

SWOT Analysis of Agroforestry Practices in Varanasi under Eastern Uttar Pradesh

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Abstract Agroforestry is an efficient land-use system where trees or shrubs are grown with arable crops, seeking positive interactions in enhancing productivity on the sustainable basis. Agroforestry combines agriculture and forestry technologies to create more integrated, diverse, productive, profitable, healthy and sustainable land-use systems. The present study was carried out in eastern Uttar Pradesh of Varanasi district in which Cholaapur block has been selected out of various block of Varanasi district to document agroforestry system practiced by farmers and also to know the strength weakness, opportunities and threats (SWOT) faces by the farmers in practicing agro-forestry. A total of 50 farmers (Households) were interviewed using structured questionnaire. The result revealed that availability of resources and support programs (e.g. seedlings, land, technology, and training) as strength, lack and inefficient manpower is the major weakness, the potential economic stability, better quality of life of upland farmers, diversification of livelihood is the major opportunities, big landowners dominate to the poor house hold is

the major threats to be faced by the households in agroforestry practices. On such basis it is found that agroforestry practices not effectively used across the different villages of Cholaapur block. The major purpose of the practicing agro-forestry by the farmer for getting additional income with optimum utilization of resources.

Keywords Agroforestry, Strength, Weakness, Opportunity, Threats.

Introduction

A combination of trees and crops on the farm land is an age old traditional practice, practiced by the farmers mainly to attain the ecological benefits like shade, protection, soil conservation and also the economic benefits like, fuel wood, fodder, timber, food. These traditional agro-forestry systems adopted by the farmers are sustainable and profitable. Agroforestry practices are intentional systematic combinations of trees with crops and/or livestock that involve intensive management of the interactions between the components as an integrated agro ecosystem. Agroforestry system has provide a various benefits to the area and farmers both, like : Controlling poverty through increased income by higher production of agroforestry products for home consumption and market, Food security by restoring farm soil fertility for food crops and production of fruits, vegetables, nuts and edible oils, Empowerment to women farmers and other less-advantaged rural residents whose rights to land are insecure through better negotiations,

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Reducing deforestation and pressure on forest by providing fuel-wood grown on farms, Increasing buffering capacity of farmers against the effects of global climate change on farm tree crops and tree cover, Improving soil health of the farm through ameliorated micro-climate and nutrition level, Augmenting accessibility to medicinal trees for cure of common and complex diseases.

Inspite of having a lots of benefit, agroforestry systems are much more complex than single purpose farm or forestry enterprises. Each component of the system the trees as well as the crops or livestock must undergo a series of evaluation procedures : Testing against the farm or family goals, evaluating resources, investigating promising options from a longer list of possibilities, making the choice, planning, and then implementing the plan and monitoring progress.

There are various issues which have a strength, weakness, opportunities and threats (SWOT) faces by the farmers. The terms ‘strengths’ and ‘weaknesses’ refer to attributes that measure internal capabilities whereas ‘opportunities’ and ‘threats’ originate from external environments of an object being assessed, such as a forestry program (Dillan 1988, Jiwan and Kenda- wang 2004, Harrison et al. 2002). Strengths are to be pursued , and weaknesses strategically eliminated or reduced. External attributes (i. e. economic, cultural, demographic, political or legal trends and events) are largely beyond the control of a farmer (Kurttila et al. 2000, Harrison et al. 2004).

Agroforestry provides a different land use option, compared with traditional arable and forestry systems. It makes use of the complimentary relationship between trees and crops, so that the available resources can be effectively utilized. The resources availability, physical environment, infrastructure, economic and social factors are the major areas where the strengths, weaknesses, opportunities and treats to be identified. The resources are the land, labor, capital, management skills, technology and tree species. The physical environments are climate, severe weather events, wildfire, pests and diseases. The infrastructures are roads and transport. The economic factors are costs of planting trees, transport and processing costs, livelihood issues, and markets. The social factors are landholder attitudes to agroforestry (Suh Jungho and Emtage 2005).

