

**SOUTH AFRICAN SUGAR INDUSTRY  
AGRONOMISTS' ASSOCIATION**

Cat. No. : 1692  
Project No: 3701  
Code No : HW363/88/R1  
(Formerly HW337/87/P)

**Title:** Post emergence herbicide phytotoxicity trial.

**Objectives:**

To assess the phytotoxic effects of post-emergence herbicide treatments on ratoon cane at Shakaskraal.

**1. Particulars of project**

<p><b>This crop</b> : 1st Ratoon <b>Site</b> : Field 37D Shakaskraal <b>Region</b> : North Coast Coastal <b>Soil system</b> : Umzinto Coast lowlands <b>Soil form/series</b>: Westleigh/Westleigh <b>Variety</b> : NCo376 <b>Age (mths)</b> : 12,4 <b>Dates</b> : 12.10.88-25.10.89 <b>Rainfall (mm)</b> : 771 <b>Irrigation</b> : - <b>Total (mm)</b> : 771</p>	<p><b>Soil analysis</b> Date: 12/10/88</p> <table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">pH (water)</td> <td style="text-align: center;">Clay (%)</td> <td style="text-align: center;">OM (%)</td> </tr> <tr> <td style="text-align: center;">5,60</td> <td style="text-align: center;">20</td> <td style="text-align: center;">2,0</td> </tr> </table> <table border="1" style="width: 100%;"> <tr> <td colspan="4" style="text-align: center;">ppm</td> </tr> <tr> <td style="text-align: center;">P</td> <td style="text-align: center;">K</td> <td style="text-align: center;">Ca</td> <td style="text-align: center;">Mg</td> </tr> <tr> <td style="text-align: center;">20</td> <td style="text-align: center;">86</td> <td style="text-align: center;">601</td> <td style="text-align: center;">159</td> </tr> </table> <table border="1" style="width: 100%;"> <tr> <td colspan="3" style="text-align: center;">Fertilizer</td> </tr> <tr> <td style="text-align: center;">N</td> <td style="text-align: center;">P</td> <td style="text-align: center;">K</td> </tr> <tr> <td style="text-align: center;">143</td> <td style="text-align: center;">29</td> <td style="text-align: center;">143</td> </tr> </table>	pH (water)	Clay (%)	OM (%)	5,60	20	2,0	ppm				P	K	Ca	Mg	20	86	601	159	Fertilizer			N	P	K	143	29	143
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**2. Design**

Design : Randomised blocks  
Replication : 6  
Whole plot size : 5 rows x 8 m x 1,4 m = 56m<sup>2</sup>  
Net plot size : 3 rows x 6 m x 1,4 m = 25,2m<sup>2</sup>  
Row spacing : 1,4 m

**3. Treatments** - see results.

**4. Chemical formulations used**

Product	Formulation	Active ingredient
Actril DS	100 + 600g/l(ec)	ioxynil + 2,4-D (Iso-octyl Ester)
Asulox	400g/l(soln)	asulam
Dopax	250 + 250g/l(ec)	metolachlor + ametryne
Dual	960g/l(ec)	metolachlor
Oxytril	200 + 250g/l(ec)	ioxynil + bromoxynil
Sencor	480g/l(sc)	metribuzin

**5. Application details**

Treatment dates : 24.11.1988  
 Time of application : 6.45 am - 8.50 am  
 Applicator : CP3  
 Nozzle : APM Green  
 Pressure : 125 kpa  
 Method : Over the row  
 Cane growth stage : Post-emergence (15-20 cm to TVD)

**6. Weather conditions**

General : Overcast and warm  
 Dew : Dew present up to end of T1  
 Soil surface : Dry  
 Wind : Slight to strong breeze  
 Sunshine hours : 6,0  
 Temperature (°C)  
     08h00 : 23  
     14h00 : 31,2  
 Relative humidity (%)  
     08h00 : 81  
     14h00 : 44  
 Rainfall (mm)  
     On day of spray : Nil  
     Total in 1st 14 days: 64,7  
     Total for trial : 771

**7. Results**

**Table 1: Visual ratings of percentage leaf scorch and stunting (where 1 = very poor and 5 = no stunting) recorded at 14, 41 and 78 days after spraying**

