

A case study :

Alternate cropping patterns for sustainable agriculture production systems

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ABSTRACT

Cropping Pattern refers to the proportion of the area under various crops in an agricultural year in a farmers arable land. It indicates the yearly sequence and spatial arrangements of crops and fallow in an area. In Karnal district of Haryana state of India the prevalent cropping systems are the cumulative results of past experiences and present decisions by individual farmers based on the suggestions proposed by the government and private extension agencies. In the present study an attempt was made to identify different cropping patterns prevalent in the district and to introduce alternative crops in the existing cropping patterns so to work out the sustainability of the different agriculture production systems. The analysed data collected from 100 farmers of different categories on the basis of their land holding indicated that there were five most prevalent cropping patterns in which paddy- wheat were the base crops. In the different existing cropping patterns farm trials were conducted by introducing cauliflower and *moong* and it was found that the newer cropping combinations required less irrigation, improved soil health and brought more profits to the farmers as compared to the earlier existing cropping patterns.

Key words : Cropping pattern, Sustainable agriculture, Paddy, Wheat, Okra, Cauliflower Moong.

INTRODUCTION

The intensive agriculture leading to higher crop production at the cost of lowering of water table, poor soil health and environmental degradation had called for the attention of the scientists, policy makers and the producers to look for newer technologies and strategies to attain sustainable agriculture production. Keeping these factors in view present study was contemplated to investigate the different farming systems those were prevalent in the study area and also to introduce newer cropping combinations so as to see the issues pertaining to sustainable farming.

Cropping Pattern refers to the proportion of the area under various crops in an agricultural year in the farmers' arable land. It indicates the yearly sequence and spatial arrangements of crops and fallow in an area. Paddy and wheat are the major crops grown in this district. A decade ago the farmers started growing two crops of paddy which were grown in the months April-October that had lowered the water table alarmingly. To conserve the water resources that were intensively used in growing two paddy crops during '*kharij*' season, the farmers have been advised in the past three years to grow only one crop. In place of one crop of paddy the farmers were advised to grow *Sesbania aculeate* which is used as green manure, moong and other vegetable crops which require less irrigation besides providing income and employment. The findings have been presented and discussed in this paper.

MATERIALS AND METHODS

To carry out the present study a multistage stratified random sampling technique was applied to draw the sample for the study. From the Karnal district two blocks and two villages from each block were selected randomly. Thus four villages from the district were selected for the study. A complete list of the farmers having agriculture land was prepared from each village. The farmers were divided into small, medium and large categories based on their land holding using cumulative square root technique. A sample of 100 farmer from the district was selected for the study by applying probability proportionate to size technique subject to the condition that at least 30 farmers were included in the study from each category *i.e.* Small, medium and large farms. Thus the study included a total number of 100 from the district. Data was collected using an interview schedule, tabulated and analysed. In the different identified cropping patterns for three agriculture years (2005-07) field trials were conducted to introduce cauliflower and moong crops in different villages of the district.

RESULTS AND DISCUSSION

In the present study the different cropping patterns were identified screened and classified based on the possible practicing cropping patterns as per the agro-climatic conditions, resources of the farmers and the