

Original Research Article

<https://doi.org/10.20546/ijcmas.2017.611.516>

Land Utilization under Homestead in Kerala: Current Status of Homestead Cultivation

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ABSTRACT

Keywords

Homestead gardening,
Land use, Socio
economic status,
Cropping pattern,
Inventories.

Article Info

Accepted:

31 October 2017

Available Online:

10 November 2017

This paper is an attempt to analyse the land use under homestead, the features of homestead gardening, its importance and socio economic profile of the homestead farmer. Homesteads are traditionally used for self-sufficiency. But due to rapid urbanization, we observe large scale conversion of agricultural land and fragmentation of holdings. In this context, homestead cultivation is considered to be the most suitable form of cultivation. The study finds the status of the homestead farmers, dependents on homestead and investigate cropping pattern of food crops and livestock.

Introduction

The land-use pattern plays an important essential part in farming advancement since, it affect the pattern of production and livelihood. In Kerala since land reforms, there has been a structural change in the land-use pattern within agriculture, causing a shift from food to non-food crops. Commercial cultivation in Kerala dominated by small holders is adversely affected by market related factors like instability in the prices and non-market factors like increasing incidence of pest and disease along with declining productivity. Moreover, heavy dependence on commercial crops had its implications on food security. Widespread mono cropping of these commercial crops has led to adverse environmental outcomes. Given the challenges associated with commercial crops,

the small and marginal farmers of the State adapted through various strategies like homestead farming, which could be economically viable and ecologically sustainable while contributing towards food security of the state. Due to scarcity of land and growing demand for houses, a shrinking land holding size is also commonly observed in Kerala. The reliance on market for consumption of food articles and the decline in food production commonly observed in Kerala have led to an increasing import of food grains, fruits and vegetables from the neighbouring states. Moreover attaining self-sufficiency in the production of vegetables has become a challenge to the state much more now than before as the vegetables importing from the neighboring states are

found to be affecting the health of the people due to over usage of pesticides and chemicals for the production (Balakrishnan, 2015). This has forced the state to produce more food grains and vegetables to bridge the demand-supply gap. All these necessitated cultivation in the homestead and a revival of the conventional homestead cultivation in Kerala.

Homestead cultivation in brief is the cultivation around the immediate surroundings of a house. Though numerous definitions are available, John (1997) comprehensively defined homestead/ home garden as a functional/operative and self-sustaining farm unit which consists of a conglomeration of crops and multipurpose trees, planted arbitrarily, with or without animals/poultry/ apiculture, owned and primarily managed by the dwelling farm family, with the objectives of satisfying the basic family needs (food, fuel, timber) and producing marketable surplus for the purchase of non-producible items.

Homestead cultivation is different from other cultivation as it concentrates only on the immediate surroundings of the home and produces all types of food items using mainly organic manures provided by livestock whose milk and meat provide rich nutritional security to the households. Other cultivation mainly focuses on market demand and is cultivated on land away from their homestead farms (Ali *et al.*, 2005).

Homestead cultivation can be simply meant as cultivation around the direct surroundings of a house which has developed through generations of gradual increase of crop cultivation with respect to two prime attributes *viz.*, rising human demands and the scarcity of arable land. Homesteads across the world reveal some basic facts such as they characterize a multi-storey combination of a variety of trees and crops in alliance with

domestic animals in and around the homestead. In accordance with the reports, these homesteads were recognized by diverse names such as home gardens, household or homestead farms, agro-forestry home gardens, backyard gardens, compound farms, dooryard gardens, village forest gardens, and house gardens (Kumar and Nair, 2004).

Homestead cultivation is important in terms of the benefits it confers. There are not only economic benefits but social and environmental benefits too are associated with homestead gardening (Galhena *et al.*, 2013). The social benefits include enhancing food and nutritional security in many socioeconomic and political situations, improving family health and human capacity, empowering women, promoting social justice and equity, and preserving indigenous knowledge and culture (Mitchell and Hanstad, 2004). The economic benefits in bibliographic evidence suggest that home gardens contribute to income generation, improved livelihoods and household economic welfare as well as promoting entrepreneurship and rural development.

On the basis of the importance of home gardening, this study focuses mainly on two aspects. First, to study the socio-economic status of the homestead farmers and secondly, to examine the characteristics of existing homesteads, explore cropping/farming pattern.

Materials and Methods

Three stage sampling technique was used for drawing samples for the present study. At first stage, Thiruvananthapuram district, one of the agriculturally advanced districts of Kerala state was purposively selected because of the features like 50 per cent total population depends on agriculture for their livelihood, Most of the people are engaged in low

remunerative pursuits which require very little capital, it is the densest district in Kerala with 1,509 residents per square kilometer and homestead farming, being the more common pattern of the district.

At the second stage, from the district Southern Laterites (AEU 8) and 2 South Central Laterites (AEU 9) are purposively selected which constitute almost 42.68 per cent total area of the district. The list of panchayaths under the selected agro-ecological units (AEU 8 and AEU 9) of Thiruvananthapuram district is prepared and after discussion with technical experts in the department of agriculture two panchayaths with maximum number of homesteads purposively identified from each selected agro-ecological unit. The selected panchayaths were Kulathoor and Karode from AEU 8 and Anad and Vembayam from AEU 9.

Finally at the third stage 20 homesteads having similar type of cropping systems and holding size between 0.1-0.3 ha was selected at random from each of the selected panchayaths. Therefore, the total sample size for the present study was eighty.

Data for the study was collected from the respondents by the personal interview method and the reference period for the study was the agriculture year 2016-2017. Simple averages, percentage share, and meaningful Discussions based on Literature review are used. Appropriate statistical tools used for inferring the homestead status.

Results and Discussion

Socio economic profile of the respondent farmers from the collected primary data, socio economic status of the farmers was analyzed and discussed in detail in the following sub headings. Socio-economic status of the

respondents is measured in terms of age, educational status, family size, holding size, primary and secondary occupation and annual income. The per cent distribution of the variables were prepared and presented in Table 1–5.

Age

From the Table 1, it is clear that 43.7 per cent of the respondents belonged to middle aged group, 32.50 per cent to old aged and 23.75 per cent were found to be youngsters.

It was noted that half of the respondents in AEU 8 belonged to middle aged category whereas 22.5 per cent was occupied by youngsters. However in AEU 9, old and middle age were found to be in equal proportion *i.e.*, 37.5 per cent each (Fig. 1).

Hence, it is inferred that almost half of the homesteads in these agro ecological units were maintained by farmers having age in between 35 to 55 years category and majority of the homestead respondents belonged to the middle aged and old aged category. This was because the senior most in the home was usually considered to be the head. A similar result was reported by Rahul (2013) and Thasneem (2016).

Education

The results presented in Table 2 shows that 47.5 per cent of respondents had secondary and higher secondary educational status. Only 10 per cent of total respondents were found to have post-graduation whereas 25 percent had graduation. It was found that only 17.5 per cent of the total respondents had educational status, primary and upper primary.

It was noted that 30 per cent of respondents in AEU 8 falls under primary and upper primary educational status while in case of AEU 9,

only 5 per cent of the respondents were under this category (Fig. 2). The association between age and education of the respondents is tested using χ^2 test and the calculated value (20.55) of test statistics revealed that there was significant association between these two variables.

