SUMMARY OF AGRICULTURAL DATA: SUGARCANE CROP 1966/67

By J. L. DU TOIT and M. G. MURDOCH,

South African Sugar Association Experiment Station

Introduction

This summary of Agricultural data is based on a survey conducted by the Sugar Industry Central Board early in 1967. Data up to this date are therefore based on actual performance but later area and yield per acre figures must be regarded as estimates, although of course the total yield of cane and sugar for the 1967/68 season are now known.

Total Areas and Yields

According to the Sugar Industry Central Board Survey of Cane Production 1965/66 to 1969/70 the area under cane on the 1st May, 1967, was 852,977 acres and it was estimated that 495,952 acres would be cut during the 1967/68 season. It is also known that for the 1967/68 milling season a total of 18,643,889 tons of cane was cut to make 2,008,683 tons of sugar. All these figures are records for the sugar industry and appreciably higher than was anticipated in their report last year. From these data it follows that the average yield for the season was 37.6 tons cane per acre harvested or 21.9 tons cane per acre of cane land under cultivation. Both these yields are again appreciably better than last year's estimates and the excellent rains of the first four months of 1967 certainly helped to increase these yields.

To gauge the extent of the progress made in the industry we may compare these results with those obtained 10 years ago during the 1957 season. The industry then produced 959,872 tons of sugar and the average yield of cane was 15 tons cane per acre under cultivation. The increase in yield per acre over a period of 10 years was therefore 46 per cent.

In Table I areas, the yields and percentage areas harvested are given on the basis explained last year. Discrepancies between figures now used and those reported last year are again due to actual results now replacing estimates for 1966 and further to later and more accurate estimates now being used.

These figures suggest that if the restriction is not considered then the sugar industry is entering a period of an overall yield of some 38 tons cane per acre cut at an approximate age of 19 months or a yield of 22 to 22.5 tons cane per acre of area under cultivation.

Rainfall and Yield

In Table II the yield in tons cane per acre of cane harvested as well as the yield in T.C.A. with reference to the area under cane the year before harvest are given and these yields are compared with the annual rainfall as compiled by the Experiment Station from 54 recording centres scattered throughout the sugar belt.

TABLE II

Season	Yield in tons cane per acre: On area harvested	Yield in tons cane per acre: On area under cane	Rainfall for the year ending 31st May: Rainfall	Rainfall for the year ending 31st May: Year
1959/60	32.4	15.4	33.34	1959
1960/61	33.8	14.1	35.66	1960
1961/62	39.4	14.9	46.43	1961
1962/63	37.8	16.9	34.10	1962
1963/64	36.7	18.0	38.32	1963
1964/65	36.0	19.1	40.92	1964
1965/66	31.6	12.9	29.02	1965
1966/67*	36.2	19.3	39.17	1966
1967/68†	37.5	22.3	38.65	1967

* Yield figures subject to further adjustments.

† Yield figures based on estimates.

This table and particularly the column giving yield in tons cane per acre under cultivation, reveals the effect of these factors on cane yield:

(1) Restriction of production reduces the yield

TABLE I

Total area under cane 1st May		Area Harvested		Tons cane Harvested		A % Area Harvested	B Yield T.C.A. area harvested	C* % area harvested	D* Yield T.C.A. area under cane
1963	616,900	63/64	299,084	63/64	10,970,338	48.5	36.7	—	—
1964	718,043	64/65	326,387	64/65	11,752,031	45.5	36.0	52.9	19.1
1965	807,542	65/66	293,465	65/66	9,266,324	36.3	31.6	40.9	12.9
1966	836,556	66/67	429,732	66/67	15,545,625	51.4	36.2	53.2	19.3
1967†	852,977	67/68	495,952	67/68	18,643,889	58.1	37.6	59.3	22.3
1968†	855,836	68/69	493,172	68/69	18,963,238	57.6	38.5	57.8	22.2
1969†	855,963	69/70	502,622	69/70	19,398,111	58.7	38.6	58.7	22.7

*Area under cane for previous season.

†Estimates.

of cane per acre under cultivation very greatly as is shown for the years 1960/61 and 1961/62.

