RESEARCH METHODOLOGY

This chapter deals with the operational measurement of concept on the basis of which the finding will be presented in the light of the objectives set forth. It consists of three main parts.

Part-I
Research Design

This part consists of the following sub parts: -

(1) Local of the study
(2) Selection of the District
(3) Blocks under study
(4) Villages of the study
(5) Sample of respondents and their selection
(6) Pilot study
(7) Pre-testing of instruments

1. Local of the Study

The IRDP come into operation during sixth plan period initially in all district in U.P. for the purpose of the present investigation, Uttar Pradesh was chosen as local on the grounds that.
There is hardly any study of this kind in Uttar Pradesh, which could work as guideline for workers, planners and administration for planning, and implementation of the IRDP schemes and activities. Thus the present study will fulfill the long felt need and assessing qualitative aspects of the programme under reference, the researcher was well acquainted with the culture prevailing in the IRDP district of the state as he himself hails from one of the cluster of four district of Azamgarh region of Uttar Pradesh.

2. Selection of the District

Under this study the Azamgarh district has been selected purposely because it is a most backward district in our state and more population residing below poverty line.

3. Blocks Under Study

During pilot study of the district it was located that, in all, there were 22 C.D. Blocks in Azamgarh district. Out of these 22 blocks the IRDP schemes were in operation in only four blocks viz.; Tahabarpur, Pani ki Saray, Palhani and Mehnagar. All these four blocks were taken for the purpose of this investigation. Hence their selection was made purposive. A set of another 100 IRDP farmers and 100 Non IRDP farmers was drawn randomly out of the rest four block with a view to make comparative study of the resultant change due to the operation of the IRDP and non IRDP schemes and activities.
4. Village of the Study

In order to facilitate the selection of the respondents it was though essential to spot out some of the villages in the above-referred two sets of the blocks. Had there been no spotting of the villages, the respondents to be interviewed would have been from scattered places of the blocks and data collection would have been very difficult. Hence with a view to have a handy sample of respondents, a set five villages was considered sufficient to be taken from each of the four blocks. For the purpose a list of villages was prepared separately for each of the four blocks that were used for drawing required number of villages through random sampling procedure. Thus the study included a set of 20 villages consisting of four blocks. The details of the villages are given as under:

TABLE-1. - Selected blocks, villages and the number of respondents under this study.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Blocks</th>
<th>Villages</th>
<th>Numbers of respondent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>IRDP and Non IRDP</td>
<td>Non-IRDP</td>
</tr>
<tr>
<td>1.</td>
<td>Tahabarpur</td>
<td>(1) Tikapur</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) Janakipur</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3) Bisauli</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4) Aikama</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4) Takamalpur</td>
<td>5</td>
</tr>
<tr>
<td>2.</td>
<td>Panik Saray</td>
<td>(1) Allipur</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) Rudari</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3) Kotila</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4) Lashirampur</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(5) Ranipur</td>
<td>5</td>
</tr>
<tr>
<td>3.</td>
<td>Palhani</td>
<td>(1) Munda</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) Neevee</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3) Geluwara</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4) Muhammadulla</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(5) Tamauli</td>
<td>5</td>
</tr>
<tr>
<td>4.</td>
<td>Mehnagar</td>
<td>(1) Khutava</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) Munahi</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3) Baseela</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4) Bachaval</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(5) Raheela</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>20</strong></td>
<td>100</td>
</tr>
</tbody>
</table>
5. **Sample of respondents**

Sample of respondents consisted of two types of subject.

(I) Sample of non officials and

(II) Sample of IRDP officials

(I) **Sample I:** It comprised of beneficiary (IRDP) and non-beneficiary (Non-IRDP) farmers. A list of beneficiary farmers of all four blocks and non-beneficiary farmers for another set of four-non IRDP block were prepared separately for all the 20 villages. Groups of 100 beneficiary farmers 100-non beneficiary farmers drawn from twenty villages were included in sample I.

(II) **Sample II:-** sample of officials consisted of 50 officials associated with the IRDP programme. Those included under this sample were ADM (P) (Additional District Magistrate Planning), DAO (District Agriculture Officer), B.D.O. (Block Development Officer), A.D.O. (Assistant Development Officers), V.D.O. (Villages Development Officers) and other related IRDP officials etc.

Thus the total respondents of officials and non-officials interviewed together were 250 in number. Table-1 provides a complete information about the number of respondent selected villages wise.

