Chapter-VIII

Constraints
Of
Production
&
Marketing
Of
Potato
Chapter VIII

CONSTRAINTS OF PRODUCTION AND MARKETING OF POTATO

The various problems and constraints faced by the sample farmers concerning to the production and marketing of potato have been analyzed in this chapter.

8.1 Constraints of potato production:

Constraints of potato production from the perception of the farmers are discussed below in four sub-heads,

i. Bio-physical constraints

ii. Socio-economic Constraints

iii. Constraints to potato cultivation

iv. Constraints to sequential potato based production system

8.1.1 Bio-physical constraints:

Weeds are a major problem in potato production in the study area. Weeds can reduce yields through direct competition for light, moisture and nutrients, and they harbor insects and diseases that attack potatoes. Early season competition of weeds is extremely critical and a
major emphasis on control should be made during this period. Weeds present at harvest increase mechanical damage to the tubers, and reduce harvesting efficiency by slowing down the harvesting operation, leaving undug tubers in the ground and/or carrying them over the diverine chain.

Table 8.1: Bio-physical constraints of potato cultivation as perceived by the farmer

<table>
<thead>
<tr>
<th>Constraints</th>
<th>Size group of farms and Degree of impact</th>
<th>(Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Group-I N=57</td>
<td>Group-II N=28</td>
</tr>
<tr>
<td></td>
<td>H M L</td>
<td>H M L</td>
</tr>
<tr>
<td>Weed infestation is more</td>
<td>10.8 55.9 33.3</td>
<td>27.3 54.5 18.2</td>
</tr>
<tr>
<td>Problem due to salinity/alkaninity</td>
<td>9.8 36.3 53.9</td>
<td>12.1 59.4 48.5</td>
</tr>
<tr>
<td>Heavy infestation of Insects/pests &amp; diseases</td>
<td>27.5 60.8 11.8</td>
<td>72.7 15.2 12.1</td>
</tr>
<tr>
<td>Water logging conditions</td>
<td>8.8 30.4 60.8</td>
<td>9.1 24.2 66.7</td>
</tr>
</tbody>
</table>

H=high impact, M=medium impact & L=low impact

As it apparent from the table 8.1 that over all majority of the sample potato growers experienced medium impact of the weed infestation in potato while about 20 per cent of them were facing the high impact of this problem. Among the different farm size groups proportionate number of farmers facing acute weed problem was found to be the highest in farm size groupIII.
Potatoes can be grown in alluvial, hill, black, red and laterite soils having pH in the range of 5.5-8.0. Saline, alkaline and sodic soils are however, not congenial for potato production. Well-drained coarse or sandy loam to loamy soils, rich in organic matter are ideal for potato cultivation. Although the impact of Saline, alkaline and sodic soils is not so severe in the study area as majority of the sample farmers responded low impact of these soils, over all about 11 per cent were facing acute problem of salinity or alkality.

'PEST' is an organism that causes damage resulting in economic loss to a plant. It can also be said that pest is a living organism that thrives at the expense of other living organism. It is a well known fact that insects being widely distributed became more problematic and becoming serious by attacking crops directly and indirectly. Insects are dominating over other pests by acquiring characters like resistance to toxic chemicals, and resurgence, particularly in intensive crop management system. The losses caused by insect pests are so enormous that these made the farmer to disturb the present ecosystems with
continuous use of excessive insecticides. As the infestation of insect, pest and diseases in the study area is concern on an average about 41 and 49 per cent of the sample farmers reported medium and heavy impact of this problem. Majority of size group-III and size group-I farmers perceived heavy infestation of insect, pest and diseases while about 61 per cent of the size group-II farmers experienced medium impact of this problem.

Water logging causes several changes in the soil and plant resulting in reduced growth and in some cases death of plants. Germinating seeds are sensitive to water logging since they are totally dependent on the surrounding soil space for oxygen supply. Although the water logging condition is not so prominent in the study area and according to more than 62 per cent of the farmers in all the farm size groups responded low impact of the water logging condition, only about 9 per cent of overall farmers facing the water logging condition up to high extent.

