Indian Journal of Extension Education
Vol.47, No. 1 & 2, 2011 (86-91)

Market-led Extension in Mid-hills of North West Himalayas: Experiences and Impact

S.R.K. Singh[1], K. Srinivas[2] , Mukesh Kumar [3], N.K. Hedau[4] and U.S.Gautam[5]

ABSTRACT

In the rural area of North West Himalayas, off-season vegetables are grown predominately as a means of livelihood. However, the farmers are unable to harness the potential benefits of vegetable cultivation due to lack of improved production technologies, poor access of market information and inadequate extension support. To overcome this, market-led extension (MLE) approach was implemented in Tarikhet block of Almora district. Using MLE approach, farmers were trained in selection of quality inputs, market situation, price trend analysis, and scientific vegetable cultivation. There was considerable increase in awareness (83.62%), knowledge (65.25%) and adoption (74.74%) of the farmer in adopted villages. The analyzed data revealed that the approach has resulted in increased yields of tomato (115.8 to 170.2 q/ha), capsicum (72.1 to 118.6 q/ha), French bean (52.2 to 83.1 q/ha) and pea (68.7 to 86.7 q/ha) beside better quality of produce. As a result, the gross income of farmers increased by 27.0 – 66.0 percent, over existing technology and market strategies, practiced before the project implementation. This study suggests the great potential of MLE approach for enhancing income of the hill farmers.

Experiences gained from organized and established extension services in the food farming sector clearly indicate that in addition to a dedicated and efficient extension services network, appropriate extension approach is needed to provide a definite direction to the programme operation so that its impact could be clearly visible. Hence, suitable approaches should be used to ensure achieving the extension objectives at a faster rate with economy of time and resources (Kumar, 1999).

The rapidly changing climatic conditions affecting hill agriculture calls for redefining the priorities and alternate management strategies for survival of the hill farmers. It is widely realized that marketing component had been neglected by the hill farmers in this era of global market which should come to the forefront for assuring income from their meager farms. Therefore, there is an urgent need for introduction of market-led extension for enhancing the income of hill farmers (Khaleel et al., 2006).

Agricultural extension efforts yield the desired results only if sustained productivity-profit enhancement is ensured to the farmers and employment-income enhancement is ensured to the agricultural labourers. A new kind of location-specific holistic extension approach that fits ideally with the economic, ecological, social and cultural conditions of the farming community is the solution to the crisis. MLE is one such approach, which cares not only the production but it helps in realizing higher net returns from farming by capacity building in the area of marketing of the farm produce. Bhaskaran (2006) supported the view after experimentation in Kerala which showed that market-led extension has greater impact.

MLE in present day is considered as the backbone of the rural development. In hilly areas resource-poor farmers with small and scattering holdings are in majority,

[1]Sr. Scientist (Ag Extension), ZPD Zone VII, Jabalpur - 482004 [2]Sr. Scientist (Ag Econo.), V.P.K.A.S., Almora, [3]Scientist (CAA), V.P.K.A.S., Almora [4]Scientist (Vegetable Science), V.P.K.A.S., Almora [5] Zonal Project Director, Zone VII, Jabalpur

MLE can be really a very important tool for enhancing income and employment of the hill farmers. Hilly areas are predominately under-developed with poor infrastructure, electricity and roads and farmers are sustaining themselves on archaic methods of farming due to poor extension services. In fact, hill farmers are practicing agriculture in unfavorable environment with undulated terrains and rainfed situation. Therefore, they need more support and backing for their income and livelihood, otherwise they may migrate from the hills leaving their fields barren (Singh and Jha, 2005).

Though hill farming is unable to produce adequate marketable surplus of food grains, still there is enormous potential for high-value crops like fruits, vegetables and medicinal plants, etc. But for earning high income from the high value crops, sufficient knowledge & skill of input and output marketing are the key component. The major objectives of this study were-

(a) To discuss the experiences during implementation of MLE for enhancing income of the farmers through vegetable cultivation; and

(b) To assess the impact of MLE in the adopted villages.

