SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

6400/27 EARLY SEASON NITROGEN TRIAL

Cat. No.: 1644

Object: To evaluate responses in early season ratoon cane to single and split nitrogen dressings applied at varying times over a period extending to just before rapid stalk elongation in early September.

This crop: Second ratoon **Age:** 12,1 months (17.5.88 to 18.5.89)

Location: ZSA Experiment Station, Field L3.

Soil type: PE.1 sandy clay loam derived from gneiss.

Design: Randomised blocks, 5 replications.

Variety: NCo376 **Spacing:** 1,5m rows

Fertiliser:
1. Nitrogen - see treatments
2. Phosphate - 60 kg P_2O_5 ha^{-1} as single superphosphate, applied at 4 weeks.
3. Potash - 60 kg K_2O ha^{-1} as muriate of potash applied at 4 weeks.

Treatments: Nitrogen applications as per treatment table:
(No treatments were applied in the plant crop)

TREATMENTS	NITROGEN APPLICATIONS(kg N/ha^{-1})				
	WEEKS AFTER CUTTING				
	1(or 1st irrigation	4(or 2nd irrigation	8	12	16
1	80	-	80	-	-
2	80	-	-	80	-
3	-	80	80	-	-
4	-	80	-	80	-
5	-	160	-	-	-
6	-	-	160	-	-
7	-	-	-	160	-
8	-	-	-	-	160
9	-	60	-	100	-
10	-	60	-	-	100
11	-	-	60	100	-
12	-	-	60	-	100

Rainfall: 398,2mm **Irrigation:** 1 006,0mm

RESULTS

Relevant second ratoon harvest data are presented in the attached tables. Statistical analyses and groupings of treatment means were done as detailed in the first ratoon report.

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a) Cane yield: There were no significant treatment effects in the trial as a whole. Grouped data did not show any significant trends, although treatments which received their first N dressing between 4 and 16 weeks after harvest yielded more than the treatment which received its first N dressing one week after harvest. Spreading N applications over 12 or 16 weeks gave higher yields than finishing N applications at 4 or 8 weeks.

b) Quality effects: There were no significant differences between treatments in the trial as a whole. However, grouped data showed that there was in general a significant ($P = 0,01$ for ERC% cane and $P = 0,05$ for ERF% cane) reduction in quality as the period of N application was extended. Although differences were not significant, applying the first N dressing within 4 weeks produced higher quality cane than delaying beyond 4 weeks.

c) ERC and ERF yield: There were no significant differences between individual treatments or grouped treatments. No clear trends were observed.

d) Stalk populations: No significant differences were obtained between individual or grouped treatments. As for the first ratoon, applying all the N by 4 weeks gave higher stalk populations than applying all the N by 8 to 16 weeks, and single applications of N gave higher stalk populations than split applications, however; all trends were not significant.

e) Cane stalk lengths and diameters: There were no significant differences between treatments both before and after grouping.

f) Flowering: Flowering was nil in the second ratoon.

g) Rainfall effects: Only the second N dressing at 4 weeks was followed by a significant fall of rain above 20mm. The actual rain recorded was 35mm. However, any N leaching resulting from the rain received was not evident since no significant cane, ERC and ERF yield depressions were obtained in treatments receiving all their N by 4 weeks.

h) Foliar data: There were highly significant differences between treatments in foliar levels of N, P, K, Ca, and Mg. Except for the K level of one treatment, all elemental concentrations were equal to or above the October critical levels of 1,65%, 0,17%, 1,10%, 0,18%, and 0,06% for N, P, K, Ca, and Mg respectively.

(i) Nitrogen: Spreading N application over 16 weeks resulted in significantly higher foliar N levels than applying all the N by 4, 8, or 12 weeks.

(ii) Phosphate: Responses were similar to those of foliar nitrogen.

(iii) Potassium: Significantly higher K levels were obtained when the first N dressing was delayed to 16 weeks than when it was applied at 1, 4, or 8 weeks. Significantly higher K values were also obtained when the first N dressing was applied at 12 weeks than when it was applied at 1 or 8 weeks.

(iv) Calcium: Grouped data did not show any significant trends.

(v) Magnesium: Applying the first N dressing at 1 week resulted in significantly lower Mg levels than delaying it to 8 or 12 weeks.

CONCLUSIONS:

In the second ratoon cane stalks tended to be most numerous, longest and thickest, and the highest cane, ERC and ERF yields were obtained when all the N was applied in one dressing at 12 weeks. This was in contrast to first ratoon results when highest cane yields were obtained when N was either applied in one dressing at 12 weeks or in two dressings (of 60N, 100N) at 12 and 16 weeks, and highest ERC and ERF yields were obtained when N was applied in one dressing at 8 weeks or in several dressings timed between 8 and 12 weeks. However, the trends were not significant and not too much weight should be given to these observations until they are maintained in the long term. Grouped foliar data responses were not correlated to ERC and ERF yield responses.

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Table 1 : Harvest Data - second ratoon

TREAT NO.	N applications (kg N ha⁻¹) weeks after cutting 1	4	8	12	16	CANE YIELD (t/ha⁻¹)	ERC% CANE	ERF% CANE	ERC YIELD (t/ha⁻¹)	ERF YIELD (t/ha⁻¹)
4	-	80	-	80	-	134,16	12,88	13,99	17,26	18,76
7	-	-	-	160	-	128,87	12,82	13,93	16,49	17,92
11	-	-	60	100	-	125,59	12,95	14,07	16,23	17,63
2	80	-	-	80	-	124,58	13,05	14,11	16,29	17,63
6	-	-	160	-	-	124,11	12,87	13,93	15,97	17,31
10	-	60	-	-	100	123,50	12,83	13,90	15,84	17,16
9	-	60	-	100	-	121,63	12,86	14,03	15,62	17,07
12	-	-	60	-	100	120,32	12,65	13,77	15,23	16,59
5	-	160	-	-	-	118,61	13,30	14,32	15,78	16,99
3	-	80	80	-	-	117,91	13,18	14,23	15,51	16,75
8	-	-	-	-	160	117,51	12,69	13,77	14,92	16,19
1	80	-	80	-	-	109,25	13,04	13,99	14,26	15,31
Significance						N.S.	N.S.	N.S.	N.S.	N.S.
Trial mean						122,17	12,93	14,00	15,78	17,11
S.E. plot ±						11,05	0,48	0,40	1,51	1,63
S.E. mean ±						4,94	0,22	0,18	0,68	0,73
C.V.%						9,04	3,75	2,87	9,58	9,54

Table 2 : Cane and ERF yield data summary 1R and 2R

TREAT. NO.	NITROGEN APPLICATIONS (kg N ha⁻¹) Weeks after cutting 1	4	8	12	16	CANE YIELD (t/ha⁻¹) 1R	2R	Mean	ERC YIELD (t/ha⁻¹) 1R	2R	Mean
6	-	-	160	-	-	178,21	124,11	151,16	21,39	15,97	18,68
12	-	-	60	-	100	172,87	120,32	146,60	21,21	15,23	18,22
9	-	60	-	100	-	167,51	121,63	144,57	19,80	15,62	17,71
8	-	-	-	-	160	166,94	117,51	142,23	19,38	14,92	17,15
5	-	160	-	-	-	165,81	118,61	142,21	19,52	15,78	17,65
10	-	60	-	-	100	165,79	123,50	144,65	19,65	15,84	17,75
2	80	-	-	80	-	165,16	124,58	144,87	20,78	16,29	18,54
7	-	-	-	160	-	164,10	128,87	146,49	19,06	16,49	17,78
4	-	80	-	80	-	163,59	134,16	148,88	19,20	17,26	18,23
3	-	80	80	-	-	162,83	117,91	140,37	19,74	15,51	17,63
11	-	-	60	100	-	158,08	125,59	141,84	18,52	16,23	17,38
1	80	-	80	-	-	155,34	109,25	132,30	18,56	14,26	16,41
Significance						N.S.	N.S.	-	N.S.	N.S.	-
Trial mean						165,52	122,17	143,85	19,73	15,78	17,78
S.E. plot ±						12,27	11,05	-	1,78	1,51	-
S.E. mean ±						5,49	4,94	-	0,80	0,68	-
C.V.%						7,41	9,04	-	9,01	9,58	-

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Table 3: ERC% cane and ERF% cane data summary 1R and 2R

TREAT. NO.	NITROGEN APPLICATION (kg N/ha-') Weeks after cutting					ERC% CANE			ERF% CANE		
	1	4	8	12	16	1R	2R	Mean	1R	2R	Mean
6	-	-	160	0	0	12,01	12,87	12,44	13,28	13,93	13,61
12	-	-	60	-	100	12,29	12,65	12,47	13,73	13,77	13,75
9	-	60	-	100	-	11,85	12,86	12,36	13,23	14,03	13,63
8	-	-	-	-	160	11,61	12,69	12,15	12,94	13,77	13,36
5	-	160	-	-	-	11,78	13,30	12,54	13,10	14,32	13,71
10	-	60	-	-	100	11,83	12,83	12,33	13,24	13,90	13,57
2	80	-	-	80	-	12,60	13,05	12,83	13,81	14,11	13,96
7	-	-	-	160	-	11,58	12,82	12,20	12,96	13,93	13,45
4	-	80	-	80	-	11,73	12,88	12,31	13,02	13,99	13,51
3	-	80	80	-	-	12,11	13,18	12,65	13,29	14,23	13,76
11	-	-	60	100	-	11,70	12,95	12,33	13,08	14,07	13,58
1	80	-	80	-	-	11,96	13,04	12,50	13,34	13,99	13,67
Significance						N.S.	N.S.	-	N.S.	N.S.	-
Trial mean						11,92	12,93	12,43	13,25	14,00	13,63
S.E. plot ±						0,69	0,48	-	0,62	0,40	-
S.E. mean ±						0,31	0,22	-	0,28	0,18	-
C.V.%						5,80	3,75	-	4,68	2,87	-

Table 4 : ERF yield and cane stalks data summary 1R and 2R

TREAT. NO.	NITROGEN APPLICATIONS (kg N ha-') weeks after cutting					ERF YIELD (t ha-')			STALKS (ha-' x 10-³)		
	1	4	8	12	16	1R	2R	Mean	1R	2R	Mean
6	-	-	160	-	-	23,64	17,31	20,48	159,1	153,0	156,1
12	-	-	60	-	100	23,69	16,59	20,14	153,4	149,5	151,5
9	-	60	-	100	-	22,13	17,07	19,60	141,0	149,6	145,3
8	-	-	-	-	160	21,60	16,19	18,90	142,8	151,6	147,2
5	-	160	-	-	-	21,72	16,99	19,36	150,9	153,3	152,1
10	-	60	-	-	100	21,96	17,16	19,56	146,8	148,5	147,7
2	80	-	-	80	-	22,82	17,63	20,23	143,8	150,4	147,1
7	-	-	-	160	-	21,33	17,92	19,63	149,1	155,6	152,4
4	-	80	-	80	-	21,33	18,76	20,05	144,1	155,3	149,7
3	-	80	80	-	-	21,66	16,75	19,21	145,7	151,6	148,7
11	-	-	60	100	-	20,70	17,63	19,17	143,8	149,8	146.8
1	80	-	80	-	-	20,70	15,31	18,01	142,3	145,4	143,9
Significance						N.S.	N.S.	-	N.S.	N.S.	-
Trial mean						21,94	17,11	19,53	146,9	151,1	149,0
S.E. plot ±						1,85	1,63	-	10,01	6,66	-
S.E. mean ±						0,83	0,73	-	4,48	2,98	-
C.V.%						8,45	9,54	-	6,81	4,41	-

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Table 5 : Stalk diameter and length data summary 1R and 2R

TREAT. NO.	NITROGEN APPLICATIONS (kg N ha-') weeks after cutting					STALK DIAMETER (cm)			STALK LENGTH (m)		
	1	4	8	12	16	1R	2R	Mean	1R	2R	Mean
6	-	-	160	-	-	2,25	2,20	2,23	3,79	2,61	3,20
12	-	-	60	-	100	2,27	2,20	2,24	3,64	2,60	3,12
9	-	60	-	100	-	2,34	2,12	2,23	3,61	2,58	3,10
8	-	-	-	-	160	2,29	2,16	2,23	3,67	2,57	3,12
5	-	160	-	-	-	2,32	2,06	2,19	3,60	2,55	3,08
10	-	60	-	-	100	2,22	2,16	2,19	3,53	2,64	3,09
2	80	-	-	80	-	2,29	2,16	2,23	3,81	2,65	3,23
7	-	-	-	160	-	2,23	2,22	2,23	3,70	2,76	3,23
4	-	80	-	80	-	2,30	2,12	2,21	3,59	2,69	3,14
3	-	80	80	-	-	2,23	2,12	2,18	3,65	2,55	3,10
11	-	-	60	100	-	2,29	2,12	2,21	3,73	2,62	3,18
1	80	-	80	-	-	2,33	2,14	2,24	3,54	2,45	3,00
Significance						N.S.	N.S.	-	N.S.	N.S.	-
Trial mean						2,28	2,15	2,22	3,66	2,61	3,14
S.E. plot ±							0,11	-	0,27	0,20	-
S.E. mean ±							0,05	-	0,12	0,09	-
C.V.%							5,01	-	7,37	7,65	-

Table 6 : Foliar N% and P% data summary 1R and 2R

TREAT. NO.	NITROGEN APPLICATION (kg N ha-') weeks after cutting					FOLIAR N% DRY MATTER (22 weeks)			FOLIAR P% DRY MATTER (22 weeks)		
	1	4	8	12	16	1R	2R	Mean	1R	2R	Mean
6	-	-	160	-	-	2,39	1,86	2,13	0,22	0,17	0,20
12	-	-	60	-	100	2,32	2,05	2,19	0,18	0,22	0,20
9	-	60	-	100	-	2,29	1,91	2,10	0,19	0,18	0,19
8	-	-	-	-	160	2,37	2,26	2,32	0,19	0,22	0,21
5	-	160	-	-	-	2,27	1,68	1,98	0,19	0,17	0,18
10	-	60	-	-	100	2,33	2,09	2,21	0,18	0,20	0,19
2	80	-	-	80	-	2,36	1,82	2,09	0,18	0,19	0,19
7	-	-	-	160	-	2,37	2,05	2,21	0,19	0,18	0,19
4	-	80	-	80	-	2,32	1,80	2,06	0,19	0,19	0,19
3	-	80	80	-	-	2,39	1,74	2,07	0,19	0,18	0,19
11	-	-	60	100	-	2,21	1,88	2,05	0,17	0,20	0,19
1	80	-	80	-	-	2,36	1,70	2,03	0,19	0,20	0,20
Significance						N.S.	**	-	*	**	-
Trial mean						2,33	1,90	2,12	0,19	0,19	0,19
S.E. plot ±						0,09	0,10	-	0,01	0,01	-
S.E. mean ±						0,04	0,04	-	0,01	0,005	-
C.V.%						3,92	5,21	-	7,92	5,51	-
L.S.D. P = 0,05						-	0,13	-	0,02	0,01	-
							0,17	-	-	0,02	

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Table 7 : Foliar K% and Ca% data summary 1R + 2R

TREAT. NO.	NITROGEN APPLICATION (kg N ha-¹) weeks after cutting					FOLIAR K% DRY MATTER (22 weeks)			FOLIAR Ca% DRY MATTER (22 weeks)		
	1	4	8	12	16	1R	2R	Mean	1R	2R	Mean
6	-	-	160	-	-	1,37	1,15	1,26	0,40	0,33	0,37
12	-	-	60	-	100	1,31	1,11	1,21	0,36	0,31	0,34
9	-	60	-	100	-	1,35	1,14	1,25	0,40	0,35	0,38
8	-	-	-	-	160	1,46	1,36	1,41	0,38	0,35	0,37
5	-	160	-	-	-	1,39	1,17	1,28	0,39	0,30	0,35
10	-	60	-	-	100	1,38	1,26	1,32	0,38	0,30	0,34
2	8-	-	-	80	-	1,35	1,18	1,27	0,38	0,32	0,35
7	-	-	-	160	-	1,42	1,28	1,35	0,38	0,34	0,36
4	-	80	-	80	-	1,31	1,21	1,26	0,39	0,31	0,35
3	-	80	80	-	-	1,27	1,13	1,20	0,40	0,31	0,36
11	-	-	60	100	-	1,32	1,09	1,21	0,34	0,31	0,33
1	80	-	80	-	-	1,31	1,11	1,21	0,39	0,31	0,
Significance						N.S.	***	-	N.S.	***	-
Trial mean						1,35	1,18	1,27	0,38	0,32	0,35
S.E. plot ±						0,10	0,08	-	0,03	0,02	-
S.E. mean ±						0,05	0,04	-	0,01	0,01	-
C.V.%						7,61	6,76	-	8,72	5,64	-
L.S.D. P = 0,05						-	0,10	-	-	0,02	-
P = 0,01						-	0,14	-	-	0,03	-

Table 8 : Foliar Mg% and Flowering data summary 1R and 2R

TREAT. NO.	NITROGEN APPLICATION (kg N ha-¹) weeks after cutting					FOLIAR Mg% DRY MATTER (22 weeks)			FLOWERING %		
	1	4	8	12	16	1R	2R	Mean	1R	2R	Mean
6	-	-	160	-	-	0,17	0,16	0,17	60	0	30
12	-	-	60	-	100	0,18	0,18	0,18	50	0	25
9	-	60	-	100	-	0,19	0,16	0,18	64	0	32
8	-	-	-	-	160	0,17	0,17	0,17	78	0	39
5	-	160	-	-	-	0,15	0,15	0,15	72	0	36
10	-	60	-	-	100	0,17	0,15	0,16	55	0	28
2	80	-	-	80	-	0,18	0,16	0,17	76	0	38
7	-	-	-	160	-	0,20	0,19	0,20	44	0	22
4	-	80	-	80	-	0,17	0,16	0,17	80	0	40
3	-	80	80	-	-	0,18	0,15	0,17	84	0	42
11	-	-	60	100	-	0,16	0,17	0,17	78	0	39
1	80	-	80	-	-	0,16	0,13	0,15	67	0	34
Significance						N.S.	***	-	N.S.	N.S.	-
Trial mean						0,17	0,16	0,17	67,3	0	34
S.E. plot ±						0,04	0,02	-	26,3	0	-
S.E. mean ±						0,02	0,01	-	11,8	0	-
C.V.%						21,27	10,30	-	39,1	0	-
L.S.D. P = 0,05						-	0,02	-			
P = 0,01						-	0,03	-			

Table 9 : Grouping of cane yield and ERC yield data 1R and 2R
B time of last nitrogen dressing

GROUPING	NO. OF TREATMENTS	CANE YIELD (t ha-')			ERC YIELD (t ha-')		
		1R	2R	Mean	1R	2R	Mean
A : All N by 4 weeks	1	165,81	118,61	142,21	19,52	15,78	17,65
B : All N by 8 weeks	3	165,46	117,09	141,28	19,90	15,25	17,58
C : All B by 12 weeks	5	163,69	126,97	145,33	19,47	16,38	17,93
D : All N by 16 weeks	3	168,53	120,44	144,49	20,08	15,33	17,71
Mean		165,52	122,17	143,85	19,73	15,78	17,76
Significance		N.S.	N.S.	-	N.S.	N.S.	-

Table 10 : Grouping of cane and ERC yield data 1R and 2R
By time of first nitrogen dressing

GROUPING	NO. OF TREATMENTS	CANE YIELD t ha-')			ERC YIELD (t ha-')		
		1R	2R	Mean	1R	2R	Mean
First N dressing at:							
E : 1 week	2	160,25	116,91	138,58	19,67	15,28	17,48
F : 4 weeks	5	165,10	123,16	144,13	19,58	16,00	17,79
G : 8 weeks	3	169,72	123,34	146,53	20,37	15,81	18,09
H : 12 weeks	1	164,10	128,87	146,49	19,06	16,49	17,78
I : 16 weeks	1	166,94	117,51	142,23	19,38	14,92	17,15
Mean		165,52	122,17	143,85	19,73	15,78	17,76
Significance		N.S.	N.S.	-	N.S.	N.S.	-

Table 11 : Grouped ERC% cane and ERF% cane data 1R and 2R
Bt time of last nitrogen dressing

GROUPING	NO. OF TREATMENTS	ERC% CANE			ERF% CANE		
		1R	2R	Mean	1R	2R	Mean
A : All N by 4 weeks	1	11,78	13,30	12,54	13,10	14,32	13,71
B : All N by 8 weeks	3	12,03	13,03	12,53	13,30	14,05	13,68
C : All N by 12 weeks	5	11,89	12,91	12,40	13,22	14,02	13,62
D : All N by 16 weeks	3	11,91	12,72	12,32	13,30	13,82	13,56
Mean		11,92	12,93	12,43	13,25	14,00	13,63
Significance			AC*AD** BD*CD*			AB*AC* AD**BD* CD*	

Table 12 : Grouped ERC% cane and ERF% cane data 1R and 2R
By time of first nitrogen dressing

GROUPING	NO. OF TREATMENTS	ERC% CANE			ERF% CANE		
		1R	2R	Mean	1R	2R	Mean
First N dressing at:							
E : 1 week	2	12,28	13,05	12,67	13,57	14,05	13,81
F : 4 weeks	5	11,86	13,01	12,44	13,18	14,09	13,64
G : 8 weeks	3	12,00	12,82	12,41	13,36	13,92	13,64
H : 12 weeks	1	11,58	12,82	12,20	12,96	13,93	13,45
I : 16 weeks	1	11,61	12,69	12,15	12,94	13,77	13,36
Mean		11,92	12,93	12,43	13,25	14,00	13,63
Significance		N.S.	N.S.	-	N.S.	N.S.	-

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Table 13 : Grouping of ERF yield and cane stalks data 1R and 2R
By time of last nitrogen dressing

GROUPING	NO. OF TREATMENTS	ERF YIELD (t ha-¹)			STALKS (ha-¹ x 10-³)		
		1R	2R	Mean	1R	2R	Mean
A : All N by 4 weeks	1	21,72	16,99	19,36	150,9	153,3	152,1
B : All N by 8 weeks	3	22,00	16,46	19,23	149,0	150,0	149,5
C : All N by 12 weeks	5	21,66	17,80	19,73	144,3	152,1	148,2
D : All N by 16 weeks	3	22,42	16,65	19,54	147,7	149,9	148,8
Mean		21,94	17,11	19,53	146,9	151,1	149,0
Significance		N.S.	N.S.	-	N.S.	N.S.	-

Table 14 : Grouping of ERF yield and cane stalks data 1R and 2R
By time of first nitrogen dressing

GROUPING	NO. OF TREATMENTS	ERF YIELD (t ha-¹)			STALKS (ha-¹ x 10-³)		
		1R	2R	Mean	1R	2R	Mean
First N dressing at:							
E : 1 week	2	21,76	16,47	19,12	143,0	147,9	145,5
F : 4 weeks	5	21,76	17,35	19,56	145,7	151,7	148,7
G : 8 weeks	3	22,68	17,18	19,93	152,1	150,7	151,4
H : 12 weeks	1	21,33	17,92	19,63	149,1	155,6	152,4
I : 16 weeks	1	21,60	16,19	18,90	142,8	151,6	147,2
Mean		21,94	17,11	19,53	146,9	151,1	149,0
Significance		NS.	N.S.	-	N.S.	N.S.	-

Table 15 : Grouping of stalk diameter and length data 1R and 2R
By time of last nitrogen dressing

GROUPING	NO. OF TREATMENTS	STALK DIAMETER (m)			STALK LENGTH (m)		
		1R	2R	Mean	1R	2R	Mean
A : All N by 4 weeks	1	2,32	2,06	2,19	3,60	2,55	3,08
B : All N by 8 weeks	3	2,27	2,15	2,21	3,66	2,54	3,10
C : All N by 12 weeks	5	2,29	2,15	2,22	3,69	2,66	3,18
D : All N by 16 weeks	3	2,26	2,17	2,22	3,62	2,60	3,11
Mean		2,28	2,15	2,22	3,66	2,61	3,14
Significance		N.S.	N.S.	-	N.S.	N.S.	-

Table 16 : Grouping of stalk diameter and length data 1R and 2R
By time of first nitrogen dressing

GROUPING	NO. OF TREATMENTS	STALK DIAMETER (m)			STALK LENGTH (m)		
		1R	2R	Mean	1R	2R	Mean
First N dressing at:							
E : 1 week	2	2,31	2,15	2,23	3,68	2,55	3,12
F : 4 weeks	5	2,28	2,12	2,20	3,60	2,60	3,10
G : 8 weeks	3	2,27	2,17	2,22	3,72	2,61	3,17
H : 12 weeks	1	2,23	2,22	2,23	3,70	2,76	3,23
I : 16 weeks	1	2,29	2,16	2,23	3,67	2,57	3,12
Mean		2,28	2,15	2,22	3,66	2,61	3,14
Significance		N.S.	N.S.	-	N.S.	N.S.	-

