

WEATHER REPORT FOR YEAR 1st JUNE 1953, TO 31st MAY, 1954

By J. L. DU TOIT.

This is the third annual weather report issued by the South African Sugar Association Experiment Station dealing with the period 1st June in one year to 31st May in the following year and using the monthly rainfall data from fifty-four truly representative centres within the Sugar Belt. It is believed that the weather conditions during this period, as well as, perhaps, those during the preceding twelve months, have a dominant effect on the crops to be cut. Although, therefore, this report will deal mainly with the weather conditions during the year June, 1953, to May, 1954, reference will also be made to conditions during the previous twelve months, so as to get an idea of most of the external influences that affected the 1954-55 sugarcane crop.

TABLE I

| Magisterial District | Rainfall for year 1st June 1952 to 31st May 1953 | Rainfall for year 1st June 1953 to 31st May 1954 | Rainfall for period 1st June 1952 to 31st May 1954 |
|-------------------------|--|--|--|
| Port Shepstone .. | Mehlomnyama 40.02 | 41.61 | 81.63 |
| Umzinto | Hibberdene 35.92 | 38.76 | 74.68 |
| | Umtwalumi 34.11 | 35.66 | 69.77 |
| | Sezela Mill 37.08 | 40.91 | 77.99 |
| | Esperanza Mill 33.82 | 40.80 | 74.62 |
| | Renishaw Mill 30.66 | 39.22 | 69.88 |
| | Dumisa 28.95 | 35.16 | 64.11 |
| Durban, Camperdown, etc | | | |
| | Illovo Mill 28.12 | 31.80 | 59.92 |
| | Umbumbulu 30.50 | 31.61 | 62.11 |
| | Thornville 25.89 | 36.07 | 61.96 |
| Inanda | Mt. Edgecombe— | | |
| | Milkwood Kraal 39.41 | 37.24 | 76.65 |
| | Experiment Station 40.15 | 33.10 | 73.25 |
| | Beach 41.40 | 32.55 | 73.95 |
| | La Mercy 42.55 | 35.90 | 78.45 |
| | Canelands 34.86 | 31.12 | 65.98 |
| | Tonga 41.64 | 35.43 | 77.07 |
| | Inyaninga 40.98 | 33.77 | 74.75 |
| | Inanda 45.09 | 43.59 | 88.68 |
| | Tonga, Mwawine 44.85 | 37.53 | 82.38 |
| Lower Tugela .. | Maidstone Mill 39.13 | 37.65 | 76.78 |
| | Sinembe 35.27 | 37.47 | 72.74 |
| | Upper Tongaat 46.57 | 43.18 | 89.75 |
| | Frasers Estate 38.74 | 35.15 | 73.89 |
| | Chaka's Kraal Exp. Farm 41.96 | 38.37 | 80.33 |
| | Chaka's Kraal 36.96 | 42.66 | 79.62 |
| | Groutville 32.72 | 34.55 | 67.27 |
| | Kearsney 34.04 | 46.39 | 80.43 |
| | Doornkop Mill 31.19 | 40.10 | 71.29 |
| | Doornkop, Sprinz 43.57 | 52.21 | 95.78 |
| | Gledhow Mill 35.31 | 35.64 | 70.95 |
| | Darnall Mill 36.65 | 35.92 | 72.57 |
| | Tugela Mouth 30.38 | 42.61 | 72.99 |
| Mtunzini | Mandeni 28.50 | 39.74 | 68.24 |
| | Amatikulu Mill 33.44 | 41.14 | 74.58 |
| | Inyoni 34.02 | 36.34 | 70.36 |
| | Mtunzini 34.63 | 58.56 | 93.19 |
| | Blackburn 37.22 | 43.23 | 80.45 |
| Eshowe | Entumeni Mill 31.56 | 42.82 | 74.38 |
| | Eshowe 36.22 | 46.18 | 82.40 |
| | Nkwaleni 22.53 | 26.93 | 49.46 |
| Lower Umfolozi .. | Felixton Mill 28.07 | 59.82 | 87.89 |
| | Empangeni West 26.88 | 40.04 | 66.92 |
| | Empangeni Mill 29.16 | 54.00 | 83.16 |
| | Logoza 26.17 | 49.47 | 75.64 |
| | Ukulu Properties 24.34 | 44.39 | 68.73 |
| | Mposa 26.09 | 45.89 | 71.98 |
| | Kwambonambi 29.11 | 48.10 | 77.21 |
| | Eteza 34.59 | 37.84 | 72.43 |
| Hlabisa | Mtubatuba Mill 25.09 | 37.92 | 63.01 |
| | U.L.O.A. 43.05 | 45.30 | 88.35 |
| | Nyalazi River 31.61 | 29.45 | 61.06 |
| | Hluhluwe 24.29 | 21.85 | 46.14 |
| Ubonbo | Mkuzi 21.24 | 22.36 | 43.60 |
| Piet Retief | Pongola 23.34 | 25.19 | 48.53 |
| Mean | 33.88 | 39.08 | 72.96 |

