# Impact of training programs on farm mechanisation

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## ABSTRACT

*A study was conducted to assess the impact of the training programmes on farm mechanisation and to conductSWOC analysis on the effectiveness of the training among the selected trainees from the central zone of Kerala. Agricultural Research Station,Mannuthyunder Kerala Agricultural University provided training on farm mechanisation to the selected farmers and farm women in batches. All the trainees reported that they learned the skill of operating farm machinery and became responsible for increasing the area under farm mechanization.Almost two-third of the respondents (62%) reported that the trainees had medium level of backhome utility after attending the trainings on farm mechanisation. Among the 14 parameters of the back home utility of the training, knowledge level, skill, positive attitude, educational level of family members, employment opportunity, income level, asset creation, teaching fellow members, savings, repayment of loans, recreation, crisis management of family, social participation and infrastructural facilities proved to be highly influential in creating an impact on the livelihood of the trainees.The SWOC analysis showed that field level hands on training and disciplined training were the major strengths of the training while less duration of the training period wasthe main weakness as reported by the trainees. Reduced cost of cultivation and opportunity for group farming were the main opportunities while difficulty in gettingrepair and maintenance of machinery was the main constraint faced by the trainees.*

*Key words: Training programme, farm mechanisation, back home utility and SWOCanalysis*

## INTRODUCTION

Kerala, a consumer state heavily depends on neighbouring states for its staple food, rice and for the daily consumption of vegetables. Because of high cost and acute shortage of labour, farming as primary occupation turned non-remunerative. This situation forced many farm labourers to move away from farm sector to non-farm sector. According to the State Planning Board, Kerala (2021), the area under rice cultivation in Kerala decreased from 2.13 lakh ha in 2010-11 to 1.98 lakh ha during 2019-20. In spite of all extension and development efforts, there has been reduction in area under rice of 0.15 lakh ha over a decade. One of the major reasons identified for the reduction in the area under rice was lack of adequate labour during peak seasonal operations. To overcome this situation, the only way was to promote the adoption of farm mechanization. Farm mechanization also helped to overcome the labour crisis and increase the efficiency of the farm labour force. It also provided the option for raising second crop which helped to increase yield and the income of farmers. Agricultural Research Station, Mannuthy under Kerala Agricultural University conducted 20 days training programmes to more than 5000 farmers and farm women on various aspects of farm mechanisation such as operation, repair and maintenance of farm machinery. In this context, a study was conducted to assess the impact of the training programmes on farm mechanization conducted by Agricultural Research Station, Mannuthy, Kerala.

## RESEARCH METHODOLOGY

Based on the set objectives, the expost facto research was conducted among the trainees of the training programmes on farm mechanization conducted by Agricultural Research Station, Mannuthy. The list of trainees of the training conducted on farm mechanization by Agricultural Research Station (ARS), Mannuthy was collected from Central Training Institute, Mannuthy. Among the trainees a sample size of 60 trainees belonged to Central Kerala were selected as respondents using simple random sampling technique. Wilcoxon signed rank test was used to assess the impact of training programmes on farm mechanisation.

## RESULTS AND DISCUSSION

### Back home utility

The distribution of respondents according to the back home utility of the training programme is presented in Table 1. It clearly shows that all the trainees reported that they learned operating farm machinery which developed the knowledge and skill level of the trainees and they became responsible for increasing the area under farm mechanization. Most of the trainees reported that the training was very effective and 90 per cent of them stated that they motivated their family and fellow members to participate in similar training programmes. Majority of the trainees (88%) agreed that they learned repairing farm machinery and it increased the self-confidence of the trainees for repairing the machinery. More than four-fifth of the trainees (87%) conveyed that they taught fellow members on the operation and repair of farm machinery after attending the training. More than one-third of the trainees (38%) became members in Self Help Groups (SHG's) to promote group farming in farm mechanization. Just above one-fourth of the trainees (27%) adopted farm mechanization on their own farm because most of the trainees were agricultural labourers and they had less area of land holdings and just above one-tenth of the trainees (12%) purchased farm machinery on their own for livelihood.

