

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

EXPERIMENT RESULT

CAT.NO.: 1827

CODE: K9/90/Sw UBO 'K'

TITLE: LEVELS OF POTASSIUM APPLICATION FOR EARLY SEASON CANE ON A 'K' SET SOIL

1. PARTICULARS OF PROJECT

This crop	: 6th ratoon	Soil Analysis:	14/11/1990				
Site	: Ubombo Ranches Field Block J	pH	OM%	Clay%	Silt%	Sand%	
		6.89	2.89	63.0	14.4	21.2	
Region	: Northern Irrigated (Swaziland)	ppm					
		P	Ko	Ca	Mgo	(Ca+Mg)/K	
		62	283	6993	1405	35	
Design	: Randomized block, 6 replications	CEC	: 52.4 meq/100g soil				
		KDI	: 0.87				
Soil Set/Series:	'K' Kwezi	Date	: 22/06/90-03/06/91				
Variety	: N14	Age	: 11.25 months				
Fertilizer	: N P K	Rainfall	: 497 mm				
Total (kg/ha)	: 160 40 See Treatment	Irrigation:	989 mm				
		Total	: 1486 mm				

2. OBJECTIVES

- 2.1 To test the new FAS soil-K threshold for winter cut cane grown on a heavy clay soil under irrigated conditions.
- 2.2 To determine the effect of low leaf-K content in Sept - Oct on yield and confirm the validity of downgrading leaf-K threshold for winter harvested cane.

3. TREATMENTS

3.1 Whole plots (granular application)

Ko \_\_\_\_\_ K1 \_\_\_\_\_ K2  
0                    150                    300 kg K ha<sup>-1</sup>

Potassium as KCl (50 % K) was surface broadcast on 12/7/1990, 3 weeks after harvest.

### 3.2 Notes on Treatments

2

Nitrogen as Urea (46 % N) at the rate of 160 kg N ha<sup>-1</sup> was top-dressed on the cane row on 02/07/1990, 2 weeks after harvest.

Phosphorus as Single Super (10.5 % P) was applied at the rate of 40 kg P ha<sup>-1</sup> was broadcasted on the soil surface on 19/08/1990, 2 months after harvest.

### 3.4 Notes on soil sampling

Topsoil: 40 cores were taken from each plot at a ratio of 16 on row to 24 interrow (ie. 1:1.5).

Subsoil: 20 cores were taken from 3 selected plots in each of the control and 300 kg K ha<sup>-1</sup> treatments at a rate of 8 on row to 12 interrow (1:1.5).

## 4. RESULTS

### 4.1 Soil Analysis

Table 1: Properties of the soil profile - November 1990

Depth (cm)	pH	Clay %	OM %	CEC meq/100g soil	TCEC meq/100g clay	KDI
0-15	7.0 (0.03)	63.0 (0.78)	2.89 (0.17)	52.43 (0.61)	83.22	0.87 (0.033)
20-30	7.5 (0.12)	63.4 (0.75)	2.79 (0.05)	56.02 (0.66)	88.36	0.77 (0.040)
40-50	8.1 (0.03)	63.9 (0.17)	2.17 (0.17)	58.77 (0.76)	91.97	0.78 (0.040)

( ) Standard error

Note: Samples taken after fertilization in 3 selected control plots

Table 2: K, Ca, Mg status (ppm) of the soil profile - November 1990

Depth (cm)	Control			
	K	Ca	Mg	(Ca+Mg)/K
0-15	280 (6)	7013 (99)	1499(128)	30
20-30	239(15)	7703(577)	1469 (9)	38
40-50	166(12)	7987(454)	1442 (18)	57

( ) Standard error

Note: Samples taken at 4.75 months after fertilization in 3 selected control plots

Table 3: K, Ca, Mg status (ppm) of the topsoil - November 1990

Treatment	K	Ca	Mg	(Ca+Mg)/K
	ppm			
K <sub>0</sub> Control	282	6993	1404	30
K <sub>1</sub> 150 kg K ha <sup>-1</sup>	389	7063	1424	22
K <sub>2</sub> 300 kg K ha <sup>-1</sup>	472	6965	1406	18
LSD (0.05)	59	343	208	
(0.01)	85	488	296	
Significance	**	NS	NS	
Mean	381	7007	1412	
SE one plot	46	266	162	
CV %	12.2	3.8	11.5	