8.1.2 Socio-Economic Constraints:

There are number of socio-economic problems in the study area inhabited by potato growers of different farm size
groups. Some of the important socio-economic constraints are Lack of credit facility, High cost of inputs, Non-availability of Inputs locally at appropriate time, Inadequate power supply, Lack of transport and Poor linkage with extension agency.

Table-8.2: Socio-economic Constraints of potato cultivation as perceived by the farmer

<table>
<thead>
<tr>
<th>Constraints</th>
<th>Marginal N=57</th>
<th>Small N=28</th>
<th>Large N=15</th>
<th>Over all N=100</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H</td>
<td>M</td>
<td>L</td>
<td>H</td>
</tr>
<tr>
<td>Lack of credit facility</td>
<td>33.3</td>
<td>49.0</td>
<td>17.6</td>
<td>18.2</td>
</tr>
<tr>
<td>High cost of inputs</td>
<td>86.3</td>
<td>11.8</td>
<td>2.0</td>
<td>78.8</td>
</tr>
<tr>
<td>Non-availability of Inputs locally at appropriate time</td>
<td>58.2</td>
<td>47.1</td>
<td>14.7</td>
<td>18.2</td>
</tr>
<tr>
<td>Inadequate power supply</td>
<td>44.1</td>
<td>47.1</td>
<td>8.8</td>
<td>81.8</td>
</tr>
<tr>
<td>Lack of appropriate transport</td>
<td>8.8</td>
<td>30.4</td>
<td>60.8</td>
<td>9.1</td>
</tr>
<tr>
<td>Poor linkage with extension agency</td>
<td>33.3</td>
<td>49.0</td>
<td>17.6</td>
<td>18.2</td>
</tr>
</tbody>
</table>

H=high impact, M=medium impact & L=low impact

Potato is highly capital intensive cash crop; requires plenty of inputs for its production. Potato growers arranged funds to purchase inputs either from their own resources or through loan. Although, the Institutional credit is available from the banks, the bank branches serving the area with higher concentration of potato growers provide credit through KCCs but about 27 per cent of the sample farmers perceived scarcity of credit at high
extent. The percentage of such farmers was found more in case of marginal farm size group. However there is no specific arrangement for marketing leading low/negligible demand for credit for marketing of Potato.

The significant rise in inputs like fertilizer, diesel, labour and cold storage charges are pushing the input costs for potatoes. Almost all the sample farmers realized the price hike of inputs at varying degree of impact. More than 86 per cent of the sample farmers were realizing the high cost of inputs at higher degree of impact. Besides the high cost of inputs it is a general complain of the potato growers that inputs are not available easily within their reach in time. Overall about 38, 45 and 16 per cent of the sample farmers perceived low, medium and high impact of this problem respectively.

Erratic power supply and frost-like weather conditions are giving sleepless nights to farmers. Regular power supply is essential for the irrigation and for cold storage also. Potato crop is highly sensitive and any sudden change in temperature can damage it. Frost is bad for the crop, but one cannot fight the weather. At least
with regular power supply farmers can save the crop. On an average more than 90 per cent of the farmers were facing the regular and adequate power supply at high and medium extent. This problem is more severe on size group-II and size group-III farms. Cheap and efficient transportation facilities are the prerequisite for the rapid supply of the potato at distant markets for getting good price and also for taking produce to the cold store. Although this problem is not so critical in the study area but majority of the sample farmers realized this problem up to low and medium extent.

