*	0	89,3	89,1	89,0
HOE 2501 3000 mℓ	9,2	+1,5**	+0,8	88,9	90,3	90,5
Mean	9,2	+1,1	0,7	89,5	89,7	89,4
C.V.%	7,5	6,6	8,0	2,0	1,7	2,1
LSD (P=0,05)*	0,9	0,9	1,0	2,3	2,0	2,5
LSD (P=0,01)**	1,2	1,2	1,4	3,1	2,8	3,4
	Stalk mass - changes in g/stalk from day of spraying			Mass ers - changes in g/stalks from day of spraying		
Control	956	+221	+371	67,7	+21,5	+28,5
Polado 400 g + Reverseal	857	+ 80	+277	72,2	+26,0	+39,1
Polado 500 g	894	+147	+333	65,0	+39,2	+41,9
PP005 300 mℓ	816*	+ 76	+235	72,0	+23,5	+45,8
PP005 140 mℓ	824	+ 77	+204	65,6	+19,2	+37,7
HOE 2501 2000 mℓ	881	+105	+204	71,9	+18,2	+46,3
HOE 2501 3000 mℓ	791*	+ 45	+224	68,5	+17,1	+29,0
Mean	753	+107	264	69,0	+23,5	+38,3
C.V.%	14,0	14,6	12,2	17,8	15,9	15,9
LSD (P=0,05)*	137	164	167	16,0	19,3	21,6
LSD (P=0,01)**	186	222	227	21,7	26,1	29,3

4.2 Results at harvest (9 weeks after spraying)

Treatments	Cane t/ha	ers % cane	ers t/ha	Stalk length of samples (cm)
Control	143	9,0	12,8	218
Polado 400 g + Rev	137	10,6**	14,5	208
Polado 500 g	134	10,0*	13,1	212
PP005 300 mℓ	132	11,0**	14,5	196
PP005 140 mℓ	135	9,8	13,2	209
HOE 2501 H 2000 mℓ	150	9,3	13,9	210
HOE 2501 H 3000 mℓ	126	10,0*	12,7	209
Mean	137	10,0	13,5	209
C.V.%	11,5	8,0	12,0	
LSD (P=0,05)*	20,6	1,0	2,1	
LSD (P=0,01)**	28,0	1,4	2,9	

5. Comments

- Cane quality was improved significantly (P=0,05 and P=0,01) by all chemicals tested within 4,5 weeks of spraying. Following rain and wind the cane started to lodge at about 4 weeks after spraying and cane quality decreased as a result.

- During the first 4,5 weeks after spraying growth of stalks was retarted by most treatments and this partly negated the good responses in terms of cane quality.

- Variability in cane yields was high and because of the damage to stalks caused by lodging the differences in cane yields do not necessarily reflect the true effect of any treatment on the growth of cane.

Polado plus Reverseal 9

The response of 2,3 ers % units from Polado (400 g/ha) and Reverseal 9 was appreciably lower than the response of 3,0 ers % units from Polado (500 g/ha) applied alone. The rate at which cane quality decreased after lodging appears to have been slower in cane treated with Polado and Reverseal 9 than in Polado treated cane. Consequently sucrose yields were greater at harvest in plots treated with Polado + Reverseal 9.

PP005

The increases in cane quality from applying PP005 at 300 mℓ/ha and 140 mℓ/ha were similar at 20% and 16% respectively, 4,5 weeks after spraying. In comparison Polado improved cane quality by 38% during this period. Stalk mass appeared to be reduced to some extent by

4.2 Results at harvest (9 weeks after spraying)

Treatments	Cane t/ha	ers % cane	ers t/ha	Stalk length of samples (cm)
Control	143	9,0	12,8	218
Polado 400 g + Rev	137	10,6**	14,5	208
Polado 500 g	134	10,0*	13,1	212
PP005 300 mℓ	132	11,0**	14,5	196
PP005 140 mℓ	135	9,8	13,2	209
HOE 2501 H 2000 mℓ	150	9,3	13,9	210
HOE 2501 H 3000 mℓ	126	10,0*	12,7	209
Mean	137	10,0	13,5	209
C.V.%	11,5	8,0	12,0	
LSD (P=0,05)*	20,6	1,0	2,1	
LSD (P=0,01)**	28,0	1,4	2,9	

5. Comments

- Cane quality was improved significantly (P=0,05 and P=0,01) by all chemicals tested within 4,5 weeks of spraying. Following rain and wind the cane started to lodge at about 4 weeks after spraying and cane quality decreased as a result.