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Table 17 : Grouping of foliar NZ and PZ data 1R and 2R
By time of last nitrogen dressing

GROUPING	NO. OF TREATMENTS	FOLIAR NZ DRY MATTER (22 weeks)			FOLIAR PZ DRY MATTER (22 weeks)		
		1R	2R	Mean	1R	2R	Mean
A : All N by 4 weeks	1	2,27	1,68	1,98	0,19	0,17	0,18
B : All N by 8 weeks	3	2,38	1,77	2,08	0,20	0,18	0,19
C : All N by 12 weeks	5	2,31	1,89	2,10	0,18	0,19	0,19
D : All N by 16 weeks	3	2,34	2,14	2,24	0,19	0,21	0,20
Mean		2,33	1,90	2,12	0,19	0,19	0,19
Significance		N.S.	AD** BD** CD**	-	N.S.	AD* BD** CD*	-

Table 18 : Grouping of foliar NZ and PZ data 1R and 2R
By time of first nitrogen dressing

GROUPING	NO. OF TREATMENTS	FOLIAR NZ DRY MATTER (22 weeks)			FOLIAR PZ DRY MATTER (22 weeks)		
		1R	2R	Mean	1R	2R	Mean
First N dressing at:							
E : 1 week	2	2,36	1,76	2,06	0,18	0,20	0,19
F : 4 weeks	5	2,32	1,84	2,08	0,19	0,19	0,19
G : 8 weeks	3	2,31	1,93	2,12	0,19	0,20	0,20
H : 12 weeks	1	2,37	2,05	2,21	0,19	0,18	0,19
I : 16 weeks	1	2,37	2,26	2,32	0,19	0,22	0,21
Mean		2,33	1,90	2,12	0,19	0,19	0,19
Significance		N.S.	N.S.	-	N.S.	N.S.	-

Table 19 : Grouping of foliar KZ and CaZ data 1R and 2R
By time of last nitrogen dressing

GROUPING	NO. OF TREATMENTS	FOLIAR KZ DRY MATTER (22 weeks)			FOLIAR CaZ DRY MATTER (22 weeks)		
		1R	2R	Mean	1R	2R	Mean
A : All N by 4 weeks	1	1,39	1,17	1,28	0,39	0,30	0,35
B : All N by 8 weeks	3	1,32	1,13	1,23	0,40	0,31	0,36
C : All N by 12 weeks	5	1,35	1,18	1,27	0,38	0,32	0,35
D : All N by 16 weeks	3	1,38	1,24	1,31	0,38	0,32	0,35
Mean		1,35	1,18	1,27	0,38	0,32	0,35
Significance		N.S.	N.S.	-	N.S.	N.S.	-

Table 20: Grouping of foliar KZ and PZ data 1R and 2R
By time of first nitrogen dressing

GROUPING	NO. OF TREATMENTS	FOLIAR KZ DRY MATTER (22 weeks)			FOLIAR CaZ DRY MATTER (22 weeks)		
		1R	2R	Mean	1R	2R	Mean
First N dressing at:							
E : 1 week	2	1,33	1,14	1,24	0,39	0,31	0,35
F : 4 weeks	5	1,34	1,18	1,26	0,39	0,31	0,35
G : 8 weeks	3	1,34	1,11	1,23	0,37	0,31	0,34
H : 12 weeks	1	1,42	1,28	1,35	0,38	0,34	0,36
I : 16 weeks	1	1,46	1,36	1,41	0,38	0,35	0,37
Mean		1,35	1,18	1,27	0,38	0,32	0,35
Significance			EF*EI* FI**GI* GI*				

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Table 21 : Grouping of foliar Mg% and Flowering% data 1R and 2R
By time of last nitrogen dressing

GROUPING	NO. OF TREATMENTS	FOLIAR Mg% DRY MATTER (22 weeks)			FLOWERING%		
		1R	2R	Mean	1R	2R	Mean
A : All N by 4 weeks	1	0,15	0,15	0,15	72	0	36
B : All N by 8 weeks	3	0,17	0,15	0,16	70	0	35
C : All N by 12 weeks	5	0,18	0,17	0,18	68	0	34
D : All N by 16 weeks	3	0,17	0,17	0,17	61	0	31
Mean		0,17	0,16	0,17	67	0	34
Significance		N.S.	N.S.	-	N.S.	N.S.	-

Table 22 : Grouping of foliar Mg% and Flowering% data 1R and 2R
By time of first nitrogen dressing

GROUPING	NO. OF TREATMENTS	FOLIAR Mg% DRY MATTER (22 weeks)			FLOWERING%		
		1R	2R	Mean	1R	2R	Mean
First N dressing at:							
E : 1 week	2	0,17	0,14	0,16	72	0	36
F : 4 weeks	5	0,17	0,16	0,17	71	0	36
G : 8 weeks	3	0,17	0,17	0,17	63	0	32
H : 12 weeks	1	0,20	0,19	0,20	44	0	22
I : 16 weeks	1	0,17	0,17	0,17	78	0	39
Mean		0,17	0,16	0,17	67	0	34
Significance		N.S.	[illegible]	-	N.S.	N.S.	-

Table 23 : Grouping of cane and ERC yield data 1R and 2R
By number and order of magnitude of N splits

GROUPING	NO.OF TREAT-MENTS	CANE YIELD (t ha-')			ERC YIELD (t ha-')		
		1R	2R	Mean	1R	2R	Mean
J : single application	4	168,76	122,28	145,52	19,84	15,79	17,82
K : Double application(80N,80N)	4	161,73	121,47	141,60	19,57	15,83	17,70
L : Double application(60N,100N)	4	166,06	122,76	144,41	19,79	15,73	17,76
Mean		165,52	122,17	143,85	19,73	15,78	17,76
Significance		N.S.	N.S.	-	N.S.	N.S.	-

Table 24 : Grouping of ERC% cane and ERF% cane data 1R and 2R
By number and order of magnitude of N splits

GROUPING	NO.OF TREAT-MENTS	ERC% CANE			ERF% CANE		
		1R	2R	Mean	1R	2R	Mean
J : Single application	4	11,74	12,92	12,33	13,07	13,99	13,52
K : Double application(80N,80N)	4	12,10	13,04	12,57	13,36	14,08	13,72
L : Double application(60N,100N)	4	11,92	12,82	12,37	13,32	13,94	13,63
Mean		11,92	12,93	12,43	13,25	14,00	13,63
Significance		N.S.	N.S.	-	N.S.	N.S.	-

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Table 25 : Grouping of ERF yield and cane stalk data 1R and 2R
By number and order of magnitude of splits

GROUPING	NO.OF TREAT MENTS	ERF YIELD (t ha^{-1})			STALKS (ha^{-1} x 10^{-3})		
		1R	2R	Mean	1R	2R	Mean
J : Single application	4	22,07	17,10	19,59	150,5	153,4	152,0
K : Double application(80N,80N)	4	21,63	17,11	19,37	144,0	150,7	147,4
L : Double application(60N,100N)	4	22,12	17,11	19,62	146,2	149,3	147,8
Mean		21,94	17,11	19,53	146,9	151,1	149,0
Significance		N.S.	N.S.	-	N.S.	N.S.	-

Table 26 : Grouping of stalk diameter and length data 1R and 2R
By number and order of magnitude of N splits

GROUPING	NO.OF TREAT-MENTS	STALK DIAMETER (cm)			STALK LENGTH (m)		
		1R	2R	Mean	1R	2R	Mean
J : Single application	4	2,27	2,16	2,22	3,69	2,62	3,16
K : Double application(80N,80N)	4	2,29	2,14	2,22	3,65	2,59	3,12
L : Double application(60N,100N)	4	2,28	2,15	2,22	3,63	2,61	3,12
Mean		2,28	2,15	2,22	3,66	2,61	3,14
Significance		N.S.	N.S.	-	N.S.	N.S.	-

Table 27 : Grouping foliar N% and Foliar P% data 1R and 2R
By number and order of magnitude of N splits

GROUPING	NO.OF TREAT-MENTS	FOLIAR N% DRY MATTER (22 weeks)			FOLIAR P% DRY MATTER (22 weeks)		
		1R	2R	Mean	1R	2R	Mean
J : Single application	4	2,35	1,96	2,16	0,20	0,19	0,20
K : Double application(80N,80N)	4	2,36	1,76	2,06	0,18	0,19	0,19
L : Double application(60N,100N)	4	2,29	1,98	2,14	0,18	0,20	0,19
Mean		2,33	1,90	2,12	0,19	0,19	0,19
Significance		N.S.	N.S.	-	JK* JL*	N.S.	-

Table 28 : Grouping of foliar K% and foliar Ca% data 1R and 2R
By number and order of magnitude of N splits

GROUPING	NO.OF TREAT-MENTS	FOLIAR K% DRY MATTER (22 weeks)			FOLIAR Ca% DRY MATTER (22 weeks)		
		1R	2R	mean	1R	2R	Mean
J : Single application	4	1,41	1,24	1,33	0,39	0,33	0,36
K : Double application(80N,80N)	4	1,31	1,16	1,24	0,39	0,31	0,35
L : Double application(60N,100N)	4	1,34	1,15	1,50	0,37	0,32	0,35
Mean		1,35	1,18	1,27	0,38	0,32	0,35
Significance		JK** JL*	N.S.	-	N.S.	N.S.	-

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Table 29 : Grouping of foliar Mg% and Flowering% data 1R and 2R
By number and order of magnitude of splits

GROUPING	NO.OF TREAT-MENTS	FOLIAR Mg% DRY MATTER (22 weeks)			FLOWERING%		
		1R	2R	Mean	1R	2R	Mean
J : Single application	4	0,17	0,17	0,17	64	0	32
K : Double application(80N,80N)	4	0,17	0,15	0,16	77	0	39
L : Double application(60N,100N)	4	0,17	0,17	0,17	62	0	31
Mean		0,17	0,16	0,17	67	0	34
Significance		N.S.	N.S.	-	N.S.	N.S.	-

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

6400/27 EARLY SEASON NITROGEN TRIAL

Cat. No.: 1644

Object: To evaluate responses in early season ratoon cane to single supers and split nitrogen dressings applied at varying times over a period extending to just before rapid stalk elongation in early September.

This crop: Third ratoon. **Age:** 12,0 months (18.5.89 to 17.5.90).

Location: ZSA Experiment Station, Field L3.

Soil type: PE.1 sandy clay loam derived from gneiss.

Design: Randomised blocks, 5 replications.

Variety: NCo376 **Spacing:** 1,5m rows.

Fertilizer:
1. Nitrogen - see treatments
2. Phosphate - 60 kg/ha P_2O_5 as single superphosphate, applied at 4 weeks.
3. Potash - 60 kg/ha K 0 as muriate of potash applied at 4 weeks.

TREATMENTS: Nitrogen applications as per treatment table: (No treatments were applied in the plant crop).

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TREAT-MENTS	NITROGEN APPLICATIONS (kg N/ha)				
	WEEKS AFTER CUTTING				
	1 (or 1st irrigation)	4 (or 2nd irrigation)	8	12	16
1	80	-	80	-	-
2	80	-	-	80	-
3	-	80	80	-	-
4	-	80	-	80	-
5	-	160	-	-	-
6	-	-	160	-	-
7	-	-	-	160	-
8	-	-	-	-	160
9	-	60	-	100	-
10	-	60	-	-	100
11	-	-	60	100	-
12	-	-	60	-	100

Rainfall: 500,0mm **Irrigation:** 1 102,0mm

RESULTS

Relevant third ratoon harvest data are presented in the attached tables. Statistical analyses and groupings of treatment means were done as detailed in the first ratoon report.

(a) Cane yield: Significant differences (P = 0,05) were recorded in the trial but grouped data did not exhibit any significant trends. However plots which received their first N dressing at 12 or 16 weeks yielded more than those which received it earlier and treatments which received all N by 4 weeks yielded less than those where N was applied over longer periods.

(b) Quality effects: There was no significant treatment effects in terms of either ERC% cane or ERF% cane. Grouped data showed that lower quality was obtained when

(i) all N was applied within 4 weeks rather than spread over 16 weeks;
(ii) when N was applied in one dressing rather than in split applications; and,
(iii) when the first N was applied in one dressing at 16 weeks rather than before 12 weeks.

However these grouped data trends were not significant.

(c) ERC and ERF yields: There were no significant differences between individual treatments or grouped treatments. Nevertheless, applying all the N by 4 weeks resulted in lower yields than spreading application over periods up to 16 weeks and applying the first N dressing at one week gave lower yields than delaying until the cane was 4 to 16 weeks old.

(d) Stalk data: There was no significant differences in stalk counts per hectare and in stalk diameters. Significant differences were obtained in stalk lengths with the shortest being obtained in plots where N was applied in two splits at one and twelve weeks and the longest where N was applied in one dressing at 14 or 16 weeks.

(e) Flowering: No flowering occurred in the third ratoon.

(f) Foliar data: As in the second ratoon highly significant differences (P = 0,01) were obtained between treatments in levels of foliar N, P and K. There were no significant differences in levels of foliar Ca and Mg. Foliar P, Ca and Mg levels were all above the October critical levels of 0,17%, 0,18% and 0,06% respectively.

(i) Nitrogen: Two treatments were below the October critical level of 1,65%. There were no significant differences between single and split N dressings but applying all N by 8 weeks resulted in lower N content than applying N over 12 to 16 weeks.
(ii) Potassium: Only one treatment was above the October critical level of 1,10%. This is the treatment where N was applied in one dressing at 16 weeks. No clear trends emerged after grouping the data.

(g) Rainfall effects: No large falls of rain were received after any of the N dressings.

CONCLUSIONS

There were no significant yield responses to the different ways of applying N in the first and second ratoons. However, in the third ratoon significant differences in cane yield were obtained. It will be interesting to see if these differences become more pronounced in later ratoons and, perhaps, also affect ERC and ERF yields.

BM/Dec'90
vdr

6400/27 EARLY SEASON NITROGEN TRIAL

Table 1. Harvest Data - third ratoon

TREAT NO	N appplications (kg N/ha) weeks after cutting 1	4	8	12	16	CANE YIELD (t/ha)	ERC% CANE	ERF% CANE	ERC YIELD (t/ha)	ERF YIELD (t/ha)
7	-	-	-	160	-	140,34	12,77	14,13	17,92	19,82
8	-	-	-	-	160	137,02	12,35	13,76	16,92	18,85
3	-	80	80	-	-	136,50	12,93	14,25	17,62	19,44
11	-	-	60	100	-	133,45	12,45	13,81	16,62	18,44
10	-	60	-	-	100	131,89	13,05	14,37	17,23	18,97
4	-	80	-	80	-	129,53	12,59	13,96	16,37	18,16
1	80	-	80	-	-	128,95	13,27	14,50	17,11	18,70
12	-	-	60	-	100	127,50	13,11	14,42	16,77	18,50
9	-	60	-	100	-	123,96	12,98	14,26	16,06	17,65
5	-	160	-	-	-	121,90	12,73	13,96	15,50	17,01
6	-	-	160	-	-	119,04	12,89	14,06	15,33	16,72
2	80	-	80	-	-	113,54	13,10	14,25	14,89	16,20
Significance						*	N.S.	N.S.	N.S.	N.S.
L.S.D. P = 0,05						14,81	-	-	-	-
Trial mean						128,63	12,85	14,14	16,53	18,20
S.E. plot ±						11,62	0,50	0,48	1,71	1,89
S.E. mean ±						5,20	0,20	0,22	0,77	0,84
C.V.%						9,04	3,89	3,41	10,35	10,37

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Table 2. Cane and ERF yield data summary 1R to 3R

TREAT NO	N appplications (kg N/ha) weeks after cutting					CANE YIELD (t/ha)				ERC YIELD (t/ha)			
	1	4	8	12	16	1R	2R	3R	Mean	1R	2R	3R	Mean
6	-	-	160	-	-	178,21	124,11	119,04	140,45	21,39	15,97	15,33	17,56
12	-	-	60	-	100	172,87	120,32	127,50	140,23	21,21	15,23	16,77	17,74
9	-	60	-	100	-	167,51	121,63	123,96	137,70	19,80	15,62	16,06	17,16
8	-	-	-	-	160	166,94	117,51	137,02	140,49	19,38	14,92	16,92	17,07
5	-	160	-	-	-	165,81	118,61	121,90	135,44	19,52	15,78	15,50	16,93
10	-	60	-	-	100	165,79	123,50	131,89	140,39	19,65	15,84	17,23	17,57
2	80	-	-	80	-	165,16	124,58	113,54	134,43	20,78	16,29	14,89	17,32
7	-	-	-	160	-	164,10	128,87	140,34	144,44	19,06	16,49	17,92	17,82
4	-	80	-	80	-	163,59	134,16	129,53	142,43	19,20	17,26	16,37	17,61
3	-	80	80	-	-	162,83	117,91	136,50	139,08	19,74	15,51	17,62	17,62
11	-	-	60	100	-	158,08	125,59	133,45	139,04	18,52	16,23	16,62	17,12
1	80	-	80	-	-	155,34	109,25	128,95	131,18	18,56	14,26	17,11	16,64
Significance						N.S.	N.S.	*	-	N.S.	N.S.	N.S.	-
L.S.D. P = 0,05						-	-	14,81	-	-	-	-	-
Trial mean						165,52	122,17	128,63	138,77	19,73	15,78	16,53	17,35
S.E. plot ±						12,27	11,05	11,62	-	1,78	1,51	1,71	-
S.E. mean ±						5,49	4,94	5,20	-	0,80	0,68	0,77	-
C.V.%						7,41	9,04	9,04	-	9,01	9,58	10,35	-

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Table 3. ERC% cane and ERF% cane data summary 1R to 3R

TREAT NO	N appplications (kg N/ha) weeks after cutting					ERC% CANE				ERF% CANE			
	1	4	8	12	16	1R	2R	3R	Mean	1R	2R	3R	Mean
6	-	-	160	-	-	12,01	12,87	12,89	12,59	13,28	13,93	14,06	13,76
12	-	-	60	-	100	12,29	12,65	13,11	12,68	13,73	13,77	14,42	13,97
9	-	60	-	100	-	11,85	12,86	12,98	12,56	13,23	14,03	14,26	13,84
8	-	-	-	-	160	11,61	12,69	12,35	12,22	12,94	13,77	13,76	13,49
5	-	160	-	-	-	11,78	13,30	12,73	12,60	13,10	14,32	13,96	13,79
10	-	60	-	-	100	11,83	12,83	13,05	12,57	13,24	13,90	14,37	13,84
2	80	-	-	80	-	12,60	13,05	13,10	12,92	13,81	14,11	14,25	14,06
7	-	-	-	160	-	11,58	12,82	12,77	12,39	12,96	13,93	14,13	13,67
4	-	80	-	80	-	11,73	12,88	12,59	12,40	13,02	13,99	13,96	13,66
3	-	80	80	-	-	12,11	13,18	12,93	12,74	13,29	14,23	14,25	13,92
11	-	-	60	100	-	11,70	12,95	12,45	12,37	13,08	14,07	13,81	13,65
1	80	-	80	-	-	11,96	13,04	13,27	12,76	13,34	13,99	14,50	13,94
Significance						N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	-
Trial mean						11,92	12,93	12,85	12,57	13,25	14,00	14,14	13,80
S.E. plot ±						0,69	0,48	0,50	-	0,62	0,40	0,48	-
S.E. mean ±						0,31	0,22	0,22	-	0,28	0,18	0,22	-
C.V.%						5,80	3,75	3,89	-	4,68	2,87	3,41	-

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Table 4. ERF yield and stalk data summary 1R to 3R

TREAT NO	N appplications (kg N/ha) weeks after cutting					ERF YIELD (t/ha)				STALKS (per hectare/1000)			
	1	4	8	12	16	1R	2R	3R	Mean	1R	2R	3R	Mean
6	-	-	160	-	-	23,64	17,31	16,72	19,22	159,1	153,0	176,8	163,0
12	-	-	60	-	100	23,69	16,59	18,50	19,59	153,4	149,5	171,8	158,2
9	-	60	-	100	-	22,13	17,07	17,65	18,95	141,0	149,6	173,8	154,8
8	-	-	-	-	160	21,60	16,19	18,85	18,88	142,8	151,6	179,6	158,0
5	-	160	-	-	-	21,72	16,99	17,01	18,57	150,9	153,3	174,2	159,5
10	-	60	-	-	100	21,96	17,16	18,97	19,36	146,8	148,5	175,0	156,8
2	80	-	-	80	-	22,82	17,63	16,20	18,88	143,8	150,4	170,1	154,8
7	-	-	-	160	-	21,33	17,92	19,82	19,69	149,1	155,6	178,1	160,9
4	-	80	-	80	-	21,33	18,76	18,16	19,42	144,1	155,3	175,4	158,3
3	-	80	80	-	-	21,66	16,75	19,44	19,28	145,7	151,6	179,5	158,9
11	-	-	60	100	-	20,70	17,63	18,44	18,92	143,8	149,8	176,0	156,5
1	80	-	80	-	-	20,70	15,31	18,70	18,24	142,3	145,4	177,8	155,2
Significance						N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	-
Trial mean						21,94	17,11	18,20	19,08	147,0	151,1	175,7	157,9
S.E. plot ±						1,85	1,63	1,89	-	10,0	6,7	8,0	-
S.E. mean ±						0,83	0,73	0,84	-	4,5	3,0	3,6	-
C.V.%						8,45	9,54	10,37	-	6,8	4,4	4,6	-

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Table 5. Stalk diameter and length data summary 1R to 3R

TREAT NO	N appplications (kg N/ha) weeks after cutting					STALK DIAMETER (cm)				STALK LENGTH (m)			
	1	4	8	12	16	1R	2R	3R	Mean	1R	2R	3R	Mean
6	-	-	160	-	-	2,25	2,20	2,10	2,18	3,79	2,61	2,38	2,93
12	-	-	60	-	100	2,27	2,20	2,20	2,22	3,64	2,60	2,45	2,90
9	-	60	-	100	-	2,34	2,12	2,10	2,19	3,61	2,58	2,33	2,84
8	-	-	-	-	160	2,29	2,16	2,14	2,20	3,67	2,57	2,62	2,95
5	-	160	-	-	-	2,32	2,06	2,10	2,16	3,60	2,55	2,48	2,88
10	-	60	-	-	100	2,22	2,16	2,22	2,20	3,53	2,64	2,45	2,87
2	80	-	-	80	-	2,29	2,16	2,10	2,18	3,81	2,65	2,25	2,90
7	-	-	-	160	-	2,23	2,22	2,20	2,22	3,70	2,76	2,62	3,03
4	-	80	-	80	-	2,30	2,12	2,12	2,18	3,59	2,69	2,40	2,89
3	-	80	80	-	-	2,23	2,12	2,10	2,15	2,65	2,55	2,49	2,90
11	-	-	60	100	-	2,29	2,12	2,10	2,17	3,73	2,62	2,47	2,94
1	80	-	80	-	-	2,33	2,14	2,08	2,18	3,54	2,45	2,38	2,79
Significance						N.S.	N.S.	N.S.	-	N.S.	N.S.	*	-
Trial mean						2,28	2,15	2,13	2,19	3,66	2,61	2,44	2,90
S.E. plot ±						0,11	0,11	0,10	-	0,27	0,20	0,16	-
S.E. mean ±						0,05	0,05	0,05	-	0,12	0,09	0,07	-
C.V.%						4,70	5,01	4,91	-	7,37	7,65	6,39	-
L.S.D. P = 0,05						-	-	-	-	-	-	0,20	-

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Table 6. Foliar N% and P% data summary 1R to 3R