Over the past many decades the dissemination of agricultural technologies has not effectively percolated to the grass root level inspite of the presence of various extension agencies. An extension agency had been addressing the needs of farmers, but in an isolated manner with no co-ordination among themselves. Lack of sound feed back mechanism has been caused system fatigue. Majority of the sample farmers of all the farm size groups under study feels medium impact of the problem of poor linkage with the extension agency.
8.1.3 Constraints to potato cultivation:

Responses of the sample potato growers particularly related with the constraints of potato cultivation have been summarized in Table 8.3 –

Table 8.3: Constraints to potato cultivation as perceived by the farmer

<table>
<thead>
<tr>
<th>Constraints</th>
<th>Marginal (H)</th>
<th>Marginal (M)</th>
<th>Marginal (L)</th>
<th>Small (H)</th>
<th>Small (M)</th>
<th>Small (L)</th>
<th>Large (H)</th>
<th>Large (M)</th>
<th>Large (L)</th>
<th>Over all (H)</th>
<th>Over all (M)</th>
<th>Over all (L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Un-availability of suitable variety for sowing in time</td>
<td>41.2</td>
<td>39.2</td>
<td>19.6</td>
<td>39.4</td>
<td>48.5</td>
<td>12.1</td>
<td>55.6</td>
<td>11.1</td>
<td>33.3</td>
<td>42.9</td>
<td>37.6</td>
<td>19.6</td>
</tr>
<tr>
<td>Complication in sowing</td>
<td>4.9</td>
<td>37.3</td>
<td>57.8</td>
<td>15.2</td>
<td>33.3</td>
<td>51.5</td>
<td>55.6</td>
<td>11.1</td>
<td>33.3</td>
<td>15.4</td>
<td>32.3</td>
<td>52.4</td>
</tr>
<tr>
<td>Water logging during sowing season</td>
<td>8.8</td>
<td>30.4</td>
<td>60.8</td>
<td>12.1</td>
<td>21.2</td>
<td>66.7</td>
<td>0.0</td>
<td>22.2</td>
<td>77.8</td>
<td>8.4</td>
<td>26.6</td>
<td>65.0</td>
</tr>
<tr>
<td>Rainfall</td>
<td>9.8</td>
<td>41.2</td>
<td>49.0</td>
<td>6.1</td>
<td>66.7</td>
<td>27.3</td>
<td>11.1</td>
<td>55.3</td>
<td>55.6</td>
<td>9.0</td>
<td>47.2</td>
<td>43.9</td>
</tr>
<tr>
<td>Paucity of labour</td>
<td>56.9</td>
<td>29.4</td>
<td>13.7</td>
<td>48.5</td>
<td>48.5</td>
<td>3.0</td>
<td>66.7</td>
<td>11.1</td>
<td>22.2</td>
<td>56.0</td>
<td>32.0</td>
<td>12.0</td>
</tr>
<tr>
<td>Complications in intercultural operations</td>
<td>8.8</td>
<td>31.4</td>
<td>59.8</td>
<td>9.1</td>
<td>42.4</td>
<td>48.5</td>
<td>44.4</td>
<td>11.1</td>
<td>44.4</td>
<td>14.2</td>
<td>31.4</td>
<td>54.3</td>
</tr>
<tr>
<td>Uneasiness in application of plant protection measures</td>
<td>17.6</td>
<td>75.5</td>
<td>6.9</td>
<td>48.5</td>
<td>42.4</td>
<td>9.1</td>
<td>66.7</td>
<td>22.2</td>
<td>11.1</td>
<td>33.6</td>
<td>58.2</td>
<td>8.1</td>
</tr>
</tbody>
</table>

H=high impact, M=medium impact & L= low impact

In the potato cultivation seed potato, among all the inputs, is the most important as well as expensive input and responsible for higher productivity up to large extent. Non-availability of suitable variety in the study area in time forces the farmers to proceed with disease prone and low yield varieties resulted low production and ultimately less profit. Majority of size group-I and size group-III
sample farmers faced this problem at high extent while medium impact of this problem was perceived by the 48 per cent farmers of farm size group-II.

