NINTH PROGRESS REPORT ON EXPERIMENTS AT UMFOLOZI.

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During the season five experiments were reaped on Farm 16, Umfolozi. The variety trial on U.L.O.A. estates was also reaped again. The following tables give all the available data concerning each experiment. Unfortunately, owing to pressure of other work at the Experiment Station, it was not possible for Mr. Kirkwood to be at Umfolozi during the whole time the experiments were being reaped. This meant that it was not possible to do the usual full tests on as many samples of the canes, and explains why the figures for fibre per cent. cane, reducing sugar ratio, etc., are not given for some of the experiments.

UMFOLOZI EXPERIMENTS Nos. 3 and 4.—Now combined as a Fertilizer Trial on Old Ratoons.

Variety P.O.J.2725. Fourth Fertilized Ratoons, harvested at 12 months old, 20th—27th November, 1942.

	Control no fertilizer.	400 lbs. per acre ammonium sulphate in two top-dressings.	800 lbs. per acre ammonium sulphate in two top-dressings.
Tons cane per acre	29.89	35.86	38.74
Tons pol. (sucrose) per acre	4.48	5.14	5.51
Increase tons pol. per acre over controls	—	0.66	1.03
Percentage tons pol. per acre compared with controls	100.0	114.7	123.0
Pol. (sucrose) per cent. cane	15.00	14.32	14.24
Purity	92.3	90.6	91.7
Total value of sucrose per acre at £5.71 per ton	£25 11 7	£29 7 0	£31 9 3
Gross value of gain or loss compared with controls for this crop	—	£3 15 5	£5 17 8
Cost of fertilizer at £16 per ton	—	£3 4 0	£6 8 0
Nett value of gain or loss over controls	—	+0 11 5	−0 10 4
Percentage of general mean	88.81	101.90	109.23

General mean = 5.0443 tons sucrose per acre.

Significant difference between treatments at 19 : 1 odds = 0.20 tons sucrose per acre.
Significant difference between treatments at 99 : 1 odds = 0.27 tons sucrose per acre.
Percentage significant difference between treatments at 19 : 1 odds = 3.96 per cent. of general mean.
Percentage significant difference between treatments at 99 : 1 odds = 5.35 per cent. of general mean.
Value of significant difference between treatments per acre at 19 : 1 odds = £1 2s. 10d.
Value of significant difference between treatments per acre at 99 : 1 odds = £1 10s. 10d.
800 lbs. ammonium sulphate > > 400 lbs. ammonium sulphate > > controls.

Summary of Yields of Four Top-dressed Crops in Tons Sucrose per acre.

Crop.	Date of harvesting.	Age of crop in months.	Controls. No fertilizer.	400 lbs. per acre ammonium sulphate.	800 lbs. per acre ammonium sulphate.
First top-dressed ratoons	23/29 Nov. 1938	12	6.36	6.77	7.00
Second top-dressed ratoons	6/19 Aug. 1940	21	9.27	10.56	10.94
Third top-dressed ratoons	12/19 Nov. 1941	15	6.43	7.46	7.76
Fourth top-dressed ratoons	20/27 Nov. 1942	12	4.48	5.14	5.51
Total for four crops			26.54	29.93	31.21
Increase over controls for four crops			—	3.39	4.67
Per cent. tons sucrose compared with controls for four crops			—	112.8	117.6
Value of four crops at £5.71 per ton of sucrose			£151 10 10	£170 18 0	£178 4 2
Value of increase over controls for four crops			—	19 7 2	26 13 4
Cost of ammonium sulphate at £16 per ton			—	12 16 0	25 12 0
Nett gain over controls for four crops			—	6 11 2	1 1 4

When working out the results of this experiment for the 1942 crop it was discovered that the results for 1938 and 1940 crops had been calculated on one-tenth acre plots instead of one-twelfth acre plots, as they ought to have been. This mistake has been corrected in the above summary, which therefore differs from that previously published.