Rainfall Returns from Fifty-four Centres

The fifty-four centres dealt with in this report are so chosen that with the exception of the four most northerly stations, each rainfall recording station is representative of an area producing approximately 2 per cent. of the annual sugarcane crop. The data are further divided into magisterial districts and the normal sub-division of the Sugar Belt, i.e. South Coast, North Coast and Zululand. The divisions are, therefore, the same as those of the annual summary of agricultural data and will facilitate a correlation between rainfall and yield data.

Table I gives the rainfall for the years 1st June, 1952, to 31st May, 1953, and 1st June, 1953, to 31st May, 1954 and the total rainfall for these two years for the fifty-four centres from which the Experiment Station now obtains regular monthly rainfall returns. Table II gives the rainfall in inches for the various districts.

Computed Averages for Fifty-four Centres

The Experiment Station now has rainfall records for these 54 centres for three complete calendar years and also has records for the same period for the old 44 recording centres whose mean rainfall for the past 25 years is known. It is, therefore, possible to arrive at a computed 25 years' average annual rainfall for the 54 centres as follows:

| | Annual Rainfall 54 Centres | Annual Rainfall 44 Centres | Ratio of Rainfall 54 Centres to Rainfall 44 Centres |
|---------------|----------------------------|----------------------------|---|
| 1951 | 33.13 | 35.10 | 0.9439 |
| 1952 | 31.57 | 33.42 | 0.9446 |
| 1953 | 37.97 | 41.15 | 0.9227 |
| Av. 1951/1953 | 34.22 | 36.56 | 0.9360 |

The mean rainfall for 44 centres for 25 years is 39.98 inches and consequently the computed mean rainfall for the 54 centres is $39.98 \times 0.9360 = 37.42$ inches. The rainfall for the year June, 1953, to May, 1954, was, therefore, above average.

The monthly rainfall distribution for 44 centres is not known, as only annual totals were reported. However, Dr. B. E. Beater, in the 1945 South African Sugar Technologists' Proceedings, gave a monthly rainfall distribution from 22 localities scattered along the South Coast, North Coast and Zululand for a number of years. The data given have been extended and now cover the period 1924-1951 and the distribution of rainfall for the 54 centres is known from the beginning of 1951. If it

