



# A Snap Shot of Spring Maize Cultivation in Kapurthala and Jalandhar Districts under Central Plain Zone of Punjab

Manoj Sharma, Onkar Singh<sup>1</sup>, Gobinder Singh and Gurpreet Kaur

Krishi Vigyan Kendra, Kapurthala-144 620 (Punjab)

---

## ABSTRACT

Maize (*Zea mays* L.) can play an important role in the crop diversification in Punjab. It is used in poultry and animal feed and for the manufacturing of starch, glucose and corn flakes. It is also used as a human food during winter season. Traditionally maize was grown as *kharif* crop and now sowing during *rabi* season has also been started in some districts with the development of new varieties and hybrids. Maize can be grown successfully during spring season. The present study was undertaken to assess the area under different maize hybrids grown in spring season, its productivity and gross returns of the farmers in the Jalandhar and Kapurthala districts of Punjab. The results revealed that majority of farmers prefer to sow seeds of two hybrids namely 31Y45 and DKC 9108 with an average yield around 96q/ha. These hybrids on an average resulted in a gross return around Rs 81,600/ha. Among the blocks studied, the maximum area was in the Kapurthala block. The highest grain yield obtained was in Kartarpur block but the selling rate and gross returns were maximum in Lohian block. Among the different categories of the farmers according to their land holdings, the maximum area was planted by farmers of category having land more than 20 ha. and they also got the maximum gross returns.

**Key Words:** Spring Maize, Hybrids, Cultivation, Jalandhar, Kapurthala.

---

## INTRODUCTION

The state of Punjab remains a classic example of a fast developing economy with agriculture as its base. The state is pioneer in ushering in the green revolution in the country. Besides this, the state has also made remarkable progress in allied sectors like dairy, poultry, fishery and also in the production of fruits and vegetables.

Punjab is an agrarian state having paddy and wheat as its main crops. The continuous adoption of rice-wheat cropping system in the Indo-Gangetic plains of the Indian sub-continent has led to a number of adverse effects (Chhibra, 2008) including deterioration of soil health, severe ground water depletion and emergence of new insect-pests, diseases and weeds which warrants the need for crop diversification. Due to plenty of these food grains, the central and state governments are pursuing the farmers to diversify

their cropping pattern and adopt maize as one of the major alternative crop. Maize can play important role in crop diversification policy of the state. It is used in poultry and animal feed and for the manufacture of starch, glucose, corn flakes. It is also used as a human food (*Makki di roti*) in winter season as a special delicious recipe in combination with *Sarson ka-sag*.

Maize crop is mainly grown in the districts of Hoshiarpur, Roopnagar, Shaheed Bhagat Singh Nagar, Amritsar, Gurdaspur, Jalandhar, Kapurthala, Patiala, Ludhiana, SAS Nagar and Fatehgarh Sahib in the state. Traditionally maize was grown as *kharif* crop and now sowing during *rabi* season has also been started in some districts. With the development of new hybrids, it is now possible to raise spring crop in Hoshiarpur, Shaheed Bhagat Singh Nagar, Jalandhar and Kapurthala. Out of these districts Jalandhar and

---

\*Corresponding Author's Email: drmanojsh1@gmail.com

<sup>1</sup>PAU's Regional Research Station, Kapurthala-144 620 (Punjab)

Kapurthala comes under central plain zone and in this area, the major cropping system followed is paddy- potato-muskmelon, paddy- potato-maize, paddy-potato-sunflower, paddy- potato-late sown wheat, paddy-potato-peas, etc. Hence, after harvesting of potato in the month from December to February, farmers decide about to the next crop to be sown i.e. maize muskmelon, sunflower, peas or late sown wheat depending upon the prevailing weather conditions. Spring maize may also be more profitable as it helps in meeting the green cob demand during early summer (Verma and Mishra, 1998). In order to see the change in cropping pattern year after year, it is essential to note down the status of spring maize cultivation every year so that later on some policy can be chalked out for the area. Therefore, the present study was undertaken to assess the area under different maize hybrids, its productivity and gross returns of the farmers in both the districts.

#### MATERIALS AND METHODS

In both the districts, a total 125 farmers were interviewed in order to know the size of land holding, hybrids of maize grown along with other

information regarding spring maize cultivation during the year 2014. There are 5 blocks in Kapurthala but maize is cultivated in Sultanpur and Kapurthala blocks where as the adjoining blocks of Jalandhar district namely Jalanadhar, Nakodar, Lohian and Kartarpur were also selected. A random sampling technique was followed for interview purpose. A questionnaire was developed and the information was collected on various parameters. The various parameters noted were area sown, grain yield obtained, rate of selling the produce in the market, days taken for harvesting and returns obtained. Data were classified by using frequency and averages etc.

