# WEATHER REPORT FOR THE YEAR 1st JUNE 1964, TO 31st MAY, 1965

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## General Scope of Report

It has been correctly said that "Climate is what you should have, and weather is what you get". This report records the weather experienced along the South African sugar-belt during the year ending 31st May, 1965, and compares it with the climate we should have had if conditions had been average. As in previous years, the report will deal primarily with the rainfall recorded by 54 measuring stations scattered throughout the cane-growing areas from Port Shepstone in the south to Pongola in the north. Other climatic data quoted, such as evaporation rates and soil and air temperatures, refer specifically to Mount Edgecombe where these readings were taken. These figures will, however, reflect broadly the conditions prevailing in the rest of the area.

Rainfall during the year under review will be discussed in some detail. In addition, the rainfall experienced during the year June, 1963, to May, 1964, will be referred to, since the crop being harvested this season will have been influenced by the weather during both years.

## Tabulated Data

Table I gives the annual rainfall recorded at each of the 54 measuring stations for the past 5 years.

Table II indicates the mean monthly rainfall during the past year for each of the magisterial districts covered by this survey, as well as for each of the three main sub-divisions.

In table III can be seen the calculated mean rainfall for the past 41 years, as well as the monthly percentage distribution. Also given are the actual mean monthly rainfall figures for all recording stations, plus the corresponding evaporation figures for the Experiment Station. The evaporation figures are recorded from an open water surface in a square "Symons" tank.

Table IV gives the rainfall distribution for 2 years according to growing periods for the magisterial districts and for the main sub-divisions.

Table V gives the monthly rainfall for the 54 centres for the past 4 years, and also the rainfall deficiency, if any, per month.

Table VI is a list of the maximum, minimum, and mean screen temperatures as recorded at the Experiment Station during the past year, plus the comparative mean figures over the past 37 years.

Table VII lists the mean monthly earth temperatures at Mount Edgecombe over the past year, as well as the figures for the past 30 years for comparison.

