

File 7

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: R83/80

Cat. No.: ~~2521~~ /247

TITLE: Ripeners - end of season (Shakaskraal)

1. Particulars of trial

<u>This crop</u>	: Plant	<u>Spray method</u> : CO ₂ operated overhead boom sprayer with two TK 1,0 nozzles
<u>Site</u>	: Shakaskraal Fld 33	<u>Pressure</u> : 200 kPa
<u>Region</u>	: North coast coastal	<u>Volume/ha</u> : 70 ℓ
<u>Soil form/series</u>	: Longlands : Waldene	<u>Weather at spraying</u> : Calm and overcast 25 cm rain during preceding 3 days
<u>Design</u>	: Randomised block, 4 reps	<u>Condition of cane at spraying</u> : 9-12 green leaves per stalk; 11-14 internodes. Well grown and green. Ave. juice purity: 87%
<u>Plot size</u>	: 4 row x 16 m at 1,4 m spacing	<u>Sampling technique</u> : 3 stalks from each of 6 pre-determined sites within 2 net rows. Sample sites varied at each sampling.
<u>Variety</u>	: NCo 376	
<u>Age at spraying</u>	: 10,5 months	
<u>Age at harvest</u>	: 16,7 months	
<u>Sampled</u>	: 0, 3, 7, 10, 13, 16, 19 and 24 weeks	
<u>Moisture regime</u>	: Rainfall: 572 mm <u>Irrigation</u> : 840 mm <u>Total</u> : 1 412 mm L.T.M.: 647 mm	

2. Objectives

1. To enable SMRI to measure in greater detail, the effects of glyphosate on cane quality.
2. To determine the effects of an extended period of 24 weeks between glyphosate application and harvesting.

3. Treatments

1. Control - unsprayed
2. Roundup (41%) 0,41 kg ai/ha 1 ℓ product/ha
3. Mon 8000 (75%) 0,41 kg ai/ha 0,55 kg product/ha

4. Results

4.1 Trial 1 (Extract from Technical Report No. 1273 - SMPI by R. Lionnet)

Table 1: Analysis of cane and mixed juice

Weeks:	Control			MON 8000			Roundup		
	0	3	6	0	3	6	0	3	6
Moisture % cane	73,3	73,4	72,2	73,0	73,0	70,7	73,6	71,6	70,3
Fibre % cane	12,7	11,8	12,0	12,5	11,3	12,8	12,5	12,3	12,1
Pol % cane	12,4	13,0	14,5	12,7	13,8	15,2	12,0	14,5	16,5
Cane purity	88,6	88,2	92,0	87,6	88,2	92,2	86,2	90,3	94,0
Mixed juice									
Pol/dry solid purity	88,1	88,6	87,3	88,0	88,6	89,3	86,6	89,5	89,7
Sucrose/dry solid purity	86,0	89,6	86,7	85,9	88,9	89,2	85,7	89,0	90,1
Ash % dry solids	3,94	3,57	3,26	3,96	3,71	3,25	4,03	3,53	3,19
Pol/sucrose	1,02	0,99	1,01	1,02	1,00	0,99	1,01	1,01	1,00
Glucose % dry solids	1,95	1,91	2,67	1,85	1,46	1,73	2,46	1,17	0,85
Fructose % dry solids	1,46	1,32	1,57	1,42	1,14	1,11	1,83	0,90	0,59
Suc+Fruct+Gluc % dry solids	89,4	92,8	91,0	89,1	91,5	92,0	90,0	91,1	91,6
Fructose/Glucose	0,75	0,69	0,58	0,77	0,78	0,64	0,74	0,77	0,69

Conclusions:

The ripeners used had a drying out effect on the cane and increased purity of both cane and mixed juice, the latter mostly through an increased conversion of reducing sugars into sucrose.

4.2 Trial 2 See graphs reflecting changes in both stalk mass and Pol % cane.

Comments

The reduction in stalk mass associated with glyphosate application persists for about 19 weeks after which there appears to be a "recovery" period during which the difference between the mass of treated and untreated stalks diminishes. This "recovery" of treated stalks is reflected in the decrease in cane quality.

In practice, cane would be harvested about six weeks after treatment when the effect on cane quality is at its maximum and before cane mass is adversely affected as illustrated in the graph.