METHODOLOGY

This study is the outcome of the project sponsored by Department of Biotechnology implemented in three clusters using MLE as extension approach. The villages in three selected clusters were- Tunakote, Tipola (Cluster I); Bajol, Bajina (Cluster II) and Dolkot, Simalkha (Cluster III) representing mid-hills conditions and have suitable climate for off-season vegetable cultivation. A baseline socio-economic survey was conducted in the project area, before implementation of the project. On the basis of the findings of the survey, MLE approach was used. A total of 120 respondents from six adopted villages were selected and interviewed personally for evaluating the performance of MLE. Awareness was measured using a set of 20 closed questions ('Yes' or 'No' type) and the response was recorded in percentage. Knowledge of the adopted farmers were tested before and after the project using a set of 50 suitable questions related to vegetable production and marketing techniques and response was gathered on 3-point continuum ('strongly agree', 'agree' and 'disagree') with score range 0-100. The adoption level of the farmers was measured before and after the project using a list of recommended technologies and adoption index was prepared on the basis of status of the farmers on that list. The actual variable cost of cultivation and yield data were collected throughout the crop season in *Kisan Phasal Card* introduced for account keeping with regard to input used, labour employed, marketing costs and returns. Paired t test was employed to test the significance in changes observed before and after the project in awareness level, knowledge level, adoption level of farmers and yields for different vegetables.

Increase in gross income (GI) is the ultimate success of an extension approach. Therefore, to find and quantify the effects of different MLE components on gross income, multiple regression model was fitted with taking components of MLE as dummy variables. Following equation was fitted using ordinary least square estimation method.

$$GI = ß0 + ß1D1 + ß2D2 + ß3\,D3 + ß4D4 + ß5D5 + ß6\,D6 + a$$

Where,

GI = Gross income, ß0 = intercept, ß1 to ß6 = coefficient of different components, a is error term.

In the model, Di = 1 where the ith component is present and Di = 0 when it is absent, Di's are:

D1 = Formation of farmers' interest group

D2 = Interactive and communication skill

D3 = Market linkages

D4 = Suitable product planning

D5 = Direct market access

D6 = Use of Information technology

RESULTS AND DISCUSSION

A. Implementation of MLE

Based on literature, six major components were employed for successful MLE outcome in this project.

1. Formation of Farmers Interest Group (FIG)

It was very challenging task to form functional FIGs. But, with proper discussion with the ADOs, Bank officials and farmers total 22 FIGs have been formed during the project period. These FIGs were based on the off-season vegetables viz., tomato, capsicum, French bean, pea, etc (Table 1).

2. Critical analysis of marketing process

The critical analysis of market situation revealed that out of five major marketing channels, most of the farmers (42.0 %) preferred marketing channel 1 and 2 (40.0%) followed by marketing channel, 3 and 5.

Maximum volume of vegetables were sold through marketing channel II (42.0 %) followed by channel I (39

%) as depicted in Table 2. Prevalence of these marketing channels as major player is due to the fact that these middlemen act as informal financial institution without many formalities and provide loans before the cropping season in the form of inputs and other needs. These channels followed by channel III where, 12 % of vegetables were marketed. Moreover in Channel IV, an agency (mother dairy) was involved was not much preferred due to the fact that this agency procures only best graded vegetables leaving large quantity of produce with the growers. The growers are again left with no option but to sell these second and third grade crop through channel I or Channel II only. By doing this, farmer actually does not gets the income as desired and his relation with contractor/commission agent is also adversely affected. Therefore, most of the farmers prefer first two established channels only.

3. Enhancing interactive and communication skills of farmers

Marketing involves lots of bargaining and negotiations, therefore, week-end interaction meeting with the adopted farmers were conducted in the name of field trainings. In such meetings, farmers were asked to express their doubts with the scientists for getting solution of their problems. Besides, farmers were asked to mimic some common behaviour of market functionaries through 'role play'. This has resulted in high level of confidence in the vegetable growers.

4. Established marketing linkage

Functional linkage with the market plays important role in MLE. Therefore, linkage with the Garampani, Haldwani, Bareilly and Azadpur Mandi was developed. Initially, PI and CO-PI of the said project visited all these mandis and contacted arahtias and other big players. Then farmers' representatives were sent to these mandis for further negotiations. Twenty interested farmers were sent to these mandis to observe the tricks and tact of the vegetable marketing.

5. Devising suitable product planning

The selection of suitable crops and their variety play a deciding role in MLE. Therefore, after thorough discussion with the progressive farmers and keeping the climatic and market conditions in view, suitable vegetable crops with high market demand was suggested for getting maximum benefits from their farming. And appropriate varieties of the different vegetables were made available for higher yield (Table 3).

6. Promoted direct marketing of the produce

Direct marketing gives higher returns to the producer than others. Therefore, adopted farmers were encouraged for this practice. As a result, 25 farmers initiated this practice with broccoli at Garampani market in Nainital and Ranikhet market in Almora district. But the volume of produce per farmers was low (50-75 kg). However, with due course of time, after getting more income (15-20 %) from their produce as compared to selling through marketing channels, more than 50 farmers has been involved. At present, considerable numbers viz., 55, 62 and 49 farmers are involved in direct selling of tomato, capsicum and French bean, respectively. Such high number of farmers' involvement shows the very success of the practice in the region.