TABLE I

**Rainfall for 54 Centres**

| | *Rainfall for year 1st June 1960 to 31st May 1961* | *Rainfall for year 1st June 1961 to 31st May 1962* | *Rainfall for year 1st June 1962 to 31st May 1963* | *Rainfall for year 1st June 1963 to 31st May 1964* | *Rainfall for year 1st June 1964 to 31st May 1965* |
|---|---|---|---|---|---|
| **Port Shepstone** | | | | | |
| Mehlomnyama | 48.21 | 36.25 | 46.13 | 43.89 | 33.32 |
| **Umzinto** | | | | | |
| Hibberdene | 54.56 | 34.40 | 42.95 | 37.43 | 51.11 |
| Mtwalume | 41.32 | 25.76 | 36 52 | 37.17 | 45.91 |
| Sezela Mill | 45.84 | 32.06 | 39.66 | 42.62 | 52.44 |
| Esperanza Mill | 46 60 | 35.97 | 46.48 | 42.10 | 41.02 |
| Renishaw Mill | 48.06 | 37.79 | 42.50 | 40.88 | 40.87 |
| Dumisa | 46.82 | 31.42 | 39.85 | 35.97 | 42.20 |
| **Durban, Camperdown, etc.** | | | | | |
| Illovo Mill | 43.18 | 39.64 | 46.80 | 40.15 | 43.06 |
| Umbumbulu | 42.46 | 29.40 | 36.93 | 32.21 | 29.51 |
| *Thornville* | 43.06 | 26.64 | 27.23 | 35.41 | 24.53 |
| **Inanda** | | | | | |
| Mount Edgecombe— | | | | | |
| Effingham | 35.64 | 27.75 | 34 17 | 37.92 | 26.78 |
| Experiment Station | 38.91 | 30.83 | 36 46 | 35.00 | 23.50 |
| Burnside | 42.23 | 33.88 | 38.52 | 33.49 | 26.12 |
| La Mercy | 46.52 | 28.12 | 37.51 | 34.85 | 29.08 |
| Canelands | 50.51 | 31.74 | 47.89 | 42.26 | 24.73 |
| *Tongaat*— | | | | | |
| Frosterly | 46.09 | 31.02 | 44.17 | 36.99 | 26.28 |
| Inyaninga | 43.86 | 31.97 | 41.06 | 36 62 | 22.50 |
| Inanda | 48.62 | 32.42 | 42.90 | 43.47 | 32.34 |
| Tongaat:— | | | | | |
| Mwawine | 48.10 | 31.33 | 36.10 | 37.50 | 30.47 |
| **Lower Tugela** | | | | | |
| Maidstone Mill | 45.10 | 28.41 | 38.04 | 33.38 | 25.74 |
| Sinembe | 44.37 | 33.19 | 40.18 | 32.21 | 26.90 |
| Upper Tongaat | 49.46 | 35.63 | 42.33 | 38.85 | 31.02 |
| Frasers Estate | 45.38 | 30.83 | 39.11 | 33.78 | 27.70 |
| Chaka's Kraal Experimental Farm | 42.79 | 32.51 | 40.68 | 34.88 | 26.82 |
| Chaka's Kraal | 42.01 | 29.98 | 43.14 | 35.15 | 26.69 |
| Groutville | 38.60 | 26.33 | 34.10 | 31.55 | 23.46 |
| Kearsney | 41.81 | 37.04 | 41.42 | 39.63 | 28.77 |
| Doornkop Mill | 38.89 | 28.79 | 33.71 | 33.25 | 22.71 |
| Doornkop Sprinz | 52.48 | 40.05 | 43.83 | 38.78 | 25.54 |
| Gledhow Mill | 42.44 | 34.36 | 38.41 | 35.14 | 24.99 |
| Darnall Mill | 47.75 | 36.50 | 46.49 | 40.97 | 26.33 |
| Tugela Mouth | 54.04 | 43.49 | 43.22 | 41.37 | 37.16 |
| **Mtunzini** | | | | | |
| Mandeni | 41.94 | 35.49 | 40.24 | 42.98 | 24.87 |
| Amatikulu Mill | 48.29 | 32.98 | 35.61 | 43.67 | 24.50 |
| Inyoni | 50.90 | 31.54 | 37.39 | 41.54 | 24.52 |
| Mtunzini | 66.73 | 49.76 | 43.26 | 54.33 | 37.16 |
| Blackburn | 54.49 | 36.73 | 37.72 | 46.30 | 27.34 |
| **Eshowe** | | | | | |
| Entumeni Mill | 46.57 | 36.99 | 43.51 | 38.39 | 25.07 |
| Eshowe | 50.12 | 39.19 | 51.32 | 54.56 | 29.10 |
| Nkwaleni | 37.30 | 20.54 | 30.26 | 35.04 | 15.69 |
| **Lower Umfolozi** | | | | | |
| Felixton Mill | 68.67 | 49.98 | 44.52 | 57.21 | 41.19 |
| Empangeni West | 48.31 | 31.70 | 32.48 | 52.45 | 24.66 |
| Empangeni Mill | 61.50 | 36.72 | 38.60 | 53.33 | 30.90 |
| Logoza | 60.93 | 39.56 | 38.21 | 54.67 | 26.55 |
| Ukulu Properties | 57.45 | 29.68 | 31.32 | 47.87 | 27.55 |
| Mposa | 54.91 | 39.19 | 33.05 | 53.71 | 25.94 |
| Kwambonambi | 54.49 | 47.11 | 36.88 | 56.60 | 31.24 |
| Eteza | 43.12 | 44.84 | 33.76 | 47.70 | 27.69 |
| **Hlabisa** | | | | | |
| Mtubatuba Mill | 36.24 | 39.50 | 30.86 | 40.89 | 22.06 |
| U.L.O.A. | 47.76 | 55.90 | 39.37 | 54.76 | 31.09 |
| Nyalazi River | 31.66 | 33.83 | 30.62 | 41.18 | 21.04 |
| Hluhluwe | 32.27 | 23.18 | 24.47 | 43.85 | 14.49 |
| **Ubombo** | | | | | |
| Mkuzi | 39.01 | 23.36 | 22 27 | 32.05 | 17.48 |
| **Piet Retief** | | | | | |
| Pongola | 28.67 | 18.24 | 24.92 | 21 59 | 16.95 |
| Mean | 46.43 | 34.10 | 38.32 | 40.92 | 29.02 |

