

meteorological data from the records of the India Meteorological Department. While the official statistics of area sown are fairly accurate, the data of yield per acre have certain limitations. The detailed examination in recent years of the official forecasts, the returns of cotton ginned and pressed, trade statistics, by the Indian Central Cotton Committee, has conclusively shown that the yield of cotton has in general been underestimated. It cannot be expected, therefore, that the statistical analysis of the "yield per acre" and weather factors would indicate anything more than certain general relationships.

Secular Changes and Variability.—The area and yield data for cotton of important districts of each of the above tracts have been examined. Some interesting results as regards the influence of weather on area and yield and also the effect of the prices of cotton on area sown have been obtained. Significant trends in the area, yield and prices have been noted in the data extending over a period of 43 years commencing from 1890. The mean acreage and its coefficient of variability are given for different districts in columns 2 and 3 of Table I below. It is interesting to observe that the area under cotton in Ahmednagar is very variable and seems to depend mostly on the timeliness of the early rains.

Influence of Weather and Prices on the Cotton Crop of the Bombay Presidency.

ONE of the aims of the Agricultural Meteorology Branch, Meteorological Office, Poona, is to investigate statistical relationships between weather and crops. The cotton crop was taken up to begin with and the analysis has been completed for the Bombay Presidency which occupies nearly four million acres, about one-fourth of the total cotton acreage in India.

Cotton Tracts of the Bombay Presidency.—The cotton belt of the Presidency, excluding Sind, can be divided into four distinct tracts defined by the character of soil and season and consequently also by the type of cotton grown in them though they naturally grade off into one another. These tracts are :

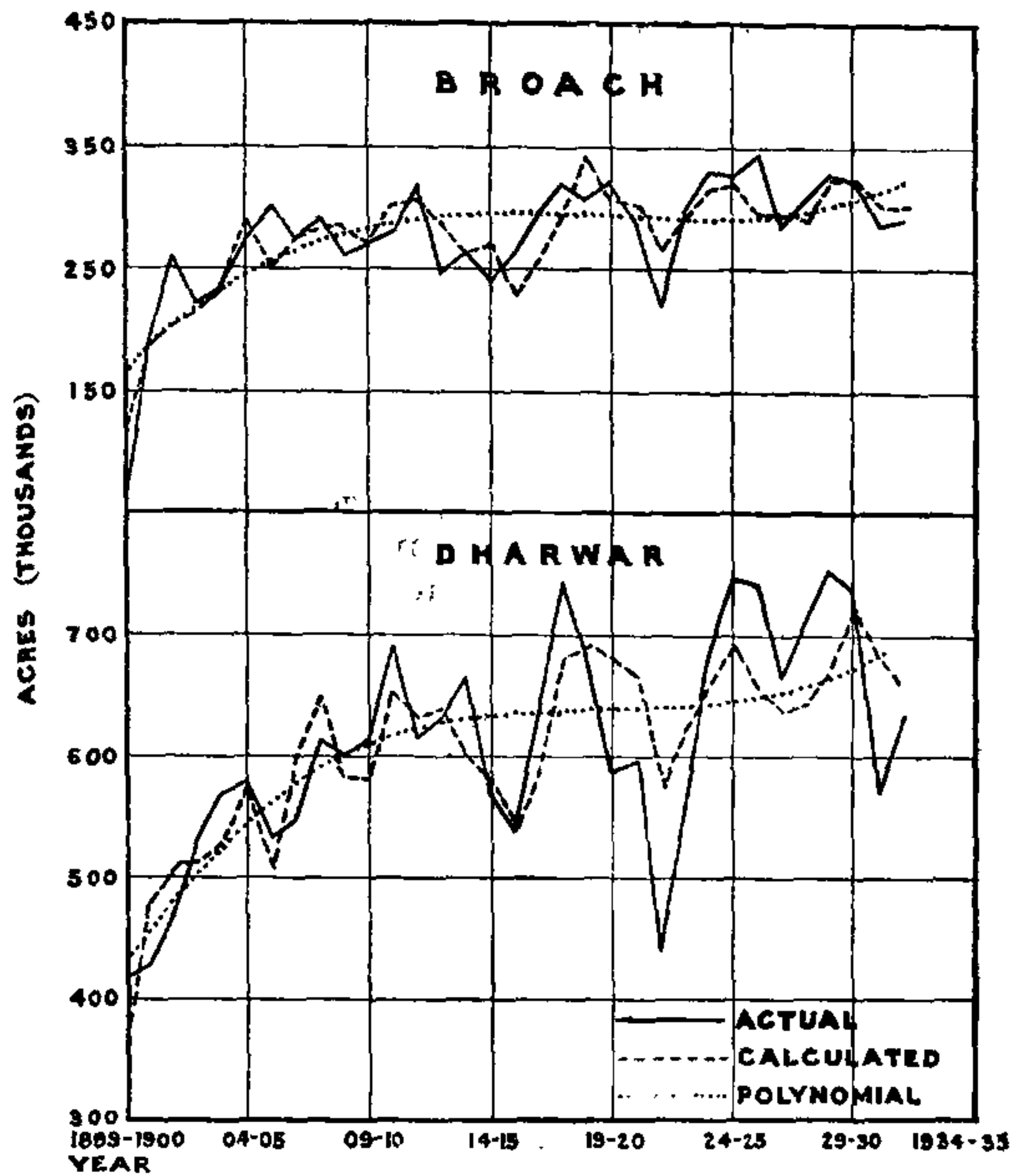
- (i) The South Gujarat with 30"—40" of annual rainfall.
- (ii) Karnatak with 20"—30" of annual rainfall.
- (iii) North Gujarat with 25"—30" of annual rainfall.
- (iv) Deccan Tract with 20"—30" of annual rainfall.

