EXISTING AGROFORESTRY SYSTEMS IN PAKISTAN

by

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Introduction:

Agroforestry is a new word representing a new focus of organized scienific activity but the practice of agroforestry is an ancient tradition among farmers in many parts of the world. As a new scientific field the novelty of agroforestry lies in the realization that many different land use systems and practices like horticulture, agriculture, forestry and other share a common denominator worth exploring in a more systematic and scientific manner, namely , the role and potential of woody components to increase ,sustain and diversify the production from the land.

In established fields of agricultural commodity research there are normally many validated technologies for improving the production of individual crops. Under these conditions, the main objective of farming systems research is to identify constraints to the adoption of existing technologies by farmers. If possible,such technologies are then adopted to meet the prevailing circumstances. In agroforestry, however, there are only a few research-validated technologies. Many promising agroforestry technologies,whether found in existing farmers ' practice or newly conceived by researchers, require considerably more research attention before they can confidentl be recommended for wider adoption.

Objectives of AF Systems Research:

A systems approach appropriate to agroforestry must be able to define the role of various agroforestry components in overcomi diagnosed land use problems, specify the desirable component character-

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istics, and indicate appropriate spatial arrangements and management practices. In other words, it must go beyond diagnosis to the design and evaluation of national technologies, from which research needs can then be derived. Accordingly, the main objectives of agroforestry systems research initiated at PFRI are:

. To inventory and catalogue existing agroforestry systems, compare their strengths and weeknesses, and evaluate their potential for improvement and extrapolation to other area;
. To diagnose agroforestry-related land management problems and design appropriate agroforestry systems;
. To utilize the above comparative perspectives on agroforestry systems to identify priorities for agroforestry research.
. Another general objective is to increase the understanding about the extent of existing agroforestry systems, and their various productive and protective roles in land use systems in our country.

One of the the most important prerequisites of an effective effort to generate improved agroforestry technology is a systematic inventory of existing agroforestry systems and practices. It is with this this objective in view that PFRI under took "Survey of Existing Agroforestry Systems in Barani Areas of the Punjab" which is now nearing completion. Conducted during 1988, the project has finished the first baseline inventory and part of data analysis in FEF project areas of the Punjab by surveying a sample of 100 farms in 19 villages in four districts of Attock, Rawalpindi, Khushab and Sialkot.

Method and Material:

a). Sample Population:

The study has been conducted in Sialkot, Khushab, Rawalpindi and Attock districts in barani areas of the Punjab. Twenty-five farms have been surveyed in each district. The sample population was randomly selected from the Project Base Line survey previously conducted in these districts. Among the total farms visited, 40 farms (10 farms in each district) were selected for actual field measurements. The same sampling technique was used for this biological data collection as had been used previously for conducting socio-economic survey of this tract.

b) Collection of Data:

Field data was collected on the format specially designed for this study. The study has two components. The first uses a questionnaire format to interview all farmers for basic data on the farm, trees and household. The second component actually measures existing trees on the farms. The sample population for the second component was 10 farms in each district randomly selected from the original 25. For the execution of questionnaire, the survey team located the farmer in his village and all the information about the household was collected there. Then the farmer was requested to take the survey team to his field for collection of the remaining necessary information and field measurements.

Infromation /data was collected and measurements recorded as per following data sheets annexed:

. Data Sheet 1 a	Farmer Interview
. Data Sheet 1 b	Farmer Interview
. Data Sheet 1 c	Farmer Interview
. Data Sheet 2 a	Field observations by the Forester FAR PARCEL
. Data Sheet 2 b	Field observations by the Forester NEAR PARCEL
. Data Sheet 3	Direct Field measurements

Methodology:

Basic proceedure for diagnosis and design of agroforestry systems as standardized by ICRAF is summarised as under:

1. Prediagnostic Stage

i. Planning the study
ii. Regional reconnaissance
iii. Identification and preliminary description of land use system
iv. Site selection.