## Comments on Rainfall

During the past year the South African sugar industry has experienced the worst summer drought ever recorded. As a direct result of the drought there will be an estimated shortfall of 400,000 tons of sugar during the coming season, and imports have been authorized in an effort to fulfil the commitments of the industry.

Rainfall for the year totalled only 29.02 inches compared with a computed mean annual figure of 38.20 inches for the past 41 years. June and July, 1964, were fractionally wetter than usual. October was very wet with 6.71 inches of rain compared with an average of 3.61 inches for the month, and May, 1965, had very slightly more rain than the average. All other months were far drier than usual, including the entire period from November to April, inclusive. Any lack of rain during this period is very serious for the cane industry, since it has been estimated that in Natal 75.2 per cent of the annual cane-growth takes place during this time, provided that moisture conditions are satisfactory. No matter how much rain falls from May onwards, growth lost by a summer drought cannot be made good.

The mean rainfall for the November/April period during the last 41 years has been 26.05 inches. Coupled with the mean evaporation figure of 28.92 inches, this gives a mean "water deficit" of 2.87 inches. Comparable figures recorded during the past summer were 14.68 inches of rain and 34.56 inches of evaporation. This gives the astonishing figure of 19.88 inches of "water deficit", or just on 7 times the expected amount. It should be explained that evaporation figures are measured from an open water surface, and are therefore seldom equal to the combined evapo-transpiration losses experienced by a field of growing cane. In this country the evapo-transpiration losses are usually limited by the rainfall, assuming that side-effects such as run-off, water-table and irrigation are absent. Thus in the 6-month period quoted above, actual evapotranspiration figures will have been nearer 14 inches rather than the 34-inch figure recorded from an open water surface.

The following is a month by month report on the year under review. June, 1964 was a dry month for most of the cane belt. The overall figure of 1.81 inches of rain was inflated by unseasonal floods on the South Coast, where some areas recorded more than 12 inches on one day (19th June). The rest of the area received less than one inch for the entire month, and crops already affected by a very dry May were feeling the stress. During the month frost was reported in greater or lesser severity on low-lying areas at Pongola, and other centres right throughout the cane belt.

Light showers, totalling 1.37 inches, were welcomed by cane growers during July, but conditions remained dry. The two most northerly centres, Pongola and Mkuzi, reported no rain at all for the month. Further isolated reports of frost were received, but little further damage was caused.

August was another dry month with only 0.69 inches of rain being recorded. Windy conditions further decreased the available soil moisture. September followed with a below-average rainfall. Thus by the beginning of October good soaking rains were badly needed in all areas. During October the whole picture was transformed when the long-awaited good soaking rains did in fact eventuate. The general mean rainfall was 6.71 inches, or nearly double the average in past years. The South Coast was particularly favoured, with many centres reporting falls in the region of 12 inches of rain.

By the 1st November cane belt soils were thoroughly moist, and the industry was looking forward to the accelerated cane-growth which the warmer weather would provide. November rainfall was 30 per cent below normal, but the residual moisture from October permitted good growth for the entire month. December rainfall was 20 per cent down on the expected figure for the cane industry. Thus, at the end of 1964 conditions were dry, and most planters were of the opinion that although the cane was in fairly good condition, it had nevertheless not made the growth it should have done.

January, 1965 started the new year badly with only 2.65 inches of rain instead of the expected mean of 4.43 inches. The South Coast received more rain than other areas, and Zululand suffered most with a scant 1.64 inches for the month. The summer drought gained momentum when 2.64 inches of rain fell during February compared with a mean of 4.61 inches in the past. Again the South Coast fared rather better than the rest of the cane belt.