TABLE II

Rainfall in Inches by Districts for the Months June, 1953 to May, 1954 inclusive

| District | No. of Centres | 1953 | | | | | | | | | | | Total | |
|--------------------------------------|----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------------|
| | | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June '53 to May '54 |
| Port Shepstone .. | 1 | 0.00 | 0.12 | 3.74 | 4.25 | 3.92 | 9.09 | 4.76 | 2.21 | 4.58 | 5.17 | 0.48 | 3.29 | 41.61 |
| Umzinto | 6 | 0.06 | 0.29 | 3.71 | 4.02 | 3.80 | 5.01 | 5.73 | 3.86 | 3.61 | 5.04 | 0.57 | 2.72 | 38.42 |
| Durban, Pinetown etc. | 3 | 0.37 | 0.15 | 3.68 | 2.76 | 3.17 | 3.66 | 6.13 | 4.11 | 2.70 | 2.75 | 1.46 | 2.22 | 33.16 |
| Mean South Coast | 10 | 0.15 | 0.23 | 3.70 | 3.67 | 3.62 | 5.01 | 5.75 | 3.77 | 3.43 | 4.37 | 0.83 | 2.63 | 37.16 |
| Inanda | 9 | 0.11 | 0.17 | 2.69 | 3.19 | 2.73 | 3.84 | 6.67 | 3.62 | 4.95 | 3.73 | 1.38 | 2.46 | 35.54 |
| Lower Tugela | 13 | 0.10 | 0.17 | 1.81 | 2.91 | 3.10 | 4.32 | 6.03 | 4.58 | 6.13 | 4.55 | 3.31 | 3.14 | 40.15 |
| Mean North Coast | 22 | 0.10 | 0.17 | 2.17 | 3.02 | 2.95 | 4.12 | 6.29 | 4.19 | 5.65 | 4.21 | 2.52 | 2.86 | 38.25 |
| Mean south of Tugela | 32 | 0.12 | 0.19 | 2.65 | 3.22 | 3.16 | 4.40 | 6.12 | 4.06 | 4.96 | 4.26 | 1.99 | 2.79 | 37.92 |
| Mtunzini | 5 | 0.35 | 0.49 | 0.94 | 3.35 | 3.35 | 5.84 | 4.92 | 4.32 | 7.76 | 4.38 | 4.57 | 3.57 | 43.84 |
| Eshowe | 3 | 0.16 | 0.10 | 1.02 | 1.90 | 2.93 | 6.63 | 6.33 | 2.97 | 5.06 | 4.18 | 3.70 | 3.65 | 38.63 |
| Lower Umfolozi .. | 8 | 0.32 | 1.25 | 0.85 | 4.30 | 4.26 | 7.79 | 2.74 | 3.13 | 11.08 | 3.13 | 3.95 | 4.66 | 47.46 |
| Hlabisa | 4 | 0.92 | 0.58 | 0.68 | 3.09 | 3.25 | 4.05 | 3.15 | 1.88 | 5.95 | 2.07 | 3.55 | 4.48 | 33.65 |
| Ubombo | 1 | 0.00 | 0.08 | 0.35 | 1.22 | 1.33 | 6.00 | 0.71 | 1.95 | 4.31 | 1.02 | 1.81 | 3.58 | 22.36 |
| Piet Retief | 1 | 0.06 | 0.08 | 0.08 | 1.15 | 2.31 | 6.25 | 1.18 | 2.71 | 5.53 | 1.62 | 0.74 | 3.48 | 25.19 |
| Mean Zululand and Piet Retief | 22 | 0.39 | 0.69 | 0.81 | 3.25 | 3.47 | 6.36 | 3.64 | 3.08 | 8.01 | 3.20 | 3.74 | 4.14 | 40.78 |
| General Mean | 54 | 0.23 | 0.39 | 1.90 | 3.23 | 3.29 | 5.20 | 5.11 | 3.66 | 6.20 | 3.83 | 2.70 | 3.34 | 39.08 |

TABLE III

Mean Monthly and Annual Rainfall Over 28 Years 1924/51 (inclusive) from 22 Localities

