

WEATHER REPORT FOR THE YEAR 1st JUNE, 1955 TO 31st MAY, 1956

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General

In this report the same procedure will be followed as was done in the four previous reports. This report will, therefore, deal mainly with the rainfall returns from 54 centres within the sugar belt for the period June 1955 to May 1956, but the rainfall data for the twelve months prior to June 1955 will also be referred to, as climatic conditions during this period will have a bearing on the mainly 2 year old cane crop to be cut during the 1956 season. The other meteorological data discussed, such as atmospheric temperatures, evaporation from an open water tank, etc. will strictly refer to the Experiment Station, Mount Edgecombe, only, but will in general reflect weather conditions in the cane area. Soil temperatures at 2 ft. depth are also available from two additional areas at Port Shepstone and Entumeni.

Rainfall Returns from Fifty-Four Centres

The centres from which rainfall data is recorded are well scattered over, and representative of, the whole sugar belt. The data is divided into the normal geographical divisions i.e. South Coast, North Coast and Zululand and further sub-divided into magisterial districts which facilitate a possible correlation between rainfall and cane yield data.

Table I gives the rainfall for the past four years for the 54 recording centres and also the total rainfall for the period June 1954 to May 1956.

Table II gives the rainfall by magisterial districts and also for the three main divisions for each month of the year from June 1955 to May 1956.

Table III gives the mean rainfall distribution for the past 32 years, the calculated mean rainfall for the same period and the actual rainfall for the year now under consideration. Evaporation data taken at the Experiment Station, Mount Edgecombe, are also given in the same table.

Table IV gives the rainfall distribution according to growing periods for the past two years for all magisterial districts and the three main sub-divisions of the industry.

Table V gives the monthly rainfall for the 54 centres for the past four years, the evaporation from an open water tank at the Experiment Station for the same period and the amount by which evaporation exceeded the rainfall.

