



AGRICULTURAL EXTENSION SERVICES PROVIDED AND ITS ECONOMIC IMPACT ON AGRO-FORESTRY FARMERS- A CASE STUDY

GS Biradar*, Gangadharappa NR and Yashodhara B

University of Agricultural Sciences, Gandhi Krishi Vignan Kendra, Bangalore – 560065, Karnataka, India.

Corresponding Author

Article Info

G.S.Biradar

Email :- gsb.143@gmail.com

Received 28/05/2014; Revised 21/06/2014

Accepted 30/06/2014

ABSTRACT

Agro forestry as a sustainable agricultural system is being widely promoted all over the world. This case study investigates into the agricultural extension services provided and its economic contribution to farmers who practicing the mixed inter-cropping agro forestry technology, mango, silver oak, teak, cereals in villages of southern Karnataka. The differences between adopters and non-adopters of agro forestry technology based on poor AES delivery in terms of research information, agricultural performance and limited interaction between researcher, extension workers and farmers of agro forestry, also in terms of their age, size of the family, extension contact, income sources and other socioeconomic variables are examined. Results from analysis suggest that extension contact, size of the family, and age of the farmer are important variables in determining the adoption of agro forestry models for improvement of their livelihoods. It was observed that farmers modified technologies to suit their situation. This suggests that local participation is important in technology development and less land holding and monsoon variation are the important constraints for adoption of agr-horti, horti-silvi, agri-silvi-pasture systems. Results shown than increase in income level, sustainable use of agriculture production factors and AES helps farmers to get appropriate benefits.

Key Words: agro forestry, mango, silver oak, teak, cereals.

INTRODUCTION

The concept extension services for the development of agriculture is gaining importance over the years and it amply demonstrated that extension services are very effective in agriculture and rural development. In recent years, many observers have suggested that agricultural and rural development strategies would benefit from increased collaboration between government research and extension organizations and nongovernmental development organizations, hereafter called GOs and NGOs, respectively [1,2].

Agro-forestry

Agro-forestry is emerged as a land management and farming system capable of maintaining and improving the quality of the producing environment. Agro forestry is a collective name for land use systems and technologies where woody perennials are deliberately used on the same land unit as agricultural crops and/or animals, either in some form of spatial arrangement or temporal sequence. In agro forestry systems there are both economical and ecological interactions between the different components [3]. A dynamic, ecologically based, natural resource management system that, through the integration of trees on farms and in the agricultural landscape, diversifies and sustains production for increased social, economic and environmental benefits for land users at all levels [4].

Farm forestry and social forestry

Farm forestry (or agro forestry) is the commitment of resources by farmers, alone or in



partnerships, towards the establishment or management of forests on their land. Social forestry is both a programme and a philosophy of the people. In a sense it is the forestry is thus not a purely community development. The approach to social forestry is thus not a purely commercial one but is considered on social cost social benefit analysis. The participative process of locally identified groups including co-operatives is an essential part of social forestry.

Role of agro forestry in the farm economy

Agro-forestry has a significant role to play in the economy in general and farm economy in particular. On the one hand it increases forest cover and provides the badly needed fuel in rural areas, thus protecting the natural forests from over exploitation for rural energy needs. On the other hand it pumps additional into the farming sector by effective utilization of marginal and sub-marginal lands and is expected to complement the agri-cultural production upon improving the eco-system.

Research in agro-forestry could be justified for maximization of fuel yield, fodder, fiber, fruits, timber and other products, and to co-operative with the agriculture in a beneficial manner [5]. The studies on socio-economic feasibility and acceptability of various agro-forestry systems and choice of species within are not only crucial but are highly relevant.

In Karnataka, growing useful trees like tamarind, mango etc. on the farmer's field is an age-old practice. However cultivation of forest trees for commercial purposes is a new trend. In fact the commercial production of timber and firewood on farmer's field has its origin with the widely implemented social forestry programme. At present many district like those of Doddaballapur, Devanahalli, Kolar, Bangalore rural, Bangalore urban and Tumkur have a substantial area under commercial production of forest trees.

Statement of the problem

Over the years our farmers depends on indigenous or traditional agriculture which patches low income and also depending on local knowledge for improved farming system. Acquisition of such primitive skill or experience not helped farmers to improve agricultural yield. All that witnessed in our rural agricultural system range from poor farm yield, emergence of new crop, animal diseases, resistant plant weeds and pest incidence, poor quality fertilizers supplied by Private or Govt agencies etc. agricultural information are always meant to get to rural farmers via extension workers, community libraries, radio, television, film shows, agricultural pamphlets, state and local government agencies etc. rural farmers in their effort to access these agricultural knowledge and information from available sources for better farming system and improved agricultural economic impact. The present case study was therefore designed to identify the knowledge, awareness and experience can be gained by providing proper agricultural extension services regarding agro-

forestry to farmers through government and non-government agencies. And it brings impacts on economic status, ecological status, and social impact. To visualize extension service as achieving its ultimate economic impact by providing information and educational or training services to induce the AKAP (farmer Awareness, farmer Knowledge, farmer Adoption of technology, change in farmer Productivity) sequence. In awareness and knowledge stage extension services are strong substitutes for schooling. Objectives of the case study are the socio-economic profile of the agro-forestry farmers, assess the economic impact of agricultural extension services on selected respondents to the case study and elicit the problems encountered and suggestions.