| Year | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Annual |
|--|--------------|--------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|---------------|
| 1924 | 4.27 | 4.32 | 2.56 | 2.20 | 1.20 | 0.84 | 0.34 | 1.40 | 4.34 | 2.96 | 6.96 | 6.38 | 37.77 |
| 1925 | 5.65 | 5.51 | 24.25 | 2.02 | 3.17 | 0.42 | 2.14 | 0.35 | 5.09 | 3.73 | 3.25 | 2.44 | 58.02 |
| 1926 | 2.03 | 3.80 | 6.19 | 0.73 | 0.67 | 2.41 | 0.34 | 0.53 | 2.68 | 4.70 | 3.71 | 3.68 | 31.47 |
| 1927 | 3.14 | 5.05 | 11.44 | 0.60 | 1.58 | 0.14 | 1.38 | 1.73 | 1.39 | 3.50 | 1.99 | 5.04 | 36.98 |
| 1928 | 5.73 | 4.66 | 2.76 | 2.08 | 1.74 | 0.34 | 0.47 | 1.38 | 1.58 | 3.09 | 2.86 | 3.80 | 30.49 |
| 1929 | 5.82 | 3.01 | 10.38 | 1.88 | 1.10 | 5.32 | 2.77 | 1.44 | 4.66 | 4.79 | 4.15 | 2.00 | 47.32 |
| 1930 | 8.32 | 1.86 | 2.82 | 1.99 | 1.04 | 1.49 | 1.48 | 2.92 | 4.04 | 3.18 | 4.54 | 4.77 | 38.45 |
| 1931 | 4.05 | 2.33 | 4.16 | 2.06 | 0.56 | 0.58 | 3.09 | 0.39 | 1.90 | 2.25 | 2.51 | 4.85 | 28.73 |
| 1932 | 4.58 | 13.69 | 5.51 | 5.78 | 5.07 | 0.74 | 0.24 | 0.74 | 2.04 | 4.09 | 3.94 | 4.93 | 51.35 |
| 1933 | 3.74 | 2.97 | 3.52 | 1.81 | 0.88 | 0.43 | 1.53 | 0.64 | 1.40 | 2.29 | 7.00 | 6.40 | 32.61 |
| 1934 | 7.37 | 5.07 | 4.52 | 5.04 | 2.81 | 1.51 | 2.74 | 2.50 | 0.84 | 1.76 | 3.22 | 8.08 | 45.46 |
| 1935 | 4.52 | 4.02 | 4.38 | 1.72 | 5.82 | 11.93 | 0.93 | 2.97 | 0.76 | 2.08 | 1.71 | 2.99 | 43.83 |
| 1936 | 6.75 | 8.54 | 6.19 | 0.92 | 7.31 | 0.98 | 0.98 | 0.33 | 2.49 | 3.85 | 11.50 | 1.70 | 51.54 |
| 1937 | 3.95 | 7.20 | 2.60 | 2.97 | 0.18 | 1.76 | 1.32 | 1.54 | 1.02 | 2.60 | 3.56 | 10.71 | 39.41 |
| 1938 | 4.85 | 7.39 | 0.87 | 3.75 | 1.18 | 2.48 | 3.64 | 1.53 | 0.69 | 5.02 | 3.58 | 5.87 | 40.85 |
| 1939 | 3.07 | 8.36 | 5.86 | 1.88 | 3.93 | 0.76 | 1.95 | 1.18 | 5.63 | 2.17 | 7.45 | 5.27 | 47.51 |
| 1940 | 2.86 | 1.54 | 4.77 | 1.85 | 10.70 | 4.16 | 0.29 | 1.16 | 2.11 | 2.16 | 8.59 | 5.11 | 45.30 |
| 1941 | 1.94 | 1.72 | 4.13 | 3.29 | 0.55 | 1.07 | 0.63 | 0.58 | 3.00 | 2.24 | 4.45 | 2.89 | 26.49 |
| 1942 | 7.35 | 2.42 | 7.26 | 2.37 | 2.44 | 1.36 | 0.82 | 2.48 | 2.87 | 3.93 | 6.71 | 8.36 | 48.37 |
| 1943 | 2.51 | 4.95 | 8.71 | 7.46 | 2.54 | 1.41 | 4.26 | 4.46 | 1.08 | 6.80 | 5.41 | 3.57 | 53.16 |
| 1944 | 1.69 | 5.58 | 5.05 | 1.68 | 0.55 | 3.61 | 1.12 | 0.90 | 8.05 | 3.49 | 3.60 | 2.26 | 37.58 |
| 1945 | 2.81 | 6.62 | 8.85 | 1.18 | 1.75 | 0.28 | 0.41 | 0.65 | 1.02 | 3.67 | 1.46 | 3.72 | 32.42 |
| 1946 | 5.13 | 3.68 | 4.01 | 4.10 | 1.00 | 0.42 | 0.09 | 0.55 | 1.35 | 3.35 | 3.81 | 5.07 | 32.56 |
| 1947 | 3.90 | 7.50 | 5.35 | 4.16 | 1.21 | 3.10 | 1.13 | 1.61 | 2.25 | 2.59 | 7.54 | 4.51 | 44.85 |
| 1948 | 4.63 | 4.99 | 5.14 | 4.20 | 0.57 | 0.20 | 0.12 | 0.75 | 1.33 | 5.30 | 3.83 | 2.46 | 33.52 |
| 1949 | 3.67 | 5.95 | 3.73 | 6.06 | 0.45 | 1.45 | 0.49 | 0.67 | 2.48 | 5.52 | 6.58 | 7.83 | 44.88 |
| 1950 | 4.01 | 4.14 | 4.69 | 1.83 | 2.21 | 0.52 | 0.63 | 2.13 | 0.53 | 1.52 | 1.51 | 6.46 | 30.18 |
| 1951 | 4.09 | 2.28 | 5.01 | 1.47 | 0.81 | 1.62 | 0.41 | 5.52 | 2.82 | 3.88 | 0.95 | 6.81 | 35.67 |
| Means | 4.37 | 4.97 | 5.88 | 2.75 | 2.25 | 1.83 | 1.28 | 1.54 | 2.48 | 3.45 | 4.51 | 4.93 | 40.24 |
| Percent- age dis- tribu- tion | 10.86 | 12.35 | 14.61 | 6.83 | 5.59 | 4.55 | 3.18 | 3.83 | 6.16 | 8.57 | 11.21 | 12.25 | 100.00 |

