

**SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION**

Cat. No. : 1803
Code No. : FTSL 1/90/R8

Title: Slurry fertiliser on trash

1. PARTICULARS OF PROJECT:

This crop : Ratoon 8
Site : Hillhead Section -
Tongaat-Hulett
Region : N Coast coastal
Soil System : Umzinto/C. lowlands
Soil form/
Design : Milkwood
: Incomplete Latin
square - 6 reps
Variety : NCo376
Fertilizer : N P K
100 100
see treatments

Soil analysis: Date 07.09.1990

pH	O.M.%	Clay %
7,5	4,81	45
ppm		

P	K	Ca	Mg	Zn	Na
80	187	1650	350	2,9	72

Age: 12 months

Dates: + 1.9.90 - 5.9.90

Rainfall: * 1008 mm 104% of LTM: 965 mm
* Mount Edgecombe

Irrigation: Nil

2. OBJECTIVES

To compare the performance of slurry and granular fertiliser when applied over a trash blanket.

3. MOTIVATION

Slurry fertilisers have been used for a number of years under irrigated conditions on burnt fields. Their use on trash blankets is a new practice and the comparative efficacy versus granular fertiliser under these conditions needed to be assessed.

4. TREATMENTS:

	Rates (kg/ha)	
	N	K
1. Liquid fertiliser	50	50
2. Liquid fertiliser	100	100
3. Granular fertiliser	50	50
4. Granular fertiliser	100	100
5. Urea based granules	50	50
6. Urea based granules	100	100

Note on treatments:

- ° Trash was removed from all plots in one replication as an observation of effects of slurry versus granules in burnt ratoons.
- ° Lan (28% N) and KCl (50% K) were applied in treatment 3 and 4 at rates of 179 + 100 kg/ha and 358 + 200 kg/ha respectively on 5.10.90. These were applied in the trash by hand in a band over the cane row.
- ° Urea (46% N) and KCl (50% K) were applied in treatments 5 and 6 at rates of 109 + 100 kg/ha and 217 + 200 kg/ha respectively on 5.10.90. These were applied in the same manner as for T3 and T4.
- ° Liquid fertiliser containing 14% N and 14% K by weight was applied at 358 kg/ha (equivalent to 270 l/ha) and 716 kg/ha (equivalent to 540 l/ha) for treatments 1 and 2 respectively. This was applied over the trash in a narrow stream using knapsack sprayers and disc nozzles.

Results:

Table 1: Rainfall (mm)

Actual and long term mean (LTM)

Months	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
1990	25	120	59	149	107	191	169	10	87	34	35	22
LTM	70	90	112	106	126	123	110	70	56	33	27	42
1991	1			Total: Actual = 1009 mm								
LTM	12			Total: LTM = 977 mm								

Table 2: Yield and crop characteristics at harvest

Treatments	Rates (kg/ha)		Stalk length (mm)	Stalk population (x 10 ³ /ha)	Cane (t/ha)	Sucrose (% cane)	Sucrose (t/ha)
	N	K					
1. Liquid (slurry)	50	50	173	155	76	14,6	11,1
2. Liquid (slurry)	100	100	187	172	85	14,2	12,2
3. Granular	50	50	173	160	76	14,0	10,5
4. Granular	100	100	174	168	81	14,4	11,7
5. Urea based granules	50	50	177	167	81	14,3	11,5
6. Urea based granules	100	100	183	164	82	14,3	11,7
CV %			4,5	6,9	9,0	5,0	11,1
S E difference +			5,69	8,0	5,1	0,50	0,90
L S D (0,05)			12,1	17,1	10,8	1,70	1,91

Table 3: Fertiliser forms

Treatments	Trash or bare *	Stalk length (cm)	Stalk population ($\times 10^3$ /ha)	Cane (t/ha)	Sucrose (% cane)	Sucrose (t/ha)
Liquid	Trash	180	164	81	14,4	11,6
Granular	Trash	174	164	78	14,2	11,1
Urea based granules	Trash	180	166	81	14,3	11,6
Liquid	Bare	192	171	98	14,5	14,3
Granular	Bare	187	159	88	15,5	13,7
Urea based granules	Bare	190	182	94	15,1	14,2

* Trash raked off one replication to compare fertilisers under burnt cane situation

Table 4: 3rd leaf nutrients (% dry matter) sampled on 13.1.91 and 30.4.91

Treatments	Rates (kg/ha) N & K	13.1.91 (ppm)						30.4.91 (ppm)					
		N	P	K	S	Ca	Mg	N	P	K	S	Ca	Mg
1. Liquid (slurry)	50	1,57	0,25	0,90	0,17	0,27	0,23	1,73	0,28	1,12	0,17	0,35	0,23
2. Liquid (slurry)	100	1,61	0,25	0,92	0,17	0,26	0,21	1,75	0,27	1,16	0,17	0,35	0,22
3. Granular	50	1,54	0,25	0,90	0,17	0,26	0,25	1,71	0,29	1,18	0,17	0,34	0,23
4. Granular	100	1,54	0,24	0,94	0,17	0,25	0,19	1,68	0,28	1,18	0,17	0,34	0,23
5. Urea based granules	50	1,55	0,26	0,89	0,17	0,27	0,21	1,71	0,29	1,17	0,17	0,34	0,24
6. Urea based granules	100	1,63	0,26	0,90	0,17	0,27	0,21	1,73	0,28	1,14	0,17	0,36	0,24
CV %		4,4	3,6	4,3	4,6	6,0	14,0	5,1	5,2	5,3	4,3	7,5	6,4
S E difference \pm		0,043	0,006	0,025	0,005	0,010	0,019	0,055	0,009	0,039	0,005	0,016	0,009
L S D (0,05)		0,093	0,012	0,053	0,011	0,021	0,041	0,117	0,020	0,084	0,010	0,035	0,020

COMMENTS

Yields:

There is a consistent advantage in sucrose and cane yields to the use of higher rates of fertiliser but no evidence of differences between nitrogen carriers.

The single replication without trash shows no indication of reliable differences between the forms of nitrogen.

3rd leaf nutrients

There is no evidence of differences between forms of nitrogen carrier.

Levels were above threshold for all nutrients at the second sampling but deficient for potassium and marginal for nitrogen at the first sampling occasion.

The higher nitrogen rates were reflected in leaf nitrogen levels at the first sampling but not the second.

CONCLUSIONS

There is no evidence to suggest that slurry carriers for fertilisers were any worse than granular applications over a trash blanket.