TABLE 1

Magisterial District	Rainfall for year 1st June 1952 to 31st May 1953	Rainfall for year 1st June 1953 to 31st May 1954	Rainfall for year 1st June 1954 to 31st May 1955	Rainfall for year 1st June 1955 to 31st May 1956	Rainfall for period 1st June 1954 to 31st May 1956
Port Shepstone					
Mehlomnyama	40.02	41.61	54.59	46.05	100.65
Umqinto					
Hibberdene	35.92	38.76	48.11	51.47	99.58
Umtwalume	34.11	35.66	41.66	38.36	80.02
Sezela Mill	37.08	40.91	50.35	41.08	91.43
Esperanza Mill	33.82	40.80	49.72	42.03	91.75
Renishaw Mill	30.66	39.22	54.79	41.26	96.05
Dumisa	28.95	35.16	37.63	39.98	77.61
Durban, Camperdown, etc.					
Illovo Mill	28.12	31.80	43.80	36.57	80.37
Umbumbulu	30.50	31.61	38.72	39.74	78.46
Thornville	25.89	36.07	36.11	29.03	65.14
Inanda					
Mount Edgecombe					
Milkwood Kraal	39.41	37.24	39.04	29.92	68.96
Experiment Station	40.15	33.10	42.83	31.11	73.94
La Lucia	41.40	32.55	46.34	35.02	81.36
La Mercy	42.55	35.90	49.04	35.14	84.18
Canelands	34.86	31.12	41.42	29.26	70.68
Tonga					
Frosterly	41.64	35.43	47.28	33.96	81.24
Inyaninga	40.98	33.77	49.04	32.89	81.93
Inanda	45.09	43.59	47.21	37.91	85.12
Tonga					
Mwawine	44.85	37.53	49.45	39.21	88.66
Lower Tugela					
Maidstone Mill	39.13	37.65	48.20	37.99	86.19
Sinembe	35.27	37.47	47.29	38.37	85.66
Upper Tongaat	46.57	43.18	52.35	44.51	96.86
Fraser's Estate	38.74	35.15	51.68	38.51	90.19
Chaka's Kraal Exp. Farm	41.96	38.37	49.50	36.80	86.30
Chaka's Kraal	36.96	42.66	51.92	39.84	91.76
Groutville	32.72	34.55	45.28	29.09	74.37
Kearsney	34.04	46.39	57.46	39.89	97.35
Doornkop Mill	31.19	40.10	41.84	33.09	74.93
Doornkop, Sprinz	43.57	52.21	55.13	47.37	102.50
Gledhow Mill	35.31	35.64	55.22	34.55	89.77
Darnall Mill	36.65	35.92	53.18	39.40	92.58
Tugela Mouth	30.38	42.61	59.11	45.70	104.81
Mtunzini					
Mandeni	28.50	39.74	53.03	38.50	91.53
Amatikulu Mill	33.44	41.14	48.08	41.91	89.99
Inyoni	34.02	36.34	47.01	39.34	86.35
Mtunzini	34.63	58.56	58.65	53.24	111.89
Blackburn	37.22	43.23	52.97	42.15	95.12
Eshowe					
Entumeni Mill	31.56	42.82	50.08	41.63	91.71
Eshowe	36.22	46.18	55.79	52.04	107.83
Nkwalini	22.53	26.93	38.91	27.59	66.50
Lower Umfolozi					
Felixton Mill	28.07	59.82	63.82	60.90	124.72
Empangeni West	26.88	40.04	43.49	37.48	80.97
Empangeni Mill	29.16	54.00	54.69	47.82	102.51
Logza	26.17	49.47	51.77	41.48	93.25
Ukulu Properties	24.34	44.39	45.99	39.05	85.04
Mposa	26.09	45.89	44.14	39.72	83.86
Kwambonambi	29.11	48.10	44.47	43.26	87.73
Eteza	34.59	37.84	45.38	38.49	83.87
Hlabisa					
Mtubatuba Mill	25.09	37.92	33.36	29.15	62.51
U.L.O.A.	43.05	45.30	46.43	38.07	84.50
Nyalazi River	31.61	29.45	44.43	28.35	72.78
Hlululuwe	24.29	21.85	36.00	22.28	58.28
Uboombo					
Mkuzi	21.24	22.36	26.63	23.87	50.50
Piet Retief					
Pongola	23.34	25.19	30.76	28.64	59.40
Mean	33.88	39.08	47.24	38.33	85.57

TABLE II

Rainfall in Inches by Districts for the Months of June, 1955, to May, 1956, inclusive

District	No. of Centres	1955												Total June 55 to May 56
		June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
Port Shepstone ..	1	1.27	0.09	0.11	5.41	3.19	6.19	3.42	0.87	5.66	14.59	4.62	0.64	46.06
Umzinto ..	6	1.18	0.42	0.11	5.33	2.98	4.30	2.84	0.92	6.83	13.10	3.89	0.32	42.22
Durban, Pinetown, etc.	3	0.83	0.02	0.31	3.09	2.32	3.64	4.21	0.77	7.63	9.24	2.50	0.56	35.12
Mean South Coast..	10	1.08	0.27	0.17	4.67	2.80	4.29	3.31	0.87	6.95	12.10	3.55	0.42	40.48
Inanda ..	9	0.61	0.08	0.33	3.56	3.43	4.66	2.56	0.37	8.37	6.51	2.58	0.82	33.88
Lower Tugela ..	13	0.84	0.10	0.29	2.80	4.45	5.71	3.60	0.58	10.29	6.90	2.26	0.98	38.80
Mean North Coast..	22	0.75	0.09	0.31	3.11	4.04	5.28	3.17	0.49	9.51	6.74	2.39	0.92	36.80
MeansouthofTugela	32	0.85	0.15	0.27	3.60	3.65	4.97	3.22	0.61	8.71	8.41	2.75	0.76	37.95
Mtunzini ..	5	0.70	0.10	0.49	2.62	5.54	7.16	5.13	0.81	12.81	4.87	1.27	1.15	42.65
Eshowe ..	3	0.56	0.02	0.38	2.30	6.15	6.00	6.17	0.53	12.46	4.73	0.49	0.64	40.43
Lower Umfolozi ..	8	0.55	0.13	1.98	2.48	4.62	5.75	3.56	0.74	12.78	7.72	1.69	1.54	43.54
Hlabisa ..	4	0.56	0.04	0.86	1.15	3.70	4.71	2.25	0.14	7.28	4.94	0.98	2.88	29.49
Ubombo ..	1	0.15	—	0.04	0.06	3.75	5.82	3.21	0.33	7.03	1.83	0.61	2.04	24.87
Piet Retief ..	1	—	—	—	—	4.61	5.32	5.76	0.07	10.17	1.11	0.12	1.48	28.64
Mean Zululand and Piet Retief	22	0.54	0.08	1.04	2.02	4.83	5.92	4.12	0.57	11.36	5.59	1.18	1.59	38.84
General Mean ..	54	0.74	0.12	0.58	2.96	4.13	5.36	3.59	0.59	9.79	7.26	2.11	1.10	38.33

