PROSPECTS FOR FARM FORESTRY IN PAKISTAN, PART I: VILLAGE-LEVEL DETERMINANTS

Michael R. Dove*

Summary

I. LOCATION

Interest in farm forestry is:

1. Lower in the vicinity of Government forests,
2. Higher as the distance from towns increases,
3. Unaffected by proximity to refugee camps, and higher in proximity to nomad camps.

II. LAND AND LABOR

Interest in farm forestry is:

1. Higher in villages with consolidated lands, because of greater parcel size and hence ease of protection,
2. Higher in villages with unarable or uncultivated lands, because of the low returns from alternate uses,
3. Neither higher nor lower in irrigated villages,
4. Higher among villages with tenant with tree-use rights than among short-duration tenants with no rights.
5. Higher in villages with large numbers of absentee male workers, because of the low labor requirements of farm forestry.

III. FARMER VIEWS

1. Farmers perceive the major constraints on their cultivation of trees to be the difficulty of protection, the lack of planting stock, the feared impact on food crop production, the lack of interest and experience on their part, and the perceived inadequacy of government assistance.

2. Due to the historic focus of the Forest Department on public lands and large-scale private plantings, farmers have not in the past turned to the Department for assistance with tree cultivation.

3. The Forest Department's FP&D project directly addresses all of the above problems,

*Office of the Inspector General of Forests & Winrock International Technical Assistance Team Islamabad

and can help to develop the enormous latent interest among common farmers in receiving government inputs into their farm forestry activities.

IV. FARMER PRACTICES

1. Traditional methods for protecting and curing trees demonstrate the tree-mindedness of most farmers and offer a starting point for outreach effects.

2. Traditional religious attitudes toward tree cultivation also can support these efforts.

3. Because of the private, household focus of farm forestry, *village*-level institutions and groups are unlikely to be useful in farm forestry development.

Introduction

I. LOCATION

1. *Distance to Government Forests*

Of our study villages in the Punjab, 46% lie within 5 miles of a government forest, in the NWFP 12%, and in Baluchistan none. In the villages within 5 miles, interest in farm forestry is 14% lower than in other villages, due to their exploitation of the proximate government forest. Even so, an average of 54% of the households in these villages are still interested in farm forestry. The fact that these villagers exploit government forests, therefore, does *not* mean that they are not 'tree-minded'. Moreover, targeting these villages for farm forestry development would have the added payoff of reducing the pressure on the proximate government forests.

2. *Distance to Towns*

The distance between our study villages and the nearest Forest Department office and town averages 14 miles, with a range of 1–48 miles. The more distant villages, while more difficult to reach, are more interest in farm forestry:

Distance from Village to Nearest FD Office & Town:	(Miles) 0–5	6–10	11–20	21–30	>30
Average % of Village Interested in Planting trees	54%	56%	62%	62%	76%

Interest is also higher, although the difference is less marked, in villages located off the paved roads.

One reason for the higher interest in the more isolated villages is that they generally receive fewer government services (Chambers 1979) and hence are more 'starved' for them. A second reason is that the inhabitants of villages located near towns are often too busy with off-farm income producing activities to be interested in the kind of investment in their land that farm forestry represents. Accordingly, villages *away* from towns and Forest Department offices should be given the higher priority for farm forestry development.

3. *Distance to Refugee and Nomad camps*

Most of the study villages are located within 5 miles of a camp or trail used by seasonal nomads or refugees, who use the village's lands and vegetation, without compensation:

Study Villages (%)	Punjab	NWFP	Baluchistan
Within 5 miles of Nomad Camp	64	78	78
Land/Trees Used by Nomads	80	96	100
Compensation Received	8	38	86

Study Villages (%)	Punjab	NWFP	Baluchistan
Within 5 miles of Refugee Camp	19	28	0
Land/Trees Used by Refugees	92	89	–
Compensation Received	23	12	–

The net impact on villages near to nomad and refugee populations is to increase the demand for farm forestry products as well as to increase (in some cases) the interest in the practice of farm forestry. Thus, interest in planting trees is no lower than average among the villages with proximate refugee populations (X^2 = .04, P<.90), and it is actually higher than average among villages with proximate nomad populations (X^2 = 12.3, P<.001). Both village types are therefore recommended for farm forestry development, especially those with proximate refugee populations, because there is an added benefit of reducing pressure on the local trees.