Hence it is inferred that more than 70 per cent of the homestead farmers had educational status from school to college level. This result is a reflection of the privileged literacy rate of Kerala State. The result was in conformity with the studies conducted by Thomas (2004), Jayawardana (2007) and Reeba (2015)

Family size

The per cent age distribution of respondents according to family size is presented in Table 3. The results of the study revealed that 46.25 per cent of the total respondents had medium family size, 33.75 per cent of respondent family comprised of less than five members whereas 20 per cent of the respondent farmers had more than 6 members (Fig. 3). The median family size of the respondents obtained was five.

A same trend was noticed in the distribution pattern of the respondents according to family size in both AEU's. The median family size of AEU 8 was 5 whereas in AEU 9, it was 5.5

Hence, it could be inferred that medium and small family size were prevailed in this region and large families were comparatively lesser which, an indication of the shift towards nuclear families is. The finding of this study is in conformity with the results of work conducted by Priya and Jayashree (2013).

Occupation

It is evident from Table 4 that only 15 per cent of the respondents had primary

occupation as agriculture. 85 per cent of the respondent farmers did not depend on agriculture as main source of income, out of which, 50 per cent had other business as main income source of income where 35 per cent were working in service sector.

It was found that only 12.5 per cent and 17.5 per cent of the respondents in AEU8 and AEU9 respectively, had agriculture as their main source of income while majority had agriculture as subsidiary source of income in both agro-ecological units (Fig. 4).

Hence, it is concluded that only very few respondents take up agriculture as their primary venture which might be due to low and fluctuating income from the homesteads. The result is in contrary to the findings made by Rahul (2013) but in conformity with the results of studies carried out by Thomas (2004) and Helen and Smitha (2013).

Annual Income

The results presented in Table 5 indicated that cumulatively 77.5 per cent of the respondents had an annual income of less than ₹ 4 lakhs, and less than 10 per cent of the respondents found to have an annual income above ₹ 6 lakhs. The overall average annual income estimated was ₹ 2,79,214/-.

27.50 per cent respondents from AEU 8 had annual income in the range of ₹ 1 lakhs to ₹ 2 lakh and 22.50 per cent had the same in the range of ₹ 2 lakhs to ₹ 4 lakhs. But in AEU 9, 40 per cent of the respondents were observed to have annual income in between ₹ 2 lakhs - ₹ 4 lakhs (Fig. 5).

Characteristics of existing homesteads

Homestead can be defined as the home and its immediate area surrounding owned and occupied by a family unit, and the space used

for cultivation and farming etc. Therefore it is important to delineate the features of homesteads in surveyed area and characteristics of the surveyed homesteads are presented in Table 6.

The characteristics of existing homesteads in AEU 8 and AEU 9 and details on farming systems in the homesteads are described below.

Asset details

It was found from Table 6 that, 65 per cent of homestead farmers in AEU 8 were having land area of 0.1 to 0.2 ha (25 to 50 cents) whereas, more than fifty per cent of the homestead farmers were observed with land area of 0.2 to 0.3 ha (50 to 75 cents) in AEU 9.

The total land area under homestead was calculated as 7.19 ha and 8.51 ha in AEU 8 and AEU 9 respectively with average holding size of 0.18 ha (45 cents) and 0.21 ha (52.5 cents). Out of the total homestead area, the land available for farming was observed as 5.57 ha and 6.67 ha in AEU 8 and AEU 9 respectively with an average available area of 0.14 ha (35 cents) and 0.17 (42.5 cents) ha respectively. But it was found that most of the space available was found unutilized and the left over space was already occupied by house and permanent structures. The average area used for house and permanent structures was 0.04 ha and 0.043 ha in AEU 8 and AEU 9 respectively.

The details of livestock rearing in the AEU's are given in Table 7 indicated that the number of livestock such as cow, buffalo and goat *etc.* reared were found very less since the maintenance is little difficult. The households as a whole preferred to rear poultry. This could be due to changing consumption habit of people from vegetables to meat and egg.

Farming practices adopted in the homesteads

In AEU 8, rain and wells formed as the prime source of water for cultivation in most of the homesteads (90%), whereas 10 percent of the homestead farmers were solely dependent on rain alone (Fig. 6). The same trend was observed in AEU 9 also, where 92.5 per cent of the farmers were dependent on water from rain and wells and remaining 7.5 per cent on rain alone. The results are in conformity with the reports of John (1997). None of the farmers had modern method of irrigation, such as drip or sprinkler system except two young farmers in AEU 8.

As far as irrigation status is concerned, it is clear from the Table 8 and Figure 7, that majority of the homesteads in AEU 8 and AEU 9 was semi-irrigated (82.5% and 92.5% respectively).

Farmers were noticed to give more preference to intercrops than main crops with respect to irrigation factor.

Data was collected on the usage of manures and fertilizers for various crops and results obtained showed that 72.5 per cent farmers were using organic materials alone and 27.5 per cent farmers were found, using both organic and inorganic materials. The results are in conformity with the report of Balasubramanian and Egli (1986), who reported that majority of the homestead farmers in Nigeria, used organic manures.

With respect to the findings from data collected on plant protection measures, 60 per cent of the farmers were found not adopting any practice to control pests, whereas 23.75 per cent of the farmers seemed to be strictly sticking on organic pest control measures and 16.25 per cent farmers were found using both inorganic and organic pesticides.

Table.1 Age-wise distribution of the respondent farmers

Sl.No.	Category (Years)	AEU-8 (n=40)	AEU-9 (n=40)	Total (n=80)
1	Young <35 years	9(22.50)	10(25.00)	19(23.75)
2	Middle 35-55 years	20(50.00)	15(37.50)	35(43.75)
3	Old >55 years	11(27.50)	15(37.50)	26(32.50)

Figures in parentheses denote percentage to total

Table.2 Educational status of the respondent farmers

Sl.No.	Educational status	AEU-8 (n=40)	AEU-9 (n=40)	Total (n=80)
		Frequency	Frequency	Frequency
1	Primary and Upper primary	12(30.00)	2(5.00)	14(17.50)
2	Secondary and Higher secondary	18(45.00)	20(50.00)	38(47.50)
3	Graduation	7(17.50)	13(32.50)	20(25.00)
4	Post-graduation	3(7.50)	5(12.50)	8(10.00)

Figures in parentheses denote percentage to total

Table.3 Distribution of respondent farmers according to family size

Sl.No.	Family size	AEU-8 (n=40)	AEU-9 (n=40)	Total (n=80)
		Frequency	Frequency	Frequency
1	Small (< 5.00)	15(37.50)	12(30.00)	27(33.75)
2	Medium(5.00 - 6.00)	18(45.00)	19(47.50)	37(46.25)
3	Large (>6.00)	7(17.50)	9(22.50)	16(20.00)
Median size		5	5.5	5

Figures in parentheses denote percentage to total

Table.4 Distribution of respondent farmers according to occupational status

Particulars	Agriculture as main	Agriculture as subsidiary	
		Service	Own business
	Frequency	Frequency	Frequency
AEU-8 (n=40)	5 (12.50)	12(30.00)	23 (57.50)
AEU-9 (n=40)	7(17.50)	16 (40.00)	17 (42.50)
Total (n=80)	12(15.00)	28(35.00)	40(50.00)