In the 1942 crop 400 lbs. of ammonium sulphate gave an increase over controls which was highly significant. The double dressing of 800 lbs. also gave a highly significant increase over 400 lbs., though at £16 per ton for ammonium sulphate it was not profitable to apply 800 lbs. As shown in the summary, 400 lbs. of ammonium sulphate per acre per crop gave a profit of £6 11s. 2d. over the four crops, whilst 800 lbs. very little more than paid its way. At peace-time prices both dressings would have given a profit of approximately £3 per acre per crop.

UMFOLOZI EXPERIMENTS Nos. 7 (A and B).—Variety Trial, Seventh Ratoon Crop.

Harvested at 12½ months old, 12th—16th December, 1942.

	Uba.	Co.281.	Co.290.	P.O.J. 2878.	P.O.J. 2725.
Tons cane per acre	41.79	38.23	42.42	38.97	30.40
Tons pol. (sucrose) per acre	5.32	5.26	5.80	5.90	5.02
Increase tons pol. per acre over Uba	—	−0.06	0.48	0.58	−0.30
Percentage tons pol. per acre compared with Uba	100.00	98.87	109.02	110.90	94.36
Pol. (sucrose) per cent. cane	12.73	13.76	13.67	15.14	16.52
Fibre per cent. cane	15.70	14.75	13.87	11.55	12.18
Purity	87.1	90.0	92.6	88.5	92.3
Reducing sugar ratio	2.79	1.31	2.31	2.89	1.57
Java ratio	79.2	78.3	79.7	83.4	82.5
Laboratory mill extraction	57.0	62.1	63.4	72.2	68.0
Total value of sucrose per acre at £5.71 per ton	£30 7 6	£30 0 8	£33 2 4	£33 13 9	£28 13 3
Gross value of gain or loss compared with Uba for this crop	—	−0 6 10	2 14 10	3 6 3	−1 14 3
Percentage of general mean	97.4	96.3	106.2	108.0	91.9

General mean = 5.46 tons sucrose per acre.

Significant difference between varieties at 19 : 1 odds = 0.38 tons sucrose per acre.
Significant difference between varieties at 99 : 1 odds = 0.51 tons sucrose per acre.
Percentage significant difference between varieties at 19 : 1 odds = 6.96 per cent. of general mean.
Percentage significant difference between varieties at 99 : 1 odds = 9.34 per cent. of general mean.
Value of significant difference between varieties per acre at 19 : 1 odds = £2 3s. 5d.
Value of significant difference between varieties per acre at 99 : 1 odds = £2 18s. 3d.

Co.290 > Uba.
Co.281.
P.O.J.2878 P.O.J.2725.

Summary of Yields of Eight Crops in tons Sucrose per acre.

Crop.	Date of harvesting.	Age of crop in months.	P.O.J. 2725.	Co.290.	Co.281.	P.O.J. 2878.	Uba.
Plant cane	14/17 July 1935	19	11.00	9.72	9.34	8.88	5.72
First ratoons	27/30 Oct. 1936	15	8.20	7.16	7.59	6.67	4.93
Second ratoons	7/11 Dec. 1937	13½	6.96	6.79	6.47	5.74	4.72
Third ratoons	19/22 Nov. 1938	11½	6.29	6.18	5.53	5.63	4.82
Fourth ratoons	7/13 Dec. 1939	12½	4.98	5.45	5.45	5.45	4.46
Fifth ratoons	17/18 Dec. 1940	12	5.65	6.06	5.18	5.39	4.12
Sixth ratoons	26 Nov./4 Dec. 1941	11½	5.73	6.13	5.41	5.81	4.60
Seventh ratoons	12/16 Dec. 1942	12½	5.02	5.80	5.26	5.90	5.32
Total tons sucrose per acre for eight crops			53.83	53.29	50.23	49.47	38.69
Increase over Uba in eight crops			15.14	14.60	11.54	10.78	—
Per cent. tons sucrose compared with Uba for eight crops			139.13	137.74	129.83	127.86	100.00
Value of eight crops at £5.71 per ton of sucrose			£307 7 4	£304 5 9	£286 16 3	£282 9 6	£220 18 5
Value of increase over Uba for eight crops			86 8 11	83 7 4	65 17 10	61 11 1	—

The canes in this experiment are still giving good yields as seventh ratoons, although no fertilizer of any kind has ever been applied to them.