TABLE III

	Mean percentage rainfall distribution 1924-55	Computed mean rainfall for 54 centres 1924-55	Actual rainfall for 54 centres June, 1955, to May, 1956	Evaporation at Experiment Station	
				Mean 1936-55	June, 1955 to May, 1956
June, 1955 ..	4.15	1.56	0.74	2.36	2.30
July, 1955 ..	2.98	1.12	0.12	2.57	2.65
August, 1955 ..	3.67	1.38	0.58	2.91	3.32
September, 1955 ..	6.36	2.39	2.96	3.64	4.16
October, 1955 ..	9.18	3.45	4.13	4.10	3.56
November, 1955 ..	11.31	4.25	5.36	4.78	4.18
December, 1955 ..	11.97	4.50	3.59	5.37	4.89
January, 1956 ..	11.52	4.33	0.59	5.60	7.19
February, 1956 ..	12.24	4.60	9.79	4.73	5.12
March, 1956 ..	14.29	5.37	7.26	4.43	4.15
April, 1956 ..	6.76	2.54	2.11	3.34	3.45
May, 1956 ..	5.56	2.09	1.10	2.82	3.06
	100.00	37.58	38.33	46.65	48.03

TABLE IV

Rainfall in Inches by Districts for the Two-year Period June, 1954, to May, 1956, inclusive

	No. of Centres	1954 Winter Growth June- August	1954 Early Growth Sept. & October	1954-55 Optimum Growth Nov.- March	1955 Late Growth April & May	1955 Winter Growth June- August	1955 Early Growth Sept. & October	1955-56 Optimum Growth Nov.- March	1955 Late Growth April & May	Total for Two years June, 1954 to May, 1956
Port Shepstone	1	2.34	21.64	28.66	1.95	1.47	8.60	30.73	5.26	100.65
Umzinto	6	2.64	17.35	24.98	2.09	1.70	8.32	27.97	4.21	89.26
Durban, Pinetown, etc. ..	3	1.94	11.81	23.21	2.58	1.16	5.41	25.49	3.07	74.67
Mean South Coast	10	2.40	16.11	24.81	2.23	1.52	7.47	27.50	3.97	86.01
Inanda	9	2.33	15.98	23.46	4.12	1.03	6.97	22.46	3.40	79.75
Lower Tugela	13	2.39	17.78	26.41	4.70	1.23	7.25	27.09	3.24	90.09
Mean North Coast	22	2.36	17.03	25.21	4.46	1.15	7.14	25.20	3.31	85.86
Mean south of Tugela ..	32	2.38	16.75	25.07	3.77	1.26	7.25	25.92	3.52	85.92
Mtunzini	5	2.96	16.76	26.93	5.37	1.28	8.15	30.74	2.42	94.61
Eshowe	3	1.80	15.79	26.22	4.43	0.95	8.45	29.89	1.13	88.66
Lower Umfolozi	8	4.02	15.94	23.86	5.40	2.66	7.10	30.54	3.23	92.75
Hlabisa	4	2.31	11.08	24.40	2.27	1.45	4.84	19.31	3.86	69.52
Ubombo	1	0.84	7.58	15.44	2.77	0.19	3.81	18.22	2.65	51.50
Piet Retief	1	0.53	7.30	18.96	3.97	—	4.61	22.43	1.60	59.40
Mean Zululand and Piet Retief	22	2.85	14.45	24.38	4.50	1.66	6.85	27.53	2.77	85.01
General Average	54	2.56	15.82	24.80	4.06	1.43	7.09	26.59	3.21	85.57
Computed mean for 32 years ..	54	4.06	5.84	23.05	4.63	4.06	5.84	23.05	4.63	75.16