7. Use of information technology

Due to lack of computer with Internet facility, farmers were unable to use this facility. However, this gap was filled by the use of cell phone in the adopted villages. Farmers were using cell phone frequently to get market information on arrivals and wholesale prices of their produce before sending it to the target mandis. And this was very useful for marketing process.

B. Impact of MLE

1. Changes in Awareness, Knowledge and Adoption level

The impact of MLE was assessed in the form of social and economic terms. In social terms, change in awareness, knowledge and adoption of the production and marketing techniques was considered, whereas in economic terms, change in productivity and gross returns from vegetable farming was considered, as suggested by Evenson, 1997.

The analyzed data depicted in Table 4 reveals that regarding awareness, there was 83.62 percent change was observed during the project period which was found significant at 0.01 probability using paired 't' test; though cluster-wise it ranged from 71.05 to 94.44 percent. However, regarding knowledge about scientific vegetable production and marketing techniques, 65.25 percent change was recorded and was found significant at 0.01 probability level; though cluster-wise change varied from 52.0 to 84.38 percent. Change in adoption level of the vegetable production technologies was observed as 74.44 percent which was significant at 0.05 probability level; though cluster-wise it ranged from 54.29 to 87.50. On the basis of above results it could be inferred that there was

significant changes in the awareness, knowledge and adoption level of the farmers which would definitely help in getting higher productivity of the vegetable crops as well additional returns from vegetable farming.

2. Changes in productivity

Market-led extension approach has positive effect on the adoption of improved technology wherein the farmers have shown better yields and quality of produce by practicing improved method of cultivation. The analyzed data in Table 5 revealed that by including quality seeds and better production technology yields in all four crops have increased significantly. The increase in quality is reflected by the higher price received by the adopted farmers against non-adopted farmers.

3. Changes in the gross returns of the adopted farmers

Income of the farmers has increased over the years due to yield and price advantage in all the demonstrated crops. The maximum change in gross income was observed in french bean (74.0%) followed by capsicum (64.0%) and tomato (45.0%) (Fig 1). Minimum change was observed in vegetable pea. This may due to the fact that majority of the farmers are following the recommended package of practices along with HYVs and other technologies in vegetable pea cultivation. The income level of the adopted farmers has been found higher than non-adopted farmers which is the testimony of the impact of the project interventions.

4. Effect of different components of MLE on Gross Income

Gross income (GI) from all crops is taken as the resultant of MLE and different components of MLE was regressed using dummy variables. The regression equation fitted gave R2 = 66.7 per cent which means that all components of MLE describe the variation in GI up to 66.7 % with highly significant F value at 1 percent level of significance. The fitted equation was

$$GI = 3571.0 + 267.6\ D1 - 60.2\ D2 + 33.7\ D3 + 2122.8\ D4^{***} + 980.96\ D5^{***} + 453.7\ D6$$
(221.7) (231.1) (222.2) (406.0) (259.3) (333.5)

$R^2 = 0.667 = 66.7\ \%$

Out of all components D4 and D5 which are crop planning and direct market access, respectively have been proved to be the most important aspects for effective MLE as the coefficients are highly significant at 1 per cent level of significance. Other components are though are not significant statistically but are contributing to enhance the GI. However, D2 which is interaction and communications skill is negatively affecting the GI though statistically non-significant. This might be due to the fact that in this exercise the formation of group has been given more importance therefore, individual interaction and communication skill at market level may be showing a negative trend.

Table 1: No. of FIGs formed during project period.

S No.	Area	No. of FIGs	
		Before project	After project
1	Cluster I	2	10
2	Cluster II	0	8
3	Cluster III	1	4
4	Overall	3	22

Table 2: Percentage sale through different marketing channels.

Sr No	Marketing channel	% sale through diff. channels
1	Producer - commission agent - wholesaler - retailer - consumer	39
2	Producer - contractor - wholesaler - retailer - consumer	42
3	Producer - contractor - retailer - consumer	12
4	Producer- mother dairy-consumer	4
5	Producer - retailer - consumer	3

Table 3: Varieties replaced during project in the adopted villages.

