

## **Relative Influence of Socio-Personal Characteristics and Utilization of Fertilizer Technology in Wheat Cultivation**

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### **ABSTRACT**

A study was conducted in Aligarh district of Uttar Pradesh. The study covered ten villages and 300 respondents belong to small categories. The study aim to generalize socio- economic profile of the farmers and utilization of fertilizer technology in the area under study. The study highlighted that majority (63.33%) of the small farmers were in 31 to 45 year age group and living in pucca house. The majority (87.15%) respondents were educated up to high school there annual income range from 10,000 to 25,000 and member of atleast one organization they living in nuclear family system. Only 45.33 per cent respondent adopted the fertilizer technology in the range of 76-100 per cent level of adoption. In the selected area maximum overall adopters were belong to medium adoption categories with their nitrogenous, phosphatic and potassic fertilizers adoption i. e. 44.67, 41.00 and 04.67 per cent respectively. The correlation study indicated that adoption levels of nitrogenous and phosphatic fertilizer were significantly correlated with income and socio economic condition of the respondents.

Wheat is the most important stable foodgrains of human race, only next to rice. It is the chief source of food of the half of the world. In India, it occupies a premier place among cereals in term of both area and production. India ranks forth amongst the wheat growing countries of the world in respect of area as well as production. About 80 per cent of the total production of wheat is confined to Uttar Pradesh, Punjab, Madhya Pradesh, Rajasthan, Bihar and Haryana. The average yield in India is 28.79 q/ha. The productivity of the crop was found to be poor when compared to actual field condition. Among other reasons, the poor yield might be due to the fact that cereals growers were no applying the recommended doses of manures and fertilizers in their field. Keeping this in view the present study was undertaken to determine the overall adoption level and extent of adoption of fertilizer technology as well as to study the relationship of socio-economic charecteristics with their extent of adoption of recommended fertilizer technology.

### **METHODOLOGY**

The study was conducted in Dhanipur, Akraabad and Gangiri blocks of Aligarh District in Uttar Pradesh. Further, ten villages were selected by random sampling method and 30 respondents were selected from each village. Thus, in all 300 respondents were selected for the study. The data were collected through personal interviews using well prepared and pre-tested interview schedule and analysed with the help of percentage and correlation coefficient basis.

### **RESULTS AND DISCUSSION**

#### **a) Profile of the respondents**

The data presented in table 1 indicating that majority of the farmers are in middle age group, belongs to general cast, posses primary to high education, having 4-5 acres of land, their main occupation is agriculture.

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**Table 1: Socio-economic status of the farmers**

| S. No.                                      | Distribution of respondents          | No. of respondents | %of respondents |
|---|--------------------------------------|--------------------|-----------------|
| <b>Age-wise distribution</b>                |                                      |                    |                 |
| 1   | Up to 30 years                       | 52                 | 21.67           |
| 2   | 31 to 45 years                       | 152                | 63.33           |
| 3   | Above 45 years                       | 36                 | 15.00           |
| <b>Caste-wise distribution</b>              |                                      |                    |                 |
| 1.  | Schedule caste                       | 80                 | 33.34           |
| 2   | Backward caste                       | 51                 | 21.25           |
| 3   | Upper caste                          | 109                | 45.41           |
| <b>Education-wise distribution</b>          |                                      |                    |                 |
| 1   | Illiterate                           | 38                 | 15.48           |
| 2   | Can read only                        | 49                 | 20.42           |
| 3   | Primary                              | 52                 | 21.67           |
| 4   | High School/Intermediate             | 71                 | 29.58           |
| 5   | Graduate/PG                          | 30                 | 12.50           |
| <b>Total</b>                                |                                      | <b>240</b>         | <b>100.00</b>   |
| <b>Land ownership-wise distribution</b>     |                                      |                    |                 |
| 1   | Up to 1 acre                         | 22                 | 9.17            |
| 2   | 2 to 3 acre                          | 48                 | 20.00           |
| 3   | 4 to 5 acre                          | 79                 | 32.92           |
| 4   | Above 5 acre                         | 91                 | 37.91           |
| <b>Total</b>                                |                                      | <b>240</b>         | <b>100.00</b>   |
| <b>On the basis of type of house</b>        |                                      |                    |                 |
| 1   | Kaccha                               | 64                 | 26.66           |
| 2   | Pucca                                | 146                | 60.84           |
| 3   | Mixed                                | 30                 | 12.50           |
| <b>Total</b>                                |                                      | <b>240</b>         | <b>100.00</b>   |
| <b>On the basis of occupation</b>           |                                      |                    |                 |
| 1   | Labour                               | 21                 | 8.75            |
| 2   | Caste occupation                     | 30                 | 12.50           |
| 3   | Business                             | 44                 | 18.33           |
| 4   | Agriculture                          | 128                | 53.34           |
| 5   | Service                              | 17                 | 7.08            |
| <b>Total</b>                                |                                      | <b>240</b>         | <b>100.00</b>   |
| <b>On the basis of social participation</b> |                                      |                    |                 |
| 1   | Member of one organisation           | 135                | 56.25           |
| 2   | Member of more than one organisation | 78                 | 32.50           |
| 3   | Office bearer                        | 12                 | 5.00            |
| 4   | Public leader                        | 15                 | 6.25            |
| <b>Total</b>                                |                                      | <b>240</b>         | <b>100.00</b>   |