RAD/VJ
17 August 1981

TRIAL I: Results

Figure 2. Effect of ripeners on sugars in mixed juice

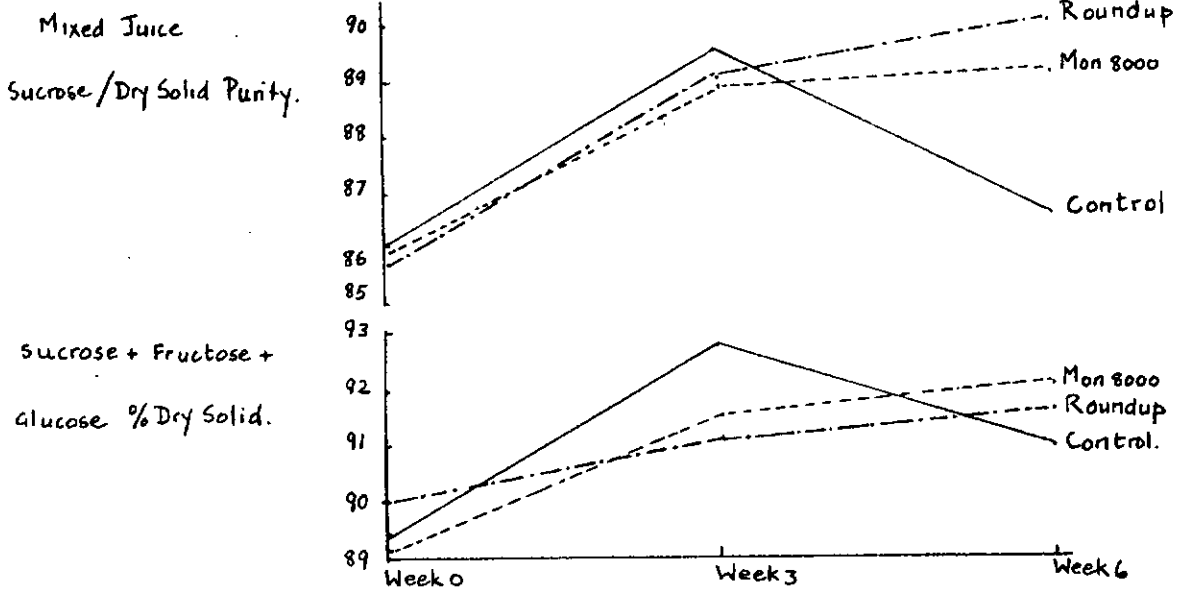
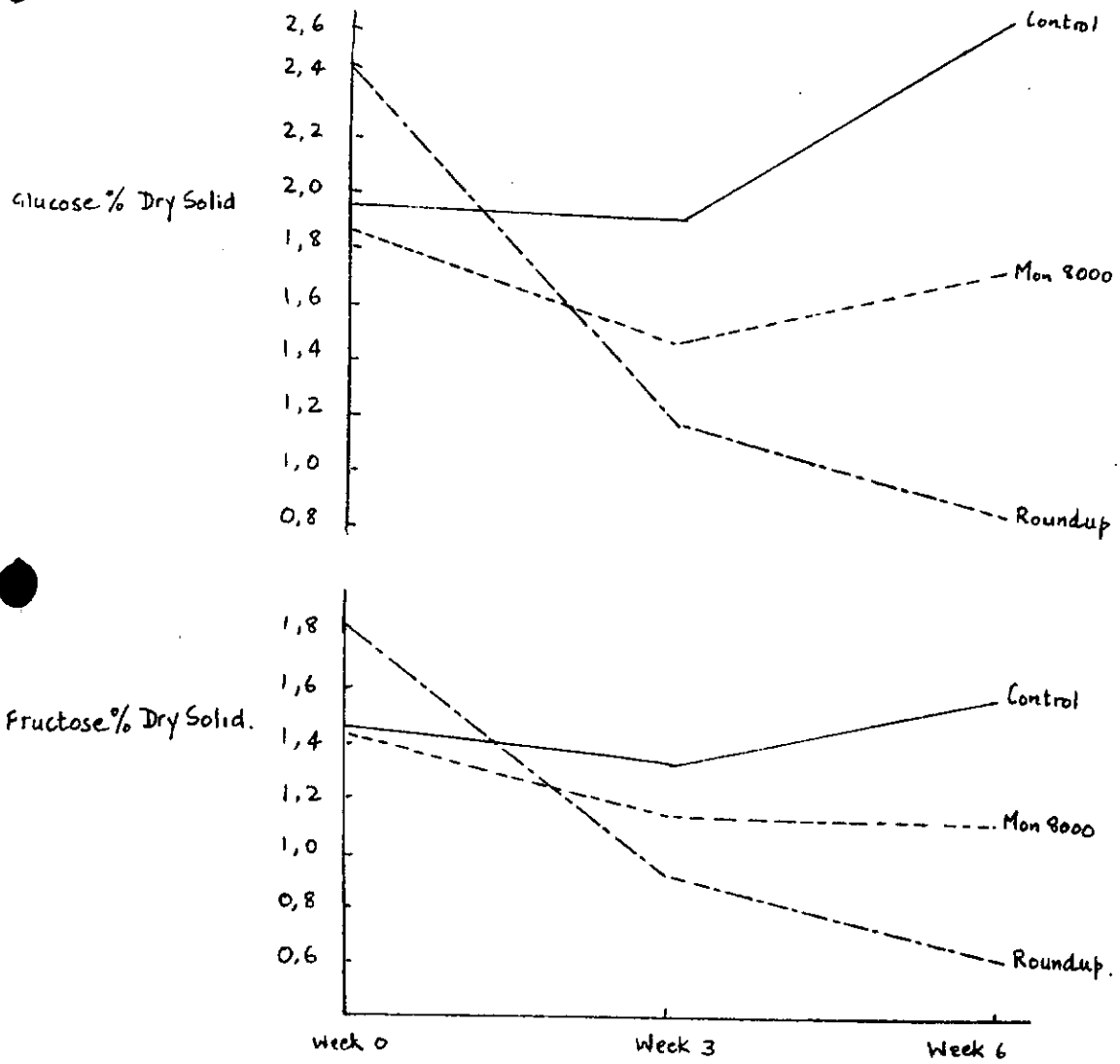


Figure 3. Effect of ripeners on reducing sugars in mixed juice



4.2 TRIAL 2 Sampling Results