(2) Rainfall has a pronounced effect on yield as is clearly shown by the abnormally low yields of 1965/66 which were caused by the severe drought experienced during the first months of 1965.

(3) In spite of wide fluctuations caused by artificial restrictions and climatic conditions, these figures show a very clear time trend: an improvement in real productivity which is most gratifying and the final yield of more than 22 tons of cane per acre under cultivation with an annual rainfall of just over 38 inches is a result which few could have visualised 10 years ago.

Group Production

According to the Sugar Industry Central Board Survey of Cane Production CB46/21, European growers occupied 582,370 acres out of a total of 852,977 under cane on the 1st May, 1967. The area under cane for miller-cum-planter was 162,735 acres and for Indian and Bantu growers respectively 70,864 and 37,008 acres. The miller-cum-planter as a group had a slightly better yield of cane per acre harvested than the European growers. Their average yield for the season 1966/67 was 37.95 T.C.A. compared with 37.72 T.C.A. for the growers. On a yield per area under cane basis their respective yield figures were: 20.8 and 19.9 T.C.A.

Table III summarises cane production statistics for the various groups of the industry for the year 1966/67 season.

TABLE III

	Area under cane 1st May 1967 as per cent of Total	Yield TCA area harvested 1966/67	Yield TCA area under cane 1st May 1965	Per cent Production
European growers	68.3	37.7	19.9	71.8
Miller-cum-planter	19.1	38.0	20.8	19.9
Indian growers	8.3	26.4	13.9	6.3
Bantu growers	4.3	20.6	11.5	2.0
Industry	100.0	36.2	19.3	100.0

Regional Production

In Figure 1 a map of the 32 regions into which the industry was divided last year is again given. We are here dealing with the 1966/67 crop and for this reason the Eastern Transvaal region is not included, although in another part of this report when the 1967/68 data are referred to this area is included.

Yields

In Table IV the yield data for the different regions are given. The Umfolozi and Umhlatuzi flats area has a very decided lead over the Pongola area both in yield per acre harvested and yield per acre under cane. These flats averaged 50.1 and 38.3 tons cane per acre on an area harvested and area under cane basis for the season 1966/67. The corresponding figures for Pongola were 45.5 and 31.4 T.C.A.

The 1966/67 yield data compared with those of the previous season showed an outstanding increase for the North Coast region and good increases for Zululand and the South Coast. This in the main is a return to normality after the disastrous drought which affected the 1965/66 crop. This drought was worst on the North Coast and affected the South Coast less than Zululand. The yield data for the main regions for 1966/67 season in a summarised form are as follows:

	T.C.A. Area Harvested	T.C.A. Area under Cane	% Area Harvested	Indicated cane age at harvest (months)
Pongola Gollel area	43.6	30.5	70	15.4
Zululand	35.5	21.9	62	17.4
North Coast	40.0	23.5	59	18.3
Midlands	35.1	13.6	39	27.7
South Coast	38.2	19.3	51	21.2
Industry	37.4	20.9	55.7	19.4

The Midlands is still in the process of expansion and this will have the effect of lowering the yield per acre based on area under cane and it will increase the apparent age of cane at harvest. To a lesser extent these arguments also hold for the South Coast.

From the areas under cane and the total tons harvested it will be apparent that we are not dealing with the entire crop produced by European growers and miller-cum-planters, and the average yield data for the industry given in Table IV will not be exactly the same as that produced elsewhere and based on the total Central Board Survey.

Irrigation

Table IV reflects considerable increases in irrigation in Zululand and the North Coast compared with areas under irrigation the year before. The Table shows an industrial increase from 12.6 to 15.3 per acre for the same period. As pointed out these results refer to Europeans only and are not completely representative even for these groups. The more complete Central Board Survey however also reveals similar increases over recent years. Here the percentage area under irrigation for all races are:

Year	*Per cent area under irrigation*
1965/66	10.8
1966/67	12.9
1967/68	14.6

Although irrigation is still on the increase in general a large part of the increase here shown is simply due to the development of the Eastern Transvaal sugar areas which are of course 100 per cent irrigated.

