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# Production and Marketing Constraints Faced by Sweet Corn Growers in Haryana

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***Abstract***— *The present study was conducted in Sonipat district of Haryana state in India. To derive the inferences of the study, 20 farmers were chosen at random from each village, including Manoli, Bhaira Bankipur, Khurrampur and Pabsara which acted as ultimate unit of the sample. According to the frequency distribution to the cumulative total technique, the farmers were divided into four categories that are marginal, small, medium, and large. Data on marketing was gathered from wholesalers and retailers in the selected market i.e., Azadpur Mandi, Delhi. For collecting the primary data, a total of 80 farmers, wholesalers, and retailers were employed. Secondary data for the study was gathered from a variety of published and unpublished sources. In the study of sweet corn, the production constraints noticed were black marketing, stray animals, availability of quality seed, and non-availability of labor at peak season, harvesting cost, difficult availability of loans from regulated sources and lack of knowledge about value addition. The main marketing constraints observed from the analysis of the study that are malpractices in marketing of sweet corn, fluctuation of price of produce in the market, high cost of transportation, lack of processing facility, low selling price during May-June month, delay in sale of produce and lack of infrastructure facilities.*

***Keywords***— ***Marketing constraints, production constraints, Sweet Corn.***

## I. INTRODUCTION

Maize (*Zea mays* L.) constitutes one of the chiefly grown food grains in the world. It is staple food for a large number of people in Latin America, Africa, and Asia and is the basis for food security as per Consultative Group on International Agricultural Research (Erenstein *et al.,* 2022). Maize production has increased, mainly because of its relatively better adaptation to different environments and strong demand for biofuel (ethanol), animal feed, for the production of sweetening agents, and other non-food industrial products, i.e., packaging materials that are biodegradable (Saldivar *et al.,* 2016).

It is commonly called the "Queen of Cereals" and the "Miracle crop." Maize belongs to the family Gramineae. It is one of the most versatile cereal crops which can be grown in various seasons (Dass *et al.,* 2012). It thrives in loamy sand to clay loam soils, but excessive or insufficient rainfall harms yield and quality. Maize is divided into two categories based on color and flavor: yellow and white. Yellow maize is traditionally used for animal feed. It comprises most of the maize produced globally and is grown chiefly in northern hemisphere. White maize is generally considered a food crop that requires more favorable climatic conditions (Abbassian, 2006). Therefore, it is produced only in limited countries. Based on the size and composition of the endosperm, several hybrid varieties of maize exist, viz. dent corn, flint corn, sweet corn, popcorn, baby corn, etc (Sandhu, *et al.,* 2004).

Sweet corn **(***Zea mays saccharata***)** is a type of corn with a thin pericarp layer, a translucent, thorny appearance

of kernels. It is a common vegetable crop, and its popularity has grown in North America, Europe and Asia cultivars evaluated by agronomic traits. The sugar and starch make the major component of the endosperm that result in sweet taste of the kernels. It has sweeter taste than other corns (Stansluos, *et al.,* 2019). The cobs are picked up green for table and canning purposes. Around 40% of the corn used in manufacturing is frozen, while the rest is canned (Mushtaq, *et al.,* 2025). The USA ranks number one in sweet corn production, followed by Japan, Canada, France, and Taiwan. Nowadays, it is being consumed in frozen or canned form on a large scale in India as well (FAOSTAT, 2024). Thus, sweet corn has a very huge market potential, especially if the processing and packing needs of large-scale production are taken care of.

Sweet corn is consumed at immature grain stages of endosperm twenty days after fertilization. The total sugar content in sweet corn at the milky stage ranges from 25 to 30%, as compared to 2 to 5% in normal corn. Fresh and raw sweet corn ears are consumed after cooking as well as in roasted form (Bhadru, *et al.,* 2020). Fresh sweet corn is usually in high demand in hotels for the preparation of sweet corn soup. Sweet corn is eaten green as a highly valued fresh product like baby corn; the immature kernels are parboiled and/or dried to produce candy (Dagla, *et al.,* 2014). Mature kernels are crushed to produce the confection pinnole as a fermented source for the production of an alcoholic beverage, Chichi. It also serves as a raw material for deriving a large number of industrial products such as starch syrup, dextrose, and dextrin etc. Thus, sweet corn with varied uses has great potential in the export as well as the domestic market. Sweet corn matures early and green ears can be harvested in 75-80 days after planting. The left-over stalk can serve as useful fodder for livestock (Suhasini, 2023).