Figures in parentheses denote percentage to total

Table.5 Distribution of respondent farmers according to annual family income

Income (Rs)	AEU-8 (n=40)	AEU-9 (n=40)	Total (n=80)
	Frequency	Frequency	Frequency
Less than 1 lakh	8(20.00)	5(12.50)	13(16.25)
1-2 lakhs	11(27.50)	13(32.50)	24(30.00)
2-4 lakhs	9(22.50)	16(40.00)	25(31.25)
4-6 lakhs	8(20.00)	3(7.50)	11(13.75)
6-8 lakhs	2(5.00)	2(5.00)	4(5.00)
Above 8 lakhs	2(5.00)	1(2.50)	3(3.75)
Average (Rs.)	2,93,650	2,52,778	2,79,214

Figures in parentheses denote percentage to total

Table.6 Details on land holding and distribution pattern in homesteads

Size of holding (ha)	AEU-8 (n=40)	AEU-9 (n=40)
0.1-0.2 ha	26(65.00)	18(45.00)
0.2-0.3 ha	14(35.00)	22(55.00)
Total land area	7.19	8.51
Average size	0.18	0.21
Total area of Houses & permanent structures	1.62	1.72
Average area of House & permanent structures	0.040	0.043
Total home garden area	5.57	6.67
Average home garden area	0.14	0.17

Figures in parentheses denote percentage to total

Table.7 Animal Stock of the homesteads

Particulars	AEU 8	AEU 9
	Frequency	Frequency
Cow	31	25
Buffalo	6	2
Goat	48	35
Poultry	199	172

Table.8 Distribution of farmers based on level of irrigation

Level of irrigation	AEU-8	AEU-9
Fully Irrigated	2(5.00)	0(0.00)
Semi irrigated	33(82.50)	37(92.50)
Rain fed	5(12.50)	3(7.50)

Figures in parentheses denote percentage to total

Table.9 Classification of selected enterprises in the homesteads

Tubers	Tapioca, Colocasia, Dioscorea, Amorphophallus
Commercial crop	Cashew
Spices and condiments	Tamarind, Turmeric, Pepper, Nutmeg, Ginger, Clove
Stimulant	Arecanut
Fruit trees	Annona, Banana, Bilimbi, Guava, Gooseberry, Jack, Mango, Papaya, Sapota, Pineapple
Vegetables	Chilli, Curry leaf, Ladies finger, Bitter guard, Bread fruit, Ivy guard, Moringa, Tomato, Brinjal, Bottle gourd, Long bean, Amaranths
Livestock	<i>Cow, Buffalo and Goat</i>
Poultry	Chickens, Turkeys, Button quail

Table.10 Cropping/farming systems existing in the homesteads (HFS)

HFS	AEU 8			AEU 9		
	Frequency	Area(ha)	Average area (ha)	Frequency	Area(ha)	Average area (ha)
S ₁	14(35.00)	2.34(32.60)	0.17	20(50.00)	4.49(62.50)	0.22
S ₂	12 (30.00)	2.46(34.16)	0.21	8(20.00)	1.63(22.64)	0.20
S ₃	14(35.00)	2.39(33.21)	0.17	12(30.00)	2.39(33.18)	0.20
Total	40	7.19	0.18	40	8.51	0.21

Figures in parentheses denote percentage to total

Table.11 The distribution of enterprises in S₁, S₂ and S₃ of AEU 8

Enterprise	S ₁		S ₂		S ₃		Overall AEU 8	
	(N=14)		(N=12)		(N=14)		(N=40)	
	F	P	F	P	F	P	F	P
Coconut	14	100	12	100	14	100	40	100
Jack	11	78.57	11	91.67	11	78.57	33	82.5
Mango	13	92.86	12	100	14	100	39	97.5
Gooseberry	6	42.86	7	58.33	7	50	20	50
Tamarind	7	50	5	41.67	7	50	19	47.5
Bread Fruit	7	50	6	50	6	42.86	19	47.5
Cashew	9	64.29	10	83.33	5	35.71	24	60
Arecanut	4	28.57	3	25	5	35.71	12	30
Tapioca	10	71.43	12	100	11	78.57	33	82.5
Clove	0	0	4	33.33	1	7.14	5	12.5
Banana	13	92.86	12	100	14	100	39	97.5
Nutmeg	0	0	2	16.67	3	21.43	5	12.5
Black pepper	7	50	8	66.67	6	42.86	21	52.5
Ginger	3	21.43	4	33.33	8	57.14	15	37.5
Turmeric	2	14.29	1	8.33	8	57.14	11	27.5
Curry Leaf	2	14.29	7	58.33	6	42.86	15	37.5
Papaya	12	85.71	10	83.33	11	78.57	33	82.5
Moringa	4	28.57	8	66.67	5	35.71	17	42.5
Colocasia	5	35.71	5	41.67	4	28.57	14	35
Dioscorea	1	7.14	5	41.67	3	21.43	9	22.5
Amorphophallus	3	21.43	3	25	2	14.29	8	20
Sapota	5	35.71	7	58.33	5	35.71	17	42.5
Annona	4	28.57	5	41.67	7	50	16	40
Bilimbi	3	21.43	5	41.67	5	35.71	13	32.5
Guava	7	50	9	75	6	42.86	22	55
Pineapple	0	0	1	8.33	1	7.14	2	5
Chilli	8	57.14	7	58.33	7	50	22	55
Ladies Finger	5	35.71	6	50	6	42.86	17	42.5
Bitter Guard	1	7.14	2	16.67	4	28.57	7	17.5
Ivy Guard	3	21.43	2	16.67	5	35.71	10	25
Tomato	3	21.43	5	41.67	8	57.14	16	40
Brinjal	4	28.57	1	8.33	8	57.14	13	32.5
Bottle Gourd	1	7.14	6	50	2	14.29	9	22.5
Amaranth	6	42.86	5	41.67	8	57.14	19	47.5
Long Bean	4	28.57	1	8.33	5	35.71	10	25
Cow	0	0	0	0	14	100	14	35
Goat	0	0	9	75	3	21.43	12	30
Poultry	0	0	4	33.33	9	64.29	13	32.5

F – Frequency, P – Percentage.