- During the first 4,5 weeks after spraying growth of stalks was retarted by most treatments and this partly negated the good responses in terms of cane quality.

- Variability in cane yields was high and because of the damage to stalks caused by lodging the differences in cane yields do not necessarily reflect the true effect of any treatment on the growth of cane.

Polado plus Reverseal 9

The response of 2,3 ers % units from Polado (400 g/ha) and Reverseal 9 was appreciably lower than the response of 3,0 ers % units from Polado (500 g/ha) applied alone. The rate at which cane quality decreased after lodging appears to have been slower in cane treated with Polado and Reverseal 9 than in Polado treated cane. Consequently sucrose yields were greater at harvest in plots treated with Polado + Reverseal 9.

PP005

The increases in cane quality from applying PP005 at 300 mℓ/ha and 140 mℓ/ha were similar at 20% and 16% respectively, 4,5 weeks after spraying. In comparison Polado improved cane quality by 38% during this period. Stalk mass appeared to be reduced to some extent by

both rates of PP005.

HOE 2501 H

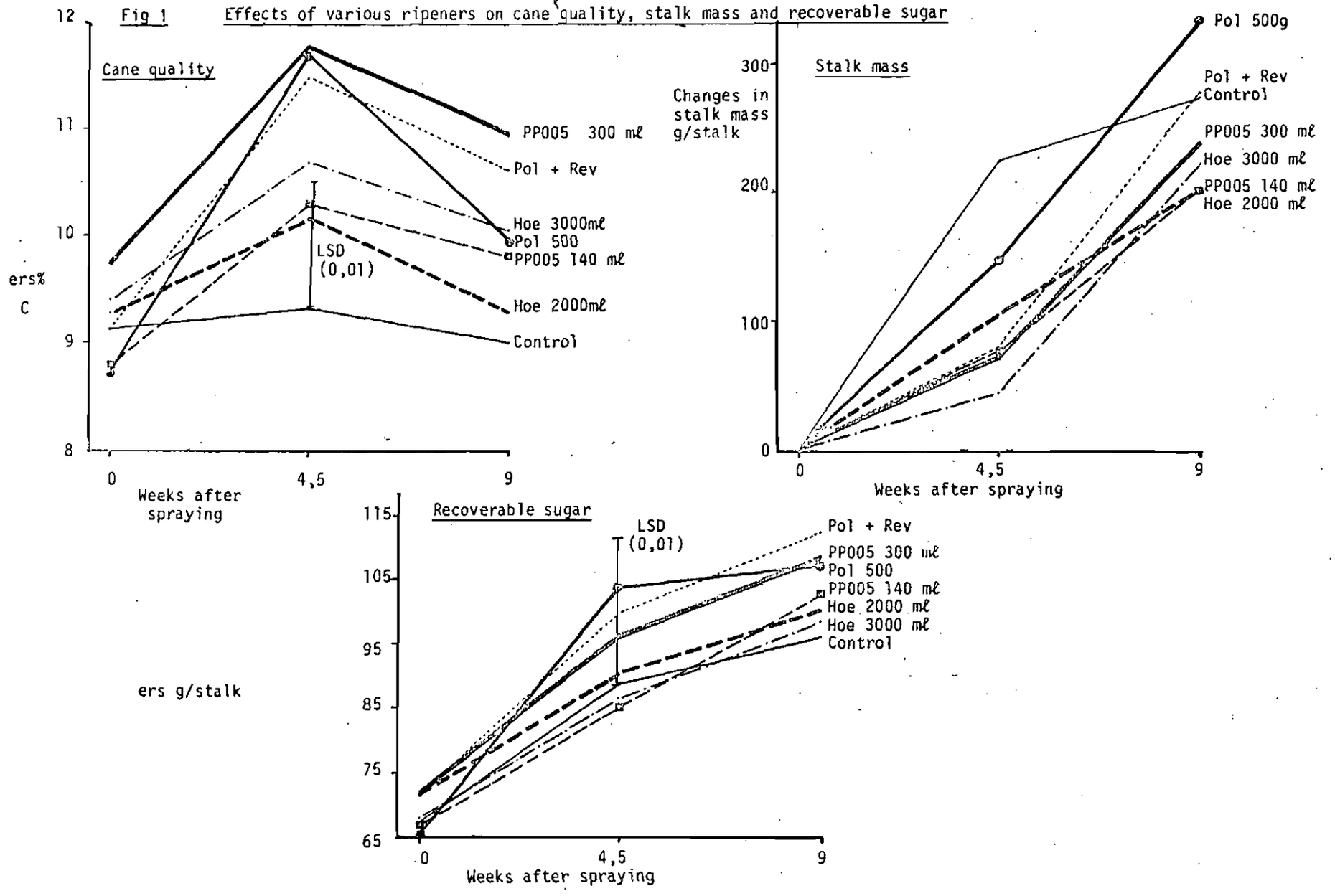
Cane quality was improved by 10% and 16% from applying HOE 2501 H at 2000 mℓ/ha and 3000 mℓ/ha respectively, 4,5 weeks after spraying. Stalk mass was reduced slightly more by this product than by PP005 and markedly more than by Polado.

