***Original Research Article***

# Assessment of maize ( *Zea mays*) farmers knowledge level on practicing of recommended production technology

## Or Assessment of farmer knowledge level about recommended production technology in Maize ( *Zea mays*) crop


**Abstract**

The present research work was conducted in the Darbhanga and Bhagalpur district of Bihar to assess the knowledge level of farmers about recommended maize production technology. The ex-post facto research design was used. Three villages are purposefully chosen for each district and a total of 210 respondents were selected randomly. Results shown that the majority of respondents (40.5%) fall into the 40-to-54-year age group followed by most the respondents have educational background up to the level of senior secondary. It was observed that most the respondents have farming experience range of 9 -14 years followed by BAO (please give detail what is BAO) is the most preferred extension exposure by the respondents, most of the respondents had the membership of jeevika. The average knowledge level of respondents is determined by knowledge test which contains question regarding different cultivation practices of maize further data from result revealed that the average knowledge level in planting time, soil and land preparation, in method of sowing, seed rate and spacing, irrigation management, insect-pest management is higher in Bhagalpur respondents compare to Darbhanga district respondents. Average knowledge level in insect -pest management is low in both districts compare to other cultivation practices.



**Key words**: Maize production, knowledge, purposefully, interview schedule, knowledge test, spearman's correlation, socioeconomic profile etc.


## 1. INTRODUCTION

Maize, belonging to the Poaceae family, is globally recognized as the Queen of Cereals because of its considerable genetic yield potential. Originating in Central America and Mexico, maize is able to flourish in a variety of agro-ecological situations, which makes it exceptional in its ability to adjust to a wide range of circumstances. In India, maize is a commonly grown crop, with Andhra Pradesh and Karnataka being the main states where it is grown. Maize is also grown in the states of Jammu, Kashmir, and the North East. Bhagalpur has a 26,641-hectare maize crop area with a 140948 metric tonne annually output, whereas Darbhanga has an 8491-hectare maize crop area with a 33082 metric tonne annual production [1].The intensity of increased maize varieties chosen on plots managed by men, women and households which make their own decisions [2]. The adoption of technology and the benefit cost ratio of improved seed were significantly higher among the improved seed users compared to the local seed users, but the level of technology adoption was not satisfactory for improved seed [3].The plant protection measure had a significant negative effect on wheat production. Human labor was the major key

determinants in barley production, while the bullock labor and plant protection measures were the major determinants in the production of bajara (please give scientific name Millets in parenthesis) **[4]**.

## 2. MATERIAL AND METHOD

The research design employed for the present study was the Ex-post-facto research design. For the purpose of carrying out the current investigation, both random and purposive sampling techniques were used. Bhagalpur and Darbhanga districts of Bihar was selected purposefully. Purposefully chosen blocks from each district include Naugachia in Bhagalpur and Bhadurpur in Darbhanga. Three villages are purposefully chosen from each block, totaling six villages from two blocks. A total of 210 respondents are chosen at random from 6 villages, with 35 respondents drawn at random from each village. The analysis of data was done by using frequency, percentage, mean, standard deviation, weighted mean, spearman's correlation.

Knowledge is defined as the technical information that the respondents have regarding the methods used to cultivate the maize crops. A group of items known as questions for a knowledge test were developed. From BAU Sabour's kisan dairy, questions were developed that related to various maize growing practices Answers to these queries are of an objective nature and pertain to maize farming methods. The accuracy of the response was assessed in relation to the prepared responses, classed as accurate or wrong, and given a score of 1 or 0. The total of each respondent's correct answers to all of the test items was used to compute their knowledge score.

$$\textit{Knowledge Index} = \frac{\textit{Actual obtained knowledge score}}{\textit{Maximum possible obtained knowledge score}} \textit{ X 100}$$

## 3. RESULT AND DISCUSSION

### Socio-Economic profile of the Farmers:

**Age:**

Table 1: Distribution of respondents according to their age

| S.NO. | Age | District | | | | pooled | |
|---|---|---|---|---|---|---|---|
| | | Bhagalpur $n_1$=105 | | Darbhanga $n_2$=105 | | n= 210 | |
| | | f | % | f | % | f | % |
| 1. | 25-39 | 22 | 21.0 | 26 | 24.8 | 48 | 22.9 |
| **2.** | **40-54** | **49** | **46.7** | **36** | **34.3** | **85** | **40.5** |
| 3. | 55-69 | 32 | 30.5 | 34 | 32.4 | 66 | 31.4 |
| 4. | 70-79 | 2 | 1.9 | 9 | 8.6 | 11 | 5.2 |
| 5. | 80 and above | 00 | 00 | 00 | 00 | 00 | 00 |
| Total | | 105 | 100.0 | 105 | 100.0 | 210 | 100.0 |
| SD | | 10.40690 | | 12.71696 | | 11.65538 | |
| Mean | | 48.1810 | | 50.6095 | | 49.3952 | |
| CV | | 21.64 | | 25.11 | | 23.58 | |

