CHAPTER III

METHODOLOGY

This chapter highlights the methods and procedures used in this research. This has been done under the following sub-heads:

1. Research Design
2. Sampling
3. Variables and their measurement
4. Data Collection
5. Statistical Analysis

THE SETTING

The study had been conducted in the W.U.P. is a part of the state of U.P. It is surrounded on the north by Uttarakhand Division of U.P., on the west by the state of Haryana, Delhi, and Rajasthan, the East by the Gorakhpur region of U.P. and on the south by Central Uttar Pradesh and parts of Madhya Pradesh. The Western Uttar Pradesh includes divisions like Saharanpur, Meerut, Moradabad, Bareilly and Agra.

The Western Uttar Pradesh had emerged as a separate regional identity due to its remarkable performance in the field of agricultural productions, developments of large and medium scale agro-based industrial units. Thus, this region is agriculturally advanced compared to other parts of U.P. and also other regions/neighbors.
District of Western Uttar Pradesh Covered Under the Study
District of Meerut is the central in the progress of W.U.P. Meerut is located to the north east of Delhi at a distance of about 70 Kms. It is approximately 80 Kms. to the south of Muzaffarnagar. District Bijnore and Moradabad are located towards its eastern margin. District ghaziabad is towards south. Similarly districts of Sonipat and Panipat are located on the Western boundary of District Meerut. Bareilly is located to the North east of Meerut at a distance of about 50 Kms.

District Aligarh is a part of Agra Division it is located to the north of Agra, North west of Etah, North east of Mathura South west of Badaun and south of District Bulandshahar. State of Haryana forms its western boundary to a certain extent Delhi to Aligarh distance of about 135kms. and Meerut to Aligarh distance of about 214kms.

According to 1991 the total geographical area of the W.U.P. is approximately 73,400 sq km. The total population according to 1991 census was approximately 4,46,00,000 the pressure of population on land varies widely from district to district. Agriculture occupy the foremost place in the economy of W.U.P. Nearly 70 percent of the total working population in the western U.P. is engaged in agriculture. The Western U.P. is surplus in food grains particularly wheat, maize, potato, rice, bajra, barley and gram. Other important crops are, pulses, Sugar Cane, oil seeds and Cottan.

The Uttar Pradesh govt. submitted a proposal to the govt. of India in September 1956 to establish an agricultural university at Rudrapur in the tarai. Now called panchagar. the govt. of India approached the problem in a cautious manner and agreed to the setting up of the agricultural University in the tarai only as an experimental measure in the second Five-Year plan. However there were demands
from many more states for such Universities and in 1961 the government of India accepted the need for a few more such Universities during the third plan and suggested that the existing colleges or institutions which had strong departments for teaching and research should serve as the nuclei for such Universities.

The Panthnagar Agricultural University is interested with state-wide extension work for Agriculture, Veterinary, Animal Science, Agricultural engineering, Home science and other allied sciences. The Act further states that the University shall be responsible for the agricultural extension functions which are primarily educational in nature. The Pantnagar Agricultural University is engaged in attaining these extension objectives through its Directorate of Extension Education. It has three wings: farm information service, farmers' training and farm advisory service.

**KRISHI VIGYAN KENDRAS**

The first Krishi Vigyan Kendras was established in 1971 at Puducherry. These were established to provide vocational education in agriculture and allied field at the pre-and post-matriculate levels to cater to the training needs of a large number of boys and girls coming from the rural areas. The main objective was to provide a strong training support for bringing about the specific objectives of K.V.K's were:

a. Planning and conducting surveys to identify training needs of farming community.

b. Compiling all relevant package of practices for utilizing the training courses.

c. Planning and conducting production-oriented need-based short and long duration training courses both on the campus as well as in the villages.

d. Providing practical training facilities of kindra to the teachers and the
students of Vocational agriculture of higher secondary schools.

e. Providing added training facilities in the areas of home making and nutrition education for rural community.

183 on going K.V.K.'s and 78 new K.V.K.'s established in the country.

(Economic survey 1995-96).