## 4.2 Harvest Data

Table 4: Cane Yield, Sucrose % Cane and Sucrose Yield

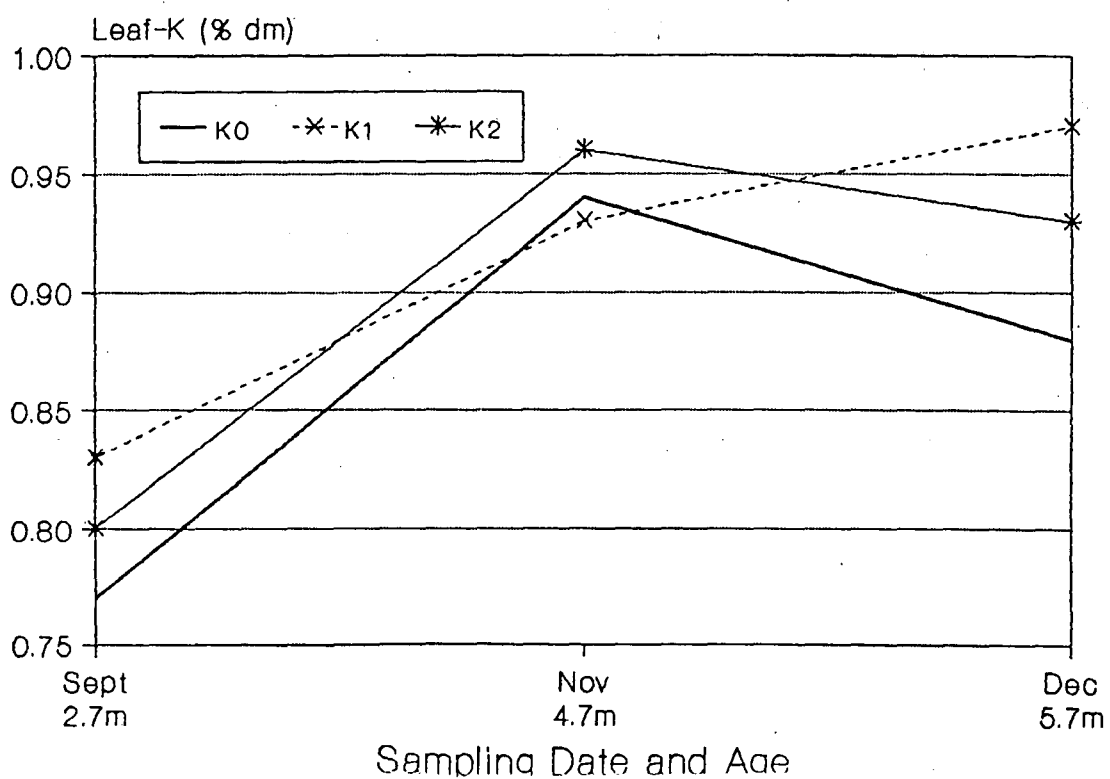
Treatment	TC ha <sup>-1</sup>	Sucrose % Cane	T Suc ha <sup>-1</sup>
K <sub>0</sub> Control	111	12.96	14.4
K <sub>1</sub> 150 kg K ha <sup>-1</sup>	107	13.26	14.2
K <sub>2</sub> 300 kg K ha <sup>-1</sup>	111	13.08	14.6
LSD (0.05)	13	0.42	2.0
(0.01)	19	0.60	2.8
Significance	NS	NS	NS
Mean	110	13.10	14.4
SE one plot	10	0.33	1.5
CV %	9.3	2.49	10.8

## 4.3 Leaf Analysis

Table 5: Leaf Analysis (% dm) at 4.75 months in November

Treatment	N	P	K	Ca	Mg
K <sub>0</sub> Control	1.89	0.22	0.94	0.35	0.35
K <sub>1</sub> 150 kg K ha <sup>-1</sup>	1.92	0.21	0.93	0.37	0.35
K <sub>2</sub> 300 kg K ha <sup>-1</sup>	1.92	0.22	0.96	0.39	0.32
LSD (0.05)	0.081	0.042	0.20	0.057	0.070
(0.01)	0.12	0.071	0.28	0.082	0.10
Significance	NS	NS	NS	NS	NS
Mean	1.91	0.22	0.94	0.37	0.34
SE one plot	0.062	0.0081	0.15	0.050	0.053
CV %	3.2	3.7	16.3	13.5	15.5

Figure 1: Effect of season on Leaf-K content



## 5. COMMENTS

### 5.1 Soil Analysis

Soil-K status of the control was above the new FAS threshold for soils containing more than 40 % clay. The (Ca + Mg)/K ratio, however, was high indicating that the availability of K could be limited by the high content of Ca and Mg.

Increasing K rates increased soil-K status significantly and reduced the (Ca + Mg)/K ratio (Table 3).

Sampling at depth showed the difference in K content between the 0-15 and 40-50 cm layers to be large, indicating that leaching of K in this soil was slow.

### 5.2 Harvest Data

#### Cane Yield

K treatments had no effect on cane yield.

#### Cane Quality

The effects of K treatments on sucrose content were variable and non significant.

#### Sucrose Yield

The effect of K treatments on sucrose yield were variable and non significant.