TABLE IV
Regional Production by Europeans 1966/67 Crop

Region	% Irrigated Acres	Tons Cane per Acre Harvested	% of Acreage Harvested	Tons Cane per Acre under Cane	Fertilizer lb./Acre under Cane	Acres under Cane (,000)	Tons Cane (,000)
1 Pongola	100	45.5	69	31.4	910	16.1	506
1b Gollel, Mkuzi	100	32.7	76	24.8	613	2.8	62
	100	43.6	70	30.5	877	18.9	568
2 Hluhluwe, Nyalazi River	42	28.0	65	18.3	419	12.2	210
3 Umfolozi and Umhlatuzi Flats	8	50.1	76	38.3	426	19.4	742
4 Mtubatuba, Etuza	12	38.1	64	24.3	330	22.7	525
5 Kwambonambi, Mpoza	13	31.7	60	18.9	482	10.0	193
6 Empangeni, Felixton, Enseleni	11	31.1	61	19.0	337	43.9	832
7 Heatonville, Ntambana	29	23.8	57	13.6	283	20.2	270
8 Nkwaleni Valley	96	39.8	63	25.1	477	6.9	178
10 Mtunzini, Gingindhlovu	9	38.7	64	25.0	622	32.9	823
13 Amatikulu, Mandini	9	33.8	58	19.4	413	11.5	218
11 Ngoye	4	29.4	56	16.5	315	6.6	107
12 Eshowe, Entumeni	4	38.2	52	19.7	476	18.7	366
9 Melmoth	0	(44.9)			621	2.4	8
ZULULAND	16	35.5	62	21.9	419	207.6	4,473
14 Tugela, Newark	4	44.7	60	26.9	674	7.7	205
15 Coastal (4-5 miles inland)	25	40.0	60	24.1	474	79.7	1,919
18 Glendale	50	40.8	60	24.7	439	3.4	78
16 Intermediate area, Kearsney, Upper Chaka's Kraal	2	37.9	57	21.5	460	32.4	698
17 Coastal Plateau, Doornkop, Upper Tongaat, Inanda	0	43.0	52	22.4	452	10.2	226
NORTH COAST	16.8	40.0	59	23.5	481	133.3	3,128
19 Bishopstowe	1	38.9	39	13.4	372	6.4	83
20 Cedara, Crammond, Seven Oaks, Mt. Alida	3	31.2	25	7.7	874	10.2	80
21 Wartburg, Fawnleas, Dalton	0	31.2	38	11.9	390	30.1	369
22 Kranskop	2	35.8	31	11.2	421	8.7	100
23 Muden	(100)	(35.7)	—	—	—	0.3	5
24 Tala Valley	75	49.1	54	26.8	407	2.1	59
25 Eston, Mid-Illovo, Richmond	1	38.5	45	17.4	490	19.5	336
26 Hillcrest, Inchanga	4	37.2	49	18.1	477	7.8	129
MIDLANDS	3	35.1	39	13.6	482	85.1	1,162
27 Coastal, North of Hibberdene	0	35.6	54	19.3	600	9.7	177
30 Coastal, South of Hibberdene	1	36.0	54	19.3	527	25.9	463
28 Intermediate Region	10	39.3	49	19.2	456	26.3	503
29 Coastal Plateau, Powerscourt, Highflats	0	43.4	54	23.6	562	1.5	32
31 Coastal Plateau, Paddock, Maringo, Oribi	3	42.2	50	21.0	787	15.8	328
32 Inland, Nquabeni, Hluku, Harding	5	30.5	36	10.9	337	3.4	37
SOUTH COAST	4	38.2	51	19.3	552	82.6	1,539
TOTAL INDUSTRY	15.3	37.4	55.7	20.9	522	527.7 (731.5)*	10,870 (14,246)*

* Figures in brackets are the Central Board totals.

The Variety Position

As is to be expected the variety situation 1966/67 as reflected in Table V showed only a slight change from that of the previous season 1965/66.

NCo.310 is mainly grown in the north and with the exception of pockets of this variety at Muden and the Tugela-Newark area it now constitutes less than 10 per cent of the plant cane in all areas south of Nkwaleni Valley.

