RESEARCH ARTICLE

LIVELIHOOD SIGNIFICANCE OF HOMEGARDEN AGROFORESTRY RESOURCES IN BLOCK LAR OF DISTRICT GANDERBAL, J.&K., INDIA

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Abstract: The study investigated theLivelihood significance of homegarden agroforestry resources in block Lar of district Ganderbal.Multi – stage random sampling technique was used to select the villages and households. For collection of data 5 village's *viz*., Barsoo, Manigam, Benhama, Watlar, Dangar pora were selected by using procedure of simple random sampling. A total of 118 households were selected from the sampled villages having 12 percent sampling intensity by simple random sampling technique for the field study. The findings revealed that people are in underprivilaged condition in all respects as reflected by their low socioeconomic and homegarden resource characteristics. A total of 25 species belongs to 15 families were mostly founded in study area out of which agricultural components has the highest position i.e.15, followed by 6 fruit component, 3 medicinal plants and one tree component.The family *Brassicaceae* and *Rosaceae* has the highest representation of four home garden species.Most of the species were used for Vegetables, Fruits, Fuelwood and Fodder for the Household purposes which is followed by medicines etc. Vegetables, Fruits, Fodder and Fuelwood are the prime resources collected by almost all the households (91.52%) from homegardens whereas the involvemet of households in collection of medicines and others is comparatively low (10.16 %).The study concluded that the homegardens plays a crucial role in livelihood security of rural people by providing fuelwood, fodder, fruits, vegetables, medicines etc and contributing significantly to the gross annual income and employment opportunities. The livelihood support from home garden resources depends on multitude of household socio- economic and homegarden resource characteristics such as education, type of family, size of land holding, livestock possession, main occupation, gross annual income.

Keywords: Homegarden, Socioeconomic, Livelihood, Kashmir

INTRODUCTION

Homegarden commonly defined as land use system involving deliberate management of multipurpose trees and shrubs in intimate association with annual and perennial agricultural crops and invariably livestock within the compounds of individual houses, the whole tree-crop, and animal unit is being intensively managed by family labour. The significance of home gardens to rural livelihoods is well appreciated throughout the world (Fernandes and Nair, 1986; Nair, 2006). The homegarden has been described as an important social and economic unit of rural households, from which a diverse and stable supply of economic products and benefits are derived (Campbell *et al*., 1991; Shackleton *et al*., 2008).Agroforestry systems provide an important contribution to sustainable agricultural production because of their potential to meet economic, social, ecological, and institutional conditions for sustainable livelihoods (Nair, 2006). The major functions of homegardens particularly in rural areas are subsistence production and income generation (Kumar and Nair, 2004).Sustainable livelihoods comprise the capabilities, assets (including both material and social resources), and activities required to achieve a means of livelihood.Kashmiri homegardens are essentially man-made and reflect the wisdom of culture and ecological knowledge that have evolved over the years. Such traditional ecological knowledge systems are based on strong socio culture and traditional beliefs, confounded by the economic status of the people.The average holding size of majority of home gardeners ranging from 0.2 to 0.5 ha in the tropics and subtropics (Nair and Sreedharan, 1986). The home garden, literally known in Kashmiri as "*waer*" refers to the traditional land use system around a homestead where several species of plants are grown and maintained by household members and their products are primarily intended for the family consumption. The resources in the homegarden and their socioeconomic importance in Kashmir valley is lacking where the practice of homegarden is quite old. In light of this, the present study was undertaken to evaluate the socio-economic and homegarden resource characteristics of people in block Lar and to assess the utilization pattern and livelihood significance of homegarden resources in block Lar.

MATERIALS AND METHODS

Study area

The proposed study was conducted in purposively selected block of lar of district Ganderbal of Jammu and Kashmir. The block lies between the geographical coordinates of 34.262N 74.755E and 34.262N74.755E at an altitude of 1650m (5410 ft) above mean sea level in the undulate surface of Kashmir valley. Lar has a population of 50, 491 (males 52%, females 48%) and the literacy rate was 59.99%. The Lar block has a total of 17 villages out of which all are inhabited. The major section of the

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population of the block is dependent on agriculture and livestock.

Sampling technique and sample

Multi – stage random sampling technique was used to select the villages and households. The first stage was the simple random sampling of 5 village's *viz*., Barsoo, Manigam, Benhama, Watlar, Dangar pora. A total of 118 households were selected from the sampled villages having 12 percent sampling intensity by simple random sampling technique for the field study.

