



Why agroforestry needs women: Four myths and a case study

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In agroforestry projects, the involvement of women is essential in project definition, design and implementation. Yet women still, for the most part, are being excluded from involvement. Authors Fortmann and Rocheleau, after looking at four myths that are responsible for the exclusion of women from project participation, describe the purposes and results of the Plan Sierra Development Project in the Dominican Republic. This project, among its other accomplishments, clearly demonstrated possibilities for the employment and training of women in agroforestry.

Despite the crucial role of women in the development process (Boserup, 1970), development projects continue to be designed without consideration of their effect on women or of the role of women in their implementation. A study of 43 World Bank forestry projects, for instance, found that only eight made specific reference to women (World Bank, 1980). Agroforestry projects are no exception.

In part this state of affairs is due to the masculine images the word "forestry" conjures up. The reality is, however, diametrically opposed to the image. Women have traditionally played important roles in agricultural production and in the use and management of trees. The importance of these roles is, however, often obscured by the prevailing myths about the roles and status of women. Four of these myths are worth discussing.

1. Women as housewives

The first myth is that women are just housewives. In many, if not most, rural societies they are, in fact, farmers; often they bear the major or sole responsibility for food production. Region by region, country by country, ethnic group by ethnic group, detailed studies have documented the point that women's labour and women's decision-making are absolutely crucial to agricultural production and development (FAO, 1982).

A study of 95 developing countries in 1970 found that women made up between 17.5 percent (in Central and South America) and 46.2 percent (in sub-Saharan Africa) of the *total* agricultural labour force (Dixon, 1983). If food production alone were to be considered, these figures could be expected to be far higher. The predominant role of women in both plough and hoe agriculture has been demonstrated for sub-Saharan Africa (Bryson, 1981). The involvement of women, particularly poor women, in agricultural production in India has been reported (Sharma, 1980). Women have been demonstrated to play a major role in agricultural

work and agricultural decision-making in Nepal (Acharya and Bennett, 1981; Bennett, 1981; Molnar, 1981; Pradhan, 1981; and Rajaure, 1981). Mazumdar (1982) states that in Asia "rural women constitute the single largest group engaged in agriculture and the production of food" and notes that temple murals in northeastern India show women as the "first domesticators of plants". Colfer (1981) documents the central role of women in swidden agriculture in East Kalimantan. Women in Latin America have been shown to be actively involved in agricultural production (Albert, n.d., Deere, 1982).

Women are frequently responsible for small-stock husbandry and the feeding of larger livestock, particularly milk cows and calves. Thus, agroforestry projects that involve fodder trees, the servicing of crops by trees or intercropping of crops and trees must include women, since it is often women who grow the crops or care for the livestock that will be involved.

2. Forest products as the domain of men

A second myth is that only men are users of and responsible for trees. In fact, women are the primary users of forestry products such as fuelwood, wild foods and fodder. Wood *et al.* (1980) noted that women "are primarily responsible for wood collection and utilization and often the initial establishment and tending of the wood stock around the village". Bennett (1981) found that 78 percent of the fuel collection in Nepal was done by women, with 84 percent done by women and girls combined. In 1980, the Expert Group on Women and Forest Industries of the UN Economic and Social Commission for Asia and the Pacific reported that as much as two-thirds of the time collecting fuelwood was spent by women (ESCAP, 1980).

Women may also make different uses of forest products than men. The priorities of men and women in species preference for Indian afforestation programmes, for example, often conflict (Sharma, 1981). Hoskins also contrasts the interests of men and women in forest resources (FAO, 1983). Men are more likely to be interested in forest products for commercial sale and in products with end-uses farther from home. Women collect fuelwood as well as food for both humans and animals from forests and individual trees. They are knowledgeable about the burning characteristics of various species and about species that have food values. Both men and women make medicine from forest products, but for different purposes. Women also use forest products for purposes like basket-making and dyeing. It might be expected, therefore, that women would have a more detailed knowledge of trees and their uses, and indeed Hoskins (1982a) found in Sierra Leone that women could list 31 products that were harvested or produced in nearby bushes and trees, while men could list only 8.

