SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS ASSOCIATION

Cat.No. :1809
Project No. :4053
Code No. :HW428/91

Title: Pre-emergence weed control trial

1.: Particulars of project:

This crop	: Fallow	Soil analysis	Date : 23/12/1991
Site	: Shakaskraal farm (37B)	Soil moisture	: 5.6% (at-spraying)
Region	: North coast - coastal	Dates	: 23/12/91 - 30/3/92
Soil System	: Umzinto coast lowlands	Rainfall	: 153mm
Soil form/ series	: Longlands/ Westleigh	Irrigation	: Nil
Design	: Randomised block	Total	: 153mm
Variety	: N/A		
Fertilizer (kg/ha)	: Nil		

2. **Objectives:** To test new herbicides for pre-emergence weed control efficacy.

3. **Treatments:**

		Rates (1 product/ha)
T1	Sencor + diuron	3 + 2
T2	Terbumeton	6.4
T3	Terbumeton	12.8
T4	Mon 132	2
T5	Mon 132	4
T6	Mon 132 + Harness	2 + 2.5
T7	Mon 132 + diuron	2 + 3
T8	San 582 H	1.5
T9	San 582 H	3
T10	Sinbar	1.88
T11	Sinbar	3.76
T12	Velpar + Sinbar	1.75 + 0.63
T13	Impi + Relay	2.3 + 1.6
T14	Galleon + Relay	1.1 + 1.5

4. **Design:**

Design	: Randomised block
No replications	: 4
Net plot size	: 8m x 2.5m = 20m²
Breaks	: 1m around each plot

5. **Chemical formulations used:**

Product	Formulation	Active ingredient
Sencor	480 g/l (SC)	metribuzin
Diuron	800 g/l (SC)	diuron
Terbumeton	500 g/l (SC)	-
Mon 132	240 g/l	-
Harness	900 g/l (EC)	acetochlor
San 582 H	900 g/l	-
Sinbar	800 g/l	terbacil
Velpar	240 g/l (EC)	hexazinone
Impi	150/300 g/l	sulcotrione/diuron
Relay	900 g/l (EC)	acetochlor
Galleon	125/300 g/l	sulcotrione/atrazine

6. **Application details:**

Treatment date	: 23/12/1991
Time	: 7.10am - 8.45am
Applicator	: Battery operated knapsack
Nozzle	: APM (green)
Pressure	: 150 kpa
Output	: 40.5ml/sec
Output	: 32.4ml/m²
Method	: Full cover

7. **Weather conditions:**

Treatment date	: 23/12/1991
General	: Hot and dry
Dew	: Nil
Soil surface	: Dry
Wind	: Moderate (NE)
Sunshine hours	: 12
Temperature (°C)	
08h00	: 21.8
14h00	: 26.5
Relative humidity (%)	
08h00	: 68
14h00	: 62
Rainfall (mm)	
On day of spray	: Nil
No. days to first rain	: 5
At first rain	: 0.6
In first 14 days	: 29.8
Total for duration of trial	: 153

8. **Results:**

Table 1: Treatment effects on *Eleusine indica* and *Digitaria sanguinalis* at 32, 50 and 66 days after spraying, expressed as percentage kill.

Treatment	Rate (l product/ ha)	*E.idica*			*D.sanguinalis*		
		32	50	66	32	50	66
T1 Sencor + diuron	3 + 2	99	100	95	99	99	93
T2 Terbumeton	6.4	81	23	0	81	56	45
T3 Terbumeton	12.8	95	87	68	95	87	80
T4 Mon 132	2	100	100	100	100	100	100
T5 Mon 132	4	100	100	100	100	100	100
T6 Mon 132 + Harness	2 + 2.5	100	99	99	100	100	100
T7 Mon 132 + diuron	2 + 3	99	100	100	99	100	100
T8 San 582 H	1.5	100	100	100	100	99	98
T9 San 582 H	3	100	100	100	100	99	97
T10 Sinbar	1.88	100	100	100	100	100	100
T11 Sinbar	3.76	100	100	100	100	100	100
T12 Velpar + Sinbar	1.75 + 0.63	100	100	100	100	100	95
T13 Impi + Relay	2.3 + 1.6	99	100	100	99	100	95
T14 Galleon + Relay	1.1 + 1.5	100	100	99	100	99	98

Table 2: Treatment effects on *Cyperus esculentus, Cyperus rotundus, Portulaca oleracae, Amaranthus spp., Commelina benghalensis* and *Ageratum conyzoides* at 50 days after spraying.

