RESEARCH NOTE

Impact of Training on Knowledge and Adoption of Jute Technology in Uttar Dinajpur District of West Bengal, India

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Paper Received on February 20, 2017, Accepted on March 12, 2017 and Published Online on April 01, 2017

ABSTRACT

India is one of the largest jute producing country. Jute is an eco-friendly crop; extensively grown at commercial scale in the province of West Bengal in India. West Bengal tops the list in respect of yield generation out of all of the states of India. Jute production is labour intensive and provides subsistence to millions of farm-families. In order to expedite jute production, various government and non-government agencies, in West Bengal, are actively working to transfer the protocol of improved cultivation strategy and field based practical knowledge to jute farmers. Therefore, an attempt has been made to assess the improvement of knowledge and cultivation practices due to the adoption of recommended technologies following training and demonstration programme. In the present study beneficiary farmers are considered as 'experimental group' and non-beneficiaries as a 'control group'. It is clearly observed from this study that beneficiary farmers achieved higher knowledge and adoption level than non-beneficiaries in different farming technology and practice. Knowledge and adoption levels of beneficiary farmers in use of high yielding varieties, land preparation, seed treatment, suggested composite, plant protection measures, irrigation, method of pesticide application, retting procedure and fibre extraction were 100, 95, 80, 95, 95, 100, 90, 90 and 80 per cent and 100, 75, 60, 85, 85, 95, 80, 85 and 60 per cent respectably. On the other hand knowledge and adoption level in non-beneficiaries were 100, 100, 70, 90, 90, 100, 70, 90 and 70 per cent and 60, 50, 40, 70, 70, 80, 60, 90 and 60 percent respectably. In the present study the impact of training and demonstration to the farmers to adopt the technology bases tools including cultural protocol was 17.87 per cent over the existing knowledge and management practices. It can be thus safely concluded from observation that there is significant role of farm-training in promotion of improved production practices of jute and ensuring their adoption. Substantial impact of training over the existing knowledge and adoption of the beneficiary farmers than the non-beneficiary farmers was also observed.

Key words: *Demonstration; Impact change; Jute farmers; Agricultural extension workers; Training; Adoption level;*

Jute is the second most economically important crop, grown widely at commercial scale in eastern part of India. Nationally, it covers an area of 0.8 million hectare and yields about 10 million bales of fibre sharing 40 per cent of global production. According to *Food and Agriculture organization* (FAO) *of United Nations' (2014),* West Bengal holds an area of 595000 ha for jute cultivation and thus tops the list in Indian subcontinent with an annual production rate of 1831074.7 metric tons. Production of the crop is labour intensive and thus may provides job assurance to 12 million farm families. The direct and indirect employment related to jute industry is 0.25and 2.5 million people respectively (*CRIJAF, 2004*).

Production of jute in India is outstanding with an average low export of 162,000 tonnes of raw jute. Jute is the most affordable natural fibres and only second to the cotton in amount of production (*CRIJAF, 2004*). In India, jute is predominantly cultivated by the marginal (65%) and small (25%) land-holding farmers. West Bengal contributes to about 80 per cent national jute production (*Chapke et al. 2006*). Area for jute production is about

8898 ha in Uttar Dinajpur within West Bengal. The gross production is 51554 metric tons with an average production rate of 1784 Kg/ha (*Principal Agricultural Office, Uttar Dinajpur, 2005*).

District Uttar Dinajpur offers a congenial situation that is encouraging for jute production. Favourable agro-climate and pedagogical profile is helpful for jute production. In order to disseminate the knowledge of cultivation to the farmers by agricultural extension workers like *Krishi Projukti Sahayak* (KPS) and also by different agencies, attempts have been made. Present study contemplates the assessment of the extent of dissemination of knowledge to the farmers in order to improve the production practices by the farmers.

METHODOLOGY

The present investigation was based on the experimental design of social research considering 'beneficiary group'- having acquaintance with field training as 'experimental group' and 'non-beneficiary group'- as a 'control group'. The investigation is mainly carried out in the selected villages of three adjacent administrative blocks namely Raiganj, Hemtabad and Kaliyaganj of Uttar Dinajpur District. Respondents are 20 trained farmers (beneficiary group) for 'knowledge level' analysis and 10 beneficiaries for 'adoption level' analysis. Respondents were selected randomly following questionnaire. Farmers who had participated in different training programmes related to jute production technology including insect pest management protocol were primarily selected. After selecting beneficiaries, equal number of non-beneficiaries (20+10 heads) was also enlisted randomly as 'control group' to assess the 'knowledge level' and technology 'adoption level'. Thus grossly 60 farmers are selected as sample for this study.