6. **Pilot Study:**

Before construction of the research instruments and determining the type of sample of respondent a pilot study of the setting was carried out. The investigator
himself visited the district headquarter, blocks and some of the villages covered under the IRDP project and held detailed discussion with officials and non-officials of the area of the investigation. The aim of conducting the pilot study was as under:

1. To obtain the general idea of the locality, the type of benefits to the people, attitudes acquired by the officials and non-officials towards the operation of the IRDP schemes and the procedure of the people participation.

2. To know the staffing pattern of the scheme, types of officials involved in it and that types of activities being.

3. To have general idea about the problems of the officials and non-officials in the area.

4. To have an idea about the socio-economic condition of IRDP and non-IRDP farmers, their requirement of credits and other inputs.

7. **Pre testing of the instruments:**

The important schedules and questionnaires related to this study were first examined with the help of the concerned officials and non-officials of the study area and later revised in the light of the suggestions made by them. The first draft of structured personal interviewing instruments was prepared to be used for pre-testing over a sample of respondents included in the study. The observations so obtained were tabulated and analysed.
Based on these observations in instruments were finalized for their final use of data collection.

Further in the process, all the scales and instruments that were developed by the researcher and used in this study were carefully listed before their final use. Editing and modification followed this as and when necessary. These modified and edited schedules and questionnaires once again were discussed with the key information so as to ascertain the reliability of the responses.
Part II

Variables and Their Study

The variable to be studied and the operational measures used for them in the present investigation were as under:

TABLE-2. - Variable studied and their empirical measures.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Variables</th>
<th>Empirical measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Target achievement analysis of the IRDP</td>
<td>Schedule developed</td>
</tr>
<tr>
<td>2.</td>
<td>Procedure and adequacy of the programme execution</td>
<td>Special schedule developed</td>
</tr>
<tr>
<td>3.</td>
<td>Progress awareness of scheme resulting programme execution</td>
<td>Schedule developed</td>
</tr>
<tr>
<td>4.</td>
<td>Problems or constraints</td>
<td>Instruments constructed</td>
</tr>
<tr>
<td>5.</td>
<td>Socio-economic changes</td>
<td></td>
</tr>
<tr>
<td>i.</td>
<td>Social participation</td>
<td>Special participation scale (Chaudhary, 1964)</td>
</tr>
<tr>
<td>ii.</td>
<td>Socio-economic status</td>
<td>Socio economic scale Trivedi &amp; Parik, 1963)</td>
</tr>
<tr>
<td>iii.</td>
<td>Mechanization</td>
<td>Mechanization index (K.N. Singh and S.N. Singh, 1970)</td>
</tr>
<tr>
<td>iv.</td>
<td>Level of education</td>
<td>Scale developed by Trivedi, 1964.</td>
</tr>
<tr>
<td>v.</td>
<td>Adoption behaviour</td>
<td>Adoption quotient by chattopadhyay, 1963</td>
</tr>
<tr>
<td>vi.</td>
<td>Mass media exposure</td>
<td>Instrument developed</td>
</tr>
<tr>
<td>viii</td>
<td>Extension Contact</td>
<td>Schedule constructed</td>
</tr>
<tr>
<td>ix.</td>
<td>Sources of irrigation</td>
<td>Special schedule developed</td>
</tr>
<tr>
<td>x.</td>
<td>Debt position</td>
<td>Special schedule developed</td>
</tr>
<tr>
<td>xi.</td>
<td>Investment pattern</td>
<td>Schedule specially developed.</td>
</tr>
</tbody>
</table>
1. **Target achievement analysis:**

The IRDP study has completed its three years tenure since its inception in 1998. Its term has been further extended and since then, it has been working for the assistance of needy small and marginal farmers of the district in coordination and collaboration with credit institutions and government departments. The agency had been very optimistic in fixing and fulfilling the financial targets. Keeping this in view, an attempt has been made to analyze the working of the agency at the aggregate level and its performance in terms of its financial target and achievement in the selected blocks. A schedule constructed to collect the information needed in this regard is given in Appendix-XXIII.

2. **Procedure and adequacy of the programme execution**

One of the objectives of the present study was to find out the procedure and adequacy of the execution of schemes and activities of the IRDP. The adequacy refers here to the degree of sufficiency with which the programmes were implemented. In order to study the procedure of the programme execution and the degree of sufficiency with which the programme were implemented, the "procedure and adequacy" concept of the programme execution was operationalised in terms of advance arrangements of inputs needed, advance arrangement of teaching aids required, wide publicity of the programme, interpretation of the approved programmes, carrying out the plan of work and evaluation of accomplishments. Information on this aspect was obtained in Likert fashion on items constituting the total domain of the concerned aspects. Information obtained were scored and
analysed. Schedules developed for collection of information on these aspects are
given in Appendix-XXXI.

