SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Cat No : 1678
Project No : 3673
Code No : HW 357/88/R2

Title : Phytotoxicity from late post-emergent applications of MSMA combinations

OBJECTIVES : To assess the phytotoxicity of various MSMA combinations with new products

1. PARTICULARS OF PROJECT

This crop : 2nd ratoon
Site : Pongola Block 305
Region : Northern area
Soil system : Komatipoort
Soil form/series : Hutton/Shorrocks
Variety : NCo376
Age (mths) : 11,9
Dates : 21.7.88 - 18.7.89
Rainfall (mm) : 746
Irrigation (mm) : 671
Total (mm) : 1417
LTM rainfall (mm): 644

Soil analysis Date: 19/8/88

pH (water)	Clay (%)	OM (%)
6,7	> 30	-

ppm

P	K	Ca	Mg
30	211	940	> 350

Fertilizer (kg/ha)

N	P	K
139	27,8	139

2. DESIGN

Design : Randomised blocks
Replication : 6
Whole plot size : 8 m x 6 rows x 1,4 m = 67,2 m^2
Net plot size : 6 m x 4 rows x 1,4 m = 33,6 m^2
Row spacing : 1,4 m

3. TREATMENTS

See results.

4. CHEMICAL FORMULATIONS USED

	Product	Formulation	Active Ingredient
P1	Classic	250 g/kg DF	Chlorimuron-ethyl
P2	MSMA	720 g/ℓ SOL	Monosodium methanearsenate
P3	Bladex Plus	333g + 167 g/ℓ	Cyanazine/Atrazine
P4	Addit	-	-

5. APPLICATION DETAILS

Treatment dates	: 1st spray 4/10/88	2nd MSMA spray 25/10/88
Time of application	: 15h20 - 17h10	8h15
Applicator	: CP3	CP3
Nozzle	: APM Green	APM Green
Height	: 60 cm	100 cm
Method	: Directed interrow	Directed interrow
Output	: 36,2 mℓ/sec	33,1 mℓ/sec
Output	: 25,9 mℓ/m²	23,6 mℓ/m²

6. WEATHER CONDITIONS AT TIME OF SPRAYING

Treatment dates	: 1st spray 4/10/88	2nd MSMA spray 25/10/88
General	: Clear and hot	Clear and warm
Dew	: Nil	Nil
Soil surface	: Dry	Dry
Wind	: Slight	Slight
Sunshine hours	: 9,3	0,0
Temperature °C 08h00	: 19,8	18,0
14h00	: 31,0	32,8
Relative humidity (%) 08h00	: 85	80
14h00	: 45	27
Rainfall: On day of spray (mm)	: Nil	Nil
No days to 1st rain	: 5	8
At 1st rain (mm)	: 15,5	2,5
In 1st 14 days (mm)	: 88,7	19,7

7. Results

Table 1 : Treatment effects on stalk heights (cm to TVD) and populations (x 1000/ha) at 3,8 and 5,6 months after spraying

Treatment	Rate (ℓ or kg) Product/ha	Populations			Stalk heights		
		3,8m	5,6m	% of control at 5,6m	3,8m	5,6m	% of control at 5,6m
Classic + MSMA	0,12 + 2	220	173	84	188	248	101
Classic + MSMA	0,24 + 4	207	201	98	183	249	101
Classic + MSMA + Addit	0,12 + 2 + 0,5%	215	205	100	184	242	98
Classic + MSMA + Addit	0,24 + 4 + 0,5%	218	208	101	185	245	100
Bladex Plus + MSMA	8 + 2,5	190	217	106	184	248	101
Bladex Plus + MSMA	16 + 5	195	208	101	181	251	102
MSMA/MSMA (Split)	3/3	187	209	102	187	253	103
Control	-	205	205	100	185	246	100

Table 2 : Effects on cane yield (tons/ha) sucrose % cane and sucrose yield (tons/ha) of post-emergent herbicide treatments directed into the interrow

Treatments	Rate (ℓ or kg) Product/ha	Cane (t/ha)	Sucrose % cane	Sucrose (t/ha)
Classic + MSMA	0,12 + 2	148	12,6	18,6
Classic + MSMA	0,24 + 4	156	12,2	18,9
Classic + MSMA + Addit	0,12 + 2 + 0,5%	142	12,0	17,0
Classic + MSMA + Addit	0,24 + 4 + 0,5%	150	11,8	17,7
Bladex Plux + MSMA	8 + 2,5	145	12,5	18,1
Bladex Plux + MSMA	16 + 5	151	12,5	18,9
MSMA/MSMA (Split)	3/3	145	12,2	17,7
Control	-	150	12,6	18,9
CV %		5,7	4,4	6,5
SE Treatment means	±	3,5	0,2	0,5
LSD (0,05)		10	0,6	1,4
(0,01)		13	0,9	1,9

8. COMMENTS

° Mixtures other than the standard were tested at both normal and twice the normal rate. Scorch ratings were not done.

° **Classic + MSMA and Classic + MSMA + Addit**
Stalk height measurements were not effected by any of these mixtures while populations appeared to be slightly reduced where the standard rate was applied. Reductions in cane yield were non-significant compared to control but were greater with the inclusion of 0,5% Addit (Table 2) Addit also appeared to suppress cane quality.

° **Bladex Plux + MSMA**
Neither growth nor yield was effected significantly by the two rates of this mixture tested.

° **MSMA/MSMA**
Two consecutive applications of MSMA represented the standard treatment for comparisons. The resultant cane and sucrose yield decrease from this treatment was minimal and non-significant compared to the control.

° The effects on yield would most likely have been greater had the spray been directed over the cane row.

NBL/cvp
30 August 1989