FARMERS TRAINING CENTRES

The farmers' training and education programme was started under centrally sponsored scheme as an integral component of the high yielding varieties programme of the Ministry of Agriculture and Irrigation Govt. of India in 1966-67. The main objective of this programme is to improve the efficiency of human impact which had a crucial importance in development agriculture by bringing the maximum area under high yielding varieties and increasing yields per unit of area. The programme envisaged the linkage of production inputs with technical know-how and skill of the farmers through a planned and organized programme of training of farmers.

The two districts Meerut and Aligarh have been selected for the study.
### TABLE 1

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Particulars</th>
<th>Unit</th>
<th>Meerut</th>
<th>Aligarh</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Total geographical area</td>
<td>Hectare</td>
<td>4910260</td>
<td>7360745</td>
</tr>
<tr>
<td>2</td>
<td>Total Cultivable area</td>
<td></td>
<td>634027</td>
<td>626136</td>
</tr>
<tr>
<td>3</td>
<td>Total irrigated area</td>
<td></td>
<td>627686</td>
<td>500908</td>
</tr>
<tr>
<td>4</td>
<td>Percentage of irrigated area</td>
<td></td>
<td>99</td>
<td>80</td>
</tr>
<tr>
<td>5</td>
<td>Number to tubewell/pumping set (1993-94)</td>
<td></td>
<td>116645</td>
<td>350544</td>
</tr>
<tr>
<td>6</td>
<td>Gobar gas plant</td>
<td></td>
<td>8288</td>
<td>6423</td>
</tr>
<tr>
<td>7</td>
<td>Krishi Seva Kendra</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agro</td>
<td></td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td></td>
<td>513</td>
<td>34</td>
</tr>
<tr>
<td>8</td>
<td>Storage Capacity</td>
<td>Tones</td>
<td>82571</td>
<td>250898</td>
</tr>
<tr>
<td>9</td>
<td>Total population</td>
<td>000</td>
<td>3447.91</td>
<td>3290.80</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td></td>
<td>2171.36</td>
<td>2462.31</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
<td></td>
<td>1276.56</td>
<td>828.58</td>
</tr>
<tr>
<td>10</td>
<td>Literacy Percentage</td>
<td></td>
<td>51.3</td>
<td>45.2</td>
</tr>
<tr>
<td></td>
<td>Men Percentage</td>
<td></td>
<td>64.5</td>
<td>60.0</td>
</tr>
<tr>
<td></td>
<td>Woman Percentage</td>
<td></td>
<td>35.6</td>
<td>27.2</td>
</tr>
<tr>
<td>11</td>
<td>Population density</td>
<td>/sq. km.</td>
<td>882</td>
<td>650</td>
</tr>
<tr>
<td>12</td>
<td>Use of fertilizers (1992-93)</td>
<td>metric tons</td>
<td>55796</td>
<td>40007</td>
</tr>
<tr>
<td></td>
<td>Nitrogen</td>
<td></td>
<td>47878</td>
<td>30601</td>
</tr>
<tr>
<td></td>
<td>Phosphorases</td>
<td></td>
<td>7029</td>
<td>9760</td>
</tr>
<tr>
<td></td>
<td>Potash</td>
<td></td>
<td>891</td>
<td>328</td>
</tr>
<tr>
<td>13</td>
<td>Educational facilities (1993-94)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Primary School 1733 1822
Higher secondary 220 155
Senior secondary 456 501
Degree college 19 7
University 1 1
Industrial training 2 3
Institute
Polytechnic School 2 2

14. Total cropped area (in hectare 1992-93)

<table>
<thead>
<tr>
<th>Crop</th>
<th>1992-93</th>
<th>1993-94</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total pulses</td>
<td>10255</td>
<td>61214</td>
</tr>
<tr>
<td>Wheat</td>
<td>151939</td>
<td>227646</td>
</tr>
<tr>
<td>Paddy</td>
<td>14763</td>
<td>10494</td>
</tr>
<tr>
<td>Maize</td>
<td>17467</td>
<td>50030</td>
</tr>
<tr>
<td>Bajra</td>
<td>1562</td>
<td>90010</td>
</tr>
<tr>
<td>Potato</td>
<td>8002</td>
<td>5788</td>
</tr>
<tr>
<td>Cotton</td>
<td>987</td>
<td>4038</td>
</tr>
<tr>
<td>Sugar Cane</td>
<td>169427</td>
<td>12865</td>
</tr>
</tbody>
</table>