S No.	Crop	Varieties	
		Before project	After project
1	Tomato	Vaishali	Manisha, Heemsohna
2	Capsicum	Local	California wonder, Bharat
3	French bean	Local	Contender, VL BB1
4	Garden pea	Arkel (local source)	VL Ageti Matar 7, Azad Matar 1

Table 4: Change in Awareness, Knowledge and Adoption of the adopted farmers (N=120).

Items	Area	2003-04	2006-07	% change	Paired 't' test
Awareness (%)	Cluster I	42	78	85.71	**
	Cluster II	36	70	94.44	**
	Cluster III	39	65	71.05	**
	Overall	38.67	71	83.62	***
Knowledge level	Cluster I	48	72	52.08	*
	Cluster II	32	68	84.38	**
	Cluster III	38	63	65.74	*
	Overall	39.33	65	62.25	*
Adoption level	Cluster I	35	54	54.29	*
	Cluster II	28	49	85.71	**
	Cluster III	32	60	87.71	**
	Overall	31.67	55.33	74.44	**

* Significent at 0.1 probability level, ** Significant at 0.05 level or *** significant at 0.01 level

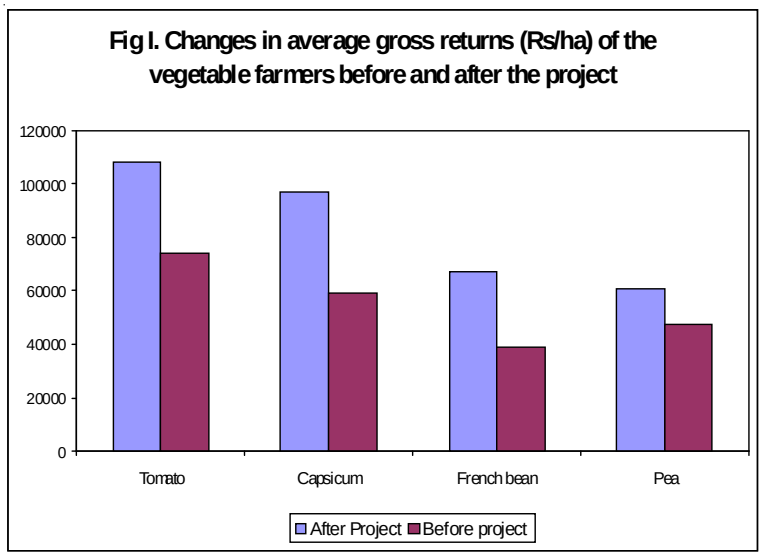
Table 5: Changes in the productivity of the vegetable crops (2003-2007).

Crop	Average Paired 't' test in demonstration plots	Average yield(q/ha) in farmer practices	% change during yield (q/ha)	Paired 't' test project period
Tomato	170.20	115.84	46.92	**
Capsicum	118.33	72.10	64.12	***
French bean	86.63	52.2	65.96	**
Pea	86.73	68.70	26.24	**

** Significant at 0.05 level or *** significant at 0.01 level

Table 6: Changes in gross returns of the vegetable farmers (2003-2007).

Crop	Average gross returns (Rs./ha) from demonstration plots	Average gross returns (Rs./ha) from farmer practices	% change during project period
Tomato	108231	74325	45.0
Capsicum	96808	59001	64.0
French bean	67170	38562	74.0
Pea	60910	47221	29.0



CONCLUSION

In the changing scenario, it has been realized by the extension planners and policy makers that production is the only half way done. The farmers have to be guided by the extensionists till the income generation, so that the ultimate benefits of the technology could be realized. In backdrop of such thoughts, this novel approach was tried in the mid-hills of Uttarakhand which proved an effective approach to raise the production as well additional income of the adopted farmers in the project area.

REFERENCES

Khaleel, F.M.H, Krishnankutty, J. and Satheesh Babu, K. (2006). Market-led Extension: Dimensions and Tools (eds.). Agro-tech Publishing Academy, Udaipur-313002.

Bahskaran, C. (2006). Agricultural extension at crossroads. In: Market-led Extension: Dimensions and Tools (eds.). Agro-tech Publishing Academy, Udaipur-313002

Evenson, R. (1997). The Economic Contributions of Agricultural Extension to Agricultural and Rural Development. In: B.E.Swanson, R.P.Bentz and A.J.Sofranco (eds.), Improving Agricultural Extension: A Reference Manual. FAO, Rome.

Singh, S.R.K. and Jha, S.K. (2005). Feedback Mechanism for Sustainable Agricultural Extension. Today & Tomorrow Publishers, New Delhi.

Kumar, Dilip (1999). Trickle Down System (TDS) of Aquaculture Extension for Rural Development. RAP Publication 1999/23,