Women's intimate involvement with forest products and agricultural production often results in their having a greater knowledge of environmental problems than men. For example, the implementors of a soil and water conservation project in Mali discovered that local women had already undertaken conservation efforts without which the fruits of the project would have been destroyed by the new project (Hoskins, 1982b). Wiff describes a reforestation and soil conservation project in which women were deliberately denied access to credit and technical support (FAO, 1977). Nevertheless, in places where women could work even without access to credit, they led conservation efforts.

[EXTENSION WORKER IN ACTION a job where more women are needed](#)

Thus, the presumption that it is only men who are involved in forestry is often totally wrong. In the case of fuelwood and minor forest products, it is often *only* women who are involved. It is women who know what is needed; who know which trees are suitable and which are not; and who will use the final product. And often they are directly responsible as well for the production and management of the crops and trees.

3. Men as heads of households

A third myth is that every woman has a husband or is a member of a male-headed household. In fact, increasing numbers of women head their own households. Sometimes this is by choice. Sometimes it is the result of personal events such as death of a spouse, divorce, desertion or abandonment, or of social trends such as male outmigration.

Whatever the cause, woman-headed households are found in substantial numbers in every region of the world. It has been estimated that between 25 and 33 percent of all households in the *world* (emphasis in the original) are *de facto* headed by women (Buvinic and Youssef, 1978). In a study of 73 developing countries, the lowest percentage of households found to be headed by women was 10.1 percent in Kuwait. The highest was in Panama, with 40 percent. Twenty-seven percent of the countries had between 10 and 14 percent woman-headed households; 43 percent had 15-19 percent; 23 percent had 20-24 percent; and 7 percent of the countries had over 25 percent woman headed households. The percentages in specific countries and specific areas within countries can be quite high. For example, in Botswana the average proportion of households headed by women in the rural areas is 30 percent, running as high as 43 percent in some places (Fortmann, 1981).

In short, the woman-headed household is an increasingly common social unit. And, as a result of heading their own households, women have assumed new roles. A historical process of women undertaking "male" tasks and working in "male" sectors in the absence of men has been reported for a number of societies (Allen, 1965; Cliffe, 1975; Kuper *et al.*, 1954).

4. Women as passive community members

A fourth myth is that women are passive members of communities in which public influence and public action is a sphere restricted to men. March and Taqqu (1982) have documented the important influence of women's informal associations in both the private and the public sphere. Within the domestic sphere, women exercise influence on public events through their information links, which are based on lineage ties, and on their ability to withhold goods (food, beer) necessary for men's public participation.

Women's solidarity groups may take a very active stance in defending their own interests. For example, in the famous Nigerian "Women's War" of 1929, women, incensed over the rumour that an ongoing census meant that they were about to be taxed, refused to allow census takers to count them or their property. Women organized confrontations with the colonial administration that at times led to the use of armed force (March and Taqqu, 1982).

Women can gain leverage in the economic sphere through work and credit associations. They may influence events through their roles as healers or religious figures. They also participate in leadership roles in formal institutions. In Botswana they are generally the mainstay of social welfare organizations and even hold positions of authority in "male" organizations such as farmers' committees (Fortmann, 1983).

The influence of women and women's groups is demonstrated by a project in the Republic of Cameroon. Here, the men, fearing that the Government was trying to seize their land by planting trees, tore down a protective fence around the nursery. It was the women, recognizing the need for fuelwood, who persuaded them to rebuild it (Hoskins, 1982b).

Women, then, both individually and in groups, have private influence on public action by men and undertake public action themselves. The potential for women's public action in areas such as reforestation and soil and water conservation is especially high because they are the principal sufferers from environmental degradation (Fouad, 1982). It is they who must walk farther for water, fuelwood and fodder. It is they who must produce subsistence crops on increasingly degraded soils. It is they who often are both able and likely to organize the

community for action.

A case study: The Dominican Republic

A case study of the Plan Sierra Development Project in the Dominican Republic can be used to examine women's involvement in different aspects of agroforestry. Plan Sierra is an integrated rural development project with strong agroforestry and reforestation components. During its first three years (1979-81) Plan Sierra developed innovative approaches to agroforestry, soil conservation, and forestry training and extension. While women were consciously included in some aspects of these programmes, their interests in "invisible" subsistence activities were nonetheless overlooked. Securing women's participation and serving women's interests were sometimes confounded. Both the successes and the failures of Plan Sierra's early years exemplify many of the key issues for women in agroforestry development projects.