is now assumed that rainfall distribution from the 22 centres reasonably reflects the rainfall distribution over the whole Sugar Belt, then the mean rainfall distribution for the 54 centres can be calculated.

The Table III gives the monthly and annual rainfall from 1924 to 1951.

The rainfall distribution for 1952 and 1953 is also known from the collected data from 54 centres and

a weighted percentage distribution covering 30 years can, therefore, be obtained. This applied to the computed annual average rainfall will give the expected mean monthly rainfall for the 54 centres for 25 years.

The Table IV gives this data as well as evaporation from an open water surface at the Experiment Station.

It will be seen from this table that, on the average, March has the highest rainfall, that the rainfall for January is on the whole decidedly lower than that of either December or February, that rainfall from November to March is relatively high and for the

winter period from June to August, very low. Rainfall distribution, as well as temperatures, form the basis of dividing the year into four periods—winter growth June to August, early growth September and October, optimum growth November to March and late growth during the months of April and May. Rainfall during these periods for the past two years for the magisterial districts and main sub-divisions of the Sugar Belt is given in Table V.

Comments on Rainfall

Although the average rainfall for the two-year period ending 31st May, 1954, was 72.96 inches or below the 30 years' mean of 74.84 inches, the rainfall for the year ending 31st May, 1954, was 39.08 inches, or well above the computed mean of 37.42 inches. The cane crop has, therefore, gone through two successive optimum growing periods with rainfalls above normal and reasonably well distributed, with the result that the cane crop now being harvested is in good condition.

The one redeeming feature about the year ending 31st May, 1953, was that on the whole excellent rains were experienced during the optimum growing period, but the winter months of June to August were dry and drought became progressively worse until the end of October. Floods were experienced during January at a number of centres on the North and South Coasts, but the rainfall for March was below normal and the months of April and May had very deficient falls. The year ended with a total rainfall of only 33.88 inches.

TABLE IV

| | Mean percentage Rainfall distribution 1924-53 | Computed Mean R fall for 54 centres 1929-53 | Actual Rainfall for 54 Centres June 1953-May 1954 | Evaporation at Experiment Station | |
|-------------|---|---|---|-----------------------------------|--------------------|
| | | | | Mean 1936-53 | June 1953-May 1954 |
| June, 1953 | 4.34 | 1.62 | 0.23 | 2.36 | 2.59 |
| July " | 3.17 | 1.19 | 0.39 | 2.53 | 2.99 |
| Aug. " | 3.81 | 1.43 | 1.90 | 2.87 | 2.68 |
| Sept. " | 6.13 | 2.29 | 3.23 | 3.60 | 3.38 |
| Oct. " | 8.47 | 3.17 | 3.29 | 4.14 | 3.63 |
| Nov. " | 11.38 | 4.26 | 5.20 | 4.85 | 4.50 |
| Dec. " | 12.45 | 4.66 | 5.11 | 5.36 | 5.90 |
| Jan. 1954.. | 11.35 | 4.25 | 3.66 | 5.66 | 5.12 |
| Feb. " | 12.31 | 4.60 | 6.20 | 4.76 | 4.57 |
| Mar. " | 14.20 | 5.31 | 3.83 | 4.40 | 4.75 |
| April " | 6.76 | 2.53 | 2.70 | 3.36 | 3.06 |
| May " | 5.62 | 2.10 | 3.34 | 2.80 | 3.24 |
| | <u>100.00</u> | <u>37.42</u> | <u>39.08</u> | <u>46.69</u> | <u>46.41</u> |