**On the basis of family type**

|              |        |            |               |
|--------------|--------|------------|---------------|
| 1            | Single | 198        | 82.50         |
| 2            | Joint  | 42         | 12.50         |
| <b>Total</b> |        | <b>240</b> | <b>100.00</b> |

**On the basis of family size**

|              |                 |            |               |
|--------------|-----------------|------------|---------------|
| 1            | Up to 5 members | 158        | 65.83         |
| 2            | Above 5 members | 80         | 34.17         |
| <b>Total</b> |                 | <b>240</b> | <b>100.00</b> |

**On the basis of income**

|              |                           |            |               |
|--------------|---------------------------|------------|---------------|
| 1            | Below Rs. 50001-          | 11         | 4.58          |
| 2            | Rs. 5,0001- Rs. 10,0001-  | 14         | 5.83          |
| 3            | Rs. 10,0001- Rs. 15,000/- | 59         | 24.58         |
| 4            | Rs. 15,000/- Rs. 20,0001- | 67         | 27.92         |
| 5            | Rs. 20,0001- Rs. 25,0001- | 54         | 22.50         |
| 6            | Rs. 25,0001- Rs. 30,0001- | 19         | 7.92          |
| 7            | Above Rs. 30,000          | 16         | 6.67          |
| <b>Total</b> |                           | <b>240</b> | <b>100.00</b> |

**On the basis of farm power**

|   |                 |     |       |
|---|-----------------|-----|-------|
| 1 | Bullock cart    | 20  | 8.33  |
| 2 | Tube well       | 72  | 30.00 |
| 3 | Diesel pump set | 58  | 24.17 |
| 4 | Chaff cutter    | 117 | 48.75 |
| 5 | Tractor         | 18  | 7.50  |

**On the basis of farm implements**

|   |             |    |       |
|---|-------------|----|-------|
| 1 | Desi plough | 41 | 17.08 |
| 2 | M.B. Plough | 26 | 10.83 |
| 3 | Desi narrow | 22 | 9.16  |
| 4 | Cultivator  | 27 | 11.25 |
| 5 | Sprayer     | 25 | 10.41 |
| 6 | Seed drill  | 40 | 16.66 |

(Note: - More than one item in farm power and farm implements has been reported by the respondents, hence total exceed 240)

**b) Adoption level:**

It is evident from the data presented in Table 2 that 44.33 per cent respondents adopted nitrogenous fertilizer application to the extent of 26.50 per cent level, while 37.00 per cent respondents had adopted the same practice to the level of 51-75 per cent of the recommended dose of the nitrogenous fertilizers. Table further reveals that the 50.00 per cent and 56.33 per cent of the respondents adopted nitrogenous fertilizers in terms of recommended method of application and time of application in the extent of 76-100 per cent. Further, 44 per cent small farmers have adopted recommended dose

of phosphatic fertilizers to the extent of 76-100 per cent of recommended technology. The phosphatic fertilizer in terms of recommended method of application and time of application are adopted to the level of 76-100 per cent by 53.67 per cent and 56.00 per cent respondents, respectively.

The table also indicates that 9.00 per cent small

farmers have adopted dose of potassic fertilizers to the extent of 25.00 per cent of recommended technology. The potassic fertilizers in terms of recommended method of application are adoption level upto 25.00 per cent by 8.33 per cent and 7.67 per cent respondents, respectively (Jaiswal and Rathore (1985) and Srivastava and Singh (1989)).

**Table-2. Adoption level of fertilizer technology  
Package of Practice of fertilizer technology**

| S. No.       | Level of adoption<br>(in term of percentage) | Nitrogen Fertilizer     |                         |                         | Phosphate Fertilizer    |                         |                         | Potassic Fertilizer   |                       |                       |
|--------------|--|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-----------------------|-----------------------|-----------------------|
|              |  | Dose/ha                 | Method of application   | Time of application     | Dose/ha                 | Method of application   | Time of application     | Dose/ha               | Method of application | Time of application   |
| 1.           | Up to 25                                     | 15<br>(5.0)             | 11<br>(3.67)            | 33<br>(11.0)            | 60<br>(20.0)            | 17<br>(5.67)            | 7<br>(2.33)             | 27<br>(9.0)           | 25<br>(8.33)          | 23<br>(7.67)          |
| 2.           | 26-50  | 133<br>(44.33)          | 53<br>(17.67)           | 24<br>(8.0)             | 26<br>(8.67)            | 29<br>(9.67)            | 22<br>(7.33)            | 15<br>(5.0)           | 10<br>(3.33)          | 12<br>(4.0)           |
| 3.           | 51-75  | 111<br>(37.00)          | 86<br>(28.67)           | 74<br>(24.67)           | 87<br>(29.0)            | 93<br>(31.0)            | 103<br>(34.33)          | 3<br>(1.0)            | 3<br>(1.0)            | 3<br>(1.0)            |
| 4.           | 76-100                                       | 41<br>(13.67)           | 150<br>(50.00)          | 169<br>(56.33)          | 127<br>(42.33)          | 161<br>(53.67)          | 168<br>(56.00)          | -                     | -                     | -                     |
| <b>Total</b> |  | <b>300<br/>(100.00)</b> | <b>300<br/>(100.00)</b> | <b>300<br/>(100.00)</b> | <b>300<br/>(100.00)</b> | <b>300<br/>(100.00)</b> | <b>300<br/>(100.00)</b> | <b>45<br/>(15.00)</b> | <b>38<br/>(12.67)</b> | <b>38<br/>(12.67)</b> |