Regrowth

Because of severe flood damage to the trial soon after harvesting no regrowth measurements will be done.

RAD/IS
14 February 1984

Fig 1 Effects of various ripeners on cane quality, stalk mass and recoverable sugar



A IX

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: A/Min Till 1/83

Cat. No.: 1399

TITLE: Pre-harvest minimum tillage

This crop	:	Ratoon
Site	:	Umzimbete
Region	:	Zululand
Soil system	:	Umzinto river valley
Soil form/series	:	Dundee
Design	:	Extended latin square six replications
Plot size	:	10 m x 6 rows x 1,4 m
Variety	:	NCo 310
Date and age at spraying	:	26 September 1983
	:	c 12 months
Date and age at harvest	:	20 October 1983
	:	c 13 months
Sampling dates	:	23 September 1983 07 October 1983 20 October 1983
Irrigation	:	Nil
Rainfall	:	912 mm (76% of LTM)

Spray method: CO_2 operated overhead boom with two TK 1,0 floodjets

Pressure: 200 kPa

Volume/ha: 76 ℓ

Weather at spraying: Sunny and calm

Condition of cane at spraying: 7-8 green leaves, about 1,25 m tall.

Soil moisture at spraying: 0-20 cm: 27%
20-40 cm: 21%

Sampling technique: Four stalks were selected from four predetermined points in the net rows. Sampling points were advanced by 1 m at each sampling occasion.

2. Objectives

2.1 To determine whether Roundup and Fusilade applied at high rates as pre-harvest treatments will effectively kill the following ratooning crop.

2.2 To determine whether high rates of Roundup and Fusilade have any effects on cane quality within four weeks of application.

3. Treatments

3.1 Control - unsprayed
3.2 Roundup 8 ℓ/ha applied 3,5 weeks before harvesting
3.3 Roundup 12 ℓ/ha applied 3,5 weeks before harvesting
3.4 Fusilade 5 ℓ/ha applied 3,5 weeks before harvesting
3.5 Roundup 8 ℓ/ha + Frigate applied 3,5 weeks before harvesting