TABLE V

Rainfall in Inches by Districts for the Two Year Period June, 1952 to May, 1954 inclusive

| | No of Centres | 1952 Winter Growth June-August | 1952 Early Growth Sept.-Oct. | 1952-53 Optimum Growth Nov.-March | 1953 Late Growth Apr.-May | 1953 Winter Growth June-August | Early Growth Sept.-Oct. | 1953-54 Optimum Growth Nov.-March | 1954 Late Growth Apr.-May | Total for two years growth June, 1952-May, 1954. |
|--------------------------------------|---------------|--------------------------------|------------------------------|-----------------------------------|---------------------------|--------------------------------|-------------------------|-----------------------------------|---------------------------|--|
| Port Shepstone | 1 | 1.31 | 4.43 | 32.61 | 1.67 | 3.86 | 8.17 | 25.81 | 3.77 | 81.63 |
| Umzinto | 6 | 1.84 | 4.38 | 25.38 | 1.84 | 4.06 | 7.82 | 23.25 | 3.29 | 71.86 |
| Durban, Pinetown, etc. | 3 | 1.62 | 2.17 | 22.75 | 1.63 | 4.20 | 5.93 | 19.35 | 3.68 | 61.33 |
| Mean South Coast | 10 | 1.72 | 3.72 | 25.32 | 1.76 | 4.08 | 7.29 | 22.33 | 3.46 | 69.68 |
| Inanda | 9 | 2.92 | 2.87 | 33.63 | 1.76 | 2.97 | 5.92 | 22.81 | 3.84 | 76.72 |
| Lower Tugela | 13 | 2.70 | 2.50 | 30.02 | 1.91 | 2.08 | 6.01 | 25.61 | 6.45 | 77.28 |
| Mean North Coast | 22 | 2.80 | 2.65 | 31.48 | 1.84 | 2.44 | 5.97 | 24.46 | 5.38 | 77.02 |
| Mean south of Tugela | 32 | 2.46 | 2.99 | 29.55 | 1.82 | 2.96 | 6.38 | 23.80 | 4.78 | 74.74 |
| Mtunzini | 5 | 3.13 | 2.72 | 25.26 | 2.44 | 1.78 | 6.70 | 27.22 | 8.14 | 77.39 |
| Eshowe | 3 | 2.80 | 2.29 | 23.18 | 1.84 | 1.28 | 4.83 | 25.17 | 7.35 | 68.74 |
| Lower Umfolozi | 8 | 3.62 | 2.13 | 20.91 | 1.51 | 2.42 | 8.56 | 27.87 | 8.61 | 75.63 |
| Hlabisa | 4 | 6.03 | 1.56 | 21.67 | 1.74 | 2.18 | 6.34 | 17.10 | 8.03 | 64.65 |
| Ubombo | 1 | 1.50 | 0.48 | 18.20 | 1.06 | 0.43 | 2.55 | 13.99 | 5.39 | 43.60 |
| Piet Retief | 1 | 1.47 | 2.03 | 17.88 | 1.95 | 0.22 | 3.46 | 17.29 | 4.22 | 48.52 |
| Mean Zululand and Piet Retief | 22 | 3.63 | 2.10 | 22.08 | 1.81 | 1.89 | 6.72 | 24.29 | 7.88 | 70.40 |
| General Average | 54 | 2.93 | 2.62 | 26.51 | 1.82 | 2.52 | 6.52 | 24.00 | 6.04 | 72.96 |
| Computed Mean for 30 Years | 54 | 4.24 | 5.46 | 23.08 | 4.63 | 4.24 | 5.46 | 23.08 | 4.63 | 74.84 |