**c) Overall adoption of fertilizers :**

It is evident from Table 3 that in terms of nitrogenous fertilizers 44.67 per cent small farmers has adopted the same as to medium adoption level, while 21.00 per cent have the high adoption level. The percentage of farmers who happens to be low adopters is 34.33 per cent.

The table shows that 43.00 per cent small farmers

have high adoption level in terms of phosphatic fertilizers, while 41.00 per cent and 16.00 per cent small farmers are fall in the categories of medium and low adoption, respectively. While, 10.33 per cent of small farmers have low adoption level in term of potassic fertilizers and 3.67 per cent small farmers have medium adoption level (Sharma et al., 2005).

**Table 3. Overall adoption of fertilizer technology**

| S.No.        | Adoption Categories | Nitrogen Fertilizer |               | Phosphatic Fertilizer |               | Potassic Fertilizer |               |
|--------------|---------------------|---------------------|---------------|-----------------------|---------------|---------------------|---------------|
|              |                     | No.of respondent    | Percentage    | No.of respondent      | Percentage    | No.of respondent    | Percentage    |
| 1.           | Low adoption        | 103                 | 34.33         | 48                    | 16.00         | 31                  | 10.33         |
| 2.           | Medium adoption     | 134                 | 44.67         | 123                   | 41.00         | 14                  | 4.67          |
| 3.           | High adoption       | 63                  | 21.00         | 129                   | 43.00         | 0                   | 0             |
| <b>Total</b> |                     | <b>300</b>          | <b>100.00</b> | <b>300</b>            | <b>100.00</b> | <b>45</b>           | <b>100.00</b> |

**d) Correlation between socio-economic characteristics and adoption level of fertilizer technology:**

The data presented in Table 4 indicating that in case of nitrogenous fertilizers application, a highly significant and positive correlation of nitrogenous fertilizers

level was observed with caste, education, family type, income, size of holding, farm power, change agent linkage and socio-economic status. However, the age, family size, social participation and urban contact were found non-significant with the level of nitrogenous fertilizers. In case of phosphatic fertilizers, there was a highly significant

and positive relationship between the family composition (type), income, farm power and socio-economic status. The size of holding, contact with extension agencies, social participation and urban contact were found to be non-significant with the level of adoption of fertilizer technology.

The table further reveals that all the socio-economic variables are non significantly related to the potassic technology, not a single farmer used potassic fertilizer because the study area soil were rich in potash.

**Table- 4. Relationship Between socio-economic characteristics and fertilizer technology**

| S.No. | Socio-economic            | Nitrogen Fertilizer | Phosphate Fertilizer | Potassic Fertilizer |
|-------|---------------------------|---------------------|----------------------|---------------------|
| 1.    | Age (r)                   | 0.068 NS            | -0.095 NS            | 0.065 NS            |
| 2.    | Caste (x2)                | 24.322**            | 12.404 NS            | 6.245 NS            |
| 3.    | Education (x2)            | 12.344 NS           | 008.772 NS           | 5.246 NS            |
| 4.    | Family type (x2)          | 03.910 NS           | 15.515**             | 2.325 NS            |
| 5.    | Family size (x2)          | 03.555 NS           | 05.123 NS            | 3.688 NS            |
| 6.    | Income (r)                | 0.421 **            | 0.303**              | 0.024 NS            |
| 7.    | Size of holding (r)       | 0 .. 93 NS          | -0.045 NS            | 0.044 NS            |
| 8.    | Farm power (r)            | 0.320**             | 0.212**              | 0.018 NS            |
| 9.    | Change agent linkage (x2) | 32.792**            | 04.722 NS            | 9.541 NS            |
| 10.   | Social Participation (x2) | 12.347**            | 01.173 NS            | 8.662 NS            |
| 11.   | Urban Contact (r)         | -0.012 NS           | 0.082 NS             | 0.073 NS            |
| 12.   | Socio-economic status (r) | 0.333**             | 0.124*               | 0.060 NS            |

Note: - \*\* Significant at 1 % level \* Significant at 5% level, NS- Non -Significant

### CONCLUSION

The study reveals that in the selected area maximum overall adopters were belong to medium adoption categories with their nitrogenous, phosphatic and potassic fertilizers adoption i. e. 44.67, 41.00 and 04.67 per cent respectively. The correlation study indicated that adoption levels of nitrogenous and phosphatic fertilizer were significantly correlated with income and socio economic condition of the respondents.

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