TREAT NO	N appplications (kg N/ha) weeks after cutting					FOLIAR N% DRY MATTER (22 weeks)				FOLIAR P% DRY MATTER (22 weeks)			
	1	4	8	12	16	1R	2R	3R	Mean	1R	2R	3R	Mean
6	-	-	160	-	-	2,39	1,86	1,68	1,99	0,22	0,17	0,20	0,20
12	-	-	60	-	100	2,32	2,05	2,03	2,13	0,18	0,22	0,23	0,21
9	-	60	-	100	-	2,29	1,91	1,92	2,04	0,19	0,18	0,23	0,20
8	-	-	-	-	160	2,37	2,26	2,31	2,31	0,19	0,22	0,24	0,22
5	-	160	-	-	-	2,27	1,66	1,64	1,86	0,19	0,17	0,19	0,18
10	-	60	-	-	100	2,33	2,09	2,06	2,16	0,18	0,20	0,23	0,20
2	80	-	-	80	-	2,36	1,82	1,67	1,95	0,18	0,19	0,20	0,19
7	-	-	-	160	-	2,37	2,05	1,99	2,14	0,19	0,18	0,23	0,20
4	-	80	-	80	-	2,32	1,80	1,71	1,94	0,19	0,19	0,20	0,19
3	-	80	80	-	-	2,39	1,74	1,71	1,95	0,19	0,18	0,19	0,19
11	-	-	60	100	-	2,21	1,88	1,85	1,98	0,17	0,20	0,22	0,19
1	80	-	80	-	-	2,36	1,70	1,64	1,90	0,19	0,20	0,19	0,19
Significance						N.S.	**	***	-	*	**	***	-
Trial mean						2,33	1,90	1,85	2,30	0,19	0,19	0,21	0,20
S.E. plot ±						0,09	0,10	0,16	-	0,10	0,01	0,01	-
S.E. mean ±						0,04	0,04	0,07	-	0,01	0,01	0,01	-
C.V.%						3,92	5,21	8,43	-	7,92	5,51	6,53	-
L.S.D. P = 0,05						-	0,13	0,20	-	0,02	0,01	0,02	-
P = 0,01						-	0,17	0,27	-	-	0,02	0,02	-

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Table 7. Foliar K% and Ca% data summary 1R to 3R

TREAT NO	N appplications (kg N/ha) weeks after cutting					FOLIAR K% DRY MATTER (22 weeks)				FOLIAR Ca% DRY MATTER (22 weeks)			
	1	4	8	12	16	1R	2R	3R	Mean	1R	2R	3R	Mean
6	-	-	160	-	-	1,37	1,15	0,91	1,14	0,40	0,33	0,38	0,37
12	-	-	60	-	100	1,31	1,11	1,09	1,17	0,36	0,31	0,39	0,35
9	-	60	-	100	-	1,35	1,14	1,07	1,19	0,40	0,35	0,39	0,38
8	-	-	-	-	160	1,46	1,36	1,16	1,33	0,38	0,35	0,40	0,38
5	-	160	-	-	-	1,39	1,17	0,99	1,18	0,39	0,30	0,36	0,35
10	-	60	-	-	100	1,38	1,26	1,12	1,25	0,38	0,30	0,39	0,36
2	80	-	-	80	-	1,35	1,18	0,96	1,16	0,38	0,32	0,39	0,36
7	-	-	-	160	-	1,42	1,28	1,07	1,26	0,38	0,34	0,42	0,38
4	-	80	-	80	-	1,31	1,21	0,99	1,17	0,39	0,31	0,38	0,36
3	-	80	80	-	-	1,27	1,13	0,92	1,11	0,40	0,31	0,34	0,35
11	-	-	60	100	-	1,32	1,09	0,99	1,13	0,34	0,31	0,39	0,35
1	80	-	80	-	-	1,31	1,11	0,96	1,13	0,39	0,31	0,37	0,36
Significance						N.S.	xxx	xx	-	N.S.	xxx	N.S.	-
Trial mean						1,35	1,18	1,02	1,19	0,38	0,32	0,38	0,36
S.E. plot ±						0,10	0,08	0,10	-	0,03	0,02	0,03	-
S.E. mean ±						0,05	0,40	0,04	-	0,01	0,01	0,01	-
C.V.%						7,61	6,76	9,64	-	8,72	5,64	7,88	-
L.S.D. P = 0,05						-	0,10	0,13	-	-	0,02	-	-
P = 0,01						-	0,14	0,17	-	-	0,03	-	-

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Table 8. Foliar Mg% and Flowering % data summary 1R to 3R

TREAT NO	N appplications (kg N/ha) weeks after cutting					FOLIAR Mg% DRY MATTER (22 weeks)				FLOWERING %			
	1	4	8	12	16	1R	2R	3R	Mean	1R	2R	3R	Mean
6	-	-	160	-	-	0,17	0,16	0,13	0,15	60	0	0	20
12	-	-	60	-	100	0,18	0,18	0,15	0,17	50	0	0	17
9	-	60	-	100	-	0,19	0,16	0,15	0,17	64	0	0	21
8	-	-	-	-	160	0,17	0,17	0,15	0,16	78	0	0	26
5	-	160	-	-	-	0,15	0,15	0,13	0,14	72	0	0	24
10	-	60	-	-	100	0,17	0,15	0,15	0,16	55	0	0	18
2	80	-	-	80	-	0,18	0,16	0,14	0,16	76	0	0	25
7	-	-	-	160	-	0,20	0,19	0,15	0,18	44	0	0	15
4	-	80	-	80	-	0,17	0,16	0,15	0,16	80	0	0	27
3	-	80	80	-	-	0,18	0,15	0,14	0,16	84	0	0	28
11	-	-	60	100	-	0,16	0,17	0,15	0,16	78	0	0	26
1	80	-	80	-	-	0,16	0,13	0,13	0,14	67	0	0	22
Significance						N.S.	***	N.S.	-	N.S.	N.S.	N.S.	-
Trial mean						0,17	0,16	0,14	0,16	67	0	0	22
S.E. plot ±						0,40	0,02	0,02	-	26	0	0	-
S.E. mean ±						0,02	0,01	0,01	-	12	0	0	-
C.V.%						21,27	10,30	13,56	-	37	0	0	-
L.S.D. P = 0,05						-	0,02	-	-	-	-	-	-
P = 0,01						-	0,03	-	-	-	-	-	-

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Table 9. Grouping of cane and ERC yield data 1R to 3R

(a) By time of last nitrogen dressing

GROUPING	NO. OF TREATMENTS	CANE YIELD (T/HA)				ERC YIELD (T/HA)			
		1R	2R	3R	Mean	1R	2R	3R	Mean
A: All N by 4 weeks	1	165,81	118,61	121,90	135,44	19,52	15,78	15,50	16,93
B: All N by 8 weeks	3	165,46	117,09	128,16	136,90	19,90	15,25	16,69	17,28
C: All N by 12 weeks	5	163,69	126,97	128,16	139,61	19,47	16,38	16,37	17,41
D: All N by 16 weeks	3	168,53	120,44	132,14	140,37	20,08	15,33	16,97	17,46
Mean		165,52	122,17	128,63	138,08	19,73	15,78	16,53	17,27
Significance		N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	-

(b) By time of first nitrogen dressing

GROUPING	NO. OF TREATMENTS	CANE YIELD (T/HA)				ERC YIELD (T/HA)			
		1R	2R	3R	Mean	1R	2R	3R	Mean
First dressing at:									
E: 1 week	2	160,25	116,91	121,24	132,80	19,67	15,28	16,00	16,98
F: 4 weeks	5	165,10	123,16	128,76	139,01	19,58	16,00	16,55	17,38
G: 8 weeks	3	169,72	123,34	126,66	139,91	20,37	15,81	16,24	17,47
H: 12 weeks	1	164,10	128,87	140,34	144,44	19,06	16,49	17,92	17,82
I: 16 weeks	1	166,94	117,51	137,02	140,49	19,38	14,92	16,92	17,07
Significance		N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	-

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Table 10: Grouping of ERC% cane and ERF% cane data 1R to 3R

(a) By time of last nitrogen dressing

GROUPING	NO. OF TREATMENTS	ERC% CANE				ERF% CANE			
		1R	2R	3R	Mean	1R	2R	3R	Mean
All N by:									
A: 4 weeks	1	11,78	13,30	12,73	12,60	13,10	14,32	13,96	13,79
B: 8 weeks	3	12,03	13,03	13,03	12,70	13,30	14,05	14,27	13,87
C: 12 weeks	5	11,89	12,91	12,78	12,53	13,22	14,02	14,08	13,77
D: 16 weeks	3	11,91	12,72	12,83	12,49	13,30	13,82	14,18	13,77
Mean		11,92	12,93	12,85	12,57	13,25	14,00	14,14	13,80
Significance		N.S.	AC*AD**	N.S.	-	N.S.	AB*AC**	N.S.	-
			BC*BD*	-	-		AD**BD*	-	-
			-	-	-		CD*	-	-

(b) By time of first nitrogen dressing

GROUPING	NO. OF TREATMENTS	ERC% CANE				ERF% CANE			
		1R	2R	3R	Mean	1R	2R	3R	Mean
First dressing at:									
E: 1 week	2	12,28	13,05	13,19	12,84	13,57	14,05	14,38	14,00
F: 4 weeks	5	11,86	13,01	12,86	12,58	13,18	14,09	14,16	13,81
G: 8 weeks	3	12,00	12,82	12,82	12,55	13,36	13,92	14,09	13,79
H: 12 weeks	1	11,58	12,82	12,77	12,39	12,96	13,93	14,13	13,67
I: 16 weeks	1	11,61	12,69	12,35	12,22	12,94	13,77	13,76	13,49
Significance		N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	-

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Table 11: Grouping of ERF yield and stalk data 1R to 3R

GROUPING	NO. OF TREATMENTS	ERF YIELD (T/HA)				STALKS/HA (X1/1 000)			
		1R	2R	3R	Mean	1R	2R	3R	Mean
All N by:									
A: 4 weeks	1	21,72	16,99	17,01	18,57	150,9	153,3	174,2	159,5
B: 8 weeks	3	22,00	16,46	18,29	18,92	149,0	150,0	178,0	159,0
C: 12 weeks	5	21,66	17,80	18,05	19,17	144,3	152,1	174,7	157,0
D: 16 weeks	3	22,42	16,65	18,77	19,28	147,7	149,9	175,5	157,7
Mean		21,94	17,11	18,20	18,99	146,9	151,1	175,7	158,3
Significance		N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	-

(b) By time of first N dressing

GROUPING	NO. OF TREATMENTS	ERF YIELD (T/HA)				STALKS/HA (X1/1 000)			
		1R	2R	3R	Mean	1R	2R	3R	Mean
First dressing at:									
E: 1 week	2	21,76	16,47	17,45	18,56	143,0	147,9	174,0	155,0
F: 4 weeks	5	21,76	17,35	18,25	19,12	145,7	151,7	175,6	157,7
G: 8 weeks	3	22,68	17,18	17,89	19,25	152,1	150,7	174,9	159,2
H: 12 weeks	1	21,33	17,92	17,82	19,69	149,1	155,6	178,1	160,9
I: 16 weeks	1	21,60	16,19	18,85	18,88	142,8	151,6	180,0	158,1
Significance		N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	-

Table 12. Grouping of stalk diameter and length data 1R to 3R

(a) By time of last N dressing

GROUPING	NO. OF TREATMENTS	STALK DIAMETER (cm)				STALK LENGTH (m)			
		1R	2R	3R	Mean	1R	2R	3R	Mean
All N by:									
A: 4 weeks	1	2,32	2,06	2,10	2,16	3,60	2,55	2,48	2,88
B: 8 weeks	3	2,27	2,15	2,09	2,17	3,66	2,54	2,42	2,87
C: 12 weeks	5	2,29	2,15	2,12	2,19	3,69	2,66	2,41	2,92
D: 16 weeks	3	2,26	2,17	2,19	2,21	3,62	2,60	2,51	2,91
Mean		2,28	2,15	2,13	2,19	3,66	2,61	2,44	2,90
Significance		N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	-

(b) By time of first N dressing

GROUPING	NO. OF TREATMENTS	STALK DIAMETER (cm)				STALK LENGTH (m)			
		1R	2R	3R	Mean	1R	2R	3R	Mean
First dressing at:									
E: 1 week	2	2,31	2,15	2,09	2,18	3,68	2,55	2,31	2,85
F: 4 weeks	5	2,28	2,12	2,13	2,18	3,60	2,60	2,43	2,88
G: 8 weeks	3	2,27	2,17	2,13	2,19	3,72	2,61	2,43	2,92
H: 12 weeks	1	2,23	2,22	2,20	2,22	3,70	2,76	2,62	3,03
I: 16 weeks	1	2,29	2,16	2,14	2,20	3,67	2,57	2,62	2,95
Significance		N.S.	N.S.	N.S.	-	N.S.	N.S.	EH**EI** FH*FI* GH*GI*	-

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Table 13. Grouping of foliar N% and P% data at 22 weeks 1R to 3R

(a) By time of last N dressing

GROUPING	NO. OF TREATMENTS	FOLIAR N% DRY MATTER				FOLIAR P% DRY MATTER			
		1R	2R	3R	Mean	1R	2R	3R	Mean
All N by:									
A: 4 weeks	1	2,27	1,68	1,64	1,86	0,19	0,17	0,19	0,18
B: 8 weeks	3	2,38	1,77	1,68	1,94	0,20	0,18	0,19	0,19
C: 12 weeks	5	2,31	1,89	1,83	2,01	0,18	0,19	0,22	0,20
D: 16 weeks	3	2,34	2,14	2,13	2,20	0,19	0,21	0,24	0,21
Mean		2,33	1,90	1,85	2,00	0,19	0,19	0,21	0,20
Significance		N.S.	AD** BD** CD**	AD** BD** CD*	-	N.S.	AD* BD** CD*	AD* BC* BD**	-

(b) By time of first N dressing

GROUPING	NO. OF TREATMENTS	FOLIAR N% DRY MATTER				FOLIAR P% DRY MATTER			
		1R	2R	3R	Mean	1R	2R	3R	Mean
First dressing at:									
E: 1 week	2	2,36	1,76	1,66	1,93	0,18	0,20	0,20	0,19
F: 4 weeks	5	2,32	1,84	1,81	1,99	0,19	0,19	0,21	0,20
G: 8 weeks	3	2,31	1,93	1,85	2,03	0,19	0,20	0,22	0,20
H: 12 weeks	1	2,37	2,05	1,99	2,14	0,19	0,18	0,23	0,20
I: 16 weeks	1	2,37	2,26	2,31	2,31	0,19	0,22	0,24	0,22
Significance		N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	-

Table 14. Grouping of foliar K% and Ca% data 1R to 3R

(a) By time of last N dressing

GROUPING	NO. OF TREATMENTS	FOLIAR K% DRY MATTER				FOLIAR Ca% DRY MATTER			
		1R	2R	3R	Mean	1R	2R	3R	Mean
All N by:									
A: 4 weeks	1	1,39	1,17	0,99	1,18	0,39	0,30	0,36	0,35
B: 8 weeks	3	1,32	1,13	0,93	1,13	0,40	0,31	0,37	0,36
C: 12 weeks	5	1,35	1,18	1,02	1,18	0,38	0,32	0,39	0,36
D: 16 weeks	3	1,38	1,24	1,12	1,25	0,38	0,32	0,39	0,36
Mean		1,35	1,18	1,02	1,19	0,38	0,32	0,38	0,36
Significance		N.S.	N.S.	AD*BC* BD*** CD**	-	N.S.	N.S.	N.S.	-

(b) By time of first N dressing

GROUPING	NO. OF TREATMENTS	FOLIAR K% DRY MATTER				FOLIAR Ca% DRY MATTER			
		1R	2R	3R	Mean	1R	2R	3R	Mean
First dressing at:									
E: 1 week	2	1,33	1,14	0,96	1,14	0,39	0,31	0,38	0,36
F: 4 weeks	5	1,34	1,18	1,02	1,18	0,39	0,31	0,37	0,36
G: 8 weeks	3	1,34	1,11	0,99	1,15	0,37	0,31	0,39	0,36
H: 12 weeks	1	1,42	1,28	1,07	1,26	0,38	0,34	0,42	0,38
I: 16 weeks	1	1,46	1,36	1,16	1,33	0,38	0,35	0,40	0,38
Significance		N.S.	EH*EI* FI** GH* GI*	N.S.	-	N.S.	N.S.	N.S.	-

Table 15. Grouping of foliar Mg% and Ca% data 1R to 3R

(a) By time of last N dressing

GROUPING	NO. OF TREATMENTS	FOLIAR Mg% DRY MATTER				FLOWERING %			
		1R	2R	3R	Mean	1R	2R	3R	Mean
All N by:									
A: 4 weeks	1	0,15	0,15	0,13	0,14	72	0	0	24
B: 8 weeks	3	0,17	0,15	0,13	0,15	70	0	0	23
C: 12 weeks	5	0,18	0,17	0,15	0,17	68	0	0	23
D: 16 weeks	3	0,17	0,17	0,15	0,16	61	0	0	20
Mean		0,17	0,16	0,14	0,16	67	0	0	22
Significance		N.S.	N.S.	AC^{xx} AD^{xx} BC^{xxx} BD^{xx}	-	N.S.	N.S.	N.S.	-

(b) By time of first N dressing

GROUPING	NO. OF TREATMENTS	FOLIAR Mg% DRY MATTER				FLOWERING %			
		1R	2R	3R	Mean	1R	2R	3R	Mean
First dressing at:									
E: 1 week	2	0,17	0,14	0,14	0,15	72	0	0	24
F: 4 weeks	5	0,17	0,16	0,14	0,16	71	0	0	24
G: 8 weeks	3	0,17	0,17	0,14	0,16	63	0	0	21
H: 12 weeks	1	0,20	0,19	0,15	0,18	44	0	0	15
I: 16 weeks	1	0,17	0,17	0,15	0,16	78	0	0	26
Significance		N.S.	EG^{x} EH^{xx} FH^{x}	N.S.	-	N.S.	N.S.	N.S.	-

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Table 16. Grouping of Cane, ERC and ERF yields, quality data and stalk counts by number and order of magnitude of N splits

GROUPING	NO OF TREATMENTS	CANE YIELD (T/HA)				ERC YIELD (T/HA)			
		1R	2R	3R	Mean	1R	2R	3R	Mean
No of N applications:									
J: Single	4	168,76	122,28	129,57	140,20	19,84	15,79	16,42	17,35
K: double (80N, 80N)	4	161,73	121,47	127,13	136,78	19,57	15,83	16,50	17,30
L: double (60N, 60N)	4	166,06	122,76	129,20	139,34	19,79	15,73	16,67	17,40
Mean		165,52	122,17	128,63	138,77	19,73	15,78	16,53	17,35
Significance		N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	-

GROUPING	NO OF TREATMENTS	ERC% CANE				ERF% CANE			
		1R	2R	3R	Mean	1R	2R	3R	Mean
J: Single	4	11,74	12,92	12,69	12,45	13,07	13,99	13,98	13,68
K: double (80N, 80N)	4	12,10	13,04	12,97	12,70	13,36	14,08	14,24	13,91
L: double (60N, 60N)	4	11,92	12,82	12,90	12,55	13,32	13,94	14,21	13,82
Mean		11,92	12,93	12,85	12,57	13,25	14,00	14,14	13,80
Significance		N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	-

GROUPING	NO OF TREATMENTS	ERF YIELD (T/HA)				STALKS/HA (X1/1000)			
		1R	2R	3R	Mean	1R	2R	3R	Mean
J: Single	4	22,07	17,10	18,10	19,09	150,5	153,4	177,2	160,4
K: double (80N, 80N)	4	21,63	17,11	18,13	18,96	144,0	150,7	175,7	156,8
L: double (60N, 60N)	4	22,12	17,11	18,39	19,21	146,2	149,3	174,1	156,5
Mean		21,94	17,11	18,20	-	146,9	151,1	175,7	157,9
Significance		N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	-

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Table 17. Grouping of stalk diameters and lengths, and foliar N, P, K and Ca by by number and order of magnitude of N splits.

GROUPING	NO OF TREATMENTS	STALK DIAMETER (CM)				STALK LENGTH (M)			
		1R	2R	3R	Mean	1R	2R	3R	Mean
No of N applications:									
J: Single	4	2,27	2,16	2,14	2,19	3,69	2,62	2,53	2,95
K: double (80N, 80N)	4	2,29	2,14	2,10	2,18	3,65	2,59	2,38	2,87
L: double (60N, 60N)	4	2,28	2,15	2,16	2,20	3,63	2,61	2,43	2,89
Mean		2,28	2,15	2,13	2,19	3,66	2,61	2,44	2,90
Significance		N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	-

GROUPING	NO OF TREATMENTS	FOLIAR N% DRY MATTER				FOLIAR P% DRY MATTER			
		1R	2R	3R	Mean	1R	2R	3R	Mean
J: Single	4	2,35	1,96	1,91	2,07	0,20	0,19	0,22	0,20
K: double (80N, 80N)	4	2,36	1,76	1,68	1,93	0,18	0,19	0,20	0,19
L: double (60N, 60N)	4	2,29	1,98	1,97	2,08	0,18	0,20	0,23	0,20
Mean		2,33	1,90	1,85	2,03	0,19	0,19	0,21	0,20
Significance		N.S.	N.S.	N.S.	-	JK* JL*		KL**	-

GROUPING	NO OF TREATMENTS	FOLIAR K% DRY MATTER				FOLIAR Ca% DRY MATTER			
		1R	2R	3R	Mean	1R	2R	3R	Mean
J: Single	4	1,41	1,24	1,03	1,23	0,39	0,33	0,39	0,37
K: double (80N, 80N)	4	1,31	1,16	0,96	1,14	0,39	0,31	0,37	0,36
L: double (60N, 60N)	4	1,34	1,15	1,07	1,19	0,37	0,32	0,39	0,36
Mean		1,35	1,18	1,02	-	0,38	0,32	0,38	0,36
Significance		JK** JL*	N.S.	N.S.	-	N.S.	N.S.	N.S.	-

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Table 18. Grouping of foliar Mg and flowering % by number and order of magnitude of N splits.

GROUPING	NO OF TREATMENTS	FOLIAR Mg% DRY MATTER				FLOWERING %			
		1R	2R	3R	Mean	1R	2R	3R	Mean
No of N applications:									
J: Single	4	0,17	0,17	0,14	0,16	64	0	0	21
K: double (80N, 80N)	4	0,17	0,15	0,14	0,15	77	0	0	26
L: double (60N, 60N)	4	0,17	0,17	0,15	0,16	62	0	0	21
Mean		0,17	0,16	0,14	0,16	67	0	0	22
Significance		N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	-

SOUTH AFRICAN SUGAR INDUSTRY AGRONOMISTS' ASSOCIATION

6400/27: EARLY SEASON NITROGEN TRIAL

Cat.No.: 1644

Object: To evaluate responses in early season ratoon cane to single and split nitrogen dressings applied at varying times over a period extending to just before onset of rapid stalk elongation in early September.

This crop: Fourth ratoon **Age:** 12,0 months (17.5.90 to 16.5.91)

Location: ZSA Experiment Station, Field L3

Soil type: P.E. 1 sandy clay loam derived from gneiss.

Design: Randomised blocks, 5 replications

Variety: NCo376 **Spacing:** 1.5 m rows

Fertilizer:
(1) Nitrogen see treatments
(2) Phosphate 60kg P_2O_5 as single superphosphate at 4 weeks.
(3) Potash 60kg K_2O as muriate of potash applied at 4 weeks.

Treatments: Nitrogen applications were as per treatment table below. No treatments were applied in the plant crop.

TREATMENTS	NITROGEN APPLICATIONS (kg N/ha)				
	WEEKS AFTER CUTTING				
	1 (or 1st irrigation)	4 (or 2nd irrigation)	8	12	16
1	80	-	80	-	-
2	80	-	-	80	-
3	-	80	80	-	-
4	-	80	-	80	-
5	-	160	-	-	-
6	-	-	160	-	-
7	-	-	-	160	-
8	-	-	-	-	160
9	-	60	-	100	-
10	-	60	-	-	100
11	-	-	60	100	-
12	-	-	60	-	100

Rainfall: 423,2 mm **Irrigation:** 1238,0 mm

RESULTS

Relevant fourth ratoon data and also data pertaining to other crops harvested to date are presented in the attached tables. Statistical analyses and groupings of treatments were done as detailed in the first ratoon report.

(a) Cane, ERC and ERF yields:
There were no significant differences between treatments and between grouped treatments. In a reversal of the trend shown in the third ratoon, plots receiving all N by 4 to 8 weeks gave higher yields than those receiving all N over 12 to 16 weeks and single applications of N gave higher yields than split applications. No trends were discernible when treatments were grouped by time of first N dressing.

(b) Quality effects:
Applying all N by 4 weeks resulted in lower ERC% cane and ERF% cane than extending applications beyond this period though the trend was not significant. No useful trends emerged when data was grouped by time of first N dressings, and, by number and order of magritude of N splits.

(c) Stalk data:
There were no significant responses shown by stalk numbers/ha, stalk lengths, diameters and lodging % in the fourth ratoon. However grouped data showed significantly (P = 0,05) higher numbers of stalks per hectare when all N was applied by 4 weeks, than when it was extended to more than 4 weeks. Stalk lengths showed similar though non-significant trends. Stalk numbers per hectare and stalk lengths also tended to be higher in single N applications than in split N applications.