March is normally the wettest month for our cane growing region with a 41-year average of 5.12 inches of rain. A figure like this would have been most welcome in March this year, and the drought would have been relieved. The actual rainfall for the month proved to be a disappointing 1.22 inches and the severity of the drought increased sharply. Cane began dying on the shallower soils, and rivers dried up, thus preventing the irrigation of some fields previously thought to be safe from the hazard of drought.

The sad saga of our severe summer drought continued with April being the sixth consecutive month of below normal rainfall. The figure of 1.32 inches recorded was only 45 per cent of the expected 2.88 inches. Six months of low rainfall, and high evaporation had by this time appreciably reduced crop yields. The same conditions continued right up to the last day in May when widespread rains throughout the industry brought relief to most centres. A few areas such as Eshowe, Nkwaleni Valley, Ntambanana and Pongola did not share much of the good rainfall. Crops in the rest of the cane belt ended the rainfall year on a dust-free note, and with a much reduced fire hazard.

In reviewing the rainfall position over the past two years, it can be said that conditions have been far from ideal. The 12-month period from June, 1963, onwards was a succession of alternately wet and dry cycles. One of the wet cycles was in June and July, 1963, when the cane was unable to take full advantage of the moist conditions through lack of heat. Conversely, a dry cycle occurred in February and March,

## TABLE 2

### Rainfall in Inches by Districts for Months of June, 1964, to May, 1965 inclusive

| District | No. of Centres | 1964 June | July | Aug. | Sept. | Oct. | Nov. | Dec. | 1965 Jan. | Feb. | Mar. | Apr. | May | Total June 1964 to May 1965 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Port Shepstone | 1 | 11.06 | 0.40 | 0.31 | 1.10 | 8.56 | 2.69 | 1.44 | 2.38 | 3.10 | 0.25 | 0.58 | 1.45 | 33.32 |
| Umzinto | 6 | 7.74 | 1.22 | 0.78 | 2.17 | 10.95 | 4.25 | 3.75 | 4.71 | 4.31 | 0.88 | 1.69 | 3.14 | 45.60 |
| Durban, Pinetown, etc. | 3 | 1.12 | 0.70 | 0.58 | 2.58 | 7.33 | 2.75 | 5.82 | 3.85 | 3.36 | 1.19 | 0.64 | 2.47 | 32.36 |
| **Mean: S. Coast** | **10** | **6.09** | **0.98** | **0.67** | **2.19** | **9.62** | **3.64** | **4.14** | **4.22** | **3.91** | **0.91** | **1.26** | **2.77** | **40.40** |
| Inanda | 9 | 1.40 | 1.10 | 0.31 | 1.74 | 5.39 | 2.69 | 4.34 | 2.96 | 2.15 | 0.67 | 0.92 | 3.19 | 26.86 |
| Lower Tugela | 13 | 0.68 | 1.26 | 0.44 | 2 34 | 5.71 | 2.75 | 4.08 | 2.93 | 2.49 | 1.38 | 1.20 | 1.96 | 27.22 |
| **Mean: N. Coast** | **22** | **0.97** | **1.20** | **0.39** | **2.09** | **5.58** | **2.72** | **4.19** | **2.94** | **2.35** | **1.09** | **2.46** | **1.90** | **27.07** |
| **Mean: S. of Tugela** | **32** | **2.57** | **1.13** | **0.48** | **2.12** | **6.84** | **3.01** | **4.17** | **3.34** | **2.84** | **1.04** | **1.14** | **2.56** | **31.24** |
| Mtunzini | 5 | 0.69 | 1.74 | 0.83 | 1.88 | 5.90 | 3.92 | 3.47 | 1.77 | 2.83 | 1.58 | 1.74 | 1.32 | 27.68 |
| Eshowe | 3 | 0.66 | 0.61 | 0.70 | 1.29 | 5.49 | 3.26 | 3.14 | 2.72 | 1.98 | 1.14 | 1.59 | 0.72 | 23.28 |
| Lower Umfolozi | 8 | 0.99 | 2.29 | 1.40 | 1.26 | 7.01 | 3.31 | 3.46 | 1.68 | 2.85 | 1.49 | 1.76 | 1.96 | 29.47 |
| Hlabisa | 4 | 0.36 | 1.29 | 0.88 | 0.39 | 7.63 | 2.56 | 1.70 | 1.18 | 1.55 | 1.74 | 1.27 | 1.63 | 22.17 |
| Ubombo | 1 | 0.46 | 0.00 | 0.97 | 0.08 | 5.56 | 2.68 | 3.19 | 0.41 | 0.96 | 1.29 | 1.36 | 0.52 | 17.48 |
| Piet Retief | 1 | 0.04 | 0.00 | 0.00 | 0.23 | 5.25 | 1.88 | 5.25 | 0.61 | 1.96 | 1.01 | 0.68 | 0.04 | 16.95 |
| **Mean: Zululand and Piet Retief** | **22** | **0.70** | **1.55** | **1.00** | **1.15** | **6.52** | **3.21** | **3.17** | **1.64** | **2.36** | **1.48** | **1.58** | **1.43** | **25.77** |
| **General Mean** | **54** | **1.81** | **1.30** | **0.69** | **1.73** | **6.71** | **3.09** | **3.76** | **2.65** | **2.64** | **1.22** | **1.32** | **2.10** | **29.02** |