15. Production (Metric Tonnes) (1992-93)
(Average yield/hectare)

<table>
<thead>
<tr>
<th>Crop</th>
<th>1992-93</th>
<th>1993-94</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>489798 (32.24)</td>
<td>618565 (27.17)</td>
</tr>
<tr>
<td>Paddy</td>
<td>32931 (22.31)</td>
<td>20870 (19.89)</td>
</tr>
<tr>
<td>Maize</td>
<td>32597 (17.62)</td>
<td>97971 (17.87)</td>
</tr>
<tr>
<td>Bajra</td>
<td>1973 (12.63)</td>
<td>120319 (13.37)</td>
</tr>
<tr>
<td>Potato</td>
<td>102334 (227.96)</td>
<td>132267 (228.52)</td>
</tr>
<tr>
<td>Cotton</td>
<td>193 (1.95)</td>
<td>806 (2.00)</td>
</tr>
<tr>
<td>Sugar Cane</td>
<td>9790947 (577.88)</td>
<td>775348 (602.68)</td>
</tr>
</tbody>
</table>

Meerut and Aligarh were purposively selected for the study because of the reason...
that more progressive and less progressive areas would be represented. Meerut was taken as more advanced area and Aligarh as less advanced area.

Table 2:

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Farmers Training Centres and Krishi Vigyan Kendras</th>
<th>Meerut</th>
<th>Aligarh</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Number of farm family</td>
<td>1124018</td>
<td>1359100</td>
</tr>
<tr>
<td>2.</td>
<td>Number of farm men/women trained by Rabi season 1995-96</td>
<td>7678</td>
<td>6864</td>
</tr>
<tr>
<td>3.</td>
<td>Total farmers selected for training during 1995-96</td>
<td>800</td>
<td>900</td>
</tr>
<tr>
<td>4.</td>
<td>Total farmers selected for training through F T C. and K V K. during 1995-96</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>5.</td>
<td>Respondents selected for sample from farmers' training centres</td>
<td>50</td>
<td>-</td>
</tr>
<tr>
<td>6.</td>
<td>Respondents selected for sample from Krishi Vigyan Kendras</td>
<td>-</td>
<td>50</td>
</tr>
</tbody>
</table>

RESEARCH DESIGN

This is an action oriented field experimental study carried out with knowledge and skill as active variables and personal, social, economic, communication and psychological characteristics of the subjects as assigned variables. The active variables designated as experimental variables (independent variables) and
assigned variables also designated as independent variables, have been discussed in detail in the section “variables and their measurements.” The experimental design adopted in this study was of ‘Before-After’ type. The total effect of specialised institutional training on farmers together with personal variables were considered as independent variables and knowledge and skill as the two dependent variables. Further adoption of technology was taken as dependent variable and the two above mentioned dependent variables become independent for the purpose. The farmers who attended the farmers’ training centres for training were tested, on their arrival to the centre and before the start of the programme, on the extent of knowledge and skill they possessed by administering knowledge and skill tests developed for the study. On completion of the three days training and before the trainees left, they were retested both on knowledge and skill. The help of Agricultural Development Officer of the area was also taken for administering skill test on the trainees before as well as after to avoid error administration of the test. Changes observed, if any, in the levels of the two dependent variables might be due to the institutional training programme.

The same tests of knowledge and skill were administered on those farmers selected for training of Krishi Vigyan Kendra before starting the training programme. After completion of training by the Extension specialists of Krishi Vigyan Kendra, the farmers were retested both on knowledge and skill.

**SELECTION OF RESPONDENTS:**

One hundred farmers were studied under the present research project. Fifty farmers from each group namely farmers’ Training centre and Krishi Vigyan Kendra were selected from both the districts.

As regards the selection of respondents from farmers’s Training Centres,
the researcher went in person where the training programmes were conducted before sowing of wheat crop in the month of October and November 1995 and selected fifty trainees from Baraut farmers' training centre of Meerut District.

