Evaluation of Market-Led-Horticulture under the Tamil Nadu Precision Farming Project

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Abstract

The study was conducted in Dharmapuri and Krishnagiri districts of Tamil Nadu with 120 project farmers of the Tamil Nadu Precision Farming Project, With an aim to assess the perception of the farmers towards market-led-horticulture implemented under the project. The perception on market-led-horticulture was assessed by considering four dimensions viz., market assessment and decision making, marketing assistance, market-led-production and group formation. It was found that a majority of the respondents of both the districts possessed a highly favourable perception towards these four dimensions of market led horticulture. All the respondents felt that technologies like drip irrigation, fertigation and chemical pesticides are expensive when compared to conventional farming. A large proportion of the respondents felt difficulty in transporting produce to long distance markets even though opportunities existed for better price.

The horticultural sector is undergoing a rapid transformation owing to the opportunities emerging due to the WTO. In turn with this, there is a shift from production oriented cultivation to Market-Led-Production as the horticultural sector has begun to respond to a new kind of strategy. Market-Led-Horticulture (MLH) encompasses sensitivity of farmers to market behaviour, price, demands, etc., and a thorough knowledge of consumer need dynamics. MLH is possible with the latest state of the art technologies including precision farming. Precision farming is a management strategy that employs detailed and site specific information to precisely manage production

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inputs. Precision farming has arisen mainly in response to advances in technology, rather than through development in the fundamental sciences, which support agriculture. Precision farming envisages precise packages of crop cultivation at micro level, which enable to increase the productivity and maintain sustainability.

Keeping the above factors in mind the policy planners of the Government of Tamil Nadu sowed the seed by way of funding the Tamil Nadu Precision Farming Project (TNPFP) for implementation by the Tamil Nadu Agricultural University (TNAU), Coimbatore. The turnkey project envisages market led production by way of assessing the market potential for a variety of vegetable crops, to mobilize marketing support from national and global markets and plan for production in terms of quantity and timely delivery. The TNPFP is in its second year of operation. In order to evaluate the MLH under TNPFP, the present study was undertaken with the objective to assess the perception on utility value of MLH under TNPFP.

METHODOLOGY

The study was conducted in Dharmapuri and Krishnagiri districts of Tamil Nadu where the TNPFP is in operation. The project is being implemented in three cluster blocks viz., Palacode, Morappur and Pappireddipatti of Dharmapuri district and four cluster blocks viz., Thally, Jakkeri, Rayakottai and Thiruchipalli of Krishnagiri District. out of the seven cluster blocks all the cluster villages under TNPFP were considered for the study. From the total number of beneficiaries in each cluster village the respondents (project farmers) for the study were selected randomly using proportionate sampling technique. The total number of sample respondents was 120 of which 60 belonged to Dharmapuri and 60 to Krishnagiri. The data were collected by using a well structured and pre tested interview schedule.

The dependent variable of the study 'Perceived utility value of MLH' was operationalized as the measure of farmers' perception

towards the utility value of the new MLH approach comprised of a set of four interventions (dimensions) viz., Market assessment and decision making, Markeing assistance, Market led production and group formation. Market assessment and decision making was operationalized as the act of assisting and encouraging the project farmers by the TNPFP scientists to collect and analyse market information and demands, followed by the facilitating the farmers to take appropriate decisions regarding selection of crops, varieties / hybrids and acreage to be covered. Marketing assistance referred to the act of providing a set of services by the project scientists such as arranging tours to leading markets, market tie-ups, contract farming etc., so as to enable the project farmers to market their farm produce efficiently and in profitable manner. Market-Led-Production referred to the act of recommending modern and scientific technologies by the project scientists such as precision farming practices, micro irrigation, etc., to the project farmers so as to optimize use of resources and enhance farm production and productivity. Group Formation was operationalized as the act of empowering the project farmers by the project scientists as to enable the project farmers to jointly carry out specific farm production and marketing operations.

The measurement tool comprised of a set of statements based on which the perception of the respondents was assessed. The responses were measured on a five point continuum ranging from 'very useful' to 'not useful'. Based on cumulative frequency method the respondents were categorized into low, medium and high. To arrive at the perceived utility of MLH (overall) score, the scores of the four dimensions were summed up and thereafter classified as low, medium and high based on cumulative frequency.

Findings and discussion

The findings and discussion with respect to the four dimensions and the perceived utility of MLH is presented as follows :

1. Perception on Utility Value of Market assessment and Decision making

The results pertaining to market assessment and decision making is furnished in Table.