### 5.4 Leaf Analysis

Leaf analysis in November showed that the K content of the control was well above the new FAS threshold for winter cut N14. Content of the other nutrient was also above threshold (Table 5).

Leaf-K in September was characteristically depressed but the K content of the control remained above the new FAS threshold (Appendix 1).

Increasing K rates tended to increase leaf-K content but the responses were not significant (Appendix 1). This is surprising as one would expect 300 kg K ha<sup>-1</sup> to be sufficient to induce large differences in K uptake. The apparent lack of effect of the K treatments on leaf-K might indicate that surface applied K is positionally unavailable to the cane and might account for the lack of yield response.

## 6. CONCLUSION

- \* There were no yield responses in this trial.
- \* The new soil-K and leaf-K threshold appeared to have been adequate for this soil. Caution is necessary as it was noted that the lack of yield response could have been the result of the surface applied K being positionally unavailable.

- \* Analysis at depth showed that leaching of K was slow in this soil and questions the effectiveness of surface application of K fertilizer as means of replenishing the root zone with K.
- \* This trial has been continued into the 7<sup>th</sup> ratoon with a view to assessing the merit of tyne cultivation as technique for incorporating K.

PCH/fkd  
10.03.92

### Appendix 1

#### Effect of season on leaf-K content (% dm)

Sampling Date	17/09/90	08/11/90	14/12/90
Cane Age	2.75 m	4.75 m	5.75 m
K <sub>0</sub> Control	0.77	0.94	0.88
K <sub>1</sub> 150 kg K ha <sup>-1</sup>	0.83	0.93	0.97
K <sub>2</sub> 300 kg K ha <sup>-1</sup>	0.80	0.96	0.93
LSD (0.05)	0.11	0.20	0.15
(0.01)	0.16	0.28	0.21
Significance	NS	NS	NS
Mean	0.80	0.94	0.92
SE one plot	0.092	0.15	0.11
CV %	11.5	16.3	12.3

#### Effect of season on leaf-Ca content (% dm)

K <sub>0</sub> Control	0.57	0.35	0.42
K <sub>1</sub> 150 kg K ha <sup>-1</sup>	0.57	0.37	0.39
K <sub>2</sub> 300 kg K ha <sup>-1</sup>	0.57	0.38	0.43
Mean	0.57	0.37	0.41

#### Effect of season on leaf-Mg content (% dm)

K <sub>0</sub> Control	0.38	0.35	0.31
K <sub>1</sub> 150 kg K ha <sup>-1</sup>	0.37	0.35	0.29
K <sub>2</sub> 300 kg K ha <sup>-1</sup>	0.33	0.32	0.28
Mean	0.36	0.34	0.29

SOUTH AFRICAN SUGAR INDUSTRY  
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EXPERIMENT RESULT

CODE: K9/90/Sw UBO 'K'

CAT No: 1827

TITLE: LEVELS OF POTASSIUM APPLICATION FOR EARLY SEASON CANE ON A 'K' SET SOIL

1. PARTICULARS OF PROJECT

This crop	: 7th ratoon	Soil Analysis:	14/11/1991			
Site	: Ubombo Ranches Field Block J	OM%	Clay%	Silt%	Sand%	
		2.89	63.0	14.4	21.2	
Region	: Northern Irrigated (Swaziland)	ppm				
		P	K <sub>o</sub>	Ca <sub>o</sub>	Mg <sub>o</sub>	(Ca+Mg)/K
		62	283	6993	1405	35
Design	: Randomized block, 6 replications	CEC	: 52.4 meq/100g soil			
		KDI	: 0.87			
Soil Set/Series:	'K' Kwezi	Date	: 03/06/91-02/06/92			
Variety	: N14	Age	: 12 months			
Fertilizer	: N      P      K	Rainfall	: 356 mm			
Total (kg/ha)	: 160    40    See Treatment	Irrigation:	1044 mm			
		Total	: 1400 mm			

2. OBJECTIVES

- 2.1 To test the new FAS soil-K threshold for winter cut cane grown on a heavy clay soil under irrigated conditions.
- 2.2 To determine the effect of low leaf-K content in Sept - Oct on yield and confirm the validity of downgrading leaf-K threshold for winter harvested cane.

3. TREATMENTS

3.1 Whole plots (granular application)

K<sub>0</sub> ————— K<sub>1</sub> ————— K<sub>2</sub>  
0                    150                    300 kg K ha<sup>-1</sup>

Potassium as KCl (50 % K) was broadcast on the surface weeks after harvest.

### 3.2 Notes on Treatments

Nitrogen as Urea (46 % N) was applied at a rate of 160kg N/ha. This was divided into two dressings with 100kg N/ha applied 5 weeks after harvest and 60kg N/ha applied 15 weeks after harvest.

