

## EXTENT OF KNOWLEDGE AND ADOPTION OF MAIZE CULTIVATION PRACTICES BY THE FARMER IN CHHINDWARA DISTRICT MADHYA PRADESH

Vipin Chandrawanshi<sup>1</sup> and D.P. Rai<sup>2</sup>

1. Research Scholar

2. Department of Agricultural Extension, Faculty of Agriculture, Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya Chitrakoot Satna M.P. Email: vipinchandrawanshi10@gmail.com

Received July30, 2022 and Accepted August, 22, 2022

**ABSTRACTS:** This investigation was carried out in Chhindwara district of Madhya Pradesh to assess the extent of Knowledge and adoption of maize cultivation practices. Total 120 farmers were considered as respondents for the study. Respondents were interviewed through pre-tested and thoroughly structured interview schedule. Collected data were analyzed with the help of proper statistical method. The analysis of the result showed that the overall knowledge level maize cultivation practices of the high level 63.33per cent had medium level 23.33per cent and low level 13.34per cent respondents and overall adoption level showed 46.67per cent high level 32.5per cent medium level and 20.83per cent respondents low level adoption of maize cultivation practices.

**Keywords:** Maize cultivation practices, extent of knowledge, extent of adoption

Maize (*Zea mays* L.) is the world's leading crop and is widely cultivated as cereal grain that was domesticated in Central America .it is one of the most versatile emerging crops having wider adaptability. Globally, maize is known as queen of cereals because of its highest genetic yield potential maize is the only food cereal crop that can be grown in diverse seasons Ecologies and uses. Beside this maize have many types like normal yellow / white grain. sweet corn, baby corn, pop corns, high oil corn, quality protein maize etc. Apart from this, maize is an important industrial raw material and provides large opportunity for value addition.

Maize is the third most important cereal crop next to wheat and rice and it is one of the staple food Crop in the world maize is the highest production potential among cereal and it has well adopted to a wide range of environmental condition. It is being widely grown in tropics, sub tropics and temperate regions up to latitude 58°N to 40°S from the equator to more than 3000 m. above sea level and area receiving annual rainfall of 250 mm to 5000 mm across the world (Downs well et al. 1996).

Maize was first domesticated by native peoples in Mexico about 10,000year native Americans taught European colonists to grow the indigenous grain and Science its introduction into Europe by Christopher Columbus and other explorers. it has spread to all areas of the world suitable to its cultivation.

Maize Is an important crop for billions of people as food, Feed and industrial raw material. currently, nearly 1147. 7 million MT of maize is being produced together by over 170 countries from an area of 193.7 million ha with average productivity of 5.75 t/ha (FAOSTAT, 2020). The global consumption Pattern of marriage is feed 61per cent, food 17per cent and industry 22per cent. It has attained a position of industrial crop globally as 83per cent of

its production in the world is used in feeds, starch and bio-fuel industries. Further, using maize directly or indirectly more than 3000 products are being made providing a wide opportunity for value addition. Because of its myriad uses, it is a prime driver of the global agricultural economy.

Among the maize growing countries, India rank 4th in area and 7th in production, representing around 4per cent of the world maize area and 2per cent of total production. During 2018-19 in India, the maize area has reached to 9.2 million ha (DACNET, 2020). During 1950-51 India used to produce 1.73 million MT maize, which increased 27.8 million MT in the year 2018-19, recording close to 16 times increase in production. The average productivity during the period has increased by 5.42 times from 547 kg/ha to 2965 kg/ha, while the area increased nearly by three times. Though the productivity in India is almost half of the world the average per day productivity of Indian maize is at par with many lead Maize producing countries. In India, maize is principally grown in two seasons, rainy (kharif) and winter (Rabi). Kharif maize represents around 83per cent of maize area in India, while Rabi maize correspond to 17per cent maize area. Over 70per cent of kharif maize area is grown under the rainfed condition with a prevalence of many biotic and abiotic stresses. The stress prone ecology contributes towards lower productivity of kharif maize (2706 kg/ha) as compared to Rabi maize (4436 kg/ha), which is predominantly grown under assured ecosystem. In recent past spring maize area is also growing quite fast in north western parts of the country, in the states of Punjab, Haryana and Western Uttar Pradesh. Unfortunately, the area and production data of spring maize is not well documented. However, informal estimates suggest the area to be around 150 thousand ha. Among cereals maize has

highest growth rate in terms of area and productivity. Since 2010 maize productivity in India is increasing @ over 50 kg/ha/year, which is the highest among food crops.

