CHAPTER III

METHODOLOGY

The methodology adopted for evaluation of the objectives of the present study is described under the following headings.

3.1 Location And Area Of The Study

3.2 Sampling Technique And Sample Size

3.3 Type Of Data

3.4 Statistical Analysis

3.1 LOCATION AND AREA OF THE STUDY

Telangana is situated on the deccan plateau, in the central stretch of the eastern seaboard of the Indian peninsula. It covers 112,077 square kilo meters. The region is drained by two major rivers, with about 79% of the Godavari river catchment area and about 69% of the Krishna river catchment area, but most of the land is arid. Telangana is also drained by several minor rivers such as the Bhima, the Maner, the Manjira and the Musi.

3.1.1 Climate:

Telangana is a semi-arid area and has a predominantly hot and dry climate. Summers start in March, and peak in May with average high temperatures in the 42 °C range. The monsoon arrives in June and lasts until September with about 755 mm (29.7 inches) of precipitation. A dry, mild winter starts in late November and lasts until early February with little humidity and average temperatures in the 22–23 °C range.

3.1.2 Rainfall:

The annual rainfall ranges between 900 and 1500 mm in northern Telangana and 700 to 900 mm in southern Telangana, from the southwest monsoons.
3.1.3 Soils of Telangana:

Various soil types abound, including chalkas, red sandy soils, dubbas, deep red loamy soils, and very deep black cotton soils that facilitate planting mangoes, oranges and flowers.

3.1.4 Crops Grown in Different Agro Climatic Zones of Agriculture in Telangana

Telangana grows 27 important crops in kharif and rabi seasons put together covering an area of about 53.51 lakh hectares. Rice is major food crop and staple food of the state. Other important crops are maize, tobacco, mango, cotton and sugar cane. Agriculture has been the chief source of income for the state's economy. Important rivers of India, the Godavari, Krishna flow through the state, providing irrigation. Apart from major rivers, there are small rivers like Tunga Bhadra, Bima, Dindi, Kinnersani, Manjeera, Manair, Penganga, Pranahitha, peddavagu and Taliperu. There are many multi-state irrigation projects in development, including Godavari River Basin Irrigation Projects and Nagarjuna Sagar Dam, the world's highest masonry dam.

Table 3.1 The crops grown in agro climatic zones of Telangana in kharif and rabi seasons

<table>
<thead>
<tr>
<th>S.no.</th>
<th>Agro climatic zones</th>
<th>Kharif season crop</th>
<th>Rabi season crop</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Northern Telangana Zone</td>
<td>Rice, cotton, maize, soybean, red gram, green gram, green gram, turmeric</td>
<td>Rice, maize, jowar, bengal gram, green gram, sesame, ground nut, sunflower</td>
</tr>
<tr>
<td>2</td>
<td>Central Telangana Zone</td>
<td>Rice, cotton, maize, soybean, red gram, green gram, green gram, sesame</td>
<td>Rice, maize, jowar, bengal gram, green gram, black gram, ground nut, sunflower</td>
</tr>
<tr>
<td>3</td>
<td>Southern Telangana Zone</td>
<td>Rice, cotton, maize, soybean, red gram, green gram, green gram, sesame, castor</td>
<td>Rice, maize, bengal gram, black gram, ground nut, sunflower, safflower</td>
</tr>
</tbody>
</table>
Agri Export Zones for the following produce are proposed at the places mentioned against them:

- Gherkins – Mahabubnagar, Ranga Reddy, Medak, Karimnagar, Warangal
- Mangoes and grapes – Hyderabad, Ranga Reddy, Medak, Mahabubnagar

