

Rainfall (mm) on day of spray : 0
 Days to first rain : 1
 Amount of first rain : 2,0
 Sunshine hours : 7,8

5. Results

1. Mean visual ratings of leaf scorch and stunting based on a 1-9 scale where 1 = no effect and 9 = dead and a 1-5 scale where 1 = very poor and 5 = very good growth respectively are presented in Table 1.
2. Crop measurements taken 5 days and 3, 6,5 and 10 months after spraying are presented in Table 2.
3. Yield date at harvest are presented in Table 3.

Table 1 Mean visual ratings of leaf scorch and stunting taken 2 and 5 weeks after spraying.

Treatments	Rate	Leaf scorch		Stunting	
		2	5	2	5
1 Control/unsprayed	-	1,0	1,9	5,0	5,0
2 Diuron + 2,4-D + S	4,0 + 2,88	2,3	1,5	3,0	3,8
3 Diuron + Sencor	3,2 + 2,8	2,0	1,5	3,6	4,6
4 Fortrol/ametryne + S	2,5	1,5	1,0	4,2	4,8
5 Fortrol/ametryne + S	2,5	2,0	1,6	3,3	4,4
6 Fortrol/ametryne + S	5,0	2,1	1,5	3,3	4,2
7 Ametryne + Velpar	4,0 + 1,35	2,8	1,7	2,3	3,8
8 Ametryne + MSMA	4,0 + 5,76	4,6	3,5	3,2	2,8

Table 2 Crop measurements taken 5 days and 3, 6,5 and 10 months after spraying

	Stalk length (m)				Population (1000/ha)			
	50	3	6,5	10	50	3	6,5	10
1. Control unsprayed	0,10	0,87	1,51	1,68	176	210	136	132
2. Diuron + 2,4-D + S	0,11	0,86	1,41	1,59	188	230	157	146
3. Diuron + Sencor	0,10	0,93	1,58	1,72	186	243	151	145
4. Fortrol/ametryne + S(directed)	0,10	0,94	1,62	1,78	174	236	143	139
5. Fortrol/ametryne + S	0,11	0,92	1,58	1,74	173	229	149	143
6. Fortrol/ametryne + S	0,11	0,94	1,58	1,72	187	243	146	146
7. Ametryne + Velpar	0,11	0,89	1,53	1,68	201	252	156	148
8. Ametryne + MSMA	0,10	0,83	1,40	1,62	181	249	139	132

Table 3 Yield data at harvest

Treatments	Rate in kg or l ai or ae	Yield				Crop measurement:	
		Cane t/ha	ers t/ha	Sucrose t/ha	ers % cane	Stalk length (m)	Stalk popln (1000/ha)
1 Control (unsprayed)	-	76	10,0	11,0	13,2	1,72	149
2 Diuron + 2,4-D + S	4,0 + 2,88	70	9,1	10,0	12,9	1,66	149
3 Diuron + Sencor	3,2 + 2,8	80	11,1	12,1	13,9	1,74	152
4 Fortrol/ametryne + S(directed)	2,5	83	11,2	12,3	13,5	1,77	149
5 Fortrol/ametryne + S	2,5	79	10,5	11,5	13,3	1,76	145
6 Fortrol/ametryne + S	5,0	78	10,3	11,3	13,2	1,74	150
7 Ametryne + Velpar	4,0 + 1,35	74	9,8	10,8	13,2	1,70	150
8 Ametryne + MSMA	4,0 + 5,76	68	8,9	9,8	13,1	1,66	145
CV%		10	12,7	12,1	4,8	3,9	3,9
LSD (0,05)		8,952	1,508	1,577	NS	7,869	NS
LSD (0,01)		12,02	2,025	2,117		10,56	

Comments:

Visual symptoms: Severe effects were produced by ametryne + MSMA and by ametryne + Velpar to a lesser extent. Five weeks after spraying only the effects of the MSMA combination was still marked.

Stunting was also apparent from MSMA, Velpar and diuron + 2,4-D + S combinations.

Crop measurements: Six and a half months after treatment marked stalk length differences were apparent. Cane in the diuron + 2,4-D + S and ametryne + MSMA plots was short while that in the diuron + Sencor and Fortrol/ametryne plots was taller than the unsprayed control and Velpar treated plots which were similar.

Populations were variable during the crop cycle but at harvest no differences were apparent.

Yield data at harvest: Although no differences reached a level of statistical significance, yield in tons cane/ha followed the trend in stalk length towards reduced yields from diuron + 2,4-D + S and ametryne + MSMA but slightly superior yields from diuron + Sencor and Fortrol/ametryne treatments.

Conclusions:

No treatments were worse than the old standard diuron + 2,4-D + S but ametryne + MSMA tended to reduce yields to the same extent at twice the recommended rates.