## TABLE 3

### Rainfall and Evaporation Data

| Month | Mean Percentage Rainfall Distribution 1924-1965 | Computed Mean Rainfall for 54 Centres 1924-1965 | Actual Rainfall for 54 Centres June, 1964, to May, 1965 | Evaporation at Experiment Station Mean 1936-1965 | Evaporation at Experiment Station June, 1964, to May, 1965 |
|---|---|---|---|---|---|
| June | 4.00 | 1.53 | 1.81 | 2.38 | 2.66 |
| July | 3.09 | 1.18 | 1.30 | 2.54 | 2.56 |
| August | 3.59 | 1.37 | 0.69 | 2.98 | 3.50 |
| September | 6.54 | 2.50 | 1 73 | 3 67 | 3 58 |
| October | 9.45 | 3.61 | 6.71 | 4.19 | 3.61 |
| November | 11.31 | 4.32 | 3.09 | 4.79 | 5.54 |
| December | 12.28 | 4.69 | 3.76 | 5.44 | 6.55 |
| January | 11.60 | 4.43 | 2.65 | 5.70 | 6.10 |
| February | 12.07 | 4.61 | 2.64 | 4.89 | 5.81 |
| March | 13.40 | 5.12 | 1.22 | 4.60 | 6.34 |
| April | 7.54 | 2.88 | 1.32 | 3.50 | 4.22 |
| May | 5.13 | 1.96 | 2.10 | 2.85 | 3.00 |
| | **100.00** | **38.20** | **29.02** | **47.53** | **53.47** |