This paper aims to documents agroforestry system practiced by farmers and also to know the strength weakness, opportunities and threats (SWOT) faces by the farmers in practicing agro-forestry in villages of Cholapur block of Varanasi district in Eastern Uttar Pradesh. The effect of strength is to take advantage, weakness is to avoid or overcome the weaknesses, an opportunity is to exploit the opportunities and threat is to avoid or overcome the weaknesses.

Materials and Methods

The study is descriptive in nature. The area of study is confined to some villages of Cholapur block of

Table 1. Respondents opinion towards the various statements regarding the strength of agroforestry practices.

Strength	D ₁ V ₁	D ₁ V ₂	D ₁ V ₃	D ₁ V ₄	D ₁ V ₅	N	Mean
Households are empowered to manage trees with controlled land	8	9	8	10	7	42	8.4
Availability of resources and support programs (e.g. seedlings, land, technology, and training)	9	8	10	10	8	45	9
Encompassing and encouraging a large number of individuals to plant trees	7	9	7	7	9	39	7.8
Creates cohesiveness among individuals in the community through active participation	5	7	10	8	10	40	8
Sustainable development : Long term ecological benefits can be derived	8	9	9	10	7	43	8.6
Improving livelihood to smallholders	8	5	8	9	8	38	7.6
It saves the government some responsibilities and costs involved in tree establishment and maintenance	8	8	10	8	10	44	8.8
Villagers become more aware of protecting the natural environment and trees	9	9	4	7	9	38	7.6
Guiding policies are clear	7	5	7	5	8	32	6.4
Encouragements in optimum utilization of tree resource	10	4	5	8	9	36	7.2

Varanasi district in Eastern Uttar Pradesh. These villages are Bhadwa (V_1), Katari (V_2), Mahmoodpur (V_3), Rasda (V_4) and Jagdispur (V_5) which have been selected on stratified sampling method. Here the respondents are households of these five villages. Ten households of each villages have been selected as respondents of the study. These respondents have been selected on the basis of random sampling method. There are primary and secondary both data have been used. In primary data, structured questionnaire have been used. Further the data is analyzed on the basis of average/mean and presented in tabular form.

Results and Discussion

Respondents opinion towards the various statements regarding the strength of agroforestry practices

‘Strength’ is something positive which should help an activity to succeed. It is a circumstance working in favors of the activity. The most recognized strength of agroforestry practices is seen to be the empowerment and security of access it gives to rural people to plant and manage trees on their lands (McNutt 1991, Oswald et al. 2004, RECOFTC 1999, Roberts and Stimson 1998, Uychiaoco 2002). There are various points which represent as a strength for agroforestry practices. The households have given their responses towards various statements, as summarized in below table. The maximum of the responses (mean =9) lies

in availability of resources and support programs (e.g. seedlings, land, technology, and training) as strength whereas least responses (mean=6.4) given against guiding policies are clear issues as strength in agroforestry practices (Table 1).

Respondents opinion towards the various statements regarding the weakness of agroforestry practices

A ‘weakness’ is a negative condition which may hamper the success of an activity. It is an unfavorable condition which could lead to reduced profitability or adoption. There are various issues as a weakness in agroforestry practices by the farmers. The households of five villages have given their responses against various statements which are considered as weakness in agroforestry practices. The below table is shows the household’s responses into the statements. On the basis of mean value it is analyzed that the lack and inefficient manpower is the major weakness and poor support from governments officials is the minor issues faces by the households in agroforestry practices (Table 2).

Respondents opinion towards the various statements regarding the opportunities of agroforestry practices

An opportunity is an innovative way to make an

Table 2. Respondents opinion towards the various statements regarding the weakness of agroforestry practices.