Sources of Data and their Limitations.—The figures of acreage, yield and price have been taken from the *Season and Crop Reports* of the Bombay Presidency and the

TABLE I.

District	Mean area sown (thousands of acres) 1890-1932	Coefficient of variability
Khandesh ..	1,229	8.2
Ahmednagar ..	116	54.5
Belgaum ..	206	23.1
Bijapur ..	500	30.0
Dharwar ..	567	12.9
Ahmedabad ..	328	29.2
Broach ..	269	14.9
Surat ..	134	15.5

Correlations of Area with Prices and Rainfall at the Time of Sowing.—Correlations of 'area' with 'prices and rainfall at the time of sowing' have been worked out for the above cotton-growing districts. Prices rather than rainfall seem to dominate the area sown to cotton in the Khandesh, Ahmedabad, Broach and Dharwar districts while in the Surat district both the



COTTON ACREAGE.

Fig. 1.

AREA.

Factors used.

(1) Broach District { Sowing—June, July.
Harvesting—February, March.

June Rainfall and average price of Broach variety during the seven months January to July, prior to the sowing season.

(2) Dharwar District { Sowing—September.
Harvesting—March, April.

September Rainfall and average price of Dharwar variety during the seven months January to July prior to sowing season.

Fig. 2.

AREA.