*Table 1*
*Distribution of respondents according to back home utility of the training on farm mechanisation*
*(n=60)*

| Sl. No. | Nature of utilization | Utilised | | Not utilised | |
|---|---|---|---|---|---|
| | | No. | % | No. | % |
| 1 | Developed skill in operating farm machinery | 60 | 100 | - | - |
| 2 | Responsible for the increase in area under farm mechanization | 60 | 100 | - | - |
| 3 | Motivated fellow members to participate in similar training programmes | 54 | 90 | 6 | 10 |
| 4 | Learned repairing farm machinery | 52 | 87 | 8 | 13 |
| 5 | Teaching fellow members,the operation of farm machinery | 41 | 68 | 19 | 32 |
| 6 | Teaching fellow members, the repair of farm machinery | 52 | 87 | 8 | 13 |
| 7 | Became member / leader of SHGs to promote group farming in farm mechanization | 23 | 38 | 37 | 62 |
| 8 | Adopted farm mechanization in own farm | 16 | 27 | 44 | 73 |
| 9 | Purchased farm machinery for my livelihood | 7 | 12 | 53 | 88 |

From the above results, it could be derived that the main purpose of conducting the training on farm mechanization was achieved by developing skill in operating farm machinery among all respondents and they were found to be responsible for increasing the area under farm mechanization. Similar findings were reported by Kempis (2019). The next stage of sustainability of retaining and promoting the trainees of training on farm mechanization in the same field as their livelihood option may be taken care of by the local level institutions and development departments like village panchayats and respective krishi bhavans.

### Extent of back home utility of the training on farm mechanisation

Table 2 reveals the extent of back home utility of the training among the trainees. It was seen that 'developed skill in operating farm machinery' was the parameter which secured the highest index of 67.77. It was followed by motivated their friends to participate in similar training programme with

the index of 60.55 responsible for increasing area under farm mechanization (59.44), developed skill in repairing farm machinery (58.89) and teaching others the repair of farm machinery (52.22) were the parameters obtained medium index and purchased farm machinery for livelihood had the least observed index of 6.67.

*Table 2*
*Extent of back home utility of the training on farm mechanization*

*(n=60)*

| Sl.No. | Parameters | Pattern of back home utility | | | | | | Index |
|---|---|---|---|---|---|---|---|---|
| | | High | | Medium | | Low | | |
| | | No. | % | No. | % | No. | % | |
| 1 | Developed skill in operating farm machinery | 20 | 33 | 22 | 37 | 18 | 30 | 67.77 |
| 2 | Motivated their friends to participate in similar training programmes | 7 | 12 | 41 | 68 | 6 | 10 | 60.55 |
| 3 | Responsible for the increase in area under farm mechanization | 11 | 18 | 25 | 42 | 24 | 40 | 59.44 |
| 4 | Developed skills in repairing farm machinery | 17 | 28 | 20 | 33 | 15 | 25 | 58.89 |
| 5 | Teaching others the repair of farm machinery | 6 | 10 | 21 | 35 | 14 | 23 | 52.22 |
| 6 | Teaching others the operation of farm machinery | 11 | 18 | 20 | 33 | 21 | 35 | 41.11 |
| 7 | Became member/leader of SHGs to promote group farming in farm mechanization | 2 | 3 | 10 | 17 | 11 | 18 | 20.56 |
| 8 | Adopted farm mechanization in my own farm | 4 | 7 | 7 | 12 | 5 | 8 | 17.22 |
| 9 | Purchased farm machinery for my livelihood | 3 | 5 | 2 | 3 | 2 | 3 | 6.67 |

*Table 3*
*Category wise distribution of trainees according to the pattern of back home utility earned by them*

*(n=60)*

| Sl. No. | Category | Frequency | Percentage |
|---|---|---|---|
| 1 | High | 12 | 20 |
| 2 | Medium | 37 | 62 |
| 3 | Low | 11 | 18 |
| | Total | 60 | 100 |

The Table 3 reveals that almost two-third of the respondents (62%) reported that the trainees earned medium level of back home utility after attending the training on farm mechanization. High level of back home utility was experienced by 20 per cent and low level back home utility was felt by 18 per cent of the respondents.

