

**SOUTH AFRICAN SUGAR INDUSTRY**

**AGRONOMISTS' ASSOCIATION**

Cat No : 1727  
Project No :  
Code No : HW 390/90/P

**Title :** Chemical control of Cynodon dactylon in plant cane.

- Objectives :**
- To evaluate certain chemicals for their efficacy on C. dactylon, and to compare results with previous trials.
  - To test the technique of using a pull-along shield to reduce cane phytotoxicity.
  - To establish an optimum chemical control method for this grass.

**1. Particulars of project**

This crop	: Plant	<b>Soil analysis</b> Date: 18.5.1990		
Site	: Shakaskraal	pH (Water)	Clay (%)	OM (%)
Region	: North Coast - Coastal	5,20	10	1,30
Soil system	: Umzinto Coast Lowlands	ppm		
Soil form/series:	-	P	K	Ca
Variety	: N16	41	100	170
Age (mths)	: -			Mg
Dates	: 8/5 - 18/6/1990			44
Rainfall (mm)	: 25,2			
Total (mm)	: 25,2			

**2. Design**

Design : Randomised block  
Replication : 2  
Whole plot size: 4 rows x 1 x 32 = 128 m<sup>2</sup>  
Net plot size : 2 rows x 1 x 30 = 60 m<sup>2</sup>  
Row spacing : 1 m

**3. Treatments**

See results.

4. Chemical formulations used.

Product	Formulation	Active Ingredient
Roundup	359 g/l (sol)	glyphosate
Diuron	800 g/l (sc)	diuron
Gramoxone	200 g/l (sol)	paraquat
Velpar	240 g/l (ec)	hexazinone
TCA	960 g/kg (sp)	TCA

5. Application details

	Lance shield	Pull-along shield
Treatment date	: 8/5/1990	8/5/1990
Time of application	: 8.00 - 9.37 am	8.00 - 9.37 am
Applicator	: CP3 with lance shield	CP3 with pull along shield
Nozzle	: APM (grey)	2 x APM (green)
Pressure	: 150 Kpa	± 150 Kpa
Method	: Directed interrow	Directed interrow
Output	: 42,25 m <sup>l</sup> /sec	45 m <sup>l</sup> /sec
Output	: 42,25 m <sup>l</sup> /m <sup>2</sup>	45 m <sup>l</sup> /m <sup>2</sup>

6. Weather conditions at time of spraying

Treatment date	: 8/5/1990
General	: Slightly overcast
Dew	: Slight
Soil surface	: Dry
Wind	: Gusty from south west
Sunshine hours	: 6,6
Temperature (°C)	:
08h00	: 20
14h00	: 24
Relative humidity(%)	:
08h00	: 73
14h00	: 68
Rainfall (mm):	
On day of spraying	: Nil
No Days to first rain	: 2

At first rain : 19,4  
 In first 14 days : 23,3

7. Results

Table 1 : Treatment effects on *Cynodon dactylon* expressed as a percentage kill assessed at 13, 27 and 41 days after spraying.

Treatment	Rate (ℓ/ha)	Days after treatment		
		13	27	41
Hand weeding	-	100	93	60
Roundup (LS)	6	77	98	95
Roundup (PAS)	6	83	96	87
Roundup (PAS) + hand weeding	6	70	94	93
Diuron + gramoxone (LS)	2 + 2,5	63	60	27
Velpar + diuron (LS)	2,5 + 2	15	8	5
TCA (LS)	10	7	10	7
TCA (LS)	20	20	28	43

LS = Lance attached shield.  
 PAS = Pull along shield.

6. Table 2 : Treatment effects on stalk populations and heights at 2, 38 and 107 days after spraying.

Treatment	Rate (ℓ/ha)	Populations x 1000ha <sup>-1</sup>			Stalk heights (cm)		
		2	38	107	2	38	107
Hand weeding	-	17	27	48	9	13	16
Roundup (LS)	6	19	27	44	10	12	14
Roundup (PAS)	6	16	25	37	10	13	14
Roundup (PAS) + hand weeding	6	14	29	54	10	12	16
Diuron + gramoxone (LS)	2 + 2,5	18	28	48	10	14	16
Velpar + diuron (LS)	2,5 + 2	19	28	48	12	15	16
TCA (LS)	10	19	24	34	11	14	12
TCA (LS)	20	18	25	29	11	13	11

LS = Lance attached shield.  
 PAS = Pull along shield.

## 8. Comments

This trial could not be taken through to harvest as the co-operator hand-weeded sections of the trial in error. All weed assessments were made in the interrows only.

### Roundup

This product provided the best control of C. dactylon up to approximately 6 weeks after spraying. Presumably the good control at this stage would have persisted for longer had the trial been continued. The best control was achieved with the lance shield due to good penetration into the cane lines which prevented regrowth back into the interrows. Although stalk heights and populations do not reflect it, the cane in the lance-shield treatment was slightly retarded in growth.

The Roundup treatment with the pull-along shield worked very well but due to the width restriction, C. dactylon was able to re-establish itself from the rows into the interrows. This treatment in combination with cane row hand-weeding was highly successful.

### Diuron + Gramoxone

This mixture provided some short term knock-down which needed repeating at  $\pm$  5 weeks after the initial application. It was applied with a lance shield which proved to be very efficient and safe on the crop (Table 2). The relatively cheap price of this treatment would mean that repeated applications could be considered in future investigations.

### Velpar + Diuron

Control of C. dactylon was exceptionally poor for this mixture which was applied using the lance-shield. Minimal crop damage was recorded which is reflected in the growth measurements.

### TCA

Initial C. dactylon control was poor for both rates tested but improved with time at the higher rate, a trend which may have continued had the trial been left undisturbed. Stalk populations and height measurements indicated that both rates tested suppressed cane growth despite the use of a lance shield.

### Conclusions

The use of Roundup for C. dactylon control in plant cane is very effective if applied using shields. However the cost at 6  $\ell$ /ha is high being  $\pm$  three times the price of the Gramoxone + diuron treatment. 10  $\ell$ /ha of TCA has, as in a previous trial, proved to be ineffective, as has double this rate (up to 7 weeks after spraying). Velpar + diuron was not as successful on this grass compared to a pot trial completed under more controlled conditions. A further trial is planned where the better treatments are to be compared for a more comprehensive study of C. dactylon control in sugarcane.