As regards the selection of respondents from Krishi Vigyan Kendras, those farmers were selected for the purpose where the training programme was organized before sowing of wheat crop. Fifty farmers were selected from Krishi Vigyan Kendras' Aligarh.
DATA COLLECTION:

The data for the present study were collected from both the participating farmers of farmers' training centres and Krishi Vigyan Kendra. This included the collection of socio-economic, personal, psychological and communication information of the farmers, answers to the questions on the subject matter content of the high yielding varieties programme of wheat cultivation.

Information was obtained from both the participating farmers during the initial reconnaissance survey, with respect to each group of farmers. Majority of the data were obtained in three intensive interviews, with respect to two training groups of farmers. The first of these interviews was conducted shortly before the start of respective training programmes for farmers. Second interview was conducted immediately after the completion of respective training programmes. The final information about the adoption of high yielding wheat varieties and connected package of practices was obtained at the end of the Rabi season of 1995-96.

VARIABLES AND THEIR MEASUREMENT:

An important element in any theory of human action is the situations or the circumstances under which the individual receives a stimulus. This element is recognized by Parsons and Shils (1951) and they stated that the behaviour of any organism is called action only when it is analyzed, in terms of a situation in which it occurs. Thomas (1958) viewed the social situation as consisting of three interrelated elements. The objective conditions, which include the socially enforced rules of behaviour, the pre-existing attitudes and values of individual or the groups; and the definition of the situation by the actors themselves. The human behaviour according to Newcomb (1950) is a function of the interaction of three variables: experience, current attitudes and values and the
current situation Bohlen and Beal (1960) while discussing their concept, observed that the units of act have emphasized the importance of the circumstances under which the stimulus is received and interpreted by an actor, before he responds to it.

On the basis of above interpretations, it would follow that the relationship between knowledge, skill and overt adoption behaviour can be more completely understood if one has the knowledge of certain situational and socio-economic variables which comprises the constructed word of reality within which individuals receive the stimuli to act.

Some socio-economic, personal, psychological, and communication variables will be examined in order to determine their possible relationship with knowledge, skill and adoption behaviour.

INDEPENDENT VARIABLES:

The variables included in this category of independent variables are: age, education, farming experience, occupation, family type, family size, social participation, caste, farm size, cattle possession, input availability, irrigation facility, cropping intensity, risk preference, level of aspiration, motivation and use of information sources.

AGE:

Age was operational as the number of completed year of respondent at the time of enquiry and the chronological age was taken as a measure. The respondents were classified into three categories according to their age as adopted by Natarajan (1991) the categories are given below.
<table>
<thead>
<tr>
<th>Category</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>Up to 35 Years</td>
</tr>
<tr>
<td>Middle</td>
<td>36 to 45 Years</td>
</tr>
<tr>
<td>Old</td>
<td>Above 45 Years</td>
</tr>
</tbody>
</table>

The completed years of the respondents were taken as such for further analysis.

**EDUCATION:**

It refers to the academic qualification of respondent acquired through formal schooling. This was measured with the help of socio-economic status scale developed by Trivedi (1963) with some modifications and the score assigned was as follows:

- Illiterate      1
- Primary pass    2
- Middle pass     3
- Matric/Higher Secondary 4
- Graduation      5
- Above graduation 6

**FARMING EXPERIENCE:**

It refers to the actual number of years put for farming and was determined by asking respondent an open ended question.

**OCCUPATION:**

It refers in this study as the diversification of efforts towards more income of the family for better life. The score assigned was as follows:

- Farming alone 1
- Farming + Other occupation 2
EXTENT OF EMPLOYMENT:

It refers in this study the time devoted by the respondent for farming. It is assumed that if a respondent carries out farming and not doing any side work will concentrate more in farming operations then a respondent who is having other side business. Therefore, the score 2 is assigned to a respondent who was having other side jobs with farming.

ANNUAL INCOME:

It refers in this study the gross annual income in other words as the total earning in a year of the respondent derived from any source of earnings, farm as well as non-farm. This variable was measured on the basis of average frequencies in the study so that the assigned score may be arbitrarily. Therefore, score 1 was assigned up to 20,000 rupees per annum, score 2 for 2001 to 40,000, score 3 for 40001-80,000 and score 4 to above 80,000 respectively.