Table.12 Population of enterprises in terms of minimum, average and maximum AEU 8

Enterprise	S ₁ (N=14)			S ₂ (N=12)			S ₃ (N=14)			AEU 8 (N=40)
	Min	Avg.	Max	Min	Avg.	Max	Min	Avg.	Max	weighted avg.
Coconut	10	20	30	4	26	40	5	16	35	20
Jack	1	2	3	1	2	4	1	2	4	2
Mango	1	3	5	1	3	7	1	3	5	3
Gooseberry	1	2	2	1	2	4	1	2	2	2
Tamarind	1	2	3	1	2	3	1	2	3	2
Bread Fruit	1	2	3	1	2	3	1	3	5	2
Cashew	1	2	4	1	3	6	1	3	5	3
Arecanut	1	7	20	2	5	8	2	5	12	6
Tapioca	12	106	400	20	134	500	20	198	420	147
Clove	0	0	0	5	12	16	6	6	6	6
Banana	4	60	250	12	62	200	8	53	150	58
Nutmeg	0	0	0	5	5	5	2	7	15	4
Pepper	2	4	6	1	5	20	2	7	17	5
Ginger	2	4	7	3	8	13	4	11	24	8
Turmeric	7	10	12	4	4	4	4	9	14	8
Curry Leaf	2	3	3	1	2	2	2	3	4	3
Papaya	3	7	13	2	9	20	3	6	10	7
Moringa	1	2	4	1	2	4	1	2	4	2
Colocasia	3	8	14	4	7	12	6	12	20	9
Dioscorea	10	10	10	3	8	12	6	9	13	9
Amorphophallus	5	11	18	4	7	10	6	7	8	8
Sapota	1	2	3	1	2	3	2	3	5	2
Annona	1	2	3	2	2	3	1	2	3	2
Bilimbi	1	2	2	1	2	3	1	1	2	2
Guava	2	2	3	1	3	6	1	2	3	2
Pineapple	0	0	0	10	10	10	400	400	400	143
Chilli	4	10	15	4	12	25	5	15	30	12
Ladies Finger	5	10	15	5	8	14	8	18	25	12
Bitter Gourd	500	500	500	5	128	250	7	62	200	235
Ivy Gourd	8	108	300	6	128	250	4	54	200	95
Tomato	8	10	12	5	12	30	4	11	20	11
Brinjal	3	7	10	25	25	25	5	9	18	13
Bottle Gourd	50	50	50	8	16	30	2	11	20	26
Amaranth	10	13	20	8	9	10	8	19	50	14
Long Bean	6	13	26	12	12	12	6	17	30	14
Cow	0	0	0	0	0	0	1	3	5	1
Goat	0	0	0	2	4	7	2	3	4	2
Poultry	0	0	0	6	15	25	2	16	45	10

Table.13 Homestead components and their distribution in AEU 9

Enterprise	S ₁ (N=14)		S ₂ (N=12)		S ₃ (N=14)		Overall AEU 9 (N=40)	
	F	P	F	P	F	P	F	P
Coconut	20	100	8	100	12	100	40	100
Jack	18	90	8	100	9	75	35	87.5
Mango	20	100	6	75	12	100	38	95
Gooseberry	10	50	3	37.5	4	33.33	17	42.5
Tamarind	14	70	3	37.5	5	41.67	22	55
Bread Fruit	9	45	3	37.5	5	41.67	17	42.5
Cashew	9	45	5	62.5	5	41.67	19	47.5
Arecanut	3	15	0	0	4	33.33	7	17.5
Tapioca	13	65	6	75	9	75	28	70
Banana	20	100	7	87.5	10	83.33	37	92.5
Pepper	11	55	5	62.5	9	75	25	62.5
Ginger	6	30	3	37.5	4	33.33	13	32.5
Turmeric	10	50	3	37.5	4	33.33	17	42.5
Curry Leaf	5	25	3	37.5	7	58.33	15	37.5
Papaya	17	85	6	75	10	83.33	33	82.5
Moringa	6	30	3	37.5	7	58.33	16	40
Colocasia	13	65	6	75	7	58.33	26	65
Dioscorea	5	25	4	50	2	16.67	11	27.5
Amorphophallus	10	50	5	62.5	4	33.33	19	47.5
Sapota	8	40	3	37.5	3	25	14	35
Annona	4	20	3	37.5	5	41.67	12	30
Bilimbi	11	55	4	50	5	41.67	20	50
Guava	10	50	3	37.5	7	58.33	20	50
Pineapple	3	15	0	0	2	16.67	5	12.5
Chilli	14	70	7	87.5	7	58.33	28	70
Ladies Finger	8	40	4	50	5	41.67	17	42.5
Bitter Guard	3	15	2	25	4	33.33	9	22.5
Ivy Guard	3	15	2	25	1	8.33	6	15
Tomato	12	60	4	50	7	58.33	23	57.5
Brinjal	9	45	3	37.5	4	33.33	16	40
Bottle Gourd	1	5	0	0	0	0	1	2.5
Amaranth	12	60	3	37.5	6	50	21	52.5
Long Bean	3	15	2	25	3	25	8	20
Cow	0	0	0	0	12	100	12	30
Goat	0	0	3	37.5	4	33.33	7	17.5
Poultry	0	0	6	75	6	50	12	30

F – Frequency, P – Percentage.

Table.14 Population of enterprises in terms of minimum, average and maximum AEU 9

Enterprise	S ₁ (N=20)			S ₂ (N=8)			S ₃ (N=12)			AEU 8 (N=40)
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	weighted average
Coconut	6	30	50	12	27	48	8	29	56	29
Jack	1	3	7	1	3	4	1	3	6	3
Mango	1	3	7	1	3	5	1	2	4	3
Gooseberry	1	2	3	1	2	3	1	2	2	2
Tamarind	1	1	2	1	1	1	1	1	3	1
Bread Fruit	1	2	5	2	2	3	1	2	4	2
Cashew	1	2	5	1	2	2	1	2	3	2
Arecanut	2	11	21	0	0	0	8	11	16	9
Tapioca	15	150	400	40	146	400	12	179	400	158
Banana	5	56	160	10	55	100	16	66	300	59
Pepper	1	7	16	3	4	5	2	9	20	7
Ginger	3	7	10	4	4	4	4	6	8	6
Turmeric	1	5	10	6	6	6	2	9	12	6
Curry Leaf	1	1	2	1	2	3	1	2	3	2
Papaya	1	7	20	2	6	10	1	8	25	7
Moringa	1	1	2	1	1	1	1	2	2	1
Colocasia	3	10	30	15	17	18	2	10	15	11
Dioscorea	3	11	22	6	7	8	3	17	30	12
Amorphophallus	3	8	15	14	15	15	2	9	15	10
Sapota	1	2	3	1	1	2	1	1	2	2
Annona	1	3	4	1	1	2	1	1	2	2
Bilimbi	1	2	4	1	2	3	1	2	3	2
Guava	1	2	5	2	2	2	1	2	2	2
Pineapple	5	8	13	0	0	0	6	9	12	7
Chilli	2	12	30	4	21	40	12	25	40	18
Ladies Finger	5	12	20	8	9	10	5	11	20	11
Bitter Guard	6	27	50	20	25	30	5	62	200	37
Ivy Guard	15	145	400	4	12	20	4	4	4	76
Tomato	0	8	15	0	6	15	3	7	15	7
Brinjal	4	10	15	5	6	7	6	12	20	10
Bottle Gourd	5	5	5	0	0	0	0	0	0	3
Amaranth	6	16	30	16	18	20	7	15	20	16
Long Bean	5	8	10	8	19	30	3	44	120	21
Cow	0	0	0	0	0	0	1	2	4	1
Goat	0	0	0	3	4	6	2	4	5	2
Poultry	0	0	0	8	15	24	8	19	40	9