Sowing of potato is influenced by various factors such as climate, soil moisture, seed material availability, availability of human labour and machinery etc. Each one of these factors may create complication in the sowing of potato. Although the complications in the sowing as influence by these factors have been experienced with low to medium impact by majority of the sample farmers but nearly half of the large farmers were perceived high impact of complications in sowing. The obvious reason for the large area under potato and large area is comparatively difficult to manage.

Water logging in the field at the time of sowing is also one of the important reasons for delay in sowing and most of the potato growers (about 90%) experienced this problem with low to medium degree of impact.

The study area falls in a semi-arid region the extent and time of rain fall has direct impact on the Rabi season crops, especially potato. Excess or under irrigation causes
several changes in the soil and plant resulting in reduced growth and in some cases death of plants. Overall 47 and 44 per cent of the sample farmers reported medium and low impact of the problem of adverse rainfall (scanty, inadequate and untimely).

Potato is a labour intensive crop as most of the cultural operations are performed by the human labour either skilled or unskilled. As the supply of labour at village level is limited and during the peak period paucity of labour was felt by most of the potato growing farmers irrespective to the size of farm. Overall percentage of the sample farmers perceived high, medium and low impact of the problem of paucity of labour particularly during peak period was reported to be about 56, 32 and 12 per cent respectively.

Potato is sown in on ridges and the interculture operations can not be performed by machines and entirely depend on the scare and costly human labour, make this operation more expensive, time taking and complicated too. Besides all these complications overall majority of the
sample farmers considered interculture as a problem with low impact.

Potato crop is highly sensitive to insect, pest and diseases. Therefore for achieving good production target, proper protection of crop from insect, pest and diseases is essential. Labour availability, timely availability of appropriate chemical at reasonable price, are the factors which greatly influence the plant protection operation. Hence, most of the size group-II and size group-III farmers felt more uneasiness in the application of plant protection measures than the size group-I farmers.

8.1.4 **Constraints to sequential potato based production system:**

Cropping systems of a region are decided by and large, by a number of soils and climatic parameters which determine overall agro-ecological setting for nourishment and appropriateness of a crop or set of crops for cultivation. Nevertheless, at farmers' level, potential productivity and monetary benefits act as guiding principles while opting for a particular crop/cropping system. These decisions with respect to choice of crops
and cropping systems are further narrowed down under influence of several other forces related to infrastructure facilities, socio-economic factors and technological developments.

For getting high production, the potato crop is required to be planted at optimum time using proper cultural, manurial and irrigational practices. Remunerative potato based cropping systems are also required to be developed to ensure stability of crop area and production and good returns to the farmers.

The constraints realized by the sample farmers having potato based cropping system have been presented in table 8.4 below-

**Table 8.4: Constraints to sequential potato based production system**

<table>
<thead>
<tr>
<th>Constraints</th>
<th>Small</th>
<th></th>
<th>Medium</th>
<th></th>
<th>Large</th>
<th></th>
<th>Overall</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H</td>
<td>M</td>
<td>L</td>
<td>H</td>
<td>M</td>
<td>L</td>
<td>H</td>
<td>M</td>
</tr>
<tr>
<td>Less time available for land preparation</td>
<td>17.6</td>
<td>55.9</td>
<td>26.5</td>
<td>7.1</td>
<td>21.4</td>
<td>69.7</td>
<td>11.1</td>
<td>55.6</td>
</tr>
<tr>
<td>Non-availability of suitable seed material</td>
<td>43.1</td>
<td>44.1</td>
<td>12.7</td>
<td>39.4</td>
<td>45.5</td>
<td>15.2</td>
<td>22.2</td>
<td>55.6</td>
</tr>
<tr>
<td>Paucity of labour</td>
<td>67.6</td>
<td>24.5</td>
<td>7.8</td>
<td>69.7</td>
<td>21.2</td>
<td>9.1</td>
<td>66.7</td>
<td>22.2</td>
</tr>
<tr>
<td>Inadequate irrigation facility</td>
<td>45.1</td>
<td>38.2</td>
<td>18.6</td>
<td>69.7</td>
<td>21.2</td>
<td>9.1</td>
<td>77.8</td>
<td>11.1</td>
</tr>
<tr>
<td>Poor germination</td>
<td>34.3</td>
<td>34.3</td>
<td>31.4</td>
<td>12.1</td>
<td>54.5</td>
<td>33.3</td>
<td>22.2</td>
<td>33.3</td>
</tr>
</tbody>
</table>

