

International Journal of Agriculture Extension and Social Development

Volume 8; Issue 12; December 2025; Page No. 918-921

Received: 07-10-2025

Accepted: 12-11-2025

Indexed Journal

Peer Reviewed Journal

Impact of training programme on banana farmers' income and welfare in Southern Karnataka

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DOI: <https://www.doi.org/10.33545/26180723.2025.v8.i12l.2898>

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Abstract

Training programmes are effective extension tools for enhancing farmers' technical knowledge, promoting sustainable cultivation practices and improving farm income and livelihood security (Nouatin, 2025). Horticulture Extension Education Unit of College of Horticulture, Mysuru conducted a training programme on scientific cultivation aspects of Banana to know the impact of training on farmers. Majority of the farmers were small (60 per cent) remaining 33 per cent of them were marginal and only 7 per cent of them belongs the large category. Total cost before training was higher (Rs.4,60,116) than after training (Rs.4,41,901), this is mainly due to reduction in variable cost after the training majorly due to reduction in the use of chemical. Use of more bio-products, taking of timely operations and prophylactic measures has attributed towards improved banana productivity and incomes of the sample respondents. Significant reduction in the cost of banana production was noticed as an impact of the training programme.

Keywords: Training programme, horticulture extension, banana cultivation

Introduction

Horticulture Extension Education Unit of College of Horticulture, Mysuru is exclusively meant for carrying out extension activities for the benefit of farmers of this region organizes exposure visits, demonstrations, exhibitions, farm trials, etc as per the demand from the farming community on a continuous basis besides helping the farmers in adopting the latest technologies developed by research institutes and farm universities. Farmer oriented crop specific training programmes were organized regularly to educate the farmers with regard to technological advancement in the particular crop and scientific cultural practices to enhance the productivity and net returns of farmers. The training programme on scientific cultivation aspects of Banana was conducted and study has been taken to know the impact of training programme on farmers.

Methodology

The present study was undertaken in Mysuru district, farmers from different villages of Mysuru district were included and purposive sampling was done to carry out the study. Primary data from 30 farmers were collected and information related to socio-economic status, various aspects of agriculture like size of land holding, livestock asset position, input usage, reasons for attending training, crop yield, costs and returns and other related information both before and after the training programme were gathered. Relevant statistical analysis was done to know the

differences in technological advancement before and after the training programme. The study was conducted to assess the impact of training on farmer's income & welfare implications of trained farmers and to suggest strategies for effective training programme.

Results and Discussion

Table 1: Age-wise distribution of sample respondent

Sl. No.	Particulars	Number of Respondents
1.	Young (<35 years)	13 (43.34)
2.	Middle aged (35-50 years)	12 (40.00)
3.	Old (>50 years)	5 (16.66)
4.	Total	30 (100)
5.	Mean Age (years)	38

Training organized from Horticulture Extension Education Unit is not restricted to particular age group, as it is the important factor in decision making allowed different age group people who are in to farming to attend the training. It is evident from the table 1 that, majority of the farmer belongs to less than 35 years age group (43 percent) and forty percent of the farmers belong to middle aged group (35-40 years), which indicates that most of the sample respondents were in the active age group, if these farmers are motivated becomes easy to convince them to adopt new technological interventions.

Table 2: Family size distribution of sample respondents

Sl. No.	Particulars	Number of Respondents
1.	Small size (<3)	3 (10.00)
2.	Medium size (3-5)	9 (30.00)
3.	Large (>5)	18 (60.00)
4.	Total	30 (100)
5.	Mean size	7

Size of the family is an indicator of availability of human resource for the agricultural operations at farm, the mean family size of the sample farmer is 7 which is considered to be good for supporting farming activities. Large family size helps in reducing the dependency on hired labour is advantageous for taking up good agricultural practices and own family labour is considered as implicit cost which helps in enhancing the farm revenue by reducing the cost of production.

Table 3: Education profile of sample respondents

Sl. No.	Particulars	Number of Respondents
1.	Illiterate	0 (0)
2.	Primary school	2 (06.67)
3.	Middle school	5 (16.67)
4.	High school	7 (23.33)
5.	College and above	16 (53.33)
6.	Total	30 (100)

Education is the key demographic factor for desirable changes in the farmer's outlook on adopting the advanced

technologies of farming. If farmers are unaware of new technologies or lack in adopting the advanced interventions, certainly hinders the agricultural development. The sample farmers who have attended the training were completely literates and they had the basic education which helped in changing their knowledge and skill. Extension training is a kind of non-formal education which helped in continuing the transfer of technologies to farming community.