TABLE V

Rainfall and Evaporation in Inches for the Past Four Years

	1952-53			1953-54			1954-55			1955-56		
	Evapor- ation	Rain- fall	Rainfall Deficiency	Evapor- ation	Rain- fall	Rainfall Deficiency	Evapor- ation	Rain- fall	Rainfall Deficiency	Evapor- ation	Rain- fall	Rainfall Deficiency
June ..	2.42	0.64	1.78	2.59	0.23	2.36	2.44	1.08	1.36	2.30	0.74	1.56
July ..	2.40	1.63	0.77	2.99	0.39	2.60	3.22	0.46	2.76	2.65	0.12	2.53
August ..	2.56	0.66	1.90	2.68	1.90	0.78	3.31	1.02	2.29	3.32	0.58	2.74
September	4.29	0.88	3.41	3.38	3.23	0.15	3.80	4.86	0.00	4.16	2.96	1.20
October ..	4.89	1.74	3.15	3.63	3.29	0.34	3.86	10.96	0.00	3.56	4.13	0.00
November	4.55	4.39	0.16	4.50	5.20	0.00	4.04	3.59	0.45	4.18	5.36	0.00
December	5.11	5.32	0.00	5.90	5.11	0.79	5.98	1.91	4.07	4.89	3.59	1.30
January ..	6.42	8.82	0.00	5.12	3.66	1.46	5.03	7.94	0.00	7.19	0.59	6.60
February ..	4.08	5.90	0.00	4.57	6.20	0.00	4.30	3.23	1.07	5.12	9.79	0.00
March ..	5.27	2.62	2.65	4.75	3.83	0.92	4.59	8.13	0.00	4.15	7.26	0.00
April ..	3.17	1.11	2.06	3.06	2.70	0.36	3.41	2.91	0.50	3.45	2.11	1.34
May ..	3.63	0.71	2.92	3.24	3.34	0.00	2.72	1.15	1.57	3.06	1.10	1.96
Total ..	48.76	33.88	18.80	46.41	39.08	9.76	46.70	47.24	14.07	48.03	38.33	19.23

Comments on Rainfall

The mean computed rainfall over the last 32 years for the 54 rainfall recording stations is 37.58 inches. The rainfall for these centres for the year ending 31st May, 1956 was 38.33 inches. This is now the third successive year with a rainfall above normal. Although the rainfall for the past year was not as good as the excellent total rainfall of 47.24 inches for the previous year, and although rainfall distribution was also not nearly as favourable as that of the previous year, this was on the whole a reasonably favourable year for the cane crop which benefited from the well above normal rainfall of the year ending 31st May, 1955. The total rainfall for the 24 months ending 31st May, 1956 was 85.57 inches.

