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Impact of FoCT training on adoption of coconut tree climbing device for harvesting coconuts

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Abstract
Majority of the coconut growers in West Godavari district were facing the problem of theft of fallen nuts and shortage of skilled labour for nut harvesting. The traditional method of harvesting the nuts i.e. climbing the tall trees was quite risky and accident prone. To overcome this problem, Krishi Vigyan Kendra, Venkataramannagudem has conducted training programmes to unemployed rural youths in collaboration with Coconut Development Board, Cochin. Total 240rural youths were trained during last five years. Out of 240 trainees 40 trainees were selected by using simple random sampling. The information pertaining to tree climber by traditional methods and advanced method of coconut tree climber was collected by using a well-structured pretested interview schedule. Eighty percent of the trainees were adopted the coconut tree climbing device for harvesting their own coconuts remaining 20 per cent of the trainees adopted the device for income generating purpose. For knowing the correlation between profile characteristics and adoption data were statistically analysed by using correlation analysis. Education, annual income, extension contact, mass media exposure, social participation, training exposure. risk preference were significantly correlated with adoption of coconut climbing device. With the conventional coconut climbing, a person could harvest about 10-25 nuts/ tree with meager earnings of Rs.10000-15000/-year. After using the coconut tree climber, annual income increased to Rs.20000-40000/-year and a person could climb coconut tree without any life risk.

Keywords: FoCT (Friends of Coconut Tree) training, rural youth, adoption and coconut tree climber

Introduction
Krishi Vigyan Kendra designs different types of training courses for the farmers/farm women and rural youths. Training is an important aspect of the entrepreneurship development and it is considered as part of strategy for growth and development of an organization. Basically, training is intended to help individuals to learn and to bring the desired standard of efficiency, condition and behaviour (*Sharmal et al*, 2013) [5] Thus, it is sustained, coordinated and focused effort to enhance individual's competence for enduring success. Courses are based on the information received through family and village survey. No specific qualification is required to be the participant of the training programme. After conducting the training programmes, follow up programmes are organized for converting the obtained skills of the trainees into practice. While designing the training programmes, the concept of the farming system is taken into account to make the enterprises commercially viable. The vocational training programmes take into account all methods and means which will result in skill development in rural youth in the areas of their interest.

Coconut (Cocos nucifera L.) is an important and versatile tree crop with diverse end-uses, supporting livelihood of many farm households in the primary sector, grown in many states of India. The classics of India have rightly eulogized coconut tree as “Kalpavriksha” or “the tree of heaven” which means “the tree that gives all that is necessary for living”, owing to the multifarious uses of various parts of the palm and its products in our daily life. It forms an integral component of the socio-economic and cultural lives of nearly 80 million people of the world in 92 countries (*Jose, 2012*) [4]. The world annual production of coconut is 57.514 billion nuts or 10.52 million tons of copra from an area of 14.231 million hectares. More than 75 per cent of this is contributed by the four major player’s viz., India, Indonesia, Philippines and Sri Lanka. India ranks third on world coconut map. Coconut is cultivated in 16 states and 4 UTs in the country and provides food and livelihood security to more than 12 million people (*Annual Report*, 2016) [1]. There are 5 million coconut holdings in the country and the average size of these holdings is less than one hectare. India is the largest coconut producing country in the world contributing 31% of the world production. As per the all India estimates for the year 2015-16, the area and production of coconut in the country is 1.98 million hectares and 20439.61 million nuts respectively.

The productivity of coconut at national level for 2015-16 is 10345 nuts per hectare.

The four southern states of Kerala, Karnataka, Tamil Nadu and Andhra Pradesh account for 88 percent of the coconut area and 90 percent of the coconut production in the country (*Coconut Development Board*, 2016) [1]. Andhra Pradesh is the fourth largest producer of coconuts after Kerala, Karnataka and Tamil Nadu. Andhra Pradesh has productivity of 8296 nuts/ha. The twin Godavari districts of Andhra Pradesh account for the bulk of coconut and copra production in the State. West Godavari district produce 4489.03 lakh nuts with the area of 21561 ha with the productivity of 20821 nuts/ha (*Venkat et al*, 2017) [3]. Majority of the coconut growers in the West Godavari district were facing the problems of shortage of skilled labour for nut harvesting also growers were losing good quality nuts and price in the market. The traditional method of harvesting the nuts i.e. physically climbing the tall trees is quite risky and accident prone. Now days, tree climbers were a rarity in coconut growing states of Kerala, Karnataka, Tamil Nadu, Andhra Pradesh, Maharashtra and Goa very few are taking as the traditional profession.

The consistent supply of raw nuts for the market as well as for the processing sector could be ensured by regular harvesting schedule. In many areas, farmers were forced to take the help from floating laborers, who charge higher cost, despite not being familiar with the art of coconut climbing. The security of labour disrupts harvesting cycle's thus causing loss of income to the growers. The objectives of the FoCT training study were to impart training to a group of unemployed youths in developing their technical skills for harvesting of coconuts, to mitigate the problem of non-availability of coconut tree climbers for coconut harvesting.