NCo.376 is still on the increase and 47 per cent of the total plant cane area in the industry is now under this variety. It is particularly popular on the South Coast with more than 80 per cent of all plant cane areas and it also forms 66 per cent of the plant cane on the North Coast, while even in the newly planted Eastern Transvaal it forms 54 per cent of the area under cane.

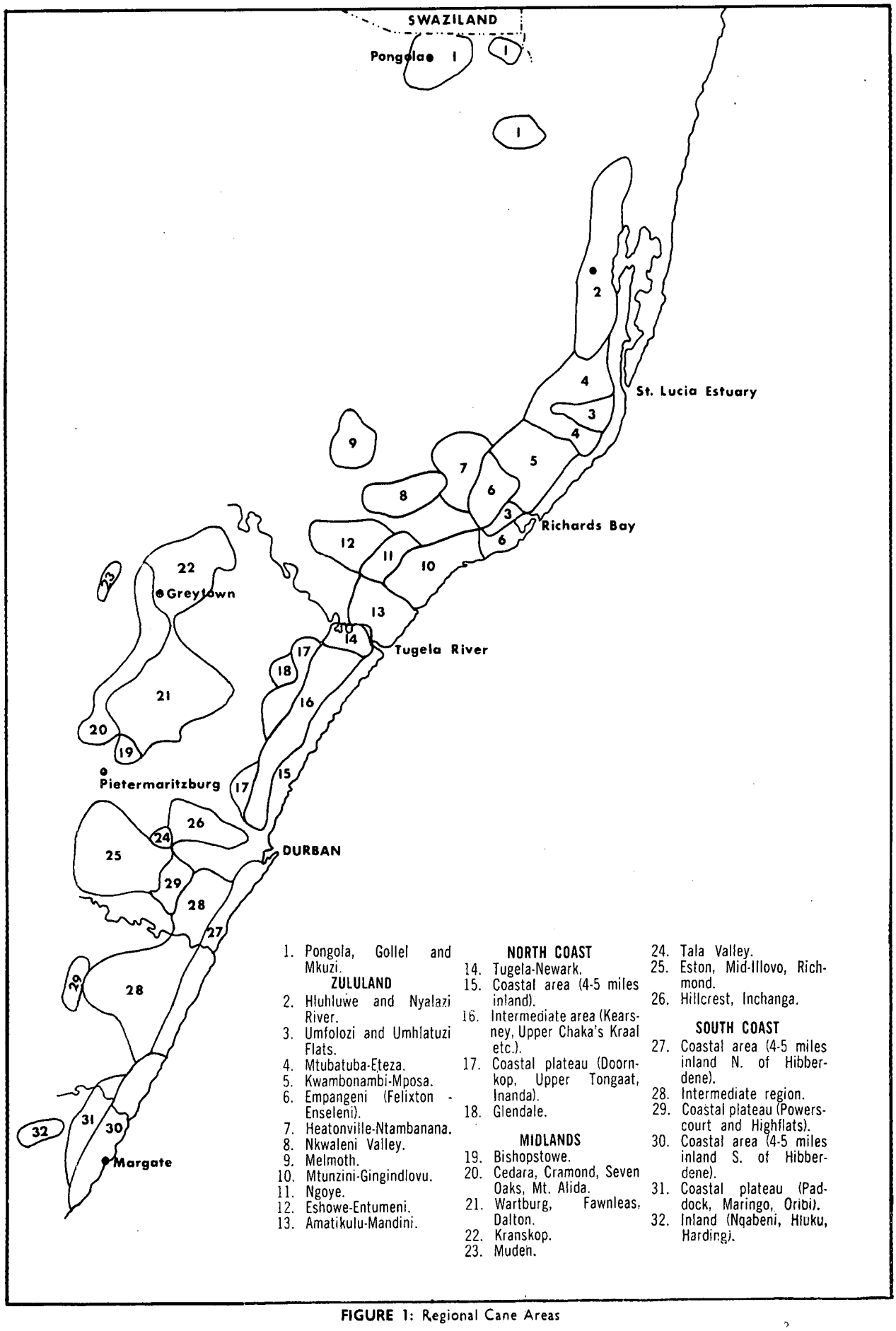
NCo.382 remains a favourite in the sandy areas from Nyalazi River down to the Felixton Enseleni area, while N50/211 finds favour further south in the sands of the North Coast. It is indeed difficult to account for the difference in preference for these two varieties in the north and the south.

