

Research Paper :

Improvement in livelihood security through front line demonstrations for small and marginal farmers on Abhishek variety of rice in Ranchi

AJEET KUMAR SINGH AND ANJALI CHANDRA

Accepted : February, 2010

See end of the article for authors' affiliations

Correspondence to:

ANJALI CHANDRA

Department of Home Science, Ram Krishna Mission Ashrama, Divyayan K.V.K., RANCHI (JHARKHAND) INDIA

ABSTRACT

Rice is the main crop of Jharkhand and Ranchi district as well. Therefore, accelerated progress in enhancing productivity, profitability, stability, and sustainability of the major farming systems would be the best safety net against hunger and poverty. To overcome this situation, one of the components of crop production *i.e.* rice production was taken into account. Keeping in view the low yield of rice, it was decided to conduct Front Line Demonstrations on a suitable variety of rice which may be conducive to the local farming situation. For this purpose, Abhishek variety was selected out of several promising varieties. The objectives of Front Line Demonstration on Abhishek variety of rice was to demonstrate its productivity potentials through use of related improved practices and test its adoptability in terms of bio-physical and socio-economic condition of the farmers. Farmers reactions and feed back of rice Abhishek varieties showed that the highest increase in yield was recorded to be 68.66 per cent. The enhanced yield achieved through adoption of improved production technologies in rice, significantly improves livelihood security of the farmers.

Key words : Livelihood security, Demonstrations, Rice

Rice is a supreme commodity to mankind, because rice is truly related to life, culture, tradition and a means of livelihoods to millions. Paddy is the main crop of Jharkhand and also of Ranchi district as well. Rice is mainly grown during rainy season (*Kharif*) and in few pockets during summer season in the low land areas. Rice in general is the major crop in Jharkhand and is entirely dependent on rainfall. Front Line Demonstration (FLD) is one of the extension methods to evaluate performance of technology under on-farm conditions, technology adoption by the participating farmers and its diffusion to non-participating farmers. Scientific, suitable and location specific crop production technology supply holds the key to improve the crop production and sustaining livelihoods. Modern crop management practices have been developed, but in most of the cases, farmers are not applying these technologies. There is certainly a gap between recommended and farmers' practices. This gap is responsible for the low productivity and lower returns. Small and marginal farmers have tremendous scope for increasing productivity because the natural capital – the soil, the water, the biodiversity, can be enhanced through conservation and rejuvenation. Keeping in view, the contribution of rice production to the livelihoods of majority of small and marginal farmers, specially the tribal. Abhishek variety of rice was selected out of several promising varieties for front line demonstrations.

METHODOLOGY

One of the mandates of KVK is to conduct front line demonstrations to show the production potentialities of modern varieties and their package of practices. Front line demonstration (FLD) on Abhishek variety of rice was conducted in *Kharif* 2008 in different adopted villages of Ramakrishna Mission Ashrama, Divyayan Krishi Vigyan Kendra Ranchi, Jharkhand. The rationale behind selection of this variety was its yield potential as it was found highly satisfactory (76 qha⁻¹) on the farm of the Divyayan KVK. It was a full package demonstration with seed rate of 40 kg per hectare, line transplanting, balanced fertilizers 80:40:20:: N:P₂O₅:K₂O kg. per ha. The demonstrations were conducted in three adopted villages *i.e.* Bhuyadih in Tamar block, Kokre in Bero Block and Obar in Angara block of Ranchi district. A total number of 78 farmers were selected for the demonstration *i.e.* 28 farmers from Bhuyadih, 33 from Kokre and 17 from Obar village in 15.7 hectare. Special features of Abhishek variety are semi dwarf, of 125-130 day duration, short bold grains, moderately resistant to brown spot and sheath rot, highly resistant to gall-midge (biotype – 4), and resistant to stem borer and leaf folder. Local check (Farmers practice) variety was IR-36. Fertilizers dose and agricultural practices of local check (IR-36) was also same as Abhishek variety.

FINDINGS AND DISCUSSION

The results obtained have been shown in Table 1 which indicate percentage increase in yield under demonstration on paddy crops over farmers practice. A remarkable increase in yield recorded in all the demonstrations. The increase in yield ranges between 68.66% (in Tamar) and 64.96 % (in Bero). The Frontline Demonstration on Abhishek paddy had fabulous impact not only the farmers adopting but also on nearby farmers. Table 1 shows the performance of the demonstration in terms of yield increased over local check or farmers practice. Front Line Demonstrations of Abhishek showed a significant increase in yield over farmers' practices (IR-36), thus a higher income also. As discussed earlier, the increase in farmer income upshot improvement of his livelihood security. Productivity is output per unit input. Biological productivity is output per unit acre. Higher biological productivity translates into higher incomes for small farmers. The raised income resulted into higher purchasing capacity of the small and marginal farmers. Farmers can expand their earnings to purchase the essentials of their living and also the luxurious things. They can avail good education and health to their family members. This increase in pecuniary returns definitely increases their living standards. Use of modern crop production technologies is not only beneficial to the farmers engaged in farming but also the very small and marginal

of its different yield contributing characters such as grain per panicle, panicle length, 1000 grain weight etc. (Tanaka *et al.*, 1964 and Yoshida, 1981). It was observed that yield contributing characters were high in improved Abhishek variety than local check IR-36 (Table 3).