Weakness	D_1V_1	D_1V_2	D_1V_3	D_1V_4	D_1V_5	N	Mean
Lack of finance and of microfinance programs	8	9	4	10	8	39	7.8
Uncertain and complex government regulations	7	10	8	7	9	41	8.2
Lack of information, education and communication	6	8	7	10	7	38	7.6
Lack of cooperation among villagers	9	8	9	8	9	43	8.6
Lack and inefficient manpower	8	10	9	9	10	46	9.2
Poor state of transport infrastructure	10	9	8	7	8	42	8.4
Lack of property rights or inflexibility of rights, with respect to land and trees	7	8	7	8	7	37	7.4
Poor support from governments officials	5	10	6	5	10	36	7.2
Low awareness about agroforestry	9	8	6	8	9	40	8
Inadequate pest, disease	4	9	10	9	7	39	7.8
Negative attitudes of landholders	6	7	10	8	9	40	8
Lack of monitoring and response to problems	8	8	8	8	9	41	8.2
Lack of markets for tree products	9	9	9	7	8	42	8.4
Trees are less profitable than land uses	4	7	8	9	9	37	7.4

Table 3. Respondents opinion towards the various statements regarding the opportunities of agroforestry practices.

Opportunities	D ₁ V ₁	D ₁ V ₂	D ₁ V ₃	D ₁ V ₄	D ₁ V ₅	N	Mean
Potential economic stability, better quality of life of upland farmers, diversification of livelihood	9	8	10	9	9	45	9
Potentials for improvement of the indigenous knowledge systems, technology transfer and agroforestry education	8	7	8	8	5	36	7.2
Honest and sincere implementation of agroforestry policies, supported by government officials and lessened red tape	10	5	7	10	8	40	8
Planting right trees at right places : Viable planting, developing improved methods of growing trees	9	9	9	7	8	42	8.4
Improvement in soil conditions	7	6	10	8	6	37	7.4
Building social infrastructure, in particular access roads to interior barangays	8	9	9	10	7	43	8.6

activity more successful - to create an environment more favorable to profitability or adoption. Opportunity should not be confused with strengths. Some of the issues identified as opportunities and faces by the farmers in agroforestry practices. There are various statements which is to be considered as opportunities for the households in agroforestry practices. The below table depicts the households responses towards the various issues as an opportunities. These responses are analyzed on the basis of mean value. The potential economic stability, better quality of life of upland farmers, diversification of livelihood is the major opportunities to be considered by the households if agroforestry practices whereas potentials for improvement of the indigenous knowledge systems, technology transfer and agroforestry education is the minor issues to be considered as opportunities by the households (Table 3).

Respondents opinion towards the various statements regarding the threats of agroforestry practices

A ‘threat’ is something potential such as an event or condition which, should it happen, will harm the activity and reduce the chance of success. Threats are external to the agroforestry/farming operations faces by the households. The below table summarized the respondents opinions towards the various threats faces by them in agroforestry practices. There are various threats like Adverse political intervention, Possible failure in implementation of contracted rules or promised activities, Uncertain harvest rights may discourage tree planting for harvest, Changes in government policies, Lack of sustainability of villagers attitudes, movivation or participation in agroforestry,

Table 4. Respondents opinion towards the various statements regarding the threats of agroforestry practices.

Threats	D ₁ V ₁	D ₁ V ₂	D ₁ V ₃	D ₁ V ₄	D ₁ V ₅	N	Mean
Adverse political intervention	9	8	7	10	8	42	8.4
Possible failure in implementation of contracted rules or promised activities	8	10	9	9	9	45	9
Uncertain harvest rights may discourage tree planting for harvest	4	8	10	8	10	40	8
Changes in government policies	7	9	8	10	9	43	8.6
Lack of sustainability of villagers attitudes, motivation or participation in agroforestry	8	10	9	9	8	44	8.8
Natural calamities (e.g.typhoons, animals, lightning) may cause severe damage to plantations	4	5	10	9	9	37	7.4
The difficult peace and order situation may discourage plantation maintenance	5	8	8	7	10	38	7.6
Lack of long-term planning by local governments units	6	10	9	8	9	42	8.4
Big landowners dominate to the poor house hold	8	9	10	9	10	46	9.2
Lack of resources (e.g.money, land and labor) for plantation	7	8	8	10	8	41	8.2
Alternative livelihoods that may seem appealing to landholders	9	5	7	9	9	39	7.8

Natural calamities (e. g. typhoons, animals, lightning) may cause severe damage to plantations, the difficult peace and order situation may discourage plantation maintenance, Lack of long-term planning by local governments units, Big landowners dominate to the poor house hold, Lack of resources (e.g. money , land and labor) for plantation, Alternative livelihoods that may seem appealing to landholders. Out of these threats, big landowners dominate to the poor house hold is the major issues whereas natural calamities (e.g. typhoons, animals, lightning) may cause severe damage to plantations is minor issues to be faced by the households in agroforestry practices (Table 4).

