ISSN: 0976-1675

www.rjas.org

Research Journal of Agricultural Sciences

© Centre for Advanced Research in Agricultural Sciences

Short Communication

DI: 6302-0907-285

Existing Pattern of Cultivation Practices of Maize

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Received: 09 July 2020; Revised accepted: 24 September 2020

Key words: *Zea mays* L., Irrigation, Weeding, Threshing, Plant protection, Storage

Maize (*Zea mays* L.) is one of the most important cereal crops in the world and has the highest production among all the cereals. It is a miracle crop, it has very high yield potential, there is no cereal on the earth which has so immense potentiality and that is why it is called 'queen of cereal'. Besides, maize has many types like normal yellow, white grain, sweet corn, baby corn, popcorn, waxy corn, high amylase corn, high oil corn, quality protein maize, etc. Maize is the most important crop in the world after wheat and rice (Verheys, Undated). It is an important staple food in many countries and is also used as animal feed and many industrial applications. Maize is 3rd major crop in India after rice and wheat (Cox 1956 and Reddy *et. al.* 2013). Maize is important cereal crop which provides food, feed, fodder and serves as a source of basic raw material for a number of industrial products viz. starch, protein, oil, food sweeteners, alcoholic beverages, cosmetics, bio-fuel etc. it is cultivated over 8.12 million hectare area with an annual production of 19.77 million tones and an average productivity of 2,435 kg ha^{-1} (Langade *et al*. 2013). Maize is the third most important food grain in India after wheat and rice. In India, about 28% of maize produced is used for food purpose, 11% as livestock feed, 48% as poultry feed, 12% in wet milling industry (for example starch and oil production) and 1% as seed (AICRP on Maize 2007). Maize crop in the state has an area of 123430 ha with the production 254134 MT (C.G. Agriculture Statistic Report 2014). The area and production of maize crop in Kanker district was 11511 ha and 25705 MT respectively, area of maize crop in Kondagaon district is 13586 ha with production of 31831 MT while the coverage of maize in Bastar district is 9560 ha with the production of 22398 (C.G. Agriculture Statistic Report 2014). The existing production pattern indicate the used to pattern which is now present in operation is made according to the exact dimension of particular style with allowance. The present study was undertaken with specific objectives to assess the existing production pattern of maize among the respondents of Bastar plateau of Chhattisgarh.

The present study was carried out in Bastar plateau of Chhattisgarh State. Three districts in the zone i.e. Kanker, Kondagaon and Bastar were undertaken for the study. Two blocks from each of the selected district Block Antagarh and Koylibeda in Kanker District, Keshkal and Baderajpur in Kondagaon, Bastar and Bakawand in Bastar District. Each selected block 3 villages viz. Irrabodi, Amagaon, Godri, in Antagarh Block, Chotekapsi, Kodosalhebhat, Manegaon, in Koylibeda Block, Cherbeda, Toraibeda, Amoda in Keshkal Block, Baderajpur, Toraipara, Khargaon (Manduki) in Baderajpur Block, Ikchapur, Bagmohlai, Dubeumargaon in Bastar Block, Belputi, Khotlapal and Mangnar in Bakawand Block were selected and from each selected village, 15 farmers were selected randomly. In this way total two hundred seventy respondents were selected to response as per the interview schedule designed for the study. Collected data were analyzed by the help of various statistical tools i.e. frequency, percentage, mean, standard deviation, correlation and regression, etc. The existing production pattern indicate the used to pattern which is now present in operation is made according to the exact dimension of particular style with allowance.

The result and discussion of the present study have been summarized on the basis of response of respondents regarding to existing cultivation practices and pattern of maize production was studied among different respondents of study area and presented in (Table 1) it is cleared from the data collected it was revealed that 87.78 percent of the respondents preferred maize crop in *Kharif* season, while 60.74 percent respondents preferred in *Rabi* season. Among the respondents 51.50 percent of them had area under maize

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cultivation was 0.5 to 1.86 ha. followed by 44.10 percent respondents had cultivated maize up to 0.4 ha. Only 4.40 percent responded had an area of more than 1.86 ha.