Madhya Pradesh is one of the traditional maize growing state accounting for 15per cent of the total maize area and contributing equally to the total maize production in the country. However, its productivity when compared to other maize growing states is very low. Madhya Pradesh maize production was at level of 3.91 million tonnes in 2020, down from 4.13 million tonnes previous year, this is a change of 5.33per cent.

## RESEARCH METHODOLOGY

To study was conducted in Amarwara Block of chhindwara district of in Madhya Pradesh state. The Chhindwara district comprises of 11 Block out of which the Amarwara Block was selected purposively because kharif maize crop is grown by the maximum

number of farmers in this block. The Amarwara block comprises of 149 Village. A list of Village under this block where maximum farmers are growing maize crops was prepared on the basis of secondary data and 04 Village Kekda, Badela, Khireti, Chargaon were selected randomly. A list of respondents from selected randomly, out of selected village, 30 Farmer was selected from each village thus the total sample of the study comprises of 120 respondents spread over 04 village. The primary data were collected through personal interview method with the help of pre-tested, interview schedule, which was prepared on the basis of objectives of investigation and variables. Collected data were analyzed by the help of various statistical tools i.e frequency, percentage, mean, chi-square etc. The knowledge test was composed of items called question for constructing the knowledge tests of all the cultivation practices of maize production technology.

Table- 1: Level of Knowledge of maize cultivation practices

Categories	Score
Low knowledge	1
Medium knowledge	2
High knowledge	3

The knowledge of index was calculated by the following formula:

$$\text{Knowledge index (K.I.)} = \frac{\text{Score obtained}}{\text{Maximum possible score}} \times 100$$

Table-2: Details of knowledge of index

Categories	Score
Low knowledge	Up to 33.33per cent
Medium knowledge	33.34-66.66per cent
High knowledge	Above 66.66per cent

Table-3: Level of Adoption of maize cultivation practices

Categories	Score
Low Adoption	1
Medium Adoption	2
High Adoption	3

The results of adoption Index was depicted in table-4 and calculated by the following formula:

$$\text{Adoption Index (A.I.)} = \frac{\text{Score obtained}}{\text{Maximum possible score}} \times 100$$

Table-4: Adoption Index of maize cultivation practices

Categories	Score
Low Adoption	Up to 33.33per cent
Medium Adoption	33.34-66.66per cent
High Adoption	Above 66.66per cent

## Results and Discussion

Table-4: Selected practices wise Knowledge level and Adoption level of the respondents about maize cultivation practices:

Extent of Knowledge of the respondents regarding recommended practices of maize cultivation

S.N.	Practices	Extent of Knowledge					
		Complete		Partial		Nill	
		F	Percentage	F	Percentage	F	Percentage
1.	Selection of suitable land	85	70.83	21	17.5	14	11.67
2.	Field preparation	76	63.33	33	27.5	11	9.17
3.	Variety	96	80	16	13.33	8	6.67
4.	Seed rate	81	67.5	27	22.5	12	10
5.	Seed treatment	56	46.67	40	33.53	24	20
6.	Sowing time	89	74.17	22	18.33	9	7.5
7.	Thinning	47	39.17	38	31.67	35	29.16
8.	Manure/ Fertilizer	97	80.83	16	13.33	7	5.83
9.	Weed control	67	55.83	27	22.5	26	21.67
10.	Irrigation	65	54.17	37	30.83	18	15
11.	Plant protection	74	61.67	33	27.5	13	10.83
12.	Harvesting	94	78.33	14	11.67	12	10
13.	Yield	87	72	23	19.17	10	8.33
14.	Storage	64	53.33	29	24.17	27	22.5
15.	Marketing channel	74	61.67	31	25.83	15	12.5

It is obvious from table 4. that all 15 agriculture practices of maize cultivation practices, manure/fertilizer (80.83 Percent) was rank at 1<sup>st</sup> as far Knowledge possessed by Respondents was concerned followed by the practices variety at 2<sup>nd</sup> rank (80 Percent), harvesting at 3<sup>rd</sup> rank(78.33 Percent), sowing time at 4<sup>th</sup> rank (74.17 Percent), yield at 5<sup>th</sup> rank (72.5 Percent), Selection of suitable land at 6<sup>th</sup> rank (70.83 Percent),Seed rate at 7<sup>th</sup> rank (67.5 Percent), Field preparation at 8<sup>th</sup> rank (63.33

