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Association between profile of apiary trainees and adoption of beekeeping activity for income generation

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Abstract
Income generation is important for any agricultural activity. Apiary is known as domestication of honey bees under favourable conditions. Two species of honey bees viz:Apis mellifera and Apis cerena indica are suitable for domestication in areas where abundant forage is available. Imparting vocational trainings is one of the mandated activities of Krishi Vigyan Kendra (KVK). In order to provide self employment oriented skill training to tribal and rural young farmers "Apiary" has been identified as suitable enterprise and a total of 175 youth were trained in this vocation in West Godavari district under Rashtriya Krishi Vikas Yojana (RKVY) and Tribal Sub Plan for the year 2015-16 & 2016-17. The study was conducted by purposive sampling method and 175 tribal youth belonging to 18 villages in West Godavari. The results found that 80% of the trainees were from young age group, having high school to college education, had association with one or more than one organization, possessed small to medium size land holding, belongs to low to medium level of annual income group, had utilized medium to low level of information sources. It was also observed that one third of the apiary trainees were found with medium market orientation, about 70% of the apiary farmers adopted horticultural crops + field crops and horticultural crops + field crops + animal husbandry as farming system. The results of the correlation analysis indicated that variables age, education, social participation, economic orientation, market orientation, extension participation and knowledge level were positively and significantly associated with extent of adoption of apiary technology for income generation.

Keywords: Apiary, Beekeeping, Apis mellifera, Apis cerana indica, Farming System.

Introduction
Income generation is important for any agricultural activity. Apiculture is proven to be an income generating enterprise under favourable conditions. Domestication of honey bees with the species *viz., Apis mellifera* and *Apis cerana indica* were found to be very successful among bee keepers, where abundant forage required for bee activity. But selling and marketing of honey remains a big challenge for apiculturist in the area every year due to lack of Knowledge and honey processing unit in the area.

Keeping these points in mind KVK, Venkataramannagudem imparted vocational training programme on Bee keeping with the financial assistance of "Rashtriya Krishi Vikas Yojana" during the years 2015-16 & 2016-17. By these trainings trainees were also made aware about the fact that apiculture is not an enterprise for selling of only honey rather more by its bye products like collection of pollen, selling bee wax, making comb foundation sheets and Royal jelly. During 2015-16 KVK, Venkataramannagudem initiated apiary unit consisting of 13 *Apis mellifera* bee hive boxes & one honey extractor with the financial assistance of "Rashtriya Krishi Vikas Yojana". During 2016-17 the apiary unit at KVK was strengthened from 13 bee hive colonies to 40 and started selling the honey and bee colonies for the farmers and visitors. A total of seven trainings of each six days duration were conducted to tribal and rural youth at KVK, Venkataramannagudem covering 175 trainees.

Table 1: Details of trainings conducted under RKVY & TSP

S. No	Name of the training	Duration	Date	No of participants
1	Vocational Training programme on Bee keeping	Six Days	16.02.2016 - 21.02.2016	25
2			07.11.2016 - 12.11.2016	25
3			25.01.2017 – 30.01.2017	25
4			06.02.2017 -11.02.2017	25
5			20.02.2017 – 25.02.2017	25
6.			02.03,2017 - 08.03.2017	25
7.			21.03.2017 - 26.03.2017	25
Total				175

The study of the profile characteristics of apiary trainees and adoption was conducted with the following objectives:

a. To study the profile characteristics of Apiary trainees.
b. To find out the association between profile of apiary trainees and adoption of beekeeping for income generation.

Methodology

The study was confined to ex-post facto research design as the independent variables already operated in the study area. The present study was carried out in West Godavari District of Andhra Pradesh state. The district comprises of forty eight mandals. Krishi Vigyan Kendra, Venkataramannagudem was established as 2nd KVK in the district under Dr YSR Horticultural Univesity (SAU). Twenty five upland mandals are the operational mandals of KVK and a total of 175 trainees received "Apiary" as 6 days vocational training to rural /tribal farmers of West Godavari.

Profile of the apiary trainees were measured with the help of structured schedule, scales, indices and test developed by the researcher himself with consultation of experts to find out the correlation between independent variables and dependent variable with the help of correlation coefficient.

Results & Discussion

The literature confirmed that the personal, social, economical, communication and situational attributes of the apiary trainees would have considerable contribution to motivate their adoption behaviour. In the present study, the independent variables of the trainees *viz:* Age, Education, Social Participation, Source of information, Land holding, Annual income, Economic Orientation, Market Orientation, Extension Participation and Knowledge level were selected. The distribution of apiary trainees in terms of their profile characteristics are as given under Table 2.