PETT/PMO
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SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

Code: HW225/R2/81
Cat. No.: 1337

Title: Post-emergence ratoon cane phytotoxicity

1. Particulars of the project

This crop	: 2nd ratoon	Soil analysis:	Date 9.11.82
Site	: Shakaskraal F. Stn	pH	OM%
Region	: N. Coast Coastal	CEC	Clay%
Soil system	: Umzinto/C Lowlands	M Sand	F Sand
Soil form/series	: Waldene/Waldene	15	54
Design	: Random blocks	ppm	
Variety	: NCo 376	P	K
Fertilizer	: N P K	16	61
Topdressing (kg/ha)	: 161 - 161	Ca	Mg
		477	129
		Age: 13,0 months Dates 20.10.82 -21.11.83	
		Rainfall: 871,1 mm L.T.M. 1051	
		Irrigation: 254 mm	
		TOTAL: 1 125 mm	

2. Objectives

To test herbicides and mixtures for their phytotoxic effect on ratoon cane

3. Treatments

See results

4. Experimental

Treatments were applied directly over cane rows of ratoon cane.
Plots were 6 rows x 8 m x 1,4 m gross and 4 rows x 6 m x 1,4 m net on which measurements and yield were taken.

Application details were:

- Date of spraying : 22.11.82
- Applicator : Lever operated knapsack sprayer
- Nozzle : APM Green floodjet
- Pressure : 1,7 bars
- Output : 280 l/ha

Rain on day of spray : 0
 Days to first rain : 4
 Amount of first rain : 6,0 mm
 Temperature 8 am : 20,4
 2 pm : 23,9
 Rel. humidity % 8 am : 64
 2 pm : 55
 Sunshine hours : 8,4

Cane growth stages at the time of application was:

Leaf height (cm) = 28
 Stalk height (cm) = 8,75
 Mean No leaves unfurled per shoot = 3,8

5. Results

Table 1 Leaf scorch ratings (%) and crop growth measurements taken 23 days and 1,75, 5,5 and 9 months after spraying respectively

Treatment	Rate in kg or l ai or ae/ha	Scorch %	Stalk length (cm)			Stalk popln (1000/ha)		
		T+23 days	1,75	5,5	9	1,75	5,5	9
Unsprayed control	-	0	44	108	130	264	139	126
Diuron+Sencor+Actril DS	3,2+2,8+1,4	9,3	37	98	112	267	146	119
Diuron+Sencor+paraquat	3,2+2,8+0,4	18,3	37	105	122	252	144	129
Bimate+Certrol DS	6,0+1,4	10,8	37	101	120	248	136	113
Diuron + Velpar+Actril DS	4,0+0,9+1,4	7,2	38	99	120	283	149	123
Bladex Plus+paraquat	9,0+0,4	17,8	35	101	120	282	146	124
Lasso+ametryne+paraquat	3,84+3,0+0,4	23,8	32	101	118	269	149	131
Dopax+Actril DS	7,5+1,4	16,8	33	100	117	280	149	125

Comments:

- Both paraquat and Actril DS or Certrol DS treatments caused marked visible scorch of cane leaves. Paraquat treatments were worse than others but all effects disappeared in time.
- Stalk height measurements showed stunting from all treatments which was still evident 9 months after spraying.
- Stalk populations were variable and no clear trends were evident.

Table 2 Yield and crop measurements at harvest

Treatments	Rate in kg or l ai or ae/ha	Yield			Stalk length (cm)	Stalk popln (1000/ha)
		Cane t/ha	Sucrose % cane	Sucrose t/ha		
Unsprayed control	-	59,4	13,38	8,0	149	107
Diuron+Sencor+Actril DS	3,2+2,8+1,4	45,9	13,14	6,0	134	108
Diuron+Sencor+paraquat	3,2+2,8+0,4	49,6	12,90	6,4	142	110
Bimate+Certrol DS	6,0+1,4	47,5	12,96	6,1	139	109
Diuron+Velpar+Actril DS	4,0+0,9+1,4	49,0	13,04	6,2	138	112
Bladex Plus+paraquat	9,0+0,4	52,2	12,84	6,7	138	116
Lasso+ametryne+paraquat	3,84+3,0+0,4	48,8	13,27	6,5	139	110
Dopax+Actril DS	7,5+1,4	51,2	13,12	6,7	137	112
CV%		14,1	3,9	15,0	6,2	7,5
LSD (0,05)		8,295	0,5993	1,159	10,09	9,757
LSD (0,01)		11,13	0,8040	1,555	13,54	13,09

Comments

1. In spite of high variability between plots of the same treatments the reduction in yield due to all treatments is considered real.
2. Differences between treatments are less marked.
3. Crop measurements corroborated the yield differences between treated and unsprayed control plots.
4. Treatments were used at twice the recommended rates of application.

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