FAMILY TYPE:

By type it is meant whether a family is single or joint. Single family means a family which is composed of the members only of one includes only minors and dependents. The joint family means a family which is composed of two or more brothers' family. At the time of assigning score it was assumed that the single family will be more prone to change than the joint family. Therefore, score 2 was assigned to single family and score 1 to joint family respectively.

FAMILY SIZE:

The size of family means the number of members present in the family. At the time of assigning scores it was assumed that the smaller the size of the family the adoption of the technology will be more because of the trends of individualistic in these days. Therefore, the score 2 was assigned to a family,
who had family members up to five and score 1 was assigned to a family, who has more than five members.

SOCIAL PARTICIPATION:

It means participation in social institutions as a member or an office bearer. Measurement of this variable was undertaken on the line of socio-economic status scale developed by Trivedi (1963) as follows:

- Not member of any organization: 1
- Member of one organization: 2
- Member of more than one organization: 3
- Office bearer of any organization: 4
- Member + Office bearer: 5

CASTE:

It refers to the caste of the respondent in which he is born. It was measured on the line of Socio-economic status scale developed by Trivedi (1963) as follows:

- High caste: 3
  (Includes Rajput, Jat, Thakur, Pandit)
- Backward class: 2
  (Includes Ahir, Gujar Lodhe)
- Schedule caste: 1
  (Includes Harizan, Sweeper, Julana, Bagola)

FARM SIZE:

Farm size referred to the total extent of land an individual possessed and
The respondents were classified into three categories as marginal, small and big farmers. Every unit acre of land was given one score. The scoring procedure followed was adopted by Shanthinagam Vadivu 1992.

<table>
<thead>
<tr>
<th>Size</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>p to 2.5 Acres</td>
<td>Marginal</td>
</tr>
<tr>
<td>rom 2.5 to 5.00</td>
<td>Small</td>
</tr>
<tr>
<td>above 5.00 Acres</td>
<td>Big</td>
</tr>
</tbody>
</table>

**ATTLE POSSESSION:**

It refers to the possession of milch animals by the respondent and was assumed that more the milch animals possessed respondent more economica1ly he will be sound, and adoption of technology will be more. The scoring was assigned in the following way: She buffalo - 2x number possessed, rossbred cows - 2x number possessed, indigenous cow - 1x number possessed.

**ARM POWER:**

It refers to the utilization of kind of power by the respondent in carrying out his farm operations. The scoring assigned 2 for mechanical power and 1 for animal power.

**INPUT AVAILABILITY:**

It refers to the kinds of input utilized by the respondent in carrying out farm operations in time and in quantity. This variable was measured with the help of a way table to achieve the aggregate score as follows, for the inputs like seed, fertilizer, herbicide, insecticide, irrigation and labour.

<table>
<thead>
<tr>
<th>Availability</th>
<th>Timely</th>
<th>Late</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td>2 x 2</td>
<td>1 x 2</td>
</tr>
<tr>
<td>Partial</td>
<td>1 x 2</td>
<td>1 x 1</td>
</tr>
</tbody>
</table>
MATERIAL POSSESSION:

It refers to the possession of Movable, articles which are of daily use at home and in farm and was determined by asking them on open ended question.

IRRIGATION FACILITY:

It refers in this study as the extent of command of irrigation possessed by the respondent by any source for cultivation of high yielding varieties of wheat. The score 3 was assigned to the full command of irrigation, 2 was assigned to the partial command of irrigation at the disposal of the respondent.

TRANSPORT:

It refers in this study as means of conveyance at the disposal of the farmer. It was measured on the line of socio economic status scale developed by Trivedi (1963). The scores were assigned to the articles based on heir prices.

