

Aw

SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

Code: HW256/83/P
Cat No: 1455

Title: Plant cane phytotoxicity trial

1. Particulars of the project

This crop : Plant cane
Site : Pongola Fld Stn
Region : Northern area
Soil system : Komatipoort
Soil form/series : Hutton/Shorrocks
Design : Random Blocks
Variety : NCo 376
Fertilizer : N P K
in furrow(kg/ha : 46 53
Topdressing(kg/ha): 138
Total (kg/ha) 184 53

Soil analysis: Date: 21.9.83

pH Clay %
6,15 30

ppm

P	K	Ca	Mg
24	216	876	220

Age: 12,2 months Dates: 6.9.83-12.9.84

Rainfall: 1 245 mm L.T.M. 620 mm

Irrigation: 610 mm

Total 1 855 mm

2. Objectives

To test herbicides for their phytotoxic effects on plant cane at Pongola

3. Treatments

Chemicals (% ai)	Timing	Rate kg or l (prod/ha)
1. Control (unsprayed)	-	-
2. Lasso (38) + atrazine (50)	Pre	6 + 3
3. Lasso + diuron (80)	Pre	6 + 2,6
4. Lasso + diuron + S	Post	6 + 2,6
5. Bladex Plus (50) + paraquat (20)	Post	9 + 0,25
6. Lasso + ametryne (50) + paraquat	Post	6 + 3 + 1,5
7. Lasso + ametryn + Actril DS (70)	Post	6 + 3 + 1,25
8. Dual (72) + Gardomil (50) + paraquat	Post	1,75 + 6 + 1,5

Note on treatments: The Lasso used was contaminated with an unknown quantity of paraquat.

4. Experimental

Conditions and application details

Date	7.9.83	17. 10. 83
Applicator	CP ₃	CP ₃
Nozzle	APM Green floodjet	APM Green floodjet
Pressure	1,5 Bars	1,5 Bars
Output	262 ℓ/ha	267 ℓ/ha
Method	Over planted row	Over cane row
Cane growth	Pre-emergence	+ 35 cm leaf ht.

Weather: General : Clear and mild to warm. Clear and mild to warm

Temperature	%	8 am :	21,2	23,2
		2 pm :	30,2	30,6
Rel. humidity	%	8 am :	75	65
		2 pm :	38	37
Rainfall (mm) on the day of spray:			0	0
Days to first rain		:	7	1
Amount of first rain		:	0,3	10,3
Sunshine hours		:	9,1	10,4
Soil condition		:	Damp	
Wind				Slight breeze
Time		:	6.00-7.00 am	4.45-6.45 pm

5. Result

1. Foliar effects

Severe foliar scorch was caused by all post-emergence treatments, the most severe being Lasso (+ paraquat) + ametryn + paraquat. All visual scorch effects grew out in time.

2. Crop measurements taken at approximately 3, 4 and 5 months of age

Treatments	Rate kg or ℓ prod/ha	Stalk length (m)			Stalk popln. (100/ha)		
		3	4	5	3	4	5
1. Control (unsprayed)	-	0,54	1,15	1,69	276	162	145
2. Lasso(+ paraquat)+ atrazine	6 + 3	0,55	1,12	1,65	267	163	150
3. Lasso(+ paraquat)+ diuron	6 + 2,6	0,55	1,10	1,64	265	156	144
4. Lasso(+ paraquat)+ diuron+S	6 + 2,6	0,45	0,96	1,59	252	163	150
5. Bladex Plus + paraquat	9 + 0,25	0,47	1,04	1,59	252	161	150
6. Lasso(+ paraquat)+ ametryn + paraquat	6 + 3 + 1,5	0,47	0,99	1,59	252	165	156
7. Lasso(+ paraquat)+ ametryn + Actril DS	6 + 3 + 1,25	0,41	1,03	1,59	248	160	150
8. Dual + Gardomil + paraquat	1,75+6+1,5	0,45	1,03	1,61	269	163	150

Comments

1. All post-emergence treatments showed severe and persistent stalk height reduction and these were fairly consistent despite large differences in the amounts of paraquat in some treatments (eg T5 - 0,25 l/ha; T6 1,5 l/ha)
2. No effects were obvious on stalk populations.

Yield and crop characteristics at harvest

Treatments	Timing	Rate kg or l prod /ha	Yield			Stalk length (m)	Stalk popln. (1000/ha)
			Cane t/ha	Sucrose % cane	Sucrose t/ha		
1. Control (unsprayed)		-	151	13,20	19,9	2,60	155
2. Lasso(+ par)+atrazine	Pre	6+3	157	13,19	20,8	2,62	162
3. Lasso(+par)+diuron	Pre	6+2,6	150	13,17	19,8	2,46	151
4. Lasso(+par)+diuron+S	Post	6+2,6	145	13,11	19,1	2,44	161
5. Bladex Plus+paraquat	Post	9+0,25	149	12,95	19,3	2,51	158
6. Lasso(+ par)+ametryn+paraquat	Post	6+3+1,5	144	12,93	18,6*	2,56	171
7. Lasso(+par)+ametryn+Actril DS	Post	6+3+1,25	143	12,92	18,5*	2,49	150
8. Dual+Gardomil+paraquat	Post	1,75+6+1,5	149	12,94	18,8	2,56	163
CV%			5,5	3,0	5,1		
SE			3,35	0,162	0,40		
LSD (0,05)			9,6	0,464	1,161		

Comments

Crop measurements

Stalk lengths at harvest were reduced by all post-emergence treatments while stalk populations were increased slightly in most cases.

Yield (cane t/ha)

Although no differences reached a level of statistical significance there was a trend towards lower cane yields from post-emergence treated plots. Crop measurements early in the crop growth period support the contention that these effects are real.

(sucrose t/ha)

Statistically significant reductions in sucrose yield were produced by Lasso (+par) + ametryn + paraquat and Lasso (+ par) + ametryn + Actril DS.

Conclusions

Some effect which may be small, is likely to occur to plant cane yields after applications of chemicals which cause scorch effects on the cane foliage of plant crops at Pongola..

PETT/PMo
20.3.85