Fig.1 Distribution of respondents according to age

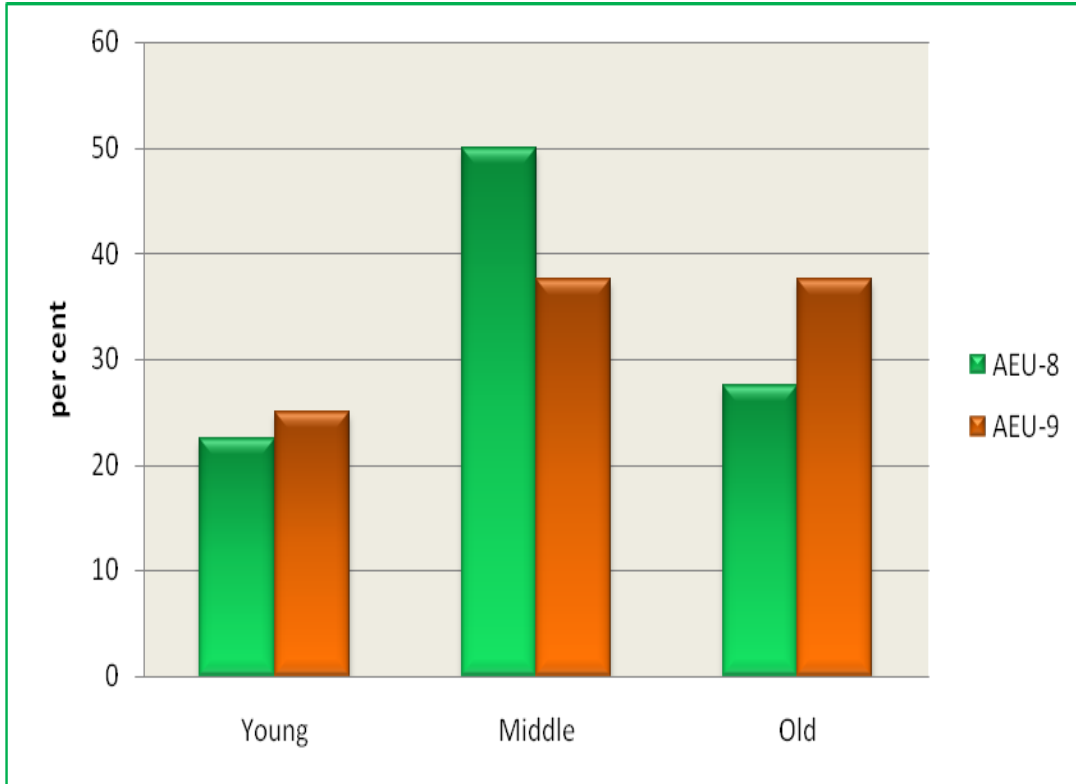


Fig.2 Distribution of respondents according to education

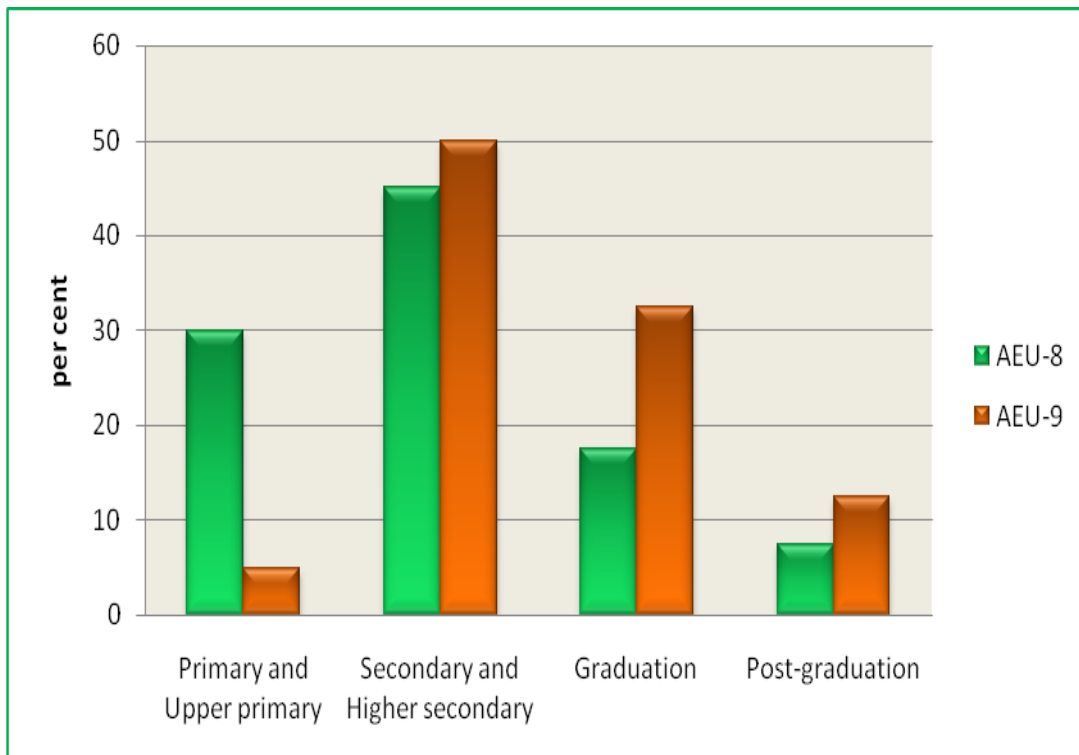


Fig.3 Distribution of respondent farmers according to Family size

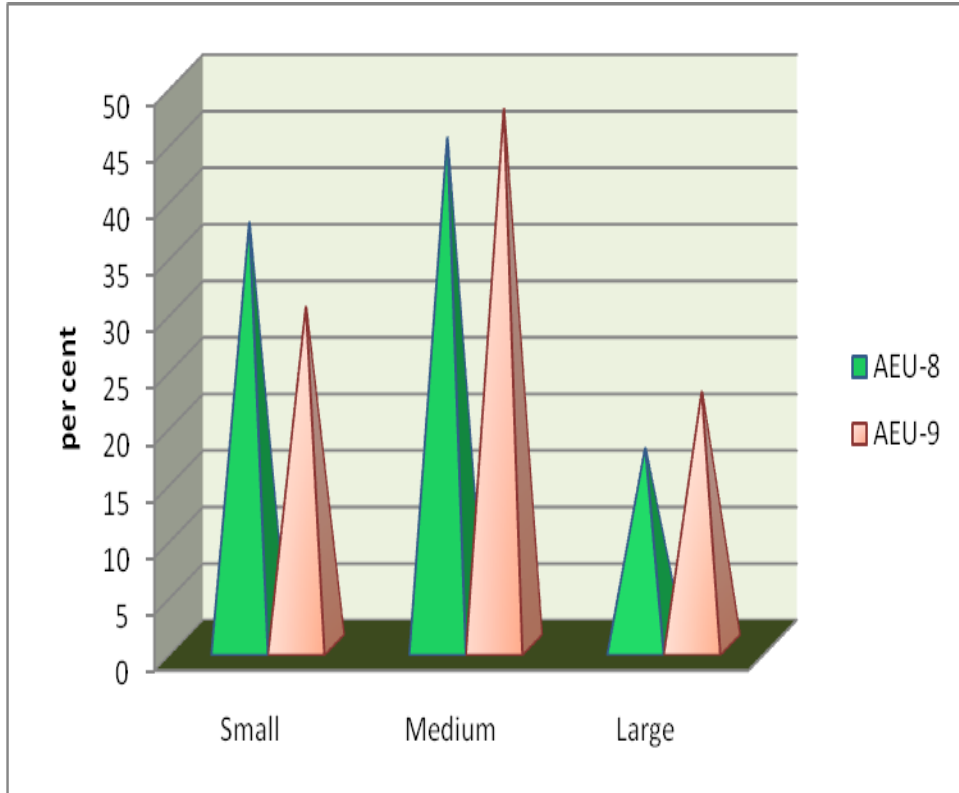


Fig.4 Distribution of respondents according to occupational status

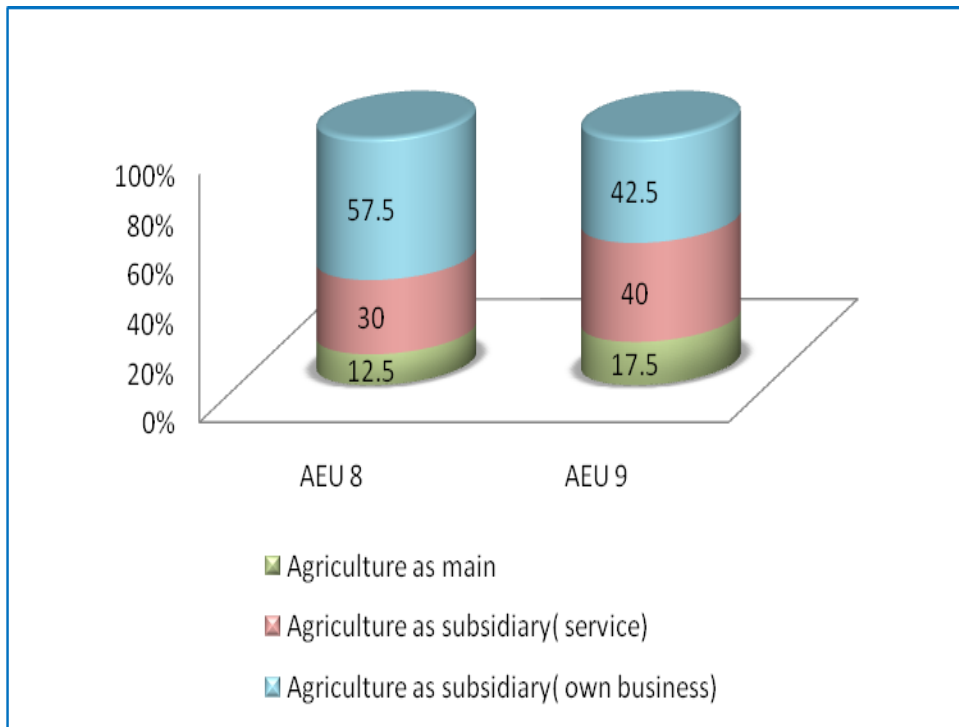


Fig.5 Distribution of respondents according to annual income

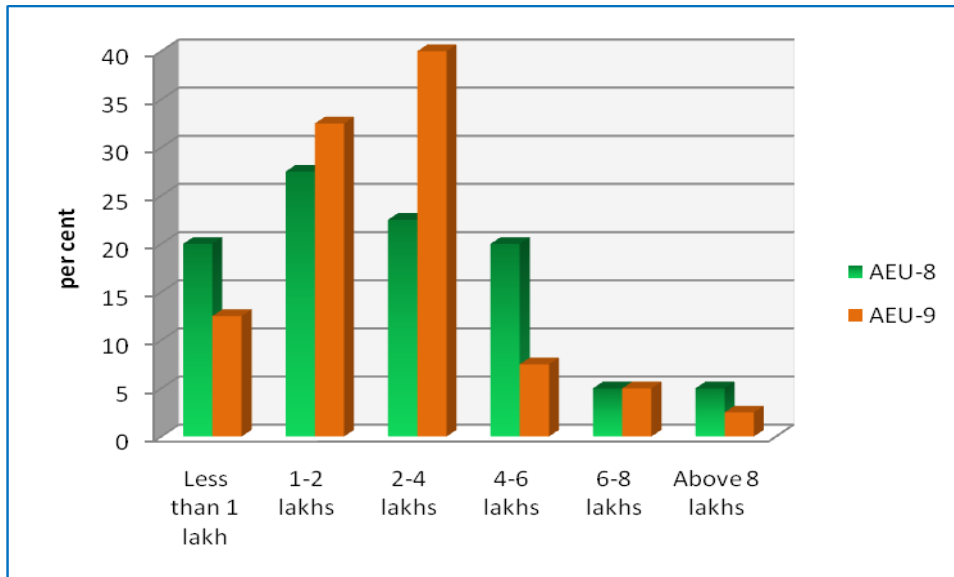


Fig.6 Source of water for cultivation

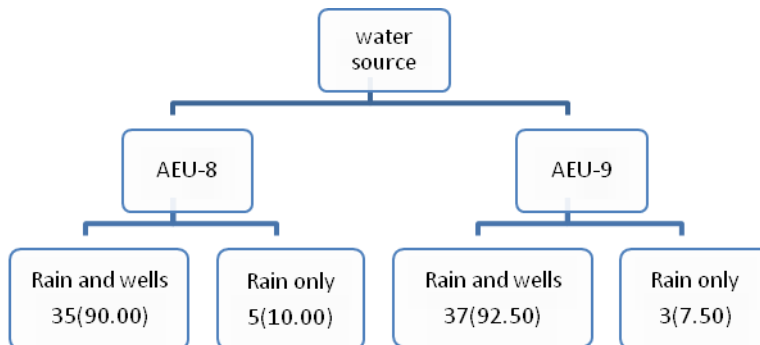


Fig.7 Distribution of farmers based on level of irrigation

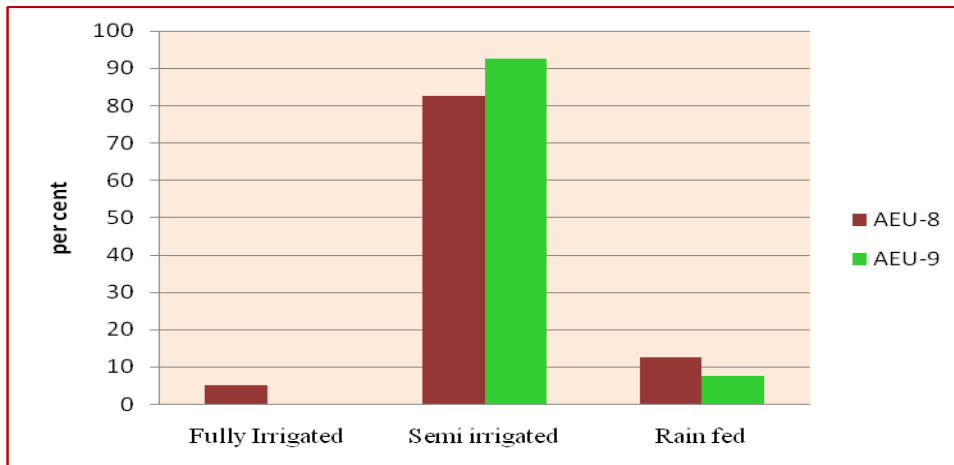
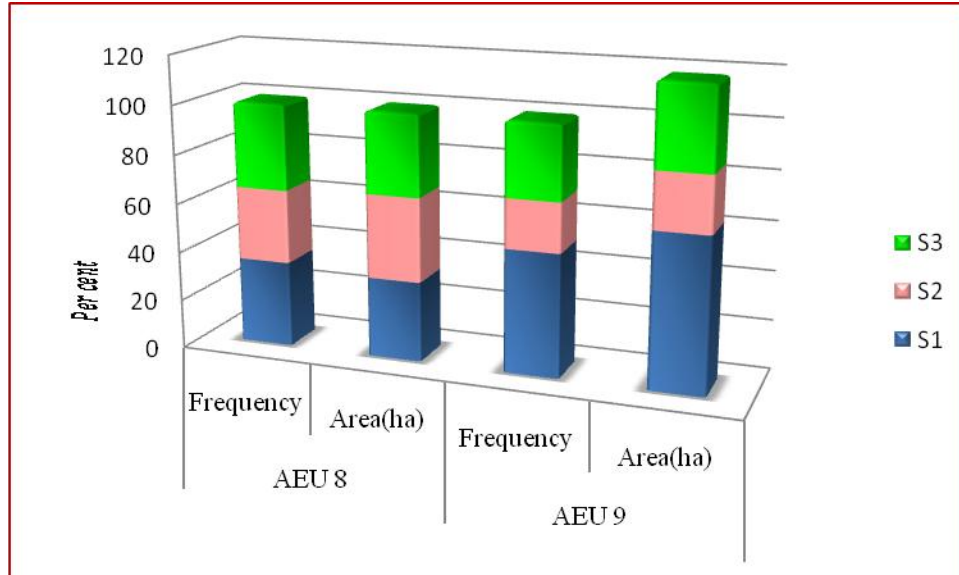


Fig.8 Cropping/farming systems existing in the homesteads (HFS)



Low adoption of plant protection measures might be due to lack of proper awareness and less interest as suggested by Ramesh and Santha (2003).

However it was observed that pest and disease incidence in the home garden was relatively lower. John (1997) reported that the plant diversity in homesteads is a well-planned strategy to minimize pest and disease attacks.

Considering the adoption of varieties of various crops used in the homestead, it was observed that most of the farmers had grown crops as per the availability of seeds/seedling from Krishi Bhavan and the College of Agriculture, Vellayani along with private outlets like Agro bazaar. Both improved and local varieties seemed to be used in the homesteads. Similar results were reported by Salam and Sreekumar (1990).

It was found in majority homesteads (91.25 %), farm activities were carried out by family labour supplemented by hired labour. Besides, a significant contribution was observed from the part of women in the homesteads. Similar view was expressed by Subhadra (2007).

Existing cropping pattern of the homesteads

The selected homesteads were found to be following coconut based cropping system comprising other thirty eight familiar enterprises falling under the groups namely tubers, commercial crops, spices and condiments, stimulants, fruits, vegetables, livestock and poultry and the details are presented in Table 9.