Due to high soil P values, no Phosphorus was applied in 1991.

### 3.4 Notes on soil sampling

Topsoil: 40 cores were taken from each plot at a ratio of 16 on row to 24 interrow (ie. 1:1.5).

## 4. RESULTS

### 4.1 Soil Analysis

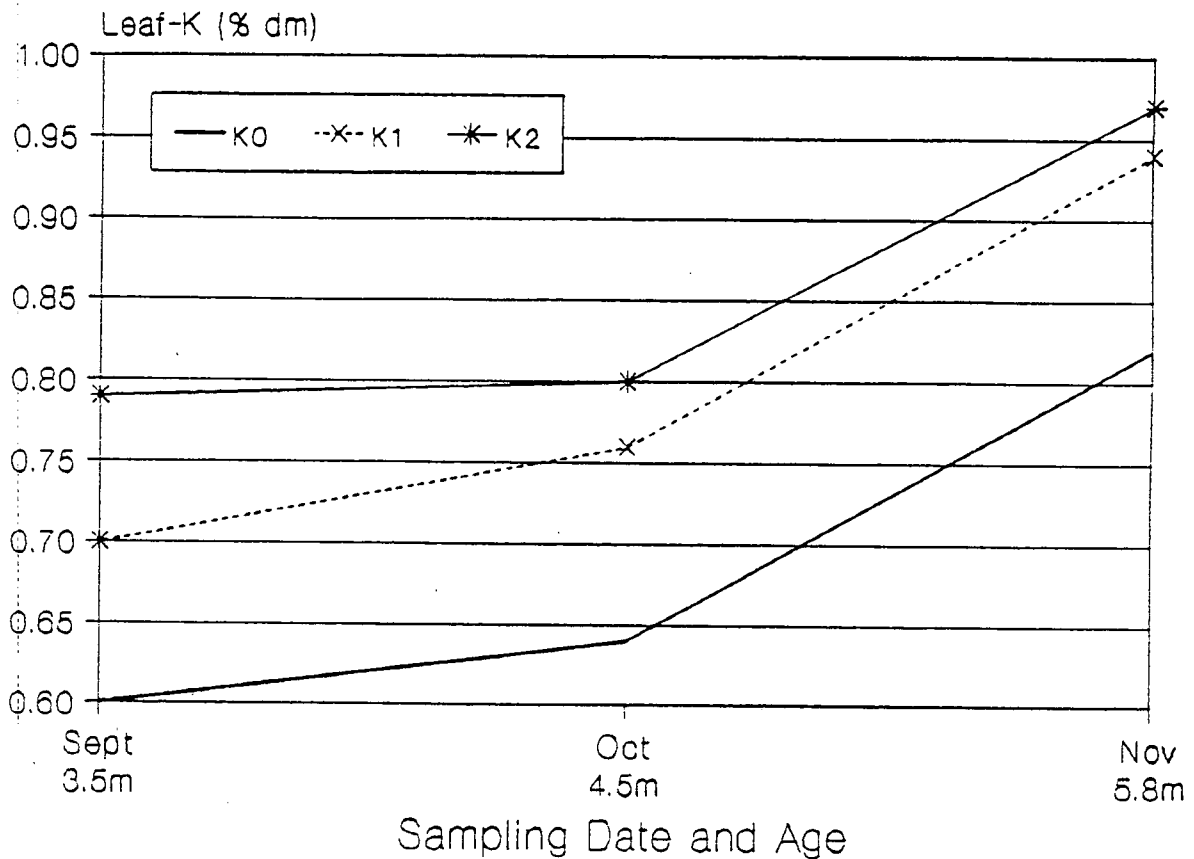
Table 1: pH, K, Ca and Mg Status (ppm) of the Topsoil - January 1992

Treatment	pH	P K Ca Mg				(Ca+Mg)/K
		ppm				
K <sub>0</sub> Control	7.0	53	252	7625	1476	37.0
K <sub>1</sub> 150 kg K ha <sup>-1</sup>	6.9	45	288	7493	1402	31.6
K <sub>2</sub> 300 kg K ha <sup>-1</sup>	6.9	52	405	7363	1372	21.9
LSD (0.05)	0.16	11.5	47.2	544.3	95.3	5.9
Significance	NS	NS	*	NS	NS	*
Mean	6.9	50	316	7490	1417	30
S.E.D. ±	0.07	5.17	21.20	244.30	42.80	2.64
CV %	1.8	18	11.6	5.6	5.2	15.2

