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## Training Needs Assessment of Farmers of Bihar : A Zone Wise Analysis

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### ABSTRACT

In the present system of imparting training to farmers, the training areas need are pre-decided by the planners which often do not match with the actual requirement, and do not fulfil the desired objectives of the training. Also, the farmers become uninterested in getting their skill improvement in the areas not suited to their needs. Keeping the above facts in mind, a study was undertaken during 2009-12 at ICAR RCER, Patna with the objectives to study the socio-economic attributes of farmers and field functionaries, to identify the training needs of farmers and field functionaries, and to suggest suitable policy recommendations. Data were collected through well-structured schedules developed for the purpose from 25 randomly selected farmers representing different socio-economic groups from each village selecting two villages from each block, two blocks from each districts and two districts from each agro-ecological zones of Bihar. Results indicated that input dealers should be trained on general agricultural aspects like safe use of pesticides, spraying techniques etc. as they are one of the important sources of information for the farmers. More time should be given on skilled demonstration, field trips, exposure visits so as to increase adoption of the technology.

**Keywords:** Farmers training needs, assessment, technology, Bihar, Zone

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### INTRODUCTION

Bihar with a geographical area of 94.2 thousand square km is divided by river Ganges into two parts, the north Bihar with an area of 53.3 thousand square km, and the south Bihar having an area of 40.9 thousand square km. Geographically the state is located between 24°20' and 27°31' north latitude and between 83° 19' to 88° 17' east longitude. Agro-climatically the state falls under middle Gangetic plains region. The state lies 53 metres above the mean sea level. The state comprises of two distinct regions viz. North Bihar and South Bihar. The river Ganges separates the state into North and South (Salam *et al.*, 2013).

Rai and Singh (2008) observed that majority of farmers belonged to low socio economic status. Highly demanded areas for training were crop planning, water conservation technique and irrigation and water management and significant association was found between socio economic statuses and training needs.

Bajpai *et al.*, (2007) reported the major areas in which farmers needed more considerations were plant protection measures, seed treatment, fertilizer treatment, improved and hybrid seed varieties, seed rate and spacing and land preparation. Regarding the plant protection measures, farmers wanted knowledge about name of insecticides and pesticides, dose / quantity of use and also the methods of use of those chemicals. Same in the area of seed treatment and fertilizer management they wanted to know the improved high yielding varieties that enhance the productivity.

Rajput *et al.* (2007) concluded that majority of the Bt cotton farmers had expressed their need for training on Bt cotton technology. The analysis of correlation of selected characteristics like age, education, land holding, area under Bt cotton, annual income, farming experience, socio-economic status, social participation, scientific orientation were found positively and significantly towards their training needs. They also observed that majority of Bt cotton farmers gave highest emphasis of training needs on features of Bt cotton technology, insect scouting, detection of ETL of different pests, application of manures and fertilizer management, various Bt cotton varieties available in the market, hybrids features and its cultivation practices, harvesting and marketing of Bt cotton.

Landgeand Tripathi (2006) observed that the extension functionaries (Kisan Mitras) perceived, crop production, vermicomposting, public health and sanitation, seed production technology, medicinal plant growing, and farm equipment management, as the top five most-needed training areas in the agriculture and allied areas. Further in livestock, they gave preference to feeding, processing of milk and milk products, breeding of cattle and buffaloes, health care of animals and financial management, and feed conservation techniques. While in agriculture particularly the most needed training areas were seed treatment, land preparation, irrigation management and training in sowing techniques.

The state of Bihar is being talked about as a sleeping giant of Indian agriculture. The National Commission on Farmers has concluded that Bihar and Eastern India present uncommon

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opportunities for becoming another “fertile crescent” even as the present Fertile Crescent (Punjab, Haryana and Western Uttar Pradesh) have reached a plateau in terms of productivity and are facing a state of economic and ecological distress. Water, the lifeline of agriculture, is abundant in Bihar and the real issue is not availability but its management. In order to increase the overall production and profitability in agriculture, the farmers of the region need to be trained in latest techniques and innovations (National Commission on Farmers, 2006).

In the present system of imparting training to farmers, the training areas need are pre-decided by the planners which often do not match with the actual requirement, and do not fulfil the desired objectives of the training. Also, the farmers become uninterested in getting their skill improvement in the areas not suited to their needs. Keeping the above facts in mind, a study was undertaken during 2009-12 at ICAR RCER, Patna with the following objectives:

- 1) To study the socio-economic attributes of farmers and field functionaries
- 2) To identify the training needs of farmers and field functionaries
- 3) To suggest suitable policy recommendations

## MATERIALS AND METHODS

Based on soil characterization, rainfall, temperature and terrain, three main agro-climatic zones in Bihar have been identified. These are: Agro Climatic Zone – I (North West Alluvial Plain), Agro Climatic Zone – II (North East Alluvial Plain), Agro Climatic Zone-III (South Alluvial Plain), each with its own potential and prospects. Out of total 38 districts in Bihar, 13 districts belong to ACZ I, 8 Districts to ACZ II, and 17 Districts to ACZ III. These zones differ in cropping patterns, soil characteristics and availability of alternative sources of irrigation (Singh *et al.*, 2014).

