

Agroforestry: Stepups of Agriculture Practices for Socio-Economic and Sustainable Development of Land

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ABSTRACT

Agroforestry is viewed as a dynamic, ecologically-based, natural resources management system that integrated trees on farms in forestry and agricultural landscapes, in order to diversify and sustain production. Agroforestry were engaged in to carry out their sustainable natural resource management programs like upland development, reforestation and greening, watershed management, community-based forest management. Sustainable development is the development which meets the needs of the present without compromising the ability of future generations to meet their own needs. With growing population and limited land resources the relevance of land use planning is obvious. Land has limited carrying capacity beyond which there will be degradation and loss in productivity due to excessive use. In order to meet various demands of the growing population the land degrading trend needs to be checked. Agroforestry combines the best practices of tree growing and agricultural systems, resulting in the best and most sustainable use of land. Agroforestry therefore serves to enrich farmers through the harvesting of diverse products at different times of the year. It also brings job opportunities from the processing of tree products, expanding the economic benefits to rural communities and national economies. The study focusses on awareness of farmers towards the agroforestry practices in their plots.

Key words: Agroforestry, Reforestation, Sustainable, Regreening

INTRODUCTION

Sustainable development is the development which meets the needs of the present without compromising the ability of future generations to meet their own needs Agroforestry is such a mechanism for sustainable natural resource management programs like upland development, reforestation and greening, watershed management, community-based forest management. It is viewed as a dynamic, ecologically-based, natural resources

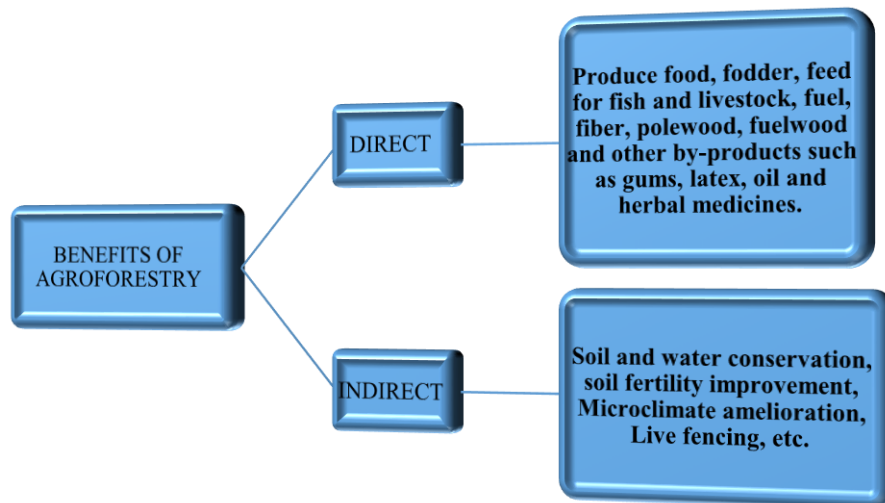
management system that integrated trees on farms in forestry and agricultural landscapes, in order to diversify and sustain production.

Agroforestry is receiving long overdue attention as a resource efficient, environmentally positive and profitable method of farming. Incorporating trees in farming and range management can provide many benefits.

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Agroforestry is a collective name for land use systems involving trees combined with crops and/or animals on the same unit of land. It actually involves cycling of nutrients and flow of energy through various tropic levels interacting positively with higher ecological efficiency. Agroforestry means many things to different people. It is often applied to the integration of trees, typically one species grown for timber, with pasture; but it may also

include more complex systems that include trees with a variety of crops, both annual and perennial species, and animals. Agroforestry is receiving long overdue attention as a resource efficient, environmentally positive and profitable method of farming. Incorporating trees in farming and range management can provide many benefits. There are various benefits of agroforestry listed in below graph.



Graph 1: Benefits of agroforestry practices.

Agroforestry therefore serves to enrich farmers through the harvesting of diverse products at different times of the year. It also brings job opportunities from the processing of tree products, expanding the economic benefits to rural communities and national economies. Effective agroforestry systems make the most of positive interactions between their various components, so that the final product is more valuable than in the absence of trees, while the risks of failed harvests and dependence on chemical inputs are reduced.

To be effective and sustainable, agroforestry needs two types of integration: agriculture with trees, and trees with people. Agroforestry generates significant public ecosystem services, such as watershed protection, soil and biodiversity conservation, carbon sequestration and avoided emissions, as well as minimizing climatic and financial risks.