Sierra production systems. The Sierra is a rugged, relatively isolated region in the Central Mountains of the Dominican Republic. Household income, health status and educational level of residents are well below national averages. The economy has suffered from boom-bust cycles in mining and lumbering. Out-migration has been high, particularly among men 20-40 years of age. The area has been largely deforested through commercial timber exploitation and the practice of shifting cultivation, which continues on the forest fringes. Soil degradation and erosion are widespread, and the region's hydrologic balance has been severely disrupted (Santos, 1981; Antonini *et al.*, 1975).

Most agricultural production is nested within agroforestry systems based on mixtures of field crops, coffee, pasture, and forest. These are combined in simultaneous intercropping mixtures as well as in rotations over time. Most farm families manage such diverse holdings for both subsistence and commercial ends.

Coffee and cattle are the major commercial enterprises among large landowners, while smallholders sell coffee or annual crops for cash. Most smallholder households are also heavily dependent on off-farm employment. Fuelwood and water are usually also gathered off-farm. Subsistence and cash crops alike are inter-cropped. Even pastures are usually studded with multi-purpose palm trees. Local cottage industries include furniture-making, food-processing (cassava bread, cheese, candy) and production of palm-fibre containers for sale to the tobacco industry and for local use with pack animals (Rocheleau, 1984).

Women's participation. Women share with men the harvesting of annual crops and the coffee harvest (as owners and/or as hired farmworkers). Women raise the small animals (hogs and chickens) for meat and egg production, they usually milk the cows (for home consumption) and they tend patio (dooryard) gardens with vegetables, bananas and herbs. Responsibility for fuelwood- and water-gathering falls mostly on the women, with some help from the children.

As in many similar projects in Latin America, local women's participation in Plan Sierra was initially limited to health services, home hygiene and home economics.

Cheese-, candy- and cassava-processing are almost entirely women's enterprises. Palm-fibre containers are produced and sold by women with help from children and elderly family members. Women artisans also weave the palm-fibre seats and backs onto locally manufactured wooden chair frames. The weaving is subcontracted as piece-work from men's woodworking shops.

Programmes. Plan Sierra was designed as an integrated rural development project to serve a 2500-km² area. It included strong agricultural, reforestation and soil conservation components from the outset. The programme of work was divided among the technical unit (agriculture,

forestry), health, education and rural organization; surveying, engineering and construction; and marketing and rural industry.

Agroforestry and forest production were included in the programmes of the technical unit. Agroforestry initiatives emphasized coffee systems. Farmers (mostly smallholders) received subsidized credit and intensive training courses to facilitate the establishment of multi-purpose shaded coffee stands. Credit and technical assistance were also provided for the establishment or improvement of fruit orchards, often inter-cropped with annual food crops (Santos, 1981, 1983).

Aside from the planting of coffee and fruit trees, tree-planting on small farms was not treated separately from the reforestation of large-scale state and private holdings. Reforestation efforts focused on indigenous and exotic pine trees for watershed management or timber. These pine species were unsuited for small-farm use, given the historical circumstances of the Sierra, where the prohibition against cutting trees (regardless of land title) has been most strongly enforced in the case of pines and other timber species. Thus, most small farmers were unwilling to plant them on their own property (Rocheleau, 1984).

Support services for agroforestry and reforestation included soil conservation, nursery development, employee training and community education programmes. Hundreds of local men were hired to construct nurseries and to engage in soil conservation and forestry training, extension, and construction activities throughout the 2500-km² project area. Technical unit personnel also promoted agroforestry and reforestation through teacher training courses in local ecology, reforestation and sustainable production systems. The teachers were later enlisted as participants and promoters in community tree-planting campaigns.

Women's role in agroforestry. As in many similar projects in Latin America (FAO, 1977), local women's participation in Plan Sierra was initially limited to health services, home hygiene and home economics (Safe and Gladwin, 1981). Women professionals were concentrated primarily in health, education and rural organization. The maturation of Plan Sierra programmes and their respective inclusion or exclusion of women provide some insight into issues that need to be addressed in future agroforestry and development projects in Latin America. The key concerns identified include access to employment, training, credit, land and appropriate technical assistance (M. Fernandes, personal communication, 1981).

Local women were initially hired as home economists, secretaries, cooks and cleaners. Eventually some of the nurseries hired women to water seedlings and to fill polyethylene bags with potting soil. Nursery supervisors considered women to be more efficient and patient at this tedious task.