TABLE VI

Screen Temperatures by Months in Degrees Fahrenheit at the Experiment Station for the Period June, 1953 to May, 1954 Compared with the means for the period 1928 to 1953

| | — THIS PERIOD — | | | | | Average 1928-1953 inclusive | | | | |
|----------------------|-----------------|-------------|-------------|-----------------------|-------------|-----------------------------|-------------|-------------|-------------|--|
| | Maximum | Minimum | Mean | Plus or Minus Average | Daily Range | Maximum | Minimum | Mean | Daily Range | |
| June | 74.5 | 52.5 | 63.5 | +0.7 | 22.0 | 73.0 | 52.7 | 62.8 | 20.3 | |
| July | 73.0 | 50.4 | 61.7 | -0.3 | 22.6 | 72.2 | 51.7 | 62.0 | 20.5 | |
| August | 71.6 | 53.8 | 62.7 | -0.9 | 17.8 | 73.2 | 53.9 | 63.6 | 19.3 | |
| September | 72.0 | 55.9 | 64.0 | -1.8 | 16.1 | 74.5 | 57.1 | 65.8 | 17.4 | |
| October | 76.3 | 62.1 | 69.2 | +0.8 | 14.2 | 76.0 | 60.9 | 68.4 | 15.1 | |
| November | 77.2 | 64.2 | 70.7 | 0.0 | 13.0 | 78.0 | 63.3 | 70.7 | 14.7 | |
| December | 79.7 | 66.9 | 73.2 | +0.3 | 12.8 | 80.1 | 65.7 | 72.9 | 14.4 | |
| January | 79.3 | 66.9 | 73.1 | -1.0 | 12.4 | 81.0 | 67.1 | 74.1 | 13.9 | |
| February | 81.7 | 67.5 | 74.6 | 0.0 | 14.2 | 81.6 | 67.5 | 74.6 | 14.1 | |
| March | 79.9 | 65.8 | 72.9 | -0.2 | 14.1 | 80.3 | 65.9 | 73.1 | 14.4 | |
| April | 77.9 | 61.0 | 69.4 | -0.8 | 16.9 | 78.4 | 62.1 | 70.2 | 16.3 | |
| May | 75.9 | 56.8 | 66.4 | -0.1 | 19.1 | 76.0 | 56.9 | 66.5 | 19.1 | |
| Means | 76.6 | 60.3 | 68.5 | -0.2 | 16.3 | 77.0 | 60.4 | 68.7 | 16.6 | |

The year June, 1953, to May, 1954, therefore started under adverse conditions, and in fact badly deficient rains during June, July and most of August resulted in one of the worst droughts ever experienced. Good rains fell towards the end of August on the South Coast and the southern part of the North Coast and the whole Industry had excellent rains in September. Good and well-distributed rains again fell over the whole Industry during October, resulting in excellent planting conditions and a good early start for the crop. Some areas, particularly in Zululand, however, still needed more rain. Excellent well-distributed rains continued throughout November and December and the Industry had four successive months of rainfall above the average and very well-distributed. These favourable conditions greatly improved the crop prospects. Although the January rainfall was somewhat below normal, it was again well-distributed and February had a rainfall appreciably above normal, with excellent rains in Zululand and on the North Coast. The rainfall for March was decidedly below normal, but again it was

well-spread over the month and the cane crop was reported to make good to excellent progress. April was dry on the South Coast but normal on the North Coast, while Zululand had good rains. May had a rainfall well above normal. On the whole, therefore, it can be said that after a severe winter drought lasting well into August, the Industry experienced good to excellent rains, which were well-distributed from October to the end of May and the year ended with an average of 39.08 inches or appreciably above the computed mean of 37.42 inches. The most gratifying feature of the rainfall for the year, with the exception of the winter months was, however, that the rainfall was so well-distributed.