In the seventh ratoon crop P.O.J.2878 beat Co.290 by a very narrow margin. One of the things to be noted is the very even level which has been maintained by P.O.J.2878 right through. P.O.J.2725 dropped in the seventh ratoon crop to last place due to excessive early flowering. In spite of this it still holds first place in the totals for eight crops. In view of the fact that Co.281 is now being largely planted at Umfolozi, it is interesting to note that it does not compare very well with the P.O.J. varieties in this experiment. Except for the fourth and seventh ratoons, when P.O.J.2725 was injured by excessive flowering, it has always been lower than that variety.

In the first three crops Co.281 gave more sucrose per acre than P.O.J.2878, but in the older ratoons P.O.J.2878 has yielded somewhat better than Co.281. Over the eight crops Co.281 has only given three-quarters of a ton more sucrose than P.O.J.2878. P.O.J.2878 gives a higher average sucrose of cane than Co.281 and is usually an easier cane to handle, so it looks as if it ought to be more extensively planted than it has been in the past.

UMFOLOZI EXPERIMENT No. 10.—Variety Trial, Fourth Ratoon Crop.

Harvested at 12 months old, 28th—30th November, 1942.

	Co.301.	Co.290.	Co.281.
Tons cane per acre	45.32	41.41	36.61
Tons pol. (sucrose) per acre	5.99	5.31	4.84
Increase tons pol. per acre over Co.281	1.15	0.47	—
Percentage tons pol. per acre compared with Co.281	123.8	109.7	—
Pol. (sucrose) per cent. cane	13.22	12.82	13.24
Fibre per cent. cane	13.33	13.41	15.44

	Co.301.	Co.290.	Co.281.
Purity	89.9	88.2	91.2
Reducing sugar ratio	2.42	1.82	2.09
Java ratio	79.9	80.3	74.8
Laboratory mill extraction	70.0	68.2	66.4
Total value of sucrose per acre at £5.71 per ton	£34 4 1	£30 6 7	£27 12 9
Gross value of gain or loss compared with Co.281 for this crop	6 11 4	2 13 8	—
Percentage of general mean	111.3	98.7	89.9

General mean = 5.3816 tons sucrose per acre.

Significant difference between varieties at 19 : 1 odds = 0.41 tons sucrose per acre.
Significant difference between varieties at 99 : 1 odds = 0.58 tons sucrose per acre.
Percentage significant difference between varieties at 19 : 1 odds = 7.62 per cent. of general mean.
Percentage significant difference between varieties at 99 : 1 odds = 10.78 per cent. of general mean.
Value of significant difference between varieties per acre at 19 : 1 odds = £2 6s. 10d.
Value of significant difference between varieties per acre at 99 : 1 odds = £3 6s. d.
Co.301 > > Co.290 > Co.281.

Summary of Yields of Five Crops in tons Sucrose per acre.

Crop.	Date of harvesting.	Age of crop in months.	Co.301.	Co.290.	Co.281.
Plant cane	24 Nov. 1937	12	4.70	4.32	4.22
First ratoons	3 Dec. 1938	12	7.07	6.08	5.55
Second ratoons	20/21 Aug. 1940	20½	8.31	10.22	9.01
Third ratoons	19/20 Nov. 1941	15	7.88	8.02	7.11
Fourth ratoons	28/30 Nov. 1942	12	5.99	5.31	4.84
Total tons sucrose per acre for five crops			33.95	33.95	30.73
Increase over Co.281 for five crops			3.22	3.22	—
Per cent. tons sucrose per acre compared with Co.281 for five crops			110.5	110.5	—
Value of five crops at £5.71 per ton of sucrose			£193 17 1	£193 17 1	£175 9 4
Value of increase over Co.281 for five crops			18 7 9	18 7 9	—

In this crop Co.301 was highly significantly better than Co.290, which was significantly better than Co.281.