3. **Progressiveness of schemes resulting programme**

An evaluation of the impact of the scheme on the farmers becomes
complicated on account of a number of methodological problems arising mainly from
the determination of incremental costs and incremental revenues associated with
scheme. Often the income position of farmers might have undergone changes of
account of a number of factors like changes in the cropping pattern, price of inputs
and outputs and similar other factors. The farmers’ decision regarding the input
combinations used in the production of various items are influenced by a number of
considerations to simplify the procedure, it was assured that most of structural
characteristic of farmers remained the same in IRDP and non IRDP areas, and that the
changes in cropping pattern and the income position were mainly due to the improved
facilities generated from the IRDP agency. With this in view, the resultant changes of
the programme were operationalized in terms of agricultural improvements, Animal
husbandry, minor irrigation, the development of allied industries and occupation.

4. **Problems and difficulties**

As mentioned earlier, the IRDP projects are working in coordination and
collaboration with various financing institution and government department of
bringing about improvements in the social and economic conditions of small and
marginal farmers. The officials of IRDP, block agencies and the other related
personnel have experienced many problems and difficulties in implementation of the
schemes and achieving the targets. Similarly the beneficiary farmers have not come up to the level of expected progress inspite of the assistance available from IRDP project. There must be some problems and difficulties being faced by these beneficiaries in ranking benefits of the IRDP project. Therefore, an enquiry was made in this regard to identify such anticipated problems and difficulties. For this purpose a schedule (Appendix-XXI) was constructed and information gathered were analysed and ranked in the order of importance.

5. **Socio-economic changes**

There were examined in terms of all sub-concepts. The imperical measures used for each of them are described as under:

(i) **Social Participation**

For study purpose, the social participation has been defined as the voluntary sharing in person to group and group to group relationships beyond the immediate household. Social participation here interpreted as including both formal and informal activities. The following principle as given by Chapin (1926) was the basic orientation. A rough measure of the scheme of social stimuli may be had by counting the number of different activities, as individual participant in (within a unit time) with supplementary facts on the number of executive positions held within range of these activities.

Social participation for this study was measured by the social participation scale (Rural farm families) developed by Chaudhary and Singh (1964). A copy of this scale is presented in Appendix-II. Social participation score for each respondent were
computed by the sum of scale item values on which he agreed. This scale consisted of
13 items. Each item was weighted by its scale values, calculated by paired
comparison technique. Theoretically the range of score on this scale varied from 0 to
25.

(ii) **Socio-economic status**

Chapin (1928) defined economic status as “the position on individual or a
family occupies with reference to the prevailing average standards of cultural
possession, effective income, material possession and participation in the group
activity of the community”.

Socio-economic status of the respondent, in this study, was measured with the
help of socio-economic status scale (rural) developed by Trivedi and Pareek (1964).
Evidence obtained from the respondent was scored according to the procedure given
in the manual of the scale, with a little modification in the caste component of the
scale (Appendix-I).

(iii) **Mechanization index**

Importance of farm mechanization as a factor in increasing the productivity
of land with greater use of improved technology has been reported by many research
workers. Increasing cost of labour, urgency of increasing output, and relative ease in
obtaining credit are some of the factors resulting in rapid changes in farm
mechanization. In order to find out as to how for the operation of IRDP has
influenced the farm mechanization in the area, an effort was made to collect and
analyze the related information. For the purpose of this study, the degree of farm
mechanization has been operationally defined, as the number of labour saving (Human and animal) devices possessed by a farmer. The scale developed on these lines by Singh et.al., (1970) was used. The specimen from of the scale is given in Appendix-IX.

(iv) Education

Education refers to the schooling education one has achieved. Education of the respondents was measured with the help of scale developed by Trivedi and Pareek (1964). Score for each respondent was given as per scoring system followed in the socio-economic status scale (Trivedi and Pareek, 1964). Theoretically the scoring ranged from a low of zero to six (Appendix-VII).