The old variety NCo.293 still holds its own in most of the high altitude areas but Co.331 is now seldom planted and has shown an appreciable fall in its last stronghold, the Midlands.

The total area under plant cane has fallen from 41 per cent in 1965/66 to 33 per cent during 1966/67 indicating a slowing down of expansion and an average crop of plant cane and two ratoon. A further fall in percentage area under plant cane and a larger number of ratoons can be expected in future.

TABLE V
Percentage Areas Under Plant Cane and Total Cane 1966/67 Season

	Region	NCo.310		NCo.376		NCo.382		NCo.293		Co.331		N50/211		Plant %
		Plant	Total	Plant	Total	Plant	Total	Plant	Total	Plant	Total	Plant	Total	Total Area
1a	Eastern Transvaal	34.4	34.4	54.1	54.0	2.2	2.2	2.3	2.3	–	–	–	–	97.7
1	Pongola	85.3	85.8	13.5	10.9	0.1	0.2	–	1.7	–	0.1	0.3	0.3	22.9
1b	Mkuze, Gollel	99.3	95.8	–	3.7	–	–	–	–	–	–	–	–	34.8
2	Hluhluwe, Nyalazi River	37.7	49.2	22.5	17.2	38.2	29.9	–	0.1	1.3	0.9	–	0.2	28.4
3	Umfolozi, Umhlatuzi Flats	40.2	74.5	25.1	13.5	31.1	10.4	–	0.1	–	–	1.8	0.6	18.8
4	Mtubatuba, Eteza	44.0	51.7	15.0	13.0	36.6	26.0	–	0.1	–	1.5	1.3	3.6	25.0
5	Kwambonambi, Mposa	11.9	11.2	28.1	29.5	33.6	30.9	–	0.1	2.7	3.0	2.6	10.2	23.4
6	Empangeni (Felixton Enseleni)	23.0	39.7	46.2	39.3	12.6	8.5	0.4	0.4	–	0.5	3.9	6.2	22.1
7	Heatonville, Ntambanana	76.2	79.0	10.9	12.0	7.0	4.6	–	0.1	–	0.1	2.4	3.0	25.7
8	Nkwaleni Valley	44.4	63.6	42.1	26.7	1.6	0.4	–	0.2	–	0.2	8.0	5.8	15.9
10	Mtunzini, Gingindhlovo	3.8	12.7	73.6	64.6	6.1	8.2	0.6	0.5	0.2	0.8	3.8	9.7	19.4
13	Amatikulu, Mandini	1.8	13.7	68.6	65.6	0.3	1.1	–	–	–	0.1	0.2	10.0	23.8
11	Ngoye	2.6	23.2	88.3	65.4	5.4	3.0	1.0	0.6	–	0.1	0.7	6.3	21.0
12	Eshowe, Entumeni	0.5	6.7	64.6	49.6	6.4	4.6	15.1	25.0	–	1.4	10.3	9.7	29.7
9	Melmoth	1.5	1.8	79.7	78.8	4.4	4.6	6.4	6.4	0.4	0.4	5.9	6.3	95.6
	ZULULAND	23.3	36.8	47.1	37.8	15.3	11.5	2.5	2.5	0.3	0.8	3.8	6.1	25.7