The present study was conducted by the Krishi Vigyan Kendra, Venkataramannagudem (Andhra Pradesh) with an attempt to know the impact of friends of coconut tree (FoCT) training on adoption of coconut tree climbing device

Materials and methods

During 2014-17 "Friends of coconut tree" (FOCT), Skill development trainings programmes were conducted at Dr YSRHU, Krishi Vigyan Kendra, Venkataramannagudem with the financial support of Coconut Development Board (CDB) to 240 coconut farmers/Climbers to impart the skill of using palm climbing device and management of coconut plantations for sustainable yields. These trainees got acquainted with the skill of using the device. The knowledge of coconut palm management and associated pest and disease management was also taught to the trainees. The selection of unemployed youths was made in joint collaboration with department of horticulture, NGO's, Gram panchayat through media coverage by print and electronic media. From each training programme 20 trainees were attended. Total 240coconut farmers were trained for safe climbing of coconut trees using coconut tree climber and improved coconut cultivation practices. Out of 240 trainees 40 trainees were selected by using simple random sampling. The information pertaining to tree climber by traditional methods and advanced method of coconut tree climber was collected by using a well-structured pretested schedule. Adoption was operationalized here as a decision to make full use of coconut climbing device for harvesting of coconuts. Farmers adopt them either fully or partially or do not adopt at all. Score 3, 2 and 1 was given for full, partial and non-adoption. In order to interpret collected data and to draw meaningful conclusions, data were statistically analysed by using analytical statistics i.e. correlation.

$$\text{Percentage of increase in income} = \frac{\text{With traditional method X 100}}{\text{Income with coconut tree climber}}$$

Results and discussion

Trainees adopted the coconut tree climbing device in two ways one is for harvesting their own coconuts and remaining one is income generating purpose. 80 percent of the trainees were adopted the coconut tree climbing device for harvesting their own coconuts remaining 20 per cent of the trainees adopted the device for income generating purpose. The trainees expressed that the device is time saving, simple and safe and reduced the harvesting cost. The device was so designed to attract the youth and non-traditional coconut climbers to take up coconut harvesting as vocation. The small farmers with few number of coconut trees or having bund plantations were very happy to harvest nuts by their own by using this simple device.

Table 1: Correlation coefficient between profile characteristics and adoption coconut tree climbing device Adoption of coconut tree climbing device by the growers might have been a function of different factors.

Characteristics	Correlation coefficient
Age	0.1342NS
Education	0.417**
Land holding	0.132NS
Annual income	0.189*
Family size	0.12NS
Farming experience	-0.141 NS
Extension contact	0.505**
Mass media exposure	0.341**
Social participation	0.392**
Training exposure	0.689**
Risk preference	0.263*

* = significant at 0.05 level of probability
** = significant at 0.01 level of probability

A perusal of data presented in table 1 revealed that, among the eleven characteristics studied, eight characteristics namely education, annual income, extension contact, mass media exposure social participation, training exposure and risk preference were significantly correlated with adoption of coconut climbing device. However, age, landholding and farming experience did not correlated with adoption of coconut climbing device.

Education paves the way to quench the need for information for adoption. Social participation act as supporting psychological variable to verify and clarify the misconception in adoption of the device. Mass media exposure, extension contact and training exposure facilitated quick acquisition of knowledge and better adoption. Social participation act as supporting psychological variable to verify and clarify the misconception in adoption of the device. Trainees who has risk preference and income orientation to work towards higher profits and better adoption.

Table 2: On an average number of nuts/tree harvested and income generation by different methods.

With traditional method		With advanced method		Traditional method i.e., physical tree climbing (Rs '000/-yr)	Advanced method (in Rs. '000/-yr)	Per cent increase over traditional method
No. of nuts/tree	No. of trees / day	No. of nuts/ tree	No. of trees / day			
10-25	18-22	20-30	60-70	10-15	20-40	50-60

The traditional method of harvesting the nuts i.e physically climbing the tall trees was quite risk and accident prone, to overcome these problems, advanced method of coconut tree climber was used. The results were expressed based on average of both traditional method and advanced method of coconut tree climber. It was evident from Table 2 that among two methods of climbing, advanced method of coconut tree climber harvested more number of nuts (20-30 nuts/tree) and more number of harvesting trees (60-70 trees/day) over traditional method i.e., physical tree climbing (10-25 nuts/ tree) and lesser number of harvesting trees (18-22 trees/day). This was mainly due to use of advance method of climber leads easy to climb the tree, without any life accidental risk by using coconut climber over other method of harvesting of coconuts, whereas, manually climbing the tall trees, experienced body pain, muscles catch and with lot of risk while climbing and very difficult to meet out financial needs of a family with meager earnings.50-60 per cent increase in income with an average of Rs.20,000-40,000/-year with advanced method and Rs.10,000-15,000/-year with traditional method (Table 2).

After successful completion of the training they were provided with a palm climbing device, free accidental insurance for one year and a certificate of completion so as to enable him to take this as his profession. These trainees were linked with Coconut Development Board to get regular advices and schemes related to coconut farming. Many youths from surrounding villages to approach KVK to undergo training and choose coconut harvesting as an employment generation opportunity to meet their livelihood demand. Simultaneously, farmers were also benefitted by harvesting the nuts at right time and getting quality nuts.

Conclusion

The study has shown that cent per cent of the trainees were adopted the coconut tree climbing device. Correlation analysis indicated that education, annual income, extension contact, mass media exposure social participation, training exposure, risk preference were significantly correlated with adoption of coconut tree climbing device. The study concludes that coconut climber equipment is a boon for the coconut harvesters, since it has reduced the drudgery in tree climbing and improved the climbing efficiency there by providing employment opportunity for rural youths, which has helped them to improve their livelihood.

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