H=high impact, M=medium impact & L=low impact
Results enumerated in the table reveal that majority of nearly half of the sample farmers perceived that due to post harvest activities of potato (grading, sorting, packing, storing and marketing) very less time left for the land preparation for next crop but somehow it is manageable while about 37 per cent of the potato growers responded that time left after harvesting of potato does not has significant impact on the preparation of next crop only 15 per cent of the farmers strongly realized that very short time left between harvesting of potato and sowing of next crop.

For a particular crop sequence time of sowing and maturity is very important. There is a prime need of suitable varieties for adopting intensive potato based cropping system. Lack of quality seed is probably the most important constraint in attaining an adequate level of production efficiency and profitability. The lack of seed is caused by the absence of a viable seed multiplication and supply system, suitable seed storage technology and the very fast degeneration rate of seed lots. Non-availability of seed material in time adversely affects the cost and returns
from the crops included in crop sequence as perceived by more than 85 per cent of the sample farmers.

Potato is a highly labour intensive cash crop requires plenty of labour force to perform various operations of potato cultivation. Labour paucity highly realized by the majority of the sample farmers of all size groups during the peak periods of potato cultivation as well as other crops included in the cropping system.

The excessive pumping of ground water for irrigation purposes in the study area has caused lowering down of the ground water table in certain pockets. Declining water tables not only raise production costs due to higher energy requirements for pumping water from greater depths but such rapid rates of decline spark serious questions about the long-term sustainability of potato based cropping system itself in the area.

Moisture may be a limiting factor in the germination of potato crop, particularly when they are planted on the land occupied by other crop. Besides moisture nutrients extraction by the preceding crop also affects germination. The problem of poor germination was complained with
high, medium and low impact by on an average 28.39 and 33 per cent of the sample farmers depending up on availability of irrigation and resources.

8.2 Marketing constraints:

Potato marketing in the study area suffers from following constraints:

1) High Marketing Costs & Margins:

The market reforms in agricultural commodities have so far been limited mainly to food grains only. The marketing of potato has so far received little attention of the government. At present, there are a large number of intermediaries in this trade between the producer and consumer which has resulted in a wide gap in the producer and consumer price of potato.

2) Wide Price Fluctuations:

Fluctuation in the price of potato in the market is a major constraint in the study area. Prices crash drastically during harvesting months leading to panic sale by the farmers, and in turn leading to heavy monetary losses.

Factors affecting price of Potato:

a. Area under cultivation in the growing areas.
b. Weather in key growing regions particularly cold wave and heavy rains during tuber formation.

c. Price of other vegetables

d. Demand of potato from the major cities and food processing industries.

e. Potato price tends to firm up during the planting period and eases down during the harvesting period.

f. Transportation charges from one place to another.

3) Bottlenecks in Storage Facilities:

Potato growers and traders hoard the commodity before selling in expectation of better prices. Potato can be kept in cold storages without spoilage for 5-6 months. Although a number of cold storages are used for potato storage in the study area and nearby districts but still there is a need of more storage facilities particularly in Etawa and Auriya.

4) Lack of Long term Indian Potato Export Policy:

Due to lack of sufficient infrastructural facilities in the movement of potato from production centers to exporting country a majority of potato producers can not avail the advantages of exporting potato. There is no long term policy of the Govt. in this regard.
5) Inadequate Post harvest management:

Owing to the perishable nature of potato, a sizable amount of the produce gets wasted due to lack of adequate post-harvest handling, which cuts down the export quantities and increases competitiveness.