II. LAND & LABOR

1. *Consolidation*

The government has consolidated private lands in none of our study villages in Baluchistan, in 10% in the NWFP, and 48% in the Punjab. In unconsolidated villages, the small size and wide scattering of land parcels makes protection of trees more difficult. Another difficulty in unconsolidated villages is fear of loss. When farmers in one study village in Sialkot district

learned that their lands were going to be consolidated, they clear-cut all of their *Shisham 'Dalbergia sissoo'* trees, to ensure that they did not lose them to someone else during the consolidation. Accordingly, villages that are or will soon be undergoing consolidation should be given a lower priority for farm forestry development.

2. *Unarable and Uncultivated Lands*

An average of 25-26% of each study village's territory is reported to be unarable. The distribution is as follows:

	% of Village Territory Unarable			
	0–25	26–50	51–75	76–100
% of Study Villages	56	16	25	3

Because of the returns from alternate uses of these lands are relatively low, interest in using them for farm forestry tends to be relatively high:

	% of Village Territory Unarable			
	0–25	26–50	51–75	76–100
Average % of Interested in Planting Trees:	57	45	70	72.5

Accordingly, villages with unarable lands should be given higher priority for farm forestry development.

3. *Irrigation*

Of the study villages, 52% are completely *barani* 'rainfed', and 48% are partially or completely irrigated. There is no *constant* association between the presence or lack of irrigation and interest in farm forestry:

		Village Lands:	
		All *Barani*	Some/All Irrig.
% of Villagers Interested in Planting Trees:	< 50	9 villges	8 villages
	> 50	16 villages	15 villages

n = 48 villages. X^2 = .008. P< .95.

This lack of association reflects two opposing factors: the farmers in the *barani* villages are worried that trees will compete with their food crops for water, while the farmers in the irrigated villages are worried that trees will compete with their high-value crops for space. These data indicate that *neither* the presence or absence of irrigation in a village should be taken as sole grounds for selecting or rejecting the village for farm forestry development.

4. *Tenant Farming*

The percentages of the study village populations engaged in tenant farming, whether as landlord or tenant, averages 22% in the Punjab study villages, 43% in the NWFP, and 85% in Baluchistan. There is no fixed association between involvement in tenant farming and interest in farm forestry:

		% of Villagers Participating in Tenant Farming:	
		< 50	> 50
% of Villagers Interested in Planting Trees:	< 50	11 villages	6 villages
	> 50	25 villages	6 villages

n = 48 villages. $X^2 = -1.5$. $P < .25$.

In parts of the Punjab and NWFP where tenancy is shorter-term and more conflict-ridden, tree-planting is favored by landlords but opposed by tenants (Sheikh 1986 : 27). In other areas, such as in Nasirabad where tenancy is longer-term and carries some fuel and fodder rights, tenants are as interested if not more interested in farm forestry as their landlords. The latter type of areas should be favored for farm forestry development, while the farmer should be avoided.

5. *Labor*

The number of non-resident male workers average 25% in the Punjab study villages, 22% in the NWFP, and 2% in Nasirabad. The outflow of labor has created a shortage of labor for food crop cultivation in some areas (Supple et al. 1985: 53-54), which makes the cultivation of trees potentially more attractive by comparison, due to their lower need *for* labor and higher returns *to* labor (Sheikh 1986: 31–33). Farm forestry is likely to do well in these labor-short areas, providing that the labor advantage of trees, which is a relatively new concept to farmers, is emphasized in outreach efforts.