4. Results

4.1 Results from samples taken

Dates and weeks after spraying / Treatments	ers % cane			Purity %		
	23/9 0	7/10 2	20/10 3,5	23/9 0	7/10 2	20/10 3,5
Control	11,0	11,2	10,4	92	92	90
Roundup 8 ℓ	10,9	11,3	10,9	91	93	90
Roundup 12 ℓ	10,9	10,7	10,3	92	91	90
Fusilade 5 ℓ	10,7	11,3	1,8**	91	93	93
Roundup 8 ℓ + Frigate	10,9	11,0	11,2	91	91	91
Mean	10,9	11,1	10,9	92	92	91
CV %	5.4	6.7	6.6	1,5	1,7	1,9
LSD (P=0,05)*	0,7	0,9	0,9	1,7	2,0	2,1
LSD (P=0,01)**	1,0	1,2	1,2	2,3	2,7	2,6
	Mass ers (g/stalk)			Stalk mass (g/stalk)		
		Changes from spraying date			Changes from spraying date	
Control	42,1	+14,0	+14,6	379	+113	+161
Roundup 8 ℓ	45,4	+ 9,0	+15,6	414	+ 68	+132
Roundup 12 ℓ	43,2	- 0,6*	+ 5,9	398	+ 4*	+ 72
Fusilade 5 ℓ	47,6	+ 2,1	+13,4	441	0*	+ 71
Roundup 8 ℓ + Frigate	44,1	+ 6,5	+15,3	401	+ 56	+126
Mean	44,5	+ 6,2	+13,0	407	+ 48	+112
CV %	29,5	23,3	21,4	26,0	18,4	17,0
LSD (P=0,05)*	16,0	14,5	15,1	129,4	102	108
LSD (P=0,01)**	22,1	19,9	20,7	178,0	140	149

4.2 Results at harvest (3,5 weeks after spraying)

Treatment	Cane t/ha	Sucrose % cane	Sucrose t/ha	Stalk population x 1 000/ha	Stalk heights (cm)
Control	58	11,9	6,9	83	137
Roundup 8 ℓ	54	12,5	6,9	73	138
Roundup 12 ℓ	52	11,8	6,2	72	123
Fusilade 5 ℓ	56	13,3**	7,5	82	136
Roundup 8 ℓ + Frigate	60	12,6	7,7	79	141
Mean	56	12,4	7,0	78	135
CV %	15,7	5,3	19,0	9,6	13,0
LSD (P=0,05)*	10,8	0,9	1,6	9,2	21,5
LSD (P=0,01)**	14,8	1,1	2,2	12,6	29,5

4.3 Effects on regrowth 6 weeks and 11,5 weeks after harvesting the treated crop

Treatment	% surviving stools	Stalk heights (cm)	Stalk population x 1 000/ha	% surviving stools	Stalks heights (cm)	Stalk population x 1 000/ha
Control	81	24,3	217	88	43	327
Roundup 8 ℓ	59	8,5	140	70	18	265
Roundup 12 ℓ	55	7,7	100	59	15	188
Fusilade 5 ℓ	78	14,6	242	83	31	354
Roundup + Frigate	61	9,1	136	67	18	257

5. Comments

5.1 Pre-harvest effects

Fusilade improved cane quality significantly (P=0,01) 3,5 weeks after spraying. Because variation in cane yield was high the severe reduction

in stalk mass from Fusilade measured in samples taken 2 and 3,5 weeks after spraying was not evident in the cane yields at the time of harvesting. Fusilade increased sucrose yields by 0,6 tons^{-ha} (ns)

Unlike the 12 ℓ^{-ha} rate of Roundup the 8 ℓ^{-ha} of Roundup had little effect on stalk mass. There appeared to be little difference in the response to 8 ℓ Roundup where Frigate was added to it. Roundup at 8 ℓ^{-ha} + Frigate increased sucrose yields by 0,8 tons^{-ha} (ns).

5.2 Post-harvest effects

6 weeks after spraying

The surviving stools were reduced by 26% and 22% by Roundup at 12 ℓ^{-ha} and 8 ℓ^{-ha} respectively. The addition of Frigate did not improve the effects of Roundup at 8 ℓ^{-ha}. The total stalk population was reduced on average by 42% from the Roundup treatments.

Fusilade reduced the number of surviving stools by only 3% and appeared to increase the total number of stalks^{-ha} slightly.

11,5 weeks after spraying

The residual effects of the treatments measured six weeks after harvesting had diminished slightly.

RAD/VSJ
6 March 1984