3.1.5 Ranga Reddy District Details

The exact work location is the Nuthankal region of Ranga Reddy district. Climate of Ranga Reddy district is characterized by a hot summer and is generally dry except during the South west monsoon season. The year may be divided into four seasons: March to May is the summer season; June to September constitutes the South-West Monsoon season, October to December form the North East monsoon season and January to February is the winter season. Ranga Reddy district has a normal rainfall of 781.5 mm. the bulk of which is received through the South-West Monsoon during the period from June to September. The mean maximum temperature begins to rise from the middle of February and reaches a maximum of about 30 degree C in May. With the onset of the South-West monsoon into the District early in June, there is appreciable drop in temperatures and the weather becomes more pleasant. December is the coldest month with the mean daily maximum temperature at 28.6 degree Celsius and the mean daily minimum Temperature at 13.6 degree celsius. During the South-West monsoon season the relative humidity is generally high, ranging between 70 and 80 per cent on the average. Humidity decreases from the post-monsoon season onwards. The driest part of the year is the summer season when the humidity is generally between 30 and 35 percent in the afternoon. Winds are generally light to moderate with some increase in force during May and South West monsoon season.

The principal crops of the district are paddy, jowar, maize, cotton, castor, pulses and vegetable. Annual normal rainfall of the district: 781.0 mm. Red soils predominate in the district followed by black soils.
3.2 Seed Sampling and Sample Size

The present study was conducted at Syngenta private Limited at Ranga Reddy district, Telangana. This has been carried during the year 2018. A primary seed sample of size 1000 gm in which the same constituents are present as in the seed lot in the same proportions are drawn from one point in the lot. Such samples of different hybrids collected from different production locations are drawn for seed size fraction analysis.

3.2.1 Tabular Analysis

To understand the seed sizes of syngenta corn hybrids primary data has been collected through seed sample analysis of maize hybrids, FC-1534, FC-1594, FC-1518, FC-1517, FC-1515 which are acquired from different locations. The seeds of each hybrid were graded using different screen sizes include, 4.9mm, 5.1mm, 5.5mm, 5.9mm, 6.3mm, 6.9mm, 7.3mm, 7.5mm, 7.9mm, 8.1mm, 9.1mm. The seeds that retained on the screens were collected separately and its quality parameters were evaluated. This data is further compiled in tabular form for easy comprehension, percentage and graphical form for easy interpretation.
3.2.1.1 Observation recorded
1) Seed size (mm)
2) Seed recovery (%)
3) Test weight (g)

3.3 TYPE OF DATA

3.3.1 Primary Data

The primary data will be collected by conducting wet ear sorting fraction analysis of the corn cobs of different hybrids by manually segregating the discarded cobs into different fractions like, half filled cobs, one fourth filled cobs, fungus affected cobs and male cobs. The seed size analysis include recovery tests and bulk density of the corn hybrids that are procured from different locations by the Syngenta company are collected. Data will be collected on daily basis.

3.3.2 Secondary Data

The secondary data will be collected from the company official website. Some required data will be directly collected from the company. Data of previous year of the maize hybrids will be collected to compare the trend of present year data with the previous year data that includes the daily seed size analysis data and the parameters like bulk density and recovery that effect the seed size.

3.4 STATISTICAL ANALYSIS

3.4.1 Seed recovery

In seed industries a large quantity of seed is lost during processing due to screen rejections. To avoid this loss and to improve the availability of seed material without sacrificing the seed quality, it is necessary to find out the screen size which can give a reasonable seed recovery. The highest percent seed recovery indicates the superiority in quality. The weight of seeds retained in each sieve was recorded and seed recovery was calculated in percentage.

The recovery percentage of corn hybrids of different seed size classes will be worked out through the formula (Lokesh et al., 2003).
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\[
\text{Seed recover} \% = \frac{\text{Weight of seeds retained in each sieve}}{\text{Total weight of seeds (bulk)}} \times 100
\]

3.4.2 Bulk Density

The bulk density of corn hybrids of different seed size classes will be worked out through the formula given as under:

\[
\text{Bulk density} = \frac{\text{Mass of sample of kernels}}{\text{Volume of sample of kernels}}
\]