No flowering occured in the fourth ratoon.

(d) Rainfall effects:
No large falls of rain were received after any of the N dressings.

CONCLUSIONS

Expectations that the significant (P = 0,05) response to treatments by cane yield in the third ratoon; would be intensified in later crops and, possibly extend to ERC and ERF yields have not been realised in this crop.

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6400/27/4R: EARLY SEASON NITROGEN TRIAL

Table 1: Harvest Data - Fourth Ratoon

TREAT NO	N APPLICATION (kg N/ha) WEEKS AFTER CUTTING					CANE YIELD (t/ha)	ERCX CANE	ERFX CANE	ERC YIELD (t/ha)	ERF YIELD (t/ha)
	1	4	8	12	16					
6	-	-	160	-	-	140.90	12.61	14.14	17.77	19.92
7	-	-	-	160	-	138.00	12.64	14.09	17.44	19.45
5	-	160	-	-	-	137.86	12.58	14.12	17.33	19.46
1	80	-	80	-	-	133.76	13.11	14.52	17.54	19.42
12	-	-	60	-	100	131.43	12.50	14.01	16.43	18.41
8	-	-	-	-	160	130.15	12.83	14.39	16.71	18.74
11	-	-	60	100	-	130.10	12.78	14.24	16.63	18.52
2	80	-	-	80	-	129.41	12.78	12.26	16.52	18.44
10	-	60	-	-	100	128.91	12.66	14.20	16.32	18.31
3	-	80	80	-	-	125.01	12.71	14.12	15.88	17.65
4	-	80	-	80	-	116.98	12.71	14.15	14.86	16.58
9	-	60	-	100	-	115.49	12.80	14.31	14.69	16.45
SIGNIFICANCE						NS	NS	NS	NS	NS
TRIAL MEAN						129.83	12.73	14.21	16.51	18.45
S.E. PLOT +/-						12.31	0.40	0.38	1.60	1.82
S.E. MEAN +/-						5.51	0.18	0.17	0.72	0.82
C.V. %						9.48	3.17	2.70	9.69	9.89

6400/27/4R: EARLY SEASON NITROGEN TRIAL

Table 2: Cane and ERC Yield Data 1R to 4R

TREAT NO	N APPLICATION (kg N/ha) WEEKS AFTER CUTTING					CANE YIELD (t/ha)					ERC YIELD (t/ha)				
	1	4	8	12	16	1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
6	-	-	160	-	-	178.21	124.11	119.04	140.90	140.57	21.39	15.97	15.33	17.77	17.62
12	-	-	60	-	100	172.87	120.32	127.50	131.43	138.03	21.21	15.23	16.77	16.43	17.41
9	-	60	-	100	-	167.51	121.63	123.96	115.49	132.15	19.80	15.62	16.06	14.69	16.54
8	-	-	-	-	160	166.94	117.51	137.02	130.15	137.91	19.38	14.92	16.92	16.71	16.98
5	-	160	-	-	-	165.81	118.61	121.90	137.86	136.05	19.52	15.78	15.50	17.33	17.03
10	-	60	-	-	100	165.79	123.50	131.89	128.91	137.52	19.65	15.84	17.23	16.32	17.26
2	80	-	-	80	-	165.16	124.58	113.54	129.41	133.17	20.78	16.29	14.89	16.52	17.12
7	-	-	-	160	-	164.10	128.87	140.34	138.00	142.83	19.06	16.49	17.92	17.44	17.73
4	-	80	-	80	-	163.59	134.16	129.53	116.98	136.07	19.20	17.26	16.37	14.86	16.92
3	-	80	80	-	-	162.83	117.91	136.50	125.01	135.56	19.74	15.51	17.62	15.88	17.19
11	-	-	60	100	-	158.08	125.59	133.45	130.10	136.81	18.52	16.23	16.62	16.63	17.00
1	80	-	80	-	-	155.34	109.25	128.95	133.76	131.83	18.56	14.26	17.11	17.54	16.87
SIGNIFICANCE						NS	NS	*	NS	-	NS	NS	NS	NS	-
TRIAL MEAN						165.52	122.17	128.63	129.83	136.54	19.73	15.78	16.53	16.51	17.14
S.E. PLOT +/-						12.27	11.05	11.62	12.31	-	1.78	1.51	1.71	1.60	-
S.E. MEAN +/-						5.49	4.94	5.20	5.51	-	0.80	0.68	0.77	0.72	-
C.V. %						7.41	9.04	9.04	9.48	-	9.01	9.58	10.35	9.69	-

6400/27/4R: EARLY SEASON NITROGEN TRIAL

Table 3: ERC% Cane and ERF% Cane Data 1R to 4R

TREAT NO	N APPLICATION (kg N/ha) WEEKS AFTER CUTTING					ERC % CANE					ERF % CANE				
	1	4	8	12	16	1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
6	-	-	160	-	-	12.01	12.87	12.89	12.61	12.60	13.28	13.93	14.06	14.14	13.85
12	-	-	60	-	100	12.29	12.65	13.11	12.50	12.64	13.73	13.77	14.42	14.01	13.98
9	-	60	-	100	-	11.85	12.86	12.98	12.80	12.62	13.23	14.03	14.26	14.31	13.96
8	-	-	-	-	160	11.61	12.69	12.35	12.83	12.37	12.94	13.77	13.76	14.39	13.72
5	-	160	-	-	-	11.78	13.30	12.73	12.58	12.60	13.10	14.32	13.96	14.12	13.88
10	-	60	-	-	100	11.83	12.83	13.05	12.66	12.59	13.24	13.90	14.37	14.20	13.93
2	80	-	-	80	-	12.60	13.05	13.10	12.78	12.88	13.81	14.11	14.25	14.26	14.11
7	-	-	-	160	-	11.58	12.82	12.77	12.64	12.45	12.96	13.93	14.13	14.09	13.78
4	-	80	-	80	-	11.73	12.88	12.59	12.71	12.48	13.02	13.99	13.96	14.15	13.78
3	-	80	80	-	-	12.11	13.18	12.93	12.71	12.73	13.29	14.23	14.25	14.12	13.97
11	-	-	60	100	-	11.70	12.95	12.45	12.78	12.47	13.08	14.07	13.81	14.24	13.80
1	80	-	80	-	-	11.96	13.04	13.27	13.11	12.85	13.34	13.99	14.50	14.52	14.09
SIGNIFICANCE						NS	NS	NS	NS	-	NS	NS	NS	NS	-
TRIAL MEAN						11.92	12.93	12.85	12.73	12.61	13.25	14.00	14.14	14.21	13.90
S.E. PLOT +/-						0.69	0.48	0.50	0.40	-	0.62	0.40	0.48	0.38	-
S.E. MEAN +/-						0.31	0.22	0.22	0.18	-	0.28	0.18	0.22	0.17	-
C.V. %						5.80	3.75	3.89	3.17	-	4.68	2.87	3.41	2.70	-

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Table 4: ERF Yield and Stalk Data 1R to 4R

TREAT NO	N APPLICATION (kg N/ha) WEEKS AFTER CUTTING					ERF YIELD (t/ha)					STALKS /HA (x 1/1000)				
	1	4	8	12	16	1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
6	-	-	160	-	-	23.64	17.31	16.72	19.92	19.40	159.1	153.0	176.8	186.6	168.9
12	-	-	60	-	100	23.69	16.59	18.50	18.41	19.30	153.4	149.5	171.8	186.3	165.3
9	-	60	-	100	-	22.13	17.07	17.65	16.45	18.33	141.0	149.6	173.8	178.4	160.7
8	-	-	-	-	160	21.60	16.19	18.85	18.74	18.85	142.8	151.6	179.6	184.4	164.6
5	-	160	-	-	-	21.72	16.99	17.01	19.46	18.80	150.9	153.3	174.2	194.2	168.2
10	-	60	-	-	100	21.96	17.16	18.97	18.31	19.10	146.8	148.5	175.0	180.6	162.7
2	80	-	-	80	-	22.82	17.63	16.20	18.44	18.77	143.8	150.4	170.1	186.7	162.8
7	-	-	-	160	-	21.33	17.92	19.82	19.45	19.63	149.1	155.6	178.1	183.7	166.6
4	-	80	-	80	-	21.33	18.76	18.16	16.58	18.71	144.1	155.3	175.4	180.8	163.9
3	-	80	80	-	-	21.66	16.75	19.44	17.65	18.88	145.7	151.6	179.5	188.5	166.3
11	-	-	60	100	-	20.70	17.63	18.44	18.52	18.82	143.8	149.8	176.0	180.1	162.4
1	80	-	80	-	-	20.70	15.31	18.70	19.42	18.53	142.3	145.4	177.8	183.7	162.3
SIGNIFICANCE						NS	NS	NS	NS	-	NS	NS	NS	NS	-
TRIAL MEAN						21.94	17.11	18.20	18.45	18.93	147.0	151.1	175.7	184.3	164.5
S.E. PLOT +/-						1.85	1.63	1.89	1.82	-	10.0	6.7	8.0	7.1	-
S.E. MEAN +/-						0.83	0.73	0.84	0.82	-	4.5	3.0	3.6	3.2	-
C.V. %						8.45	9.54	10.37	9.89	-	6.8	4.4	4.6	3.8	-

6400/27/4R: EARLY SEASON NITROGEN TRIAL

Table 5: Stalk Diameter and Length Data 1R to 4R

TREAT NO	N APPLICATION (kg N/ha) WEEKS AFTER CUTTING					STALK DIAMETER (cm)					STALK LENGTH (m)				
	1	4	8	12	16	1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
6	-	-	160	-	-	2.25	2.20	2.10	1.98	2.13	3.79	2.61	2.38	2.66	2.86
12	-	-	60	-	100	2.27	2.20	2.20	2.09	2.19	3.64	2.60	2.45	2.49	2.80
9	-	60	-	100	-	2.34	2.12	2.10	2.01	2.14	3.61	2.58	2.33	2.46	2.75
8	-	-	-	-	160	2.29	2.16	2.14	2.04	2.16	3.67	2.57	2.62	2.51	2.84
5	-	160	-	-	-	2.32	2.06	2.10	1.97	2.11	3.60	2.55	2.48	2.60	2.81
10	-	60	-	-	100	2.22	2.16	2.22	2.08	2.17	3.53	2.64	2.45	2.47	2.77
2	80	-	-	80	-	2.29	2.16	2.10	1.92	2.12	3.81	2.65	2.25	2.50	2.80
7	-	-	-	160	-	2.23	2.22	2.20	2.10	2.19	3.70	2.76	2.62	2.55	2.91
4	-	80	-	80	-	2.30	2.12	2.12	1.98	2.13	3.59	2.69	2.40	2.41	2.77
3	-	80	80	-	-	2.23	2.12	2.10	1.99	2.11	2.65	2.55	2.49	2.50	2.55
11	-	-	60	100	-	2.29	2.12	2.10	2.02	2.13	3.73	2.62	2.47	2.63	2.86
1	80	-	80	-	-	2.33	2.14	2.08	2.03	2.15	3.54	2.45	2.38	2.37	2.69
SIGNIFICANCE						NS	NS	NS	NS	-	NS	NS	NS	NS	-
TRIAL MEAN						2.28	2.15	2.13	2.02	2.15	3.66	2.61	2.44	2.51	2.81
S.E. PLOT +/-						0.11	0.11	0.10	0.12	-	0.27	0.20	0.16	0.17	-
S.E. MEAN +/-						0.05	0.05	0.05	0.06	-	0.12	0.09	0.07	0.07	-
C.V. %						4.70	5.01	4.91	6.17	-	7.37	7.65	6.39	6.62	-

6400/27/4R: EARLY SEASON NITROGEN TRIAL

Table 6: Foliar N% and P% Dry Matter at 22 Weeks 1R to 4R

TREAT NO	N APPLICATION (kg N/ha) WEEKS AFTER CUTTING					FOLIAR N%					FOLIAR P%				
	1	4	8	12	16	1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
6	-	-	160	-	-	2.39	1.86	1.68	1.84	1.94	0.22	0.17	0.20	0.17	0.19
12	-	-	60	-	100	2.32	2.05	2.03	2.02	2.11	0.18	0.22	0.23	0.20	0.21
9	-	60	-	100	-	2.29	1.91	1.92	1.84	1.99	0.19	0.18	0.23	0.17	0.19
8	-	-	-	-	160	2.37	2.26	2.31	2.43	2.34	0.19	0.22	0.24	0.20	0.21
5	-	160	-	-	-	2.27	1.68	1.64	1.75	1.84	0.19	0.17	0.19	0.17	0.18
10	-	60	-	-	100	2.33	2.09	2.06	2.06	2.14	0.18	0.20	0.23	0.18	0.20
2	80	-	-	80	-	2.36	1.82	1.67	1.82	1.92	0.18	0.19	0.20	0.19	0.19
7	-	-	-	160	-	2.37	2.05	1.99	2.13	2.14	0.19	0.18	0.23	0.19	0.20
4	-	80	-	80	-	2.32	1.80	1.71	1.73	1.89	0.19	0.19	0.20	0.17	0.19
3	-	80	80	-	-	2.39	1.74	1.71	1.67	1.88	0.19	0.18	0.19	0.18	0.19
11	-	-	60	100	-	2.21	1.88	1.85	1.89	1.96	0.17	0.20	0.22	0.17	0.19
1	80	-	80	-	-	2.36	1.70	1.64	1.76	1.87	0.19	0.20	0.19	0.17	0.19
SIGNIFICANCE						NS	**	***	***	-	*	**	***	**	-
TRIAL MEAN						2.33	1.90	1.85	1.91	2.00	0.19	0.19	0.21	0.18	0.19
S.E. PLOT +/-						0.09	0.10	0.16	0.10	-	0.10	0.01	0.01	0.02	-
S.E. MEAN +/-						0.04	0.04	0.07	0.04	-	0.01	0.01	0.01	0.01	-
C.V. %						3.92	5.21	8.43	5.02	-	7.92	5.51	6.53	8.44	-
L.S.D. P = 0.05						-	0.13	0.20	0.12	-	0.02	0.01	0.02	0.02	-
P = 0.01						-	0.17	0.27	0.16	-	-	0.02	0.02	0.03	-

6400/22/4R: EARLY SEASON NITROGEN TRIAL

Table 7: Foliar K% and Ca% Dry Matter at 22 Weeks 1R to 4R

TREAT NO	N APPLICATION (kg N/ha) WEEKS AFTER CUTTING					FOLIAR K%					FOLIAR Ca%				
	1	4	8	12	16	1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
6	-	-	160	-	-	1.37	1.15	0.91	0.92	1.09	0.40	0.33	0.38	0.29	0.35
12	-	-	60	-	100	1.31	1.11	1.09	1.14	1.16	0.36	0.31	0.39	0.29	0.34
9	-	60	-	100	-	1.35	1.14	1.07	0.91	1.12	0.40	0.35	0.39	0.31	0.36
8	-	-	-	-	160	1.46	1.36	1.16	1.05	1.26	0.38	0.35	0.40	0.32	0.36
5	-	160	-	-	-	1.39	1.17	0.99	1.01	1.14	0.39	0.30	0.36	0.29	0.34
10	-	60	-	-	100	1.38	1.26	1.12	1.07	1.21	0.38	0.30	0.39	0.32	0.35
2	80	-	-	80	-	1.35	1.18	0.96	0.81	1.08	0.38	0.32	0.39	0.25	0.34
7	-	-	-	160	-	1.42	1.28	1.07	1.01	1.20	0.38	0.34	0.42	0.32	0.37
4	-	80	-	80	-	1.31	1.21	0.99	1.00	1.13	0.39	0.31	0.38	0.29	0.34
3	-	80	80	-	-	1.27	1.13	0.92	1.04	1.09	0.40	0.31	0.34	0.28	0.33
11	-	-	60	100	-	1.32	1.09	0.99	0.95	1.09	0.34	0.31	0.39	0.31	0.34
1	80	-	80	-	-	1.31	1.11	0.96	0.76	1.04	0.39	0.31	0.37	0.27	0.34
SIGNIFICANCE						NS	***	**	***	-	NS	***	NS	**	-
TRIAL MEAN						1.35	1.18	1.02	0.97	1.13	0.38	0.32	0.38	0.30	0.35
S.E. PLOT +/-						0.10	0.08	0.10	0.10	-	0.03	0.02	0.03	0.03	-
S.E. MEAN +/-						0.05	0.40	0.04	0.05	-	0.01	0.01	0.01	0.01	-
C.V. %						7.61	6.76	9.64	10.70	-	8.72	5.64	7.88	9.71	-
L.S.D. P = 0.05						-	0.10	0.13	0.13	-	-	0.02	-	0.04	-
P = 0.01						-	0.14	0.17	0.18	-	-	0.03	-	0.05	-

6400/27/45: EARLY SEASON NITROGEN TRIAL

Table 8: Foliar Mg% Dry Matter at 22 Weeks and Flowering % 1R to 4R

TREAT NO	N APPLICATION (kg N/ha) WEEKS AFTER CUTTING					FOLIAR Mg%					FLOWERING %				
	1	4	8	12	16	1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
6	-	-	160	-	-	0.17	0.16	0.13	0.13	0.15	60	0	0	0	15
12	-	-	60	-	100	0.18	0.18	0.15	0.16	0.17	50	0	0	0	13
9	-	60	-	100	-	0.19	0.16	0.15	0.18	0.17	64	0	0	0	16
8	-	-	-	-	160	0.17	0.17	0.15	0.17	0.17	78	0	0	0	20
5	-	160	-	-	-	0.15	0.15	0.13	0.13	0.14	72	0	0	0	18
10	-	60	-	-	100	0.17	0.15	0.15	0.17	0.16	55	0	0	0	14
2	80	-	-	80	-	0.18	0.16	0.14	0.15	0.16	76	0	0	0	19
7	-	-	-	160	-	0.20	0.19	0.15	0.17	0.18	44	0	0	0	11
4	-	80	-	80	-	0.17	0.16	0.15	0.14	0.16	80	0	0	0	20
3	-	80	80	-	-	0.18	0.15	0.14	0.13	0.15	84	0	0	0	21
11	-	-	60	100	-	0.16	0.17	0.15	0.16	0.16	78	0	0	0	20
1	80	-	80	-	-	0.16	0.13	0.13	0.15	0.14	67	0	0	0	17
SIGNIFICANCE						NS	***	NS	***	-	NS	NS	NS	**	-
TRIAL MEAN						0.17	0.16	0.14	0.15	0.16	67	0	0	0	-
S.E. PLOT +/-						0.40	0.02	0.02	0.02	-	26	0	0	0	-
S.E. MEAN +/-						0.02	0.01	0.01	0.01	-	12	0	0	0	-
C.V. %						21.27	10.30	13.56	10.88	-	37	0	0	0	-
L.S.D. P = 0.05						-	0.02	-	0.02	-	-	0.02	-	0.04	-
P = 0.01						-	0.03	-	0.03	-	-	0.03	-	0.05	-

6400/27/4R: EARLY SEASON NITROGEN TRIAL

Table 9: Grouping of Cane and ERC Yield Data 1R to 4R

(a) By Time of Last Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	CANE YIELD (t/ha)					ERC YIELD (t/ha)				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
A: All by 4 weeks	1	165.81	118.61	121.90	137.86	136.05	19.52	15.78	15.50	17.33	17.03
B: All by 8 weeks	3	165.46	117.09	128.16	133.22	135.98	19.90	15.25	16.69	17.07	17.23
C: All by 12 weeks	5	163.69	126.97	128.16	126.00	136.21	19.47	16.38	16.37	16.03	17.06
D: All by 16 weeks	3	168.53	120.44	132.14	130.16	137.82	20.08	15.33	16.97	16.49	17.22
MEAN		165.52	122.17	128.63	129.83	136.54	19.73	15.78	16.53	16.51	17.14
SIGNIFICANCE		NS	NS	NS	NS	-	NS	NS	NS	NS	-

(b) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	CANE YIELD (t/ha)					ERC YIELD (t/ha)				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
First dressing at:											
E: 1 week	2	160.25	116.91	121.24	131.59	132.50	19.67	15.28	16.00	17.03	17.00
F: 4 weeks	5	165.10	123.61	128.76	124.85	135.58	19.58	16.00	16.55	15.82	16.99
G: 8 weeks	3	169.72	123.34	126.66	134.14	138.47	20.37	15.81	16.24	16.94	17.34
H: 12 weeks	1	164.10	128.87	140.34	138.00	142.83	19.06	16.49	17.92	17.44	17.73
I: 16 weeks	1	166.94	117.51	137.02	130.15	137.91	19.38	14.92	16.92	16.71	16.98
SIGNIFICANCE		NS	NS	NS	NS	-	NS	NS	NS	NS	-

6400/27/4R: EARLY SEASON NITROGEN TRIAL

Table 10: Grouping of ERC% Cane and ERF% Cane Data 1R to 4R

(a) By Time of Last Nitrogen Dressing

GROUPINS	NO. OF TREATMENTS	ERC % CANE					ERF % CANE				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
A: All by 4 weeks	1	11.78	13.30	12.73	12.58	12.60	13.10	14.32	13.96	14.12	13.89
B: All by 8 weeks	3	12.03	13.03	13.03	12.81	12.73	13.30	14.05	14.27	14.26	13.97
C: All by 12 weeks	5	11.89	12.91	12.78	12.74	12.58	13.22	14.02	14.08	14.21	13.88
D: All by 16 weeks	3	11.91	12.72	12.83	12.66	12.53	13.30	13.82	14.18	14.20	13.88
MEAN		11.92	12.93	12.85	12.73	12.62	13.25	14.00	14.14	14.21	13.90
SIGNIFICANCE		NS	AC* AD** BC* BD*	NS	NS	-	NS	AB* AC** AD** BD* CD*	NS	NS	-

(b) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	ERC % CANE					ERF % CANE				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
First dressing at:											
E: 1 week	2	12.28	13.05	13.19	12.95	12.87	13.57	14.05	14.38	14.39	14.10
F: 4 weeks	5	11.86	13.01	12.86	12.69	12.61	13.18	14.09	14.16	14.18	13.90
G: 8 weeks	3	12.00	12.82	12.82	12.63	12.57	13.36	13.92	14.09	14.13	13.88
H: 12 weeks	1	11.58	12.82	12.77	12.64	12.45	12.96	13.93	14.13	14.09	13.78
I: 16 weeks	1	11.61	12.69	12.35	12.83	12.37	12.94	13.77	13.76	14.39	13.72
SIGNIFICANCE		NS	NS	NS	NS	-	NS	NS	NS	NS	-

6400/27/4R: EARLY SEASON NITROGEN TRIAL

Table 11: Grouping of ERF Yield and Stalk Data 1R to 4R

(a) By Time of Last Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	ERF YIELD (t/ha)					STALKS /ha (x 1/1000)				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
A: All by 4 weeks	1	21.72	16.99	17.01	19.46	18.80	150.9	153.3	174.2	194.2	168.2
B: All by 8 weeks	3	22.00	16.46	18.29	19.00	18.94	149.0	150.0	178.0	185.3	165.6
C: All by 12 weeks	5	21.66	17.80	18.05	17.89	18.85	144.3	152.1	174.7	181.9	163.3
D: All by 16 weeks	3	22.42	16.65	18.77	18.49	19.08	147.7	149.9	175.5	183.7	164.2
MEAN		21.94	17.11	18.20	18.45	18.93	146.9	151.1	175.7	184.3	164.5
SIGNIFICANCE		NS	NS	NS	NS	-	NS	NS	NS	AB* AC** AD*	-

(b) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	ERF YIELD (t/ha)					STALKS /ha (x 1/1000)				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
First dressing at:											
E: 1 week	2	21.76	16.47	17.45	18.93	18.65	143.0	147.9	174.0	185.2	162.5
F: 4 weeks	5	21.76	17.35	18.25	17.69	18.76	145.7	151.7	175.6	183.9	164.2
G: 8 weeks	3	22.68	17.18	17.89	18.95	19.18	152.1	150.7	174.9	184.3	165.5
H: 12 weeks	1	21.33	17.92	17.82	19.45	19.13	149.1	155.6	178.1	183.7	166.6
I: 16 weeks	1	21.60	16.19	18.85	18.74	18.85	142.8	151.6	180.0	184.4	164.7
SIGNIFICANCE		NS	NS	NS	NS	-	NS	NS	NS	NS	-