In the present investigation the role of different educational programme and the dissemination of knowledge by KPS were assessed in terms of gain in information that assist in 'knowledge' generation and adoption of affordable techniques by the 'beneficiary jute farmers' following the participation in demonstration and training programme in comparison with non-beneficiary as controlled group. The role was measured in terms of 'impact index' with the help of following formula (*Deshmukh et al. 2003*).

$$\text{Impact index} = \frac{(\text{MIK of B} - \text{MIK of NB}) + (\text{MIA of B} - \text{MIA of NB})}{2}$$

MIK = Mean Index of Knowledge

MIA = Mean Index of Adoption

B= Beneficiary, NB= Non beneficiary, Diff. = Difference

$$\text{Impact (\%) change} = \frac{\text{Sum of dif. of index Knowledge + Adoption}}{2}$$

RESULTS AND DISCUSSION

To measure the impact of training and demonstration in adoption of jute production Technology among Farmers in Uttar Dinajpur, twenty conditions on jute cultivation practices were identified and data were collected accordingly.

Observation on practice wise knowledge and adoption of jute production technology by the beneficiary and non-beneficiary farmers: All the beneficiary farmers had ample knowledge on high yielding varieties, methods and mode of sowing and module of time-fitted suitable plant protection measures (Table.1). Whereas, 80 per cent, 80 per cent and75 per cent non-beneficiary farmers respectively had knowledge of time of sowing, proper time of land selection and preparation that are related to improved jute production practices. On the other hand 60 per cent of non-beneficiary farmers had poor knowledge about proper seed treatment, appropriate use of biological manure and fertilizer, and fibre extraction process respectively. 'Beneficiaries' having experience of 'training' get acquainted with methodologies had knowledge about recommended seed rate (75%), intercultural operations (85%), irrigation (95%), retting (90%) and washing and drying of fibre (95%). Whereas, the values for non-beneficiary farmers for recommended seed rate (80%), intercultural operations (65%), irrigation (85%), retting (85%) and washing and drying of fibre (85%) are comparatively below than the 'beneficiaries'. Data reveals that the beneficiary farmers had good knowledge of recommended dose of manures and fertilizers, plant protection measures, appropriate time of harvesting and fibre extraction whereas, non beneficiary farmers, had poor knowledge (<65%) about these practices. Maximum level of 'knowledge gap' between beneficiary and non-beneficiary group of farmers (30%) was related to the adoption of recommended dose of biological manures and organic fertilizer.

In case of acceptance of techniques and technologies, all of the beneficiary farmers had adopted

Table 1. Extent of knowledge and adoption of methodology on jute production technology by the beneficiary and non –beneficiary jute farmers

Parameters	Assessment on adoption levelBy the farmers							
	Estimation on knowledge level				Estimation on adoption level			
	Beneficiary farmers (n=20)		Non-beneficiary farmers (n=10)		Beneficiary farmers (n=10)		Non-beneficiary farmers (n=10)	
	No.	%	No.	%	No.	%	No.	%
Use of high yielding varieties	20	100	20	100	10	100	6	60
Land selection	18	90	16	80	8	80	5	50
Land preparation	19	85	15	75	10	100	5	50
Appropriate time of sowing	17	95	16	80	9	90	6	60
Method of sowing	20	100	14	70	10	100	7	70
Adoption of Seed treatment	16	80	12	60	7	70	4	40
Suggested seed rate	15	75	16	80	7	70	5	50
Suggested chemical fertilizer	20	100	18	90	9	90	8	80
Suggested biological fertilizer	18	90	12	60	8	80	4	40
Suggested composite (biological+ chemical) fertilizer	19	95	17	85	9	90	7	70
Intercultural operation	17	85	13	65	7	70	5	50
Irrigation facility	19	95	17	85	9	90	7	70
Plant protection measures	20	100	19	95	10	100	8	80
Time of pesticide application	17	85	15	75	8	80	6	60
Method of pesticide application	18	90	16	890	7	70	6	60
Appropriate time of harvesting	19	95	16	80	8	80	7	70
Retting procedure	18	90	17	85	9	90	9	90
Fibre Extraction	16	80	12	60	7	70	6	60
Washing and drying of fibre	19	95	17	85	9	90	8	80
Marketing through proper agency	18	90	14	70	8	80	4	40