### 4.2 Leaf Analysis

Table 2: Third Leaf Analysis (% dm) at 3.5, 4.5 and 5.8 Months

Treatment	N			P			K			Ca			Mg		
	Sept	Oct	Nov	Sept	Oct	Nov	Sept	Oct	Nov	Sept	Oct	Nov	Sept	Oct	Nov
K <sub>0</sub> Control	2.28	2.04	1.93	0.21	0.20	0.23	0.60	0.64	0.82	0.68	0.56	0.47	0.46	0.37	0.40
K <sub>1</sub> 150 kg K ha <sup>-1</sup>	2.27	2.08	1.92	0.22	0.20	0.23	0.70	0.76	0.94	0.76	0.58	0.58	0.43	0.33	0.37
K <sub>2</sub> 300 kg K ha <sup>-1</sup>	2.26	2.00	1.91	0.22	0.20	0.23	0.79	0.80	0.97	0.69	0.57	0.54	0.41	0.30	0.34
LSD (0.05)	0.10	0.12	0.08	0.00	0.00	0.00	0.12	0.12	0.12	0.46	0.08	0.16	0.08	0.04	0.04
Significance	NS	NS	NS	NS	NS	NS	NS	‡	NS	NS	NS	NS	NS	‡	‡
Mean	2.27	2.04	1.92	0.22	0.20	0.23	0.70	0.72	0.91	0.71	0.57	0.52	0.43	0.33	0.37
SE of Difference	0.04	0.05	0.04	0.00	0.00	0.00	0.05	0.05	0.05	0.20	0.04	0.07	0.04	0.01	0.02
CV %	3.54	4.34	4.29	6.30	4.27	4.43	13.54	12.95	10.71	50.48	10.77	21.40	4.42	10.47	8.95

Figure 1: Effect of Season on Leaf K Content

#### 4.3 Harvest Data

Table 4: Cane Yield, Sucrose % Cane and Sucrose Yield

Treatment	TC ha <sup>-1</sup>	Sucrose % Cane	T Suc ha <sup>-1</sup>
K <sub>0</sub> Control	95	12.6	13.3
K <sub>1</sub> 150 kg K ha <sup>-1</sup>	89	11.7	13.1
K <sub>2</sub> 300 kg K ha <sup>-1</sup>	101	13.3	13.2
LSD (0.05)	14.02	1.78	0.58
Significance	NS	NS	NS
Mean	94.9	12.5	13.2
SE one plot	6.29	0.80	0.21
CV %	11.5	11.0	3.5

## 5. COMMENTS

### 5.1 Soil Analysis

Soil K levels of the control plots in this trial were higher than the FAS threshold value of 225 ppm (63 % clay) and no yield response was expected. K levels in the various treatments differed significantly ( $P = 0.05$ ), reflecting the fact that different amounts of K had been applied to the soil. In spite of high K values measured, Ca+Mg/K ratios were well above the proposed ratio level of 15, indicating a low availability of K in the plant.



## 5.2 Leaf Analysis

Leaf analysis in September, October and November showed satisfactory levels for all nutrients, with the exception of Potassium. Leaf K levels of all treatments were lower than 0.85% dm (interim threshold for winter cut cane), in September and October but increased above this level in November. Leaf K levels were improved by the application of K in all three months and reflected the amounts applied, and statistically significant differences in leaf K levels were noted in October (table 2). Leaf Mg values were decreased by applications of K and statistically significant differences occurred in October and November (figure 1).

## 5.3 Harvest Data

No statistically significant differences in terms of cane yields, sucrose yields or sucrose content occurred between treatments and no consistent pattern of response occurred. However, the highest cane and sucrose yields were obtained from the highest treatment (i.e. 300 kg K/ha).

## 6. CONCLUSION

- \* High soil K levels were measured in the controls of this trial and it was not expected that yields would be increased with increased applications of K.
- \* Leaf K levels in the control treatments were below both the interim (0.85 % dm) and the official (1.05 % dm) threshold levels in September, October and November and using this criterion, a yield improvement was expected.
- \* Applications of K did not lead to statistically significant yield increases in this trial, despite the fact that leaf K levels were improved by treatments.
- \* This trial will be continued and is now its 7<sup>th</sup> ratoon.

AJD/fkn  
25.01.93

SOUTH AFRICAN SUGAR INDUSTRY AGRONOMISTS' ASSOCIATION

Cat. No.: 1827

TERMINAL REPORT

CODE: K9/90/Sw/Ubo 'K'

TITLE: LEVELS OF POTASSIUM APPLICATION FOR EARLY SEASON CANE ON A 'K' SET SOIL

1. PARTICULARS OF PROJECT

This crop	: 8th Ratoon	Soil Analysis:	05/06/92		
Site	: Ubombo Ranches Field Block J	pH	OM%	Clay %	
		6.5	2.9	63.0*	
Region	: Northern Irrigated (Swaziland)	ppm (control)			
		P	K	Ca	Mg (Ca+Mg)/K
		63	265	9198	1548 41
Soil Set/Series	: 'K' Kwezi	CEC	: 52.4meq/100g soil*		
Design	: Randomised block 6 replications	KDI	: 0.87*		
Variety	: N14	Age	: 11.9 months		
		Date:	: 02/06/92 -28/05/93		
Fertilizer	: N P K	Rainfall	: 349 mm		
Total	: 160 20 Treatment	Irrigation:	: 1073 mm		
		Total	: 1422 mm		