6400/27/4R: EARLY SEASON NITROGEN TRIAL

Table 12: Grouping of Stalk Diameter andLength Data 1R to 4R

(a) By Time of Last Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	STALK DIAMETER (cm)					STALK LENGTH (m)				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
A: All by 4 weeks	1	2.32	2.06	2.10	1.97	2.11	3.60	2.55	2.48	2.60	2.81
B: All by 8 weeks	3	2.27	2.15	2.09	2.00	2.13	3.66	2.54	2.42	2.51	2.78
C: All by 12 weeks	5	2.29	2.15	2.12	2.00	2.14	3.69	2.66	2.41	2.51	2.82
D: All by 16 weeks	3	2.26	2.17	2.19	2.07	2.17	3.62	2.60	2.51	2.49	2.81
MEAN		2.28	2.15	2.13	2.02	2.15	3.66	2.61	2.44	2.51	2.81
SIGNIFICANCE		NS	NS	NS	NS	-	NS	NS	NS	NS	-

(b) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	STALK DIAMETER (cm)					STALK LENGTH (m)				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
First dressing at:											
E: 1 week	2	2.31	2.15	2.09	1.97	2.13	3.68	2.55	2.31	2.44	2.75
F: 4 weeks	5	2.28	2.12	2.13	2.01	2.14	3.60	2.60	2.43	2.49	2.78
G: 8 weeks	3	2.27	2.17	2.13	2.03	2.15	3.72	2.61	2.43	2.59	2.84
H: 12 weeks	1	2.23	2.22	2.20	2.10	2.19	3.70	2.76	2.62	2.55	2.91
I: 16 weeks	1	2.29	2.16	2.14	2.04	2.16	3.67	2.57	2.62	2.51	2.84
SIGNIFICANCE		NS	NS	NS	NS	-	NS	NS	EH** EI** FH* FI* GH* GI*	NS	-

6400/27/4R: EARLY SEASON NITROGEN TRIAL

Table 13: Grouping of Foliar N% amd P% Dry Matter Data at 22 Weeks 1R to 4R

(a) By Time of Last Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	FOLIAR N%					FOLIAR P%				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
A: All by 4 weeks	1	2.27	1.68	1.64	1.75	1.84	0.19	0.17	0.19	0.17	0.18
B: All by 8 weeks	3	2.38	1.77	1.68	1.76	1.90	0.20	0.18	0.19	0.17	0.19
C: All by 12 weeks	5	2.31	1.89	1.83	1.88	1.98	0.18	0.19	0.22	0.18	0.19
D: All by 16 weeks	3	2.34	2.14	2.13	2.17	2.20	0.19	0.21	0.24	0.20	0.21
MEAN		2.33	1.90	1.85	1.91	2.00	0.19	0.19	0.21	0.18	0.19
SIGNIFICANCE		NS	AD** BD** CD**	AD** BD** CD**	NS	-	NS	AD* BD** CD*	AD* BC* DB*	NS	-

(b) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	FOLIAR N%					FOLIAR P%				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
First dressing at:											
E: 1 week	2	2.36	1.76	1.66	1.79	1.89	0.18	0.20	0.20	0.18	0.19
F: 4 weeks	5	2.32	1.84	1.81	1.81	1.95	0.19	0.19	0.21	0.18	0.19
G: 8 weeks	3	2.31	1.93	1.85	1.92	2.00	0.18	0.20	0.22	0.18	0.20
H: 12 weeks	1	2.37	2.05	1.99	2.13	2.14	0.19	0.18	0.23	0.19	0.20
I: 16 weeks	1	2.37	2.26	2.31	2.43	2.34	0.19	0.22	0.24	0.20	0.21
SIGNIFICANCE		NS	NS	NS	EI** FI** GI**	-	NS	NS	NS	NS	-

Table 14: Grouping of Foliar K% and Ca% Dry Matter Data at 22 Weeks 1R to 4R

(a) By Time of Last Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	FOLIAR K%					FOLIAR Ca%				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
A: All by 4 weeks	1	1.39	1.17	0.99	1.01	1.14	0.39	0.30	0.36	0.29	0.34
B: All by 8 weeks	3	1.32	1.13	0.93	0.91	1.07	0.40	0.31	0.37	0.28	0.34
C: All by 12 weeks	5	1.35	1.18	1.02	0.93	1.12	0.38	0.32	0.39	0.29	0.35
D: All by 16 weeks	3	1.38	1.24	1.12	1.09	1.21	0.38	0.32	0.39	0.31	0.35
MEAN		1.35	1.18	1.02	0.97	1.13	0.38	0.32	0.38	0.30	0.35
SIGNIFICANCE		NS	AD**	AD** BC* BD*** CD**	NS	-	NS	NS	NS	NS	-

(b) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	FOLIAR K%					FOLIAR Ca%				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
First dressing at:											
E: 1 week	2	1.33	1.14	0.96	0.79	1.06	0.39	0.31	0.38	0.26	0.34
F: 4 weeks	5	1.34	1.18	1.02	1.01	1.14	0.39	0.31	0.37	0.30	0.34
G: 8 weeks	3	1.34	1.11	0.99	1.00	1.11	0.37	0.31	0.39	0.30	0.34
H: 12 weeks	1	1.42	1.28	1.07	1.01	1.20	0.38	0.34	0.42	0.32	0.37
I: 16 weeks	1	1.46	1.36	1.16	1.05	1.26	0.38	0.35	0.40	0.32	0.36
SIGNIFICANCE		NS	EH* EI* FI** GH* GI*	NS	NS	-	NS	NS	NS	NS	-

6400/27/4R: EARLY SEASON NITROGEN TRIAL

Table 15: Grouping of Foliar Mg% Dry Matter and Flowering % Data 1R to 4R

(a) By Time of Last Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	FOLIAR Mg%					FLOWERING %				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
A: All by 4 weeks	1	0.15	0.15	0.13	0.13	0.14	72	0	0	0	18.0
B: All by 8 weeks	3	0.17	0.15	0.13	0.14	0.15	70	0	0	0	17.5
C: All by 12 weeks	5	0.18	0.17	0.15	0.16	0.17	68	0	0	0	17.0
D: All by 16 weeks	3	0.17	0.17	0.15	0.17	0.17	61	0	0	0	15.3
MEAN		0.17	0.16	0.14	0.15	0.16	67	0	0	0	
SIGNIFICANCE		NS	NS	AC** AD** BC*** BD**	NS	-	NS	NS	NS	NS	-

(b) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	FOLIAR Mg%					FLOWERING %				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
First dressing at:											
E: 1 week	2	0.17	0.14	0.14	0.15	0.15	72	0	0	0	18.0
F: 4 weeks	5	0.17	0.16	0.14	0.15	0.16	71	0	0	0	17.8
G: 8 weeks	3	0.17	0.17	0.14	0.15	0.16	63	0	0	0	15.8
H: 12 weeks	1	0.20	0.19	0.15	0.17	0.18	44	0	0	0	11.0
I: 16 weeks	1	0.17	0.17	0.15	0.17	0.17	78	0	0	0	19.5
SIGNIFICANCE		NS	EG* EH** FH*	NS	NS	-	NS	NS	NS	NS	-

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Table 16: Grouping by Number and Order of Magnitude of Nitrogen Splits

(a) Cane and ERC Yield

GROUPING	NO. OF TREATMENTS	CANE YIELD (t/ha)					ERC YIELD (t/ha)				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
NO. OF N APPLICATIONS											
J: Single	4	168.76	122.28	129.57	136.73	139.34	19.84	15.79	16.42	17.31	17.34
K: Double (80N, 80N)	4	161.73	121.47	127.13	126.29	134.16	19.57	15.83	16.50	16.20	17.03
L: Double (60N, 100N)	4	166.06	122.76	129.20	126.48	136.13	19.79	15.73	16.67	16.02	17.05
MEAN		165.52	122.17	128.63	129.83	136.54	19.73	15.78	16.53	16.51	17.14
SIGNIFICANCE		NS	NS	NS	NS	-	NS	NS	NS	NS	-

(b) ERC% Cane and ERF% Cane

GROUPING	NO. OF TREATMENTS	ERC % CANE					ERF % CANE				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
NO. OF N APPLICATIONS											
J: Single	4	11.74	12.92	12.69	12.67	12.51	13.07	13.99	13.98	14.19	13.81
K: Double (80N, 80N)	4	12.10	13.04	12.97	12.83	12.74	13.36	14.08	14.24	14.26	13.99
L: Double (60N, 100N)	4	11.92	12.82	12.90	12.68	12.58	13.32	13.94	14.21	14.19	13.92
MEAN		11.92	12.93	12.85	12.73	12.61	13.25	14.00	14.14	14.21	13.90
SIGNIFICANCE		NS	NS	NS	NS	-	NS	NS	NS	NS	-

6400/27/4R: EARLY SEASON NITROGEN TRIAL

Table 17: Grouping by Number and Order of Magnitude of Nitrogen Splits

(a) ERF Yield and Stalk Counts

GROUPING	NO. OF TREATMENTS	ERF YIELD (t/ha)					STALKS /ha (x 1/1000)				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
NO. OF N APPLICATIONS											
J: Single	4	22.07	17.10	18.10	19.39	19.17	150.5	153.4	177.2	187.2	167.1
K: Double (80N, 80N)	4	21.63	17.11	18.13	18.02	18.72	144.0	150.7	175.7	184.2	163.7
L: Double (60N, 100N)	4	22.12	17.11	18.39	17.92	18.89	146.2	149.3	174.1	181.3	162.7
MEAN		21.94	17.11	18.20	18.45	18.93	146.9	151.1	175.7	184.3	164.5
SIGNIFICANCE		NS	NS	NS	NS	-	NS	NS	NS	NS	-

(b) Stalk Diameters and Lengths

GROUPING	NO. OF TREATMENTS	STALK DIAMETERS (cm)					STALK LENGTHS (m)				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
NO. OF N APPLICATIONS											
J: Single	4	2.27	2.16	2.14	2.02	2.15	3.69	2.62	2.53	2.58	2.86
K: Double (80N, 80N)	4	2.29	2.14	2.10	1.98	2.13	3.65	2.59	2.38	2.45	2.77
L: Double (60N, 100N)	4	2.28	2.15	2.16	2.05	2.16	3.63	2.61	2.43	2.51	2.80
MEAN		2.28	2.15	2.13	2.02	2.15	3.66	2.61	2.44	2.51	2.81
SIGNIFICANCE		NS	NS	NS	NS	-	NS	NS	NS	NS	-

6400/27/4R: EARLY SEASON NITROGEN TRIAL

Table 18: Grouping by Number and Order of Magnitude of Nitrogen Splits

(a) Foliar N% and P% Dry Matter at 22 Weeks

GROUPING	NO. OF TREATMENTS	FOLIAR N%					FOLIAR P%				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
NO. OF N APPLICATIONS											
J: Single	4	2.35	1.96	1.91	2.04	2.07	0.20	0.19	0.22	0.18	0.20
K: Double (80N, 80N)	4	2.36	1.76	1.68	1.75	1.89	0.18	0.19	0.20	0.18	0.19
L: Double (60N, 100N)	4	2.29	1.98	1.97	1.95	2.05	0.18	0.20	0.23	0.18	0.20
MEAN		2.33	1.90	1.85	1.91	2.00	0.19	0.19	0.21	0.18	0.19
SIGNIFICANCE		NS	NS	NS	NS	-	JK* JL*	NS	KL**	NS	-

(b) Foliar K% and Ca% Dry Matter at 22 Weeks

GROUPING	NO. OF TREATMENTS	FOLIAR K%					FOLIAR Ca%				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
NO. OF N APPLICATIONS											
J: Single	4	1.41	1.24	1.03	1.00	1.17	0.39	0.33	0.39	0.31	0.36
K: Double (80N, 80N)	4	1.31	1.16	0.96	0.90	1.08	0.39	0.31	0.37	0.27	0.34
L: Double (60N, 100N)	4	1.34	1.15	1.07	1.02	1.15	0.37	0.32	0.39	0.31	0.35
MEAN		1.35	1.18	1.02	0.97	1.13	0.38	0.32	0.38	0.30	0.35
SIGNIFICANCE		JK** JL**	NS	NS	NS	-	NS	NS	NS	JK* KL*	-

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Table 19: Grouping by Number and Order of Magnitude of Nitrogen Splits

Foliar Mg% Dry Matter and Flowering % at 22 Weeks

GROUPING	NO. OF TREATMENTS	FOLIAR Mg%					FLOWERING %				
		1R	2R	3R	4R	MEAN	1R	2R	3R	4R	MEAN
NO. OF N APPLICATIONS											
J: Single	4	0.17	0.17	0.14	0.15	0.16	64	0	0	0	16
K: Double (80N, 80N)	4	0.17	0.15	0.14	0.14	0.15	77	0	0	0	19
L: Double (60N, 100N)	4	0.17	0.17	0.15	0.17	0.17	62	0	0	0	16
MEAN		0.17	0.16	0.14	0.15	0.15	67	0	0	0	17
SIGNIFICANCE		NS	NS	NS	-		NS	NS	NS	NS	-

SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

6400/27: EARLY SEASON NITROGEN TRIAL

CATALOGUE No: 1644

Object: To evaluate responses in early season ratoon cane to single and split nitrogen dressings applied at varying times over a period extending to just before the onset of rapid stalk elongation in early September.

This crop: Fifth ratoon **Age:** 11,5 months (16.5.91 to 29.4.92)

Location: ZSA Experiment Station, Field L3.

Soil type: P.E. 1 sandy clay loam derived from gneiss.

Design: Randomised blocks, 5 replications.

Variety: NCo376 **Spacing:** 1,5m rows.

Fertilizer: (1) Nitrogen see treatments
(2) Phosphate 60kg P_2O_5/ha as single superphosphate at 4 weeks.
(3) Potash 60kg K_2O/ha as muriate of potash applied at 4 weeks.

Treatments: Nitrogen applications were as per treatment table below. No treatments were applied in the plant crop.

TREAT MENTS	NITROGEN APPLICATIONS (kg N/ha) WEEKS AFTER CUTTING				
	1 (or 1st irrigation)	4 (or 2nd irrigation)	8	12	16
1	80	-	80	-	-
2	80	-	-	80	-
3	-	80	80	-	-
4	-	80	-	80	-
5	-	160	-	-	-
6	-	-	160	-	-
7	-	-	-	160	-
8	-	-	-	-	160
9	-	60	-	100	-
10	-	60	-	-	100
11	-	-	60	100	-
12	-	-	60	-	100

Rainfall: 98.4 **Irrigation:** 1474.0

RESULTS

Fifth ratoon harvest data and relevant data for earlier ratoons are presented in the attached tables. Statistical analyses and groupings of treatments were done as detailed in the first ratoon report.

(a) Cane, ERC and ERF yields:
There were no significant differences between treatments. After grouping the treatments the only significant (P=0,05) response obtained was when the double dressing of N in two equal amounts of 80kg N/ha each gave higher cane yields than the double application of N with 50 kg N/ha being applied first followed by 100kg N/ha. However the effect was not significant in ERC and ERF yields.

(b) Quality effects:
There were no significant differences between treatments before and after grouping and no useful non-significant trends were discernible.

(c) Stalk data:
There was no significant differences between treatments after grouping the treatments the only significant (P=0,05) response obtained was when applying the first N dressing at one week gave higher number of stalks per hectare than holding it back until 8 weeks and beyond.

(d) Rainfall effects:
No large falls of rain were received after any of the N dressings.

(e) Foliar data:
Foliar samples were taken from the trial at 14, 18, 22, 26 and 30 weeks after fourth ratoon harvest. Foliar values at 22 weeks as a percentage of dry matter of nitrogen, phosphate, potassium, calcium and magnesium are shown in Tables 6, 7, 8, 13, 14, and 15.

(i) Nitrogen: There were highly significant (P=0,01) differences between treatments. After grouping the data it was found that extending N applications to 16 weeks resulted in significantly lower values of foliar N than applying all the N within 12 weeks of harvest. All plots were above the October initial level of 1,55% N dry matter at 22 weeks.

(ii) Phosphate: No significant differences were obtained before or after grouping. All plots were above the critical level of 0,17% P ar 22 weeks.

(iii) Potassium: There were no significant differences between treatments. Foliar K dry matter values at 22 weeks were variable ranging from 0,79% to 1,25% for individual plots and from 0,95% to 1,07% for individual treatments. Only five treatments out of twelve were equal to or above the critical level of 1,05%.

(iv) Calcium and magnesium: There were highly significant differences between treatments however no significant trends emerged after grouping the data. All plots and treatment recorded values above the critical levels of 0,10% and 0,06% dry matter for calcium and magnesium respectively for the month of October.

(v) Lodging and Flowering: There were zero in all treatments in the fifth ratoon.

COMCLUSIONS

As in the fourth ratoon, expectations that significant responses to treatments by cane yield in the third ratoon would be intensified in later ratoons and possibly extend to ERC and ERF yields have not been realised. The trial was terminated after the fifth ratoon harvest.

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6400/27/5R : EARLY SEASON NITROGEN TRIAL

Table 1 : Harvest Data - Fifth Ratoon

TREAT NO.	N APPLICATION (kgN/ha) WEEKS AFTER CUTTING					CANE YIELD (t/ha)	ERC% CANE	ERF% CANE	ERC YIELD (t/ha)	ERF YIELD (t/ha)
	1	4	8	12	16					
4	-	80	-	80	-	112.71	11.98	14.84	13.50	16.71
1	80	-	80	-	-	112.46	12.64	15.25	14.25	17.13
2	-	80	-	80	-	112.37	12.50	15.12	14.07	17.01
7	-	-	-	160	-	108.99	12.64	15.25	13.89	16.65
3	-	80	80	-	-	108.83	12.61	15.24	13.79	16.61
6	-	-	160	-	-	108.62	12.92	15.27	14.06	16.55
11	-	-	60	100	-	108.31	12.63	15.22	13.59	16.40
5	-	160	-	-	-	107.96	12.52	15.07	13.52	16.26
10	-	60	-	-	100	102.23	12.58	15.14	12.89	15.48
12	-	-	60	-	100	102.21	12.55	15.41	13.04	16.17
8	-	-	-	-	160	100.35	12.14	14.87	12.31	14.98
9	-	-	60	100	-	94.40	12.71	15.14	12.04	14.48
SIGNIFCANCE						N.S.	N.S.	N.S.	N.S.	N.S.
TRIAL MEAN						106.62	12.55	15.17	13.41	16.17
S.E. PLOT +/-						12.11	0.88	0.52	1.98	1.98
S.E. MEAN +/-						5.41	0.39	0.23	0.88	0.89
C.V.%						11.35	7.01	3.44	14.75	12.26

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Table 2 : Cane and ERC Yield Data 1R to 5R

TREAT NO.	N APPLICATION (kgN/ha) WEEKS AFTER CUTTING					CANE YIELD (t/ha)						ERC YIELD (t/ha)					
	1	4	8	12	16	1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
6	-	-	160	-	-	178.21	124.11	119.04	140.90	108.62	134.18	21.39	15.97	15.33	17.77	14.06	16.90
12	-	-	60	-	100	172.87	120.32	127.50	131.43	102.21	130.87	21.21	15.23	16.77	16.43	13.04	16.54
9	-	60	-	100	-	167.51	121.63	123.96	115.49	94.40	124.60	19.80	15.62	16.06	14.69	12.04	15.64
8	-	-	-	-	160	166.94	117.51	137.02	130.15	100.35	130.39	19.38	14.92	16.92	16.71	12.31	16.05
5	-	160	-	-	-	165.81	118.61	121.90	137.86	108.83	130.60	19.52	15.78	15.50	17.33	13.52	16.33
10	-	60	-	-	100	165.79	123.50	131.89	128.91	102.23	130.46	19.65	15.84	17.23	16.32	12.89	16.39
2	80	-	-	80	-	165.16	124.58	113.54	129.41	112.37	129.01	20.78	16.29	14.89	16.52	14.07	16.51
7	-	-	-	160	-	164.10	128.87	140.34	138.00	108.99	136.06	19.06	16.49	17.92	17.44	13.89	16.96
4	-	80	-	80	-	163.59	134.16	129.53	116.98	112.71	131.39	19.20	17.26	16.37	14.86	13.50	16.24
3	-	80	80	-	-	162.83	117.91	136.50	125.01	108.83	130.22	19.74	15.51	17.62	15.88	13.79	16.51
11	-	-	60	100	-	158.08	125.59	133.45	130.10	108.31	131.11	18.52	16.23	16.62	16.63	13.59	16.32
1	80	-	80	-	-	155.34	109.25	128.95	133.76	112.46	127.95	18.56	14.26	17.11	17.54	14.25	16.34
SIGNIFICANCE						N.S.	N.S.	*	N.S.	N.S.	-	N.S	N.S.	N.S.	N.S.	N.S.	-
TRIAL MEAN						165.52	122.17	128.63	129.83	106.62	130.55	19.73	15.78	16.53	16.51	13.41	16.39
S.E. PLOT +/-						12.27	11.05	11.62	12.31	12.11	-	1.78	1.51	1.71	1.60	1.98	-
S.E. MEAN +/-						5.49	4.94	5.20	5.51	5.41	-	0.80	0.68	0.77	0.72	0.68	-
C.V.%						7.41	9.04	9.04	9.48	11.35	-	9.01	9.58	10.35	9.69	14.75	-

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Table 3 : ERC % Cane and ERF % Cane Data 1R to 5R

TREAT NO.	N APPLICATION (kgN/ha) WEEKS AFTER CUTTING					ERC % CANE						ERF % CANE					
	1	4	8	12	16	1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
6	-	-	160	-	-	12.01	12.87	12.89	12.61	12.92	12.66	13.28	13.93	14.06	14.14	15.27	16.90
12	-	-	60	-	100	12.29	12.65	13.11	12.50	12.73	12.66	13.73	13.77	14.42	14.01	15.41	16.54
9	-	60	-	100	-	11.85	12.86	12.98	12.80	12.71	12.64	13.23	14.03	14.26	14.31	15.32	15.64
8	-	-	-	-	160	11.61	12.69	12.35	12.83	12.14	12.32	12.94	13.77	13.76	14.39	14.87	16.05
5	-	160	-	-	-	11.78	13.30	12.73	12.58	12.52	12.58	13.10	14.32	13.96	14.12	15.07	16.33
10	-	60	-	-	100	11.83	12.83	13.05	12.66	12.58	12.59	13.24	13.90	14.37	14.20	15.14	16.39
2	80	-	-	80	-	12.60	13.05	13.10	12.78	12.50	12.81	13.81	14.11	14.25	14.26	15.12	16.51
7	-	-	-	160	-	11.58	12.82	12.77	12.64	12.64	12.49	12.96	13.93	14.13	14.09	15.25	16.96
4	-	80	-	80	-	11.73	12.88	12.59	12.71	11.98	12.38	13.02	13.99	13.96	14.15	14.84	16.24
3	-	80	80	-	-	12.11	13.18	12.93	12.71	12.61	12.71	13.29	14.23	14.25	14.12	15.24	16.51
11	-	-	60	100	-	11.70	12.95	12.45	12.78	12.63	12.50	13.08	14.07	13.81	14.24	15.22	16.32
1	80	-	80	-	-	11.96	13.04	13.27	13.11	12.64	12.80	13.34	13.99	14.50	14.52	15.25	16.34
SIGNIFICANCE						N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S	N.S.	N.S.	N.S.	N.S.	-
TRIAL MEAN						11.92	12.93	12.85	12.73	12.55	12.60	13.25	14.00	14.14	14.21	15.17	16.39
S.E PLOT +/-						0.69	0.48	0.50	0.40	0.88	-	0.62	0.40	0.48	0.38	0.52	-
S.E. MEAN +/-						0.31	0.22	0.22	0.18	0.39	-	0.28	0.18	0.22	0.17	0.23	-
C.V.%						5.80	3.75	3.89	3.17	7.01	-	4.68	2.87	3.41	2.70	3.44	-

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Table 4 . ERF Yield and Stalk Data 1R to 5R