The data was also collected by using both secondary sources and primary field survey.Secondary sources included were Research reports, Village records, internet and review records.Primary sources included were structured interviews with selected respondents.In order to study the utilization and livelihood significance of homegardens and there interrelationship with household socio-economic characteristics the selection of variables were done after the review of secondary data and the survey of the study area.The species cultivated in the homegardens of sampled households were identified and their common name, scientific name, genus, family, parts used and utilization pattern were recorded. The species were classified mainly into trees, shrubs, herbs and climbers. The plant parts utilized/consumed were categorized as entire plant, bole, leaves, branch, shoot, fruit, and root. The interview schedule comprised the data pertaining to livelihood significance of homegarden resources included type of homegarden resources Collected/produced per annum, Consumption/annum, households involvement in marketing, sale of home garden resources, rate, income (Rs) and employment generation. The quantity of various forest resource namely fuelwood, fodder, fruits, vegetables, medicines etc collected /consumed from homegardens were estimated separately.

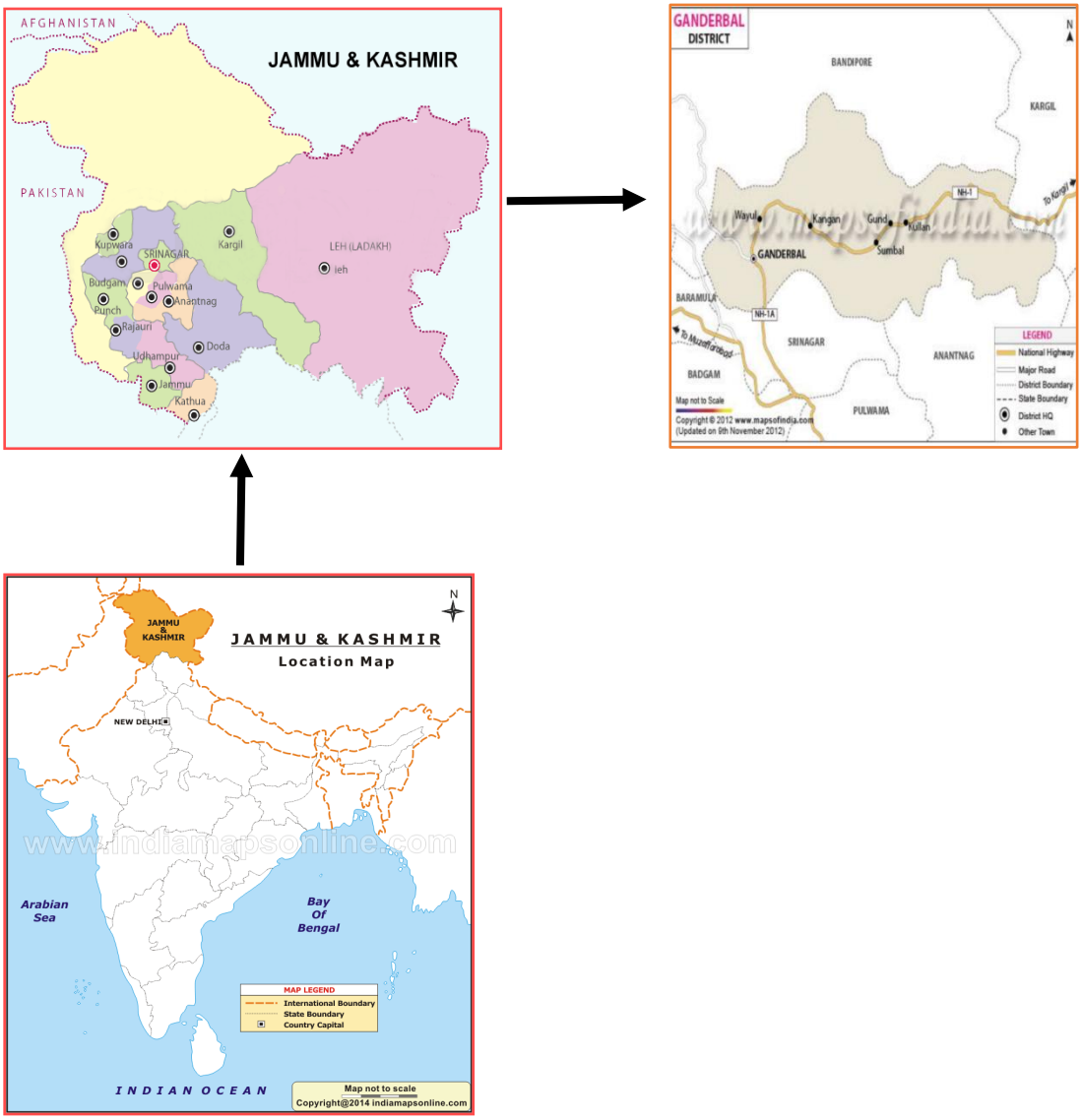

Fig. 1: Location of the study area

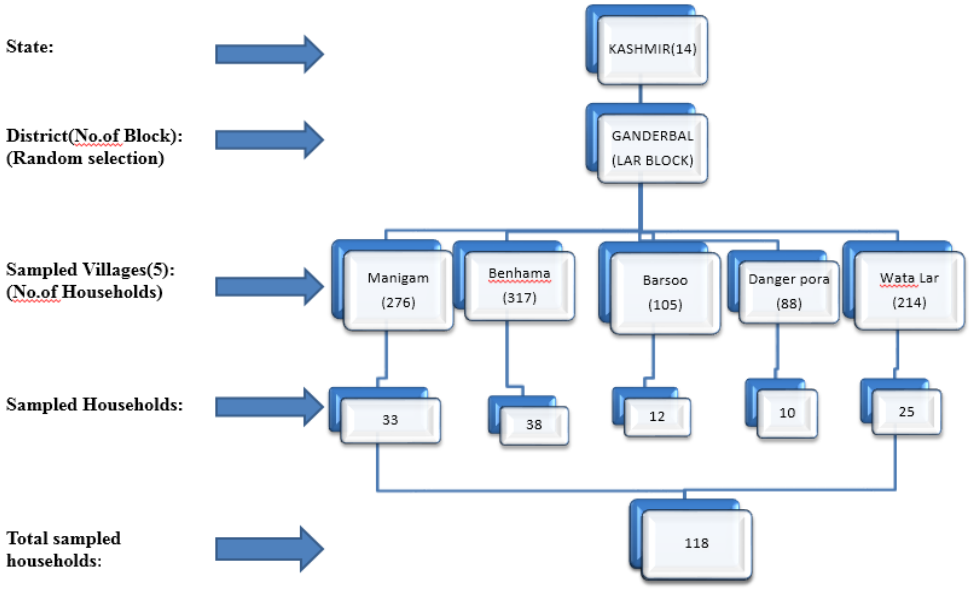

Fig. 2: Sampling procedure

DATA ANALYSIS

The survey were analysed by descriptive as well as statistical analysis. The observed data were run through the software and analyzed on MS excel and the following statistical devices were used; Frequency (f), percentage (%), mean along with standard error (x), standard deviation (Snedecor and Cochran) for the present analysis.

RESULT AND DISCUSSION

Socioeconomic and homegarden resource characteristics of people in block Lar.