high yielding varieties, proper land preparation schedule, ideal method of sowing and suggested plant protection measures. Whereas, only 60 per cent non-beneficiary had adopted the high yielding varieties, 50 per cent land preparation techniques, 70 per cent ideal method of sowing and 80 per cent appropriate plant protection measures. 83.33 per cent beneficiary farmers had practiced the improved practices *viz*. time of sowing suggested dose of chemical fertilizer, recommended composition of 'composite' fertilizer, befitted irrigation facility, proper retting procedure and appropriate washing and drying of fibre. The percentage of non-beneficiary farmers adopted all of these practices was 60 per cent, 80 per cent, 70 per cent, 70 per cent and 90 per cent respectively. 70 per cent beneficiary and 40 per cent non-beneficiary farmers had adopted the seed treatment. The result depicted that maximum difference between beneficiaries and non-beneficiary farmers occur regarding the application of biological manures and fertilizer. Most of the non-beneficiary farmers are guided by the advice of fertilizer retailer and had not any exposure to training programme or demonstration by the agricultural extension officials.

Impact of trainings in consideration of knowledge and adoption of cultivation practices: The gross impact of agricultural training and demonstration to the farmers was computed as means index of knowledge (MIK) and mean adoption index (MIA). MIK and MIA were further computed to assess impact of change (Table 2).

In the present study the impact of training and demonstration to the farmers to adopt the technology bases tools including cultural protocol was 17.87 per cent over the existing knowledge and management. A noteworthy impact of the trainings and demonstration on the farmers was thus evicted.

Nurzaman et al. (2000) from Bangladesh

Table 2. Impact of trainings in terms of knowledge and adoption

Particular	Bene-ficiary	Non-Bene-ficiary	Diffe-rence
Mean knowledge index	90.75	78.00	12.75
Mean adoption index	84.50	61.50	23.00
Total	175.25	142.50	35.75
Impact (%) change		17.875	

collected data erratically from 120 farmers, 60 out of them were trained in Farmers' Field Schools (FFS) where information about best practices in written sources were given. The remaining 60 farmers were non-FFS. Adoption of integrated pest management (IPM) procedure by the farmers was considered as the dependent variable. 60 per cent of FFS farmers had medium practice, 28 per cent had high practice, and 12 per cent had low practice of IPM, while 57 per cent of the non-FFS farmers had low practice and 43 per cent had medium practice of IPM. Only extension contact and innovativeness correlated with the practice of IPM among non-FFS farmers. The success of an IPM programme depends upon the acceptance of cultivation protocol by the farmers. Present observation is in equivalence with the study of *Nurzaman et al. (2000).*

The present findings are in consonance with *Kumbhare (1996)* who had reported the significant impact of *Krishi Vigyan Kendra* training on their beneficiaries. Present study corroborates to the observation of *Paul et al. (2001)* who had noted significant impact of training for the farmers associated with mango production. Somewhat similar finding from Benin mango orchard was also reported by *Aimé et al., (2002)*. *Deshmukh et al. (2003)* had argued for a continuous training and demonstration for cotton growers to sustain productivity. From western parts of India, *Kumar et al. (2007)* had recoded that continues training with a handsome knowledge of time-fitted management schedule resulted in increase in production. *Aime et al. (2002)* had proclaimed the training programme should be conducted in phases.

Mengech et al. (1995) and *Koul et al. (2004)* have reported that improved educational programmes are aiming to pest controls are being observed in developing countries Plant clinics are setup to educate farmers about pest biology and appropriate controls have gained momentum in recent years. Accurate identification of insect pest and pest related problem, reasonable estimates of potential damage and determination of appropriate control have given in the 'tool box' of alternatives (*CAST, 2004*). Life-long learning with sound practical background and enlivening adult education are the leading concepts that have been well-documented for the improvement of agricultural policies among the farmers (*Anderson, 1985)*.The success of agricultural development programmes in developing countries like India largely depends on the nature and extent of effective use of mass media to mobilize people and to disseminate newly evolved agricultural technologies *(Birkenholtz et al. 1991)*. *Digha et al. (2014)* emphasized on proper training of the farmers for the restoration of soil organic carbon to sustaining and improving food production.

CONCLUSION

From the forging, significant variation of 'knowledge level' and 'adoption level' was noted between 'beneficiary' and 'non-beneficiary' farmer group. Thus it can be safely concluded from the study that there is significant role of training programme to improve jute production-practices among the farmers. Substantial increase of knowledge level following training programme and field demonstration of beneficiary farmers than the non-beneficiary farmers was also noted. There is the need for proper guidance and monitoring by agriculture office from land evaluation to marketing of jute fibre for higher production of jute and better livelihood of farmers.

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