TREAT NO.	N APPLICATION (kgN/ha) WEEKS AFTER CUTTING					ERF YIELD (t/ha)						STALKS/HA (X1/1000)					
	1	4	8	12	16	1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
6	-	-	160	-	-	23.64	17.31	16.72	19.92	16.55	18.83	159.10	153.00	176.80	186.60	176.50	170.40
12	-	-	60	-	100	23.69	16.59	18.50	18.41	15.77	18.59	153.40	149.50	171.80	186.30	174.20	167.04
9	-	60	-	100	-	22.13	17.07	17.65	16.45	14.48	17.56	141.00	149.60	173.80	178.40	176.90	163.94
8	-	-	-	-	160	21.60	16.19	18.85	18.74	14.98	18.07	142.80	151.60	179.60	184.40	170.80	165.84
5	-	160	-	-	-	21.72	16.99	17.01	19.46	16.26	18.29	150.90	153.30	174.20	194.40	186.10	171.78
10	-	60	-	-	100	21.96	17.16	18.97	18.31	15.48	18.38	146.80	148.50	175.00	180.60	178.90	165.96
2	80	-	-	80	-	22.82	17.63	16.20	18.44	17.01	18.42	143.80	150.40	170.10	186.70	184.40	167.08
7	-	-	-	160	-	21.33	17.92	19.82	19.45	16.65	19.03	149.10	155.60	178.10	183.70	176.00	168.50
4	-	80	-	80	-	21.33	18.76	18.16	16.58	16.71	18.31	144.10	155.30	175.40	180.80	178.70	166.86
3	-	80	80	-	-	21.66	16.75	19.44	17.65	16.61	18.42	145.70	151.60	179.50	188.50	184.40	169.94
11	-	-	60	100	-	20.70	17.63	18.44	18.52	16.40	18.34	143.80	149.80	176.00	180.10	178.10	165.56
1	80	-	80	-	-	20.70	15.31	18.70	19.42	17.13	18.25	142.30	145.40	177.80	183.70	187.20	167.28
SIGNIFCANCE						N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-
TRIAL MEAN						21.94	17.11	18.20	18.45	16.17	18.37	147.00	151.10	175.70	184.30	179.30	167.48
S.E. PLOT +/-						1.85	1.63	1.89	1.82	1.98	-	10.00	0.67	8.00	7.10	8.30	-
S.E. MEAN +/-						0.83	0.73	0.84	0.82	0.89	-	4.50	0.30	3.60	3.20	3.70	-
C.V.%						8.45	9.54	10.37	9.89	12.26	-	6.80	0.44	4.60	3.80	4.60	-

6400/27/5R : EARLY SEASON NITROGEN TRIAL

Table 5 . Stalk Diameter and Stalk Length Data 1R to 5R

TREAT NO.	N APPLICATION (kgN/ha) WEEKS AFTER CUTTING					STALK DIAMETER (cm)						STALK LENGTH (m)					
	1	4	8	12	16	1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
6	-	-	160	-	-	2.25	2.20	2.10	1.98	2.12	2.13	3.79	2.61	2.38	2.66	2.18	2.72
12	-	-	60	-	100	2.27	2.20	2.20	2.09	2.16	2.18	3.64	2.60	2.45	2.49	2.02	2.64
9	-	60	-	100	-	2.34	2.12	2.10	2.01	2.04	2.12	3.61	2.58	2.33	2.46	1.86	2.57
8	-	-	-	-	160	2.29	2.16	2.14	2.04	2.18	2.16	3.67	2.57	2.62	2.51	2.08	2.69
5	-	160	-	-	-	2.32	2.06	2.10	1.97	2.08	2.11	3.60	2.55	2.48	2.60	2.13	2.67
10	-	60	-	-	100	2.22	2.16	2.22	2.08	2.12	2.16	3.53	2.64	2.45	2.47	1.98	2.61
2	80	-	-	80	-	2.29	2.16	2.10	1.92	2.14	2.12	3.81	2.65	2.25	2.50	2.08	2.66
7	-	-	-	160	-	2.23	2.22	2.20	2.10	2.08	2.17	3.70	2.76	2.62	2.55	2.10	2.75
4	-	80	-	80	-	2.30	2.12	2.12	1.98	2.12	2.13	3.59	2.69	2.40	2.41	2.13	2.64
3	-	80	80	-	-	2.23	2.12	2.10	1.99	2.10	2.11	2.65	2.55	2.49	2.50	2.12	2.46
11	-	-	60	100	-	2.29	2.12	2.10	2.02	2.06	2.12	3.73	2.62	2.47	2.63	2.13	2.72
1	80	-	80	-	-	2.33	2.14	2.08	2.03	2.06	2.13	3.54	2.45	2.38	2.37	2.11	2.57
SIGNIFICANCE						N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-
TRIAL MEAN						2.28	2.15	2.13	2.02	2.11	2.14	3.66	2.61	2.44	2.51	2.08	2.66
S.E. PLOT +/-						0.11	0.11	0.10	0.12	0.10	-	0.27	0.20	0.16	0.17	0.15	-
S.E. MEAN +/-						0.05	0.05	0.05	0.06	0.04	-	0.12	0.09	0.07	0.07	0.07	-
C.V.%						4.70	5.01	4.91	6.17	4.59	-	7.37	7.65	6.39	6.62	7.38	-

6400/27/5R : EARLY SEASON NITROGEN TRIAL .

Table 6 : Foliar N % and P % Data at 22 Weeks 1R to 5R

TREAT NO.	N APPLICATION (kgN/ha) WEEKS AFTER CUTTING					FOLIAR N %						FOLIAR P %					
	1	4	8	12	16	1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
6	-	-	160	-	-	2.39	1.86	1.68	1.84	2.42	2.04	0.22	0.17	0.20	0.17	0.23	0.20
12	-	-	60	-	100	2.32	2.05	2.03	2.02	2.03	2.09	0.18	0.22	0.23	0.20	0.23	0.21
9	-	60	-	100	-	2.29	1.91	1.92	1.84	2.31	2.05	0.19	0.18	0.23	0.17	0.22	0.20
8	-	-	-	-	160	2.37	2.26	2.31	2.43	1.70	2.21	0.19	0.22	0.24	0.20	0.22	0.21
5	-	160	-	-	-	2.27	1.68	1.64	1.75	2.36	1.94	0.19	0.17	0.19	0.17	0.23	0.19
10	-	60	-	-	100	2.33	2.09	2.06	2.06	1.98	2.09	0.18	0.20	0.23	0.18	0.21	0.20
2	80	-	-	80	-	2.36	1.82	1.67	1.82	2.39	2.01	0.18	0.19	0.20	0.19	0.23	0.20
7	-	-	-	160	-	2.37	2.05	1.99	2.13	2.33	2.17	0.19	0.18	0.23	0.19	0.25	0.21
4	-	80	-	80	-	2.32	1.80	1.71	1.73	2.40	1.99	0.19	0.19	0.20	0.17	0.22	0.19
3	-	80	80	-	-	2.39	1.74	1.71	1.67	2.48	2.00	0.19	0.18	0.19	0.18	0.25	0.20
11	-	-	60	100	-	2.21	1.88	1.85	1.89	2.43	2.05	0.17	0.20	0.22	0.17	0.24	0.20
1	80	-	80	-	-	2.36	1.70	1.64	1.76	2.39	1.97	0.19	0.20	0.19	0.17	0.24	0.20
SIGNIFICANCE						N.S.	**	***	***	**	-	*	**	***	**	N.S.	-
TRIAL MEAN						2.33	1.90	1.85	1.91	2.26	2.05	0.19	0.19	0.21	0.18	0.23	0.20
S.E. PLOT +/-						0.09	0.10	0.16	0.10	0.10	-	0.10	0.01	0.01	0.02	0.02	-
S.E. MEAN +/-						0.04	0.04	0.07	0.04	0.05	-	0.01	0.01	0.01	0.01	0.01	-
C.V.%						3.92	5.21	8.43	5.02	4.57	-	7.92	5.51	6.53	8.44	7.91	-

6400/27/5R : EARLY SEASON NITROGEN TRIAL

Table 7 : Foliar K % and Ca % Data at 22 Weeks 1R to 5R

TREAT No	N APPLICATION (kgN/ha) WEEKS AFTER CUTTING					FOLIAR K %						FOLIAR Ca %					
	1	4	8	12	16	1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
6	-	-	160	-	-	1.37	1.15	0.91	0.92	1.07	1.08	0.40	0.33	0.38	0.29	0.44	0.37
12	-	-	60	-	100	1.31	1.11	1.09	1.14	1.02	1.13	0.36	0.31	0.39	0.29	0.40	0.35
9	-	60	-	100	-	1.35	1.14	1.07	0.91	1.02	1.10	0.40	0.35	0.39	0.31	0.46	0.38
8	-	-	-	-	160	1.46	1.36	1.16	1.05	0.98	1.20	0.38	0.35	0.40	0.32	0.40	0.37
5	-	160	-	-	-	1.39	1.17	0.99	1.01	1.11	1.13	0.39	0.30	0.36	0.29	0.44	0.36
10	-	60	-	-	100	1.38	1.26	1.12	1.07	1.05	1.18	0.38	0.30	0.39	0.32	0.40	0.36
2	80	-	-	80	-	1.35	1.18	0.96	0.81	0.98	1.06	0.38	0.32	0.39	0.25	0.46	0.36
7	-	-	-	160	-	1.42	1.28	1.07	1.01	1.03	1.16	0.38	0.34	0.42	0.32	0.42	0.38
4	-	80	-	80	-	1.31	1.21	0.99	1.00	0.95	1.09	0.39	0.31	0.38	0.29	0.46	0.37
3	-	80	80	-	-	1.27	1.13	0.92	1.04	0.99	1.07	0.40	0.31	0.34	0.28	0.46	0.36
11	-	-	60	100	-	1.32	1.09	0.99	0.95	1.05	1.08	0.34	0.31	0.39	0.31	0.44	0.36
1	80	-	80	-	-	1.31	1.11	0.96	0.76	1.07	1.04	0.39	0.31	0.37	0.27	0.45	0.36
SIGNIFICANCE						N.S.	***	**	***	N.S.	-	N.S.	***	N.S.	**	**	-
TRIAL MEAN						1.35	1.18	1.02	0.97	1.03	1.11	0.38	0.32	0.38	0.30	0.44	0.36
S.E. PLOT +/-						0.10	0.08	0.10	0.10	0.10	-	0.03	0.02	0.03	0.03	0.03	-
S.E. MEAN +/-						0.05	0.40	0.04	0.05	0.04	-	0.01	0.01	0.01	0.01	0.01	-
C.V.%						7.61	6.76	9.64	10.70	9.46	-	8.72	5.64	7.88	9.71	6.89	-

6400/27/5R : EARLY SEASON NITROGEN TRIAL

Table 8 . Foliar Mg % Date at 22 Weeks and Flowering % 1R to 5R .

TREAT NO.	N APPLICATION (kgN/ha) WEEKS AFTER CUTTING					FOLIAR Mg %						FLOWERING %					
	1	4	8	12	16	1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
6	-	-	160	-	-	0.17	0.16	0.13	0.13	0.19	0.16	60	0	0	0	0	0.37
12	-	-	60	-	100	0.18	0.18	0.15	0.16	0.17	0.17	50	0	0	0	0	0.35
9	-	60	-	100	-	0.19	0.16	0.15	0.18	0.20	0.18	64	0	0	0	0	0.38
8	-	-	-	-	160	0.17	0.17	0.15	0.17	0.14	0.16	78	0	0	0	0	0.37
5	-	160	-	-	-	0.15	0.15	0.13	0.13	0.18	0.15	72	0	0	0	0	0.36
10	-	60	-	-	100	0.17	0.15	0.15	0.17	0.15	0.16	55	0	0	0	0	0.36
2	80	-	-	80	-	0.18	0.16	0.14	0.15	0.19	0.16	76	0	0	0	0	0.36
7	-	-	-	160	-	0.20	0.19	0.15	0.17	0.16	0.17	44	0	0	0	0	0.38
4	-	80	-	80	-	0.17	0.16	0.15	0.14	0.19	0.16	80	0	0	0	0	0.37
3	-	80	80	-	-	0.18	0.15	0.14	0.13	0.19	0.16	84	0	0	0	0	0.36
11	-	-	60	100	-	0.16	0.17	0.15	0.16	0.18	0.16	78	0	0	0	0	0.36
1	80	-	80	-	-	0.16	0.13	0.13	0.15	0.17	0.15	67	0	0	0	0	0.36
SIGNIFICANCE						N.S.	***	N.S.	***	**	-	N.S.	N.S.	N.S.	N.S.	N.S.	-
TRIAL MEAN						0.17	0.16	0.14	0.15	0.18	0.16	67	0	0	0	0	0.36
S.E. PLOT +/-						0.40	0.02	0.02	0.02	0.02	-	26	0	0	0	0	-
S.E. MEAN +/-						0.02	0.01	0.01	0.01	0.01	-	12	0	0	0	0	-
C.V.%						21.27	10.30	13.56	10.88	12.85	-	37	0	0	0	0	-

6400/27/52. EARLY SEASON NITROGEN TRIAL

Table 9 : Grouping of Cane and ERC Yield Data 1R to 5R

(a) By Time of Last Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	CANE YIELD (t/ha)						ERC YIELD (t/ha)					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
A : All N by 4 weeks	1	165.81	118.61	121.90	137.86	107.96	130.43	19.52	15.78	15.50	17.33	13.52	16.33
B : All N by 8 weeks	3	165.46	117.09	128.16	133.22	109.97	130.78	19.90	15.25	16.69	17.07	14.03	16.59
C : All N by 12 weeks	5	163.69	126.97	128.16	126.00	107.36	130.44	19.47	16.38	16.37	16.03	13.42	16.33
D : All N by 16 weeks	3	158.53	120.44	132.14	130.16	101.60	130.57	20.08	15.33	16.97	16.49	12.74	16.32
MEAN		165.52	122.17	128.63	129.83	106.62	130.55	19.73	15.78	16.53	16.51	13.41	16.39
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

(a) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	CANE YIELD (t/ha)						ERC YIELD (t/ha)					
First dressing at :		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
E : 1 week	2	160.25	116.91	121.24	131.59	112.42	128.48	19.67	15.28	16.00	17.03	14.16	16.43
F : 4 weeks	5	165.10	123.61	128.76	124.85	105.23	129.51	19.58	16.00	16.55	15.82	13.15	16.22
G : 8 weeks	3	169.72	123.34	126.66	134.14	106.38	132.05	20.37	15.81	16.24	16.94	13.56	16.58
H : 12 weeks	1	164.10	128.87	140.34	138.00	108.99	136.06	19.06	16.49	17.92	17.44	13.89	16.96
I : 16 weeks	1	166.94	117.51	137.02	130.15	100.35	130.39	19.38	14.92	16.92	16.71	12.31	16.05
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

6400/27/5R : EARLY SEASON NITROGEN TRIAL

Table 10 . Grouping of ERC % Cane and ERF % Cane Data 1R to 5R

(a) By Time of Last Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	ERC % CANE						ERF % CANE					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
A : All N by 4 weeks	1	11.78	13.30	12.73	12.58	12.52	12.58	13.10	14.32	13.96	14.12	15.07	14.11
B : All N by 8 weeks	3	12.03	13.03	13.03	12.81	12.73	12.73	13.30	14.05	14.27	14.26	15.25	14.23
C : All N by 12 weeks	5	11.89	12.91	12.78	12.74	12.49	12.56	13.22	14.02	14.08	14.21	15.15	14.14
D : All N by 16 weeks	3	11.91	12.72	12.83	12.66	12.49	12.52	13.30	13.82	14.18	14.20	15.14	14.13
MEAN		11.92	12.93	12.85	12.73	12.55	12.60	13.25	14.00	14.14	14.21	15.17	14.15
SIGNIFICANCE		N.S.	AC* AD** BC* BD*	N.S.	N.S.	N.S.	-	N.S.	AB* AC** AD** BD* CD*	N.S.	N.S.	N.S.	-

(a) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	ERC % CANE						ERF % CANE					
First dressing at :		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
E : 1 week	2	12.28	13.05	13.19	12.95	12.57	12.81	13.57	14.05	14.38	14.39	14.16	14.11
F : 4 weeks	5	11.86	13.01	12.86	12.69	12.48	12.58	13.18	14.09	14.16	14.18	13.15	13.75
G : 8 weeks	3	12.00	12.82	12.82	12.63	12.76	12.61	13.36	13.92	14.09	14.13	13.56	13.81
H : 12 weeks	1	11.58	12.82	12.77	12.64	12.64	12.49	12.96	13.93	14.13	14.09	13.89	13.80
I : 16 weeks	1	11.61	12.69	12.35	12.83	12.14	12.32	12.94	13.77	13.76	14.39	12.31	13.43
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

6406/27/SR : EARLY SEASON NITROGEN TRIAL

Table 11 . Grouping of ERF Yield and Stalk Data 1R to 5R

(a) By Time of Last Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	ERF YIELD (t/ha)						STALKS PER HECTARE (X1/1000)					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
A : All N by 4 weeks	1	21.72	16.99	17.01	19.46	16.26	18.29	150.9	153.3	174.2	194.2	186.1	171.7
B : All N by 8 weeks	3	22.00	16.46	18.29	19.00	16.76	18.50	149.0	150.0	178.0	185.3	182.7	169.0
C : All N by 12 weeks	5	21.66	17.80	18.05	17.89	16.25	18.33	144.3	152.1	174.7	181.9	178.8	166.4
D : All N by 16 weeks	3	22.42	16.65	18.77	18.49	15.41	18.35	147.7	149.9	175.5	183.7	174.6	166.3
MEAN		21.94	17.11	18.20	18.45	16.17	18.37	146.9	151.1	175.7	184.3	179.3	167.5
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	AB*AC** AD*	N.S.	-

(a) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	ERF YIELD (t/ha)						STALKS PER HECTARE (X1/1000)					
First dressing at :		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
E : 1 week	2	21.76	16.47	17.45	18.93	17.07	18.34	143.0	147.9	174.0	185.2	185.8	167.2
F : 4 weeks	5	21.76	17.35	18.25	17.69	15.91	18.19	145.7	151.7	175.5	183.9	181.0	167.6
G : 8 weeks	3	22.68	17.18	17.89	18.95	16.24	18.59	152.1	150.7	174.9	184.3	176.3	167.7
H : 12 weeks	1	21.33	17.92	17.82	19.45	16.65	18.63	149.1	155.6	178.1	183.7	176.0	168.5
I : 16 weeks	1	21.60	16.19	18.85	18.74	14.98	18.07	142.8	151.6	180.0	184.4	170.8	165.9
SIGNIFICANCE		N.S.	N	N.S.	[illegible]	N.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

6400/27/5R : EARLY SEASON NITROGEN TRIAL

Table 12 : Grouping of Stalk Diameter and Length Data 1R to 5R

(a) By Time of Last Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	STALK DIAMETER (cm)						STALK LENGTH (m)					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
A : All N by 4 weeks	1	2.32	2.06	2.10	1.97	2.08	2.11	3.60	2.55	2.48	2.60	2.13	2.67
B : All N by 8 weeks	3	2.27	2.15	2.09	2.00	2.09	2.12	3.66	2.54	2.42	2.51	2.13	2.65
C : All N by 12 weeks	5	2.29	2.15	2.12	2.00	2.09	2.13	3.69	2.66	2.41	2.51	2.06	2.67
D : All N by 16 weeks	3	2.26	2.17	2.19	2.07	2.15	2.17	3.62	2.60	2.51	2.49	2.03	2.65
MEAN		2.28	2.15	2.13	2.02	2.11	2.14	3.66	2.61	2.44	2.51	2.08	2.66
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

(a) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	STALK DIAMETER (cm)						STALK LENGTH (m)					
First dressing at :		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
E : 1 week	2	2.31	2.15	2.09	1.97	2.10	2.12	3.68	2.55	2.31	2.44	2.10	2.62
F : 4 weeks	5	2.28	2.12	2.13	2.01	2.09	2.13	3.60	2.60	2.43	2.49	2.04	2.63
G : 8 weeks	3	2.27	2.17	2.13	2.03	2.11	2.14	3.72	2.61	2.43	2.59	2.11	2.69
H : 12 weeks	1	2.23	2.22	2.20	2.10	2.08	2.17	3.70	2.76	2.62	2.55	2.10	2.75
I : 16 weeks	1	2.29	2.16	2.14	2.04	2.18	2.16	3.67	2.57	2.62	2.51	2.08	2.69
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.	-	N.S.	N.S.	EH** EI** FH* FI* GH* GI*	N.S.	N.S.	-

6400/Z7/5R : EARLY SEASON NITROGEN TRIAL

Table 13 : Grouping of Foliar N % and P % Dry Matter Data at 22 Weeks 1R to 5R

(a) By Time of Last Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	FOLIAR N %						FOLIAR P %					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
A : All N by 4 weeks	1	2.27	1.68	1.64	1.75	2.36	1.94	0.19	0.17	0.19	0.17	0.23	0.19
B : All N by 8 weeks	3	2.38	1.77	1.68	1.76	2.43	2.00	0.20	0.18	0.19	0.17	0.24	0.20
C : All N by 12 weeks	5	2.31	1.89	1.83	1.88	2.37	2.06	0.18	0.19	0.22	0.18	0.23	0.20
D : All N by 16 weeks	3	2.34	2.14	2.13	2.17	1.88	2.13	0.19	0.21	0.24	0.20	0.22	0.21
MEAN		2.33	1.90	1.85	1.91	2.26	2.05	0.19	0.19	0.21	0.18	0.23	0.20
SIGNIFICANCE		N.S.	AD** BD** CD**	AD** BD** CD**	N.S.	AD** BD** CD**	-	N.S.	AD* BD** CD*	AD* BC* DB*	N.S.	N.S.	-

(a) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	FOLIAR N %						FOLIAR P %					
First dressing at		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
E : 1 week	2	2.36	1.76	1.66	1.79	2.39	1.99	0.18	0.20	0.20	0.18	0.24	0.20
F : 4 weeks	5	2.32	1.84	1.81	1.81	2.29	2.01	0.19	0.19	0.21	0.18	0.23	0.20
G : 8 weeks	3	2.31	1.93	1.85	1.92	2.29	2.06	0.18	0.20	0.22	0.18	0.23	0.20
H : 12 weeks	1	2.37	2.05	1.99	2.13	2.33	2.17	0.19	0.18	0.23	0.19	0.25	0.21
I : 16 weeks	1	2.37	2.26	2.31	2.43	1.70	2.21	0.19	0.22	0.24	0.20	0.22	0.21
SIGNIFICANCE		N.	N.S.	N.S.	E**	N.S.	-	N.S.	N.	N.S.	N.S.	N.S.	-

Table 14 : Grouping of Foliar K % and Ca % Dry Matter Data at 22 Weeks 1R to 5R

(a) By Time of Last Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	FOLIAR K %						FOLIAR Ca %					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
A : All N by 4 weeks	1	1.39	1.17	0.99	1.01	1.11	1.13	0.39	0.30	0.36	0.29	0.44	0.36
B : All N by 8 weeks	3	1.32	1.13	0.93	0.91	1.05	1.07	0.40	0.31	0.37	0.28	0.45	0.36
C : All N by 12 weeks	5	1.35	1.18	1.02	0.93	1.00	1.10	0.38	0.32	0.39	0.29	0.45	0.37
D : All N by 16 weeks	3	1.38	1.24	1.12	1.09	1.02	1.17	0.38	0.32	0.39	0.31	0.40	0.36
MEAN		1.35	1.18	1.02	0.97	1.03	1.11	0.38	0.32	0.38	0.30	0.44	0.36
SIGNIFICANCE		N.S.	AD*	AD** BC* BD*** CD**	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

(a) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	FOLIAR K %						FOLIAR Ca %					
First dressing at :		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
E : 1 week	2	1.33	1.14	0.96	0.79	1.03	1.05	0.39	0.31	0.38	0.26	0.45	0.36
F : 4 weeks	5	1.34	1.18	1.02	1.01	1.02	1.11	0.39	0.31	0.37	0.30	0.45	0.36
G : 8 weeks	3	1.34	1.11	0.99	1.00	1.05	1.10	0.37	0.31	0.39	0.30	0.43	0.36
H : 12 weeks	1	1.42	1.28	1.07	1.01	1.03	1.16	0.38	0.34	0.42	0.32	0.42	0.38
I : 16 weeks	1	1.46	1.36	1.16	1.05	0.98	1.20	0.38	0.35	0.40	0.32	0.40	0.37
SIGNIFICANCE		N.S.	EH* EI* FI** GH* GI*	N.S.	N.S.	N.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

Table 15 : Grouping of Foliar Mg % Dry Matter Data at 22 Weeks and Flowering % Data 1R to 5R

(a) By Time of Last Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	FOLIAR Mg %						FLOWERING %					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
A : All N by 4 weeks	1	0.15	0.15	0.13	0.13	0.18	0.15	72	0	0	0	0	14.4
B : All N by 8 weeks	3	0.17	0.15	0.13	0.14	0.18	0.15	70	0	0	0	0	14.0
C : All N by 12 weeks	5	0.18	0.17	0.15	0.16	0.18	0.17	68	0	0	0	0	13.6
D : All N by 16 weeks	3	0.17	0.17	0.15	0.17	0.15	0.16	61	0	0	0	0	12.2
MEAN		0.17	0.16	0.14	0.15	0.18	0.16	67	0	0	0	0	13.4
SIGNIFICANCE		N.S.	N.S.	AC^{xx} AD^{xx} BC^{xxx} BD^{xx}	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

(a) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	FOLIAR Mg %						FLOWERING %					
First dressing at :		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
E : 1 week	2	0.17	0.14	0.14	0.15	0.18	0.16	72	0	0	0	0	14.4
F : 4 weeks	5	0.17	0.16	0.14	0.15	0.18	0.16	71	0	0	0	0	14.2
G : 8 weeks	3	0.17	0.17	0.14	0.15	0.18	0.16	63	0	0	0	0	12.6
H : 12 weeks	1	0.20	0.19	0.15	0.17	0.16	0.17	44	0	0	0	0	8.8
I : 16 weeks	1	0.17	0.17	0.15	0.17	0.14	0.16	78	0	0	0	0	15.6
SIGNIFICANCE		N.S.	EG^{x} EH^{xx} FH^{x}	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

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Table 16 : Grouping by Number and Order of Magnitude of Nitrogen Splits 1R to 5R

(a) Cane and ERC Yield

GROUPING	NO. OF TREATMENTS	CANE YIELD (t/ha)						ERC YIELD (t/ha)					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
No. OF APPLICATIONS :													
J : Single	4	168.76	122.28	129.57	136.73	106.48	132.76	19.84	15.79	16.42	17.31	13.44	16.56
K : Double (80N,80N)	4	161.73	121.47	127.13	126.29	111.59	129.64	19.57	15.83	16.50	16.20	13.90	16.40
L : Double (60N,60N)	4	160.06	122.76	129.20	126.48	101.79	129.26	19.79	15.73	16.67	16.02	12.89	16.22
MEAN		165.52	122.17	128.63	129.83	106.62	130.55	19.73	15.78	16.53	16.51	13.41	16.39
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

(a) ERC % Cane and ERF % Cane

GROUPING	NO. OF TREATMENTS	ERC % CANE						ERF % CANE					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
No. OF APPLICATIONS :													
J : Single	4	11.74	12.92	12.69	12.67	12.55	12.51	13.07	13.99	13.98	14.19	15.12	14.07
K : Double (80N,80N)	4	12.10	13.04	12.97	12.83	12.43	12.67	13.36	14.08	14.24	14.26	15.11	14.21
L : Double (60N,60N)	4	11.92	12.82	12.90	12.68	12.66	12.60	13.32	13.94	14.21	14.19	15.27	14.19
MEAN		11.92	12.93	12.85	12.73	12.55	12.60	13.25	14.00	14.14	14.21	15.17	14.15
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

Table 17 : Grouping by Number and Order of Magnitude of Nitrogen Splits 1R to 5R

(a) ERF Yield and Stalk Counts

GROUPING	NO. OF TREATMENTS	ERF YIELD (t/ha)						STALKS/ha (x 1/1000)					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
No. OF APPLICATIONS :													
J : Single	4	22.07	17.10	18.10	19.39	16.11	18.55	150.5	153.4	177.2	187.2	177.4	169.1
K : Double (80N,80N)	4	21.63	17.11	18.13	18.02	16.87	18.35	144.0	150.7	175.7	184.2	183.7	167.7
L : Double (60N/60N)	4	22.12	17.11	18.39	17.92	15.53	18.21	146.2	149.3	174.1	181.3	177.0	165.6
MEAN		21.94	17.11	18.20	18.45	16.17	18.37	146.9	151.1	175.7	184.3	179.3	167.5
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

(a) Stalk Diameters and Stalk Lengths .