Co.301 has now recovered from the drop which it suffered in the second ratoon crop, when these canes were allowed to stand over to be nearly two years old. It is equal to Co.290 over the five crops, and both are just over 10 per cent. better than Co.281. This is a very substantial amount when profits come to be considered. If the second ratoon crop is omitted and the varieties compared on the results of the other four crops, Co.301 easily leads over Co.290.

UMFOLOZI EXPERIMENT No. 11.—Third Ratoons, harvested at 13 months, 20th—23rd December, 1942.

This experiment comprises (1) a variety trial, (2) a comparison of four spacings, (3) a fertilizer trial.

No. 11.—Variety Trial.

	P.O.J.2725.	Co.301.	Co.290.	Co.281.
Tons cane per acre	33.32	46.86	44.47	42.69
Tons pol. (sucrose) per acre	5.08	6.71	5.95	6.00
Decrease tons pol. per acre compared with P.O.J.2725	—	1.63	0.87	0.92
Percentage tons pol. per acre compared with P.O.J.2725	—	132.1	117.1	118.1
Pol. (sucrose) per cent. cane	15.26	14.33	13.39	14.06
Fibre per cent. cane	11.93	12.91	14.22	14.74
Purity	92.1	90.2	88.4	91.1
Reducing sugar ratio	1.86	1.70	2.00	1.43
Java ratio	83.0	79.9	79.4	80.2
Laboratory mill extraction	68.2	64.9	63.5	61.1
Total value of sucrose per acre at £5.71 per ton	£29 0 2	£38 6 3	£33 19 6	£34 5 2
Gross value of gain or loss compared with P.O.J.2725 for this crop	—	9 6 1	4 19 4	5 5 0
Percentage of general mean	85.5	113.0	100.2	101.0

General mean = 5.9386 tons sucrose per acre.

Significant difference between varieties at 19 : 1 odds = 0.49 tons sucrose per acre.
Significant difference between varieties at 99 : 1 odds = 0.66 tons sucrose per acre.
Percentage significant difference between varieties at 19 : 1 odds = 8.25 per cent. of general mean.
Percentage significant difference between varieties at 99 : 1 odds = 11.11 per cent. of general mean.
Value of significant difference between varieties per acre at 19 : 1 odds = £2 16s. 0d.
Value of significant difference between varieties per acre at 99 : 1 odds = £3 15s. 4d.
Co.301 > > $\frac{\text{Co.281}}{\text{Co.290}}$ > > P.O.J.2725.

Summary of Yields of Four Crops in tons Sucrose per acre.

Crop.	Date of harvesting.	Age of crop in months.	P.O.J. 2725.	Co.301.	Co.290.	Co.281.
Plant cane	27 Nov./6 Dec. 1939	20	9.50	9.37	8.60	8.80
First ratoons	10/15 Dec. 1940	12	5.79	5.68	6.02	5.37
Second ratoons	21/26 Nov. 1941	11½	5.84	6.95	6.50	5.77
Third ratoons	20/23 Dec. 1942	13	5.08	6.71	5.95	6.00
Total for four crops			26.21	28.71	27.07	25.94
Increase or decrease compared with P.O.J.2725 for four crops			—	2.50	0.86	−0.27
Per cent. tons sucrose per acre compared with P.O.J.2725 for four crops			—	109.5	103.3	99.0
Value of four crops at £5.71 per ton of sucrose			£149 13 2	£163 18 8	£154 11 5	£148 2 4
Value of increase or decrease compared with P.O.J.2725 for four crops			—	14 5 6	4 18 3	−1 10 10