Factors affecting the back home utility of trainings on farm mechanization

*Table 4*
*Factors affecting the back home utility of trainings on farm mechanization*

| Sl. No. | Factors | Correlation coefficient |
|---|---|---|
| 1 | Age | -0.273* |
| 2 | Gender | -0.066 |
| 3 | Educational status | -0.067 |
| 4 | Family size | -0.024 |
| 5 | Type of house owned | 0.858 |
| 6 | Marital status | -0.158 |
| 7 | Occupational status | 0.134 |
| 8 | Land owned | 0.003 |
| 9 | Self confidence | 0.351* |
| 10 | Achievement motivation | -0.365* |
| 11 | Innovativeness | 0.404** |
| 12 | Social participation | -0.205 |
| 13 | Scientific orientation | 0.409** |
| 14 | Mass media utilization | -0.208 |
| 15 | Risk orientation | -0.037 |

** Significant at 0.01 level of probability *Significant at 0.05 level of probability

From the Table 4, it could be observed that from the selected 15 independent variables five variables had significant relationship with the utility of the training. The factors which affected the utility of the training were age of the respondents, achievement motivation, self confidence level of the respondents, scientific orientation and innovativeness. Among the variables, achievement motivation and age of the respondents were negatively significant and other factors were positively significant to the utility of the training. Scientific orientation and innovativeness were highly significant at 0.01 level. Age of the respondents, achievement motivation and self confidence level of the respondents showed significance at 0.05 level in terms of back home utility of trainings on farm mechanization.

Impact of trainings on farm mechanization

*Table 5*
*Impact of the trainings on farm mechanization among the selected trainees*

*(n=60)*

| Sl. No. | Parameter | Before | After | Z - value |
|---|---|---|---|---|
| | | Mean rank | Mean rank | |
| 1 | Knowledge level | 00.00 | 30.50 | 6.827** |
| 2 | Skill level | 00.00 | 30.50 | 6.805** |
| 3 | Positive attitude | 11.00 | 32.67 | 6.331** |
| 4 | Educational level of family members | 23.50 | 32.07 | 5.128** |
| 5 | Employment opportunity | 29.27 | 30.78 | 4.570** |
| 6 | Income level | 27.83 | 30.97 | 5.235** |
| 7 | Asset creation | 29.38 | 37.75 | 4.922** |
| 8 | Teaching fellow members | 27.00 | 31.47 | 4.553** |
| 9 | Savings | 28.00 | 30.58 | 6.854** |
| 10 | Repayment of loans | 30.00 | 31.67 | 3.799** |
| 11 | Indebtedness | 29.65 | 33.29 | 3.551** |
| 12 | Recreation | 23.50 | 31.74 | 5.499** |
| 13 | Crisis management of family | 29.77 | 33.15 | 3.865** |
| 14 | Marriage of family members | 29.92 | 31.86 | 2.701* |
| 15 | Social participation | 19.50 | 32.70 | 5.489** |
| 16 | Infrastructural facilities | 27.23 | 31.23 | 4.849** |

*** Significant at 0.01 level of probability (2-tailed)* **Significant at 0.05 level of probability (2-tailed).*

From the Table 5, it was clear that the training created a positive impact among the trainees. All the 16 parameters used for the test proved to be highly influential in creating positive impact on the livelihood of participants. Except the parameter, marriage of family member, all other 15 parameters showed the impact of training at 0.01 level of significance. It was observed that the trainees did not possess knowledge and skills on farm mechanisation before the training programme, whereas gained completely new knowledge and skill from the training with respect to the farm mechanization. Remya and Alexander (2015), Kumari *et al.* (2020) and Patil *et al.* (2020) reported similar findings of improvement in knowledge and skills after the training. The training was found as successful in creating positive attitude among the trainees towards farm mechanization. Their employment opportunity increased which helped to increase their income level. Increase in income improved their savings, created asset, they could utilise a part of income for recreation, they were able to use their earnings for meeting crisis in the family and also helped to reduce indebtedness in the family of the trainees. By working as members of food security army, the trainees got wider exposure to society which in turn enhanced their social participation.

SWOC analysis

SWOC analysis was done to analyse the Strengths, Weaknesses, Opportunities and Challenges faced by the trainees after attending the training on farm mechanization. SWOC analysis was done among the trainees using index method. The findings are given below.