#### RESULTS AND DISCUSSION

It has been observed that during the sowing season in the months of January and February, there are number of private companies dealing with the seed roaming in the farmers field in order to convince the farmers regarding the performance of hybrid seeds available with the said firm. On the basis of experience of last year, neighbouring farmer, dealers, availability of seed in the market and price of hybrid seed, farmers take decision regarding the selection of cultivar for sowing the crop.

**Table 1. Area and Productivity of Spring Maize Hybrids Grown in Kapurthala and Jalandhar Districts.**

Parameter	Number of farmers	Area (ha)	Grain yield (q/ha)	Rate (Rs./q)	Days taken to harvesting	Maize productivity (kg/day/ha)	Gross returns (Rs./ha)
<b>Hybrid</b>							
P 1864	6	14.2	100.8	953.3	121.5	83.4	95,087
PMH1	1	1.2	70.0	1100.0	115.0	60.8	77,000
31 Y 45	60	321.8	96.0	851.8	122.2	79.9	81,361
DKC 9108	58	280.2	96.2	855.0	121.5	80.6	81,842
<b>Block wise</b>							
Kapurthala	66	426.4	96.2	854.9	121.4	80.6	81,835
Sultanpur	13	34.0	96.1	849.5	121.5	80.4	81,214
Jalandhar	28	118.2	96.1	846.3	122.1	80.1	80,934
Nakodar	5	13.2	112.5	680.0	128.0	87.9	76,500
Lohian	6	12.4	93.7	1075.0	131.0	71.5	1,00,781
Kartarpur	7	13.2	118.7	710.0	112.0	106.0	84,312
<b>Area wise (ha)</b>							
≤ 1	20	14.2	96.1	846.2	122.1	79.9	80,913
> 1 to ≤ 2	37	56.8	96.1	853.2	122.0	80.1	81,648
> 2 to ≤ 3	15	37.8	96.1	846.3	122.0	80.0	80,934
> 3 to ≤ 4	24	87.8	96.9	849.3	121.2	81.4	81,912
> 4 to ≤ 8	19	115.2	96.1	848.9	121.2	80.5	81,163
> 8 to ≤ 20	6	65.6	97.6	815.8	120.9	82.3	79,040
> 20	4	240.0	94.8	870.5	118.9	81.3	82,290

## Spring Maize Cultivation in Kapurthala and Jalandhar

### Performance and choice of hybrids

There were 4 different hybrids from public and private concern (Table 1). It was found that hybrid 31Y 45 of M/S DuPont Pioneer, formerly Pioneer Hi-Bred was sown on an area of about 322 ha by 60 farmers (48%) but the selling rate was found to be the lowest (Rs. 852/q). Another hybrid DKC 9108 of M/S Monsanto Company, was also grown on an area of 280ha by 58 farmers. Therefore, both these hybrids of private firms were most popular among the farmers of both the districts. Moreover, the average productivity is almost same i.e. about 96 q/ha. Similarly, the number of days taken to maturity was 121 to 122 whereas per day productivity was found to be about 80 kg/day/ha. The selling price of PMH 1 was maximum (Rs.1100/q) followed by P 1864 and the most popular hybrids had comparable selling price (Rs 850/q). The gross returns were almost comparable among these hybrids (31Y45 and DKC 9108) but it was maximum in P1864 and the difference was about Rs 13,800/ha as compared to the two popular hybrids, which was mainly due to higher selling price of produce of this hybrid. But the farmers are growing more of 31Y45 and DKC 9108 hybrids which might be due to easy availability of seed or intensive marketing strategy of the companies producing them. Hence, it can be said that in maize cultivation, both these private hybrids have their monopoly among the farmers of the area.

### Site Specificity

The results of the present study showed that maximum 426 ha area was observed in Kapurthala block followed by Jalandhar. The highest grain yield was noticed in the Kartarpur block (118.7q/ha), which was followed by Nakodar (112.5q/ha) in rest of the blocks the grain yield was almost equal and was around 96.2q/ha, the lowest grain yield was noticed in Lohian (93.7q/ha). The maize produced in Lohian block fetched the highest price (Rs 1075/q), followed by Kartarpur, Sultanpur and Jalandhar where price remained around Rs 850/q. The price in Nakodar block was the lowest among all the blocks surveyed. The days taken for harvesting was maximum in Lohian followed by Nakodar and was lowest in Kartarpur (112) and rest of the block had almost similar number

of days for harvest (around 122). Maize productivity (kg/day/h) was maximum in Kartarpur (106kg/day/ha) followed by Nakodar (87.9kg/day/ha) and was lowest in Lohian (71.5 kg/day/ha). In rest of the blocks it was around 80 kg/day/ha. The maximum gross return was obtained in Lohian block and least was in Nakodar block.