Treatments	Rates l or kg product/ha	% leaf scorch			Stunting		
		14	41	78	14	41	78
T1 Oxytril + Dopax	1,25 + 8	13,0	5,0	4,2	3,4	3,9	4,8
T2 Oxytril + Dopax	2,5 + 16	23,3	10,0	4,0	3,0	3,3	4,8
T3 Oxytril + Asulox	1,25 + 8	6,7	6,0	4,8	4,7	4,8	4,8
T4 Oxytril + Asulox	2,5 + 16	7,8	9,8	4,6	4,6	4,3	4,8
T5 Dual + Sencor	1,5 + 2,25	3,2	1,8	4,8	4,6	4,6	3,3
T6 Dual + Sencor	3,0 + 4,5	9,0	3,8	4,5	3,9	4,1	4,5
T7 Actril DS + Dopax	2,5 + 16	22,5	10,0	4,0	3,3	3,2	4,2
T8 Control	-	0,3	0	4,9	4,2	5,0	3,2

**Table 2: The effects of various herbicide treatments on stalk heights and populations**

Treatments	Rate ℓ or kg product/ha	Populations x 1000 ha <sup>-1</sup>					Stalk heights (cm to TVD)		
		-2	48	108	196	270	108	196	270
T1 Oxytril + Dopax	1,25 + 8	154	242	164	142	129	48	197	198
T2 Oxytril + Dopax	2,5 + 16	136	229	163	137	125	42	188	189
T3 Oxytril + Asulox	1,25 + 8	140	217	148	138	119	60	214	211
T4 Oxytril + Asulox	2,5 + 16	175	201	152	136	126	56	212	216
T5 Dual + Sencor	1,5 + 2,25	140	231	149	142	131	54	205	206
T6 Dual + Sencor	3,0 + 4,5	156	235	160	144	126	51	203	205
T7 Actril DS + Dopax	2,5 + 16	145	219	157	146	127	41	189	187
T8 Control	-	144	212	140	132	124	65	216	223

**Table 3: The effects of various herbicide treatments on cane yield (tons/ha) sucrose % cane and sucrose yield (tons/ha)**

Treatments	Rate ℓ or kg product/ha	Cane (tons/ha)	Sucrose % cane	Sucrose (tons/ha)
T1 Oxytril + Dopax	1,25 + 8	85	15,5	13,2
T2 Oxytril + Dopax	2,5 + 16	81	15,6	12,5
T3 Oxytril + Asulox	1,25 + 8	92	15,8	14,6
T4 Oxytril + Asulox	2,5 + 16	90	15,8	14,1
T5 Dual + Sencor	1,5 + 2,25	91	15,9	14,4
T6 Dual + Sencor	3,0 + 4,5	88	16,0	14,0
T7 Actril DS + Dopax	2,5 + 16	76	15,0	11,4
T8 Control	-	92	15,3	14,2
CV %		10,4	2,5	11,1
S.E. treatment means	±	3,7	0,2	0,6
LSD (0,05)		11	0,5	1,8
(0,01)		14	0,6	2,4

## 8. Comments

Mixtures other than the Actril DS + Dopax treatment were tested at the recommended and twice the recommended rate.

### **Oxytril + Dopax**

% Leaf scorch was more evident in the higher rate of this mixture and led to a greater reduction in stalk heights and eventual yield for this treatment. However, yields for both rates were not lowered sufficiently to be significantly different to that of the control.

### **Oxytril + Asulox**

The rates of this mixture tested appeared to affect cane growth while populations were unaffected. The influence on growth recorded approximately 9 months after spraying did not persist up to harvest as yields were very similar to control. The significant increase in cane quality for this treatment is likely to be due to natural field variability.

### **Dual + Sencor**

Similar reductions in growth were recorded for both rates of this mixture for up to ± 9 months after spraying. The resultant losses in cane yield were greater for the double rate but neither treatment was significantly below control. Both rates generated a highly significant (P=0,01) increase in sucrose % cane which offset the cane losses.

### **Actril DS + Dopax**

Observations of % leaf scorch and stunting showed this treatment to be as phytotoxic as the high rate of Oxytril + Dopax. A ± 17% reduction in cane yield resulted in a highly significant sucrose yield loss at harvest.