No transport 0
Cycle 1
Tyred wheel bullock cart 2
Motor cycle/Scooter 3
Tractor 4

CROPPING INTENSITY:

Operationally the cropping intensity has been defined in this study as the proportion of total annual cropped area to the size of holding expressed in percentage. Lokhande (1973) and Sadamate (1978). The intensity of cropping was calculated by the formula:
MOTIVATION:

It refers in this study some selective motives which can motivate the farmers to attend the training programmes. They were worked out and ranked on the basis of response of the farmers. After getting the response from the farmers, the score value was worked out for each motive by multiplying inverse of ranks. Then the cumulative value was divided by the sum of weights to get the final score value. Further these motives were put on three point scale for the purpose of achieving these motives, i.e., fully achieved/partially achieved and not achieved assigning 3, 2 and 1 mark to each motive respectively. Total score for motivation was taken as the sum of all these motives by adding their respective weights assigned by the respondents.

COMMUNICATION:

It refers in this project as the frequency with which an individual has used his source of information for getting information about the package of practices connected with wheat cultivation, and measured on the basis of three point scale i.e., frequently used - 3, less frequent - 2 and not used - 1. The total score of communication was taken as the sum of the weights assigned to the source by the respondent.

LEVEL OF ASPIRATION:

It refers in the study as a goal statement concerning future level of achievement. Here the goal concerns development in son's and daughter's education, son's and daughter's job, income, farm size, produce, house material possession, general contentment, milk animals, other animal and shelter for livestock.
To measure the level of aspiration of the respondents, the scale developed by Mulhaway (1971) was used. In this scale there are 13 items which gave the goal statement concerning future level of achievement, and were asked on the basis of alternative responses given in the schedule.

**SCORING PROCEDURE:**

i. The responses were arranged into suitable number of classes, so as to form a continuum in ascending order.

ii. Frequencies of the respondents following in each of the classes were worked out.

iii. These frequencies were then expressed in terms of the percentage of the total size of sample of the two groups respectively.

iv. Equivalent Q value for each class was worked out in consultation with table - H (Garret, 1961, pp. 456-57).

v. Equivalent 6 values were expressed as standard score in a distribution, the mean of which was 50 and the 6 was 10” (Garret, 1961, pp. 3 and 7). For this, each equivalent 6 values was multiplied by 10 and added to 50 with proper signs (i.e., minus and plus).

**RISK ORIENTATION:**

It refers in the study as the degree to which a farmer oriented towards risks and uncertainty in adopting a new idea in farming and was measured with the scale developed by Subramaniam, U.A and Singh, A.P. (1980). The scale consisted of three positive and three negative statements respectively on a five point scale, with the score of 5, 4, 3, 2, 1, given for strongly agree, agree, undecided, disagree and strongly disagree in case of positive statement and 1, 2, 3, 4, and 5 for the same responses in case of negative statements. The total score was obtained by summation of responses on all the six statements of the scale.
KNOWLEDGE:

Measurement of the knowledge acquired as a result of exposure to training in the present study has been done through the test situation which emphasises the recalling of ideas of information received. A suitable teacher-made type achievement test was developed by framing suitable questions on every bit of information passed on to the respondents through these training programmes. Questions were framed on the basis of recommendation of Pantriagar Agricultural University on the package of practices for cultivation of New agricultural technology of wheat. Further personal discussions were made with the staff of farmers' training programme and Krishi Vigyan Kendra to arrive on the final format of the test. In total twenty-five questions were developed related to the technology of wheat cultivation.

The idea behind the test was to find out how much information a respondent could recall out of the total communicated to him and how much understanding of the communication he developed, that is, how much could be comprehend the communication. The answer of the respondents to each of the questions was marked correct/incorrect to a correct answer a score of one and to an incorrect answer a score of zero was assigned and then converted into percentage. Thus, the total possible score that a respondent can obtain would vary from zero to hundred. In order to ascertain the knowledge gained from the treatment given, this scale was administered to every respondent twice one just before the start of training programme and the second just after completion of the training programme. The difference between the data of the pre and post measurements yielded the data indicated gain in knowledge.

SKILL:

In this study, skill refers to the cognitive, conative and affective behaviour.
of the farmer. Measurement of the skill acquired as a result of exposure to
the training, in the present study, has been done through the test situation which
emphasises the recalling of ideas, processed (thinking point) and action of an
object for this purpose, a suitable teacher made type achievement test
was developed by framing suitable steps on every bit of the process of weeds control
in wheat by the use of 2, 4-D with urea.

