CHAPTER-III

METHODOLOGY

3.1 Introduction

This chapter outlines the sampling procedures and the techniques of analysis used. The former aspect is covered a Section 3.2 and the latter in section 3.3.

3.2. Sampling Procedures

3.2.1. Size of the Sample

For this study, the universe was the total number of Agricultural Cooperative Credit Societies in Punjab. The number of such societies in 1982-83 was 34543[1]. it was decided to conduct this study on a sample basis. The total size of the sample was decided using the following formula:

$$n = \frac{N.S^2 . Z^2}{N.e^2 + S^2 . Z^2}$$

Where

n = total sample of Agricultural Cooperative Societies
n = total number of Agricultural Cooperative Credit Societies in Punjab = 34543

S2 = variance of membership of cooperative societies which was 47.78
Z = Normal variety. Its value at 95 percent confidence level is 1.96

E = level of sampling error deemed acceptable = 1.76

Thus

$$n = \frac{(34543)(47.78)(1.96)^2}{(34543)(1.76)^2 + (47.78)(1.96)^2} = 59$$

3.2.2. Distribution of Sample Societies Among Different Sample Districts

Initially[2], the whole Punjab was divided into four broad crop zones*, i.e. (1) cotton zone; (2) mixed zone; (3) rice zone; and (4) barani zone. The sample was divided among these zones proportionately on the basis of the number of cooperative societies located in those districts. From these zones, 9 sample districts were taken purposively

[1] Government of Pakistan (1985), Agricultural Statistics of Pakistan – 1984, Ministry of Food, Agriculture and Cooperatives, Islamabad

[2] Cotton Zone = Bahawalpur Division, Multan and Vehari Districts
Mixed Zone = Faisalabad Division, D.G. Khan, Sahiwal, Sargodha and Gujrat District
Rice Zone = Lahore Division, Gujranwala and Sialkot districts.
Barani Zone = Rawalpindi Division

in such a way that each broad crop zone may get representation. Thus two districts were taken from 'cotton zone', four from 'mixed zone' (two fully irrigated and two partially –irrigated), two from 'rice zone' and one from 'barrani zone'. The list of sample districts is given in Table 3.1.

The sample societies were distributed among the sample districts proportionately.

These sample societies were selected randomly from the list of those societies which got loan from PCB at least once during 1983-84 and 1984-85. The list was obtained from the branches of the bank. However, it was decided that in case the selected society did not exist on the ground (and only on papers), the next society would be taken until selected societies in each districts contained a number of working societies at least equal to the sample. Thus the final sample size was increased to 75 and the working societies increased to 63. The details of final sample are given in Table 3.1.

Table 3.1. Distribution of Sample Societies Among Sample Districts

Districts	Sample Allocation	Final Sample
Barani Zone	3	3
Rawalpindi		
Rice Zone		
1. Gujranwala	8	8
2. Shekhupura	6	10
Mixed Zone		
3. Faisalabad	10	14
4. Sahiwal	7	14
5. Gujrat	4	4
6. Khushab	4	4
Cotton Zone		
7. Multan	11	12
8. R.Y. Khan	6	6
Total:	**59**	**75**

3.2.3 Sample Size of Members and Non-Members

It was decided to take 10 members from each sample society. Since the members of bogus societies were not accessible, the members of these could not be taken in the sample. Moreover, sometimes due to non-availability of members, the field team could not interview all the 10 members from a society. Therefore, the sample of the members which emerged in the end was 571. The zone-wise breakdown of this sample is given in Table. 3.2.

In order to serve as control group for evaluation purpose, non-members from the same village with similar size equal to about half the number of members were also include din the sample for the study. The zone-wise split of the sample respondents is given in Table 3.2.

Table 3.2. Distribution of the Sample Respondents

Zones	Members	Non-Members	Total
Barani	23	12	35
Rice	195	81	276
Mixed	224	108	332
Cotton	129	60	189
Overall	**571**	**261**	**832**

3.3 Techniques of Data Analysis

Major part of the data is reported in cross-tabulation form. In addition to this, difference in mean of fertilizer doses and crop yields were examined using 't' test. The data collected for this exercise was related to crop year 1984-85.