The findings on the age of the respondents are presented in the table 1. The data from table revealed that 40.5% of respondents belongs to the age group of 40-54 years, followed by 31.4% of the respondents belongs to the age group of 55-69 years, 22.9% of respondents belong to 25 - 39 years age group, 5.2% of respondents to the age group of 70-79 years and no respondents belongs to the age group of 80 and above. The study's findings concur with those of [5]. where they found that majority of respondents belongs the age group of 30- 40 years [6].

### Education level of respondents:

Table 2: Distribution of respondents according to the level of education

| S.NO. | Education | District | | pooled |
|---|---|---|---|---|
| | | Bhagalpur $n_1$ = 105 | Darbhanga $n_2$ =105 | n= 210 |

| | | f | % | f | % | f | % |
|---|---|---|---|---|---|---|---|
| 1. | Illiterate | 3 | 2.9 | 6 | 5.7 | 9 | 4.3 |
| 2. | Functional literate | 13 | 12.4 | 10 | 9.5 | 23 | 11.0 |
| 3. | Primary (1-5$^{th}$ class) | 4 | 3.8 | 7 | 6.7 | 11 | 5.2 |
| 4. | Upper primary (6-8$^{th}$ class) | 6 | 5.7 | 8 | 7.6 | 14 | 6.7 |
| 5. | Secondary (9-10$^{th}$ class) | 27 | 25.7 | 29 | 27.6 | 56 | 26.7 |
| **6.** | **Senior secondary (11-12$^{th}$ class)** | **38** | **36.2** | **31** | **29.5** | **69** | **32.9** |
| 7. | Graduate | 14 | 13.3 | 13 | 12.4 | 27 | 12.9 |
| 8. | Graduate and above | 00 | 00 | 1 | 1.0 | 1 | 0.5 |
| Total | | 105 | | 105 | | 210 | 100 |

The results about the respondents' education level are shown in table 2 the data revealed that majority (32.9%) of the respondents have received education up to Senior secondary level, followed by 26.7% up to Secondary, 12.9% have received education level Graduate, 11.0% respondents have functionally literate followed by 6.7 received education, 5.2% respondent have primary level of education, 4.3% respondent are functionally literate and only 0.5% respondent possess graduation and above level of education. The results of the classification of education levels are consistent with those of [7].

**Institutional membership of respondents:**

Table 3 Distribution of respondents as per their institutional membership

| S.NO. | Institutional Membership | District | | | | Pooled | |
|---|---|---|---|---|---|---|---|
| | | Darbhanga $n_1$= 105 | | Bhagalpur $n_2$= 105 | | n= 210 | |
| | | f | % | f | % | f | % |
| 1. | Panchayat | 29 | 27.6 | 33 | 31.4 | 62 | 29.5 |
| 4. | FPO | 23 | 21.9 | 37 | 35.2 | 60 | 28.6 |
| 5. | Jeevika | 49 | 46.7 | 48 | 45.7 | 97 | 46.2 |
| 6. | Co-operatives | 16 | 15.2 | 1 | 1.0 | 17 | 8.1 |

The distribution of respondents as per their institutional membership is presented in table 3. It was found that 46.2% respondents are panchayat members followed by 29.6% of respondents ~~are~~ which were members of jeevika, FPO members (28.6%) and co -operatives 8.1%.

