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Impact of frontline demonstration on yield enhancement of turmeric

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ABSTRACT

Fifty six demonstrations were conducted during 2004-05 to 2011-12 in different villages of Ri-Bhoi district of Meghalaya to disseminate the production technology of high yielding (237.6 q/ha) Megha Turmeric 1 variety having high curcumin content (6.8%). Field diagnostic visits, regular surveys, farmer meetings and training programmes ensured application of balanced and optimum doses of nutrients and timely plant protection measures. These activities ensured higher yield over local practice of cultivation in the range of 26.5-39.4 per cent. An average net profit of Rs 3,05,302 was recorded under recommended practice while it was Rs 1,27,071.3 under farmers' practice. Benefit/cost ratio ranged from 3.2 to 4.1 under demonstration while it ranged from 2.1 to 3.1 under control plots. With frontline demonstration (FLD) of proven technology it could be shown that yield potential and net income from turmeric cultivation could be enhanced to a great extent resulting in higher income to the farming community.

Keywords: Benefit/cost ratio; demonstration; front line demonstration; Megha Turmeric 1

INTRODUCTION

Turmeric (*Curcuma longa* L) has the potentiality to play vital role in the economy of the tribal farmers of Meghalaya who grow this crop traditionally without adequate knowledge on the variety, optimum plant spacing and size of rhizomes used as planting material. The average productivity of turmeric in this region is low owing to several biotic and abiotic factors and important among them are cultivation of inferior varieties, imbalanced use of fertilizers and inadequate use of plant protection measures agaisnt leaf spot, leaf blotch, rhizome rot etc. The ICAR Research Complex for NEH Region, Umiam, Meghalaya has developed a variety Megha Turmeric 1 through a clonal selection of Lakadong. According to Chandra et al (1996) the variety is suited for cultivation under mid-hill conditions of Meghalaya and is characterized by 15-20 leaves/plant, needing 285 days for complete rhizome formation and 300-315 days for crop maturity with an average yield potential of

268 q/ha. The variety contains 16.37 per cent dry matter, 6.8 per cent curcumin and 5.5 per cent essential oil. It is highly tolerant to leaf spot (*Colletotrichum capsici*) and leaf blotch (*Taphrina maculans*) disease (Chandra et al 2005). Therefore there is ample scope for improvement of production and productivity of turmeric and raising the income level of the farming community. However the cultivation of the variety did not pick up with and was not adopted by the farmers. Technology transfer is thus paramount to spread new ideas from originating sources to the users (Prasad et al 1987). With an objective to combat the causes of yield and low economic returns dissemination of recommended technology through frontline demonstration was attempted in the Ri-Bhoi district.

MATERIAL and METHODS

Krishi Vigyan Kendra, Ri-Bhoi, Meghalaya carried the technology to the farmers field through 56 frontline demonstrations in the villages viz Bangla, Bhoirymbong, Umkon, Mawtnum and Kyrdem between 2004-05 and 2011-12. The average area under each demonstration was 1.0 ha with 187 beneficiaries. Through field diagnostic visits, surveys, farmer meetings etc the factors contributing to low productivity like varietal issues, faulty management practices, negligent plant protection measures were identified. Improved recommended technologies were applied as intervention to manage these problems. The recommended practices included treatment of rhizomes with Ridomil (2.5 g/l) for 40 min before sowing as prophylactic measure for rhizome rot. Application of well rotten cow dung @ 12 tons/ha followed by N:P:K @ 120:90:90 kg/ha and foliar spray of Mancozeb 75 per cent WP (2.5 g/l) at 15 days interval during June-Sept against leaf spot disease. All other steps like site and farmer selection, layout of demonstration, farmers' participation etc were followed as suggested by Choudhary (1999). In case of local check (control plots) no change was made in the existing practices of imbalanced use of organic and inorganic fertilizers and little or no use of fungicides and pesticides. Well before the demonstrations training was imparted to the farmers and their exposure visits to the KVK instructional-cum-demonstration farms were conducted. Visits of the farmers and the extension functionaries were also organized to demonstration plots to disseminate the message at large. Yield data were collected from the control and demonstration plots and cost of cultivation, net income and benefit/cost ratio were computed.