## TABLE 4

### Rainfall in Inches by Districts for the Two-year Period June, 1963 to May, 1965 inclusive

| | No. of Centres | 1963 Winter Growth June to August | 1963 Early Growth Sept. and October | 1963-1964 Optimum Growth Nov. to March | 1964 Late Growth April and May | 1964 Winter Growth June to August | 1964 Early Growth Sept. and October | 1964-1965 Optimum Growth Nov. to March | 1965 Late Growth April and May | Total for Two Years June, 1963 to May, 1965 |
|---|---|---|---|---|---|---|---|---|---|---|
| Port Shepstone | 1 | 6.92 | 6.33 | 27.98 | 2.66 | 11.77 | 9.66 | 9.86 | 2.03 | 77.21 |
| Umzinto | 6 | 7.26 | 5.22 | 23.44 | 3.45 | 9.74 | 13.12 | 17.90 | 4.83 | 84.97 |
| Durban, Pinetown, etc. | 3 | 6.15 | 5.39 | 20.18 | 4.20 | 2.40 | 9.91 | 16.97 | 3.11 | 68.29 |
| **Mean: South Coast** | **10** | **6.89** | **5.38** | **22.92** | **3.59** | **7.74** | **11.81** | **16.82** | **4.03** | **79.18** |
| Inanda | 9 | 7.40 | 4.13 | 22.71 | 3.31 | 2.81 | 7.13 | 12.81 | 4.11 | 64.43 |
| Lower Tugela | 13 | 8.71 | 4.28 | 19.35 | 3.71 | 2.38 | 8.05 | 13.63 | 3.16 | 63.29 |
| **Mean: North Coast** | **22** | **8.18** | **4.22** | **20.73** | **3.55** | **2.56** | **7.67** | **13.29** | **3.55** | **63.76** |
| **Mean: South of Tugela** | **32** | **7.78** | **4.59** | **21.42** | **3.57** | **4.18** | **8.96** | **14.40** | **3.70** | **68.58** |
| Mtunzini | 5 | 13.18 | 5.55 | 20.63 | 5.49 | 3.26 | 7.78 | 13.57 | 3.06 | 73.44 |
| Eshowe | 3 | 12.43 | 4.07 | 24.77 | 5.14 | 1.97 | 6.78 | 12.24 | 2.31 | 65.95 |
| Lower Umfolozi | 8 | 21.90 | 4.20 | 20.40 | 4.87 | 4.68 | 8.27 | 12.79 | 3.72 | 82.41 |
| Hlabisa | 4 | 17.03 | 3.44 | 18.60 | 6.10 | 2.53 | 8.02 | 8.73 | 2.90 | 67.34 |
| Ubombo | 1 | 8.31 | 3.04 | 17.12 | 3.58 | 1.43 | 5.64 | 8.53 | 1.88 | 49.53 |
| Piet Retief | 1 | 3.93 | 2.26 | 13.39 | 2.01 | 0.04 | 5.48 | 10.71 | 0.72 | 38.54 |
| **Mean: Zululand and Piet Retief** | **22** | **16.30** | **4.21** | **20.25** | **5.09** | **3.25** | **7.67** | **11.86** | **3.01** | **71.90** |
| **Mean: General** | **54** | **11.25** | **4.43** | **20.95** | **4.19** | **3.80** | **8.44** | **13.36** | **3.42** | **69.93** |
| **Computed Mean for 41 Years** | | **4.08** | **6.11** | **23.17** | **4.84** | **4.08** | **6.11** | **23.17** | **4.84** | **76.40** |