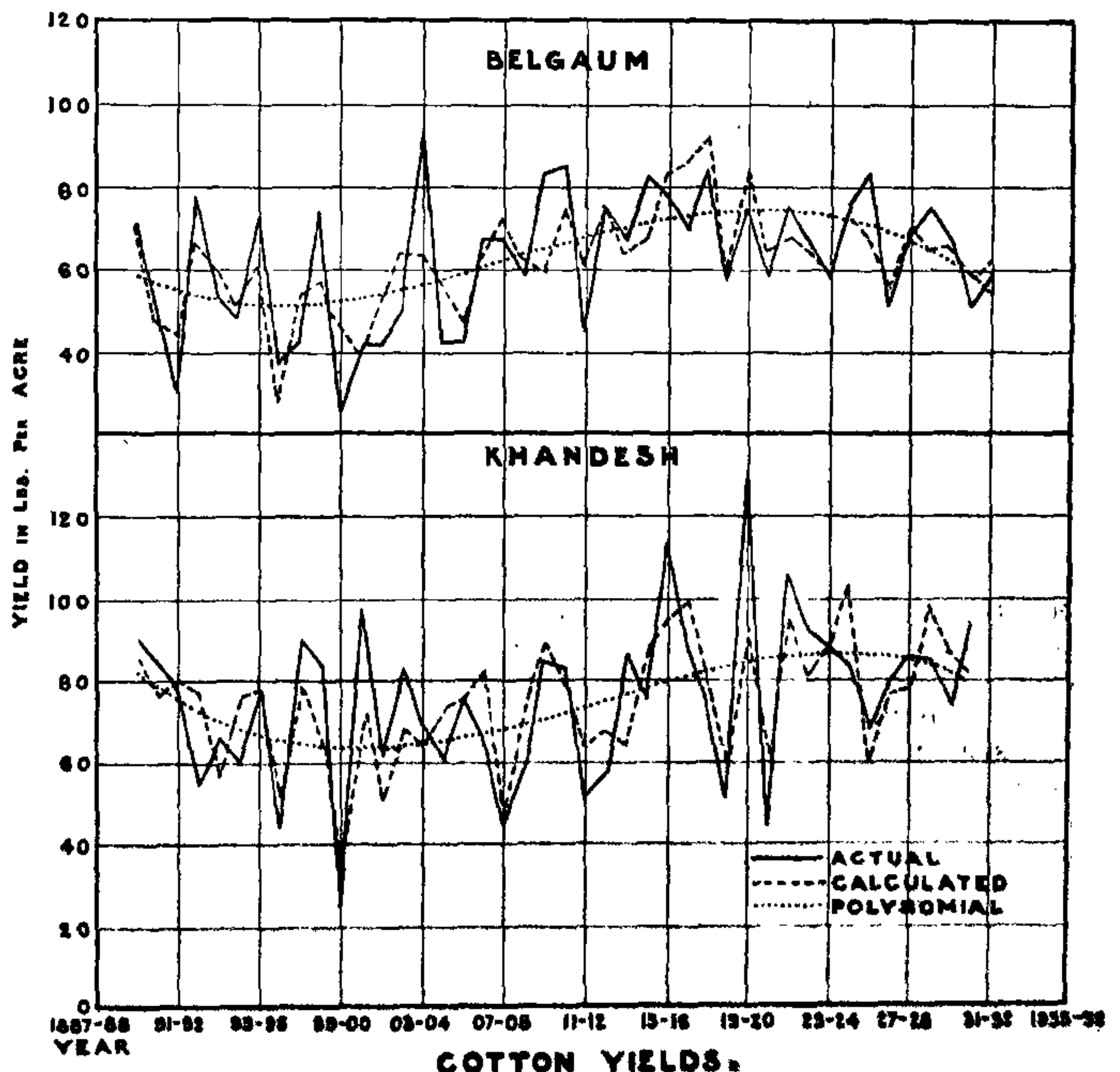
Factors used.

(1) Belgaum District
Sowing—August, September.
Harvesting—February, April.

September and October Rainfall and October, November and December Maximum Temperatures.

(2) Khandesh District.
Sowing—June.
Harvesting—November, December.

July and September Rainfall and May, September, October and November Maximum Temperatures.



COTTON YIELDS.

rainfall and prices show significant correlations. In the districts of Ahmednagar, Belgaum and Bijapur significant correlations between area and rainfall at the sowing time are obtained while those between area and prices are insignificant. Formulae have been worked out for calculating the cotton acreage from prices and rainfall at the time of sowing. Fig. 1 shows the actual and calculated acreages in the Broach and Dharwar districts for a period of 33 years.

Influence of Rainfall and Maximum Temperature on the Yield of Cotton.—The limitations of the yield statistics have already been referred to. Use has been made of the past data as available for studying the influence of weather factors on the yield of cotton. Significant correlations of rainfall and maximum temperature with cotton yields have been obtained for the cotton-growing districts. The actual and the calculated values for Belgaum and Khandesh are given in Fig. 2. The results will be discussed in greater detail elsewhere.

Investigations on other crops will be taken up.

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December 11, 1935.