Table 1 Existing pattern of cultivation practices of maize

Existing pattern	Frequency	Percent
Season		
Kharif Cultivated	237	87.78
Rabi Cultivated	164	60.74
Area under cultivation		
Up to 0.4 ha	119	44.10
0.5 – 1.86 ha	139	51.50
> 1.86 ha	12	4.40
Variety		
J K - 502	5	1.85
Dhanya - 1105	6	2.22
Dhanya - 8255	8	2.96
Rasi - 4458	4	1.48
Rasi - 4558	7	2.59
Bio - 20027	3	1.11
DKC – 9144 (Monsanto)	35	12.96
DKC – 9081(Monsanto)	33	12.22
DKC - 8101(Monsanto)	39	14.44
VNR - 4226	26	9.63
Highcell – 900 M Gold	25	9.26
High cell - 9126	26	9.63
Highcell – MCH - 42	20	7.41
Local	33	12.22
Seed rate		
Up to 13 kg ha^{-1}	7	2.60
14-18 kg ha^{-1}	91	33.70
>18 kg ha^{-1}	172	63.70
Seed treatment		
Treatment	3	1.11
Method of sowing		
Broadcasting	0	0
Line Sowing	270	100
Fertilizer		
➢ Nitrogen		
Up to 80 kg ha^{-1}	59	21.85
81-125 kg ha^{-1}	131	48.52
> 125 kg ha^{-1}	80	29.63
➢ Phosphorus		
Up to 40 kg ha^{-1}	19	7.04
41 to 76 kg ha^{-1}	61	22.59
> 76 kg ha^{-1}	190	70.37
➢ Potash		
Up to25 kg ha^{-1}	37	13.70
26 to 70 kg ha^{-1}	214	79.26
>70 kg ha^{-1}	19	7.04
Weed control		
Manual	256	94.81
Chemical	45	16.67
Irrigation		
10 – 15 Days interval	172	63.70
No irrigation	98	36.30
Plant protection measures		
No use of chemical	129	47.78
Occasional use of chemical	141	52.22
Harvesting		
Cob form	33	12.22
After maturity	268	99.26
Threshing		
Thresher machine	268	99.26
Hitting by wood	2	0.74
Storage		
In wooden stand	61	22.59
In- house upper chamber	86	31.85
No storage	123	45.56

*Data are based on multiple responses

While choosing the varieties of maize by the respondents they had different choice. Between the improved varieties and hybrid maize, hybrid maize was taken up by the majority of the respondents. The improved varieties under maize were Rasi-4558, Dhanya-8255, Dhanya-1105 and JK-502. The preference hybrid maize was maximum with the maize hybrid DKC-8101 (Monsanto) followed by DKC-9144 (Monsanto) and DKC-9081 (Monsanto) and Highcell MCH-42. The average seed rate of more than 18 kg ha^{-1} was used by 63.70 percent respondents followed by 33.70 percent who used seed rate of 14 to 18 kg ha^{-1}. Before sowing the seed, treatment was done by only 1.11 percent respondents while rests were not using seed treatment. Interestingly, all the respondents used the line showing method in place of broadcasting.

Data pertaining to application of fertilizer it was found that 48.52 percent respondents were using Nitrogen at the rate of 81 to 125 kg ha^{-1} followed by more than 125kg Nitrogen ha^{-1} utilized by 29.63 percent respondents. In case of Phosphorus the rate of application was more than 67 kg ha^{-1} used by 70.37 percent respondents followed by up to 40kg ha^{-1} used by 22.59 percent respondents. The nutrient Potash was used at the rate of 26 to 70 kg ha^{-1} by 79.26 percent respondents followed by upto 25kg ha^{-1} by 13.70 percent respondents.

Manual weeding of weed control measure was common practice among the respondents followed by 94.81percent. The chemical weed control measure was adopted by 16.67 percent respondents. Data on frequency of irrigation to maize crop revealed that 63.70 percent respondents apply irrigation to maize crop in 10-15 days interval while 36.30 percent respondents did not have the irrigation facilities to irrigate the maize crop. Under the plant protection measures 52.22 percent respondents occasionally used the chemical whereas, 47.78 percent respondents did not use chemicals as plant protection measures.

Among the different respondents 99.26 percent used to harvest the maize crop when it attained the maturity while, only 12.22 percent used to harvest maize crop in from cobs. About the mode of threshing 99.26 percent respondents used the thresher machine for threshing. About 45.56 percent respondents did not have storage facilities followed by 31.85 percent who preferred to store the produce in in-house upper chamber and only 22.59 percent responded used to store it in wooden stand.

SUMMARY

This investigation was carried out in three district of Bastar plateau of Chhattisgarh State to assess the existing pattern of cultivation practices of maize. 270 farmers were considered as respondents for this study. Respondents were interviewed through personal interview. Collected data were analyzed with the help of suitable statistical methods. The analysis of the results showed that existing pattern of practice of maize revealed among the respondents, 51.50 percent cultivating the maize crop having an area of 0.5 to 1.86 ha. Between the improved varieties and hybrid maize, hybrid maize was taken up by the majority of the respondents. The average seed rate of more than 18 kg ha^{-1} was used by 63.70 percent respondents, all the respondents used the line showing method in place of broadcasting, manual weeding of weed control measure was common practice among the respondents. Frequency of irrigation 63.70 percent respondents apply irrigation to maize crop in 10-15 days interval, plant protection measures 52.22 percent respondents occasionally used the chemical. Among the different respondents 99.26 percent used to harvest and thresher machine for threshing. About 45.56 percent respondents did not have storage facilities. From the above research findings, it can be concluded that most of the respondents cultivated maize in *Kharif* and *Rabi* season in small land size and they mostly preferred hybrid variety. Regarding the sowing method respondents were practiced of line sowing. Generally, weed control measures were carried out by manually weeding operation doing by them and occasionally used plant protection measures. Majority of respondents harvested after maturity for grain purpose and threshing by maize thresher whereas they had stored cob and grain in house upper chamber and wood stand.

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