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SOUTH AFRICAN SUGAR INDUSTRY AGRONOMISTS' ASSOCIATION

7310/8 CHEMICAL RIPENER TRIAL

TERMINAL REPORT

Catalogue: 1177

Object : To determine the effects of spraying different chemical ripeners on carry-over cane i.e. cane 14 months old.

Planted : 22 December, 1978.

Terminated : 6 May, 1980.

Age at harvest : 16,5 months.

Location : ZSA Experiment Station, Field F 1-3.

Soil type : Rotated P.E.1 sandy clay loam derived from gneiss.

Design : 6 randomised blocks.

Variety/spacing : NCo 376, Rows 1,5m apart.

Sprayed : 12 February, 1980.

Fertiliser :

	N	P	K
Plant	140 kg ha^{-1}	60 kg P_2O_5 ha^{-1}	-

Irrigation and Rainfall :

	Irrigation	Rainfall
Plant	1 341mm	1 138mm

Treatments : Chemical ripeners

1. Control.
2. Embark 0,75kg a.i. ha^{-1}
3. Ethrel 0,75kg a.i. ha^{-1}
4. Polaris 4kg material ha^{-1}
5. Glyphosate 0,6kg a.i. ha^{-1}

Conduct : All chemical ripeners were mixed with water and a surfactant added if not already added by the manufacturers. Sufficient solution was made up to ensure that the correct levels of chemical ripeners were applied when 80 l of solution ha^{-1} was sprayed over the top of the cane canopy. A carbon di oxide pressurised knapsack sprayer with FS 480 jets on a T boom was used.

Results : Cane Yields. Although treatment differences were non-significant, spraying the chemical ripeners Embark, Polaris, and Glyphosate onto leaf canopeis 12 weeks before harvesting appeared to reduce cane yields, while Ethrel had no effect. The lower cane yields after spraying were associated with a slower rate of stalk extension.

ERC% cane. Spraying chemical ripeners had no significant effects on ERC% cane. This was due to the high

level of stalk maturity at the time of spraying i.e. Purity %'s were 90 (±) which is ± 15% greater than the maximum observed for good responses to chemical ripeners. The lack of differences were largely associated with slow rates of stalk extension in all maturing stalks.

TERC ha^{-1}. Due to no significant differences in cane yields and ERC% cane there were no differences in tonnes estimated recoverable crystal ha^{-1}.

TFAS% cane and TTFAS ha^{-1}. Total fermentables as sugar (TFAS) produced similar trends to ERC, with no significant differences between treatments.

Stalk counts. Treatments had no effect on stalk counts.

Lodging. No lodging was observed before "carrying over the crop" i.e. at 12 months. However, two months later during a short period of rapid stalk extension before spraying, all plots lodged.

Conclusions : These results confirm that spraying chemical ripeners onto relatively mature stalks will not significantly enhance the rate of natural accumulation of sugar.

RJH/May '80.
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7310/8 CHEMICAL RIPENER TRIAL - CANE YIELDS (t/ha^{-1}) ERC% CANE, TERC/ha^{-1}, TFAS% CANE, TTFAS/ha^{-1}, STALK COUNTS, STALK LENGTHS AND DIAMETERS AND LODGING% - PLANT CROP

Treatments	Cane yields t/ha^{-1}	ERC% CANE			TERC ha^{-1}	TFAS% cane (at harvest)	TTFAS ha^{-1}
		At spraying	Six weeks later	12 weeks later (at harvest)			
Chemical ripeners							
Control	175,4	12,31	12,73	13,63	23,93	15,64	27,45
Embark	166,4	12,50	13,15	13,70	22,75	15,80	26,26
Ethrel	175,3	12,46	12,42	13,32	23,35	15,45	27,09
Polaris	161,7	12,57	13,41	13,55	22,02	15,70	25,49
Glyphosate	164,2	13,32	13,67	14,52	23,89	16,40	26,96
L.S.D. P = 0,05	N.S.	-	-	N.S.	N.S.	N.S.	N.S.
Trial mean	168,6	12,63	13,08	13,74	23,19	15,80	26,65
S.E. treatment means ±	5,10	-	-	0,38	1,03	0,31	1,04
C.V.%	7,41	-	-	6,78	10,83	4,85	9,60

Treatments	Stalks ha^{-1} x 10^{-3}	Stalk lengths (m)			Stalk diameter (cm) (at harvest)	Lodging %
		At spraying	Six weeks later	12 weeks later (at harvest)		
Chemical ripeners						
Control	173,7	2,76	3,04	3,24	2,25	99,2
Embark	167,8	2,82	2,93	3,11	2,18	99,2
Ethrel	168,9	2,92	3,17	3,31	2,12	100,0
Polaris	165,1	2,77	2,90	3,06	2,17	100,0
Glyphosate	165,3	2,85	2,95	3,05	2,20	100,0
Trial mean	168,2	2,82	3,00	3,15	2,18	99,7

7310/8 CHEMICAL RIPENER TRIAL - PURITY% AND ERC% CANE IN DIFFERENT STALK POSITIONS - PLANT CROP

Treatments	Stalk position	Purity %			ERC% cane		
		At spraying	Six weeks later	12 weeks later (at harvest)	At spraying	Six weeks later	12 weeks later (at harvest)
Chemical Ripeners							
Control	Top	79,8	88,2	86,3	8,80	11,38	12,84
	Middle	92,8	93,2	92,3	14,27	13,89	14,82
	Bottom	93,1	93,9	92,7	13,06	13,01	13,37
Embark	Top	81,4	88,9	87,1	8,84	11,97	13,74
	Middle	93,4	92,5	90,5	14,30	14,05	14,38
	Bottom	93,1	93,8	90,1	13,40	13,35	13,06
Ethrel	Top	79,9	87,4	86,2	8,36	10,97	13,10
	Middle	93,5	93,9	91,2	14,62	14,02	14,35
	Bottom	94,1	93,4	91,5	13,55	12,58	12,71
Polaris	Top	81,3	87,5	88,5	9,08	11,33	13,42
	Middle	93,8	94,7	90,4	14,45	14,91	14,47
	Bottom	94,7	96,0	90,9	13,54	13,81	12,94
Glyphosate	Top	82,7	90,1	88,0	9,30	12,43	14,34
	Middle	94,3	94,4	92,6	15,16	15,04	15,62
	Bottom	95,9	94,8	92,4	14,42	13,58	13,84
Mean	Top	81,0	88,4	87,2	8,88	11,62	13,49
	Middle	93,6	93,7	91,4	14,56	14,38	14,73
	Bottom	94,2	94,4	91,5	13,59	13,27	13,18