## II. METHODOLOGY

The current research was carried out in Haryana's Sonipat. Sonipat district was chosen for the study because the region has a lot of potential for sweet corn cultivation and commercialization. On the basis of largest acreage, one main sweet corn producing block was selected for the second round of sampling from a designated area. Four villages from the block were chosen based on the prevalence of sweet corn farming. Similarly, for the data related to wholesalers and retailers, one large market most frequently visited by farmers i.e., Azadpur market in New Delhi, was chosen.

A total of 20 farmers were chosen at random from each village, including Manoli, Bhaira Bankipur, Khurrampur and Pabsara. According to the frequency distribution to the cumulative total technique, the farmers were divided into four categories that are marginal, small, medium, and large. Data on marketing was gathered from wholesalers and retailers in the selected market *i.e.,* Azadpur Mandi, Delhi. For collecting the primary data, a total of 80 farmers, wholesalers, and retailers were employed. Secondary data for the study was gathered from a variety of published and unpublished sources.

Information regarding various production and marketing constraints were collected from the respondents by survey method through personal interview with the help of pre-tested schedule designed for the study. With respect to the various production and marketing constraints faced by the sweet corn growers, the multiple responses of the farmers to a particular problem were presented in a tabular form and worked out in terms of percentages.

## III. RESULTS AND DISCUSSION

**Socio-economic profile of respondents:**

This section refers to socio-economic profiles of sample respondents that comprise of family composition, educational status, and age, average size of operational holding with acreage under sweet corn, sources of draft power and irrigation sources of the respondents of the sampled area, which are explained as follows:

The data in Table 1 shows the family composition of respondents in the study area. In Sonipat district of Haryana, the family composition comprised adult males, adult females and children were 45.58, 38.23, 16.17 per cent; 47.52, 33.66, 18.81 per cent; 43.41, 35.16, 21.42 per cent and 44.92, 35.5, 24.4 per cent for the marginal, small, medium and large categories of farmers, respectively. The overall family composition of adult males, adult females and children were about 45, 34 and 21 per cent in Sonipat district. The table clearly revealed that the overall average family size in the district was nearly 6 members per family in the study area

*Table 1 Family composition of respondents under different categories*

| Categories | Adult Males Frequency | Adult Females Frequency | Children Frequency | Total |
|---|---|---|---|---|
| **Marginal** | 31(45.58) | 26(38.23) | 11(16.17) | 68(100) |
| **Small** | 48(47.52) | 34(33.66) | 19(18.81) | 101(100) |
| **Medium** | 79(43.41) | 64(35.16) | 39(21.42) | 182(100) |
| **Large** | 62(44.92) | 49(35.5) | 34(24.64) | 138(100) |
| **Overall** | 220(44.99) | 168(34.35) | 103(21.06) | 489(100) |
| **Average size** | 2.75 | 2.1 | 1.28 | 6.2 |

Note: Figures in parenthesis are percentages to the total respondent farmers.

The educational status of the respondents in the study area has been shown in the Table 2. In Sonipat, the percentage of illiterate, primary, secondary, matriculates, intermediates and graduates were 8.33, 41.66, 8.33, 25.00 and 8.33 (marginal category); 2.50, 15.79, 21.05, 10.53, 15.80, 26.32 (small category); 3.44, 10.34, 13.79, 24.14, 27.59, 20.68 (medium category), and 0, 10.00, 20.00, 15.00, 30.00, 25.00 (large category), respectively. The overall percentages of illiterates, primary, secondary, matriculate, intermediate and graduate were 5.00, 16.25, 17.5, 15.00, 25.00 and 21.25 respectively in the study area. Large farmers among respondents were highly educated compared to other categories.

*Table 2: Educational status of respondents under different categories*

| Categories | Illiterates | Primary | Secondary | Matriculates | Intermediates | Graduates | Total |
|---|---|---|---|---|---|---|---|
| Marginal | 1(8.33) | 5(41.66) | 1(8.33) | 1(8.33) | 3(25.00) | 1(8.33) | 12(100) |
| Small | 2(2.50) | 3(15.79) | 4(21.05) | 2(10.53) | 3(15.80) | 5(26.32) | 19(100) |
| Medium | 1(3.44) | 3(10.34) | 5(13.79) | 6(24.14) | 8(27.59) | 6(20.68) | 29(100) |
| Large | 0(0.00) | 2(10.00) | 4(20.00) | 3(15.00) | 6(30.00) | 5(25.00) | 20(100) |
| Over All | 4(5.00) | 13(16.25) | 14(17.5) | 12(15.00) | 20(25.00) | 17(21.25) | 80(100) |

Note: Figures in parenthesis are percentages to the total respondent farmers.

