SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Cat No : 1690
Project No : 3675
Code No : HW 359/88/R1
(Formerly : HW339/87/P)

Title : Phytotoxicity of some new product combinations applied early post-emergent on ratoon cane

Objectives To assess the phytotoxicity of some new product combinations of long term residual herbicides.

1. Particulars of project

This crop : 1st ratoon

Site : Pongola Farm. Block 311

Region : Northern area

Soil system : Komatipoort

Soil form/series: Hutton/Shorrocks

Variety : NCo376

Age (mths) : 11,7 months

Dates : 13.9.88 - 5.9.89

Rainfall (mm) : 722

Irrigation (mm) : 549

Total (mm) : 1271 Gross

Soil analysis Date: 22.09.89

pH (water)	Clay (%)	OM (%)
6,40	> 30	-

ppm

P	K	Ca	Mg
30	262	844	338

Fertilizer (kg/ha)

N	P	K
135	-	135

2. Design

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

3. Treatments

See results

4. Chemical formulations used

Product	Formulation	Active ingredient
Bladex Plus	333 + 167 gm/ℓ (sc)	Cyanazine + atrazine
Certrol	600 + 100 (ec)	Ioxynil + 2,4-D Iso-octyl ester
Classic	250 g/kg (df)	Chlorimuron ethyl
Sencor	480 g/ℓ (sc)	metribuzin
Addit	-	-
Oxytril	200 + 200 g/ℓ (ec)	ioxynil + bromoxynil
Diuron	800 g/ℓ (sc)	diuron

5. Application details

Treatment date : 5/10/1988
Time : 09h55 - 11h45
Applicator : CP3
Nozzle : APM green
Pressure : 130 Kpa
Output : 36,33 mℓ/sec
Output : 25,95 mℓ/m²
Method : Over the row

Weather conditions at spraying

General : Overcast and warm
Dew : Nil
Soil surface : Dry
Wind : Slight
Sunshine hours : 7,9
Temperature (°C)
08h00 : 22
14h00 : 30
Relative humidity (%)
08h00 : 86
14h00 : 50

Rainfall (mm)
On day of spray : Nil
Total 1st 14 days : 91,7
Total for trial : 722

6. Results

Table I: Visual ratings of percentage leaf scorch and stunting (1 - 5 where 1 = very poor and 5 = no stunting)

Treatments	Rates ℓ or kg product/ha	% leaf scorch	Stunting
		47 days after spraying	47 days after spraying
T1 Bladex Plus + Certrol	8 + 1,25	0	3,7
T2 Bladex Plus + Certrol	16 + 2,6	1,3	3,2
T3 Classic + Sencor + Addit	0,12 kg + 2,9 + 0,5%	0,7	3,8
T4 Classic + Sencor + Addit	0,24 kg + 5,8 + 0,5%	0	4,3
T5 Oxytril + Diuron + Sencor	1,25 + 2,5 + 2 ,9	0	3,8
T6 Oxytril + Diuron + Sencor	2,5 + 5 + 5,8	3,0	4,0
T7 Diuron + Sencor + Actril	5 + 5,8 + 2,5	2,3	3,3
T8 Certrol		0	4,8

Table II: Phytotoxic effects of different herbicide treatments on growth measurements

Treatments	Rates ℓ or kg Product/ha	Populations x 1000 ha^{-1}				Stalk heights (cm to TVD)			
		40*	78	141	169	40	78	141	169
T1 Bladex Plus + Certrol	8 + 1,25	481	354	186	189	25	94	189	241
T2 Bladex Plus + Certrol	16 + 2,5	485	445	145	186	24	95	188	245
T3 Classic + Sencor + Addit	0,12 + 2,9 + 0,5%	439	424	185	213	25	98	193	237
T4 Classic + Sencor + Addit	0,24 + 5,8 + 0,5%	462	480	192	219	25	99	194	246
T5 Oxytril + Diuron + Sencor	1,25 + 2,5 + 2,9	513	431	194	200	25	96	192	244
T6 Oxytril + Diuron + Sencor	2,5 + 5 + 5,8	464	421	170	214	23	96	199	242
T7 Diuron + Sencor + Actril	5 + 5,8 + 2,5	424	467	181	177	24	98	199	246
T8 Certrol	-	419	399	194	212	28	103	205	242

* = days after spray

Table III : Phytotoxic effects of different herbicide treatments on cane yield (tons/ha) sucrose % cane and sucrose yield (tons/ha)

Treatments	Rates ℓ or kg product/ha	Cane (t/ha)	Sucrose % cane	Sucrose (t/ha)
T1 Bladex Plus + Certrol	8 + 1,25	139	12,5	17,3
T2 Bladex Plus + Certrol	16 + 2,6	142	12,6	17,8
T3 Classic + Sencor + Addit	0,12 kg + 2,9 + 0,5%	144	11,8	16,9
T4 Classic + Sencor + Addit	0,24 kg + 5,8 + 0,5%	146	12,4	18,0
T5 Oxytril + Diuron + Sencor	1,25 + 2,5 + 2 ,9	143	12,4	17,7
T6 Oxytril + Diuron + Sencor	2,5 + 5 + 5,8	143	12,2	17,4
T7 Diuron + Sencor + Actril	5 + 5,8 + 2,5	134	11,9	15,4**
T8 Certrol	-	144	12,7	18,2
CV %		7,3	9,9	10,2
SE treatment means	±	4,2	0,5	0,7
LSD (0,05)		12	1,4	2,1
(0,01)		16	1,9	2,8

7. **Comments**

Apart from the Diuron + Sencor + Actril mixture, the remaining treatments were tested at standard and double the standard rates.

Bladex Plus + Certrol
Both the standard and double the standard rate of this mixture appeared to suppress cane growth up to approximately 20 weeks after spraying, but thereafter differences disappeared. Harvest data (Table III) indicated only minor effects on yields by this mixture which may have resulted from a slight depression in stalk populations (Table II).

Classic + Sencor + Addit
Both rates of this mixture produced slight stunting and growth loss at ± 20 weeks after application. This effect was temporary as yields were similar to control at harvest.

Oxytril + diuron + Sencor
Some leaf scorch was recorded in cane treated with double the standard rate of this mixture while stunting was similar for both rates. This effect declined with time as yields at harvest were non-significantly different to that of the control.

Diuron + Sencor + Actril
At double the standard rate, this mixture resulted in significant stalk stunting and population decline (Table I and II). In spite of an apparent improvement in growth at ± 24 weeks after spraying, populations were sufficiently reduced to cause a cane yield loss that approached significance at harvest. Sucrose yields were significantly (P=0,05) lowered for this treatment.

NBL/cvp
19 January 1990