

Aw

SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

Code: HW224/81/R2
Cat No: 1454

Title: Herbicide sensitivity of varieties N8 and N13

1. Particulars of the project

This crop : 2nd ratoon
Site : Felixton
Region : Zululand
Soil system : Berea
Soil form/series : Fernwood/Fernwood
Design : Random blocks
Variety : N8, N13
Fertilizer : N P K
Topdressing (kg/ha) : 129 - 129
Temik applied at 20 kg/ha

Soil analysis						Date: 29.9.83	
pH	Clay%	Silt%	Sand%				
5,87	2	5	93				
ppm							
P	K	Ca	Mg	Zn	Al		
>80	109	701	69	>4,0			
Age: 11,9 months Dates: 28.9.83 - 25.9.84							
L.T.M. 1 356							
Rainfall: (mm)							
				'84			
Sept	Oct	Nov	Dec	Jan	Feb	Mar	
55,4	96,2	195,5	82,8	20,3	333,2	119,	
Apr	May	June	July	Aug	Sept	Tota	
97,7	33,4	53,8	192,8	71,2	22,8	1 5	

2. Objectives

To test the effects of second annual applications of herbicides to varieties N8 and N13.

3. Treatments

<u>Variety Chemicals (ai%)</u>		<u>Rate in kg or l prod/ha</u>
1. N8	Control	-
2. N8	Sencor (70) + diuron (80)	2 + 2
3. N8	Velpar (90)	0,75
4. N8	Dual (72) + ametryn (50) + paraquat (20)	2,75 + 2 + 1
5. N8	Ametryn + MSMA (72)	3 + 3
6. N13	Control	-
7. N13	Sencor + diuron	2 + 2

Experimental

A severe drought was experienced during the previous crop and very poor yields were obtained. Treatments were thus re-applied onto the same plots in this second ratoon to study their affects in a better rainfall year.

Application details: Date: 24.10.83

Method : Directed interrow (+_ 40% contact with cane foliage)
Applicator : CP₃ knapsack
Nozzle : APM Green floodjet
Output : 288 ℓ/ha
Cane growth stage : 25 cm leaf height
Weather conditions :
Temperature °C : 8 am : 20,2 (Mtunzini met. station)
 2 pm : 24,0
Rel. humidity : 8 am : 64
 2 pm : 46
Sunshine hours : 4,0
Rainfall (mm) on :
the day of spray : 7 mm (at site)
Days to first rain : 0
Amount of first :
rain : 7 mm
Wind : Strong
General : Overcast and very windy
Time : 0700 - 0900 am

Results

Table 1

Visual ratings of leaf scorch and stunting taken 30 days after spraying and crop measurements taken 2,5, 3,5, and 6,5 months after spraying

Variety	Treatments	Leaf scorch % 30	Stunting 1 - 5* 30	Stalk length (cm)			Stalk popln. (100pha)		
				2,5	3,5	6,5	2,5	3,5	6,5
N8	Control (unsprayed)	1	5	0,71	1,11	2,09	234	205	143
N8	Sencor + diuron	8,4	3	0,62	1,02	2,09	214	213	156
N8	Velpar	1,6	3,8	0,67	1,06	2,14	220	213	159
N8	Dual + ametryn + paraquat	9,2	2,8	0,62	1,00	2,03	236	222	159
N8	Ametryn + MSMA	12,4	3	0,62	0,99	2,03	234	223	159
N13	Control	1,6	4,8	0,57	0,98	2,06	261	219	145
N13	Sencor.+ diuron	4	4,2	0,52	0,94	1,99	242	232	170

* Stunting ratings 1 = very poor 5 = very good

Comments

Visual ratings: In spite of directing the spray application between the cane rows, severe scorch symptoms were produced from Sencor + diuron, Dual + ametryn + paraquat and ametryne + MSMA.

Effects caused by Velpar were far less than those caused by other treatments. All symptoms disappeared in time.

Stunting was caused by all treatments and Velpar again showed least effect on N8.

Crop measurement: Decreased stalk heights in sprayed plots were usually associated with increased populations.

Table 2
Yield data and crop characteristics at harvest

Variety	Treatments	Yield			Crop measurements	
		Cane t/ha	Sucrose % cane	Sucrose t/ha	Stalk length (m)	Stalk pop (1000/ha)
N8	Control (unsprayed)	65	12,01	7,7	2,27	144
N8	Sencor + diuron	69	12,32	8,5	2,20	163*
N8	Velpar	68	11,87	8,0	2,23	166*
N8	Dual + ametryn + paraquat	66	11,83	7,8	2,17	155
N8	Ametryn + MSMA	69	11,88	8,2	2,12	160*
N13	Control (unsprayed)	84	14,22	11,9	2,04	130
N13	Sencor + diuron	91	14,39	13,2	2,05	157*
	CV %	11,5	3,4	13,6	5,2	7,7
	LSD (0,05)	11,0	0,564	1,566	0,147	15,45
	LSD (0,01)	14,89	0,763	2,120	0,198	20,91

Comments

Crop measurements

Stalk length

This was reduced by most treatments during crop growth and this persisted until harvest particularly in the case of paraquat and MSMA treatments.

Stalk populations

All treated plots showed higher stalk populations than unsprayed control plots of both varieties.

Yield

Cane and sucrose yields were higher in all treated plots than in untreated control plots. Of the treated plots those treated with Dual + ametryn + paraquat yielded lowest.

These differences in yield are considered to be primarily due to weed competition in untreated plots in spite of hand weeding fourteen days and 10 weeks after spraying.

Conclusions

1. As was evident in the plant crop weed competition in these light sands is difficult to eliminate without the use of herbicide treatments.
2. A second annual application of commonly used herbicides on relatively sensitive varieties was shown to be preferable to hand weeding under the conditions of this trial. Damage from these treatments on cane has been masked by the competitive effects of weeds in untreated plots. However, slight differences were apparent in treatment effects on cane growth in N8 suggesting that some treatments should be preferred to others.
3. N13 appeared to be affected to a larger extent by weed competition than N8.
4. Elimination of weed competition is more important than possible damage from herbicide treatments.

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