In Sonipat district , the average age of marginal, small, medium and large farmers was around 45.25, 43.21, 45.07 and 44.62 years, respectively. In marginal category farmers, the percentages of ages were 16.66, 58.66 and 25.00 under the age group of young, adult and old respectively. In small farmers, the percentages were 10.52, 63.15 and 42.10 under the age group of young, adult and old respectively. While under the same group of ages in the medium farmers the percentages of ages were 10.34, 51.29 and 37.93 respectively. In large farmers, the percentages of ages were 10.00, 55.00 and 35.00 under the age group of young, adult and old respectively. The detail has been summarized in the Table 3.

*Table 3: Category and age wise distribution of respondents*

| Category | Young (<35) | Adult (35-50) | Old (>50) | Total | Average age |
|---|---|---|---|---|---|
| Marginal | 2(16.66) | 7(58.66) | 3(25.00) | 12(100) | 45.25 |
| Small | 2(10.52) | 12(63.15) | 8(42.10) | 19(100) | 43.21 |
| Medium | 3(10.34) | 15(51.29) | 11(37.93) | 29(100) | 45.07 |
| Large | 2(10.00) | 11(55.00) | 7(35.00) | 20(100) | 44.62 |
| Total | 9(11.25) | 45(56.25) | 29(36.00) | 80(100) | 44.66 |

Note: Figures in the parentheses indicates the percentage to the total respondent farmers.

The overall average size of operational holding of selected farmers is 14.2 acres. The percentage acreage under sweet corn was highest in case of marginal followed by small, medium and least in case of large farmers. The detail has been abridged in Table 4.

*Table 4: Operational size of holdings of different category of farmers*

| Category | Frequency | Average land holding (in acres) | Average sweet corn acreage (in acres) | Percentage Acreage under sweet corn |
|---|---|---|---|---|
| Marginal | 12(15.00) | 1.85 | 1.63 | 88.11 |
| Small | 19(23.75) | 5.03 | 3.92 | 77.93 |
| medium | 29(36.25) | 14.62 | 7.12 | 48.7 |
| Large | 20(25.00) | 29.7 | 13.18 | 44.37 |
| Overall | 80(100) | 14.2 | 7.05 | 49.64 |

Note: Figures in the parentheses indicates the percentage to the total respondent farmers.

**Constraints in production and marketing of sweet corn:**

With the passage of time and advancements in crop production technologies, farming is increasingly becoming more commercialized. Its current goal is to boost the per-unit productivity of land, labour and other limited agricultural resources. The challenges that the farming community faces with regard to agricultural companies have taken central stage in this process. In India's agricultural industry, farmers face multiple challenges in crop production and selling/marketing, particularly with novel crops such as sweet corn. An attempt has been made to critically evaluate the issues faced by farmers in the production and sale of the sweet corn crop based on an opinion poll of the sampled sweet corn producers.

**Constraints in production of sweet corn:**

In this part, an effort was made to investigate the factors that contribute to decreased yields in the farmer's field. Table 5 is showing the primary issues that farmers encounter when producing sweet corn.

*Table 5: Constraints in production of sweet corn*

| S. No. | Constraints | No. of respondents (Frequency) | Percentage | Rank |
|---|---|---|---|---|
| i) | High cost of seeds | 66 | 82.5 | I |
| ii) | Problem of stray animals | 61 | 76.25 | II |
| iii) | Non-availability of quality seeds in time | 58 | 72.5 | III |
| iv) | Non availability of labour at peak harvesting time | 51 | 63.75 | IV |
| v) | Relatively high harvesting cost | 45 | 56.25 | V |
| vi) | Difficult availability of loans from regulated sources | 37 | 46.25 | VI |
| vii) | Lack of awareness about value addition at farmers level | 22 | 27.5 | VII |