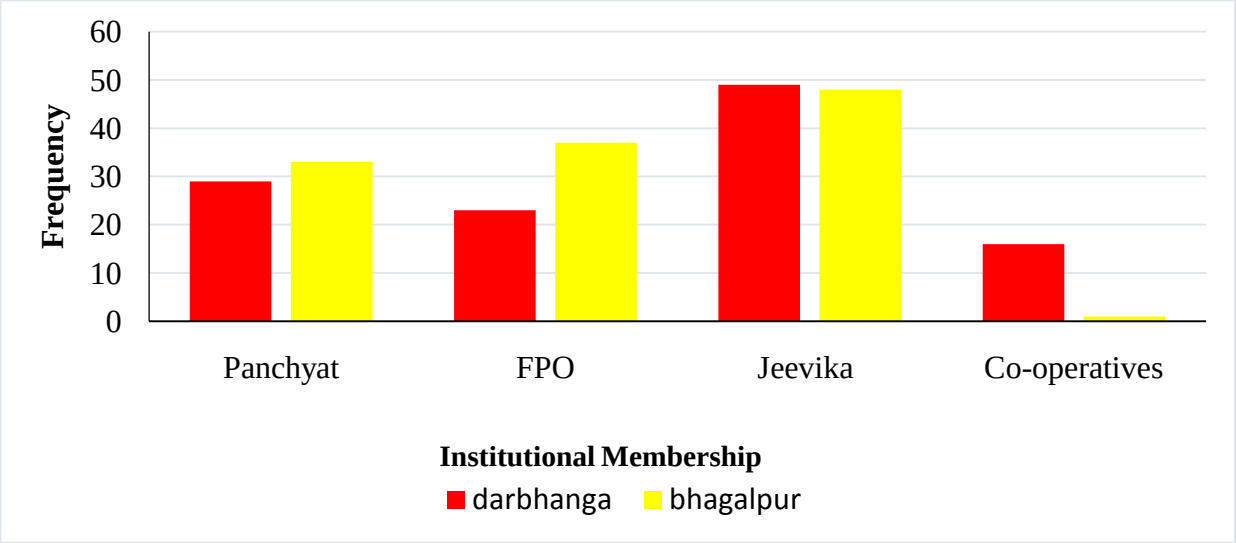


Fig: 1. Distribution of respondents as per their institutional membership

**Farming experience of respondents**

Table 4. Distribution of respondents as per their farming experiences

| S.NO. | farming experiences | District | | | | pooled | |
|---|---|---|---|---|---|---|---|
| | | Darbhanga $n_1$= 105 | | Bhagalpur $n_2$= 105 | | n= 210 | |
| | | F | % | f | % | f | % |
| 1. | 3-8 years | 10 | 9.5 | 12 | 11.4 | 22 | 10.5 |
| 2. | 9-14 years | 19 | 18.1 | 27 | 25.7 | 46 | 21.9 |
| 3. | 15-20 years | 17 | 16.2 | 24 | 22.9 | 41 | 19.5 |
| 4. | 21-26 years | 13 | 12.4 | 14 | 13.3 | 27 | 12.9 |
| 5. | 27-32 years | 17 | 16.2 | 19 | 18.1 | 36 | 17.1 |
| 6. | 33-38 years | 11 | 10.5 | 6 | 5.7 | 17 | 8.1 |
| 7. | 39- 44 years | 9 | 8.6 | 2 | 1.9 | 13 | 6.2 |
| 8. | 45 and above | 9 | 8.6 | 1 | 1.0 | 8 | 3.8 |
| TOTAL | | 105 | 100.0 | 105 | 100.0 | 210 | 100.0 |
| SD | | 13.02742 | | 9.90017 | | 11.84128 | |
| MEAN | | 24.4857 | | 19.2095 | | 21.8476 | |
| CV | | 53.2 | | 51.5 | | 54.19 | |

The findings on the farming experience of respondents are presented in table 4 the data revealed that majority (21.9%) of respondents have 9 – 14 years of farming experience followed by 15 -20 years farming experience (19.5%), 27 – 32 years farming experience (17.1%), 21 -26 years

farming experience (12.9%), 3 – 8 years farming experience (10.5%), 33 – 38 years farming experience (8.1%), 39 – 44 years farming experience (6.2%), and only 3.8% of respondents have more than 45 years of farming experience. Researchers found that the average farming experience of respondents was 24.4 years [8]. On average, farmers had 12 years of hybrid maize farming experience in the study of Factors influencing hybrid maize farmers' risk attitudes and their perceptions in Punjab Province, Pakistan [9]