During June 1955, with a rainfall of only 0.74 inches for the month some of the cane areas became rather dry. During July an average of only 0.12 inches of rain was recorded and this was followed by only 0.58 inches in August. The cane crop had then gone through four successive months with deficient rainfall and although it stood up well to these adverse conditions dry patches were common and on shallow soil even dying patches could be seen. Some welcome showers fell in parts of Zululand but the North and South Coasts experienced severe droughts. By the middle of September the crop had received a severe set-back as a result of the drought which was, however, broken particularly on the South Coast by a continuous cold drizzle on the 28th and 29th of September which brought up the month's total rainfall to 2.96 inches which was just above average. October was abnormally cold with mean screen temperature of only 65.7°F. Light well distributed rains averaged 4.13 inches for the month which was above normal. Similarly, November with a rainfall of 5.36 inches or well above normal was exceptionally cold with a mean screen temperature of 67.1°F. In fact the mean screen temperatures for these two months were the lowest ever recorded for October and November at the Experiment Station. Lack of heat and sunshine rather than deficient rainfall retarded the recovery of the cane crop. These abnormal conditions continued up to about the third week of December but then hot sunny weather set in. The average temperature for December, however, remained below normal and the rainfall 3.59 inches was also below normal.

Towards the end of the month there were indications of some areas becoming dry. January was a most exceptionally dry, sunny, and desiccating month. The rainfall totalled only 0.59 inches with a normal of 4.33 inches. It was in fact the driest January experienced in the sugar belt for the past 32 years. To make matters worse the evaporation totalled 7.19 inches at the Experiment Station compared with a normal of 5.60 inches for January. This was the highest evaporation yet recorded at the Experiment Station for any month of the year for the past 20 years of recorded data. Similarly, the total hours of sunshine 270.9 was the highest for any month in 28 years of recorded results. Drought conditions developed in consequence and the crop received a severe set-back and small patches of dry or dying cane could be observed. Exceptionally heavy rains totalling 9.79 inches fell in February with flood conditions developing in parts of Zululand where the Umfolozi river flooded hundreds of acres of cane. Fortunately, however, the area drained fairly rapidly. The good rain of February made the cane respond rapidly. Exceptionally heavy rains totalling 7.26 inches also fell in March and this time flood conditions were experienced on the South Coast where Hibberdene had a total of 20.32 inches of rain for the month and 8.20 inches fell on the 19th. The crop was making excellent progress. This progress was continued during April with a somewhat below normal rainfall of 2.11 inches, but the crop was beginning to get dry towards the end of May for the rainfall was well below normal at 1.10 inches for this month.

Summarising the rainfall over the past two years it can be stated that the winter months of 1954 were dry but excellent rains fell during September and October of that year. During the period November 1954 to March 1955 average rains and good growing conditions were experienced and these conditions largely continued during April and May although the rainfall decreased. The winter months of June to August and the greater part of September 1955 were, however, very dry. With the better rains of September, October and the first part of December came exceptionally cold weather which retarded the recovery of the crop and extremely desiccating conditions of the latter part of December 1955 and the whole of January 1956 caused a severe set-back to the crop. Exceptionally heavy rains in February

and March and normal rains in April resulted in excellent cane growth which was largely continued into May when it became somewhat dry again.

Temperatures

The mean screen temperature at the Experiment Station for the year ending 31st May, 1956 was 68.0°F. lower than the 1928-55 average of 68.7°F. With the exception of July, every month from June 1955 to January 1956 had mean temperatures below normal. There was some light frost on the South Coast in June but it was really the months, September to December, that were so exceptionally cold and this applied particularly to October and November with mean screen temperatures of 65.7°F. and 67.1°F. respectively, or 2.6° and 3.4°F below normal. With a mean screen temperature of 74.8°F or 1.7° above normal for March and the excellent rainfall conditions already referred to, the cane started to grow exceptionally well during that month and continued growing well during April and to a lesser extent during May.

Soil temperatures were also well below normal averaging 70.3°, 70.8° and 70.9°F at 1 ft., 2 ft., and

4 ft. compared with the 1935-55 averages at the same depth of 71.7°, 72.7° and 74.8°F.

Summary and Conclusions

The industry has now experienced for the second year running, two successive years with rainfalls above normal. The mean rainfall over the past two years was 85.57 inches and for the year ending 31st May, 1956 it was 38.33 inches compared with a 32 years mean of 37.38 inches.