The total number of households in 5 sample villages were 1000, of which 118 households were sampled for the survey.The table 1 and 2 and 3 shows household survey indicated that most of the respondents were middle aged (55.93%) having literacy upto primary level (72.03%) and belong to large family size(61.01%) and nucler (59.32%) family type.Most of the households (72.88%) were marginal land holders engages mainly in cultivation or business (60.16%), having livestock upto 5 (68.63%) and gross annual income up to Rs30001 to Rs 60000 per annum (63.47%) (Table 4, 5, 6 and 7). The pervasiveness of middle aged respondents could be endorsed to the fact that middle aged people are generally enthusiastic, innovative, and hardworking with more experience, vigourzeal, prosperity and challenge. The low literacy might be due to derisory socio economic conditions, lack of educational facilities, higher involvement of boys and girls in livelihood earnings and ignorance towards education.The maximum people were found in nuclear family because of growing individualism people prefer to lead independent life with personal assets and proper accommodations in nuclear familes. Contemplation of child as an added asset to the family who can contribute by the way of labour and lack of knowledge of the benefit of small families might be the reason for large sized families.The predominance of marginal farmers in the surveyed area is due to nuclear and neo-local structure of families in the community which urged early. Livestock support agriculture and allied activities besides providing nutritional, social, economic, religious and recreational benefits to the people. dissolution of land from generation to generation and amoung married offsprings. Agriculture and business being the back fillet of the economy in the study area, most of the respondets belong to farming families or dependent on business for their livelihood. The study established the predominance of families having low gross annual income ranging between Rs 30001 to Rs 60000 per annum. The probable reasons of this might be that majority of the respondents are either farmer having small sized land holding or paltry businessmen, lack of scintefic know-how, low crop production, inadeqaute fertility of soil etc. The findings are inconsistent with earlier works of Pal, 2011;Sinha, 2010; Rahman, 2013.

