SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: HW 157/R2/79

Cat. No.: 1237

TITLE: Variety sensitivity to herbicides

1. Particulars of trial

This crop	:	2nd ratoon
Site	:	Pongola Field Station
Region	:	Northern Area
Soil system	:	Komatipoort
Soil form/series	:	Hutton/Shorrocks
Fertilizer/ ameliorants	:	N 146, P 24, K 100 + 2,0 kg/ha Zn
Date sprayed	:	8/ 1/80

Soil analysis:

pH	O.M.%	Clay %	P.D.I.
-	-	23	-

Age: 11,2 months Dates: 4/12/79-11/11/80

Rainfall: 495 mm

Irrigation: 732 mm

Total: 1 227 mm

2. Objectives

To assess the sensitivity of six sugarcane varieties to a range of post-emergence herbicide treatments.

3. Treatments

See results

4. Experimental

Treatments were applied by means of a lever-operated knapsack sprayer fitted with a TK5 floodjet. The nozzle was held directly over the cane rows and the output was 276 ℓ/ha.

Plots consisted of 6 rows each 8 m long. One metre at the ends of each row and the two outer rows were discarded at harvest.

Conditions at the time of spraying were:

General	:	Overcast
Temperature	:	19,3°C at 8 am
Wind	:	Slight - up to 8,8 km/hr
Time	:	0630 - 0900

Cane growth stages at the time of spraying are presented in the table below.

Variety	NCo 376	N52/219	N55/805	NCo 293	N8	N11
Stalk heights (mm)	193	220	198	208	200	163

5. Results

1. Crop measurements taken 17 days and 3 and 6 months after spraying are presented in Table 1.

2. Yield data at harvest are presented in Table 2.

3. Flowering counts taken 6 months after spryaing are presented in Table 3.

Table 1 Crop measurements taken 17 days and 3 and 6 months after spraying.

Variety	Treatments	Crop measurements					
		17 days		3 months		6 months	
		Stalk heights (m)	Stalk popln (000/ha)	Stalk heights (m)	Stalk popln (000/ha)	Stalk heights (m)	Stalk popln (000/ha)
NCo 376	Control	0,37	569	2,03	176	2,25	136
	Diuron+Sencor	0,30	481	1,87	176	2,24	150
	Bladex Plus+S	0,35	550	1,93	187	2,24	158
	Bimate+S	0,35	561	1,92	179	2,18	149
N52/219	Control	0,45	483	1,99	123	2,39	115
	Diuron+Sencor	0,38	457	1,93	119	2,24	110
	Bladex Plus+S	0,39	467	1,97	127	2,38	107
	Bimate+S	0,32	404	1,80	102	2,08	107
N55/805	Control	0,40	399	1,74	140	2,07	129
	Diuron+Sencor	0,35	396	1,66	137	1,97	121
	Bladex Plus+S	0,36	439	1,71	142	2,03	121
	Bimate+S	0,36	488	1,69	140	1,94	117
NCo 293	Control	0,42	508	1,97	151	2,43	137
	Diruon+Sencor	0,39	463	1,98	138	2,37	130
	Bladex Plus+S	0,38	496	2,05	151	2,39	133
	Bimate+S	0,35	385	1,95	144	2,39	136
N8	Control	0,49	529	2,27	180	2,65	145
	Diuron+Sencor	0,30	452	2,02	162	2,42	140
	Bladex Plus+S	0,34	515	2,19	177	2,55	148
	Bimate+S	0,29	438	1,96	167	2,37	163
N11	Control	0,36	555	1,96	144	2,24	139
	Diuron	0,33	483	1,91	143	2,26	135
	Bladex Plus+S	0,35	531	1,91	138	2,21	130
	Bimate+S	0,30	456	1,90	148	2,24	127

Table 2 Mean yield data at harvest

Variety	Treatment	Rate in kg or ℓ prod/ha	Yield			Crop measurements	
			Cane t/ha	Ers % cane	Ers t/ha	Stalk height (m)	Stalk popln (000/ha)
NCo 376	Control	-	134	12,9	17,3	2,50	153
	Diuron+Sencor	2+2	134	12,5	16,6	2,53	143
	Bladex Plus+S	9,0	138	12,3	16,9	2,52	152
	Bimate+S	5	127	12,5	15,9	2,50	151
N52/219	Control	-	118	14,3	16,9	2,49	103
	Diuron+Sencor	2+2	114	14,3	16,3	2,52	105
	Bladex Plus+S	9	113	14,2	16,1	2,47	106
	Bimate+S	5	106*	14,5	15,4*	2,37	111
N55/805	Control	-	112	13,3	14,9	2,31	109
	Diuron+Sencor	2+2	110	13,6	15,0	2,34	122
	Bladex Plus+S	9	114	13,4	15,2	2,31	113
	Bimate+S	5	112	13,5	15,1	2,26	108
NCo 293	Control	-	119	12,9	15,3	2,56	122
	Diuron+Sencor	2+2	113	12,2	13,8*	2,54	126
	Bladex Plus+S	9	117	11,9	13,9	2,61	122
	Bimate+S	5	122	12,1	14,7	2,57	132
N8	Control	-	109	11,1	12,1	2,82	145
	Diuron+Sencor	2+2	104	10,0**	10,5*	2,78	150
	Bladex Plus+S	9	105	10,6	11,1	2,77	142
	Bimate+S	5	102	10,5	10,7	2,59**	143
N11	Control	-	105	13,3	14,0	2,46	126
	Diuron+Sencor	2+2	100	12,5	12,5*	2,46	125
	Bladex Plus+S	9	103	12,8	13,2	2,41	116
	Bimate+S	5	106	12,8	13,6	2,49	126
C.V. %			5,91	4,56	7,02	3,66	9,63
L.S.D (0,05)			9,556	0,819	1,438	13,01	17,35
L.D.S (0,01)			12,74	1,093	1,917	17,35	23,14

Table 3 Flowering counts taken six months after spraying

Variety	Flowering counts/plot			
	Control	Diuron+Sencor	Bladex Plus+S	Bimate+S
NCo 376	0	0	0	0
N52/219	14,8	12,8	14,5	11,5
N55/805	1,5	0,75	2	0,5
NCo 293	0	0	0	0
N8	5	6	11,8	3,8
N11	0	0	0	0

Comments

NCo 376: All treatments reduced stalk length to a small extent early in the crop growth period. Suppression from Bimate tended to persevere for longer than was the case for other treatments and the yield tended to be lower although this was not statistically significant.

N52/219: Stalk heights were depressed by both diuron + Sencor and by Bimate at an early age. The reduction caused by Bimate persisted until harvest and resulted in a yield reduction (P=0,05).

N55/805: All three treatments caused early and slight stalk height reductions with Bladex Plus being the least severe. Effects had grown out by harvest and no yield reductions occurred.

NCo 293: No stalk height reductions were caused at any stage of crop growth and there were no effects on yield.

N8 : Marked stalk height reductions were caused by all treatments but only that from Bimate persisted until harvest. Bladex Plus was markedly less severe than the two other treatments. No treatments caused a yield reduction at harvest in terms of tons of cane per hectare. Diuron + Sencor however reduced ers % cane which in turn caused ers t/ha to be reduced.

N11 : Very slight stalk height reductions were produced by all treatments at an early growth stage but none persisted until harvest.

General comments

1. Althouth yield reductions are minimal it is evident that single rates of commonly used herbicides when applied at this late stage of cane growth can have a depressing effect on stalk heights and in some cases yield.

2. Flowering occurred to a limited extent only, except in variety N52/219, but was not affected by herbicide treatments.

PETT/VJ
18 August 1981