In this experiment P.O.J.2725 does not show up so favourably as in Experiments 7 (A and B). This can be explained by the fact that in 1939 when this experiment was harvested as plant cane, and again in 1942, heavy flowering took place in P.O.J.2725, reducing its yield in these seasons. Even so, it is not much behind Co.290 over four crops and is slightly ahead of Co.281. Co.301 has increased its lead and is now 6 per cent. ahead of Co.290 and 9½ per cent. ahead of P.O.J.2725.

No. 11 Spacing and Fertilizer Trials. Summary of Yields of Four Crops in tons sucrose per acre.

Crop.	Age of crop in months.	Spacing Trial. 4 feet.	5 feet.	6 feet.	7 feet.	Fertilizer Trial. No fertilizer.	Plant: 300 lbs. ammonium sulphate. 1st ratoons: 600 lbs. ammonium sulphate.
Plant cane	20	9.07	9.05	9.16	8.98	9.06	9.07
First ratoons	12	5.98	5.76	5.68	5.43	5.70	5.73
Second ratoons	11½	6.34	6.26	6.19	6.27	6.19	6.34
Third ratoons	13	6.19	5.98	5.77	5.82	5.82	6.06
Total for four crops		27.58	27.05	26.80	26.50	26.77	27.20

As before, there is a slightly larger yield from the closer spacings, but the difference between 4 feet and 7 feet is just under 4 per cent., which is not enough to be significant under the conditions of this experiment.

It has been suggested that some of the varieties may react to spacing differently from others, so the yield from each variety at each spacing is given below.

Variety and Spacing.—Yields of Four Crops in tons Sucrose per acre.

	P.O.J.2725.	Co.301.	Co.290.	Co.281.
4 feet	27.39	30.47	25.75	26.73
5 feet	25.98	28.21	27.88	26.10
6 feet	26.52	27.95	27.00	25.74
7 feet	24.96	28.25	27.62	25.19

It will be noted that all the varieties except Co.290 gave the highest yield when planted at 4 feet apart. Co.290 gave its highest yield at 5 feet, but gave nearly as high a tonnage at 7 feet.

Perhaps the most surprising fact shown by these figures is the regular and fairly big drop in the case of P.O.J.2725 as the width between the lines was increased.

There was no increase in yield from the application of sulphate of ammonia in this experiment.

UMFOLOZI EXPERIMENT No. 12.—Fertilizer Trial on P.O.J.2725, Plant Cane.

Harvested at 22 months old, 1st—8th December, 1942.

	Controls. No fertilizer.	800 lbs. Government guano.	400 lbs. Super, 400 lbs. ammonium sulphate.	400 lbs. ammonium sulphate.
Tons cane per acre	76.01	74.98	79.60	75.53
Tons pol. (sucrose) per acre	10.74	10.54	11.13	10.84
Increase tons pol. per acre over controls	—	−0.20	0.39	0.10
Percentage tons pol. per acre compared with controls	100.00	98.14	103.63	100.93
Pol. (sucrose) per cent. cane	14.13	14.06	13.98	14.35
Fibre per cent. cane	12.32	12.23	12.89	12.55
Purity	89.4	89.8	89.4	91.1
Reducing sugar ratio	4.25	3.91	4.21	4.16
Java ratio	83.1	81.1	83.2	84.2
Laboratory mill extraction	73.6	74.4	73.0	72.9
Total value of sucrose per acre at £5.71 per ton	£61 6 6	£60 3 8	£63 11 0	£61 17 11
Gross value of gain or loss compared with controls for this crop	—	−1 2 10	2 4 6	0 11 5

From these figures it is so obvious that there was no response to fertilizer in this crop, that it is not considered necessary to go into the question of cost of fertilizer in detail. It can only be said that there is no evidence to show that the fertilizer did any good to this crop at all.