(v) Adoption behavior

The adoption quotient is a ratio scale designed to quantify the adoption behaviour of an individual. The scale is constructed with the help of following variables. The main variable to be considered in the case of the various practices advocated to a farmer is the applicability of these practices to him. It is the total number of innovation that beneficiaries can possibly adopt. Under the variable of applicability three aspects have been considered in the study namely (i) the total number of improved communication in the community, (ii) the total number of improved practices which the farmers can adopt potentiality, and (iii) the total number of improved practices adopted by the farmers.
(vi) **Mass Media exposure**

The terms mass media exposure was conceptualized as the degree to which an individual was exposed to the mass media of communication. The scores on mass media exposures was calculated for each respondent based upon radio listening, newspaper reading, other literatures readership, and watching of movies. Theoretically the scores ranged from zero to twenty (0-20). A copy of mass media exposure schedule is presented in Appendix-III.

(vii) **Farmer's progressiveness**

Studies in communication have pointed out that strategies for diffusion of agricultural information may have to be developed differently for different regions according to their degree of progressiveness. Moulik and Lobhande (1969) observed that the leadership pattern in a progressive village was situationally diffused while in a non progressiveness villages it was concentrated. Likewise observation in another study, Ramachandran (1969) related to progressive and non progressive farmers and their change proneness towards some of the developmental activities presented a picture wherein the progressive farmers were not only positively higher adopters of farm practices as compared to non-progressive ones but were also more prone to change in other areas like education, health and family planning as well. Shankariah (1969) found that farm consultation pattern of information on high yielding varieties followed perceived best farmers pattern in the progressive village whereas in the non-progressive village, it followed friendship pattern. He also observed differences in the perception of credibility to different communication sources. In the progressive
village, scientists, radio, progressive farmers, block extension agency and
demonstration were accorded credibility in that order where as in non-progressive
village, the order was demonstrations, progressive farmers, scientists, block extension
agency and radio. The measurement of agricultural progressiveness is a pre-requisite
in planning of various developmental programmes. A device to measure the degree of
agricultural progressiveness, therefore, is very essential for the village leaders,
extension workers and administration who are often confronted with the problems of
identifying more agricultural progressiveness from that of the less progressive ones.
The agricultural progressiveness in this study was measured with the help of “a scale
for measurement of agricultural progressiveness” developed by Singh and Singh

(viii) Extension contact

The farmer’s exposure to formal personal communication sources is essential
to improve the level of education and finally in bringing out the improvement in their
socio-economic conditions an attempt has been made here to find out as to how often
the farmers of different categories talk with various officials and field workers to
receive information regarding production inputs, implements, irrigation sources,
milch animal, bullocks and bullock carts etc. The instruments used for obtaining these
information is given in Appendix-VIII the information gathered were analysed and
tested for its significance by $\chi^2$ test.
(ix) **Source of Irrigation Scale**

As a result of the facilities made available and subsidies provided under IRDP schemes a considerable improvement has been noticed in the level of the possession of the sources of irrigation resulting into an improved level of agricultural production. In order to find out as to how far the level of irrigation resources of the IRDP farmers had advanced, an attempt was made in this regard in the present investigation, with the help of a schedule developed specially for the purpose. Information gathered were analysed and tested for the validity with the help of $\chi^2$ test.

(x) **Debt Position**

Various agencies are found operating in the villages for advancing loan to the farmers for varying purpose of agriculture. After the introduction of IRDP schemes, farmers might have undergone change with regard to their debt position. With a view to find out the validity of thus statement, information with regard to the debt position were gathered and analysed. A schedule specially developed for this purpose is given in Appendix-XI.

(xi) **Investment pattern**

The investment pattern refers to the acquisition or purchase of capital assets during the reference period. The capital assets have further been divided as land, livestocks, improved agricultural implements, irrigation assets etc. To determine the level of investment on different items, the actual expenditure made in purchasing the assets was taken into account. The instrument used for obtaining information on investment pattern in this study is given in Appendix-XII.
Data Collection

The study consisted of two sets of instruments for collection of data. They were:

1. Instrument of officials and
2. The instrument for non officials

All the official and non-official respondents were interviewed personally by the researcher himself and the responses were collected with the help of structured and presented scales and instrument. Face to face interview afforded the researcher an opportunity to answer question assure on anonymity and clarify the meaning of many items if required. An office call approach was adopted for information from officials and the rest of the respondents (non-officials) were approached through individual contact method in the respective villages. Every non-official was contacted individually at his house or farm or wherever he could be available at ease. The respondents who were not available for interview at the time of investigator visit, they were replaced by the other respondents of the same category selected at random. The purpose of the data collection was explained to very respondent before he was asked to supply the answer. The whole data gathering took about three months i.e. from early 1998 to end of September 1998.
Statistical Measures used

For analysis and interpretation of data the following statistical tools were used.