2. OBJECTIVE OF THE STUDY

Agroforestry combines the best practices of tree growing and agricultural systems,

resulting in the best and most sustainable use of land. The study attempts to know the farmers awareness towards the agroforestry practices. For achieving this objectives, various sub-objectives have been formed and listed below:

- To examine the knowledge/awareness of agroforestry among the farmers in villages of Varanasi district.
- To find out the main and other occupations of farmers in different villages of Varanasi district.
- To find out the schemes and programmes of government for promoting sustainable agriculture and agroforestry practices.

MATERIAL AND METHODS

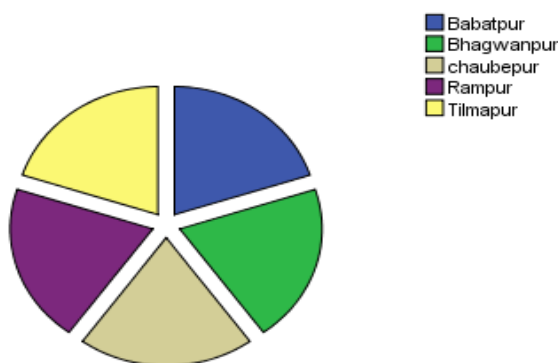
The study is empirical and exploratory in nature. The area of the study is confined to five villages of Varanasi district only where the agroforestry is actually functioned. Here the primary and secondary both type of data

have been used. The primary data is collected from the structured questionnaire and personal interview whereas secondary data is collected from the published articles, research papers, government official publications and reports. The 10 respondents of each villages have been chosen for the sample size. In total 50

respondents are the sample size of the study which is selected on the random sampling basis. For the primary data, farmers/ villagers are the respondents who respond towards the questions. The table 1 shows the complete list and number of respondents in different villages of Varanasi district.

Table 1. Total number of respondents of each villages in Varanasi district.

VILLAGES	FREQUENCY	PERCENTAGE
Babatpur	10	20
Bhagwanpur	10	20
Chaubepur	10	20
Rampur	10	20
Tilmapur	10	20
Total	50	100



Graph 2. The number of interviewees for each of the five villages.

4. ANALYSIS AND INTERPRETAION

4.1 TO EXAMINE THE KNOWLEDGE/AWARENESS OF AGROFORESTRY AMONG THE FARMERS IN VILLAGES OF VARANASI DISTRICT.

Agroforestry is a collective name for land use systems involving trees combined with crops and/or animals on the same unit of land. Agroforestry means many things to different people. It is often applied to the integration of trees, typically one species grown for timber, with pasture; but it may also include more complex systems that include trees with a variety of crops, both annual and perennial species, and animals. Agroforestry practices

provides various benefits of agroforestry: to the farmer's like:

- Helps protect and sustain agricultural productive capacity
- Ensures food diversity and seasonal nutritional security
- Diversifies rural incomes
- Strengthens resilience to climatic fluctuations
- Helps perpetuate local knowledge and social and cultural values

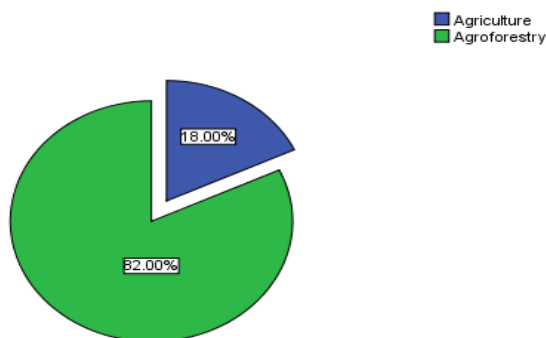
The below table shows the awareness of farmers towards the agroforestry. 18% of respondents planting the agriculture only and 82% of farmers have the knowledge of agroforestry practices. Out of these 82%, 54% of respondents follow the modern agroforestry

and 28% follow the traditional agroforestry practices. After analyzing these, the next step is to find out the sources of knowledge of agroforestry. There are various sources through which the farmers got the knowledge

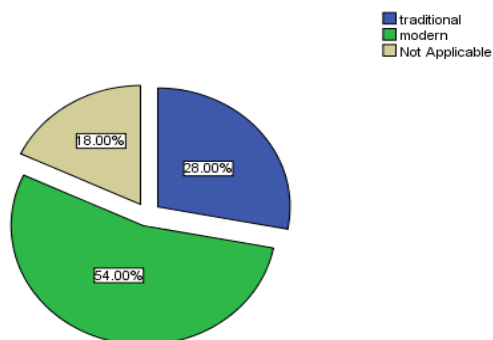
of agroforestry. 40% of farmers got the knowledge from media, 34% from friends/fellow villagers and 8% from extension officers.