Table 4: Land holding distribution of sample respondents

Sl. No.	Particulars	No. of Respondents
1.	Marginal (<2.5)	5 (16.67)
2.	Small (2.5 to < 5 ac)	18 (60.00)
3.	Medium (5.0 to 12.5 ac)	5 (16.67)
4.	Large (>12.5 ac)	2 (06.66)
5.	Total	30 (100)
6.	Mean size	5.10

Land holding distribution pattern of farmers were presented in table 4, majority of them were small farmers (60 per cent) remaining 33 per cent of them were marginal and medium farmers and only 7 per cent of the farmers belongs the large category. It could be evident from the table that, majority of the farmers belong to small and medium land holding category hence, training programmes must focus on equipping them with the knowledge and skills necessary to increase productivity and inducing cost effective technologies for improving the socio- economic status of these farmers to sustain their livelihood.

Table 5: Livestock assets of sample households (per farm)

Sl. No.	Particulars	Average No.	Value
1.	Cow	1.00	18,465
2.	Bullock pair	1.00	34,733
3.	Poultry	4.00	760
4.	Goat / Sheep	1.00	5,620
5.	Total	--	59,578
6.	FYM produced (tons/farm)	05.50	

Table 5 presents the per farm livestock assets of the sample households, which serve as an important indicator of the economic strength and sustainability of rural households. The results indicate that the farmers possessed a moderate level of livestock assets, with one bullock pair, followed by cows, goats/sheep and poultry birds as source of eggs for home consumption Animal power can be utilized for ploughing and carting primarily in agriculture where

machinery is not a feasible option (Mehta & Nambiar, 2007)^[7]. Livestock asset provide a wide spectrum of benefits such as food, manure with an average production of 5.50 tons per farm and generate income. The availability of farm yard manure supports integrated nutrient management practices and helps in reducing dependency on chemical fertilizers and intern reduces cost of cultivation thereby promoting sustainable agriculture practices.

Table 6: Reasons for participating in banana training programme

Sl. No.	Motivating Factors	Percentage of farmer	Rank
1	Field preparation	63.33	9
2	Quality planting material	76.67	5
3	Method of planting	50.00	11
4	Recent advances in production technologies	100.00	1
5	Irrigation management	76.67	5
6	Integrated nutrient management	93.33	3
7	Integrated pest management	66.67	8
8	Integrated disease management	96.67	2
9	Post harvest handling	46.67	12
10	Improved marketing opportunities	83.33	4
11	Export potentiality	53.33	10
12	Good rapport from the fellow farmers and scientific community	73.33	7

It is very crucial to know, why farmers will attend training programmes in the horticulture extension education unit. Table 6 highlights the reasons for farmers participation in the banana training programme. The findings reveal that all the respondents participated to gain knowledge on recent advances in banana production technologies, which was ranked first (Anonymous 2024 & 2025) [3, 4, 5]. Integrated disease management (96.67 per cent) and integrated nutrient management (93.33 per cent) were ranked next, indicating farmers concern towards reducing chemicals and making

crops more resilient to pest and diseases. This will boost crop productivity, soil health and cutting cost on chemicals. Improved marketing opportunities, quality planting material and irrigation management were considered as important motivating factors to attend training. Overall, the results indicate that farmers were primarily motivated by production oriented, technology driven and income enhancing aspects of banana cultivation, emphasizing the relevance and effectiveness of the training programme.

Table 7: Variable cost of cultivation of Banana production (Rs./ha)

Sl. No.	Particular	Before training Programme		After training programme	
		Amount in Rupees	Per cent to TVC	Amount in Rupees	Per cent to TVC
A	Variable cost				
1	Planting material	36,000	9.24	34,500	9.47
2	Nutrients	1,10,263	28.29	72,763	19.97
3	FYM	27,125	6.96	41,588	11.41
4	Neem Cake	1,563	0.40	2,875	0.79
5	Vermi compost	1,130	0.29	995	0.27
6	Bio-Products	288	0.07	945	0.26
7	PPC	27,325	7.01	20,803	5.71
8	Staking	36,038	9.25	33,753	9.26
9	Labour Cost	98,250	25.21	103,013	28.27
10	Marketing cost	9,743	2.50	10,313	2.83
11	Miscellaneous	1,145	0.29	1,900	0.52
12	Interest on working capital	40,883	10.49	40,883	11.22
	TVC	3,89,750	84.71	3,64,328	82.45

In order to calculate the total cost of production, variable cost components assessed on the basis of prevailing market rates of the inputs used. Table 7 presents the variable costs incurred in production of banana. An overall variable cost estimated for one hectare of banana accounts to Rs.3, 89,750/- before training and it has reduced to Rs.3, 64,328/- after the training. This has attributed towards reduction in the use of nutrient application by 8 per cent. Among variable cost component nutrient and labour cost is

considered to be the highest. After the training, there is a significant change in the farmers cultivation practice of banana, application of bio inputs and farm yard manure has increased by decreasing the usage of chemical fertilizers. Farm yard manure cost is also accounted for 11 per cent of the total variable cost, which is due to lack of livestock results in depending on purchase of farm yard manure from the fellow farmers at higher price by the sample respondent.