1. **Tabular analysis:** For comparison and interpretation of various aspects in the assessment of credit need, its availability and utilization pattern, the tabular form analysis was used.

2. **Average:** The average given, refer to the averages of aggregate values.

3. **Percentage:** In the target and achievement analysis, maintenance cost of livestock and changes regarding IRDP irrigation potential and non IRDP irrigation potential of farmers, 'percentage' method was used to interpret the data.

4. **Chi-square test ($\chi^2$) (Goodness of fit test):** In order to test the differences between socio-economic conditions of IRDP and non-IRDP farmers, $\chi^2$ test (Goodness of fit test) was used. Formula used for calculation of $\chi^2$ test is as

$$\chi^2 = E \frac{(O_i - E_i)^2}{E_i}$$

under

Where $O_i$ = Observed frequency of ith class

$E_i$ = Expected frequency of jth Class

$\chi^2$ = Test was also applied to test the homogeneity between beneficiary and non-beneficiary farmers for the socio-economic changes brought about.
Farm Mechanization Index:

(i) **Item Selection:** A construction of index for computing the index, first of all, a list of farm machineries possessed by farmers in selected villages was prepared. From this list, eight items, which were considered as, labour savings devices and contributed towards from mechanization were selected in consultation with experts, post-graduate student of agricultural economics, extension and agricultural engineering.

(ii) **Allocation of weightages to items:** Since different labour saving devices differ in their contribution towards degree of farm mechanization, it was decided to give weightage to each of the items. For this, the list of selected items was given to a group of twenty judges consisting of post-graduate students of the above mentioned two division. They were requested to rate each on a seven-point continuum according to their intensity of contribution towards farm mechanization index. The term farm mechanization index (FMI) was then calculated for the individual farmers by the following formula.

\[
FMI = \sum_{i=1}^{N} w_j n_j t_j
\]

where

- \( FMI \) = Farm Mechanization Index
- \( w_j \) = Weighage of the jth item
- \( n_j \) = The number of the jth items possessed by the individual
- \( t_j \) = The total period in years of the Jth has been possessed
N = Total number of items selected

(i) Critical ratio (t) value: In the method equal appearing intervals a basis for the rejection of statements is in term of the criterion of irrelevance. A basis for rejecting statement in the method of summated ratings, use is made of some form of item analysis. We consider the frequency distribution of scores based upon the responses to all statements. We may than take 25 (or some other) per cent of the subjects with the highest total scores and also the 25 per cent of the subjects with the lowest total scores, we assume that these two groups provide criterion groups in terms of which to evaluate the individual statement. In evaluating the responses of high and low groups to the individual statements we find the ratio.

\[
t = \frac{\bar{X}_H - \bar{X}_L}{\sqrt{\frac{\sum (X_{Hi} - \bar{X}_H)^2 + \sum (X_{Li} - \bar{X}_L)^2}{n(n-1)}}}
\]

Where \( \sum (X_{Hi} - \bar{X}_H)^2 = \sum X^2_H = \frac{(\sum X_{Hi})^2}{n} \)

and \( \sum (X_{Li} - \bar{X}_L)^2 = \sum X^2_L = \frac{(\sum X_{Li})^2}{n} \)

\( \bar{X}_H \) – the mean score on a given statement for the high group

\( \bar{X}_L \) – the mean score on the same statement for the low group

\( X_L \) – the variance of the distribution of response of the low group in the statements

\( X_H \) – The variance of the distribution of responses of the high group in the statement.

n = number of respondents
The Wilcoxon matched-pairs signed ranks test:

The order to test how for the results of the operation of IRDP schemes and activities have led towards farm mechanisation, changed investment pattern and farmer’s progressiveness, wilcoxon matched-pairs signed ranks test was applied. In making use of this test we first obtain the difference scores for each pair. These differences are then ranked, ignoring the sign of the difference. Having ranked the absolute values of the differences, we then go back and record the sign. Finally, we obtain the sums of the ranks of both the positive and negative differences. If the null hypothesis is correct, we expect that the sum of the ranks of the positive differences will be approximately the same as the sum of the rank for negative differences. If these sum are quite different in magnitude, the null hypothesis may be rejected. We farm the statistics T that is the smaller of these two sums. We then inspect to see as to whether or not the sum of the negative ranks will be less than that of the positive ranks therefore; we obtain T by adding these negative ranks. It is not necessary to keep the negative signs in looking up the value of T in the table since T values will always be given as positive. Nirangan 1980 in the percent area of the investigation used this scale.