In last year's report the number of tests which had been done of the various varieties in these experiments was given, with the average sucrose per cent. cane for each. The figures for 1942 have now been included in the averages and the results to date are as follows:—

Variety.	Number of tests.	Average sucrose per cent. cane.
P.O.J.2725	699	15.06
P.O.J.2878	171	14.56
Co.290	295	13.61
Co.281	208	13.55
Co.301	94	13.96
Uba	151	11.89

Conclusions.

There has been no reason to alter the general conclusions expressed in the last report concerning the qualities of the different varieties, so it is not considered necessary to cover the same ground this year. It is, however, considered necessary to point out that Co.281 does not appear to be the best variety to cultivate on the alluvial lands, and that where it is desired to change from P.O.J.2725 because of borer or for any other reason, P.O.J.2878 is probably a better variety than Co.281 for Umfolozi flats. In saying this, there is no intention to imply that Co.281 is not the best variety for very many sugar lands.

U.L.O.A. EXPERIMENT No. 1.—TRIAL OF UNRELEASED NEW VARIETIES, SECOND RATOONS.

Harvested at 15 months old, 30th September, 1942.

	P.O.J. 2725.	M.P.R. 28.	P.R. 809.	P.R. 803.	M.P.R. 61.	M.P.R. 49.	M.P.R. 42.
Tons cane per acre	69.94	66.44	62.31	61.69	60.62	56.81	47.81
Tons pol. (sucrose) per acre	10.50	11.44	8.49	8.90	8.95	8.89	7.79
Increase or decrease tons pol. per acre compared with P.O.J.2725	—	0.94	−2.01	−1.60	−1.55	−1.61	−2.71
Percentage tons pol. per acre compared with P.O.J.2725	—	108.95	80.86	84.76	85.24	84.67	74.20
Pol. (sucrose) per cent. cane	15.01	17.23	13.63	14.43	14.77	15.65	16.30
Fibre per cent. cane	11.69	10.34	13.92	12.62	11.65	13.23	10.98
Purity	93.0	95.3	91.1	91.9	92.4	93.1	94.9
Reducing sugar ratio	0.66	0.50	2.54	1.36	1.20	0.90	0.26
Java ratio	82.0	86.1	80.5	81.8	80.3	83.2	84.2
Laboratory mill extraction	79.7	79.0	77.3	79.7	76.7	73.9	75.3
Total value of sucrose per acre at £5.71 per ton	£59 19 1	£65 6 5	£48 9 6	£50 16 4	£51 2 1	£50 15 3	£44 9 7
Gross value of gain or loss compared with P.O.J.2725 for this crop	—	5 7 4	−11 9 7	−9 2 9	−8 17 0	−9 3 10	−15 9 6
Percentage of general mean	113.13	123.26	91.47	95.89	96.43	95.78	83.93

General mean = 9.2814 tons sucrose per acre.

Significant difference between varieties at 19 : 1 odds = 1.84 tons sucrose per acre.

Percentage significant difference between varieties at 19 : 1 odds = 19.8 per cent. of general mean.

Value of significant difference between varieties per acre at 19 : 1 odds = £10 10s. 0d.

Summary of Yields of Two Crops in tons Sucrose per acre.

Crop.	Date of harvesting.	Age of crop in months.	P.O.J. 2725.	M.P.R. 28.	P.R. 809.	P.R. 803.	M.P.R. 61.	M.P.R. 49.	M.P.R. 42.
First ratoons	24 June 1941	18	10.25	10.52	9.20	7.42	6.61	7.53	5.20
Second ratoons	30 Sept. 1942	15	10.50	11.44	8.49	8.90	8.95	8.89	7.79
Total for two crops			20.75	21.96	17.69	16.32	15.56	16.42	12.99
Increase or decrease compared with P.O.J. 2725 over two crops			—	1.21	−3.06	−4.43	−5.19	−4.33	−7.76
Per cent. tons sucrose compared with P.O.J. 2725 for two crops			100.00	105.83	85.25	78.65	74.99	79.13	62.60
Value of two crops at £5.71 per ton of sucrose			£118 9 8	£125 7 10	£101 0 3	£93 3 9	£88 17 0	£93 15 2	£74 3 6
Value of increase or decrease compared with P.O.J.2725 for two crops			—	6 18 2	−17 9 5	−25 5 11	−29 12 8	−24 14 6	−44 6 2

