CHAPTER - I

INTRODUCTION
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India is one of the biggest agricultural country of the world. About 79.70 per cent of the population lives in villages and is directly or indirectly dependent on agriculture. Oil seed crops cover 4683900 hectares and contribute significantly towards the agricultural economy. During the last 25 years the gap between demand and supply in case of oil seeds has been steadily widening. Oil seeds occupy about 9.6 per cent of total cropped area and contribute about 9 percent of the total agricultural income of the country. The realization of increased yield would be possible only when the local constraints are identified and removed. In certain cases only a singular change in one component can result in spectacular gain in yield. While in others, a chain of changes may be required. In the ultimate analysis the increased production would have to be the ultimately realized through optimizing productivity in environmental stress situations and maximizing productivity in ideal conditions.

India is facing an acute shortage of edible oils. Therefore, a very high priority has been fixed in the Twenty Point Programme on increasing the oil seeds production in the country. The total edible oil production in India is about 18 million tones per year. Presently per capita consumption of oil and fats is 11 gms. per day. Dietitians recommended 30 gms of oil consumption per day. This will make clear that there is every reason to atleast double the consumption of fat and oil in our country.

Beside making improvement in production technology, we should also have to develop post harvest technology as this involves huge farm labour. Thus the oil seed technology is important from nutritional and industrial point of view. This will have an effect on the village cottage industries.
1. Sunflower – Not only ornamental and moves from garden to fields.

2. Sunflower – a boon to farmers.
not been very discreet. Major oil seed crops are grown in low
irrigation or unirrigated condition. This keeps the yield low.
Vagaries of weather, poor plant protection less fertilizer appli-
cation and age old post harvest technology are some common fac-
tors for the low and unstable production.

TABLE - 1 Area, Production and Productivity of total oil seeds
in Uttar Pradesh (Pure crop)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Year</th>
<th>Area (lakh hectare)</th>
<th>Production (lakh M.Tones)</th>
<th>Productivity (quintals/ha.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1961-62</td>
<td>5.72</td>
<td>3.25</td>
<td>5.69</td>
</tr>
<tr>
<td>2.</td>
<td>1971-72</td>
<td>7.19</td>
<td>3.10</td>
<td>4.31</td>
</tr>
<tr>
<td>3.</td>
<td>1978-79</td>
<td>7.82</td>
<td>3.75</td>
<td>4.80</td>
</tr>
<tr>
<td>4.</td>
<td>1979-80</td>
<td>5.74</td>
<td>1.92</td>
<td>3.25</td>
</tr>
<tr>
<td>5.</td>
<td>1980-81</td>
<td>7.09</td>
<td>3.74</td>
<td>5.27</td>
</tr>
<tr>
<td>6.</td>
<td>1988-89</td>
<td>8.51</td>
<td>6.57</td>
<td>7.72</td>
</tr>
<tr>
<td>7.</td>
<td>1989-90</td>
<td>17.64</td>
<td>11.47</td>
<td>6.50</td>
</tr>
<tr>
<td>8.</td>
<td>1990-91</td>
<td>16.90</td>
<td>13.42</td>
<td>7.94</td>
</tr>
</tbody>
</table>

Source: "U.P. Agriculture In Brief", Department of Agri-

It is clear from the table that oilseed area and
production in U P has gained momentum after 1989. However,
productivity has marginally increased. The increased in area in
production have been roughly 3 and 4 percent during 1960 to 1992
but the productivity could increased by two quintals per hectare.
Only during same period. Sunflower (Helianthus annus L.) a native
of North America is a non traditional oil seed crop of temperate
countries. Its cultivation as an oil seed crop was recognised
only in the middle of nineteenth century. Today, Russia is pro-
ducing about 66% of the world's sunflower oil while
Argentina, Romania, Yugoslavia, Bulgaria, Hungary and Canada make up
most of the rest. The sunflower is a cross pollinated crop be-
longing to the family composite and genus Helianthus which has
about 24 species.

In India, sunflower was cultivated since long but it
could not succeed either as oil seed or a forage crop. Systematic
work on sunflower, however, could be started in our country with
the seeds of four Russian varieties introduced in 1969. These
varieties produced as high as 39.5 quintals and 18 quintals per hectare under irrigated and rainfed conditions respectively with an average oil content of over 40 percent. They are doing well under Indian conditions and are expected to augment our edible oil resources. This way we can save a good amount of foreign exchange by growing sunflower. At present the area under oil seed crops, specially under sunflower, is very low, mainly because of poor yield and marketing facilities.

