SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

EXPERIMENT RESULT

CODE: N19 * RIPENER 33/90/SW SIS 'T'

CAT: 1768

TITLE: EARLY SEASON CHEMICAL RIPENING OF N19 IN SWAZILAND

1. PARTICULARS OF PROJECT

This Crop : 2nd ratoon	Spray Details: Ethrel / Fusilade
Site : SIS - Vuvulane Estate. Field P3/11	Date applied : 14/03/90 / 08/05/90
	Age at spray : 7.75 m / 9.5 m
Region : Northern Irrigated (Swaziland)	Weeks before harvest : 14.5 / 7
Soil Set : 'T'	Juice Purity : 76% / Unsp. :85% Ethrel:86%
Design : Randomised blocks 5 replications	Conditions at spraying Ethrel - Early morning, calm with gusts of wind.
Variety : N19	Fusilade - Early morning, calm
Fertiliser: N P K (kg ha^{-1}) 170 30 -	Spray method : CO_2 constant pressure knapsack with hand held "T" boom. Delivery rate ± 49 l/ha through two T.K 1.5 nozzles.
Dates : 24/07/89 - 03/07/90	
Age at Harvest : 11.5 m	
Irrigation: 1028 mm Rainfall : 662 mm Total : 1690 mm	

2. OBJECTIVES

1.1 To determine the optimum ripening treatment for early harvested N19.

3. TREATMENTS

3.1 Control
3.2 Ethrel @ 1,00 l/ha.
3.3 Ethrel @ 1,50 l/ha.
3.4 Fusilade @ 0,45 l/ha.
3.5 Fusilade @ 0.60 l/ha.
3.6 Ethrel @ 1,00 l/ha + Fusilade @ 0,45 l/ha.
3.7 Ethrel @ 1,50 l/ha + Fusilade @ 0,45 l/ha.
3.8 Ethrel @ 1,00 l/ha + Fusilade @ 0.60 l/ha.
3.9 Ethrel @ 1,50 l/ha + Fusilade @ 0.60 l/ha.

4. SAMPLING METHODS

4.1 Sucrose sampling commenced at the time of Ethrel applications and continued at approximately monthly intervals until harvest

4.2 Samples comprised 20 stalks per treatment taken from 4 localities in the net lines of each plot.

5. RESULTS

5.1 Table 1: Harvest Data

Treatments	Tons Cane/Ha	Ers % Cane	Tons Ers/Ha	Sucrose % Cane	Tons Sucrose/Ha
Control	105	14.33	15.0	15.92	16.7
Ethrel @ 1.0 l/ha	103	14.55	14.9	16.12	16.5
Ethrel @ 1.5 l/ha	104	14.60	15.2	16.12	16.7
Fusilade @ 0.45 l/ha	106	14.10	14.9	15.74	16.6
Fusilade @ 0.6 l/ha	106	15.02	15.9	16.53	17.5
E @ 1.0 + F 0.45 l/ha	103	15.17	15.6	16.70	17.2
E @ 1.5 + F 0.45 l/ha	96	15.63	15.0	17.02	16.3
E @ 1.0 + F 0.6 l/ha	107	14.91	15.9	16.48	17.6
E @ 1.5 + F 0.6 l/ha	101	15.25	15.4	16.75	16.9
LSD Treatments					
(0.05)	15	0.60	2.0	0.53	2.3
(0.01)	21	0.80	2.7	0.71	3.0
Significance	NS	**	NS	**	NS
Mean	103	14.84	15.3	16.37	16.9
CV %	11	3.1	10.2	2.5	10.4

5.2 Table 2: Mean Differences Between Ripened Treatments and Unripened Controls

TREATMENTS	T CANE/HA	ERS %	T ERS/HA	SUC %	T SUC/HA
Ethrel @ 1.0 l/ha	- 2	0.22	- 0.09	0.20	- 0.2
Ethrel @ 1.5 l/ha	- 1	0.27	0.17	0.20	0
Fusilade @ 0.45 l/ha	1	- 0.23	- 0.10	- 0.18	- 0.1
Fusilade @ 0.6 l/ha	2	0.69‡	0.91	0.61‡	0.8
E @ 1.0 + F 0.45 l/ha	- 2	0.84‡‡	0.65	0.78‡‡	0.5
E @ 1.5 + F 0.45 l/ha	- 9	1.33‡‡	- 0.05	1.09‡‡	- 0.4
E @ 1.0 + F 0.6 l/ha	3	0.58	0.92	0.56‡	0.9
E @ 1.5 + F 0.6 l/ha	- 4	0.92‡‡	0.35	0.83‡‡	0.2