Economic impact of the crop:

The cost of cultivation per hectare was Rs. 12428/- . Average yield was 57.68 q ha⁻¹ and minimum rate of sale @ Rs. 7.5/- per kg. Therefore gross return came Rs. 43262.50/- and net return *i.e.* profit (Rs. 43262.50 – 12428.00) = 30834.50 per hectare. Benefit cost ratio was 2.48:1

Feed back for Development Department/Extension functionaries:

- Due to early maturing character, its water requirement is less, therefore it should be popularized for rain fed areas.
- The taste of rice good, bold nature, sticky as such and rural fold likes it very much.
- Crop weed competition was minimum due to early maturity.
- Less infestation of insects and pests.
- Yield is significantly higher than any other variety used by the farmers of this locality.
- It is resistant to stress.

Table 1 : Details of the front line demonstrations on rice (Abhishek)

Blocks	No. of farmers	Area (ha)	Average yield q ha ⁻¹		Per cent increase yield over local check (IR-36)
			Demonstration (Abhishek)	Local check (IR-36)	
Tamar	28	5.12	61.75	36.61	68.66
Bero	33	6.64	56.50	34.25	64.96
Angara	17	3.94	54.80	33.80	62.13
Demonstrations	78	15.7	57.68	34.88	65.25
C.D. (P=0.05)	-	-	NS	NS	-

NS – Non significant

farmers and landless workers depend upon farm labour. This increase also supports the agro-industries and workers associated with this. Average yield of 61.75 qha⁻¹ was received in Tamar Block, followed by Bero Block (56.50 qha⁻¹) and Angara block (54.80 qha⁻¹) in comparison to local check (IR-36) 36.61 qha⁻¹, 34.25 qha⁻¹ and 33.80 qha⁻¹, respectively. This may be due to differences in soil fertility level (Table 2). Soil fertility status of Tamar block was high in comparison to other two blocks. Due to this reason, yield of paddy was also high in comparison to other blocks. The district average yield was 13.6 qha⁻¹. The grain yield of paddy is a function

Table 2 : Comparative average yield parameters of Abhishek and local check IR-36

Sr. No.	Parameters	Abhishek	Local (IR-36)
1.	No. of effective tillers /meter	83	65
2.	No. of panicles/m ²	327	255
3.	No. of filled grains/ panicles	83.6	78.5
4.	Test weight (1000 grains)	26.27	22.11
5.	Insect pest incidence (%)	15	25
6.	Disease incidence (%)	10	20
7.	Weed incidence (%)	10	30
8.	Length of panicles (cm)	26.00	22.00

Table 3 : Average soil fertility status of different blocks

Blocks	pH	% O.C	Avail. N	Avail. P ₂ O ₅	Avail. K ₂ O
Tamar	6.58	0.46	225.5	23.67	301.8
Bero	6.40	0.47	205.0	19.54	260.0
Angara	5.96	0.39	200.7	17.50	245.4
C.D. (P=0.05)	NS	0.03	0.84	0.19	1.85

NS-Non significant

– Resistant to bacterial disease, gall midage, moderately resistant to brown spot, stem rot, stem borer and leaf folder.

Conclusion:

Jharkhand agricultural economy and food security depend vitally on the small holder farmers. It is therefore, incumbent upon the nation to assist the small and marginal farmers to increase their productivity and to augment their assets and entitlements. Paddy is the main crop and staple food of our country and Ranchi district as well. Through the intervention of suitable variety (Abhishek) and appropriate package of practices under Front Line Demonstration, it has brought out a significant impact in paddy crop production in adopted villages of Divyayan KVK. The impact of Divyayan KVK was clearly brought out in fostering the capacity and capability of the target group for achieving higher production through the

implementation of Front Line Demonstration. Farmers should go for the Abhishek variety of paddy and they can get a good monetary return from the crop production, which may enable them to achieve the sustainable livelihood security. In this way, the livelihood security of the small and marginal farmers can be improved by increasing the productivity of rice crop.

Authors' affiliations:

AJEET KUMAR SINGH, Department of Soil Science, Ram Krishan Mission, Ashrama, Divyayn Krishi Vidyan Kendra, RANCHI (JHARKHAND) INDIA

REFERENCES

- Tanaka, A.**, Navasero, S.A., Garcia, C.V., Parao, F.T. and Ramirez, E. (1964). Growth habit of the rice plant in the tropics and its effect on nitrogen response. *Internat. Rice. Res. Inst. Tech. Bull.*, 3.80 p.
- Yoshida, S.** (1981). Fundamentals of rice crop science. The International Rice Research Institute, Los Banos, Laguna, Philippines, 269 pp.