The selected coconut based homesteads were grouped into three on the basis of cropping/farming system existing in the homesteads (HFS) viz., system-I (S₁) consisting of crops alone, system-II (S₂) including crops integrated with poultry or goat or both and system-III (S₃) comprising of crops and cattle with or without poultry and goat.

Table 10 represent the per cent distribution of respondents falling under each HFS along with the share of total area in both AEU's. More or less, same trend was observed in the distribution of number and area under different HFS's in AEU 8 whereas, a

domination (50 %) of S₁ HFS was noticed in AEU 9.

Out of total 40 respondents surveyed, 35 per cent homesteads followed had crops alone, whole 30 per cent had crops + poultry or goat and 35 per cent had crop + cattle ± poultry ± goat (Fig. 8). Similar cropping pattern was noticed in AEU 9. The estimated average holding sizes of S₁, S₂ and S₃ were 0.17 ha, 0.21 ha and 0.17 ha in AEU 8 and 0.22 ha, 0.20 ha, 0.20 ha in AEU 9 respectively.

Inventory of enterprises in the homesteads of AEU 8

The system was comprised of mainly annual crops, trees, perennial and semi-perennial shrubs. The farmers integrated numerous divergent species, multipurpose trees and shrubs in close association with agricultural crops in most of the homesteads.

The distribution of homestead components/enterprises in S₁, S₂ and S₃ of AEU 8 is presented in Table 11 and their population in terms of minimum and maximum are shown in Table 12. Coconut based homesteads were found to be more prevalent in AEU 8 with significant domination in land use.

It was found from Table 11 that all the homesteads (100 %) in AEU 8 had coconut, which suggested that coconut based farming system prevailed in this system. Moreover, from Table 12, the estimated average population of coconut palms in homesteads was 20 with a minimum of 4 and maximum of 40 trees. Maximum number of coconut was reported in S₂ followed by S₃ and S₁.

Perennial fruit trees like mango, jack, papaya and annual fruit trees like banana were grown in most of the homesteads. More than 90 per cent of respondents were cultivating banana