Table 2. List of respondent’s awareness towards the agroforestry practices.

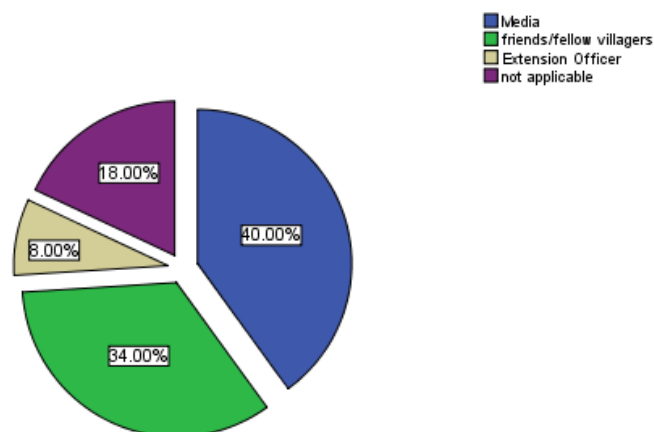
VARIABLES	SUB-VARIABLES	VILLAGES				
		Babatpur	Bhagwanpur	Chaubepur	Rampur	Tilmapur
FARMING PRACTICES	Agriculture	1	1	3	2	2
	Agroforestry	9	9	7	8	8
AGROFORESTRY PRACTICES	Traditional	4	3	2	3	2
	Modern	5	6	5	5	6
SOURCES OF KNOWLEDGE OF AGROFORESTRY	Media	4	5	2	5	4
	Friends/Fellow Members	4	3	3	3	4
	Extension Officer	1	1	2	-	-



Graph 3: Percentage of farmers uses the agriculture and agroforestry in their plots.



Graph 4: Percentage of farmers uses the traditional and modern agroforestry and non-agroforestry in their plots.



Graph 5: Percentage of farmer's awareness/knowledge of agroforestry from various sources.

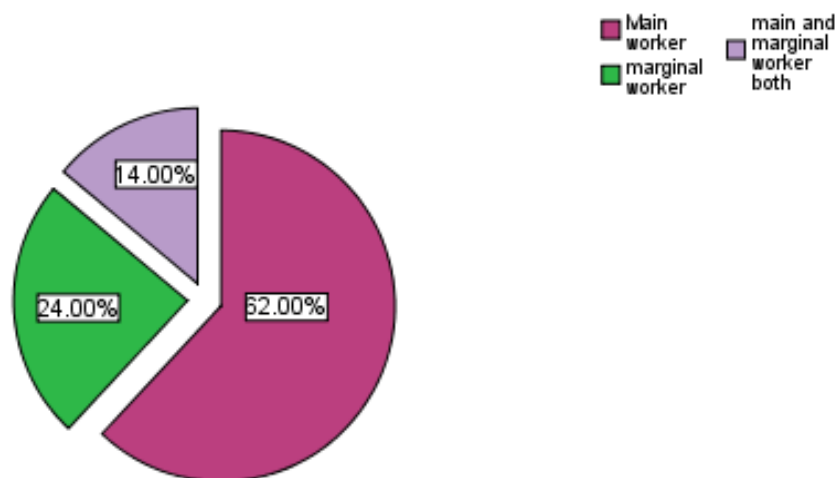
4.2 TO FIND OUT THE MAIN AND OTHER OCCUPATIONS OF FARMERS IN DIFFERENT VILLAGES OF VARANASI DISTRICT.

There are two major category of occupation of farmer's i.e. main worker and marginal worker. The main worker includes various other occupations i.e., Cultivator, Agriculture Labour, Livestock, Forestry Plantation, Mining & Quarrying, Households Industry, Other than households industry, Construction, Trade & Commerce. The table 3 shows the complete list of occupation of respondents in different villages of Varanasi district. There