\* Analysed November 1990

2. OBJECTIVES

- 2.1 To test the new FAS soil K threshold for winter cut cane grown on a heavy clay soil under irrigated conditions.
- 2.2 To determine the effect of low leaf K content in Sept. - Oct. on yield and to confirm the validity of downgrading leaf K threshold for winter harvested cane

3. TREATMENTS

3.1 Notes on Treatments

<u>K0</u>	<u>K1</u>	<u>K2</u>
0	150	300 kg K/ha

Potassium as KCl (50% K) was broadcast 1 week after harvest.

### 3.2 Notes on Fertilizer

Nitrogen (Urea, 46% N) was applied on the cane row at 160 kg N/ha in two dressings: 53kg N/ha was applied 10 days after harvest and 107 kg N/ha, 3.7 months later.

Phosphorus (Superphosphate, 10.5% P), was applied on the cane row at 20 kg P/ha, 2 weeks after harvest.

### 3.3 Notes on Soil Sampling

Topsoil: 40 cores were taken in each plot at a ratio of 16 on row to 24 interrow (i.e. 1:1.5).

Subsoil: 20 cores were taken in 3 randomly selected plots of the control and K2 treatment, at a ratio of 8 on row to 12 interrow (i.e. 1:1.5).

## 4. RESULTS

### 4.1 Soil Analysis

Table 1: pH, P, K, Ca and Mg status of the topsoil - June 1992

Treatment	pH	ppm				(Ca+Mg)/K
		P	K	Ca	Mg	
Control	6.5	63	265	9198	1548	41
K1 - 150 kg K/ha	6.7	60	305	8522	1545	33
K2 - 300 kg K/ha	6.7	78	429	8690	1471	24
LSD (0.05)	0.33	19	36	1459	165	6
Significance	NS	NS	**	NS	NS	**
Mean	6.6	67	333	8803	1521	33
SE Diff. $\pm$	0.15	8.6	16.0	654.7	74.1	2.7
CV%	3.9	22.3	8.3	12.9	8.4	14.5

Table 2: P, K, Ca and Mg status of the soil profile - December 1992

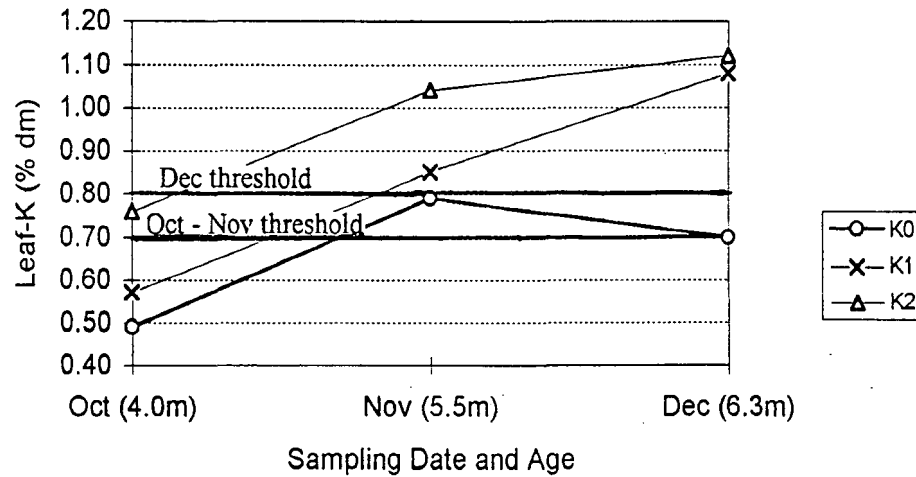
Depth (cm)	K0 - Control					K2 - 300 kg K/ha				
	(ppm)					(ppm)				
	P	K	Ca	Mg	(Ca+Mg)/K	P	K	Ca	Mg	(Ca+Mg)/K
0 - 15	64	234	8097	1581	41	82	371	7893	1526	25
20 - 30	66	173	8913	1423	60	82	320	9000	1441	33
40 - 50	69	175	9910	1418	65	55	207	9387	1470	52