Sunflower oil is rich in Poly Unsaturated Fatty Acids (PUFA) and has a pleasant flavour and an excellent keeping quality when refined. The oil is used in making margarine and is regarded as good cooking oil. Being rich in linoleic acid (62 percent) it is recommended as a dietary constituent to the heart patients. The sunflower cake makes a high quality feed for cattle and poultry because of higher protein (40-44 percent) and balanced amino acids. Sunflower harvested at dough stage (Green sunflower) makes an excellent quality forage specially for milch cattle but is not in practice in India.

Day length and atmospheric temperature have been observed to have little effect on the sunflower flowering behaviour. the crop has therefore, a wide adaptability and is least affected by seasonal barriers. In consequence one can fit sunflower crops in any multiple crop rotation throughout the country. It may be planted after harvesting potato, sugarcane or toria crops. It can also be grown as a companion crop, with autumn planted sugarcane. Being fairly drought resistant and high yielding, it may be considered as the best substitute for groundnut, sesame, lentil, toria, rapeseeds, safflower and other oil seed crops even under rainfed conditions. For better return from land under both rainfed and irrigated conditions, sunflower may be raised as its cost of cultivation is relatively low.

Sunflower is a newly introduced crop, hence, it has a number of problems that come in the way of its successful cultivation. The varieties available are susceptible to a number of diseases and pests. Since this is a cross pollinated crop it is
difficult to maintain the yield potential and oil content of the crop, which if left to go in its own way will ultimately result in drastic reduction of yield of seed and oil. Therefore, it is absolutely necessary to chalk out a suitable breeding programme for this crop.

Thus, it can be concluded that area and production of sunflower is very low and there is great scope of increasing the same in the country. For this an empirical study regarding constraints to adoption of sunflower production technology needs to be undertaken.

The present study has been developed with the following objectives:

1. To study the area and productivity trends of sunflower cultivation in U.P.
2. To ascertain the knowledge gap of extension workers and farmers on package of practices of sunflower crop and socio-economic factors associated with it.
3. To delineate factors affecting adoption gaps in recommended package of practices of sunflower crop on farmers fields.
4. To analyse the technological factors contributing/ limiting towards increase in area and productivity of sunflower crop.
5. To examine the impact of extension education activities towards increase in area, production and productivity of sunflower.
6. To analyse the impact of economic support available to the farmers for cultivation and marketing of sunflower crop.
7. To suggest an extension strategy for promotion of sunflower crop in Uttar Pradesh.

In a developing country like India, the value of research work is judged by an immediate gains which society can derive from it. It requires an understanding of the totality of situation in which a new technology is evolved, processed, communicated and integrated into farming systems. Some times technology is not properly assessed. This is why the technology fails in field with the result that it looses confidence and casts a poor image of the field extension functionary.
The importance of sunflower as an edible oil in India needs no emphasis. Nevertheless, performance is not satisfactory. In Uttar Pradesh, the condition is worst so far as sunflower production is concerned. The present study will reveal useful information regarding sunflower growing situations and the factors that influence them.

The present study analyses the agronomic practices of sunflower cultivation under different resource situations, the gaps between recommended and existing practices, the productivity variations and causes thereof.

Attempts have also been made to highlight the potential for future increase in these aspects. The study proposes to formulate a suitable strategy of production for major areas cultivating the sunflower crop.
LIMITATIONS

Following limitations were observed during the course of present research work.

1. Due to broad area of 8 districts sampled under the study sufficient time was spent to visit the entire area during the sunflower season. It restricted the researcher in extensively analysing the situational constraints affecting the crop.

2. The sample of respondents was drawn from 5 categories of sunflower growers, 5 cadres of extension workers, field representatives and scientists. This required a more time to collect data from the respondents and therefore restricted the researcher on using latest research design statistical tools.

3. Difficulties were experienced in collecting secondary data and reports from the extension system specially on the areas, production, productivity, subsidy, marketing and consumption aspects.

4. The farmers also could not furnish relevant information related to personal and behavioural aspects, hence the inferences drawn from the study may not be fully relevant for the other farming communities. These findings may, therefore, be treated as indicative of the trends appearing in sunflower cultivation and factors associated with these trends. Possibilities also exist that many more constraints may operate in some other areas of sunflower cultivation.
Justification

Oil seed production has become most urgent need of the country in order to meet outgrowing consumer demand and checking the pressure of increased expenditure of foreign exchange. The sharp rise in prices of edible oils in the country have attracted the farmers to grow oil seeds as an economically profitable cash crop. In view of limited scope of expansion of Kharif and Rabi oil seeds due to the dominance of rice and wheat in these seasons farmers have been attracted towards cultivation of sunflower crop during Summer (Zaid) season. It is quite appropriate and timely that a study has been formulated to examine the existing level of cultivation of sunflower crop, as well as, highlighting the constraints to area and productivity of sunflower in U.P. The suggestions of the present study will help resolve the impediments and recommend ways for improvements.