

AIIV

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: HW 249

Cat. No.: 1403

Title: Cane killing

1. Particulars of trial

This crop : 6th Ratoon
Site : CFS
Region : N Coast Coastal
Soil system : Berea
Soil form/series : Hutton/Clansthal
Design : Random blocks
Variety : N55/805
Irrigation : Nil
Fertilizer/Ameliorants : $\frac{N}{-}$ $\frac{P}{-}$ $\frac{K}{-}$

Soil analysis: Date: 21 January 1983

pH	OM %	Clay %	Silt %	Sand %
8,5	0,06	8	2	90

ppm

P	K	Ca	Mg	Na
> 80	69	> 1800	56	20

Dates: 18.01.83 - 27.09.83

<u>Rainfall - 1983</u>	(mm)	% of LTM
January	82	61
February	53	45
March	53	47
April	19	31

2. Objectives

To test one new chemical and one new additive to Roundup for their ability to kill sugarcane.

To test the improvement, if any, in cane kill by splitting the treatment using an interval of three days.

3. Treatments

	<u>Chemicals</u>	<u>Rate product/ha</u>
1.	Roundup)	6
2.	Roundup) on first spray date	8
3.	Roundup)	10
4.	Roundup - split	4 + 4
5.	Roundup - on second spray date	8
6.	SC 0224	6,4
7.	SC 0224	10,8
8.	Roundup + Frigate	6 + 0,5%
9.	Roundup + Frigate	6 + 1%
10.	Roundup + Frigate	8 + 0,5%

4. Experimental details

Treatments were applied directly over the cane rows using an APM Green flood-jet fitted to the lance of a lever-operated knapsack sprayer.

Cane growth at the time of application was:

5-8 leaves unfurled per shoot
 45-55 cm height of leaf canopy
 Stalk heights: 16,3 cm
 Stalk population: 188 000/ha

Weather conditions at spraying and subsequently were:

	<u>18 January 1983</u>	<u>21 January 1983</u>
Temperature °C 8 am :	25,2	26,8
2 pm :	26,6	28,0
Relative humidity % 8 am :	77	79
2 pm :	70	70
Sunshine hours :	12,6	6,5
Rainfall (mm) :		
On the day of spray :	0	0
<u>General conditions</u> :	Warm and clear	Overcast and warm

5. Comments on procedure

A heavy dew was present while spraying treatments 1-9 so an observation plot on adjacent cane was also sprayed before and after dew evaporated from cane leaves.

6. Note on assessments

Assessments were made by means of visual ratings of percent kill initially and subsequently by counts of regrowing stools and shoots.

The assessment was made by dividing the net row lengths (2 rows x 4 m) into 25 cm sections and counting any new green shoot within each section as a count of one regrown unit. This would be judged to be removable with one swing of a hoe and could thus be termed a 'hoe unit'. A hoe unit count of less than ten percent would be considered acceptable.

At the final assessment individual shoots were also counted to compare the two methods of assessment.

7. Results

Table 1 Assessments of cane kill using ratings and regrowth counts taken 14, 35, 49, 72, 126, 164 and 252 days after spray application

Treatments	Rate ℓ/ha	Ratings % kill			*1 Regrowth - hoe units %					Regrowth shoots *2 No./ha	Regrowth stools No./ha
		14	35	49	35	72	126	164	252	252	252
1 Roundup	6	59	90	96	3	4,7	28	27	20	20 893	5 000
2 Roundup 1st appli. date	8	74	95	98	0	1,6	4,1	7	3,1	7 143	357
3 Roundup	10	81	98	100	0,9	0,8	4,7	3	9,4	16 607	1 429
4 Roundup Both dates split	4+4	73	98	99	1,6	0,8	6,3	5,6	9,4	2 321	893
5 Roundup 2nd appli. date	8	71	98	99	0,9	3,1	3,1	2,5	1,9	829	536
6 SC 0224	6,4	56	91	96	1,6	8,6	42	38	39	61 250	8 929
7 SC 0224	10,8	75	96	99	0,9	1,6	5,6	5,6	0	0	0
8 Roundup + Frigate 1st appli. date	6+0,5%	66	92	98	1,6	4,7	25	29	19	24 107	4 464
9 Roundup + Frigate	6+1%	68	94	99	0,9	3,1	10,3	10,3	7,5	13 750	1 786
10 Roundup + Frigate	8+0,5%	79	98	100	0	3,1	4,1	3	1,9	829	536