Some women, who began working only reluctantly with plant propagation techniques, later acquired an active interest in such work. Plan Sierra administrators and some technical staff encouraged this trend. They trained a group of paratechnical women horticulturists who became known as the "budders and grafters". The job attained a high status and was accepted as a women's task, setting a precedent for the inclusion of more women in technical nursery work. As in many other, similar projects, sexual harassment by a few co-workers and managers made work difficult for some women employees, but administrators eventually ousted the offenders.

[Home-made products from the forest in China](#)

[Home-made products from the forest in Turkey](#)

Women began to request specific assignment to the nurseries, and a few expressed interest in conducting forestry or soil conservation fieldwork with visiting women researchers. Some of the "budders and grafters" talked of investing part of their earnings in land or small citrus

groves, an option they would not have considered previously.

Technical assistance and training. Despite a high incidence of women heads of household, women were rarely direct beneficiaries of community or farm-level tree-planting. They were actively sought as volunteer labourers and promoters for community reforestation and also became involved in technical training and project implementation through the teachers' training courses. About half the teachers in the Sierra are women, and all teachers attend the same training sessions, regardless of individual specialization or prior training.

Women were seldom direct beneficiaries of technical programmes - not by design but by default. Since poor farm women were not consulted on technical project design, their concerns and needs were not adequately addressed in the technical programmes. When consulted during a mid-project evaluation of women's needs, women requested assistance with the development of water supplies, fuelwood supplies, patio gardens and cottage industries such as weaving and food-processing. Here, both fuelwood and cottage industry issues fell within the domain of agroforestry (Chancy and Lewis, 1980; Rocheleau, 1984; Safa and Gladwin, 1981).

Some of the women who produced woven containers complained of a lack of access, or dwindling, insecure supplies of palm fibre (E. Geoges, personal communication). The palms (*Sabal umbraculifera* Martius and others) are also important sources of wood, food and animal feed, and they are often located in pastures or fallow land owned by neighbours or relatives. The women have free access (an apparent advantage) but no guarantee of future access and no control over cutting and replacement. The palm-frond supply is both free and unreliable. Supplies in some instances were threatened by the felling of palms for cheap construction material. Many local men decided to use the trees for construction or cash income after their hog-feed value was undermined by a swine-fever epidemic and a subsequent embargo on hog-raising (Rocheleau, 1984).

The management and improvement of this disrupted multiple-use agroforestry system were not integrated into either the pasture management or the rural industry programmes. The marketing of the finished products, however, was addressed by Plan Sierra (marketing and rural industry unit), with the farm-gate price of containers nearly doubling. Neglect of the technical and management aspects of this enterprise may have been conditioned, in part, by the low cash income from (and low priority given to) such enterprises as coffee. However, the importance of this cottage industry to rural women (especially the poor) lies in the fact that it requires neither land nor capital and that work can be performed by women, children and the elderly.

The fuelwood shortage also had the greatest impact on poor families with smallholdings. Some women had closed down their cassava-bread-processing operation because of the lack of fuelwood nearby and the high cost of purchased fuelwood. Others commented on the increasing time and effort (and trespass) required to secure the same quantity of fuel for home use.

Gathering, selection, consumption and the potential for subsistence production of fuelwood in rural farms or towns were not directly addressed in any of the programmes. Research on commercial charcoal production in dry forests had been conducted in the region but these studies were not utilized during this period (Jennings and Ferreiras, 1979; Mercedes, 1980). Some trials of exotic species, including fuelwood species, were initiated in 1981 (V. Montero, personal communication, 1981), but no experiments or farm trials were conducted with proven indigenous fuelwood trees.

The fuelwood problem was not initially recognized as a high-priority issue. When the issue did arise, there was a lack of training and experience among technical staff in the choice,

propagation, management and promotion of fuelwood species, particularly those suitable for planting on the farm. Nor were there any women foresters (or agroforesters) available within the country. Thus, a major opportunity to involve and serve local women in agroforestry and reforestation was lost.

Women were likely to benefit directly from the technical assistance when their cash income or food sources coincided with those most often managed by men. For example, those who had (or wished to establish) coffee holdings, as heads of household or as spouses of owners or managers, were invited to attend training courses for improved agroforestry systems based on coffee. Women were consciously included, although they were not considered to be the main clients of this training/extension/credit programme. They were, in effect, given equal access to training and equal formal commitments for technical assistance in a field considered to be a man's domain.