and mango in their homesteads with average of 58 numbers of trees, and a minimum number of 4 to maximum of 250 plants in a homestead. It was also noticed that homestead farmers preferred different types of fruits including jack fruit (82.5%), papaya (82.5%), sapota (42.5%) etc cultivating in their homesteads. An average of 2 jack fruit tree, 3 mango trees, 7-9 papaya and 2-3 sapota were noticed as a common feature of homesteads. Tapioca was the major tuber crop grown by 82.5 per cent respondents with an average of 147 numbers of plants and it goes up to 500. Tapioca is mainly used for household consumption by all categories of people in Kerala (82.5%). Tapioca was found to be most common and important among the tuber crops, which was cultivated as an intercrop by more than 70 per cent of farmers in homesteads.

Tuber crops were found to be most dominant category and among the tropical tubers, tapioca was noted most in number. Other tuber crops included colocasia, dioscorea and amorphophallus. The predominance of tuber crops in the homesteads may be due to the fact that they can be grown with relatively less care as understorey species in partial shade and yet expected to yield reasonably as suggested by Nair (1993).

The commonly grown vegetables included chilli (55%), amaranthus (47.5%), bread fruit (47.5%), moringa (42.5%) and tomato (40%) which were grown mainly for household consumption. Farmer preference was observed most in crops like banana and pepper. Pepper was grown mostly along with other trees.

Jack fruit tree was common in S₁ (78.57%), S₂ (91.67%) and S₃ (78.57%). Among spices and condiments, black pepper occupied a dominant position in homesteads viz., 50 per cent in S₁, 66.67 per cent in S₂ and 42.86 per

cent in S₃. Tapioca was the major tuber crops cultivated in the homesteads 71.43 per cent in S₁, 100 per cent in S₂ and 78.57 per cent in S₃.

The average number of coconut trees in AEU 8 (20) was observed as minimum of 4 to maximum of 40 trees in number. Maximum coconut population was reported in S₂ followed by S₃ and S₁.