14	Tugela, Newark	18.4	17.8	69.5	53.5	2.5	12.0	–	–	0.6	1.1	7.7	9.6	19.2
15	Coastal area (4-5 miles inland)	1.5	12.7	61.7	48.9	7.3	10.7	3.8	1.2	0.2	2.0	19.0	17.0	17.6
18	Glendale	–	15.5	84.2	71.6	7.5	3.6	–	1.4	–	2.3	–	3.8	20.4
16	Intermediate area, Kearsney, Upper Chaka's Kraal etc.	5.2	14.6	70.1	59.9	4.8	2.8	3.2	2.6	0.5	4.3	7.1	9.2	19.1
17	Coastal Plateau (Doornkop, Upper Tongaat, Inanda)	0.5	4.4	72.9	61.1	3.0	2.0	10.1	15.8	1.4	2.9	7.4	8.8	24.2
	NORTH COAST	2.8	13.0	66.0	53.4	6.0	7.9	2.0	2.5	0.4	2.6	13.6	13.7	18.6
19	Bishopstowe	1.2	1.1	40.1	40.9	24.4	20.1	29.0	30.0	3.5	6.7	1.7	1.0	63.4
20	Cedara, Cramond, Seven Oaks, Mt. Alida	1.2	1.2	17.7	17.4	23.8	21.8	52.5	51.0	4.0	7.9	0.7	0.8	85.0
21	Wartburg, Fawnleas, Dalton	0.6	0.6	4.3	4.6	36.1	29.1	42.8	41.7	15.0	22.9	1.0	0.7	50.5
22	Kranskop	0.5	0.8	11.9	14.9	27.2	25.2	50.8	47.6	8.4	9.5	0.5	0.4	85.4
23	Muden	26.9	23.7	41.5	42.6	3.8	3.4	25.2	28.1	–	–	2.5	2.2	88.1
24	Tala Valley	4.7	3.8	47.5	61.3	11.0	7.9	36.0	25.6	–	0.6	0.4	0.7	48.5
25	Eston, Mid-Illovo, Richmond	–	0.2	45.4	43.1	8.4	8.2	44.2	42.5	0.5	3.4	0.7	0.8	48.0
26	Hillcrest, Inchanga	0.4	2.9	59.1	59.5	11.1	9.1	25.3	24.5	0.7	1.2	2.0	1.5	42.0
	MIDLANDS	0.9	1.0	23.1	25.1	24.0	20.0	43.8	41.0	6.9	11.3	0.9	0.8	58.9
27	Coastal area 4-5 miles inland, North of Hibberdene	0.1	2.3	91.1	82.3	8.2	6.6	–	–	–	2.8	0.4	2.1	26.2
30	Coast area 4-5 miles inland, South of Hibberdene	8.0	15.9	86.6	76.5	2.5	1.2	0.3	1.4	0.3	2.4	0.5	1.5	29.7
28	Intermediate Region	9.1	12.4	70.1	56.6	8.3	11.1	4.1	12.3	–	0.6	5.3	3.5	19.7
29	Coastal Plateau, Powerscourt, Highflats	0.5	0.3	75.8	70.6	–	–	22.8	28.4	0.9	0.6	–	–	67.1
31	Coastal Plateau, Paddock, Maringo, Oribi	1.2	2.5	92.9	87.2	0.8	0.4	4.3	7.0	0.2	0.7	0.6	1.0	35.9
32	Inland (Nquabeni, Hluku, Harding)	1.8	1.5	52.6	52.1	1.3	0.9	43.2	43.9	1.0	1.5	–	–	67.3
	SOUTH COAST	5.0	9.9	80.7	71.1	3.7	4.9	7.5	8.4	0.3	1.4	1.5	2.1	29.6
	TOTAL	14.5	22.6	47.0	44.2	13.0	10.2	15.3	9.8	2.2	3.0	3.4	6.0	33.3