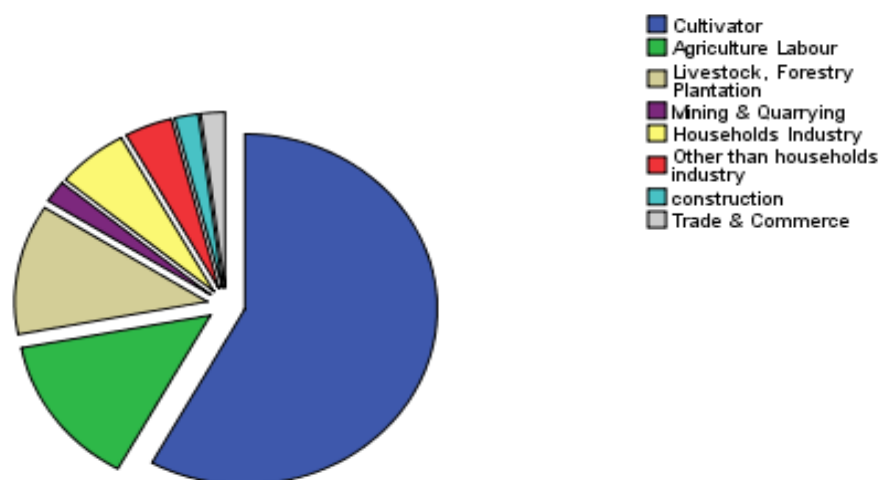
are 62% of respondents who are the main worker and 24% of marginal worker and 14% have main and marginal worker both. Further the 62% of main worker occupation is classified into various other occupation, i.e. 40% of cultivator, 4% of agriculture labour, 10% of Livestock, Forestry Plantation, 4% of Households Industry, 2% Other than households industry and 2% of Trade & Commerce. On such basis of responses, it is concluded that the cultivator is the main occupation of workers in the villages of Varanasi district.

Table 3. The different categories of occupation of respondents.

MAIN OCCUPATION	OCCUPATION			Total
	Main Worker	Marginal Worker	Main and marginal worker both	
Cultivator	20	4	5	29
Agriculture Labour	2	4	1	7
Livestock, Forestry Plantation	5	1	0	6
Mining & Quarrying	0	1	0	1
Households Industry	2	1	0	3
Other than households industry	1	1	0	2
Construction	0	0	1	1
Trade & Commerce	1	0	0	1
Total	31	12	7	50



Graph 6: Percentage of farmer’s occupation into main worker, marginal worker and both occupation.



Graph 7: Percentage of farmer’s occupation as various sub-occupation of main worker.

4.3 SCHEMES AND PROGRAMMES OF GOVERNMENT FOR PROMOTING SUSTAINABLE AGRICULTURE AND AGROFORESTRY PRACTICES.

The Government has been implementing several schemes and programmes for promoting sustainable agriculture practices. Some of these are presented in below graph:

National Mission on Sustainable Agriculture (NMSA)
 National Initiative on Climate Resilient Agriculture
 National Agro Forestry Policy
 Soil Health Card Scheme.
 National Food Security Mission
 Mission for Integrated Development of Horticulture
 National Mission on Agricultural Extension and Technology
 Pradhan Mantri Krishi Sinchayee Yojana (PMKSY):
 Accelerated Irrigation Benefit Programme (AIBP)
 PMKSY (Har Khet ko Pani)
 PMKSY (Per Drop More Crop)
 PMKSY (Watershed)
 National Mission for Sustainable Agriculture (NMSA):
 Rainfed Area Development Programme (RADP)
 National Mission on Micro Irrigation (NMMI)
 National Project on Organic Farming (NPOF)
 National Project on Management of Soil Health & Fertility (NPMSH&F)
 Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)
 Paramparagat Krishi Vikas Yojana (PKVY)
 National Initiative for Climate Resilient Agriculture (NICRA)
 National Food Security Mission
 Soil Health Card Scheme (SHC)
 Mission for Development of Integrated Horticulture (MIDH)
 National Agroforestry & Bamboo Mission (NAFM)
 National River Conservation Plan
 Ecomark Scheme of India (ECOMARK) - Ecomark Labelling
 National Afforestation Programme: A Participatory Approach to Sustainable Development of
 Forests
 National Action Programme to Combat Desertification
 Grants-in-aid Scheme for Voluntary Agencies

CONCLUSION

Agroforestry combines the best practices of tree growing and agricultural systems, resulting in the best and most sustainable use of land. The outcomes of agroforestry can be seen in food, fuelwood and watershed management, contributing to a more resilient food system. The study found that the government have initiate and promotes to the farmers through various schemes and programmes for using the agroforestry practices in their plots. The main occupation of farmers is cultivation. So the majority of the respondents follow the agroforestry pattern in their land for sustainable development and socio-economic benefits. The media plays the very important role to make aware to the

farmers. With growing population and limited land resources the relevance of land use planning is obvious. Land has limited carrying capacity beyond which there will be degradation and loss in productivity due to excessive use. In order to meet various demands of the growing population the land degrading trend needs to be checked. Agroforestry combines the best practices of tree growing and agricultural systems, resulting in the best and most sustainable use of land.

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