RESULTS and DISCUSSION

Performance of turmeric var Megha Turmeric 1 was found to be substantially higher under the demonstration plots than under control during all the demonstration years (Table 1). The yield under demonstrations was 224.6, 223.5, 232.3,

Table 1. Yield performance and economic indicators of frontline demonstration of turmeric variety Megha Turmeric 1

Year	Demonstrations (#)	Yield (q/ha)		% increase over FP	Gross expenditure (Rs)/ha		Gross return (Rs)/ha		Net return (Rs)/ha		B:C ratio	
		RP	FP		RP	FP	RP	FP	RP	FP	RP	FP
2004-05	3	224.6	167.1	34.4	109720	75435	359360	167100	249640	91665	3.3	2.2
2005-06	3	223.5	165.6	35.0	111914	77698	357600	165600	245686	87902	3.2	2.1
2006-07	4	232.3	172.4	34.7	114153	80029	371680	172400	257527	92371	3.3	2.2
2007-08	6	234.2	168.0	39.4	116436	82429	421560	201600	305124	119171	3.6	2.4
2008-09	8	240.6	175.8	36.9	118764	84902	433080	210960	314316	126058	3.6	2.5
2009-10	10	248.7	185.6	34.0	121140	87449	447660	222720	326520	135271	3.7	2.5
2010-11	10	251.3	198.7	26.5	123563	90073	502600	278180	379037	188107	4.1	3.1
2011-12	12	245.3	192.0	27.8	126034	92775	490600	268800	364566	176025	3.9	2.9
Average	7.0	237.6	178.2	33.6	117715.5	83848.8	423017.5	5210920.0	305302.0	127071.3	3.6	2.5

RP= Recommended practice, FP= Farmers practice, B:C ratio= Benefit/cost ratio

234.2, 240.6, 248.7, 251.3 and 245.3 q/ha during 2004-05, 2005-06, 2006-07, 2007-08, 2008-09, 2009-10, 2010-11 and 2011-12 respectively. Chandra et al (1996), Govind et al (1998) and Chandra et al (2005) have shown similar trend of yield results in Megha Turmeric 1. The yield enhancement due to technological intervention was to the tune of 34.4, 35.0, 34.7, 39.4, 36.9, 34.0, 26.5 and 27.8 per cent over control. The cumulative effect of technological intervention over eight years revealed an average yield of 237.6 q/ha ie 33.6 per cent higher over local check. The year-to-year fluctuations in yield and cost of cultivation can be explained based on variations in microclimatic conditions and marketability price. Mukherjee (2003) also reported that depending on identification and use of farming situation specific interventions may have greater implications in enhancing systems productivity. Similar variations in results have been documented by Haque (2000), Tiwari and Saxena (2001), Tiwari et al (2003), Tomar et al (2003), Mishra et al (2009) and Kumar et al (2012) in different crops. The data clearly reveal that the net returns from the demonstration plots were substantially higher than control plots during all the years. An average net return was observed to be Rs 3,05,302 in comparison to control plot ie Rs 1,27,071.3. Thus on an average additional income of Rs 1,78,230.7 is attributed to the technological intervention provided in demonstration plots. Economic analysis revealed that benefit/cost ratio in demonstration plots was comparatively higher than control plots. The highest benefit cost ratio (4.1) was observed in the year 2010-11 followed by 3.9 in the year 2011-12. The variation in B:C ratio could be due to price variation during the study years. The average B:C ratio of demonstration and control plots was 3.6 and 2.5 respectively during the study period. Hence favourable B:C ratio proved the economic viability of the intervention made under demonstration and convinced the farmers on the utility of intervention. Similar findings were reported by Sharma (2003) in moth bean, Gurumukhi and Mishra (2003) in sorghum and Kumar et al (2012) in ginger.

CONCLUSION

The results of front line demonstration convincingly proved that the yield of turmeric could be increased by 26.5 per cent to 39.4 per cent with the better technological intervention. Favorable benefit/cost ratio is self-explanatory of economic viability of the demonstration. The technology is suitable for enhancing the productivity of turmeric crop and appropriate time for area expansion under turmeric production in Ri-Bhoi. The suitable climate for its growth can transform lives of many rural growers if more interventions are conducted and technical knowhow is given to the growers with bottom up policy.

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