**Extension exposure of respondents:**

Table 5. Distribution of respondents as per extension exposure

| S.NO | Extension exposure | District | | | | | | | | | | | | | | Weighted mean | Rank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Darbhanga $n_1$= 105 | | | | | Bhagalpur $n_2$= 105 | | | | | Pooled n= 210 | | | | | |
| | | never | occasionally | frequently | regular | Rank | never | Occasionally | frequently | regular | Rank | never | occasionally | frequently | regular | | |
| | | f % | f % | f % | f % | | F % | f % | f % | f % | | f % | f % | f % | f % | | |
| 1. | Kishan sahalakar | 58.1 (61) | 41.9 (44) | 00 | 00 | VI | 60.0 (63) | 40.0 (42) | 00 | 00 | VI | 59.0 (124) | 41.0 (86) | 00 | 00 | 0.41 | VI |
| 2. | SMS | 21.9 (23) | 43.8 (46) | 28.6 (30) | 5.7 (6) | II | 21.0 (22) | 50.5 (53) | 21.9 (23) | 6.7 (7) | II | 21.4 (45) | 47.1 (99) | 25.2 (53) | 6.2 (13) | 1.16 | II |
| 3. | Ag. university | 23.8 (25) | 61.0 (64) | 11.4 (12) | 3.8 (4) | IV | 22.9 (24) | 61.0 (64) | 11.4 (12) | 4.8 (5) | III | 23.3 (49) | 61.0 128) | 11.4 (24) | 4.3 (9) | 0.96 | III |
| 5. | ATM | 48.6 (51) | 51.4 (54) | 00 | 00 | V | 59.0 (62) | 41.0 (43) | 00 | 00 | V | 53.8 (113) | 46.2 (97) | 00 | 00 | 0.46 | V |
| 6. | BTM | 58.1 (61) | 41.9 (44) | 00 | 00 | VI | 62.9 (66) | 37.1 (39) | 00 | 00 | VII | 60.5 (127) | 39.5 (83) | 00 | 00 | 0.39 | VIII |
| 7. | BAO | 20.0 (21) | 25.7 (27) | 45.7 (48) | 8.6 (9) | I | 21.0 (22) | 22.9 (24) | 42.9 (45) | 13.3 (14) | I | 20.5 (43) | 24.3 (51) | 44.3 (93) | 11.0 (23) | 1.45 | I |
| 8. | SHG | 24.8 (26) | 40.0 (42) | 35.2 (37) | 00 | III | 44.8 (47) | 41.0 (43) | 14.3 (15) | 00 | IV | 34.8 (73) | 40.5 (85) | 24.8 (52) | 00 | 0.9 | IV |

All abbreviations must be given ATM, BTM, BAO, SHG before in text

The results of extension exposure are shown in table 5. A four-point scale was employed, and the weighted mean was computed using the various values given to the various replies. The most recent ranking was determined using the weighted mean. It was revealed from the table that BAO rank first with weighted mean 1.46, followed by SMS ranked second with weighted mean 1.16, Ag. university ranked third with weighted mean 0.96, SHG ranks fourth with weighted

mean 0.9, ATM rank fifth with weighted mean 0.46. Kishan (Kisan or Kishan plz check) salahakar ranks sixth with weighted mean 0.41and BTM ranks last with weighted mean 0.39Addition to this, spearman's rank correlation was employed to assess the strength and direction of the relationship between two ranked variables with value 0.607. Assistant agriculture officers most frequently contacted by the respondents [10]

**Knowledge level of respondent about maize production technologies**

Table 6. Distribution of respondents according to their knowledge level in maize

| S.No. | Production technology of maize cultivation | Knowledge level of Darbhanga farmers $n_1$= 105 | Knowledge level of Bhagalpur farmers $n_2$= 105 | knowledge level of total respondents n=210 |
|---|---|---|---|---|
| 1. | Planting time | 2.54 | 2.76 | 2.65 |
| 2. | Soil and land preparation | 3.05 | 3.24 | 3.14 |
| 3. | Method of sowing, seed rate and spacing | 3.17 | 3.30 | 3.24 |
| 4. | Nutrient management and seed treatment | 3.34 | 3.30 | 3.31 |
| 5. | Irrigation management | 2.98 | 3.05 | 3.01 |
| 6. | Weed management | 2.23 | 2.13 | 2.17 |
| 7. | Insect-pest management | 1.52 | 1.78 | 1.65 |
| 8. | Disease management | 2.82 | 2.2 | 2.56 |
| 9. | Harvesting practices | 3.21 | 2.82 | 3.01 |