Methodology of the case study

1. **Selection of area:** two villages were selected purposively from Bangalore rural district based on the familiarity of the area by the researcher i.e., Gantaganahalli village from Doddaballapur taluka and Kempalinganapura from Devanahallitaluka.

2. **Selection of respondents:** totally five farmers were selected based on that who are practicing agro-forestry practices like agri-horti, agri-forestry, agri-horti forestry systems etc. for this case study five farmers were selected based on the set criteria were as follows, Manjanna.G.C, Bhagyalaxmi, Srinivaas from Gantaganahalli and Ashwatnarayan K.R, Ramesh shivampur from kempalinganapura village of Bangalore rural district.

Forests on farms may increase agricultural production or supporting economically to home. They might be sustainable, even improve economic, social and environmental capital. Such cases are mentioned as below:

Case 1: General information: name of Selected farmer is Manjanna G.C belong to Gantaganahalli village of Doddaballapur taluka, 41 year old age, nuclear family, having education up to pre university level, discontinued the education because the economic problem of family.

History of farmer

He is having 3.05 acres of land holding (rainfed) and 23 years' experience in farming. Before 1989 he was practicing only traditional agriculture like growing of cereals like Raagi (little millet), jowar, redgram, cowpea, sunflower and vegetables namely tomato, French Beans, Peas, Radish, Brinjal, Chilli & Green Leafy vegetables. Income generated from traditional agriculture system was very low (i.e 15000-30000/-), it was unable to run a family of 6 members among that giving education to two children was still horrible. So he consulted the UASB scientists in 1988 and they suggested him to go for horticulture along with agriculture and maintain forest trees along the border. In 1989 he planted 100 mango trees of different mango varieties i.e Badaami(20), Rasapuri(20), Rajgeera(15), malagopa(15), Baiganapalli(10), Totapur(20) in available 3



acre land. He brought planting materials from Bhagys nursery, near devanahalli, each cost of Rs150/-. Planted in 3*3*3 pit with maintaining suitable spacing of 40*40 feet. No irrigation facility, so he following organic farming by practicing live mulching, vermicomposting and live earthworms are spread on the land by the suggestion of VC, UAS, GKVK, Bangalaoe, and Yielding started after 3 years.

During 2003 he planted forestry trees species namely, silver oak (50 trees), and teak (20 trees) along the borders and 23 mango trees, four tamarind trees, 1 jack fruit tree near home and Now those forest tree species like jackfruit and tamarind trees yielding very well.

Agri-Horti system

The practicing this system in best way means cultivating mixed cropping of mango + jowar, mango + ragi, mango + redgram, mango + maize, mango+ fodder system in sequential manner. And he got best farmer award at taluka level for getting highest production of ragi ((37.8quintal/ha) as mixed crop with mango. Awardees’ was selected by the KVK Hadonahalli, UAS Bangalore. The present income is 1, 50,000/- it increased to thrice compare to old traditional agriculture. Because of continuous contact with the agricultural extension services.

Income from different sources

Sl no	Particulars	Income (Rs)
01	Mango plantation (3 acres i.e 100 trees)	100000
02	Jack fruit tree (1 tree)	25000
03	Tamarind tree (4 tree)	5000
04	Lime trees (70 trees)	18000
Total		148000
50 silver oak trees are there but still need 5 years to harvest the trees. So not taken in calculating income		

Other four Cases

Bhagyalaxmi (33years, SSLC), Srinivaas (49years, high school) from Gantaganahalli and Ashwatnarayan K.R (29 years, degree), Ramesh shivampur (48years, SSLC) from Kempalinganpura village. Responses of other four farmers are collected and presented as below.

I. Awareness of the farmers

The agencies providing AES regarding agro-forestry known by the farmers as below

Government agencies	Private agencies
State agricultural university scientists	IFFCO
KVKs	TAFPE
RSKs	TEJA Nursery
AO, AHO, FO and other related officers	Bhagya nursery etc

All respondents opined that among both the agencies Government agencies are the best service

providing agency namely KVK, Hadonahalli, SAUs scientists, UAS, GKVK, Bangalore and Karnataka State agriculture department officers.

