

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: HW 189/79

Cat. No.: 1148

Title: Post-emergence phytotoxicity trial in trays.

1. Particulars of the project:

This crop: Plant cane

Site: Experiment Station

Region: N. Coast coastal

Soil system:

Soil form/series:) see treatments

Design: Randomised blocks

Variety: NCo 376

<u>Fertilizer/ Ameliorants:</u>	<u>N</u>	<u>P</u>	<u>K</u>
(kg/ha)	153	30	153

Age: 2 mths Dates: 28.11.79-4.2.80

Irrigation: Perforainer

2. Objectives:

To test promising post-emergence herbicide treatments for their phytotoxic effects on plant cane in trays.

3. Treatments:

Twelve herbicide treatments were used. These are listed in the results. Two soil types were used:-

	<u>Sandy soil</u>			<u>Clay soil</u>	
<u>Soil system</u> :	Berea			Berea	
<u>Soil form/series</u> :	Fernwood/Fernwood			Shortlands/Shorrocks	
<u>Soil type</u>	<u>pH</u>	<u>O.M.%</u>	<u>Silt %</u>	<u>Sand %</u>	<u>Clay %</u>
Sandy	6,5	0,21	3	96	1
Clay	6,95	2,01	19	28	53

4. Experimental:

Treatments were applied by means of a gas-operated knapsack sprayer fitted with an 8004-E fanjet.

Cane was planted as single-eyed setts in trays 300 mm x 300 mm x 100 mm in size with eight setts per tray. At spraying the cane shoots had attained a height of + 13 cm.

The day was clear and warm too hot at spraying. Cane growth at spraying was weak in the trays with sandy soil with some necrosis of leaf tips while that in the clay soil was well grown and green.

5. Results:

1. Mean visual ratings of leaf scorch based on the EWRS 1-9 scale where 1 = no effect and 9 = dead are presented in Table 1.
2. Stalk height and changes in tiller counts during the growth period are presented in Table 2.
3. Yield data at harvest are presented in Table 3.

Table 1. Mean visual ratings of leaf scorch taken 4 and 15 days after spraying and of stunting at 15 days after spraying.

Treatments	Clay			Sand		
	Ratings of * 1 leaf scorch		* 2 Ratings of stunting	Ratings of leaf scorch		Ratings of stunting
	4	15	15	4	15	15
Control	1,2	2,2	5	1,3	1,2	4,8
Diuron + Actril DS	2	2,8	3,7	3,2	3,2	3,2
DPX 4129	1,2	2,5	4,3	2,2	2	4,7
DPX 4129 + Velpar	2,2	4,7	2,8	3	7	2,2
Ametryne + MSMA	3,7	4,3	3,7	4,7	4	4
Ametryne + MSMA	5,5	4,8	3,5	5,3	4,8	2,7
Bimate + paraquat	6,2	4,8	3,8	5,8	6	2,8
Bimate + paraquat	7,2	5,5	3,0	6,5	6,6	2
Fortrol + TCA + S	3,2	3,5	3,2	3,8	5,2	2,8
Fortrol/amestryne + S	2	3	3,8	3	6,8	3
Fortrol/amestryne + S	1,8	3,7	3,7	2,7	5	3
Bladex Plus + MSMA + S	3,7	3,8	4,3	3,8	5	3,5
Bladex Plus + MSMA + S	4,8	4	3,8	4,3	6,7	2

*1 Based on the EWRS 1-9 scale where 1 = no effect and 9 = dead

*2 Based on a scale of 1-5 where 1 = very poor and 5 = as for unsprayed control.

Table 2. Shoot height and tiller number increase or decrease during the experimental period.

Treatment	Measurements			
	Shoot height increase (cm)		Tiller count increase/decrease	
	Clay	Sand	Clay	Sand
Control	4,3	7,5	3,2	8
Diuron + Actril DS	2,1	3,2	1,9	0,3
DPX 4129	3,2	4,6	4,5	5,9
DPX 4129 + Velpar	0,4	1,1	-3,8	-6,3
Ametryne + MSMA	2,6	3,4	3,5	5,5
Ametryne + MSMA	2,0	1,6	3,4	0
Bimate + paraquat	2,5	1,1	0,1	-2,5
Bimate + paraquat	0,3	0	-1,3	-8,7
Fortrol + TCA + S	2,1	1,2	-1,3	-4,7
Fortrol/ametryne + S	2,2	3,4	0,7	-3,7
Fortrol/ametryne + S	1,4	1,9	0,8	-5,4
Bladex Plus + MSMA + S	2,8	1,1	1,4	1,0
Bladex Plus + MSMA + S	2,0	1,9	0,9	-7,8

Table 3. Mass of foliage at harvest.

Treatment	Rate in kg or l ai or ae/ha	Yield			
		Sand Dry mass		Clay Dry mass	
		Total (g)	Per shoot (g)	Total (g)	Per shoot (g)
Control	-	40,63	6,77	54,82	7,6
Diuron + Actril DS	4,0 + 1,75	7,65	1,4	30,08	5,2
DPX 4129	0,64	35,27	5,19	44,63	7,1
DPX 4129 + Velpar	1,28 + 1,35	0	0	16,83	2,7
Ametryne + MSMA	2,5 + 1,8	18,63	3,11	34,32	5,2
Ametryne + MSMA	5,0 + 3,6	5,82	1,06	31,67	4,9
Bimate + paraquat	3,75 + 0,2	6,33	1,05	33,63	5,3
Bimate + paraquat	7,5 + 0,4	2,45	0,37	19,48	3,1
Fortrol + TCA + S	7,5 + 10,0	0,02	0,003	17,82	3,0
Fortrol/ametryne + S	5,0	5,13	0,93	30,28	4,5
Fortrol/ametryne + S	10,0	4,98	0,74	24,72	4,0
Bladex Plus + MSMA + S	3,75 + 2,16	10,40	1,65	38,82	5,7
Bladex Plus + MSMA + S	7,5 + 4,32	2,3	0,49	30,85	4,4
C.V.%		10,67		24,2	
L.S.D. (0,05)		8,99		8,767	
L.S.D. (0,01)		11,99		11,68	

Comments:

1. All treatments except DPX 4129 produced mild to severe symptoms of leaf scorch in both sand and clay soils.
2. All treatments stunted the sugarcane.
3. The cane growing in the sandy soil was killed in some instances and generally yield reductions were excessive and unacceptable. Many treatments were more severe than diuron + Actril DS.

PETT/SN
4th June, 1980