Temperatures

The mean screen temperature at the Experiment Station for the year ending 31st May, 1954, was 68.5°F., or 0.2° lower than the 1928-53 average of 68.7°. September had a mean temperature of 1.8° below normal and January was 1.0° below normal.

TABLE VII
Mean Monthly Earth Temperatures

| | Experiment Station Means 1935-53 | | | Experiment Station June 1953-May 1954 | | | Umzimkulu Sugar Co. June '53-May '54 | | Entumeni Wattle Co. June '53-May '54 |
|---------------------|-------------------------------------|-------------|-------------|--|-------------|-------------|--|-------------|--|
| | 1 ft. | 2ft. | 4 ft. | 1 ft. | 2ft. | 4 ft. | 2ft. | 2 ft. | |
| June | 64.4 | 67.3 | 69.9 | 63.6 | 66.3 | 69.3 | 65.6 | 65.0 | |
| July | 62.9 | 65.2 | 67.3 | 60.9 | 63.2 | 66.1 | 64.0 | 64.2 | |
| August | 64.9 | 66.1 | 67.1 | 62.7 | 64.1 | 65.7 | 64.6 | 64.7 | |
| September | 68.0 | 68.6 | 68.6 | 66.1 | 66.3 | 66.6 | 67.8 | 64.3 | |
| October | 71.1 | 71.3 | 70.7 | 71.2 | 70.5 | 69.3 | 70.7 | 67.7 | |
| November | 73.6 | 73.7 | 73.2 | 73.6 | 73.1 | 71.5 | 72.8 | 69.2 | |
| December | 76.5 | 76.4 | 75.0 | 76.9 | 75.9 | 73.8 | 75.6 | 70.8 | |
| January | 78.8 | 79.3 | 77.2 | 77.0 | 76.8 | 75.2 | 76.8 | 71.2 | |
| February | 79.6 | 79.8 | 78.5 | 79.3 | 78.8 | 76.6 | 78.5 | 71.9 | |
| March | 78.3 | 79.2 | 78.6 | 77.0 | 77.4 | 76.8 | 76.5 | 70.2 | |
| April | 75.0 | 76.6 | 77.1 | 72.9 | 73.9 | 74.8 | 73.1 | 67.3 | |
| May | 69.6 | 72.1 | 73.9 | 67.6 | 69.4 | 71.8 | 68.3 | 65.6 | |
| Mean | 71.9 | 73.0 | 73.1 | 70.7 | 71.3 | 71.5 | 71.2 | 67.7 | |

The highest temperature recorded was 97.7° on 9th January, 1954, and the lowest screen temperature was 44.6 on 29th July, 1953. The previous year was, however, abnormally hot and the mean screen temperature averaged 69.7°F.

Soil temperatures recorded during the past year at the Experiment Station were well below normal, averaging 70.7°, 71.3° and 71.5° at 1ft., 2ft. and 4ft., compared with the 1935-1953 averages at the same depth of 71.9°, 73.0° and 73.1°. The soil temperatures at 2ft. depth are also given for Umzimkulu Sugar Co. Ltd. and Entumeni Wattle Co. and again it is noticeable that the winter temperatures at these two centres are rather similar, but that the summer temperatures are much lower at Entumeni. These figures are detailed in Tables VI and VII.

Summary

The average rainfall for the past two years was 72.96 inches or 1.88 inches below normal, but the crop during the past two seasons went through two optimum growing seasons with rainfalls above

normal. During the year ending 31st May, 1954, the rainfall for the 54 recording stations averaged 39.08 inches, or 1.66 inches above normal, and on the whole this rainfall was very well-distributed.

The period June to October, 1952, was dry to very dry. Good rains fell during November and December and floods were experienced during January in many centres. The rainfall was deficient from March, 1953, until towards the end of August and an exceptionally severe drought was experienced. From October, 1953, up to the end of May, 1954, the Industry as a whole experienced very favourable weather conditions, with well-distributed rains, which were seldom, and only for short intervals, deficient; these favourable conditions improved the crop tremendously, with the result that an excellent crop can be expected.

Temperatures were well above normal for the first year, but somewhat below for the immediate past year. Soil temperatures during the last year were particularly low at the Experiment Station.