Medias creating awareness related to agro-forestry

Almost all respondents opined that television is the most important mass media for creating awareness, programmes like annadata, krishidarshan etc, followed by news papers namely kannadaprabha, prajavani and also friends and neighbours.

Farmer knowledge

Farmers having the correct knowledge about agro-forestry mean growing of trees along with agricultural crops or growing of trees alone in the field. And it provides benefits like provides the fruit, provides timber, increases economic status, social and environmental status. And also aware about destroying forests leads to reduces rainfall, increases atmospheric temperature, increases fuel and timber problems and more severe problem that creates deficit of fodder to cattle.

Planting of trees along field borders/ on bunds helps to prevent erosion of bunds, provides fodder, fuel, timber, fruits etc. they know subabul is best fodder tree species, pongemiapinneta is tree species of fuel, mango, tamarind, jamun, ber are tree species of fruits, and also have knowledge of planting trees crops in rows, agr-horti practice, silvi-pasture practice, establishment of live bunds helps for soil and water conservation, less expensive and highly beneficial, all this practice helps to increase the aggregate income.

Farmer adoption of technology

Most of the farmers are motivated by the government agencies and started growing trees along the borders as shelterbelts so as to protect the crops from wind break along with it increases the income and provides many more benefits.

Most of the farmers adopted that planting trees along field borders/on bunds namely silver oak, lime tree, coconut, teak etc, planting of trees along irrigation canal are tamarind, mango, jack fruit as fruit trees and it was noticed the adopted practices like, establishment of live bunds and ragi, red gram, maize are cultivated as crops in rows. Planting of trees in less fertile and waste lands practice. From all these practices can obtain more benefit from available land and reduces erosion of canals.

Farmers have the knowledge about all the agro-forestry systems but not adopted the all systems because they lack of availability of land, erratic rainfall, non-availability of labour at when we need and high labour cost.

Productivity Gap

Impact of extension services can be measured by taking the productivity gaps viz, actual yield (A), Best



practice yield (BP), Best practice best infrastructure yield (BPBIRP), and these gaps provide a way to classify the contribution of extension activities and show how the extension and research are linked?.

There is a greater extent of change has been brought by the extension services by the government and private agencies by providing inputs like knowledge and skill about organic farming, application of recommended fertilizer, improve soil fertility status through organic fertilizer, adoption of drip irrigation, conservation of the water by basin preparation and catch pits, follow inter crop/ mixed crop, monitoring and manage the pest and disease incidence, training and pruning, mulching of leaves and live mulching. Major role is played by the KVK, Hadonahalli, UAS, GKVK, Bangalore and SDA officers.

Economic impact: among tree species teak was found to be the most profitable tree species in terms of net return (25000 to 45000/ 25 year old tree) followed by neem (4000 to 7500/tree, similarly among the horticultural trees mango was found to be most profitable (800 to 1000/plant/year) followed by jack and tamarind (500 to 800 plant/year)

Above economic parameters clearly help to improve the family income, all round year employment, increased purchasing power of family, it brought impact on

BPBI), Best practice best infrastructure yield research social status like celebrating festivals in better ways, provides better education to children, and also ecological impact like provide shade, helps for bring more rainfall, reduces carbon di-oxide and gives better oxygen, air. These are the impacts expressed by the farmers. And one more important statement from these farmers is that 'there is no problem of money that who goes for horticulture and agro forestry and, there is no need of subsidy if rain comes properly'

CONCLUSION

Much has been learned about how to promote agro forestry and increase benefits to farmers and others through research, extension and policy reform. Whereas this case study has focused on success stories, constraints faced by the farmers have also provided important lessons. Lack of land holding, erratic rainfall distribution and labour problems but still trends seem that the number of trees in forests is declining, and the number on farms is increasing. And agricultural extension services really brought changes in farming system of these farmers through bringing positive impacts on social, economic and ecological status.

REFERENCES

1. Jordan F. (ED). (1989). *La economíacampesina: Crisis, reactivación, políticas*. San Jose, Costa Rica: Institute Interamericano de Cooperaciónpara la Agricultura.
2. Korten D. (1987). Third generation NGO strategies: A key to people-centred development. *World Development*, 75 (Supplement), 145-159. Project. *Ph.D. Thesis*, Uni Agric Sci, Dharwad.
3. Lundgren, B.O. &Raintree, J.B. 1982. Sustained agroforestry. In B. Nestel, ed. *Agricultural research fordevelopment: potentials and callenges in Asia*, pp. 37–49. The Hague, International Service for National Agricultural Research.
4. FAO. (1997). *Pluralism and Sustainable Forestry and Rural Development. Proceedings of an International Workshop*. December. Food and Agriculture Organisation, Rome.
5. FAO (2008) Agro forestry systems. Accessed 14 April 2008. www.fao.org/forestry.