### 4.2 Leaf Analysis

Table 3: Third leaf nutrient analysis (% dm) in October, November and December

Treatment	%dm														
	October (4 months)					November (5.5 months)					December (6.3 months)				
	N	P	K	Ca	Mg	N	P	K	Ca	Mg	N	P	K	Ca	Mg
Control	1.91	0.19	0.49	0.54	0.46	1.83	0.20	0.79	0.55	0.35	1.64	0.21	0.70	0.52	0.34
K1 - 150 kg K/ha	1.93	0.19	0.57	0.51	0.46	1.78	0.21	0.85	0.48	0.32	1.61	0.21	1.08	0.45	0.29
K2 - 300 kg K/ha	1.90	0.20	0.76	0.48	0.39	1.78	0.20	1.04	0.46	0.28	1.61	0.20	1.12	0.40	0.25
LSD (0.05)	0.06	0.10	0.12	0.11	0.09	0.10	0.02	0.22	0.15	0.10	0.08	0.01	0.25	0.08	0.05
Significance	NS	*	**	NS	NS	NS	NS	NS	NS	NS	NS	NS	**	*	**
Mean	1.91	0.20	0.60	0.51	0.44	1.79	0.20	0.90	0.49	0.31	1.62	0.21	0.97	0.46	0.30
SE Diff. $\pm$	0.03	0.00	0.06	0.05	0.04	0.05	0.01	0.10	0.07	0.05	0.04	0.00	0.11	0.03	0.02
CV%	2.4	2.9	15.9	16.3	16.8	4.4	6.4	18.6	22.9	25.3	4.0	4.7	20.0	13.1	12.1

Figure 1:      The effect of season on leaf K content



#### 4.3 Harvest Data

Table 4: Cane yield, sucrose % cane and sucrose yield

Treatment	TCane/ha	Suc. % Cane	TSuc/ha
Control	81	15.48	12.5
K1 150 kg K/ha	90	15.82	14.2
K2 300 kg K/ha	89	15.88	14.2
LSD (0.05)	11	0.43	1.8
Significance	NS	NS	NS
Mean	87	15.73	13.6
SE Diff ±	5.0	0.19	0.8
CV %	10.0	2.1	10.2

## 5. COMMENTS

### 5.1 Soil Analysis

Soil K levels of the control were above FAS of 225ppm before fertilization (soil >40% clay) while soil K levels of treatments receiving K were well above the threshold level. A response to K application was therefore not expected (table 1).

High Ca and Mg levels and a resultant high Ca+Mg/K ratio indicated that K uptake might be inhibited at this site (tables 1&2).

Soil K levels decreased with depth, while Ca levels increased (table 2).

### 5.2 Leaf Analysis

Leaf P, Ca and Mg levels were generally satisfactory at this site. Leaf N levels declined from above the FAS threshold level in October to levels of deficiency in November and December (table 3).

Leaf K levels of the control were below 0.70 %dm (current threshold for N14 in October and November) in October, suggesting a possible response to K application, but increased to levels above threshold in November. In December, leaf K levels of the control declined below 0.80 %dm (current threshold for December) again suggesting that a response to K application could be expected (table 3, figure 1).

Leaf K levels for treatments receiving K were below the threshold in October but increased to levels above the respective thresholds in the following months. Leaf K levels of the K2 treatment were consistently higher than that of the K1 treatment.

There were no apparent effects on the uptake of N, Ca and Mg in October and November. However, in December, Ca and Mg levels of treatments receiving K were significantly lower than that of the control.

### 5.3 Harvest Data

Cane and sucrose yields as well as cane quality were substantially increased by applications of K although responses were not statistically significant. There were no differences between the yields of the two K treatments (table 4).

## 6. CONCLUSIONS

- Soil K levels in the control treatment were above the current threshold value and no yield response to K application was expected.
- Leaf K levels of the control was below threshold in two of the three months sampled, suggesting that a response to K applications was possible.
- Both cane and sucrose yields were increased considerably by the application of K, indicating that the soil K threshold (225ppm) for this heavy clay soil might be too low.
- Yield responses obtained in this trial confirm current leaf K thresholds for this variety in October and December.
- This trial has been terminated and a summary of results for the 6th to 8th ratoon crops is attached.

DMZ/AJD/fkn  
07.12.93

**TERMINAL REPORT SUMMARY: TRIAL K9/90/Sw/UBO 'K'**

**6th to 8th ratoon**

**Table 1: Properties of the soil profile - November 1990**

Depth (cm)	pH	Clay %	OM %	CEC meq/100g soil	TCEC meq/100g soil	KDI
0-15	7.0	63.0	2.89	52.43	83.22	0.87
20-30	7.5	63.4	2.79	56.02	88.36	0.77
40-50	8.1	63.9	2.17	58.77	91.97	0.78

Note: Samples taken after fertilization in 3 selected control plots.

