RESEARCH METHODOLOGY

Method of sampling

A three stage stratified random sampling technique was adopted to select the Block, Villages and Cultivators in District Meerut, for the present study.

Selection of Block

In District Meerut, a list of existing Development Blocks was prepared and from it one Block namely Mawana was selected randomly.

Selection of the villages

Selection of the villages from the Block formed the second stage of sampling. A list of all villages of the selected Block was prepared, and 10 villages were selected randomly with the help of random numbers.

Selection of the cultivators

A list of all the cultivators along with their cultivated areas of the selected villages was prepared in ascending order. A sample of hundred cultivators under five different size groups i.e. 0-1, 1-2, 2-3, 3-4 and 4 & above hectares was drawn from the universe of ten selected villages. The number of cultivators under each size group was kept in proportion to their number, falling in the universe of ten villages.
Thus, in all 100 cultivators from 10 villages of Mawana Block of District Meerut were selected for the investigation. The number of cultivators selected under different size groups of holdings in the Block and villages is given Table III-1.

Table III-1: Number of cultivators in selected villages of Mawana Block, District Meerut (1975-76).

<table>
<thead>
<tr>
<th>Selected villages</th>
<th>Number of cultivators size groupwise</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dicoley</td>
<td>2 3 2 2 0</td>
<td>9</td>
</tr>
<tr>
<td>Birana</td>
<td>2 4 2 1 2</td>
<td>11</td>
</tr>
<tr>
<td>Jandhedy</td>
<td>3 4 1 2 0</td>
<td>10</td>
</tr>
<tr>
<td>Raphan</td>
<td>2 3 2 2 2</td>
<td>11</td>
</tr>
<tr>
<td>Atora</td>
<td>2 3 2 1 1</td>
<td>9</td>
</tr>
<tr>
<td>Sadipur</td>
<td>2 4 1 2 0</td>
<td>9</td>
</tr>
<tr>
<td>Marakpur</td>
<td>3 4 2 2 1</td>
<td>12</td>
</tr>
<tr>
<td>Koal</td>
<td>2 4 1 1 1</td>
<td>9</td>
</tr>
<tr>
<td>Kola</td>
<td>2 3 2 2 1</td>
<td>10</td>
</tr>
<tr>
<td>Khedi</td>
<td>2 4 1 1 2</td>
<td>10</td>
</tr>
</tbody>
</table>

| TOTAL             | 22 36 16 16 10 100                |

Method of enquiry and source of data

The survey method was adopted to conduct the enquiry. The data were collected by personal interview method approaching the selected cultivators at the spot, with the help of schedules and questionnaires prepared in advance.
Keeping in view the convenience of the cultivators, timely visits were paid for the collection of the data, during investigation. Every possible care was taken to ensure accuracy of information. Wherever possible and advisable, the information furnished by respondents was suitably supplemented and edited through personal observation and cross-checks. The help of Block Development Officers, Asstt. Development Officers, Village Level Worker, Lekhpal, Panchayat Secretaries, Gram Pradhans and other village leaders, was sought for obtaining correct and reliable data.

The secondary data were compiled from the District, Block and Tehsil Headquarters record, Government publications and Research Journals.

Period of Enquiry

The data related to the agricultural year 1975-76, from 1st June, 1975 to 31st May, 1976, completely covered all the farm operations which the selected cultivators conducted on their farms.

Physical Input-output data

The data on the inputs included human labour, bullock labour, seed, manure and fertilizers, irrigation and other expenses relating to crops grown on the farms. The output data consisted of gross returns including returns from the byproducts for all the crop enterprises on the farms.
Prices of inputs and outputs

The prices of inputs and outputs were collected along with the physical input-output data from the farms. The wages for human and bullock labour have been imputed at the prevailing wages in the study area. Output prices used were those which prevailed at the time of harvest in the sample villages.

Statistical Analysis

The following statistical techniques have been used for comparison and interpretation of the data.

(a) Lorenze curve

The Lorenze curve of the selected Block was given to show the percentage distribution of the number of holdings to size and area of the cultivators holdings.

(b) Tabular analysis

Tabular analysis was used to compare the values of costs and returns of various size groups of farms of major crops and labour employment etc.

(c) Average

The average given refers to average of the aggregate values.

(d) Correlation

Simple correlation coefficients were calculated for the purpose of comparison and inferring trends and causal association.
(e) Functional Analysis

In order to examine Resource productivity and Efficiency in its use on farms, an effort has been made to use Production Function Analysis. Multiple Regression Analysis was carried out to study the input-output relationships and productivity of farm inputs for farm business as a whole and crop enterprises separately. The Cobb-Douglas production function was used as given below:

\[ y = ax_1^{b_1} x_2^{b_2} \cdots x_n^{b_n} \]

The values of constant \(a\) and of the coefficients \(b_1\) in respect of independent variables in the function have been estimated by using the method of least squares. For details, reference may be made to Chapter IX.

Estimation of Marginal Value Products

The marginal value products of inputs were estimated by taking partial derivatives of returns with respect to the input concerned, at the geometric mean level of the inputs. The steps involved for the estimation of marginal value products of inputs have been dealt in Chapter IX.