III. FARMER VIEWS

1. *Major Constraints on Farm Forestry*

Farmers in the study villages say that their principal constraints in cultivating trees are the following:

Major Perceived Constraints on Farm Forestry:	% of Study Villages Citing: Punjab	NWFP	Baluch-istan
1. Lack of Water.	67	59	78
2. Problem of Protection	68	50	11
3. Lack of Planting Stock	21	44	56
4. Feared Impact on Food Crops	41	22	0
5. Lack of Time or Interest	6	66	44
6. Lack Government Assistance	0	47	72

Constraints # 3 and 6 can be remedied by the Forest Department material inputs, while constraints # 4 and 5 can be remedied by the Department's outreach components. The introduction of new species of cultivation techniques should also help to remedy constraints # 1 and 2. In short, the farmers' own assessment of their needs indicates that the Pakistan Forest Department (through the Forestry Planning and Development Project) (FP&DJ) is ideally positioned to meet the farm forestry needs of the common farmer.

2. *Relations with the Forest Department*

Farmers in the study villages say that in the past they have gotten assistance with tree cultivation from the following places:

Reported Sources of Assistance for Tree Cultivation Problems	% of Study Villages Citing: Punjab	NWFP	Baluch-istan
1. No Outside Source:	87	66	44
2. Agriculture Department:	30	0	56
3. Village Leaders/Specialists	0	9	39
4. Traditional Knowledge:	0	28	0

No one mentioned having obtained assistance from the Forest Department. One reason for this is the Department's traditional role in fining or jailing violators of the forest laws: this has caused many farmers to regard forest officers with suspicion. Also important is the Department's practice of 'registering' village lands for reforestation, which in the past was followed in some cases by disputes regarding the ownership of this land. This has led to a widespread fear that cooperation with the Department can jeopardize one's title to one's own land. In addition, the farmers assisted by the Department have tended to be ones with large holdings and interests in subsidized block plantations: this has led to a widespread belief that any cooperation with the Department necessitates large block plantations, in which common farmers have little interest. Finally, the Forest Department has not had an active extension program (at

least not in our study areas) that could strengthen ties with farmers.

The FP&D project directly addresses this last problem in its attempt to establish an outreach program. This program in turn can resolve the other problems mentioned above, by demonstrating to the farmers that the social forester can be the farmer's friend as opposed to foe, by guaranteeing (in writing where necessary) that the farmer's land rights will not be jeopardized by participation in Department projects, and by demonstrating that the Department is interested in working with small farmers who want small scattered or linear tree plantings. By these actions, the Department should have no difficulty in establishing outreach or extension relationships with the common farmers: 66% of 1100 farmers interviewed in the Punjab, NWFP, and Baluchistan project areas expressed interest in planting trees. These farmers have low expectations for government services, so they are highly receptive to modest inputs such as free tree seedlings, in contrast to large farmers, who are much more demanding (Cernea 1985: 276-277, U.S.AID 1983: 136-137). With four million farms in Pakistan (Government of Pakistan 1985: tab. 64), every one of which has some trees on it, there is a tremendous opportunity for developing the Forest Department's outreach or extension services.

IV. FARMER PRACTICES

1. *Protection*

Farmers in the study villages protect trees from livestock by:

(i) Using thorn, mud, and brick fencing or walls.

(ii) Planting trees within a courtyard or in proximity to a farm house or tubewell.

(iii) Planting food or fodder crops among newly planted trees, to garner for the latter the 'off-limits' status of the former.

(iv) Enforcing village-wide rules against free grazing (the penalty for violation is often holding the offending livestock in a *phattok* 'pen' until a fine is paid).

(v) Summoning village-wide parties (*shalgoon* in the NWFP) for protection of village lands against nomads' herds.

These methods demonstrate that many farmers are already 'tree-minded', they care about their trees and actively try to protect them. These traditional methods provide a starting place for farm forestry outreach activities.