For the collection of data, two districts from each agro-ecological zone were selected randomly. From each selected districts, two blocks and from each block two villages were

selected and from each village 25 farmers representing different socio-economic groups were selected randomly. Data were collected through well-structured schedules developed for the purpose.

## RESULTS AND DISCUSSIONS

### Socio economic characteristics

District-wise demographic characteristics of selected households of Bihar have been depicted in Table 1. It is evident from the table that Joint family is still the preferred family system in Jamui district whereas in other districts nuclear family system is preferred. The percentage of households of general caste group was more in Jamui and Patna districts as compared to other districts. In Katihar, the selected households were uniformly distributed among general, OBC and SC/ST caste groups whereas in other districts the percentage of SC/ST households was found less. It is also clear from table that higher education was opted by farmers of Zone I and Zone III, whereas the percentage of graduates was minimum in the villages of Zone II. Percentage of illiterates was high in Vaishali (22 %) and Katihar (34 %). The percentages of illiterates in selected households were very less ranging from 2 % to 8 %. Agriculture was the main occupation in all the three zones.

An animal husbandry/dairy practice was found the main secondary occupation in all the zones followed by labour/others. Labour is the secondary occupation of 21 % HH in Zone II as against 8 % and 6.5 % in Zone I and II respectively. The percentage of small and marginal farmers is more in Zone I than the other two zones. The association of farmers with any society is more in Zone II in general and Darbhanga in particular. It is mainly because of association of them with the fisheries society to whom public water bodies are leased. The average land holding is maximum in Katihar and minimum in Vaishali district. The leasing pattern of land was found more common in Katihar district. No such pattern was observed in Patna district. Cultivation of cash crops may be one of the reasons.

**Table 1:** District-wise demographic characteristics of selected households of Bihar (in %)

| Particulars        |                       | Zone I   |            | Zone II |        | Zone III |       |
|--------------------|-----------------------|----------|------------|---------|--------|----------|-------|
|                    |                       | Vaishali | Darbhangha | Katihar | Purnia | Patna    | Jamui |
| Family Type        | Joint                 | 31       | 10         | 48      | 54     | 53       | 78    |
|                    | Nuclear               | 69       | 90         | 52      | 46     | 47       | 22    |
|                    | General               | 32       | 1          | 25      | 12     | 77       | 59    |
| Caste              | OBC                   | 53       | 97         | 40      | 87     | 19       | 38    |
|                    | SC/ST                 | 15       | 2          | 35      | 1      | 4        | 3     |
| Educational Status | Graduate & above      | 11       | 11         | 9       | 8      | 25       | 13    |
|                    | Matric & Intermediate | 35       | 52         | 30      | 32     | 49       | 44    |
|                    | Below matric          | 32       | 32         | 27      | 54     | 24       | 35    |
|                    | Illiterate            | 22       | 5          | 34      | 6      | 2        | 8     |

### Crops and cropping system

Paddy is the most prevalent *Kharif* crop in all the districts/zones. However, Jute is another important *Kharif* crop of Purnia district (Table 2). Wheat, potato and maize are

the important *rabi* crops of all the districts. Among summer crops, vegetables and Moong/Urd are taken by farmers in Zone II and III. But for farmers of Zone II, Boro rice and maize are the main crop apart from vegetables.

**Table 2:** Principal crops grown in selected districts (in %)

| Crop Season   | Crops      | Vaishali | Darbhangha | Patna | Jamui | Katihar | Purnia |
|---------------|------------|----------|------------|-------|-------|---------|--------|
| <i>Kharif</i> | Paddy      | 96       | 49         | 99    | 95    | 98      | 100    |
|               | Maize      | 38       | 53         | 57    | 54    | 16      | 47     |
| <i>Rabi</i>   | Wheat      | 92       | 100        | 95    | 93    | 99      | 100    |
|               | Lentil     | 9        | 95         | 70    | 61    | 1       | -      |
|               | Potato     | 61       | 99         | 85    | 75    | 43      | 73     |
|               | Vegetables | 23       | 93         | 78    | 53    | 50      | 24     |
|               | Maize      | 11       | 80         | 72    | 51    | 71      | 93     |
|               | Moong/Urd  | 39       | 92         | 0     | 24    | 1       | -      |
| <i>Summer</i> | Vegetables | 22       | 82         | 10    | 12    | 36      | 48     |
|               | Paddy      | -        | -          | -     | -     | 27      | 1      |
|               | Maize      | -        | 5          | -     | -     | 15      | 48     |

**Trainings obtained**

The details of trainings obtained by farmers are shown in Table 3 below. It was found that the farmers of Zone II are less exposed to trainings than the farmers of other Zones. The farmers of Jamui have taken maximum numbers of trainings

on almost all aspects of agriculture whereas the selected farmers of Katihar have not participated in any training programmes and only meager percentage of farmers of Purnia (2%) have been imparted training on crop production technologies.

