

# RAINFALL RISK ANALYSIS FOR DHULE IN MAHARASHTRA

by  
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A Project Undertaken for the Dept. of Agriculture, Govt. of Maharashtra  
by

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## **INTRODUCTION & SUMMARY**

As a consequence of the interest taken by policy makers in Maharashtra in the possibilities offered by computer-based analysis of historical rainfall data, the Systems Research Institute was commissioned, to develop the software and to demonstrate its use on the rainfall data for a Station.

This report marks, therefore, the culmination of the first stage of SRI's rainfall analysis activity, which was triggered by the presence of Mr C R V Raman, formerly Director of Project MONEX and Senior DDG of Meteorology, at SRI for the last four years. During 1981-83 Mr. Raman held a Jawaharlal Nehru Fellowship, awarded by the by the Nehru Foundation, for study of the monsoon. As a, result of discussions with Mr Raman, SRI was

convinced of the value to the nation of full analysis of the wealth of data now archived with the Meteorological Department, and hence undertook the present project. In later stages of SRI's work in this field, it is intended to integrate this software with SRI's mapping software so as to generate useful maps for agricultural policy making.

The statistical analyses include frequency tables for the rainfall during specific periods, for the dates of commencement of "sowing rains", for the interspell duration, and for the intensity of wet spells. Where relevant, these are analysed, for each different level of monsoon performance. In addition to the statistical tables, the software produces graphs and charts that enables the user to see the implication of recent rainfall patterns (say, during the first few weeks or month of the monsoon) for the likely realization in the remaining period. A considerable effort has gone into making the presentation of these analyses as compact and effective as possible.

An agricultural meteorologist, with access to the relevant soil, slope and cropping practice information could use these analyses effectively to suggest appropriate steps which will minimize the effects of drought while taking full advantage of 'good' monsoon years. Crop-protection steps both early and later in the life-cycle of the crop can be effectively planned, for instance, with information on interspell duration and on wet spells.

The software prepared can now be used for low-cost analysis of historical time series data on the monsoon. We feel privileged to contribute this as an aid for enhancing agriculture production.

#### **Final Word:**

This initial attempt to analyse the data of one station – Dhule – has demonstrated how the raw rainfall data can be analysed and recast in a form suitable for practical use in agricultural decision making. Drought-proofing activities can take a number of forms, with aims that can be expressed as:

- encouraging readjustment to probable natural conditions
- making agriculture immune from drought, in successive stages
- obtaining advantage of the abundance expected from good years without causing excessive hardships in bad years
- lowering the public cost of emergency drought programmes
- showing people how to make do with less, when less is all that is available
- allaying the consequences of expected dry periods.

Such steps demand careful preparation and planning through exhaustive correlative use of all available information on Rainfall, on Soils, on Contours, etc., on Crops, on Pests and on the farmers' traditional knowledge and practices. Computer use for analysis and reduction of data into useable form is one step. Use of computers to generate thematic maps is another. Computers can also be used interactively to view the results of alternate policies and investments on agricultural production and on food security. The rest is up to the scientist and the policy maker.

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