3.0 METHODOLOGY

This chapter deals with the research design, sampling technique and tools used in the scientific investigation in the light of objectives laid down for the present study. The information presented in this chapter has been classified and presented under the following heads:

- Selection of Study Area
- Sampling Technique
- Data Collection and
- Analytical Procedure

3.1 SELECTION OF THE STUDY AREA

Haryana state has been purposely selected for the present study due to its multi-favourable resource endowments like fertile land, assured irrigation, high productivity and production with good marketing facilities, electricity and roads and above all a receptive farming community with proven record of early adoption of improved technology and modern production practices. Haryana farmer considers farming not as a way of life but also as a business.* Haryana state regarded as a wheat basket and rice bowl of India, contributing about 45 percent of rice and 65 percent of wheat to the central pool and more than 8 percent of the total production of the country.** Technological and human factors increased the pressure on the marketing machinery to take care of marketable surplus from the farmers to the consumers. It was, therefore, imperative that a strong and efficient infrastructure was created by setting up a modern marketing and efficient system in the state. Therefore, Haryana State Agricultural Marketing Board set up on 1st. Aug.1969 with its headquarters in Chandigarh, which has now been shifted to Panchkula has been purposely selected for the study, since it is one of the few boards set up in the country at the earlier stage itself to remove the malpractices in agricultural marketing and help the producers from exploitation at the hands of various market functionaries.

**Statistical Abstract Haryana (2008-09): Production and principal crops 0f Haryana, pp 266-67
3.2 SAMPLEING TECHNIQUE

To arrive at the necessary results of the study, two stage sampling viz. at the board level and mandi level has been done, which is as under.

3.2.1 State Level

As mentioned earlier in this section, Haryana State Agricultural Marketing Board, which is the only Board in Haryana has been selected for the study.

3.2.2 Zone level

Haryana State Agricultural Marketing Board, to administer the state efficiently and effectively has classified the entire state into three Zones, each headed by a zonal administrative officer of the rank of a Haryana Civil Service Officer. The classification of the state According to Zones has been presented below in Table 3.1

Table 3.1 Classification of Haryana state into various Zones

<table>
<thead>
<tr>
<th>Districts</th>
<th>Mandis Covered</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>KARNAL ZONE</strong></td>
<td></td>
</tr>
<tr>
<td>Ambala</td>
<td>Ambala city, Ambala cantt, Barara, Naneola, Mullana, Naraingarh and Sahzadpur</td>
</tr>
<tr>
<td>Panchkula</td>
<td>Panchkula, Raipur Rani and Barwala.</td>
</tr>
<tr>
<td>Yamuna Nagar</td>
<td>Jagadhri, Yamuna Nagar, Chhachrauli, Sadaura, Mustafabad, Radaur and Bilaspur</td>
</tr>
<tr>
<td>Karnal</td>
<td>Karnal, Kunjpura, Nilokheri Taraori, Indri, Nissang, Gharaunda, Nigdhu and Assandh.</td>
</tr>
<tr>
<td>Kurukshetra</td>
<td>Thanesar, Pipli, Ismialabad, Shahabad, Pehowa, Ladwa, Babain.</td>
</tr>
<tr>
<td>Kaithal</td>
<td>Kaithal, Cheeka, Fatehpur Pundri, Dhand, Sewan, Kalayat, Pai</td>
</tr>
<tr>
<td>Panipat</td>
<td>Panipat, Israna, Samalkha, Madlauda and Bapauli</td>
</tr>
<tr>
<td>Sonipat</td>
<td>Sonipat, Ganaur and Gohana</td>
</tr>
<tr>
<td><strong>HISSAR ZONE</strong></td>
<td></td>
</tr>
<tr>
<td>Hisar</td>
<td>Hisar, Hansi, Adampur, Uklana Barwala and Narnaund</td>
</tr>
<tr>
<td>Fatehabad</td>
<td>Fatehabad, Bhattukalan, Ratia, Jakhal, Tohana, dharsul, Bhuna</td>
</tr>
<tr>
<td>Sirsa</td>
<td>Sirsa, Rania, Ellanabad, Kalanwali, Dabwali, Ding.</td>
</tr>
<tr>
<td>Bhiwani</td>
<td>Bhiwani, Charkhi dadri, Loharu, Jui, Tosham, Behal, Siwani</td>
</tr>
<tr>
<td>Jind</td>
<td>Jind, Julana, Plukherra, Safidon, Uchana, Narwana</td>
</tr>
</tbody>
</table>
From each zone, three mandis have been selected randomly. Thus the selected mandis from Karnal zone are: Karnal, Panipat and Taraori. From Hisar zone, the mandis selected are Tohana, Bhiwani and Fatehabad. From Gurgaon Zone, the selection zeroed at Rohtak, Ballabgharh and Narnaul. Thus in all 9 mandis from the three zones have been selected randomly for the data collection. The selected mandis and the zones have been ear marked in bold format and underlined in the above 3.1

From each mandi, all the functionaries viz. the farmers, traders/ commission agents and the office of the mandi board were selected for the data collection. From each mandi, 15 farmers from the various farming groups were selected randomly. Again from each mandi, 10 arhtiyas/commission agents too were selected randomly. From the other functionaries, officials from the various agencies procuring the agriculture produce and the other licencees too were selected randomly. Thus the total sample comprised of 135 farmers, 90 Arhtiyas/commission agents, 9 mandi offices/officers and 20 functionaries.