2. Diagnostic Stage

v. Diagnostic survey

vi. Diagnostic analysis
vii. Specifications for appropriate interventions

3. Technology Design Stage

viii. Identification of candidate technologies
ix. Detailed technology specifications
x. Technology design

4. Evaluation and Redesign Stage

xi. Ex-ante evaluation & redesign
xii. Suitability classification

5. Planning Stage

xiii. State of knowledge review and assessment of research needs
ix. Research and extension plan

6. Implementation Stage

xv. Implementation of R&D and extension activities

Some Important Traditional Agroforestry Systems:

Mixed farming systems have been a traditional way of life for the farmers of Pakistan. In every village there are combinations of tree, crop and animal-husbandary activities according to the local requirements. Some of these combinations have stood the test of time and are practised extensively. The most important of these agroforestry systems/practices are given below:-

Major Agroforestry Systems and Practices

roforestry actice	Brief Descriptin(of arrangement of components)	Major Output/Function
AGRISILVICULTURAL SYSTEMS(Crops including tree crops, and trees)		
Improved fallow	Woody species planted and left to grow during the 'fallow phase!	Food and wood;Soil fertility improvement
Taungya	Combined stand of woody and agric. species during early stages of establishment of plantations	Production of wood, food.
Multipurpose trees on crop land	Trees scattered haphazardly or according to some systematic patterns on bunds, terraces or plot/field boundaries.	Production of food fuelwood other wood products;Sustainability of production; soil conservation.
Plantation crop combinations	i)Integrated multistorey (mixed,dense)mixture of plantation crops.	Production of plantation crops for sale(cash).
	ii) Mixture of plantation crops in alternate or other regular arrangement	Production of subsidiary (food)crops; sustainability
	iii) Shade trees for plantation crops;shade trees scattered.	
	iv) Intercropping with agric. crops	
ome gardens	Intimate,multistorey combination of various trees and crops around homesteads	Production of food/ fodder,fuelwood,etc. for home consumption and sometimes for sale(cash)
rees in soil onservation nd reclamation	Trees on bunds,terraces, raisers,etc. with or with out grass strips;trees for soil reclamation.	Soil conservation; Production of food, fuelwood

7. Shelterbelts and windbreaks, live hedges	Trees around farmlands/ plots	Protective role; production of food, fuelwood.
8. AF Fuelwood production	Interplanting firewood species on or around agri. lands.	Production of fuelwood; other products like food, poles, fodder; fencing, shade, shelterbelts etc.

: SILVOPASTORAL SYSTEMS (Trees + pasture and / or animals)

. Trees on range-land or pasture	Trees scattered irregularly or arranged according to some systematic pattern.	Production of pasture/ livestock and wood; Food production.
0. Protein banks	Production of protein rich tree fodder on farm/range lands for cut-and-carry fodder production.	Production of fodder/live stock and food crops; fuelwood; soil conservation
1. Forest plantations with pastures and animals	Cattle in forest plantations and other forests.	Production of wood and fodder/livestock.
2. Living fences of fodder tress and shrubs	Woody hedges for browse	Service function (fences); production of tree products/fodder.

. AGROSILVOPASTORAL SYSTEMS. (trees+ crops + pasture/animals)

3. Home gardens involving animals	Intimate, multistorey combination of various trees and crops, and animals, around homesteads	Production of food/fodder /fuelwood, etc. for home consumption and sometimes for sale (cash)
4. Multipurpose woody hege rows	Woody hedges for browse, mulch, greenmanure, soil conservation, etc.	Production of food/fodder fuelwood; soil conservation

D. OTHERS

15. Apiculture with trees	Trees for honey production	Production of honey
16. Aquaforestry	Trees lining fish ponds, tree leaves being used as 'forage for fish.	Production of food
17. Multipurpose woodlots	For various purposes,(wood, fodder,soil protection, soil reclamation, etc.)	Production of wood, fodder;soil protection; soil reclamation.

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