Table -1

Distribution of respondents according to perception on Market assessment and decision making

Category	Dharmpuri district (n = 60)		Krishnagiri district (n = 60)	
	No.	Percentage	No.	Percentage
Low	5	8.00	-	-
Medium	-	-	-	-
High	55	92.00	60	100.00
Total	60	100.00	60	100.00
Mean	17.33		20.00	
Difference between means	2.67			
't' value	3.096**			

** Significant at 1% confidence level

From table 1 it is inferred that an overwhelming majority of the respondents of Dharmapuri district (92.00%) were found with a high favourable perception on utility value of market assessment and decision making. In the case of Krishnagiri district, cent per cent of the respondents had a high level of favourable perception towards the intervention. The mean value of Krishnagiri respondents was higher than that of Dharmapuri respondents. The 't' test revealed that there existed a significant difference between both the categories of respondents.

Providing market information and assistance in decision making helped to update knowledge and enabled to take decision regarding choice or crops / varieties / hybrids/ acreage and market updates enabled in analysis of market trends and to choose the right markets

for selling the produce were the reasons expressed by majority of the respondents of both the districts for their high level of favourable perception on utility value of the intervention market assessment and decision making.

2. Perception on Utility Value of Marketing Assistance

The results pertaining to component two of the dependent variable.

Reveals that an overwhelming majority of the Dharmpuri respondents (88.00%) had a high level of favourable perception on the intervention marketing assistance. With regard to Krishnagiri district, nearly all (97.00%) the respondents possessed a high level of favourable perception on marketing assistance. The mean value of Krishnagiri respondents was higher than that of Dharmapuri respondents. The 't' test revealed that their existed significant difference between the two districts in terms of marketing assistance. It is therefore concluded that the perception on marketing assistance of Krishnagiri respondents was significantly more favourable than that of Dharmapuri respondents.

Tours provided new exposure and experience to different markets/ enabled to update recent marketing strategies, market tie ups enabled reduction of middlemen problems, resulted in obtaining assured market price and enhanced linkages between traders and farmers, contract farming enabled integration of production with marketing with assured price for the produce; tours and trainings encouraged to go for quality production; and creation of logo gave an identity for the produce with brand value and assurance for quality, were the reasons expressed by a majority of both the categories of respondents for their favourable perception towards the intervention marketing assistance.

Table 2

Distribution of respondents according to perception on Marketing assistance

Category	Dharmpuri district (n = 60)		Krishnagiri district (n = 60)	
	No.	Percentage	No.	Percentage
Low	4	7.00	2	3.00
Medium	3	5.00	-	-
High	53	88.00	58	97.00
Total	60	100.00	60	100.00
Mean	24.95		26.15	
Difference between means	1.20			
't' value	3.849 **			

** Significant at 1% confidence level

3. Perception on Utility value of Market-Led-production

The results of the analysis with respect to this component is tabulated in table 2.

Table 2 shows that the perception on the utility value of market-led-production for a great majority of the Dharmapuri respondents (80.00%) was highly favourable. With regard to Krishnagiri, more than half (62.00%) of the respondents had a high level of favourable perception on market-led-production, followed by medium (20.00%) and the rest (18.00%) with low level of perception. The mean value of Dharmapuri district was found to be higher than that of Krishnagiri district. However, the 't' test showed that there existed no significant difference between the respondent groups. It is concluded that the respondents of both the districts had a similar level of favourable perception on market-led-production.

Adoption of precision farming technologies enabled scientific farming and increased production and productivity; adoption of drip irrigation decreased water consumption and increased water use efficiency' adoption of fertigation technology reduced cost of labour, ensured even spreading of fertilizers, prevented wastage of fertilizers

and prevented weed growth community nursery venture enabled effective utilization of land and resources uniform growth of seedlings, reduced seedlings mortality resulting in more productive plants and reduced occurrence of pests; use of portrays enabled use of less seed rate, prevented competition between seedlings, production of healthy seedlings, ease of transport and easiness to separate the seedlings; and soil test enabled soil test based fertilizer application, saved fertilizer cost and is eco-friendly in nature were the reasons expressed by a majority of both the categories of respondents for their favourable perception towards the intervention market-led-production.

Table 3
Distribution of respondents according to perception on Market-Led-Production

Category	Dharmpuri district (n = 60)		Krishnagiri district (n = 60)	
	No.	Percentage	No.	Percentage
Low	12	20.00	11	18.00
Medium	-	-	12	20.00
High	48	80.00	37	62.00
Total	60	100.00	60	100.00
Mean	50.91		50.78	
Difference between means	0.13			
't' value	0.331^{NS}			

NS = Non Significant

4. Perception on Utility value of Group Formation

Group formation forms the last component of the dependent variable. The results pertaining to group formation are presented in Table 4.