## TABLE 5

### Rainfall and Evaporation in Inches for the Past Four Years

| Month | 1961 - 1962 | | | 1962 - 1963 | | | 1963 - 1964 | | | 1964 - 1965 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Evaporation | Rainfall | Rainfall Deficiency | Evaporation | Rainfall | Rainfall Deficiency | Evaporation | Rainfall | Rainfall Deficiency | Evaporation | Rainfall | Rainfall Deficiency |
| June | 2.15 | 3.76 | 0.00 | 2.95 | 0.04 | 2.91 | 2.41 | 4.47 | 0.00 | 2.66 | 1.81 | 0.85 |
| July | 2.51 | 1.08 | 1.43 | 3.11 | 0.32 | 2.79 | 2.36 | 6.62 | 0.00 | 2.56 | 1.30 | 1.26 |
| August | 3.60 | 0.80 | 2.80 | 3.43 | 2.97 | 0.47 | 3.47 | 0.44 | 3.03 | 3.50 | 0.69 | 2.81 |
| September | 4.14 | 3.18 | 0.96 | 4.33 | 0.80 | 3.53 | 3.68 | 0.87 | 2.81 | 3.58 | 1.73 | 1.85 |
| October | 4.97 | 3.60 | 1.37 | 4.57 | 3.89 | 0.69 | 4.59 | 3.57 | 1.02 | 3.61 | 6.71 | 0.00 |
| November | 5.13 | 4.14 | 0.99 | 4.82 | 6.83 | 0.00 | 5.93 | 3.50 | 2.43 | 5.54 | 3.09 | 2.45 |
| December | 6.07 | 2.72 | 3.35 | 6.39 | 3.30 | 3.13 | 6.41 | 3.98 | 2.43 | 6.55 | 3.76 | 2.79 |
| January | 5.80 | 4.08 | 1.72 | 6.28 | 7.01 | 0.00 | 6.53 | 8.52 | 0.00 | 6.10 | 2.65 | 3.45 |
| February | 5.07 | 2.70 | 2.37 | 6.37 | 3.07 | 3.30 | 5.96 | 2.67 | 3.29 | 5.81 | 2.64 | 3.17 |
| March | 5.28 | 5.20 | 0.08 | 4.88 | 7.45 | 0.00 | 5.28 | 2.11 | 3.17 | 6.34 | 1.22 | 5.12 |
| April | 4.30 | 1.99 | 2.31 | 4.09 | 2.44 | 1.65 | 4.91 | 3.71 | 1.20 | 4.22 | 1.32 | 2.90 |
| May | 3.34 | 0.85 | 2.49 | 3.80 | 0.20 | 3.60 | 2.63 | 0.46 | 2.17 | 3.00 | 2.10 | 0.90 |
| **Total** | **52.36** | **34.10** | **19.87** | **55.02** | **38.32** | **22.07** | **54.16** | **40.92** | **21.55** | **53.47** | **29.02** | **27.55** |

## TABLE 6

**The following are the Screen Temperatures by Months in Degrees Fahrenheit at the Experiment Station for the Year June, 1964 to May, 1965, compared with the Means for the Period 1928 to 1965**

| Month | THIS PERIOD | | | | | AVERAGE 1928 TO 1963 INCLUSIVE | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Plus or Minus Average | Daily Range | Maximum | Minimum | Mean | Daily Range |
| June | 72.0 | 51.1 | 61.5 | — 1.4 | 20.9 | 72.9 | 52.7 | 62.9 | 20.2 |
| July | 70.3 | 49.6 | 60.0 | — 2.2 | 20.7 | 72.4 | 52.0 | 62.2 | 20.4 |
| August | 70.9 | 52.9 | 61.9 | — 1.7 | 18.0 | 73.3 | 53.9 | 63.6 | 19.4 |
| September | 72.7 | 58.5 | 65.6 | — 0.3 | 14.2 | 74.3 | 57.5 | 65.9 | 16.8 |
| October | 73.6 | 61.3 | 67.4 | — 1.0 | 12.3 | 75.7 | 61.0 | 68.4 | 14.7 |
| November | 76.1 | 63.7 | 69.9 | — 0.7 | 12.4 | 77.7 | 63.6 | 70.6 | 14.1 |
| December | 78.6 | 66.0 | 72.3 | — 0.5 | 12.6 | 79.8 | 65.8 | 72.8 | 14.0 |
| January | 79.9 | 67.5 | 73.7 | — 0.4 | 12.4 | 80.9 | 67.3 | 74.1 | 13.6 |
| February | 82.0 | 68.5 | 75.2 | † 0.5 | 13.5 | 81.5 | 67.8 | 74.7 | 13.7 |
| March | 82.0 | 65.8 | 73.9 | † 0.6 | 16.2 | 80.5 | 66.2 | 73.3 | 14.3 |
| April | 77.0 | 61.5 | 69.3 | — 0.8 | 15.5 | 78.1 | 62.2 | 70.1 | 15.9 |
| May | 73.8 | 55.6 | 64.7 | — 1.7 | 18.2 | 75.7 | 57.0 | 66.4 | 18.7 |
| **Means** | **75.7** | **60.2** | **67.9** | **— 0.8** | **15.5** | **76.9** | **60.6** | **68.7** | **16.3** |