Another reason why India has not been very successful in the export market is that most of the produce is purchased from the wholesale market or from contractors. In such conditions the exporter does not have any knowledge about the pre-harvest care during the growth period. Latent infections therefore appear by the time the produce reaches the importing country. This is a big setback to our exports. Non-availability of air cargo space and high freight rates are other major constraints in increasing exports.

6) Lack of avenues of utilization of Potato:

There is a need to utilize larger quantities of potatoes in the processing industries to improve and enhance the efficiency of processing and to reduce the cost of processing and processed products. Although this industry has been increasing but still there is much scope to
establishment of processing units in rural area in the jurisdiction of potato growers.

There are some other constraints which have also been elaborated upon for better understanding:

- Lack of education and awareness of the potato growers about opportunities.
- Lack of market knowledge and marketing skills.
- Lack of professionalism and small land holding.
- Falling water levels and lack of irrigation facilities.
- Expensive credit.
- Laws that stifle private investment.

8.3 Organizations / Agencies Providing Marketing Services:

The following Govt., Semi-Govt. and State Govt. organizations provide and assist in marketing services like procurement, grading, storage, and processing in the field of potato.

8.3.1 Directorate of Marketing and Inspection (DMI):

([www.agmarknet.nic.in](http://www.agmarknet.nic.in))

✓ Promote grading of agricultural produce under the Agricultural Produce (Grading & Marking) Act, 1937.
✓ Facilitate the construction of marketing infrastructure of agricultural produce.

✓ Render advice on statutory regulation, development and management of agricultural markets by states / U.Ts.

✓ Marketing research, surveys and planning.

✓ Trains personnel in agricultural marketing.

8.3.2 Agricultural and Processed Food Export Development Authority (APEDA) (http://www.apeda.com):

✓ Promote export of agricultural commodities including potato and its products to foreign countries.

✓ Adopting standards and specifications for the purpose of export of schedule products.

8.3.3 National Horticulture Board:
(www.hortibizindia.nic.in):

✓ Develop post harvest infrastructural facilities of horticultural commodities including potato.

8.3.4 Ministry of Food Processing Industries (MOFPI): (www.mofpi.nic.in)

✓ Grant and support for food park component which in turn also help in setting up of Agri Export Zone.

8.3.5 National Agricultural Cooperative Marketing Federation of India Ltd. (NAFED) (www.nafed-india.com):
Act as a nodal agency for implementing the market intervention scheme to avoid glut situation and price craze of potato.

8.3.6 **State Marketing Boards at State Capitals:**

- Regulation management and development of marketing in concerned state.
- Implement different schemes on agricultural marketing including potato.
- Co-ordinate functioning of all market committees.
- Grading of agricultural produce.
- Publicity on regulated marketing of agro produce.

8.3.7 **Agricultural Produce Market Committees (APMCs) at different regulated markets of different states.**

For better marketing of agricultural produce the APMC provide the following facilities:

- Facilitates drying of produce.
- Providing grading, weighing and storage facilities of produce, brought to APMC complexes.

8.4 **Solution to overcome the constraints:**

Solution to overcome the constraints in production and marketing of potato as suggested by the sample farmers are as follows-
1. Availability of new improved varieties of potato at reasonable rates to increase the productivity and quality.

2. Availability the literature in local language on potato as well as other crops of the region.

3. To develop network of marketing on cooperative basis to overcome constraints in marketing.

4. There should be authorized shopping place at various sub-urban areas to rural market functionaries.

5. Backward and forward linkages for training in production and marketing should be arranged on priority.

6. Assistance to producer farmers to go for modern agro-technologies and thereby increase productivity and quality of potato.

7. Assistance to farmers to get production inputs such as packing material, fertilizers, pesticides, water and electricity at reasonable prices and timely.

8. Making available information on domestic and export market, market rates and modern production technology.
9. Setting up of more cold storage in potato growing areas and markets to extend the storage life and selling period.

10. Making available crop loan at low rate of interest to potato growers.