Table 4

Distribution of respondent according to the problems faced

Sl.No.	Problems	Response *

		Yes		No	
		No.	**%**	**No.**	**%**
I.	**Technology**				
a.	Technologies like drip irrigation, water soluble fertilizers and chemical pesticides are expensive	120	100.00	-	-
II.	**Marketing**				
a.	Difficulty in transporting produce to long distance markets even though opportunities existed for better price	75	63.00	45	37.00

b.	Difficulty in accessing market information due to non-availability or non-awareness of sources / insufficient information from existing sources	15	12.00	105	88.00
c.	Market tie-ups led to low price fixation fro the produce / unprofitable negotiations	47	39.00	73	61.00
d.	Inability to market the produce as contractors refuse to take the produce due to viral disease infection	33	28.00	87	72.00
III.	**Others**				
a.	Insurance covers only loss due to natural calamity and not loss due to lapses in crop management or pest and disease management	67	56.0	53	44.00

* Multiple responses

The results discussed below reveals that nearly all the Dharmapuri respondents (95.00%) and cent per cent of the Krishnagiri respondents had a high degree of favourable perception towards group formation. The 't' test revealed that there does not exist any significant difference between the two categories of respondents with respect to their perception.

Promoted group action and empowerment; reduced labour, production and marketing costs; facilitated better marketing in terms of improving bargaining power, developing market tie-ups, common transport, etc; establishing community nursery enabled pooling of resources, sharing work and responsibilities; improved farmer-to farmer linkage and interaction and improved social security and self confidence were the reasons expressed by majority of the respondents of both the districts for their high level of favourable perception on utility value of the intervention group formation.

5. Perception on Utility Value of Market-Led-Horticulture

Perception on utility value of Market-Led-Horticulture (MLH) was obtained by summing the scores of its dimensions viz., perception on market assessment and decision making, marketing assistance, market-led-production, and group formation. The total score thus obtained was subjected to analysis, and the results pertaining to market-led-horticulture is discussed below.

The results indicates that perception on utility value of MLH for nearly half (40.00%) of the respondents of Dharmapuri was high, followed by 35.00 per cent with medium level and the rest (25.00%) with low level of favourable perception. With respect to Krishnagiri, 38.00 per cent of the respondents had high level of favourable perception, followed by medium (32.00%) and the rest (30.00%) were found with low level of perception on market-led-horticulture. The mean value of Dharmapuri was found to be higher than that of Krishnagiri district. The 't' test revealed that there is a significant difference between the two respondent groups. It is therefore concluded that the perception on market-led-horticulture of Dharmapuri respondents was significantly higher than that of Krishnagiri respondents.

The general impression is that 'Market-Led-Horticulture' has clicked well with the respondents of both the districts. They have been unanimous in their expression of their perception towards all the four components of MLH. Two reasons can be attributed for the perceived success as follows:

- Performance of the project scientists
- Response of the Project farmers

The project scientists have performed well in terms of the interventions they have done in the project area, which is vouchsafed by the results on the perception analysis of the respondents. Similarly, it is obvious that the project farmers have responded well to the project interventions, which reveals the trust and confidence that

they have placed on TNPFP. If not for following the recommendations / suggestions given by the project scientists from time, the project farmers would not have realised the value of MLH.

6. Constraints faced by the project farmers

The constraints or problems faced by the respondents were categorised under three dimensions viz., technologies, marketing and others and the same is presented in Table 3.

Table 3 reveals that cent per cent of the respondents felt that technologies like drip irrigation fertigation and chemical pesticides are expensive when compared to conventional farming. The table further shows that nearly two-third (63.00%) of the respondents felt difficulty in transporting produce to long distance markets even though opportunities existed for better price. Above one third (39.00%) of the respondents felt market tie ups led to low price fixation for their produce including unprofitable negotiations. Moreover, 28.00 per cent of the respondents felt that viral diseases caused product refusal which in turn led to poor profitability and the rest 12.00 per cent expressed difficulty in accessing market information due to non-availability or non-awareness of sources / insufficient information from existing sources. A little more than half (56.00%) of the respondents expressed the difficulty that insurance cover was only for losses due to natural calamity and not for lapses in crop management or pest and disease management.

Conclusion

The study has vividly revealed the success of TNPFP among the respondents in both the districts. This can very well serve as a model for all the farmers in the adjoining areas, including neighbouring states, to observe and learn from the experiences of the project farmers. At the same time, necessary measures should be undertaken to address the problems related to technology, marketing and other

constraints. Since, group formation has led to the first stage of empowerment of the project farmers, the emerging problems can be tackled in a systematic manner without any difficulty with little amount of facilitation by the project scientists. The success of MLH gives a strong signal to the authorities to replicate or extend TNPFP to other districts also.