The number of livestock such as cow, buffalo and goat etc. reared were found very less. The households as a whole preferred to rear poultry. This could be due to changing consumption habit of people from vegetables to meat and egg. But combining crop cultivation with livestock activities has positive influence on the betterment of homesteads. Moreover, livestock represents an important capital asset and a source of income to the farmer. Similar views on crop and livestock combination were expressed by Von Maydell (1987) and Helen and Smitha (2013).

Inventory of enterprises in the homesteads of AEU 9

The distribution of homestead components/enterprises in S₁, S₂ and S₃ homesteads of AEU 9 is presented in Table 13. The homesteads surveyed in AEU 9 were coconut based and multi-purpose trees like coconut, jack and mango were observed with high frequency.

Mixed cropping consisting of coconut, banana, papaya, tapioca and pepper was observed and farmers of AEU 9 were found preferred cultivation of perennial crops along with different intercrops which require less management practices and labour.

Minimum and maximum value in various homestead cropping and farming systems of AEU 8 is also tabulated (Table 14).

Fruit trees commonly grown in AEU 9 were mango (95 %), jack (87.5 %), banana (95 %) and papaya (82.5 %) with an average number of 3 jack trees, 3 mango trees, 59 banana and 7 papaya (Table 14). Cent per cent homesteads in S₁ and 75 per cent homesteads in S₂ had mango and banana, however, cent per cent farmers in S₃ was found growing mango trees. Chilli (70%), tomato (57.5%), amaranthus (52.5) and ladies finger (42.5) were the most commonly growing vegetables in homesteads of AEU 9. More or less similar trend was observed in the pattern of distribution of enterprises in AEU 8 and AEU 9, but comparatively less intensive cultivation was noticed in homesteads. More than 10 different vegetables were observed to be growing in the kitchen yards out of which chilli, tomato, ladies finger and brinjal were found more prevalent. The cultivation of vegetables in homesteads has been reported by Galhena *et al.*, (2013).

Crop-livestock integration was observed in 18.5 per cent households, while 15 per cent homesteads preferred poultry rearing along with the crops. The practice of maintaining livestock and poultry components in the homesteads has been reported by Ali (2005) and Andrews (2016).

It is found that 100 per cent of homestead had coconut with an average number of 29 with a minimum of 6 trees to a maximum of 56 trees (Table 14) in AEU 9. It is interesting to observe that, large scale production of ivy guard even though ivy gourd cultivation was not prominent among the homesteads.

Homestead farming has been the backbone agricultural economy of Kerala, owing to its direct and indirect benefits to the social and economic well-being of the people in state over the years, both at the micro and macro levels. The homesteads of Kerala, which once considered the self-sustainable mini-

production models is at the verge of extinction due to the share of land under homestead farming in Kerala has grown, and the share of area under garden land has declined, owing to rapid urbanization. Over the years, many small holdings have fragmented into smaller homesteads. Farmers depending on farming alone were found in distress due to low and fluctuating income. Increasing population and low per capita availability of lands have necessitated better management practices in home gardens and the micro-development models like homesteads is the key to success in a populous country like India.

References

- Ali, S. M. 2005. Home gardens in smallholder farming systems; examples from Bangladesh. *Hum. Ecol.* 33 (2): 245-270.
- Andrews, S. and Kannan, E. 2014. Land use under homestead in Kerala: the status of homestead cultivation from a village study. Working paper series 369, The Institute for Social and Economic Change, Bangalore, 24p.
- Balakrishnan, T R (2015). Homestead Farming in Focus. Farming-in-focus, article.
www.thehindu.com/news/national/kerala/homestead
- Galhena, D. H., Freed, R., and Maredia, K. M. 2013. Home gardens: A promising approach to enhance household food security and wellbeing. *Agric. Food Sec.* 2 (8): 2-8.
- Helen, S. and Baby, S. 2013. Analysis of diversifications in coconut based small homesteads of Kerala. *Agric. Update* 8(3): 343-347.
- Jacob, J. and Nair, M. A. 1999. Socio-economic characteristics of homestead farming in southern Kerala. *J. Trop. Agric.* 37: 107-109.
- Jayawardana, J. K. J. P. 2007. Organic agricultural practices in coconut based homesteads in Thiruvananthapuram district. M. Sc. (Ag) thesis, Kerala agricultural university, Thrissur, 110p.
- John, J. 1997. Structure analysis and system dynamics of agroforestry home gardens of southern Kerala. Ph. D. thesis, Kerala Agricultural University, Thrissur, 213p.
- John, J. 2014. Homestead farming in Kerala: A multi-faceted land-use system. *Rev. Agrarian Stud.* 4 (1): 80- 105.
- Kumar, B. M. and Nair, P. K. R. 2004. The enigma of tropical homegardens. *Agrofor. Syst.* 61: 135-152.
- Kumar, B. M., George, S. J., and Chinnamani, S. 1994. Diversity, structure and standing stock of wood in the homegardens of Kerala in peninsular India. *Agrofor. Syst.* 25: 243-262.
- Nair, P. K. R. 1993. Agroforestry system design: an ecozone approach. In: Sharma, N. P. (ed.), *Managing the World's Forests*. Proceedings of the EWC/FAO workshop on Socio economic aspect of Social Forestry in Asia- pacific region. Bangkok, Thailand, pp. 34-39.
- Priya, N. K. and Jayashree, K. 2013. Profile characteristics, inventory of the crop species and farming mechanisms in homestead farming of Kerala for agrobiodiversity conservation. *Int. J. Multidisciplinary Res.* 3 (11): 30-37.
- Rahul, K. 2013. Techo socio-economic characterization of specialized homegardens: A dominance-diversity approach. M.Sc. (Ag) Thesis, Kerala agricultural university, Thrissur, 136p.
- Ramesh, P. and Santha, G. 2003. Correlates of knowledge level of organic farmers. *Maharashtra J. Ext. Educ.* 22 (2): 182-185.
- Reeba, J. 2015. Technology assessment on the production practices of economically dominant crops in Homegardens. M.Sc.

- thesis, Kerala agricultural university, Thrissur, 139p.
- Salam, M. A. and Sreekumar, D. 1990. Coconut-based mixed farming system to sustain productivity. *Indian Coconut J.* 20 (10): 1-3.
- Subhadra, M. R., Suresh, K. A., and George, P. R. 2009. Optimum activity mix of dairy with crops in mixed farming system in Kerala. *J. Dairy. Food Home Science* 28 (2): 101- 106.
- Thasneem, S. 2016. Technology utilization of banana in Thiruvananthapuram district. M. Sc. (Ag) thesis, Kerala Agricultural University, Thrissur, 123p.
- Thomas, A. 2004. Technology assessment in the homegarden systems. Ph.D. thesis. Kerala Agricultural University, Thrissur, 230p.
- Wiersum, K. F. 2006. Forest Gardens as an 'Intermediate' land-use system in the nature-culture continuum: characteristics and future Potential. *Agrofor. Syst.* 61: 123–134.

How to cite this article:

Muhammed Jaslam, P.K., Brigit Joseph, Liz J. Mampallil and Vishnu, B.R. 2017. Land Utilization under Homestead in Kerala: Current Status of Homestead Cultivation. *Int.J.Curr.Microbiol.App.Sci.* 6(11): 5391-5410. doi: <https://doi.org/10.20546/ijcmas.2017.611.516>