Result of the study on knowledge level in maize of respondents is presented in the table 6. the result from the knowledge level of respondents shows that the average knowledge in plant time is 2.54% in Darbhanga district respondents and 2.76 in Bhagalpur district respondents, method of sowing, seed rate and spacing is 3.17%in Darbhanga and 3.30% in Bhagalpur district followed by nutrient management and seed treatment average knowledge level with 3.34% in Darbhanga district and 3.30% in Bhagalpur district, 3.05% of knowledge level in Soil and land preparation of Darbhanga district respondents and 3.24% in Bhagalpur district respondents, 2.98 % of knowledge level in Irrigation management in Darbhanga district and 3.047%in Bhagalpur district, 2.54% knowledge level in planting time in Darbhanga district respondent and 2.76% in Bhagalpur district respondents, 2.82% level of knowledge in disease management in 2.82% in Darbhanga district and 2.28% in Bhagalpur district , 2.23% knowledge level in weed management of Darbhanga district respondents and 2.13% in Bhagalpur district, 1.52% knowledge level in insect-pest management in Darbhanga district respondents and 1.78% in Bhagalpur district respondents, 3.21% knowledge level in harvesting practice among Darbhanga

district respondents and 2.82% in Bhagalpur. Almost same maize cultivation practices was taken to knowledge level of respondents. [11-13].

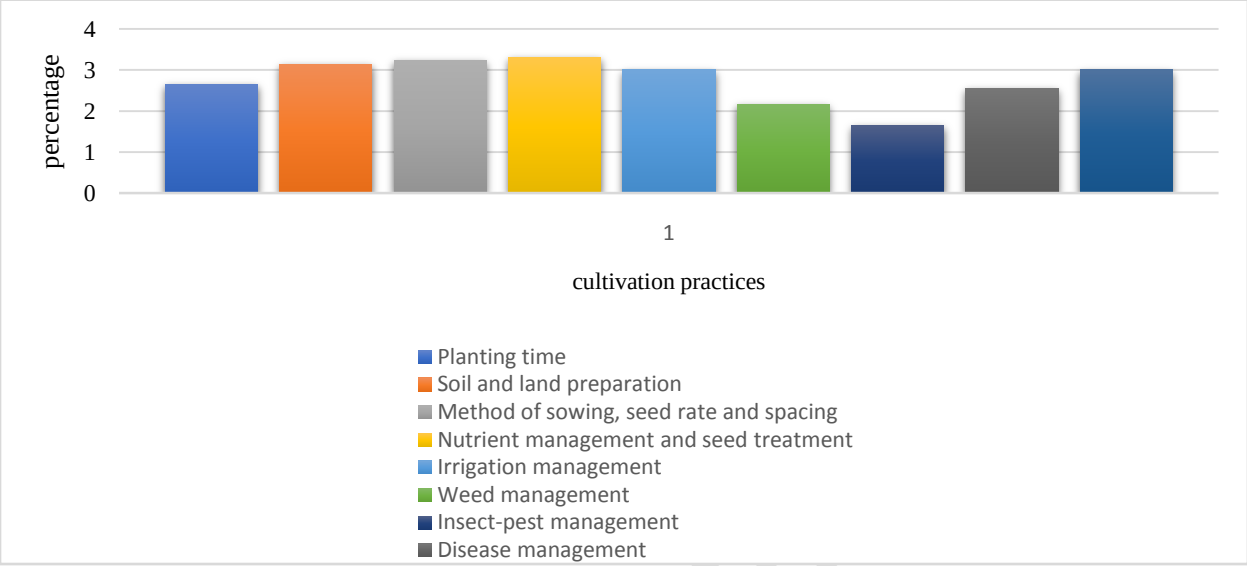


Fig 2: Distribution of respondents according to their knowledge level in maize

## 4. CONCLUSION

It can be concluded from the findings of this study that majority (40.5) of respondent belons to the age group of 40 -54 years followed by 32.9% respondents possess senior secondary level of education , 46.2% respondents are having jeevika institutional membership, BAO is most preferred extension contact and 21.9% are having 9 -14 years of farming experience. Result of the study on knowledge level in maize of respondents is presented in the table 6. The result from the knowledge level of respondents shows that the average knowledge in method of sowing, seed rate and spacing is 3.24% followed by nutrient management and seed treatment average knowledge level with 3.31%, 3.14% of knowledge level in Soil and land preparation, 3.01% of knowledge level in Irrigation management and in harvesting practices, 2.65% knowledge level in planting time, 2.56% level of knowledge in disease management, 2.17% knowledge level in weed management and 1.65% knowledge level in insect-pest management. Further it is concluded that average knowledge level in planting time, soil and land preparation, in method of sowing, seed rate and spacing, irrigation management, insect-pest management is higher in Bhagalpur respondents compare to Darbhanga district respondents. Average knowledge level in insect -pest management is low in both districts compare to other cultivation practices.

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