Table 2: Profile of Apiary Trainees

S.No	Attributes of Apiary Trainees		Frequency	Per Cent
1.	Age	Young age (Up to 30 years)	128	73.14
		Middle Age (Between 31-50 years)	47	26.86
		Old age (Above 50 years)	-	-
2.	Education	Illiterate	-	-
		Functionally Literate	-	-
		Primary School	-	-
		Middle School	24	13.71
		High School	82	46.85
		College/Post graduation	69	39.44
3.	Social Participation	No Participation	-	-
		Membership in one organization	135	77.14
		Membership in more than one organization	36	20.57
		Membership with office bearer	4	2.29
4.	Land Holding	Marginal (Upto 1.00 ha.)	5	2.85
		Small (1.01 – 2.00 ha.)	95	54.28
		Medium (2.01 to 4.00 ha.)	53	30.28
		Big (Above 4.00 ha.)	22	12.59
5.	Annual Income	Low annual income (Up to Rs. 1,50,000/ annum)	128	73.14
		Medium annual income (1,50001 to 4,00,000/annum)	34	19.42
		High annual Income (4,00,001/- and above/annum)	13	07.44
		Mean – 2,84,923/- S.D. 1,12,234/-		
6.	Extension Participation	Low participation (below 3.41 score)	25	14.28
		Medium participation (3.42 to 5.77 score)	112	64.00
		High participation (Above 5.77 score)	38	21.72
		Mean 4.39 S.D. 1.06		
7.	Sources of Information	Low utilization (Upto 8.44 score)	45	25.71
		Medium utilization (8.45 – 12.41 score)	128	73.14
		High utilization (above 12.41 score)	2	1.15
		Mean 12.45 S.D. 1.73		
8.	Market orientation	Low (Up to 20.01 score)	114	65.14
		Medium (20.02 to 24.31 score)	56	32.00
		High (Above 24.31 score)	05	2.86
		Mean – 20.16 S.D. 1.03		
9.	Cropping pattern	Paddy-Paddy-Pulse	35	20.00
		Paddy-pulse-Maize	49	28.00
		Pulse-cashew	58	33.14
		Vegetables	17	9.72
		Coconut-cocoa	16	9.14
10	Farming System	Only Horticultural Crops	33	18.86
		Field Crops + Horticultural Crops	58	33.14
		Horticultural crops + Animal Husbandry	22	12.57
		Field Crops + Horticultural Crops + Animal Husbandry	62	35.43
11.	Knowledge	Low level of knowledge (Up to 35 score)	29	16.57
		Medium level knowledge (36 to 50 score)	118	67.43
		High level knowledge (Above 51 score	28	16.00
		Mean - 38.00 S.D- 4.86		

The data presented in Table 2. Revealed that most of the apiary trainees, about 78,14% were from young age group, having high school (46.85%) to college education(39.44%), had association with one (77.14%) or more than one organization (20.57%), possessed small (54.28%) to medium size land holding (30.28%), belongs to low (73.14%) to medium level (19.42%) of annual income group, had utilized medium (73.14%) to low level of information sources. It was also observed that one third of the apiary trainees were found with low to medium market orientation (65.14%) & 32%), while 35.43% of the apiary farmers adopted horticultural crops + field crops + animal husbandry as farming system, followed by 33.14% as Field + Horticultural Crops. Majority of the trainees has medium level of knowledge on apiary as they freshly attended the six days vocational training on apiary and learned the skills of beekeeping and honey extraction.

Association between selected profile of the apiary trainees and their extent of adoption

Usually, few farmers adopt the latest technologies immediately who are called the progressive farmers or innovators. The adoption of any new skill or technology by the trainees differs based on their personal, socio-economic, communication and psychological attributes. This was tested and confirmed by arriving at the correlation coefficient (r) value of the various independent variables over the dependent variable i.e. extent of adoption of apiary as income generating activity.

Table 3: Association between selected profile characters of the apiary trainees and their extent of adoption

S.No.	Independent Variable	Correlation Coefficient (r Value)
A.	Personal Attributes	
X_1	Age	-0.367**
X_2	Education	0.754**
B	Socio-Economic Attributes	
X_1	Social Participation	0.345*
X_2	Land Holding	0.320*
X_3	Annual Income	0.245*
C	Communication Attributes	
X_1	Extension Participation	0.297**
X_2	Sources of Information	0.312*
D	Psychological Attributes	
X_1	Knowledge level	0.678**
X_2	Market Orientation	0.496**
E	Situational Attributes	
X_1	Cropping Pattern	0.089^{NS}
X_2	Farming System	0.005^{NS}

** - Significant at 1 per cent, * - Significant at 5 per cent & NS Non Significant

The results of correlation analysis indicated that out of the eleven independent variables, eight variables i.e. education ('r' – 0.754), social participation ('r' – 0.345), land holding ('r' – 0.320), annual income ('r' – 0.245), extension participation ('r' – 0.297), sources of information ('r' – 0.312), knowledge level ('r' – 0.678) and market orientation ('r' - 0.496) were positively and significantly associated with the extent of adoption of apiary as income generating activity. The age of the trainees ('r' - -0.367) had negative correlation with the dependent variable i.e. extent of adoption of apiary activity as young age trainees tend to adopt the new skill and vocation. The situational attributes cropping pattern ('r' – 0.089) and farming systems ('r' – 0.005) had non-significant association with extent of adoption of the enterprise.

Conclusion

The results found that 80% of the trainees were from young age group, having high school to college education, had association with one or more than one organization, possessed small to medium size land holding, belongs to low to medium level of annual income group, had utilized medium to low level of information sources. It was also observed that one third of the apiary trainees were found with medium market orientation, about 70% of the apiary farmers adopted horticultural crops + field crops and horticultural crops + field crops + animal husbandry as farming system. The results of the correlation analysis indicated that variables age, education, social participation, economic orientation, market orientation, extension participation and knowledge level were positively and significantly associated with extent of adoption of apiary technology for income generation.

The results of the correlation analysis indicated that out of the eleven independent variables, eight variables *viz.,* education, social participation, land holding, annual income, extension participation, land holding, annual income, orientation knowledge level were positively and significantly associated with extent of adoption of apiary as income generating activity among the rural and tribal youth after obtaining the vocational training at KVK, Venkataramannagudem. The age was negatively and significantly correlated showing the fact that any new enterprise can be adopted by the youth rather than the aged persons. Only, cropping pattern and farming system had non-significant association with adoption of recommended technology of beekeeping as successful enterprise by the rural and tribal young trainees in West Godavari District.

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