Percent), Plant protection at 9<sup>th</sup> rank(61.67 Percent), Marketing channel at 10<sup>th</sup> rank (61.67 Percent), Weed control at 11<sup>th</sup> rank (55.83 Percent), Irrigation at 12<sup>th</sup> rank (54.17 Percent), Storage at 13<sup>th</sup> rank (53.33 Percent), Seed treatment at 14<sup>th</sup> rank(46.67 Percent) and Thinning at 15<sup>th</sup> rank(39.14 Percent). It can be calculated that the extent of knowledge about maize cultivation practices seems to satisfactory. (Rai, D. P. *et.al*, 2010)

Table 5: Extent of overall Knowledge of the respondents regarding recommended practices of maize cultivation

Categories	Frequency	Percentage
Low (Up to 33.33per cent)	16	13.34
Medium (33.34-66.66per cent)	28	23.33
High (Above 66.66per cent)	76	63.33

The extent of overall knowledge of the respondent presented in table-1 and it referred maximum 63.33 Percentage respondent of the high knowledge level. Followed by 23.34 Percentage respondent medium

knowledge level and 13.33per cent respondents had to low level of knowledge about maize cultivation practices

Table-6: Extent of Adoption of the respondents regarding recommended practices of maize cultivation

S.N.	Practices	Extent of Adoption					
		Complete		Partial		Nill	
		F	Percentage	F	Percentage	F	Percentage
1.	Selection of suitable land	54	45	39	32.5	27	22.5
2.	Field preparation	60	50	34	28.33	26	21.67
3.	Variety	66	55	34	28.33	20	16.67
4.	Seed rate	61	50.83	38	29.17	12	10
5.	Seed treatment	28	23.33	48	40	24	20
6.	Sowing time	58	48.33	41	34.17	9	7.5
7.	Thinning	38	29.17	64	53.33	35	29.16
8.	Manure/ Fertilizer	76	63.33	34	28.33	7	5.83
9.	Weed control	72	60	32	26.67	26	21.67
10.	Irrigation	54	45	32	26.67	18	15
11.	Plant protection	48	40	37	30.87	13	10.83
12.	Harvesting	56	46.67	48	40	12	10
13.	Yield	53	44.17	36	30	10	8.33
14.	Storage	45	37.5	41	34.17	27	22.5
15.	Marketing channel	58	48.33	53	27.5	15	12.5

It is obvious from table 6 that the 15 agriculture practices of maize cultivation practices Manure/ Fertilizer (63.33 Percentage) were 1<sup>st</sup> rank as for adoption possessed by Respondents were concerned followed by the practices of Weed control at 2<sup>nd</sup> rank (60 Percentage), Variety at 3<sup>rd</sup> rank(55 Percentage), Seed rate at 4<sup>th</sup> rank (50.85 Percentage), Field preparation at 5<sup>th</sup> rank (50 Percentage), Sowing time at 6<sup>th</sup> rank (48.33 Percentage), Marketing channel at 7<sup>th</sup> rank (48.33 Percentage), Harvesting at 8<sup>th</sup> rank

(46.67 Percentage), Selection of suitable land at 9<sup>th</sup> rank (45 Percentage), Irrigation at 10<sup>th</sup> rank (45 Percentage), Yield at 11<sup>th</sup> rank (44.17 Percentage), Plant protection at 12<sup>th</sup> rank (40 Percentage), Storage at 13<sup>th</sup> rank (37.5 Percentage), Thinning at 14<sup>th</sup> rank (29.17 Percentage) and Seed treatment at 15<sup>th</sup> rank (23.33 Percentage ). It can be calculated that the extent of adoption about maize cultivation seems to satisfactory. (Pandey, S. K *et.al*,2012)

Table 7: Extent of overall Knowledge of the respondents regarding recommended practices of maize cultivation

Categories	Frequency	Percentage
Low (Up to 33.33per cent)	25	20.83
Medium (33.34-66.66per cent)	39	32.5
High (Above 66.66per cent)	56	46.67

The data has given in a table 7 indicates that out of 120 Respondents observed 46.67 Percentage high adoption level, 32.5 Percentage medium adoption level and 20.83 Percentage low adoption level observed respectively. Thus it is concluded that the highest percentage of maize growers belonged to high adoption behavior category. (Rai D P *et al*. 2012)

## CONCLUSIONS

The highest level of knowledge among 15 maize cultivation practices was observed in manure/ fertilizer first rank, second rank was variety, third was harvesting time was found as extent of knowledge of maize cultivation practices. The highest rank was found for the adoption of manure and fertilizer whereas second rank was weed control. Selection of variety was stand on the third rank.

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