Table 8: Fixed and Total cost of cultivation of Banana production (Rs./ha)

Sl. No.	Particular	Before training Programme		After training programme	
		Amount in Rupees	Per cent to TVC	Amount in Rupees	Per cent to TVC
B	Fixed cost				
1	Land revenue	55	0.08	55	0.08
2	Depreciation charges	2,233	3.17	2,815	4.00
3	Rental value	58,900	83.71	65,525	93.12
4	Interest on fixed capital	9,178	13.04	9,178	13.04
5	TFC	70,366	15.29	77,573	17.55
6	TVC	3,89,750	84.71	3,64,328	82.45
7	TC	4,60,116	100	4,41,901	100
8	Cost per kg of output	14.24		11.14	

Among fixed cost component rental value of land is the highest in both before and after training. Table 8 represents the fixed and total cost components of banana, indicating that total cost before training was higher (Rs.4,60,116) than after training (Rs.4,41,901), Kumari, R. S., *et al.* (2025) [6] results are in line with these findings. This reduction is mainly due to reduction in variable cost after the training

majorly due to reduction in the use of chemical. Use of more bio-products, taking of timely operations and prophylactic measures has attributed towards improved banana productivity and incomes of the sample respondents. Significant reduction in the cost of banana production was noticed as an impact of the training programme.

Table 9: Returns and Break even analysis of Banana cultivation

Sl. No.	Particulars	Amount in Rupees	
		Before training programme	After training programme
A		Returns	
1	Returns from main product (Rs/ha)	6,86,640	7,99,451
2	Returns from by-product (Rs/ha)	26,579	24,578
3	Gross return (Rs/ha)	7,13,219	8,24,029
4	Net returns (Rs/ha)	2,62,846	3,92,441
5	B C ratio	1.55	1.86
B	Breakeven Yield (Rs/ha)	19,165	21,419

The comparison of total returns and net incremental income has shown positive impact, Net returns from banana crop increased from Rs. 2, 62,846 to Rs. 3, 92,441 which was about 49 percent more than the before training (Table 9). These results are in line with the results of the study conducted by Kumari *et al.*, 2025& Murigi *et al.*, 2024^[6, 2]. After the training there was a decline in the usage of chemical fertilizers and plant protection chemicals, this has attributed towards reduction in the total variable cost which contributed towards increased net returns. There was an eleven per cent increase in the breakeven yield of banana after the training, majority of the farmers have opined that adoption of scientific cultivation practices could able to increase the yield. This clearly signified the impact of training on yield and income of farming community.

Conclusion

The present study assessed the impact of the banana cultivation training programme organized by the Horticulture Extension Education Unit, College of Horticulture, Mysuru, on the income and welfare of banana farmers in Mysuru district. The findings clearly revealed that the training programme had a positive and significant impact on the socio-economic conditions, production practices, cost efficiency and profitability of the trained farmers.

The majority of the respondents belonged to the productive age group and possessed adequate educational background, which facilitated effective understanding and adoption of scientific banana cultivation practices. Most of the farmers were small (60 percent) and marginal landholders (33 percent), highlighting the importance of cost-effective and sustainable technologies promoted through training programmes. Livestock ownership and availability of farmyard manure (5.5 tonne per farm) further supported integrated nutrient management practices. A notable shift in cultivation practices was observed after the training, particularly a reduction in the use of chemical fertilizers and plant protection chemicals and an increased adoption of FYM, bio-inputs and integrated pest and disease management practices. This resulted in a considerable reduction in variable cost of cultivation. An overall variable cost estimated for one hectare of banana accounts to Rs.3, 89,750/- before training and it has reduced to Rs.3, 64,328/- after the training. This has attributed towards reduction in the use of nutrient application by 8 per cent. Economic analysis indicated a substantial increase in gross returns, net returns and benefit-cost ratio after training. Net returns from banana crop increased from Rs. 2, 62,846 to Rs. 3, 92,441 which was about 49 percent more than the before training. After the training there was a decline in the usage of

chemical fertilizers and plant protection chemicals, this has attributed towards improved productivity & reduction in the total variable cost which contributed towards increased net returns of banana farmers.

Overall, the study concludes that crop-specific, farmer-oriented training programmes are effective extension tools for enhancing farmers' technical knowledge, promoting sustainable cultivation practices and improving farm income and livelihood security. Strengthening such training initiatives with greater emphasis on market-led production, export quality standards and post-harvest management can further enhance the long-term impact of extension interventions.

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