Rainfall during this last year was, however, not well distributed. It was very dry during the winter of 1955 and also in January 1956 whereas excellent rains and floods were experienced during February and March.

The mean screen temperature was well below normal and lack of heat during the months of September to December 1955 retarded cane growth.

The crop benefited from the good growing conditions for the year ending 31st May, 1955 and the excellent conditions during February to April, 1956 and on the whole a good crop can be expected this year.

TABLE VI

The following are the Screen Temperatures by Months in Degrees Fahrenheit at the Experiment Station for the Year June, 1955, to May, 1956, compared with the Means for the Period 1928 to 1955

	<i>This Period</i>					<i>Average 1928 to 1955 inclusive</i>				
	<i>Maximum</i>	<i>Minimum</i>	<i>Mean</i>	<i>Plus or minus Average</i>	<i>Daily Range</i>	<i>Maximum</i>	<i>Minimum</i>	<i>Mean</i>	<i>Daily Range</i>	
June	72.3	52.7	62.5	-0.3	19.6	72.9	52.7	62.8	20.2	
July	73.6	52.2	62.9	+0.9	21.4	72.3	51.6	62.0	20.7	
August	72.7	52.2	62.4	-1.1	20.5	73.2	53.8	63.5	19.4	
September	72.9	54.9	63.9	-1.9	18.0	74.4	57.1	65.8	17.3	
October	72.7	58.6	65.7	-2.6	14.3	75.8	60.8	68.3	15.0	
November	73.2	61.0	67.1	-3.4	12.2	77.8	63.3	70.5	14.5	
December	78.4	64.8	71.6	-1.2	13.6	80.0	65.7	72.8	14.3	
January	81.7	65.8	73.8	-0.2	15.9	80.9	67.1	74.0	13.8	
February	81.0	68.5	74.7	+0.1	12.5	81.6	67.5	74.6	14.1	
March	81.5	68.2	74.8	+1.7	13.3	80.3	65.9	73.1	14.4	
April	77.9	62.8	70.3	+0.1	15.1	78.4	62.1	70.2	16.3	
May	75.0	57.9	66.4	-0.1	17.1	76.0	57.0	66.5	19.0	
Mean	76.1	60.0	68.0	-0.7	16.1	77.0	60.4	68.7	16.6	

TABLE VII

The following table gives the Mean Monthly Earth Temperatures

	<i>Experiment Station Means 1934-55</i>			<i>Experiment Station, June, 1955, to May, 1956</i>			<i>Umzimkulu Sugar Co., June 1955 to May, 1956</i>	<i>Entumeni Wattle Co., June 1955 to May, 1956</i>
	<i>1 ft.</i>	<i>2 ft.</i>	<i>4 ft.</i>	<i>1 ft.</i>	<i>2 ft.</i>	<i>4 ft.</i>	<i>2 ft.</i>	<i>2 ft.</i>
June	64.3	67.1	69.7	63.9	65.8	68.9	65.2	65.0
July	62.7	64.9	67.1	61.7	63.0	65.8	62.6	64.0
August	64.6	65.8	69.9	62.2	63.3	65.3	63.9	65.0
September	67.9	68.4	68.4	65.3	65.7	66.2	67.0	69.0
October	70.8	71.0	70.4	67.3	67.5	67.5	66.7	65.0
November	73.5	73.4	72.9	70.3	70.3	69.4	70.8	68.0
December	76.4	76.2	74.8	73.9	73.6	71.8	73.0	72.0
January	78.7	79.1	77.0	78.6	77.7	74.8	77.8	—
February	79.5	79.7	78.3	79.2	79.0	76.8	78.5	—
March	78.1	79.0	78.4	78.4	78.3	76.8	76.6	76.4
April	74.8	76.4	76.9	74.1	75.0	75.6	73.4	72.5
May	69.5	71.9	73.7	68.2	69.8	72.1	68.4	68.4
Mean	71.7	72.7	74.8	70.3	70.8	70.9	70.3	—