Conclusion

Agroforestry provides a different land use option, compared with traditional arable and forestry systems. It makes use of the complimentary relationship between trees and crops, so that the available resources can be effectively utilized. The ‘strengths’ apply to current forces associated with a agroforestry practices at issue whereas ‘opportunities’ refer to what actions could be taken to enhance the system of agroforestry. Likewise, ‘weaknesses’ refer to current problems whereas ‘threats’ are problems waiting to happen. In this study it is found that the availability of resources and support programs (e.g. seedling, land, technology and training) as strength, lack and inefficient manpower weakness, the potential economic stability, better quality of life of upland farmers, diversification of livelihood as opportunities, big landowners dominate to the poor house hold as threats to be faced by the households in villages of Cholaapur block of Varanasi district in Eastern Uttar Pradesh. In some cases households might disagree about whether a current or condition is strength or a weakness, or whether something which might happen will turn out to be an opportunity or a threat.

References

- Dillan J (1988) A SWOT appraisal of the Australian profession of agricultural economics as at 1988. *Rev of Market and Agric Econ* 56 (3) : 340—346.
- Harrison SR, Herbohn JL (2002) In process. SWOT analysis of forest industry development in north Queensland. *Proceedings of the North Queensland Forest Industry Development Workshop Cairns* 28—29 April.
- Harison SR, Herbohn JL, Mangaoang EO, Vanclay J (eds) (2002) *Socio-economic research techniques in tropical forestry*. In : *Socio-economic Research Methods in Forestry : A training Manual*. Rainforset CRC, Cairns pp 5—14.
- Harison SR, Emtage NF, Herbohn JL (eds) (2004) *Small-scale forest economics management and policy*. spl issue on *Comm For* 3 (3) : In press.
- Jiwan D, Kendawang JJ (2004) SWOT analysis of some agroforestry systems implemented in sarawak., Malaysia and their future directions. In : *Abstracts from the 1st World Congress of Agroforestry Working Together for Sustainable Land Use Systems*. Orlando, Florida 27 June—2 July 2004 p 60.
- Kurttila M, Pesonen M, Kangas J, Kajanus M (2000) Utilizaing the analyis hierachy (AHP) in SWOT analysis—a hybrid method and its application to a forest-certification case. *For Policy and Econ* 1: 41—52.
- McNutt K (1991). SWOT before you start. *Nutrition Today* 26 (1) : 48—51.
- Oswald K, Riechsteiner D, THEES O Lemm R (2004) Reorganization of wood production for improved performance : A swiss forest district case study. *Small-scale For Econ Manage and Policy* 3 (2) : 143—160.
- RECOFTC (The regional Community Forestry Training Center for Asia and The Pacific (1999) *Training report on Community Forestry Extension*. Training and Workshop Report Series No. 1999/12, RECOFTC, Bangkok.
- Roberts B, Stimson R (1998) Multi-sectoral qualitative analysis : A tool for assessing the competitiveness of regions and formulating strategies for economic development. *The Ann of Regional Sci* 32 : 469—494.
- Suh Jungho, Emtage NF (2005) Identification of strengths, weaknesses, opportunities and threats of the community-based forest management program. *Ann of Trop Res* 27 (1) : 55—66.
- Uychiaoco AJ, Alifio PM, White AT, (2002) Marine protected areas in the philippines : Towards harmonizing goals and strategies. *Proc IUCN/WCPA-EA-4 Taipei con* 18—23 March 2002, pp 255—260.