1. Pongola, Gollel and Mkuzi.

ZULULAND

2. Hluhluwe and Nyalazi River.
3. Umfolozi and Umhlatuzi Flats.
4. Mtubatuba-Eteza.
5. Kwambonambi-Mposa.
6. Empangeni (Felixton - Enseleni).
7. Heatonville-Ntambanana.
8. Nkwaleni Valley.
9. Melmoth.
10. Mtunzini-Gingindlovu.
11. Ngoye.
12. Eshowe-Entumeni.
13. Amatikulu-Mandini.

NORTH COAST

14. Tugela-Newark.
15. Coastal area (4-5 miles inland).
16. Intermediate area (Kearsney, Upper Chaka's Kraal etc.).
17. Coastal plateau (Doornkop, Upper Tongaat, Inanda).
18. Glendale.

MIDLANDS

19. Bishopstowe.
20. Cedara, Cramond, Seven Oaks, Mt. Alida.
21. Wartburg, Fawnleas, Dalton.
22. Kranskop.
23. Muden.
24. Tala Valley.
25. Eston, Mid-Illovo, Richmond.
26. Hillcrest, Inchanga.

SOUTH COAST

27. Coastal area (4-5 miles inland N. of Hibberdene).
28. Intermediate region.
29. Coastal plateau (Powerscourt and Highflats).
30. Coastal area (4-5 miles inland S. of Hibberdene).
31. Coastal plateau (Paddock, Maringo, Oribi).
32. Inland (Ngabeni, Hluku, Harding).

FIGURE 1: Regional Cane Areas

Discussion

Mr. Bartlett: These statistics are important because they enable a grower to compare his production with the average production in this area.

Would it be possible, however, to add another column to Table IV and give production of tons cane per acre per month? If this could be compared with the fertilizer used in each area and area rainfall figures, the table would have even more value.

Mr. du Toit: Very little will be gained by introducing such an additional column as tons cane per acre under cane virtually gives cane per acre per annum and is actually better, in that area under fallow is here incorporated into the production figure.

The accuracy of fertilizer usage is too low to draw specific conclusions with reference to rainfall, yield, age, etc., for individual areas.

Mr. Morrow: An industry this size must have reliable data and a system should be introduced to make this possible.

Mr. du Toit: Mr. Murdoch is working on a plan whereby representative samples will be collected from groups in the industry and it will no longer be necessary to rely on returns from individual growers.

Use will still have to be made, to a certain degree, of the Central Board Survey.

Mr. Turck: There are tremendous variations in fertilizer usage. Do the authors think enough is being used and, if not, will more lead to an even greater increase in yield than has been effected over the past few years?

Mr. du Toit: The figures look high and appear to show that the sugar industry is using adequate amounts of nitrogen, potash and phosphate.

But when driving through the cane fields there is plenty of visible evidence that sufficient fertilizer is not being applied in some cases.

Fertilizer application reached a peak about two or three years ago when planters were making great efforts to get higher quotas.

Mr. Main: It should be mentioned that when the farmers in the Midlands are firmly on their feet and have recovered part of their establishment costs their use of fertilizer will increase greatly.

Mr. King: I think it would be better if fertilizer was given as N, P and K rather than as pounds of fertilizer because the tendency today is to upgrade fertilizer and it is difficult to know what is being applied.

The figures can be misleading. In Table IV, regions 20 and 21, tons cane harvested was 31.2 for both and yet fertilizer in pounds per acre was 874 and 390. Presumably a lot must have been used for plant cane that has not yet been harvested.

Mr. du Toit: We can divide the figures given to us by the fertilizer suppliers into N, P and K but I think it would be asking too much of farmers to request them to supply figures in such detail.

Regarding Mr. Main's remarks about an anticipated increase in fertilizer use in the Midlands it is a fact that fertilizer usage is closely related to the prosperity of the farmer, or the sugar price. Hence the drop in recent years.

Mr. Pearson: The percentage acreage cut shows a very big increase, being 62% for Zululand. This may of course be related to farmers endeavouring to obtain mean peaks.

The fact that Umhlatuzi and Umfolozi still have 74% NCo.310 shows how popular this variety is in those areas.

Mr. Wilson (in the chair): Although this paper points out that yield per acre of cane has increased by 42% in the last ten years the established sugar cane areas have by no means been fully exploited. Twenty-two tons cane per acre per annum certainly does not represent the ceiling at which we can operate in the main cane growing areas. In an area of 800,000 acres under cane an increase of five tons of cane per acre per annum, which is quite feasible, represents an enormous increase in tons of sugar.

Mr. Harvey: Does Mr. du Toit have any idea what proportion of plant cane has been heat treated?

Mr. Thomson: We intend to a survey on ratoon stunting and heat treated acreage but we have not got a figure at the moment.

Mr. Sherrard: I think the increase in NCo.382 in the North was due to it being the only variety that could be grown in the Umfolozi flats in the sand deposited by the floods in 1962.

Mr. Pearson: NCo.310 was planted almost completely at Monzi and has survived very well on the flats and is giving good yields.