*Table 6*
*SWOC analysis of the trainings on farm mechanization*

*(n=60)*

| Sl. No. | Category | Index | Rank |
|---|---|---|---|
| | I. Strengths | | |
| 1 | Field level hands on training | 96.33 | I |
| 2 | Disciplined training | 94.56 | II |
| 3 | Commitment of the training institution | 93.33 | III |
| 4 | Very good infrastructure and logistics for the training | 91.5 | IV |
| 5 | Expertise of the trainers | 89.88 | V |
| 6 | More importance for practical sessions | 86.66 | VI |
| | II. Weaknesses | | |
| 1 | Duration of the training period is not adequate to develop skill thoroughly | 71.33 | I |
| 2 | Lack of continuous organizational support | 54.44 | II |
| 3 | No credit support / linkage for individual ownership of machineries | 53.33 | III |
| | III. Opportunities | | |
| 1 | Opened avenue for group farming | 95.55 | I |
| 2 | Reduced the cost of cultivation | 83.33 | II |
| 3 | Efforts to attract youth towards farming sector | 81.11 | III |
| 4 | Brought fallow land under cultivation | 78.89 | IV |
| 5 | Better utilization of human resources | 77.22 | V |
| 6 | Addressed prevailing social problem | 69.44 | VI |
| | IV. Challenges | | |
| 1 | Repair and maintenance too difficult | 86.67 | I |
| 2 | Limited availability of spare parts | 63.89 | II |
| 3 | Lack of institutional back up in terms of technical and financial assistance after training | 60.00 | III |
| 4 | Competition of labor contractors | 59.44 | IV |
| 5 | Interpersonal conflicts in group | 48.33 | V |

The major strength of the training provided by ARS, Mannuthy was field level hands on training with an index value of 96.33 followed by disciplined training, Commitment of the training institution, very good infrastructure and logistics for the training, expertise of the trainers.

The major weakness was in the area of inadequacy in training duration to develop skill thoroughly whereas lack of continuous organizational support, no credit support / linkage for individual ownership of machineries were also the weaknesses of training programsas expressed by the participants.

The major opportunity perceived by the trainees of farm mechanization was opening avenue for group farming, which secured an index of 95.53. 'Reduced the cost of cultivation was another important opportunity with an index of 83.33. Effort to attract the youth and increasing the employment and bringing out fallow land under cultivation were the other two important opportunities of these training with index values of 81.11 and 78.89, respectively. Promoting better utilization of human resources (77.22) and addressing the prevailing

social problem throughthe training programmes' (69.44) were ranked as 5th and 6th possible opportunities.

It was clear that repair and maintenance of machines was too difficult, which was the major challenge having index value of 86.67. Limited availability of spare parts were also major challenges reported by the trainees with index value of 63.89. Challenges ranked as 5th and 6th were competition of labour contractors (59.44) and interpersonal conflicts in group (48.33), respectively.

*Table 7*
*Constraints faced by the trainees of the training on farm mechanization*

*(n=60)*

| Sl. No. | Constraints | Total score | Average score | Garrett ranking |
|---|---|---|---|---|
| 1 | Farm machineries were not feasible in the region | 3815 | 63.60 | 1 |
| 2 | Financial assistance was not provided | 3795 | 63.25 | II |
| 3 | Lack of support after training | 3762 | 62.70 | III |
| 4 | Training period not adequate | 3745 | 62.40 | IV |
| 5 | Maintenance cost of machineries were high | 3567 | 59.45 | V |
| 6 | Operation of machineries were very complicated | 3488 | 58.13 | VI |

Table 7 shows that the most important constraint faced by the trainees was non feasibility of the farm machinery in all the regions with an average score of 63.60. The second important constraint was the non-availability of financial assistance with an average score of 63.25. The third important constraint perceived by the trainees was lack of support after training with an average score of 62.70. Inadequate training period (62.40), high maintenance cost of machineries (59.45) and complication in operating machineries (58.13) were ranked 4th, 5th and 6thas the constraints faced by the trainees on farm mechanization.

## SUMMARY AND CONCLUSION

Agricultural Research Station, Mannuthy under Kerala Agricultural University had provided training to rural youth on farm mechanisation. Majority of the trainees were middle aged and more than 50 per cent of the trainees had plus two level education. Less than half of the trainees (45%) had Agricultural and allied activities as their occupation. Majority of the trainees had low annual income (< ` 50000). After attending the training the trainees had achieved medium level of back home utility. Among 15 independent variables 5 variables showed significant influence on back home utility of the training. Except one parameter, all other 15 parameters showed the impact of training at 0.01 level of significance. The training created a positive impact among the trainees and became organized as Food Security Army. Only few respondents owned machinery and all trainees improved knowledge, skill and positive attitude towards farm mechanization. They improved self-confidence in using farm machinery. The training had improved the livelihood security of the trainees. All members turned from unemployment to assured employment status and they could increase the area under farm mechanization year after year.

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