### Land holding

The data (Table 1) revealed that maximum area under maize was planted by farmers who were having the land above 20 ha followed by between 4 to 8 ha and 3 to 4ha. It was interesting to note that there were only 4 farmers having area more than 20 ha and total area sown by these 4 farmers was 240 ha. This was due to the fact that they possess the machinery required for maize cultivation e.g. maize seed planter, bund maker, maize combine harvester, rotavator, tractor with more horse power, trolleys, etc. Farmers having land between 1 to 2 ha cultivated maize only on 56.8 ha indicating that the small farmers try to sell this crop as green cob and if left will be used for grain purpose. Hence, it can be said that the financial condition of the farmers plays an important role in selecting the crops to be sown at the farms likewise, the large farmers also take some land on lease for the production of cereal, oilseeds and for the vegetable mainly potato. The grain yield obtained per hectare by all groups of land holdings was almost comparable (around 96.25q/ha) except in case of the farmers having land holding above 20 ha which had the lowest grain yield of 94.8q/ha. The selling price was lowest for farmers having land holding between 8 to 20 ha of land, while for the farmers of rest of the land holding categories the selling price remained around Rs 850/q. while, the farmers of the highest land holding group fetched the maximum price (Rs 870/q) for the produce. The days taken for harvesting and maize productivity per day remained almost similar for all the land holding types. This might be due to the fact that majority of the farmers planted the two hybrids requiring same number of days from sowing to harvest and had almost similar yield potential. Maximum gross return was noticed in case of farmers having land holding more than 20 ha, while the minimum was in case of farmers belonging to 8 to 20 ha category.

### Constraints

In both these districts farmers take the land on lease @ Rs75,000 to 1,00,000/ha/year. Mainly they grow paddy as the main crop in order to cover up the land rent due to the assured market and minimum selling price. In order to get the profit, farmers prefer to grow, muskmelon, sunflower or maize keeping in view the gross returns obtained during the previous years. This is the main reason that, area under all these three crops go on varying every year. The main constraints perceived by the participating farmers were:

1. Scarcity of labour required: For sowing of the crop, earthing up, frequent irrigations, watch and word from parrots, crows and stray animals.
2. Dwindling selling rate every year: Every year the farmers sell the produce at different rates and this depends upon the quality of produce.
3. Occurrence of rain at harvesting time: Crop sown in the month of February –March became ready for harvesting in the month of mid June - July and if rains occur during this time cultivation of maize results in a loss.
4. High temperature: Due to very high temperature in the month of May-June sometimes pollination does not occur and results in low yields.
5. Frequent irrigation: Farmers revealed that crop sown in spring season require frequent irrigation at an interval of 5-7 d and if there is no electricity available its cost of production increases manifold.
6. The maize crop in Punjab is presently facing serious marketing problem due to high percentage of moisture in grains. The moisture percentage in the grains at the time of harvesting may be up to 28 per cent but actual requirement of moisture for proper storage and processing is approximately 14 per cent. This results in low price of crop. The sun drying during this period is not practically possible because it coincides with the

monsoons; moreover the sun drying is not uniform. Therefore, provision for artificially drying of maize needs to be made in the grain markets so that farmers can fetch a good harvest and returns from the maize cultivation.

### CONCLUSION

This study revealed that farmers of the area have good confidence in cultivating the spring maize and harvesting an average grain yield of 96q/ha. However, the water requirement is very high and therefore low water productivity but farmers are reluctant to see the long term effect of maize cultivation during spring season. Similarly, the hybrid seeds evolved by the private seed companies market the seeds at very high rates. Due to small land holdings in both the districts, farmers go for three crops in a year in order to get maximum profit from crop cultivation. In fact, it is not appropriate to increase area under spring maize due to the fact that the underground water table in both these district is going down at a very high rate and in Jalandhar district some of the blocks have been declared under dark zone. It can be concluded from the present study that majority of farmers prefer to sow seeds of two hybrids namely 31Y45 and DKC 9108 with an average yield around 96 q/ha. These hybrids resulted in a gross return around Rs 81,250/ha. Among the blocks studied, the maximum area under spring maize was in the Kapurthala block. The highest grain yield was in Kartarpur block, but the selling rate and gross returns were maximum in Lohia block. Among the different categories of the farmers according to their land holdings the maximum area was planted by farmers of category having land more than 20 ha and they also got the maximum gross returns.

### REFERENCES

- Chhibra I M (2008). Soil fertility related problems in Punjab. Chhibra I M and Kukal S S (eds) *Irrigation Water and Soil Fertility Management in Punjab*. Tech Bull II, Niche Area of Excellence, Department of Soils, Punjab Agricultural University, Ludhiana.
- Verma S S and Mishra S N (1998). Successful cultivation of maize in summer. *Indian Farmers' Digest* **31**: 17-18.

Received on 20/8/2014 Accepted on 30/9/2014