## TABLE 7

**The following table gives the mean monthly earth temperatures**

| Month | Experiment Station 1935-65 | | | Experiment Station June 1964 to May 1965 | | |
|---|---|---|---|---|---|---|
| | 1 foot | 2 feet | 4 feet | 1 foot | 2 feet | 4 feet |
| June | 64.0 | 66.5 | 69.4 | 62.4 | 65.1 | 69.3 |
| July | 62.6 | 64.5 | 66.9 | 59.9 | 61.3 | 65.5 |
| August | 64.5 | 65.6 | 66.6 | 63.0 | 63.3 | 64.8 |
| September | 67.8 | 68.2 | 68.1 | 67.6 | 66.9 | 66.4 |
| October | 70.8 | 70.9 | 70.2 | 69.1 | 68.9 | 68.0 |
| November | 73.6 | 73.4 | 72.6 | 73.6 | 72.3 | 70.0 |
| December | 76.5 | 76.2 | 74.5 | 77.4 | 75.7 | 72.3 |
| January | 78.7 | 78.7 | 76.6 | 79.3 | 77.5 | 74.1 |
| February | 79.6 | 79.4 | 77.8 | 81.7 | 80.1 | 76.1 |
| March | 78.2 | 78.8 | 78.0 | 79.2 | 78.4 | 76.3 |
| April | 74.7 | 76.0 | 76.5 | 73.9 | 75.2 | 75.2 |
| May | 69.2 | 71.3 | 73.3 | 67.1 | 69.3 | 71.6 |
| **Mean** | **71.7** | **72.5** | **72.5** | **71.2** | **71.2** | **79.8** |

1964 when the high temperatures prevailing at that time would have given excellent growth if moisture had been available. Frost was experienced in some areas during the 1964 winter. Furthermore, crops were very dry by the end of September. Excellent rains during October gave promise of the beginning of a bumper crop. Good growth was maintained during November, despite below average rainfall. From then onwards, however, a disastrous summer drought prevailed right through until the last day of May, 1965, when soaking rains fell over most parts of the cane belt. Given reasonably average rains over the next few years, the South African sugar industry will show its resilience, as in the past, and record sugar crops will again be harvested.

### Temperatures

The mean screen temperature for the year under review was 67.9° F. at the Experiment Station. This was 0.8° colder than the 37 years' mean. With the exception of February and March, all months from June, 1964 to May, 1965 were below normal in regard to air temperature. The soil was also colder more often than not. There were several occasions during the year when the grass minimum thermometer recorded below freezing conditions. This occurred once in June, twice in July, and twice in August.

### Evaporation

This year the evaporation from a free water surface was particularly high. When coupled with the very low rainfall, this gave an abnormally high rainfall deficiency. The deficiency was most pronounced in the vital 6-month November/April period. The only month without a rainfall deficiency was October. The most disappointing month was March, which is normally the wettest month in the sugar belt. Instead of a rainfall surplus of 0.68 inches, which has been the average in the past, we had a rainfall deficit of 5.1 inches for this month.

### Hours of Sunshine

During the year Mount Edgecombe has had 2,499.2 hours of sunshine, representing 5.4 per cent more than the 38-year average. All months were more sunny than usual, with the exception of September, October, and May. With its 16 rain-days, October had only 118.6 hours of sunshine, compared with the customary 190.3 hours expected.

### Wind

An Anemometer was installed in the Experiment Station's meteorology site at the end of February, 1964. With no previous comparable recordings available, it can only be said that during the past 15 months 52,138 miles of air has passed the site. The rate has varied from 3 m.p.h. average throughout June, up to 6.4 m.p.h. for November. With something as variable as the wind it must take several years before a reliable pattern for wind-speed can be evolved, and obviously the above figures can be regarded only as indications.

### Conclusions

Poor growing conditions have been experienced by the South African sugar industry during the past two years. During the 1963/64 season moisture conditions fluctuated between wet and dry on a number of occasions. Frost damage during the 1964 winter was more pronounced than normal. Satisfactory rains in October last year were unfortunately not repeated in the following months, and from November until the end of May the most disastrous summer drought ever recorded took place. The drought was broken by good rains at the end of May, and in mid June.