*1 % hoe units = number of 25 cm sections with some new green material ÷ total number of sections x 100

*2 Shoot counts included new tillers developing from regrown shoots

Table 2 Visual observations and ratings of treatments with and without dew taken 3 and 14 days after spray

Treatments	Ratings % kill	
	3	14
Roundup 6 ℓ/ha + dew	6	20
Roundup 8 ℓ/ha + dew	6	35
Roundup 7,4 ℓ/ha - dew	7	30
Roundup 8 ℓ/ha - dew	10	40

8. Comments

Ratings

1. Observation plots showed that dew on the foliage at spraying decreased the effects of Roundup to some extent initially. No counts were taken on regrowth from these plots.
2. Although effects may have been masked to some extent by dew, a linear response to Roundup rates was apparent, and the addition of Frigate improved Roundup treatments slightly at an early stage.
3. 49 days after treatment the trends were still apparent although differences were very slight and all treatments showed an acceptable degree of kill.

Hoe units of regrowth

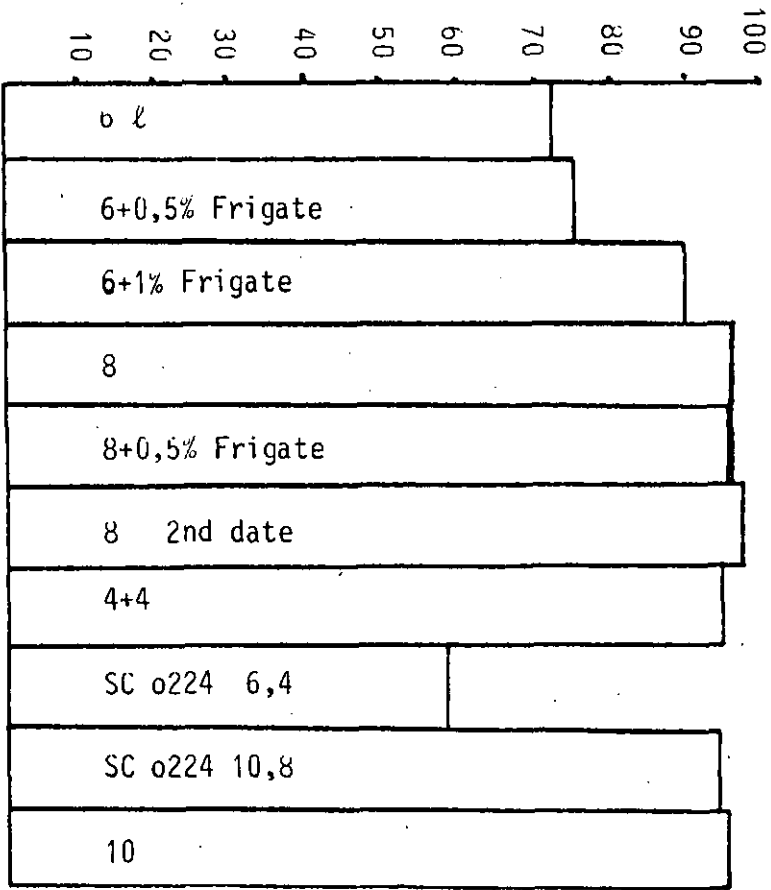
1. Regrown shoots became evident 35 days after spraying and were most obvious about 4-5 months after spraying.
2. 6 l/ha of Roundup and 6,4 l/ha of SC 0224 showed unacceptable regrowth (more than 10%). However, Frigate at 1% considerably improved the kill using 6 l/ha but was not beneficial at 0,5%.
3. SC 0224 was equal to Roundup at equivalent rates.
4. Splitting the application of Roundup did not improve the kill achieved.
5. In spite of some variability in result at 252 days after spraying all treatments with greater than 6 l/ha or with 1% Frigate provided an adequate kill of sugarcane.

Shoot regrowth counts

1. A large degree of variability is apparent in these counts due to the extent of tillering of survived stools. For this reason these values should be regarded with care.

Stool regrowth counts

1. The trends in stool counts follow those of 'hoe units' fairly well and these two systems appear to be most appropriate for cane killing evaluations.
2. Thus stool regrowth counts indicate an improved kill from 1% Frigate added to 6 l/ha of Roundup, no improvement from split applications and a poor kill from 6 l/ha rates of Roundup or SC 0224 generally.



% Kill based on hoe unit counts 126 days after spray (ie 100 - % hoe units regrowth)