3.3 DATA COLLECTION

Both types of data viz. Primary and secondary data has been collected and used in the study.

3.3.1 Secondary data

Secondary data on income and expenditure and the investment on the various infrastructure facilities have been collected from the published and unpublished records, various reports, balance sheets and ledgers of Haryana State Agriculture Marketing Board, Panchkula. General views on the working of HSAMB were ascertained from the authorities working at the headquarters by lose ended survey schedule in an informal manner. In addition to this, the data on other parameters like
number of mandis in different years, the procurement of grains/commodities by various organizations etc. was collected from the office of Economic and Statistical Adviser to the Govt. of Haryana, Statistical Abstract of various years, Economic Survey Reports of Haryana Government and other published and unpublished records. Records of various mandis selected too were scanned and the data on various aspects like number of traders and other functionaries operating in the mandi, staff employed and their designation/salaries, procurement of various commodities during various years, villages attached to the mandi and the area covered by the mandi, length of roads, income of the mandi from all sources, capital and operational expenditure during different years and facilities available etc. were collected. The views on the operational aspects too were ascertained by informal interview method.

3.3.2 Primary Data

Primary data on various aspects has been collected from the selected farmers and arhtias/commission agents on pre structured and pre tested survey schedules by the researcher herself by personal enquiry method. The opinion of the farmers and other functionaries were sought regarding the functioning of the mandis, the facilities available and the extent to which the mal-practices have been eliminated. The data was also collected on the prestructured schedule from the Mandi Board office and the informal discussion held with various officers and recorded. Views of various other functionaries operating in the market were ascertained by enquiry and discussion method and recorded. To have the frank and un-biased opinion similar questions were asked from the different functionaries. Even the same question in different words/manner was asked from the same person. The schedules prepared for the purpose have been given in APPENDIX-I.

3.4 ANALYTICAL PROCEDURE

The data collected and tabulated has been subjected to analysis as per the objectives of the study. Tabular analysis and quantitative techniques have been used for the analysis of data, which are detailed below:
3.4.1 Tabular Analysis

Tabular Analysis technique has been used to study the pattern and trend of setting up mandis, production and procurement of different crops produced in the various zones of the state, income and expenditure incurred on various infrastructure facilities etc. and the investment on repair and construction of urban and rural roads etc.

3.4.2 Quantitative Analysis

To find out the growth trends in the production and procurement of grains, income and expenditure and the infrastructure facilities over different years, various quantitative techniques have been used and are discussed below.

3.4.3 Growth Trends

The growth trends in respect of various parameters mentioned above have been analysed using Compound Growth Rate by the exponential growth function technique. The mathematical model of exponential growth function used in ascertaining the trends has been given below.

\[ Y = ab^t e^c \]

Where,

\( Y \) - Dependent variable for which growth is to be estimated (quantity/value/price)

\( a \) - Constant term

\( b \) - Regression coefficient

\( t \) - Time variable

\( e \) - Error term

The equation was estimated after transforming into

\[ \log Y = \log a + \log b + e \]

Then, the CGR was calculated as,

\[ r = \frac{\text{Antilog of (b)} - 1}{100} \]

The ‘t’ test was used to test the significance of ‘r’ as,

\[ t = \frac{r/\text{SE (r)}}{\sqrt{n - 2}} \]

CGR was calculated from most of the parameters of the study.

Simple growth rates across periods were worked out by using the formula:
\[ G = \frac{P_n - P_o}{P_o} \times 100 \]

Where

- \( G \) = Growth Rate
- \( P_n \) = Value at the end of the period (Current year)
- \( P_o \) = Value at the beginning of the period (Previous year)

Functions have been fitted taking the data of total income and expenditure during different years. All the four type of functions viz. Linear, Cobb-Douglas, Semi log and Log Linear functions have been fitted and the functions giving the best fit and conforming to the economic logic have been considered for the interpretation of the results. Zero order correlation matrixes too have been examined for multi collinearity.

Final selection of the function was made on the basis of co-efficient of determination (\( R^2 \)) and significance of regression co-efficient. Linear function has been found to be better fit and confirmed to the economic logic.