‡ Significant at P = 0.05
‡‡ Significant at P = 0.01

5.3 Table 3: Sample Data

TREATMENTS	WEEKS AFTER APPLICATION											
	Ethrel 0 Fusilade -7			7 0			12 5			14 7		
	g/stalk	% ERC	g ERC stalk	g/stalk	% ERC	g ERC stalk	g/stalk	% ERC	g ERC stalk	g/stalk	% ERC	g ERC stalk
Control	1106	7.88	87	1388	11.32	156	1416	13.07	184	1421	14.33	204
Ethrel @1.0 l ha^{-1}	1019	7.52	77	1339	11.91	160	1346	13.81	186	1302	14.55	189
Ethrel @1.5 l ha^{-1}	1089	7.59	83	1424	11.83	168	1539	13.90	214	1542	14.60	225
Fusilade @0.45 l ha^{-1}	1056	6.94	73	1242	11.34	139	1584	13.59	215	1152‡	14.10	168‡
Fusilade @0.60 l ha^{-1}	1069	7.82	83	1278	11.66	148	1462	14.29	208	1448	15.02	218
E @1.0 + F @0.45 l ha^{-1}	983	7.96	77	1391	11.96	166	1381	14.13	195	1334	15.17	202
E @1.5 + F @0.45 l ha^{-1}	1073	7.41	79	1286	12.22	157	1401	14.35	201	1378	15.63	215
E @1.0 + F @0.60 l ha^{-1}	1115	7.38	82	1429	11.70	167	1349	14.32	192	1327	14.91	198
E @1.5 + F @0.60 l ha^{-1}	1082	8.09	87	1367	11.80	160	1492	14.68	218	1398	15.25	213
LSD Treatments												
(0.05)	152	0.97	13	204	1.14	23	162	0.75	22	205	0.60	32
(0.01)	204	1.31	17	275	1.53	31	218	1.01	30	275	0.80	44
Significance	NS	NS	NS	NS	NS	NS	NS‡	‡‡	‡	NS	‡‡	‡
Mean	1066	7.62	81	1349	11.75	158	1441	14.01	202	1371	14.84	204
CV%	11	9.9	12	12	7.5	11	9	4.17	8	12	3.11	12

‡ This sample appears to be unrepresentative and does not agree with harvest results.

6. COMMENTS

6.1 Cane yield

Responses to ripening were variable and not significant in this trial.

6.2 Cane Quality

Sucrose content was increased by most ripening treatments and although responses were not large they were significant, particularly in the combination treatments.

Responses to Ethrel alone were poor in this trial and possibly reflect the maturity of the cane at spraying (Juice Purity 76%). Sample data show that sucrose content was marginally increased 7 weeks after application and that significant responses had developed by 12 weeks. Responses at harvest were not significant, however, apparently as a result of accelerated natural ripening in the unsprayed controls.

Responses to Fusilade were more significant and were apparent 5 weeks after application. The response to the low rate of Fusilade applied alone was unaccountably poor while the response to the higher rate was significant.

The responses to the combination treatments tended to be better than the single treatment of Fusilade although the differences were not significant.

6.3 Sucrose Yield

The responses in sucrose yield were not significant although yields tended to be increased by most of the combination treatments and the higher rate of Fusilade when applied alone.

7. CONCLUSION

* The response of N19 to Fusilade in previous trials has been poor and increases in cane quality have often been offset by significant reductions in cane yields. There were no reductions in cane yields in this trial even with the high rate of Fusilade, and the ability of N19 to respond positively to Fusilade has thus been established. More work will be necessary to determine optimum timing and rates of application on this variety.

* The response to Ethrel was poor in this trial and resulted from relatively high maturity at application as well as good natural ripening at harvest. In view of the early maturity of N19 it appears that application may have to take place earlier than currently recommended. It is also questionable that it is worthwhile applying this chemical to July harvest N19, particularly on marginal soils. These aspects will be investigated next season.

AGK/PCH/vnm