Treatment	Rate (l product/ ha)	Cyper escul	Cyper rotun	Portu olera	Amara spp.	Comme bengh	Agera conyz
T1 Sencor + diuron	3 + 2	0	0	99	-	100	-
T2 Terbumeton	6.4	0	0	81	100	100	-
T3 Terbumeton	12.8	0	0	99	100	-	97
T4 Mon 132	2	0	0	85	50	0	25
T5 Mon 132	4	0	0	95	100	0	47
T6 Mon 132 + Harness	2 + 2.5	40	0	98	100	-	100
T7 Mon 132 + diuron	2 + 3	0	0	95	73	0	100
T8 San 582 H	1.5	0	0	80	100	0	50
T9 San 582 H	3	63	0	99	100	100	100
T10 Sinbar	1.88	83	40	100	100	-	99
T11 Sinbar	3.76	95	40	100	100	100	100
T12 Velpar + Sinbar	1.75 + 0.63	0	0	100	100	-	100
T13 Impi + Relay	2.3 + 1.6	72	0	98	100	-	100
T14 Galleon + Relay	1.1 + 1.5	69	0	96	100	-	98

9. **Comments:**

General

This site was dry for the duration of the trial with rainfall being approximately 39% of the long term mean. Despite these conditions, weed growth was heavy particularly for *Digitaria sanguinalis*.

Grass control

Apart from Terbumeton, *Eleusine indica* and *Digitaria sanguinalis* were exceptionally well controlled for up to three months after spraying by both rates of the other treatments. Acceptable control of *D.sanguinalis* was only achieved with Terbumeton at twice the recommended rate (Table 1).

Sencor + diuron
The standard treatment failed to control both the Cyperus spp. but provided good control of *P.oleracae* and *C.benghalensis*.

Terbumeton

Neither rate of this product controlled the Cyperus spp., whereas good control was achieved on the Amaranthus Spp. and *Commelina benghalensis*. *Portulaca oleracae* was only controlled adequately with the double rate of this product.

Mon 132, Mon 132 + Harness and Mon 132 + diuron

Mon 132 + Harness was the only treatment in this group to provide some control of *Cyperus esculentus* (NS). All these treatments, bar the lower rate of Mon 132 alone, resulted in good control of *P.oleracae*. The high rate of Mon 132 on its own and the standard rate of Mon 132 with Harness controlled the Amaranthus spp., while *Ageratum conyzoides* was controlled by the mixtures only.

San 582 H

The double rate of this product provided moderate control of *Cyperus esculentus* and good control of the broadleaf weeds recorded. The standard rate of the product was not effective on Cyperus and only resulted in acceptable control for the Amaranthus spp. among the broadleaf weeds.

Sinbar

This product provided the best control of the two Cyperus spp. although acceptable kill was recorded for *C. esculentus* at the higher rate only. Both rates of the product resulted in good kill of the broadleaf weeds recorded. It is important to note that this product was still providing excellent weed control at more than 90 days after spraying, particularly at the higher application rate.

Velpar + Sinbar

The poor Cyperus control with this mixture was possibly due to the lower rate of Sinbar. The control achieved on the broadleaf weeds was excellent.

Impi + Relay and Galleon + Relay

Both mixtures resulted in moderate control of the Cyperus spp. and provided excellent control of the broadleaf weeds that were present in those plots (Table 2).

NBL/gb

5 May 1992