GROUPING	NO. OF TREATMENTS	STALK DIAMETERS (cm)						STALK LENGTHS (m)					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
No. OF APPLICATIONS :													
J : Single	4	2.27	2.16	2.14	2.02	2.12	2.14	3.69	2.62	2.53	2.58	2.12	2.71
K . Double (80N,80N)	4	2.29	2.14	2.10	1.98	2.11	2.12	3.65	2.59	2.38	2.45	2.11	2.64
L : Double (60N/60N)	4	2.28	2.15	2.16	2.05	2.10	2.15	3.63	2.61	2.43	2.51	2.00	2.64
MEAN		2.28	2.15	2.13	2.02	2.11	2.14	3.66	2.61	2.44	2.51	2.08	2.66
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

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Table 18 : Grouping by Number and Order of Magnitude of Nitrogen Splits 1R to 5R

(a) Foliar N % and P % Dry Matter at 22 Weeks

GROUPING	NO. OF TREATMENTS	Foliar N %						Foliar P %					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
No. OF APPLICATIONS													
J : Single	4	2.35	1.96	1.91	2.04	2.20	2.09	0.20	0.19	0.22	0.18	0.23	0.20
K : Double (80N,80N)	4	2.36	1.76	1.68	1.75	2.42	1.99	0.18	0.19	0.20	0.18	0.24	0.20
L : Double (60N/80N)	4	2.29	1.98	1.97	1.95	2.17	2.07	0.18	0.20	0.23	0.18	0.23	0.20
MEAN		2.33	1.90	1.85	1.91	2.26	2.05	0.19	0.19	0.21	0.18	0.23	0.20
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	JR* JL*	N.S.	N.S.	N.S.	N.S.	-

(a) Foliar K% and Foliar Ca%

GROUPING	NO. OF TREATMENTS	Foliar K %						Foliar Ca %					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
No. OF APPLICATIONS													
J : Single	4	1.41	1.24	1.03	1.00	1.05	1.15	0.39	0.33	0.39	0.31	0.42	0.37
K : Double (80N 80N)	4	1.31	1.16	0.96	0.90	1.00	1.07	0.39	0.31	0.37	0.27	0.46	0.36
L : Double (60N/80N)	4	1.34	1.15	1.07	1.02	1.04	1.12	0.37	0.32	0.39	0.31	0.43	0.36
MEAN		1.35	1.18	1.02	0.97	1.03	1.11	0.38	0.32	0.38	0.30	0.44	0.36
SIGNIFICANCE		JK** JL**	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

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Table 19 : Grouping by Number and Order of Magnitude of Nitrogen Splits 1R to 5R

(a) Foliar Mg % Dry Matter at 12 Weeks and Flowering %.

GROUPING	NO. OF TREATMENTS	FOLIAR Mg %						FLOWERING %					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
No. OF APPLICATIONS :													
J : Single	4	0.17	0.17	0.14	0.15	0.17	0.16	64	0	0	0	0	13
K : Double (80N.80N)	4	0.17	0.15	0.14	0.14	0.18	0.16	77	0	0	0	0	15
L : Double (60N.100N)	4	0.17	0.17	0.15	0.17	0.17	0.17	62	0	0	0	0	12
MEAN		0.17	0.16	0.14	0.15	0.18	0.16	67	0	0	0	0	13
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	JK* JL*	N.S.	N.S.	N.S.	N.S.	-

SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

6400/27: EARLY SEASON NITROGEN TRIAL

CATALOGUE No: 1644

TERMINAL REPORT

Object: To evaluate responses in early season ratoon cane to single and split nitrogen dressings applied at varying times over a period extending to just before the onset of rapid stalk elongation in early September.

Planted: 10th April 1986

Terminated: 29th April 1992 after fifth ratoon crop.

Harvest dates:

	Harvest	Age
P	28.4.87	12,1 months
1R	17.5.88	12,6 months
2R	18.5.89	12,0 months
3R	17.5.90	12,0 months
4R	16.5.91	12,0 months
5R	29.4.92	11,5 months

Location: SASA Experiment Station, Field L3.

Soil type: P.E. 1 sandy clay loam derived from gneiss.

Design: Randomised blocks, 5 replications.

Variety: NCo376 **Spacing:** 1.5m between rows

Irrigation: In-row furrow.

Fertilizer:

Nitrogen
Plant - 120kg N/ha split dressings. 1/3 at 4 weeks 2/3 at 8 weeks.
Ratoons - 160kg N/ha in single and split dressings as per treatment table.

Phosphate
Plant - 100kg P_2O_5/ha broadcast and disced in before ridging as single superphosphate.
Ratoons - 60kg P_2O_5 at 4 weeks.

Potash
Plant and Ratoons - 60kg K_2O at 4 weeks as muriate of potash.

Treatments: Nitrogen application were as per treatment table below. No treatments were applied in the plant crop.

TREATMENTS	NITROGEN APPLICATIONS (kg N/ha)				
	WEEKS AFTER CUTTING				
	1 (or 1st	4 (or 2nd	8	12	16
1	80	-	80	-	-
2	80	-	-	80	-
3	-	80	80	-	-
4	-	80	-	80	-
5	-	160	-	-	-
6	-	-	160	-	-
7	-	-	-	160	-
8	-	-	-	-	160
9	-	60	-	100	-
10	-	60	-	-	100
11	-	-	60	100	-
12	-	-	60	-	100

Treatments 1, 3 and 4 reflected practices on Hippo Valley Estates, ZSA Experiment Station and Triangle Limited on heavy soils respectively.

Irrigation and

	Irrigation (mm)	Rainfall (mm)
1R	966,0	692,2
2R	1006,0	398,2
3R	1102,0	500,0
4R	1238,0	423,2
5R	1474,0	98,4

RESULTS

Relevant harvest data for first to fifth ratoons are presented in attached tables. Four staistical analyses were done on each set of harvest data. The first compared treatment means and the other three were done after grouping the treatments according to:

(i) time of application of the last nitrogen dressing;
(ii) time of application of the first nitrogen dressing; and,
(iii) number and order of magnitude of the nitrogen dressings.

(a) Cane yield: The only significant (P=0,05) differences between treatments were obtained in the third ratoon but even in this crop grouped data did not exhibit any significant trends.

(b) Quality: There were no general significant trends applicable to all crops, however in the second ratoon grouped data showed that there was a significant (P=0,05 for ERF% cane and P=0.01 for ERC% cane) reduction in quality as the period of N application was extended from 4 to 16 weeks.

(e) ERC and ERF yields: There were no significant differences between treatments. No clear general, even though non-significant, trends applicable over all ratoons were obtained.

(d) Stalk populations: Applying all the nitrogen within 4 weeks generally resulted in higher stalk populations than extending N applications beyond 4 weeks. However, these trends though present in most crops to some degree only attained significance in the fourth ratoon.

(e) Cane stalk lengths and diameters: No significant differences were found before and after grouping the data.

(f) Flowering: The only flowering to occur was observed in the first ratoon where the mean flowering % for the trial was 67%. However even in this crop there were no significant differences between treatments nor grouped data.

(g) Rainfall effects: Rainfall was monitored in all crops between nitrogen applications and the monitoring continued for 4 weeks after the last nitrogen dressin for each treatment. The only significant rainfall (above 20mm) potentially capable of causing some N leaching was obtained in the second ratoon when the second N dressing at 4 weeks was followed by 35 mm of rain. However any leaching of N resulting from the rain was not evident since no significant cane, ERC and ERF yield depressions were obtained in treatments receiving some or all their N by 4 weeks.

(h) Foliar data: Foliar samples were taken from the trial in every crop at 14, 18, 22, 26 and 30 weeks after harvest of the previous crop. Foliar values at 22 weeks expressed as a percentage of dry matter, of the elements N, P, K, Ca, and Mg are shown in Tables 6, 7, 8, 13, 14 and 15.

No useful general trends emerged over the five ratoon crops, although in some of the crops significant differences between treatments were obtained both before and after grouping the data.

Mean foliar N% values over the five crops were all above the initial level. Foliar K levels were high and were above the critical level in the first and second ratoons, but decreased markedly in later ratoons.

Foliar P, Ca and Mg values were equal to or above the critical level at 22 weeks in all crops.

CONCLUSIONS

The trial was conducted in years when annual rainfall was generally lower than would be expected from studying long term rainfall data. Thus, heavy falls in the early season were non-exsistant. The trial showed that in years where early-season precipitation is not high enough to result in leaching losses of applied N;

(a) N fertilizer may be applied in one swoop at any time extending up to 16 weeks after cutting, or;
(b) N feritlizer can be split and applied over the same period;
without any significant differences being obtained between the methods used. However, treatments with applications extending to 12 and 16 weeks tended to show samll though non-significant depressions in yield.

A fairly valid general recommendation emanating from the trial would be to apply the N fertilizer in two equal dressings over a period of up to 10 weeks after cutting. Current practices on Hippo Valley Estates, ZSA Experiment Station and Triangle Limited (on heavy soils) will therefore be equally effective when early season precipitation is below average and they will not show any significant differences in cane, ERC and ERF yield.

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Table 1 : Cane and ERC Yield Data 1R to 5R

TREAT NO.	N APPLICATION (kgN/ha) WEEKS AFTER CUTTING					CANE YIELD (t/ha)						ERC YIELD (t/ha)					
	1	4	8	12	16	1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
6	-	-	160	-	-	178.21	124.11	119.04	140.90	108.62	134.18	21.39	15.97	15.33	17.77	14.06	16.90
12	-	-	60	-	100	172.87	120.32	127.50	131.43	102.21	130.87	21.21	15.23	16.77	16.43	13.04	16.54
9	-	60	-	100	-	167.51	121.63	123.96	115.49	94.40	124.60	19.80	15.62	16.06	14.69	12.04	15.64
8	-	-	-	-	160	166.94	117.51	137.02	130.15	100.35	130.39	19.38	14.92	16.92	16.71	12.31	16.05
5	-	160	-	-	-	165.81	118.61	121.90	137.86	108.83	130.60	19.52	15.78	15.50	17.33	13.52	16.33
10	-	60		-	100	165.79	123.50	131.89	128.91	102.23	130.46	19.65	15.84	17.23	16.32	12.89	16.39
2	80	-		80	-	165.16	124.58	113.54	129.41	112.37	129.01	20.78	16.29	14.89	16.52	14.07	16.51
7	-	-		160	-	164.10	128.87	140.34	138.00	108.99	136.06	19.06	16.49	17.92	17.44	13.89	16.96
4	-	80		80	-	163.59	134.16	129.53	116.98	112.71	131.39	19.20	17.26	16.37	14.86	13.50	16.24
3	-	80	80	-	-	162.83	117.91	136.50	125.01	108.83	130.22	19.74	15.51	17.62	15.88	13.79	16.51
11	-	-	80	100	-	158.08	125.59	133.45	130.10	108.31	131.11	18.52	16.23	16.62	16.63	13.59	16.32
1	80	-	80	-	-	155.34	109.25	128.95	133.76	112.46	127.95	18.56	14.26	17.11	17.54	14.25	16.34
SIGNIF						N.S.	N.S.	*	N.S.	N.S.	-	N.S	N.S.	N.S.	N.S.	N.S.	-
TRIAL MEAN						165.52	122.17	128.63	129.83	106.62	130.55	19.73	15.78	16.53	16.51	13.41	16.39
S.E. PLOT						12.27	11.05	11.62	12.31	12.11	-	1.78	1.51	1.71	1.60	1.98	-
S.E. MEAN						5.49	4.94	5.20	5.51	5.41	-	0.80	0.68	0.77	0.72	0.88	-
C.V.%						7.41	9.04	9.04	9.48	11.35	-	9.01	9.58	10.35	9.69	14.75	-

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Table 2 : ERC % Cane and ERF % Cane Data 1R to 5R

TREAT NO.	N APPLICATION (kgN/ha) WEEKS AFTER CUTTING					ERC % CANE						ERF % CANE					
	1	4	8	12	16	1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
6	-	-	160	-	-	12.01	12.87	12.89	12.61	12.92	12.66	13.28	13.93	14.06	14.14	15.27	14.14
12	-	-	60	-	100	12.29	12.65	13.11	12.50	12.73	12.66	13.73	13.77	14.42	14.01	15.41	14.27
9	-	60	-	100	-	11.85	12.86	12.98	12.80	12.71	12.64	13.23	14.03	14.26	14.31	15.32	14.23
8	-	-	-	-	160	11.61	12.69	12.35	12.83	12.14	12.32	12.94	13.77	13.76	14.39	14.87	13.95
5	-	160	-	-	-	11.78	13.30	12.73	12.58	12.52	12.58	13.10	14.32	13.96	14.12	15.07	14.11
10	-	60	-	-	100	11.83	12.83	13.05	12.66	12.58	12.59	13.24	13.90	14.37	14.20	15.14	14.17
2	80	-	-	80	-	12.60	13.05	13.10	12.78	12.50	12.81	13.81	14.11	14.25	14.26	15.12	14.31
7	-	-	-	160	-	11.58	12.82	12.77	12.64	12.64	12.49	12.96	13.93	14.13	14.09	15.25	14.07
4	-	80	-	80	-	11.73	12.88	12.59	12.71	11.98	12.38	13.02	13.99	13.96	14.15	14.84	13.99
3	-	80	80	-	-	12.11	13.18	12.93	12.71	12.61	12.71	13.29	14.23	14.25	14.12	15.24	14.23
11	-	-	60	100	-	11.70	12.95	12.45	12.78	12.63	12.50	13.08	14.07	13.81	14.24	15.22	14.08
1	80	-	80	-	-	11.96	13.04	13.27	13.11	12.64	12.80	13.34	13.99	14.50	14.52	15.25	14.32
SIGNIFICANCE						N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S	N.S.	N.S.	N.S.	N.S.	-
TRIAL MEAN						11.92	12.93	12.85	12.73	12.55	12.60	13.25	14.00	14.14	14.21	15.17	14.15
S.E. PLOT +/-						0.69	0.48	0.50	0.40	0.88	-	0.62	0.40	0.48	0.38	0.52	-
S.E. MEAN +/-						0.31	0.22	0.22	0.18	0.39	-	0.28	0.18	0.22	0.17	0.23	-
C.V.%						5.80	3.75	3.89	3.17	7.01	-	4.68	2.87	3.41	2.70	3.44	-

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Table 3 : ERF Yield and Stalk Data 1R to 5R

TREAT NO.	N APPLICATION (kgN/ha) WEEKS AFTER CUTTING					ERF YIELD (t/ha)						STALKS/HA (X1/1000)					
	1	4	8	12	16	1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
6	-	-	160	-	-	23.64	17.31	16.72	19.92	16.55	18.83	159.10	153.00	176.80	186.60	176.50	170.40
12	-	-	60	-	100	23.69	16.59	18.50	18.41	15.77	18.59	153.40	149.50	171.80	186.30	174.20	167.04
9	-	60	-	100	-	22.13	17.07	17.65	16.45	14.48	17.56	141.00	149.60	173.80	178.40	176.90	163.94
8	-	-	-	-	160	21.60	16.19	18.85	18.74	14.98	18.07	142.80	151.60	179.60	184.40	170.80	165.84
5	-	160	-	-	-	21.72	16.99	17.01	19.46	16.26	18.29	150.90	153.30	174.20	194.40	186.10	171.78
10	-	60	-	-	100	21.96	17.16	18.97	18.31	15.48	18.38	146.80	148.50	175.00	180.60	176.90	165.96
2	80	-	-	80	-	22.82	17.63	16.20	18.44	17.01	18.42	143.80	150.40	170.10	186.70	184.40	167.08
7	-	-	-	160	-	21.33	17.92	19.82	19.45	16.65	19.03	149.10	155.60	178.10	183.70	176.00	168.50
4	-	80	-	80	-	21.33	18.76	18.16	16.58	16.71	18.31	144.10	155.30	175.40	180.80	178.70	166.86
3	-	80	80	-	-	21.66	16.75	19.44	17.65	16.61	18.42	145.70	151.60	179.50	188.50	184.40	169.94
11	-	-	60	100	-	20.70	17.63	18.44	18.52	16.40	18.34	143.80	149.80	176.00	180.10	178.10	165.56
1	80	-	80	-	-	20.70	15.31	18.70	19.42	17.13	18.25	142.30	145.40	177.80	183.70	187.20	167.28
SIGNIFICANCE						N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-
TRIAL MEAN						21.94	17.11	18.20	18.45	16.17	18.37	147.00	151.10	175.70	184.30	179.30	167.48
S.E. PLOT +/-						1.85	1.63	1.89	1.82	1.98	-	10.00	0.67	8.00	7.10	8.30	-
S.E. MEAN +/-						0.83	0.73	0.84	0.82	0.89	-	4.50	0.30	3.60	3.20	3.70	-
C.V.%						8.45	9.54	10.37	9.89	12.26	-	6.80	0.44	4.60	3.80	4.60	-

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Table 4 . Stalk Diameter and Stalk Length Data 1R to 5R

TREAT NO.	N APPLICATION (kgN/ha) WEEKS AFTER CUTTING					STALK DIAMETER (cm)						STALK LENGTH (m)					
	1	4	8	12	16	1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
6	-	-	160	-	-	2.25	2.20	2.10	1.98	2.12	2.13	3.79	2.61	2.38	2.66	2.19	2.72
12	-	-	60	-	100	2.27	2.20	2.20	2.09	2.16	2.18	3.64	2.60	2.45	2.49	2.02	2.64
9	-	60	-	100	-	2.34	2.12	2.10	2.01	2.04	2.12	3.61	2.58	2.33	2.46	1.86	2.57
8	-	-	-	-	160	2.29	2.16	2.14	2.04	2.18	2.16	3.67	2.57	2.62	2.51	2.08	2.69
5	-	160	-	-	-	2.32	2.06	2.10	1.97	2.08	2.11	3.60	2.55	2.48	2.60	2.13	2.67
10	-	60	-	-	100	2.22	2.16	2.22	2.08	2.12	2.16	3.53	2.64	2.45	2.47	1.98	2.61
2	80	-	-	80	-	2.29	2.16	2.10	1.92	2.14	2.12	3.81	2.65	2.25	2.50	2.08	2.66
7	-	-		160	-	2.23	2.22	2.20	2.10	2.08	2.17	3.70	2.76	2.62	2.55	2.10	2.75
4	-	80	-	80	-	2.30	2.12	2.12	1.98	2.12	2.13	3.59	2.69	2.40	2.41	2.13	2.64
3	-	80	80	-	-	2.23	2.12	2.10	1.99	2.10	2.11	2.65	2.55	2.49	2.50	2.12	2.46
11	-	-	60	100	-	2.29	2.12	2.10	2.02	2.06	2.12	3.73	2.62	2.47	2.63	2.13	2.72
1	80	-	80	-	-	2.33	2.14	2.08	2.03	2.06	2.13	3.54	2.45	2.38	2.37	2.11	2.57
SIGNIFICANCE						N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-
TRIAL MEAN						2.28	2.15	2.13	2.02	2.11	2.14	3.66	2.61	2.44	2.51	2.08	2.66
S.E. PLOT +/-						0.11	0.11	0.10	0.12	0.10	-	0.27	0.20	0.16	0.17	0.15	-
S.E. MEAN +/-						0.05	0.05	0.05	0.06	0.04	-	0.12	0.09	0.07	0.07	0.07	-
C.V.%						4.70	5.01	4.91	6.17	4.59	-	7.37	7.65	6.39	6.62	7.38	-

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Table 3 : Foliar N % and P % Data at 22 Weeks 1R to 5R

TREAT NO.	N APPLICATION (kgN/ha) WEEKS AFTER CUTTING					FOLIAR N %						FOLIAR P %					
	1	4	8	12	16	1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
6	-	-	160	-	-	2.39	1.86	1.68	1.84	2.42	2.04	0.22	0.17	0.20	0.17	0.23	0.20
12	-	-	60	-	100	2.32	2.05	2.03	2.02	2.03	2.09	0.18	0.22	0.23	0.20	0.23	0.21
9	-	60	-	100	-	2.29	1.91	1.92	1.84	2.31	2.05	0.19	0.18	0.23	0.17	0.22	0.20
8	-	-	-	-	160	2.37	2.26	2.31	2.43	1.70	2.21	0.19	0.22	0.24	0.20	0.22	0.21
5	-	160	-	-	-	2.27	1.68	1.64	1.75	2.36	1.94	0.19	0.17	0.19	0.17	0.23	0.19
10	-	60	-	-	100	2.33	2.09	2.06	2.06	1.90	2.09	0.18	0.20	0.23	0.18	0.21	0.20
2	80	-	-	80	-	2.36	1.82	1.67	1.82	2.39	2.01	0.18	0.19	0.20	0.19	0.23	0.20
7	-	-	-	160	-	2.37	2.05	1.99	2.13	2.33	2.17	0.19	0.18	0.23	0.19	0.25	0.21
4	-	80	-	80	-	2.32	1.80	1.71	1.73	2.40	1.99	0.19	0.19	0.20	0.17	0.22	0.19
3	-	80	80	-	-	2.39	1.74	1.71	1.67	2.48	2.00	0.19	0.18	0.19	0.18	0.25	0.20
11	-	-	60	100	-	2.21	1.88	1.85	1.89	2.43	2.05	0.17	0.20	0.22	0.17	0.24	0.20
1	80	-	80	-	-	2.36	1.70	1.64	1.76	2.39	1.97	0.19	0.20	0.19	0.17	0.24	0.20
SIGNIFICANCE						N.S.	**	***	***	**	-	*	**	***	**	N.S.	-
TRIAL MEAN						2.33	1.90	1.85	1.91	2.26	2.05	0.19	0.19	0.21	0.18	0.23	0.20
S.E. PLOT +/-						0.09	0.10	0.16	0.10	0.10	-	0.10	0.01	0.01	0.02	0.02	-
S.E. MEAN +/-						0.04	0.04	0.07	0.04	0.05	-	0.01	0.01	0.01	0.01	0.01	-
C.V.%						3.92	5.21	8.43	5.02	4.57	-	7.92	5.51	6.53	8.44	7.91	-

Table 6 . Foliar K % and Ca % Data at 22 Weeks 1R to 5R

TREAT NO.	N APPLICATION (kgN/ha) WEEKS AFTER CUTTING					FOLIAR K %						FOLIAR Ca %					
	1	4	8	12	16	1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
6	-	-	160	-	-	1.37	1.15	0.91	0.92	1.07	1.08	0.40	0.33	0.38	0.29	0.44	0.37
12	-	-	60	-	100	1.31	1.11	1.09	1.14	1.02	1.13	0.36	0.31	0.39	0.29	0.40	0.35
9	-	60	-	100	-	1.35	1.14	1.07	0.91	1.02	1.10	0.40	0.35	0.39	0.31	0.46	0.38
8	-	-	-	-	160	1.46	1.36	1.16	1.05	0.98	1.20	0.38	0.35	0.40	0.32	0.40	0.37
5	-	160	-	-	-	1.39	1.17	0.99	1.01	1.11	1.13	0.39	0.30	0.36	0.29	0.44	0.36
10	-	60	-	-	100	1.38	1.26	1.12	1.07	1.05	1.18	0.38	0.30	0.39	0.32	0.40	0.36
2	80	-	-	80	-	1.35	1.18	0.96	0.81	0.98	1.06	0.38	0.32	0.39	0.25	0.46	0.36
7	-	-	-	160	-	1.42	1.28	1.07	1.01	1.03	1.16	0.38	0.34	0.42	0.32	0.42	0.38
4	-	80	-	80	-	1.31	1.21	0.99	1.00	0.95	1.09	0.39	0.31	0.38	0.29	0.46	0.37
3	-	80	80	-	-	1.27	1.13	0.92	1.04	0.99	1.07	0.40	0.31	0.34	0.28	0.46	0.36
11	-	-	60	100	-	1.32	1.09	0.99	0.95	1.05	1.08	0.34	0.31	0.39	0.31	0.44	0.36
1	80	-	80	-	-	1.31	1.11	0.96	0.76	1.07	1.04	0.39	0.31	0.37	0.27	0.45	0.36
SIGNIFICANCE						N.S.	***	**	***	N.S.	-	N.S.	***	N.S.	**	**	-
TRIAL MEAN						1.35	1.18	1.02	0.97	1.03	1.11	0.38	0.32	0.38	0.30	0.44	0.36
S.E. PLOT +/-						0.10	0.08	0.10	0.10	0.10	-	0.03	0.02	0.03	0.03	0.03	-
S.E. MEAN +/-						0.05	0.40	0.04	0.05	0.04	-	0.01	0.01	0.01	0.01	0.01	-
C.V.%						7.61	6.76	9.64	10.70	9.46	-	8.72	5.64	7.88	9.71	6.89	-

Table 7 Foliar Mg % Data at 22 Weeks and Flowering % 1R to 5R .

