Maximisation of Crop Production in the Ceded Districts *

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Introduction: The Ceded Districts of Anantapur, Bellary, Cuddapah and Kurnool constitute 20·8% of the total land area of the Madras State, which is about 80·7 million acres. Out of this a net area of 7·6 million acres is under the plough. The area under irrigation is small compared with the total area available for cultivation as indicated below:—

Anantapur – 11·0%
Bellary – 3·0%
Cuddapah – 26·5%
Kurnool – 6·0%

Want of assured and dependable irrigational facilities necessitates the ryots in this tract, (perhaps with the slight exception of those in Cuddapah) to depend mostly on rains for the cultivation of crops. Virtually, agriculture in this tract is a gamble with the monsoons. The situation is made worse by the frequent failures of the monsoons. The State has also realised the need for giving protection of a lasting nature to the ryots of this zone, to insure them and their cattle against famine conditions. Agriculturally, this zone forms a major millet producing area of the State and any attempt to improve the food production in the State envisages the exploration of all possibilities for improving the agricultural situation as a whole in the Ceded districts. The authors have, therefore, taken up a preliminary study of analysing the available crop and rainfall data in every one of the four districts constituting this zone. The five major cultivated crops have been taken into consideration for a correct perception of the relation between rainfall and crop yield and this study will be extended later on to other cultivated crops as well.

Materials and Method: All the available data from the season and Crop Reports (1901—1950), published by the Economic Adviser to the Government of Madras, were culled with reference to the major cultivated crops in this zone, namely, Cholam, Korra, Cambu, Cotton, and Groundnut. Data were collected on district – war basis. In addition, to gain an idea of the year to year performance of the crop in relation to the nature of precipitation in that year, the Administration and Station Reports of the Madras Agricultural Department were studied in detail.

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In the light of the available literature on "Dry Farming" and the experience gained by the authors in Crop Weather research, suitable methods as indicated below, were adopted to analyse the data and formulate certain suggestions for the maximisation of crop production in this zone. The basic principle governing the method of analysis of data is in accordance with the agricultural practices in the tract.

The two main seasons are Mungari (Early) and Hingari (Late). Of the two, "Hingari" is the main crop season. The sowing season is surprisingly long and sowing of major crops starts early in June and ends in December, that is throughout the monsoonic periods. But the bulk sowing is done in the months of July, August, September and October depending on the development and performance of the monsoons.

Analysis of the data: (i) The 81 years rainfall data of these four Districts have been statistically analysed to study the relationship of the rainfall in spans of five inches with the performance of crops.

(ii) The total monsoonic showers received and the average acre yields of everyone of the five major cultivated crops were examined in detail.

(iii) The particulars given in the Season and Crop Reports for the year 1949—'50 on "General Agricultural Operations' in Ceded Districts were useful to study graphically the wide span of the sowing season for the different crops and the nature of general precipitation in the tract.

Discussion and Results: (i) In most of the years annual precipitation falls under a range of 16" to 31", and the mean of this range may be taken as the normal annual rainfall in the tract.

(ii) Study of the data on the influence of the total rains of the south-west monsoon and north-east monsoon, on the crop yields of the five important cultivated crops leads to the following tentative inferences:—

(a) *Cotton:* So far as cotton is concerned, it is not the total quantity of the rains received during the life period of the crop but the nature of precipitation and the time of receipt of rains that influence the yield. This finding is equally applicable to all the four districts of the zone.

(b) *Groundnut:* In the district of Anantapur and Bellary the total rainfall received has good influence on the yield of the groundnut crop, with a few exceptions. In the other two districts, the effect of total rainfall on the yield obtained is less significant, possibly due to the existence of the K. C. canal system providing protective irrigation. The crop would have received irrigations in times of need and consequently the adverse effect of insufficiency of rains is mitigated to a great extent.

(c) *Cholam:* For the cholam crop the rainfall received during the growing season has significant influence on the yield. The distribution is also important for normal yield as for any other crop.

(d) *Cumbu:* The rains in the growing period of this crop appear to have a decisive influence on its yield.

(e) *Korra:* Both for a pure crop and as a mixture with cotton the total rains received seem to have far less effect on yield than the nature of distribution of the precipitation itself.

(iii) The graph summarising the particulars of the 1949—'50 Report on the trend of sowing season in the tract, reveals that the vigorous sowing season covers a period of five months commencing from July onwards besides indicating the miserable plight of the farmers of this tract in having to take a mere chance, so to say, to decide the optimum period for such sowings.

Recommendations: To improve the agricultural status of the tract for bettering the food position in the State, intensive research has to be done on the following lines:—

(i) *Effectiveness and Intensity of Rainfall:* In these four districts there should be at least twenty effective rainfall gauges installed and an equal number of self-recording rain gauges to collect data on the nature of distribution of rains affecting the cropping programme of the tract. Simultaneous collection of soil moisture data in the twenty localities fixed for the installation of the above mentioned instruments will also throw light on the nature of variation of soil moisture content and its relation to the external air temperature and wind velocity for adoption of ameliorative agronomic practices in dry farming schemes.

(ii) Facilities are to be provided to assess, *in situ*, the intrinsic drought resisting capacities of the different strains of millets, cotton and groundnut released by the Madras Agricultural Department to enable the concerned plant breeders to evolve by judicious crossing the most drought resisting strains of the major cultivated crops, because the transpirational loss in plants is known to vary according to their inherent genetic capacity to economically utilise the available moisture besides their dependence on the adaptive factor of the locality.

SUMMARY: (1) The success or otherwise of crop production in Ceded districts depends on the nature of distribution of the precipitation. Cotton and groundnut bear typical testimony to this statement.

(ii) It is obvious that for producing a fixed quantity of plant material a definite amount of minimum water is essential. The peculiar dry farming practices existing in the Ceded districts' zone, lacking

dependable irrigation, require regional research to elucidate the scope for evolving a suitable dry farming technique for each group of land in the zone.

(iii) To satisfactorily improve the crop outturn in this zone there seems to be no alternative except that of giving serious consideration to the recommendations made above.

Acknowledgement: The grateful thanks of the authors are due to Sri M. V. B. Narasinga Rao, Paddy Specialist, for his valuable help and guidance in the preparation of this paper. Their thanks are also due to all those responsible for the collection and compilation of the data published in the 'Season and Crop Reports'.

ERRATA

M. A. J. Vol, XL, No. 3, March 1953

Page	Line	For	Read
106	13	1·395 acres	1·403 acres
106	14	1930—31	1935—36
105	18	10·2	9·6

Page 106 from bottom 4th line to page 107 8th line delete.

Page	Col.	Line	For	Read
105	4	2	3,050,272	2,651,672
105	5	2	1·395	1·604
106	4	2	3,996,074	3,512,074
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