Conclusions.

This variety trial was described in last year's report, when some notes on the varieties in the trial were included. On the yields given in the summary for two crops M.P.R.28 gave nearly 6 per cent. more sucrose per acre than P.O.J.2725, whilst the yield from P.R.809, the third best variety, was about 15 per cent. lower than P.O.J.2725. The lead of 6 per cent. gained by M.P.R.28 is not enough to be statistically significant under the conditions of this experiment. In other words, this lead might have been due to M.P.R.28 being lucky in the position of its plots in the field or in some other way. Whether M.P.R.28 holds this lead by luck or by merit is something which ought to be tested out by further experiments, and so far three such

experiments have been planted at U.L.O.A. The first, planted in January, 1940, was ruined by flood water. The second, planted in October, 1941, germinated so badly due to drought after it was planted that it had to be replanted in October, 1942. It is to be hoped that this time the canes will grow and that reliable data will be obtained. If M.P.R.28 should prove itself at least equal to P.O.J.2725 and its release for commercial planting could be obtained, it would be a very useful variety at Umfolozi. It has many desirable agricultural qualities, such as freedom from flowering, forming a good canopy, producing heavy individual sticks, and giving a high sucrose per cent. cane. It does not appear probable that any other cane in this trial will prove good enough to be released.

ACKNOWLEDGMENTS.

To Mr. E. Stanley Murphy, Mr. G. M. Higgins, the staff of the Umfolozi Co-operative Sugar Planters Ltd., the staff of U.L.O.A. Estates, and Mr. J. V. Kirkwood of the Experiment Station Staff, the authors are deeply indebted for their assistance in carrying on the work connected with the care and harvesting of these experiments. They wish to thank all whose assistance made the production of this report possible.

Experiment Station,
South African Sugar Association,
Mount Edgecombe.
March, 1943.

Mr. MOBERLY deprecated the lack of support for a paper of this nature. He suggested that in future the assistance and co-operation of the Cane Growers' Association be sought. Present day conditions made it difficult to hold the ordinary field days at the Experiment Station or to circularize planters with copies of papers. An attempt should be made by the Technologists' Association to arrange a planters' day on such a date that members of the Cane Growers' Association attending their annual general meeting could take advantage of it.

Mr. DODDS found it remarkable that Co.281 should be increasing rapidly at Umfolozi in spite of the results of these experiments, which indicated clearly that it was by no means an ideal variety for those conditions. Co.281 was, of course, more resistant to borer attacks, but then he had never considered the borer infestation really very serious at Umfolozi, and at any rate it appeared to be rapidly diminishing.

Mr. RAULT considered it possible that the higher fibred Co.281 might be preferred at Umfolozi for fuel purposes. He again drew attention to the fact that these hand-sampled tests showed a higher sucrose per cent. cane than was obtained at the factory. This invariably seemed to be the case with small hand samples compared with large mill tests. He realised, of course, that trash would depress the sucrose per cent. cane, but was doubtful whether it could to the extent often experienced.

Mr. DODDS said that the difference at Umfolozi was not very big. Experiments at the Experiment Station indicated that normal factory cane had about 5 to 10 per cent. trash adhering to it and gave a correspondingly lower sucrose per cent. cane. Experiments at Chakas Kraal indicated a progressive diminution of sucrose content while the cane was in the milling process.