Utilization pattern and livelihood significance of homegarden resources in block Lar.

As shown in table 8 a total of 25 home garden species belongs to 15 families were recorded in the study area. The family *Brassicaceae* and *Rosaceae* has the highest representation of four home garden species. Among all the species maximum were used as vegetables, fruits, fodder, and fuelwood. The households collect vegetables such as onion, knolkhol, spinach, cauliflower, cucumber, chili, brinjal, peas, pulses, maize, radish, carrot, garlic,

turnip etc from their homegardens. Very small quantity of medicinal plants was also founded in the home gardens namely Vai gander, Pamb chalan, Mint and Handh. Important forest species usually grown in the homegardens by local people for ornamentation were *Cupressestorulosa*. Almost all the parts namely leaves, branches, bole, shoot, fruit, roots, seeds and entire plants were extensively collected and consumed by the local households to meets their daily needs and livelihood security.Similar study was conducted by Rahmaan,2013 and Devi *et al*., 2013.

The table 9 comprises the findings pertaining to household collection, consumption, sale, rate, income and employment from homegardens. It was revealed that vegetables, fruits, fuelwood and fodder are the prime forest products collected by almost all the households in considerable quantity (91.52%) while medicine is collected comparatively by lesser number of households in low quantity (10.16%). Vegetables fetched the maximum earning (Rs 75,000per annum) among the sampled households while medicines accrued lowest income (Rs1820 per annum). The Vegetable was the major employment source (326.08 man-days per annum) among the homegarden forest resources and Medicine has the lowest employment source among the home garden (13.2 man-days per annum). The extraction, consumption and marketing of homegarden forest resources accrued an average income of Rs 1525.42per annum per households and employment opportunities of 7.24 man-days per annum per household among the sample households.

Table 1. Age of the sample household (N = 118)

Age			
S.No.	**Category**	**Household**	**Percentage (%)**
1.	Young (up to 30years)	21	17.79
2.	Middle (31 to 50 years)	66	55.93
3.	Old (51 to 70 years)	19	16.10
4.	Very old (above 70)	12	10.16
	$\overline{XX}$±S.E = 44.72±1.4		

S.E = Standard error.

Table 2. Education of the sample household (N = 118)

Education			
S.No.	**Category**	**Household**	**Percentage (%)**
1.	Illiterate	47	39.83
2.	Below primary	23	19.49
3.	Primary	15	12.71
4.	Middle	11	9.32
5.	High school	9	7.62
6.	Intermediate	7	5.93
7.	Graduate& above	6	5.08
	$\overline{XX}$±S.E = 2.29±0.10		

Table 3. Family composition of the sample Households (N =118)

S.No.	**Family type**		**Family size**	
	Category	**Households**	**Category**	**Households**
1	Nuclear	70 (59.32%)	Small (up to 5 members)	46 (38.98%)
2	Joint	48 (40.67%)	Large (above 5 members)	72 (61.01%)
	$\overline{XX}$±S.E = 1.48 ± 0.09;		= 1.85±0.07	

S.E = Standard error

Table 4. Size of Land Holding of the Sample Households (N= 118)

Size of Land Holding			
S.No.	**Category**	**Household**	**Percentage (%)**
1	Landless	00	0.00

2.	Marginal	86	72.88
3	Small	32	27.11
4	Medium	00	0.00
5	Large	00	0.00
	$\overline{XX}$ ±S.E = 1.11 ± 0.04		

S.E = Standard error

Table 5. Main Occupation of the Sample Households (N=118)

Main Occupation			
S.No.	**Category**	**Household**	**Percentage (%)**
1.	Wage labour	14	11.8
2.	Caste occupation	11	9.32
3.	Cultivation	45	38.13
4.	Business	26	22.03
5.	Services	12	10.16
6.	Any others	10	8.41
$\overline{XX}$ ±S.E = 3.28 ± 0.08			

S.E = Standard error

Table 6. Livestock possession of the Sample Households (N= 118)

Livestock possession			
S.No	**Category**	**Household**	**Percentage (%)**
1.	No livestock	18	15.25
2.	Upto 5 livestock	63	53.38
3	6 to 10 livestock	22	18.64
4	Above 10 livestock	15	12.71
	$\overline{XX}$ ±S.E = 5.04 ± 0.33		

S.E = Standard error

Table 7. Gross Annual Income in the Sample Households (N=118)