2. *Curing*

Farmers in some study villages, especially in the NWFP, say that they use traditional

desi 'village' methods to treat ailing trees. These involve applying to the tree roots lime, animal blood, and burnt camle bones – the first to ward off pests, and the latter two to nourish the tree. In the event that this treatment does not work and the tree continues to weaken, the response of farmers in all study villages is to fell the tree and use it for fuelwood, which enables the farmer to salvage some economic use from the tree, while deterring the spread of the malady to other trees. These methods, although crude and capable of improvement, again demonstrate the existing 'tree-mindedness' of many farmers.

3. *Religion*

The sacredness of trees is explicity discussed in the Holy Koran (Ahmad 1984), and is commonly invoked by farmers as a reason for planting trees. The greatest impact of religion in the past was not to encourage the planting of trees, however, but to prescribe their cutting, mostly commonly within or about graveyards and shrines. The stark contrast between the vegetation within and without these holy places, in areas where the nearest alternative source of fuelwood, fodder, or timber may be many miles away, is impressive evidence of the force of religion in man's interaction with his natural environment. The power is relevant to the development of farm forestry, one of the major problems of which is the protection of plants.

4. *Village Institutions*

Formal institutions are present in 63% of the study villages in the Punjab, 25% in the NWFP, and 6% in Baluchistan. The most common and successful of these are the cooperative societies (whose principal task is to loan farmers fertilizers and seed on credit) and welfare committees (whose tasks include the construction of village mosques, roads, and schools, and the support of the poor). It is unlikely that these or similar institutions can be of much use in developing farm forestry. Whereas the success of the cooperative societies is based upon the high cost of capital inputs into agriculture, there are far fewer such inputs in farm forestry. Whereas the success of the welfare committees depends upon their focus on the social welfare of the village as a whole, farm forestry is explicity focussed on the property and economic needs of individual households. Thus, attempts to create village institutions such as cooperatives or committees to assist in farm forestry development on *private* lands, are likely to be successful.

V. STUDY SAMPLE

The data presented here are based on interviews in 118 villages in the *barani* districts of the Punjab and NWFP and in the irrigated district of Nasirabad in Baluchistan. These villages were selected, based on prior interviews with Forest Department and local officials, for their representativeness. We conducted two interviews with 4–6 man groups in each village, one containing village officials and larger landowners, and one containing smaller landowners and the landless. The data obtained in these interviews were cross-checked in the course of 1,150 individual household interviews subsequently carried out in 58 of these same villages.

REFERENCES CITED

Ahmad, Salahuddin, 1984 'The Holy Quran and Vegetation.' *Pakistan Journal of Forestry* 34, 1: 49–52.

Cernea, Michael M. 1985 'Alternative Units of Social Organization in Sustaining Afforestation Strategies.' In *Putting People First: Sociological Variables in Rural Development*, Michael M. Cernea ed., pp. 267–293. Washington D.C.: The World Bank/Oxford University Press.

Chambers, Robert, 1979 'Rural Development Tourism: Poverty Unperceived.' Paper read at the conference 'Rapid Rural Appraisal', 4–7 December, Sussex.

Government of Pakistan 1980 *Pakistan Census of Agriculture 1980*. Lahore: Agricultural Census Organization, Statistics Division, Government of Pakistan.

1985 *Agricultural Statistics of Pakistan*. Islamabad: Ministry of Food, Agriculture and Co-Operatives.

Sheikh, Mahmood Iqbal 1986 'A Case Study on Hurries – *Acacia nilotica* Block Plantations for Wood Production in Pakistan.' Peshawar: Pakistan Forest Institute.

Supple, K.R.; A. Razzaq; Ikram Saeed; and A.D. Sheikh 1985 *Barani Farming Systems of the Punjab Constraints and Opportunities for Increasing Productivity*. Islamabad: Agricultural Economics Research Unit, National Agricultural Research Centre.

U.S. AID 1983 'Project Paper: Pakistan Forestry Planning and Development.' Washington D.C.: U.S.AID.