ADOPTION OF TECHNOLOGY:

Adoption of wheat technology communicated to the farmers through these
two training organizations was considered to be the dependent variable in the
present investigation. The extent of adoption of the recommended package of
practices with respect to the cultivation of New agricultural technology high of wheat
was measured by means of adoption index. The purpose was to quantify the extent
of adoption of package practices for the cultivation of recommended wheat varieties
in the W.U.P. and not to arrive at individuals’ adoption quotient. Suitable questions
were framed on all the practices or components of the technology brought to the
knowledge of the farmers through these training organizations. For this purpose
the practices included were seeds, fertilizers, irrigation, weedicide and pesticides and equal weight was assigned for all the practices keeping view the inter-
correlation and importance of each step, the adoption of technology, was
measured with the formula:

\[ AI = \frac{E}{P} \]

Potentiality of adoption

A respondent’s adoption of advocated technology was calculated by
pooling the scores of the items of practices he actually adopted. In this way,
the extent of adoption of the technology was worked out for all the respondents. The same adoption index was used to determine the respondents' level of adoption of wheat technology both before and after the treatment to the experimental variables.

DEFINITION OF IMPORTANT TERMS USED:

Behaviour: Any action or any activity of a farmer or for that matter any person is termed behaviour.

Knowledge: This is defined as increase in understanding of the farmers, with respect to the package of practices connected with the high yielding varieties of wheat, because of exposure of the farmers to the farmers' training and education programme.

ADOPITION:

The concept of Ramsey et al. (1959) on adoption has been followed in this study. They made a distinction between 'behavioural adoption' and 'cognitive adoption.' Behavioural adoption means actually putting an innovation into practice, while, cognitive adoption involved a complex of decisions and changes including obtaining knowledge and critically evaluating the practice in terms of the individual situation.

STATISTICAL PROCEDURE USED FOR THE ANALYSIS OF THE DATA:

The statistical methods and test used in the present study for analyzing the data were:

1. FREQUENCY AND PERCENTAGE:

Frequencies and then percentages were used for making simple comparison. To calculate the percentage, the frequency of the particular cell was multiplied...
by 100 and divided by the total number of respondents in that particular category.

2. **t-test:**

This test was applied in this study to test the significance of the difference of mean values of knowledge, skill and adoption before training and after training. The formula used for calculating 't' value was as follows:

\[
t = \frac{\text{Difference between means}}{\text{Standard error of difference}}
\]

The significance of 't' was tested by referring to 't' table. If the observed value of 't' was equal to or greater than the table value of \( t \) of \( n^2 + n^2 \) df, at 0.05 and 0.01 level of probability then it was considered as significant. If the value of C.R. is more than 1.96, it has been concluded that the means differ significantly.

**PERSON'S COEFFICIENT OF CORRELATION (r)**

The test was used to find out the relationship between the different combination of production advancement viz., knowledge, skill, adoption and yield by varying categories of farmers. Coefficient of correlation were also found out between in independent variable and dependent variable the formula used for calculating correlation coefficient values is as below:

\[
r = \frac{\sum xy}{\sqrt{\left( \frac{\sum x^2}{n} \right) \left( \frac{\sum y^2}{n} \right)}},
\]

Where,

- \( n \) = Number of observations being calculated.
- \( x \) and \( y \) = Variables being correlated.
- \( r \) = Correlation coefficient between \( x \) and \( y \).
by = Sum of products of x and y.

b_x = Summation of overall cell entries of independent variable.

b_y = Sum of squared value of each cell of independent variable.

b_y = Summation of overall cell entries of dependent variable.

by = Sum of squared value of each cell of dependent variable.

The significance of calculated 'r' value was tested by 't' test as given below.

\[ t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2} \]

Where,

\( r \) = Correlation coefficient

\( n \) = Number of observations

**MULTIPLE REGRESSION:**

The prediction equation was used in this dissertation to determine the multiple regression. The equation was as follows:

\[ Y = a + b_1 x + b_2 x^2 + b_3 x^3 + \ldots + b_n x^n \]

Where

\( Y \) = dependent variable

\( a \) = Constant

\( x^k \) = Total number of independent/intervening variables.