Gross Annual Income			
S.No	**Category**	**Household**	**Percentage**
1.	Very low income (uptoRs 30000/annum)	8	6.77
2.	Low income (Rs 30001 to Rs 60000/annum)	67	56.7
3.	Medium income (Rs 60001toRs 90000/annum)	26	22.03
4	High income (above Rs 90000/Annum)	17	14.40
$\overline{XX}$ ±S.E = 62878.79 ± 3063.306			

S.E = Standard error

Table 8. Utilization pattern of the species of Homegarden resources in the Sampled Households (N=118)
Vegetables: Kharif crops

S.No	**Common name**	**Scientific name**	**Family**	**Part used**	**Usage**
1	Potato	*Solanum tuberosum*	*Solanaceae*	Stem	Edible
2	Onion	*Allium cepa*	*Amaryllidaceae*	Leaves, bulb	Edible
3	Maize	*Zea mays*	*Poaceae*	Entire plant, cobs	Fodder, edible
4	Brinjal	*Solanum melongena*	*Solanaceae*	Fruit	Edible
5	Spinach	*Spinacia oleracea*	*Amaranthaceae*	Leaves	Edible

6	Cucumber	*Cucumis sativus*	*Cucurbitaceae*	Fruit	Edible
7	Knolkhol	*Brassica oleracea*	*Brassicaceae*	Leaves	Edible
8	Cauliflower	*Brassica oleracea*	*Brassicaceae*	Flower, leaves	Edible
9	Chilli	*Capsicum frutescens*	*Solanaceae*	Fruit	Edible

Rabi crops

S.No	Common name	Scientific name	Family	Part used	Usage
1	Pea	*Pisum sativum*	*Leguminaceae*	Seeds	Fodder, edible
2	Pulses (lentils, beans)	_	*Leguminaceae*	Seed	Edible
3	Garlic	*Allium sativum*	*Amaryllidaceae*	Bulb	Edible
4	Carrot	*Daucus carota*	*Apiaceae*	Root	Edible
5	Radish	*Raphanus sativus*	*Brassicaceae*	Root, leaves	Edible
6.	Turnip	*Brassica rapa*	*Brassicaceae*	Root, leaves	Edible

Fruit trees:

S.No	Common name	Scientific name	Family	Part used	Usage
1	Apple	*Malus domestica*	*Rosaceae*	Fruit	Edible
2	Grapes	*Vitis vinifera*	*Vitaceae*	Fruit	Edible
3	Peach	*Prunus persica*	*Rosaceae*	Fruit	Edible
4	Apricot	*Prunus armeniaca*	*Rosaceae*	Fruit	Edible
5	Plum	*Prunus domestica*	*Rosaceae*	Fruit	Edible
6	Walnut	*Juglans regia*	*Juglandaceae*	Fruit	Edible

Medicinal plants:

S.No	Common name	Scientific name	Family	Part used	Usage
1	Vai gander	*Acorus calamus*	*Acoracea*	Rhizome	Medicinal purpose
2	Mint	*Mentha arvensis*	*Lamiaceae*	Leaves	Medicinal purpose
3	Handh	*Taraxacum officinale*	*Asteraceae*	leaves	Medicinal purpose

Table 9. Exploitation of Homegarden resources by the Sampled Households (N=118)

Homegarden resources	Households involved in collection	Collection (kg/annum)	Consumption (kg/annum)	Households involved in marketing	Sale (kg/annum)	Rate (Rs per kg)	Income (Rs /annum)	Employment (man days/annum)
Vegetables	118 (100)	6280.00	5030.00	24 (20.33)	1250.00	60.00	75,000	326.08
Fruits	108 (91.52)	5082.00	3092.00	18 (15.24)	1990.00	30.00-50.00	59,700	271.36
Fodder	108 (91.52)	9.68 Δ	5.70 Δ	14 (11.8)	3980.00	6.00	23,880	136.59
Fuelwood	118 (100)	11.2 Δ	8.47 Δ	26 (22.03)	2800.00	7.00	19,600	108.00
Medicines	12 (10.16)	96.00	70.00	8 (6.77)	26.00	30.00-100.00	1,820	13.20
Total							1,80,000	855.23
Average							1525.42	7.24

Figures in parentheses show percentages; Δ = *ton*

CONCLUSION

The study indicated that the surveyed people are in underprivileged position in all respects as reflected by their low socioeconomic conditions. The homegardens plays a crucial role in livelihood security of rural people by providing fuelwood, fodder, fruits, vegetables, medicines etc and contributing significantly to the gross annual income and employment opportunities. The livelihood support from home garden resources depends on multitude of household socio- economic and homegarden resource characteristics such as education, type of family, size of land holding, livestock possession, main occupation, gross annual income.

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