**Table 3:** District wise details of training obtained (in %)

| Area of training            | Vaishali | Darbhangha | Patna | Jamui | Katihar | Purnia |
|-----------------------------|----------|------------|-------|-------|---------|--------|
| Crop production             | 18       | 13         | 3     | 74    | 0       | 2      |
| Horticulture                | 0        | 0          | 3     | 57    | 0       | 0      |
| Animal husbandry            | 2        | 3          | 3     | 66    | 0       | 0      |
| Aromatic & medicinal plants | 9        | 1          | 0     | 12    | 0       | 0      |
| Water management            | 1        | 3          | 6     | 54    | 0       | 0      |
| IFS                         | 2        | 1          | 10    | 47    | 0       | 0      |
| INM                         | 0        | 0          | 1     | 35    | 0       | 0      |
| IPM                         | 5        | 1          | 5     | 39    | 0       | 0      |

**Sources of Information**

Input dealers and Progressive farmers are the two main sources of information for the farmers of Makhana growing

districts (Zone II and Darbhanga district of Zone I). For farmers of other districts, TV, Radio, Newspaper and Agricultural experts are the main sources of information.

**Table 4:** Sources of information in different districts (in %)

| Sources of Information | Vaishali | Darbhangha | Patna | Jamui | Katihar | Purnia |
|------------------------|----------|------------|-------|-------|---------|--------|
| Television             | 71       | 43         | 27    | 62    | 72      | 62     |
| Radio                  | 65       | 69         | 58    | 97    | 39      | 64     |
| Newspaper              | 72       | 67         | 76    | 74    | 51      | 53     |
| Farmers fair/          | 54       | 76         | 57    | 86    | 40      | 12     |
| Exhibitions            |          |            |       |       |         |        |
| Agricultural Experts   | 55       | 17         | 68    | 82    | 58      | 12     |
| Progressive farmers    | 53       | 89         | 47    | 93    | 93      | 98     |
| Input dealers          | 38       | 97         | 25    | 62    | 76      | 100    |

**Training Needs**

The major and minor training heads are given in Tables 5 and 6. Improved crop production techniques and Livestock Production and management are the main themes of training needs of farmers of Zone I. In Zone I and III B, Improved crop

production techniques and Vermi-composting are the main training needs, whereas Vermi-composting and Livestock Production and Management are the major training needs of the farmers of Zone III A.



**Table 5:** District-wise major themes of training needs (%)

| Theme areas                         | Vaishali | Darbhanga | Patna | Jamui | Katihar | Purnia |
|-------------------------------------|----------|-----------|-------|-------|---------|--------|
| Improved crop production            | 25       | 98        | 75    | 77    | 71      | 92     |
| Livestock production and management | 24       | 84        | 74    | 83    | 44      | 76     |
| Horticultural crop production       | 19       | 90        | 0     | 74    | 18      | 54     |
| Soil and fertility management       | 22       | 90        | 32    | 73    | 32      | 57     |
| Irrigation and water management     | 20       | 94        | 29    | 73    | 26      | 47     |
| Vermi -composting                   | 49       | 95        | 20    | 97    | 27      | 31     |
| Others                              | 15       | 75        | 16    | 56    | 25      | 25     |

Under Improved crop production techniques, Weed management, Integrated Pest Management and Nursery Management are the specific topics in which the farmers require trainings. Under Livestock Production and Management, Dairy Management is the main topic on which

the farmers require trainings. Water conservation techniques and seed production are the other training needs of the farmers. Majority of the farmers, irrespective of Zones, are of the opinion that 30 - 40 % time of training should be devoted towards field trips/exposure visits.

**Table 6:** District wise specific training needs (in %)

| Topics                         | Vaishali | Darbhanga | Patna | Jamui | Katihar | Purnia |
|--------------------------------|----------|-----------|-------|-------|---------|--------|
| Weed management                | 22       | 98        | 75    | 75    | 71      | 81     |
| Integrated Pest Management     | 14       | 92        | 68    | 63    | 55      | 92     |
| Nursery management             | 4        | 80        | 56    | 76    | 60      | 54     |
| Seed production                | 21       | 54        | 54    | 78    | 54      | 80     |
| Dairy management               | 18       | 31        | 74    | 83    | 44      | 76     |
| Water conse rvation techniques | 6        | 94        | 29    | 73    | 12      | 47     |
| Soil & water testing           | 9        | 90        | 32    | 72    | 32      | 57     |
| Fert. Management of soil       | 6        | 84        | 23    | 43    | 19      | 46     |
| Organic farming                | 25       | 85        | 7     | 45    | 22      | 40     |
| Improved vegetable cultivation | 19       | 90        | 20    | 74    | 14      | 54     |

## CONCLUSION

Based on above study it was concluded that since input dealers are the main and first-hand information dissemination sources, there is urgent need of training of input dealers on general agricultural aspects like safe use of

pesticides, spraying techniques etc. as they are one of the important sources of information for the farmers. There is urgent need to more time should be given on skilled demonstration, field trips, exposure visits so as to increase adoption of the technology.

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