Black marketing of seed during the peak season was of major concern that ultimately delays the sowing and hence further affects the yield. Also, the high cost of seeds further increases the operational cost and hence the return. Near about 83 per cent farmers raised this problem. After high cost of seed the next major constraint was problem of stray animals. Animals such as Nilgai (*Boselaphus tragocamelus*) and Desi cows (*Bos Indicus*) are causing major crop damage. At some places especially in fields near the residential area stray dogs also damages the crop by taking out the cobs very cleverly. Nearly 76 per cent farmers called it a significant problem. Availability of quality seed was also found to be of major concern at peak time of sowing. At some instances, farmers sow faulty seeds available at that time in order to keep pace with others. The faulty seeds further hamper the yield and productivity. This problem is largely seen in case of small and marginal farmers, however medium and large are also affected by it. About 72 percent farmers faced this problem. Non-availability of labour at peak time increases the harvesting cost as well as decreases the marketing quality of the produce due to delay in harvest. This in turn, increases the cost as well as decreases the average price of produce, hence ultimately decreases the return of the farmer. Harvesting cost is very high as compare to other crops. In the study area 56 per cent of farmers in Sonipat district felt it as a problem. Getting loans from regulated source was also found to be a problem among farmers. Many times, farmers have to take

loans from either commission agents/arhatiya at very high interest rate; in turn farmers have liability to sale their produce through them. Value addition significantly boosted profitability. At the farmer level, there is a dearth of understanding regarding value addition. In the research region, 27 percent of farmers in Haryana's Sonipat district reported a lack of understanding regarding value addition at the farmer level. Similar constraints were proposed by Kumari *et al.,* (2015) for maize marketing in eastern Bihar and Islam *et. al.,* (2019) for marketing of vegetables in Bangladesh, major constraints were lack of good infrastructure facilities.

**Constraints in marketing of sweet corn**

Effective marketing has always been a pre-requisite for a business's development and expansion. If the supply chain is not working properly, production is meaningless. Table 6 depicts the issues that farmers face while marketing sweet corn in this area.

*Table 6: Constraints in production of sweet corn*

| S. No. | Constraints | No. of respondents (Frequency) | Percentage | Rank |
|---|---|---|---|---|
| a. | Malpractices in marketing of sweet corn | 73 | 91.25 | I |
| | i) No open auction/sale of produce facility | 67 | 83.75 | 1 |
| | ii) Arbitrary rate fixation of sweet corn by commission agents | 62 | 77.5 | 2 |
| | iii) Unauthorized marketing charges by commission agents | 60 | 75 | 3 |
| b. | Fluctuation of price of produce in the market | 61 | 76.25 | II |
| c. | Higher cost of transportation | 42 | 52.5 | III |
| d. | Lack of processing facility | 38 | 47.5 | IV |
| e. | Low selling price during May-June months | 36 | 45 | V |
| f. | Delay in sale of produce | 35 | 43.75 | VI |
| g. | Lack of infrastructure facilities | 34 | 42.5 | VII |

Malpractices during marketing activities at mandi constitute major constraints as felt by majority of farmers. They felt that one or other kind of malpractices surely happens at regular basis. More than 90 per cent respondents raised this as major problem. There is absence of open auction facility for the sale of the produce which further restricts the farmers from getting better prices. In this case more than 80 percent farmers reported this problem as important. In marketing of sweet corn, it is also an important problem. More than 75 percent farmer felt it as a problem. In the study area this problem was reported by 75 percent of respondents. Regular fluctuation in prices is also a major problem this brings uncertainty of prices among farmers. It was reported by nearly 76 percent of responding farmers. Higher cost of transportation brings down the net price received by farmers for their produce which further reduces the returns of the farmers. Nearly 53 percent of farmers raised this problem. Processing units fetch better prices for farmers and also reduces on-field wastage of produce. But, due to less no. of units their collective demand for sweet corn is limited. More units are therefore required. About 47 percent farmers felt this problem. Due to low demand during May-June the average selling price is very low during the May-June month. Periods of low prices compel farmers to delay the harvest of produce. This problem was reported by about 44 percent of farmers. Kumar *et al.,* (2019) also pointed out major marketing related constraints in marketing of vegetables such as lack of market information, higher price fluctuation, malpractices, problem of storage facilities, lack of processing industries/units and high transportation cost.

## IV. CONCLUSION

The major constraints in marketing were malpractices in marketing (i.e., no open auction/sale of produce facility, arbitrary rate fixation of sweet corn by commission agents and unauthorized marketing charges by commission agents) followed by fluctuation of price of produce in the market, Higher cost of transportation, Lack of processing facility, Low selling price during May-June months, Delay in sale of produce, and Lack of infrastructure facilities. Although, Haryana is very developed state but proper infrastructure facilities as required by sweet corn farmers at market level is lacking *i.e.,* poor marketing and auction yards, less transportation vehicles, lack of cold chain for perishable vegetables, specialized cold storage facilities for fresh

vegetables etc. So, by resolving these issues in production and marketing of sweet corn profitability of sweet corn farmers can be assured.

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