TREAT NO.	N APPLICATION (kgN/ha) WEEKS AFTER CUTTING					FOLIAR Mg %						FLOWERING %					
	1	4	8	12	16	1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
6	-	-	160	-	-	0.17	0.16	0.13	0.13	0.19	0.16	60	0	0	0	0	12.00
12	-	-	60	-	100	0.18	0.18	0.15	0.16	0.17	0.17	50	0	0	0	0	10.00
9	-	60	-	100	-	0.19	0.16	0.15	0.18	0.20	0.18	64	0	0	0	0	12.80
8	-	-	-	-	160	0.17	0.17	0.15	0.17	0.14	0.16	78	0	0	0	0	15.60
5	-	160	-	-	-	0.15	0.15	0.13	0.13	0.18	0.15	72	0	0	0	0	14.40
10	-	60	-	-	100	0.17	0.15	0.15	0.17	0.15	0.16	55	0	0	0	0	11.00
2	80	-	-	80	-	0.18	0.16	0.14	0.15	0.19	0.16	76	0	0	0	0	15.20
7	-	-	-	160	-	0.20	0.19	0.15	0.17	0.16	0.17	44	0	0	0	0	8.80
4	-	80	-	80	-	0.17	0.16	0.15	0.14	0.19	0.16	80	0	0	0	0	16.00
3	-	80	80	-	-	0.18	0.15	0.14	0.13	0.19	0.16	84	0	0	0	0	16.80
11	-	-	60	100	-	0.16	0.17	0.15	0.16	0.18	0.16	78	0	0	0	0	15.60
1	80	-	80	-	-	0.16	0.13	0.13	0.15	0.17	0.15	67	0	0	0	0	13.40
SIGNIFICANCE						N.S.	***	N.S.	***	**	-	N.S.	N.S.	N.S.	N.S.	N.S.	-
TRIAL MEAN						0.17	0.16	0.14	0.15	0.18	0.16	67	0	0	0	0	13.40
S.E. PLOT +/-						0.40	0.02	0.02	0.02	0.02	-	26	0	0	0	0	-
S.E. MEAN +/-						0.02	0.01	0.01	0.01	0.01	-	12	0	0	0	0	-
C.V %						21.27	10.30	13.56	10.88	12.85	-	37	0	0	0	0	-

Table 8 : Grouping of Cane and ERC Yield Data 1R to 5R

(a) By Time of Last Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	CANE YIELD (t/ha)						ERC YIELD (t/ha)					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
A : All N by 4 weeks	1	165.81	118.61	121.90	137.86	107.96	130.43	19.52	15.78	15.50	17.33	13.52	16.33
B : All N by 8 weeks	3	165.46	117.09	128.16	133.22	109.97	130.78	19.90	15.25	16.69	17.07	14.03	16.59
C : All N by 12 weeks	5	163.69	126.97	128.16	126.00	107.36	130.44	19.47	16.38	16.37	16.03	13.42	16.33
D : All N by 16 weeks	3	168.53	120.44	132.14	130.16	101.60	130.57	20.08	15.33	16.97	16.49	12.74	16.32
MEAN		165.52	122.17	128.63	129.83	106.62	130.55	19.73	15.78	16.53	16.51	13.41	16.39
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

(a) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	CANE YIELD (t/ha)						ERC YIELD (t/ha)					
First dressing at :		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
E : 1 week	2	160.25	116.91	121.24	131.59	112.42	128.48	19.67	15.28	16.00	17.03	14.16	16.43
F : 4 weeks	5	165.10	123.61	128.76	124.85	105.23	129.51	19.58	16.00	16.55	15.82	13.15	16.22
G : 8 weeks	3	169.72	123.34	126.66	134.14	106.38	132.05	20.37	15.81	16.24	16.94	13.56	16.58
H : 12 weeks	1	164.10	128.87	140.34	138.00	108.99	136.06	19.06	16.49	17.92	17.44	13.89	16.96
I : 16 weeks	1	166.94	117.51	137.02	130.15	100.35	130.39	19.38	14.92	16.92	16.71	12.31	16.05
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

Table 9 : Groupings of ERC % Cane and ERF % Cane Data 1R to 5R

(a) By Time of Last Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	ERC % CANE						ERF % CANE					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
A : All N by 4 weeks	1	11.78	13.30	12.73	12.58	12.52	12.58	13.10	14.32	13.96	14.12	15.07	14.11
B : All N by 8 weeks	3	12.03	13.03	13.03	12.81	12.73	12.73	13.30	14.05	14.27	14.26	15.25	14.23
C : All N by 12 weeks	5	11.89	12.91	12.78	12.74	12.49	12.56	13.22	14.02	14.08	14.21	15.15	14.14
D : All N by 16 weeks	3	11.91	12.72	12.83	12.66	12.49	12.52	13.30	13.82	14.18	14.20	15.14	14.13
MEAN		11.92	12.93	12.85	12.73	12.55	12.60	13.25	14.00	14.14	14.21	15.17	14.15
SIGNIFICANCE		N.S.	AC* AD** BC* BD*	N.S.	N.S.	N.S.	-	N.S.	AB* AC** AD** BD* CD*	N.S.	N.S.	N.S.	-

(a) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	ERC % CANE						ERF % CANE					
First dressing at :		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
E : 1 week	2	12.28	13.05	13.19	12.95	12.57	12.81	13.57	14.05	14.38	14.39	14.16	14.11
F : 4 weeks	5	11.86	13.01	12.86	12.69	12.48	12.58	13.18	14.09	14.16	14.18	13.15	13.75
G : 8 weeks	3	12.00	12.82	12.82	12.63	12.76	12.61	13.36	13.92	14.09	14.13	13.56	13.81
H : 12 weeks	1	11.58	12.82	12.77	12.64	12.64	12.49	12.96	13.93	14.13	14.09	13.89	13.80
I : 16 weeks	1	11.61	12.69	12.35	12.83	12.14	12.32	12.94	13.77	13.76	14.39	12.31	13.43
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

Table 10 : Grouping of ERF Yield and Stalk Data 1R to 5R

(a) By Time of Last Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	ERF YIELD (t/ha)						STALKS PER HECTARE (X1/1000)					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
A : All N by 4 weeks	1	21.72	16.99	17.01	19.46	16.26	18.29	150.9	153.3	174.2	194.2	186.1	171.7
B : All N by 8 weeks	3	22.00	16.46	18.29	19.00	16.76	18.50	149.0	150.0	178.0	185.3	182.7	169.0
C : All N by 12 weeks	5	21.66	17.80	18.05	17.89	16.25	18.33	144.3	152.1	174.7	181.9	178.8	166.4
D : All N by 16 weeks	3	22.42	16.65	18.77	18.49	15.41	18.35	147.7	149.9	175.5	183.7	174.6	166.3
MEAN		21.94	17.11	18.20	18.45	16.17	18.37	146.9	151.1	175.7	184.3	179.3	167.5
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	AB*AC** AD*	N.S.	-

(a) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	ERF YIELD (t/ha)						STALKS PER HECTARE (X1/1000)					
First dressing at :		1E	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
E : 1 week	2	21.76	16.47	17.45	18.93	17.07	18.34	143.0	147.9	174.0	185.2	185.8	167.2
F : 4 weeks	5	21.76	17.35	18.25	17.69	15.91	18.19	145.7	151.7	175.5	183.9	181.0	167.6
G : 8 weeks	3	22.68	17.18	17.89	18.95	16.24	18.59	152.1	150.7	174.9	184.3	176.3	167.7
H : 12 weeks	1	21.33	17.92	17.82	19.45	16.65	18.63	149.1	155.6	178.1	183.7	176.0	168.5
I : 16 weeks	1	21.60	16.19	18.85	18.74	14.98	18.07	142.8	151.6	180.0	184.4	170.8	165.9
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

Table 11 . Grouping of Stalk Diameter and Length Data 1R to 5R

(a) By Time of Last Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	STALK DIAMETER (cm)						STALK LENGTH (m)					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
A : All N by 4 weeks	1	2.32	2.06	2.10	1.97	2.08	2.11	3.60	2.55	2.48	2.60	2.13	2.67
B : All N by 8 weeks	3	2.27	2.15	2.09	2.00	2.09	2.12	3.66	2.54	2.42	2.51	2.13	2.65
C : All N by 12 weeks	5	2.29	2.15	2.12	2.00	2.09	2.13	3.69	2.66	2.41	2.51	2.06	2.67
D : All N by 16 weeks	3	2.26	2.17	2.19	2.07	2.15	2.17	3.62	2.60	2.51	2.49	2.03	2.65
MEAN		2.28	2.15	2.13	2.02	2.11	2.14	3.66	2.61	2.44	2.51	2.08	2.66
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

(a) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	STALK DIAMETER (cm)						STALK LENGTH (m)					
First dressing at :		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
E : 1 week	2	2.31	2.15	2.09	1.97	2.10	2.12	3.68	2.55	2.31	2.44	2.10	2.62
F : 4 weeks	5	2.28	2.12	2.13	2.01	2.09	2.13	3.60	2.60	2.43	2.49	2.04	2.63
G : 8 weeks	3	2.27	2.17	2.13	2.03	2.11	2.14	3.72	2.61	2.43	2.59	2.11	2.69
H : 12 weeks	1	2.23	2.22	2.20	2.10	2.08	2.17	3.70	2.76	2.62	2.55	2.10	2.75
I : 16 weeks	1	2.29	2.16	2.14	2.04	2.18	2.16	3.67	2.57	2.62	2.51	2.08	2.69
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	EH** EI** FH* FI* GH* GI*	N.S.	N.S.	-

Table 12 : Grouping of Foliar N % and P % Dry Matter Data at 22 Weeks 1R to 5R

(a) By Time of Last Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	FOLIAR N %						FOLIAR P %					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
A : All N by 4 weeks	1	2.27	1.68	1.64	1.75	2.36	1.94	0.19	0.17	0.19	0.17	0.23	0.19
B : All N by 8 weeks	3	2.38	1.77	1.68	1.76	2.43	2.00	0.20	0.18	0.19	0.17	0.24	0.20
C : All N by 12 weeks	5	2.31	1.89	1.83	1.88	2.37	2.06	0.18	0.19	0.22	0.18	0.23	0.20
D : All N by 16 weeks	3	2.34	2.14	2.13	2.17	1.88	2.13	0.19	0.21	0.24	0.20	0.22	0.21
MEAN		2.33	1.90	1.85	1.91	2.26	2.05	0.19	0.19	0.21	0.18	0.23	0.20
SIGNIFICANCE		N.S.	AD** BD** CD**	AD** BD** CD**	N.S.	AD** BD** CD**	-	N.S.	AD* BD** CD*	AD* BC* DB*	N.S.	N.S.	-

(a) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	FOLIAR N %						FOLIAR P %					
First dressing at :		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
E : 1 week	2	2.36	1.76	1.66	1.79	2.39	1.99	0.18	0.20	0.20	0.18	0.24	0.20
F : 4 weeks	5	2.32	1.84	1.81	1.81	2.29	2.01	0.19	0.19	0.21	0.18	0.23	0.20
G : 8 weeks	3	2.31	1.93	1.85	1.92	2.29	2.06	0.18	0.20	0.22	0.18	0.23	0.20
H : 12 weeks	1	2.37	2.05	1.99	2.13	2.33	2.17	0.19	0.18	0.23	0.19	0.25	0.21
I : 16 weeks	1	2.37	2.26	2.31	2.43	1.70	2.21	0.19	0.22	0.24	0.20	0.22	0.21
SIGNIFICANCE		N.S.	N.S.	N.S.	EI** FI** GI**	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

Table 13 : Grouping of Foliar K % and Ca % Dry Matter Data at 22 Weeks 1R to 5R

(a) By Time of Last Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	FOLIAR K %						FOLIAR Ca %					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
A : All N by 4 weeks	1	1.39	1.17	0.99	1.01	1.11	1.13	0.39	0.30	0.36	0.29	0.44	0.36
B : All N by 8 weeks	3	1.32	1.13	0.93	0.91	1.05	1.07	0.40	0.31	0.37	0.28	0.45	0.36
C : All N by 12 weeks	5	1.35	1.18	1.02	0.93	1.00	1.10	0.38	0.32	0.39	0.29	0.45	0.37
D : All N by 16 weeks	3	1.38	1.24	1.12	1.09	1.02	1.17	0.38	0.32	0.39	0.31	0.40	0.36
MEAN		1.35	1.18	1.02	0.97	1.03	1.11	0.38	0.32	0.38	0.30	0.44	0.36
SIGNIFICANCE		N.S.	AD*	AD** BC* BD*** CD**	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

(a) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	FOLIAR K %						FOLIAR Ca %					
First dressing at :		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
E : 1 week	2	1.33	1.14	0.96	0.79	1.03	1.05	0.39	0.31	0.38	0.26	0.45	0.36
F : 4 weeks	5	1.34	1.18	1.02	1.01	1.02	1.11	0.39	0.31	0.37	0.30	0.45	0.36
G : 8 weeks	3	1.34	1.11	0.99	1.00	1.05	1.10	0.37	0.31	0.39	0.30	0.43	0.36
H : 12 weeks	1	1.42	1.28	1.07	1.01	1.03	1.16	0.38	0.34	0.42	0.32	0.42	0.38
I : 16 weeks	1	1.46	1.36	1.16	1.05	0.98	1.20	0.38	0.35	0.40	0.32	0.40	0.37
SIGNIFICANCE		N.S.	EH* EI* FI** GH* GI*	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

Table 14 : Groupings of Foliar Mg % Dry Matter Data at 22 Weeks and Flowering % Data 1R to 5R

(a) By Time of Last Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	FOLIAR Mg %						FLOWERING %					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
A : All N by 4 weeks	1	0.15	0.15	0.13	0.13	0.18	0.15	72	0	0	0	0	14.4
B : All N by 8 weeks	3	0.17	0.15	0.13	0.14	0.18	0.15	70	0	0	0	0	14.0
C : All N by 12 weeks	5	0.18	0.17	0.15	0.16	0.18	0.17	68	0	0	0	0	13.6
D : All N by 16 weeks	3	0.17	0.17	0.15	0.17	0.15	0.16	61	0	0	0	0	12.2
MEAN		0.17	0.16	0.14	0.15	0.18	0.16	67	0	0	0	0	13.4
SIGNIFICANCE		N.S.	N.S.	AC** AD** BC*** BD**	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

(a) By Time of First Nitrogen Dressing

GROUPING	NO. OF TREATMENTS	FOLIAR Mg %						FLOWERING %					
First dressing at :		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
E : 1 week	2	0.17	0.14	0.14	0.15	0.18	0.16	72	0	0	0	0	14.4
F : 4 weeks	5	0.17	0.16	0.14	0.15	0.18	0.16	71	0	0	0	0	14.2
G : 8 weeks	3	0.17	0.17	0.14	0.15	0.18	0.16	63	0	0	0	0	12.6
H : 12 weeks	1	0.20	0.19	0.15	0.17	0.16	0.17	44	0	0	0	0	8.8
I : 16 weeks	1	0.17	0.17	0.15	0.17	0.14	0.16	78	0	0	0	0	15.6
SIGNIFICANCE		N.S.	EG* EH** FH*		N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

Table 15 . Grouping by Number and Order of Magnitude of Nitrogen Splits 1R to 5R

(a) Cane and ERC Yield

GROUPING	NO. OF TREATMENTS	CANE YIELD (t/ha)						ERC YIELD (t/ha)					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
No. OF APPLICATIONS :													
J : Single	4	168.76	122.28	129.57	136.73	106.48	132.76	19.84	15.79	16.42	17.31	13.44	16.56
K : Double (80N,80N)	4	161.73	121.47	127.13	126.29	111.59	129.64	19.57	15.83	16.50	16.20	13.90	16.40
L : Double (60N(80N)	4	166.06	122.76	129.20	126.48	101.79	129.26	19.79	15.73	16.67	16.02	12.89	16.22
MEAN		165.52	122.17	128.63	129.83	106.62	130.55	19.73	15.78	16.53	16.51	13.41	16.39
SIGNIFICANCE		N.S	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

(a) ERC % Cane and ERF % Cane

GROUPING	NO. OF TREATMENTS	ERC % CANE						ERF % CANE					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
No. OF APPLICATIONS :													
J : Single	4	11.74	12.92	12.69	12.67	12.55	12.51	13.07	13.99	13.98	14.19	15.12	14.07
K : Double (80N,80N)	4	12.10	13.04	12.97	12.83	12.43	12.67	13.36	14.08	14.24	14.26	15.11	14.21
L : Double (60N(80N)	4	11.92	12.82	12.90	12.68	12.66	12.60	13.32	13.94	14.21	14.19	15.27	14.19
MEAN		11.92	12.93	12.85	12.73	12.55	12.60	13.25	14.00	14.14	14.21	15.17	14.15
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

Table 16 . Grouping by Number and Order of Magnitude of Nitrogen Splits 1R to 5R

(a) ERF Yield and Stalk Counts

GROUPING	NO. OF TREATMENTS	ERF YIELD (t/ha)						STALKS/ha (x 1/1000)					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
No. OF APPLICATIONS :													
J : Single	4	22.07	17.10	18.10	19.39	16.11	18.55	150.5	153.4	177.2	187.2	177.4	169.1
K : Double (60N,80N)	4	21.63	17.11	18.13	18.02	16.87	18.35	144.0	150.7	175.7	184.2	183.7	167.7
L : Double (60N(80N)	4	22.12	17.11	18.39	17.92	15.53	18.21	146.2	149.3	174.1	181.3	177.0	165.6
MEAN		21.94	17.11	18.20	18.45	16.17	18.37	146.9	151.1	175.7	184.3	179.3	167.5
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

(a) Stalk Diameters and Stalk Lengths .

GROUPING	NO. OF TREATMENTS	STALK DIAMETERS (cm)						STALK LENGTHS (m)					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
No. OF APPLICATIONS													
J : Single	4	2.27	2.16	2.14	2.02	2.12	2.14	3.69	2.62	2.53	2.58	2.12	2.71
K : Double (80N,80N)	4	2.29	2.14	2.10	1.98	2.11	2.12	3.65	2.59	2.38	2.45	2.11	2.64
L : Double (60N(80N)	4	2.28	2.15	2.16	2.05	2.10	2.15	3.63	2.61	2.43	2.51	2.00	2.64
MEAN		2.28	2.15	2.13	2.02	2.11	2.14	3.66	2.61	2.44	2.51	2.08	2.66
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

Table 17 : Grouping by Number and Order of Magnitude of Nitrogen Splits 1R to 5R

(a) Foliar N % and P % Dry Matter at 22 Weeks

GROUPING	NO. OF TREATMENTS	Foliar N %						Foliar P %					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
NO. OF APPLICATIONS :													
J : Single	4	2.35	1.96	1.91	2.04	2.20	2.09	0.20	0.19	0.22	0.18	0.23	0.20
K : Double (80N.80N)	4	2.36	1.76	1.68	1.75	2.42	1.99	0.18	0.19	0.20	0.18	0.24	0.20
L : Double (60N/60N)	4	2.29	1.98	1.97	1.95	2.17	2.07	0.18	0.20	0.23	0.18	0.23	0.20
MEAN		2.33	1.90	1.85	1.91	2.26	2.05	0.19	0.19	0.21	0.18	0.23	0.20
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	JK' JL'	N.S.	N.S.	N.S.	N.S.	-

(a) Foliar K% and Foliar Ca%

GROUPING	NO. OF TREATMENTS	Foliar K %						Foliar Ca %					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
NO. OF APPLICATIONS :													
J : Single	4	1.41	1.24	1.03	1.00	1.05	1.15	0.39	0.33	0.39	0.31	0.42	0.37
K : Double (80N,80N)	4	1.31	1.16	0.96	0.90	1.00	1.07	0.39	0.31	0.37	0.27	0.46	0.36
L : Double (60N/60N)	4	1.34	1.15	1.07	1.02	1.04	1.12	0.37	0.32	0.39	0.31	0.43	0.36
MEAN		1.35	1.18	1.02	0.97	1.03	1.11	0.38	0.32	0.38	0.30	0.44	0.36
SIGNIFICANCE		JK'' JL''	N.S.	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	N.S.	-

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Table 16 : Grouping by Number and Order of Magnitude of Nitrogen Splits 1R to 5R

(a) Foliar Mg % Dry Matter at 22 Weeks and Flowering % .

GROUPING	NO. OF TREATMENTS	FOLIAR Mg %						FLOWERING %					
		1R	2R	3R	4R	5R	MEAN	1R	2R	3R	4R	5R	MEAN
No. OF APPLICATIONS													
J : Single	4	0.17	0.17	0.14	0.15	0.17	0.16	64	0	0	0	0	13
K : Double (80N,80N)	4	0.17	0.15	0.14	0.14	0.18	0.16	77	0	0	0	0	15
L : Double (60N(60N)	4	0.17	0.17	0.15	0.17	0.17	0.17	62	0	0	0	0	12
MEAN		0.17	0.16	0.14	0.15	0.18	0.16	67	0	0	0	0	13
SIGNIFICANCE		N.S.	N.S.	N.S.	N.S.	N.S.	-	JK* JL*	N.S.	N.S.	N.S.	N.S.	-