**Table 2: K, Ca and Mg status (ppm) of the soil profile - 6th and 8th ratoon**

Treatment (kg K/ha)	November 1990 - 6th Ratoon				December 1992 - 8th Ratoon							
	K0 (1)				K0 (2)				K2			
	K	Ca	Mg	(Ca+Mg)/K	K	Ca	Mg	(Ca+Mg)/K	K	Ca	Mg	(Ca+Mg)/K
0-15	280	7013	1499	30	234	8097	1581	41	371	7893	1526	25
20-30	239	7703	1469	38	173	8913	1423	60	320	9000	1441	33
40-50	166	7987	1442	57	175	9910	1418	65	207	9387	1470	52

NB: (1) Samples taken from 3 selected plots in the control after fertilization (6th ratoon).

(2) Samples taken from 3 selected plots in the control and treatment of 300 kg K/ha after fertilization in the 8th ratoon.

**Table 3: Third leaf nutrient analysis (% dm) at various ages - 6th to 8th ratoon**

Nutrient	mth	1990/91				1991/92				1992/93										
		Age (mths)	Treatment			Age (mths)	Treatment			Age (mths)	Treatment									
			K0	K1	K2		K0	K1	K2		K0	K1	K2							
N	Sept	2.75	2.45	2.46	2.48	Sept	3.50	2.28	2.27	2.26	Oct	4.00	1.91	1.93	1.90					
	Oct	4.75	1.89	1.92	1.92	Oct	4.50	2.04	2.08	2.00										
	Nov	5.75	1.92	1.93	1.97	Nov	5.80	1.93	1.92	1.91						Nov	5.50	1.83	1.78	1.78
	Dec					6.30	1.64	1.61	1.61											
P	Sept	2.75	0.29	0.28	0.29	Sept	3.50	0.21	0.22	0.22	Oct	4.00	0.19	0.19	0.20					
	Oct	4.75	0.22	0.21	0.22	Oct	4.50	0.20	0.20	0.20										
	Nov	5.75	0.22	0.22	0.22	Nov	5.80	0.23	0.23	0.23						Nov	5.50	0.20	0.21	0.20
	Dec					6.30	0.21	0.21	0.20											
K	Sept	2.75	0.77	0.84	0.80	Sept	3.50	0.60	0.70	0.79	Oct	4.00	0.49	0.57	0.76					
	Oct	4.75	0.94	0.83	0.96	Oct	4.50	0.64	0.76	0.80										
	Nov	5.75	0.88	0.97	0.93	Nov	5.80	0.82	0.94	0.97						Nov	5.50	0.79	0.85	1.04
	Dec					6.30	0.70	1.08	1.12											
Ca	Sept	2.75	0.57	0.57	0.57	Sept	3.50	0.68	0.76	0.69	Oct	4.00	0.54	0.51	0.48					
	Oct	4.75	0.35	0.37	0.39	Oct	4.50	0.56	0.58	0.57										
	Nov	5.75	0.42	0.39	0.43	Nov	5.80	0.47	0.58	0.54						Nov	5.50	0.55	0.48	0.46
	Dec					6.30	0.52	0.45	0.40											
Mg	Sept	2.75	0.38	0.37	0.33	Sept	3.50	0.46	0.43	0.41	Oct	4.00	0.46	0.46	0.39					
	Oct	4.75	0.35	0.35	0.32	Oct	4.50	0.37	0.33	0.30										
	Nov	5.75	0.31	0.29	0.28	Nov	5.80	0.40	0.37	0.34						Nov	5.50	0.35	0.32	0.28
	Dec					6.30	0.34	0.29	0.25											

Table 4: Cane yield, sucrose % cane and sucrose yield - 6th to 8th ratoon

Treatment	6th ratoon			7th ratoon			8th ratoon		
	(11.25 months)			(12 months)			(11.9 months)		
	TC/ha	Suc % Cane	TS/ha	TC/ha	Suc % Cane	TS/ha	TC/ha	Suc % Cane	TS/ha
Control	111	12.96	14.4	95	12.6	13.3	81	15.48	12.5
K1 150 kg K/ha	107	13.26	14.2	89	11.7	13.1	90	15.82	14.2
K2 300 kg K/ha	111	13.08	14.6	101	13.3	13.2	89	15.88	14.2
SED ±	5.8	0.19	0.9	6.3	0.8	0.3	5.0	0.19	0.8
Mean	110	13.10	14.4	95	12.5	13.2	8.7	15.73	13.6
Significance	NS	NS	NS	NS	NS	NS	NS	NS	NS
CV %	9.3	2.49	10.8	11.5	11.0	3.5	10.0	2.1	10.2

Table 5: Summary of rainfall and irrigation figures - 6th to 8th ratoon

Crop	Season	Period	Rainfall (mm)	Irrigation (mm)	Total (mm)
6th R	1990/91	22/06/90 - 03/06/91	497	989	1486
7th R	1991/92	03/06/91 - 02/06/92	356	1044	1400
8th R	1992/93	02/06/92 - 28/05/93	349	1073	1422
Mean			401	1035	1436