Obtaining credit proved to be more difficult, and depended chiefly upon marital status. Some subsidized credit and land reform programmes were included within the overall project, but lack of access to credit and land constituted a serious obstacle to the implementation of on-farm or community tree-planting projects by and for women. Credit was particularly difficult to obtain for women settled in small towns, on non-titled land or on the property of absentee husbands.

Lessons. Plan Sierra illustrates both the possibility for the employment and training of women and the need for further utilizing their experience in project definition, technology design, and extension and implementation. It demonstrates that even in regions where women do not traditionally till the soil, they can and should still be offered employment and training in nursery and horticultural techniques, some of which can be identified as "women's occupations".

The experience of Plan Sierra also indicates the need for prior consultation with women clients of agroforestry development projects about issues of immediate concern to them and about potential action to solve problems or otherwise improve their lot. This would, in many cases, imply a reordering of priorities in project identification, technology design and species selection criteria to better meet the needs of rural women, especially the poor and heads of households. The employment and training of women in fields already recognized as important (but not exclusively defined as men's work) could then be extended to the training of women personnel for more flexible roles in agroforestry extension programmes for rural families, including subsistence farmers and smallholders.

[AT WORK IN CHINA tree cultivation supports agriculture](#)

Implications for the future

The women who worked as "budders and grafters" - as well as tree planters - in Plan Sierra benefited in terms of wages and knowledge, which they could transfer to their own private economic activity. However, the number of such women was, of necessity, limited by the size of the project. The project, however, did not address two of the issues most important to rural farm women: fibre for handicrafts and fuelwood. Unless care is taken, such women's participation in a project through their labour may give them relatively little return if their needs are not considered.

The division of labour in agriculture has often resulted in men's involvement with export cash crops and women's involvement in the subsistence sector. Thus, Plan Sierra focused on the men's export crop of coffee while the women's non-export cash enterprises and subsistence activities received lower priorities. There is a clear need to establish who uses what trees for what purposes before planning a project.

Lack of access to credit and land constituted a serious obstacle to the implementation of on-farm or community tree-planting projects by and for women.

Agroforestry projects that involve fodder trees, the servicing of crops by trees, or intercropping of crops and trees must include women.

Project design must take into consideration what resources women actually have to work with. Either resource constraints must be alleviated or a project must be geared to the resources women actually control. Failure to do this will result in an exclusion of women from project benefits. In terms of contact with extension workers, the case has been made again and again for female extension workers to work with women. This strategy not only avoids the difficulties of trying to restrict male-female interaction but is likely to facilitate communication between the female farmer and the extension worker. Alternatively, reluctance on the part of the male forestry officials or extension staff to work with women can be overcome by requiring them to report their visits with women (Spring, 1983).

The nature of women's participation in agriculture has been shown to differ with their social class and control of resources (Deere, 1982; Fortmann, 1979, 1981; and Sharma, 1980). Just as the priorities of men and women may differ, the priorities of rich and poor may differ. This point is especially important to remember when women's organizations (formal or informal) are involved in promoting or utilizing agroforestry. It is often the case that only wealthier, better-educated women have the leisure time to spend in formal organizations or in training to obtain skilled employment. Such women also often capture the leadership of both formal and informal organizations. While there is a great deal to be said for utilizing the organizational capacity of women's organizations and associations, care must be taken that the poor are not excluded. Associations should be identified that are "structured so as to redistribute introduced resources equitably" and in which "all members participate equally in or have equal access to group decision-making procedures and avenues of redress" (March and Taqqu, 1982).

Women are traditionally the prime participants in both the agricultural and the forestry components of agroforestry production systems. They are also private and public participants in community life and decision-making. The failure to include them in agroforestry projects has several detrimental effects. It excludes from project benefits the increasing proportion of rural households headed by women. It may prevent project designers from benefiting from women's special knowledge. It may exclude (or even harm) activities and commodities such as fuelwood, basket-making and minor forest products, which are part of women's economic sphere. The participation of women is essential for the success of agroforestry projects, but such participation may, in the long run, also require changes both in approach and in the nature of personnel in forestry and extension departments. Only after prevailing myths about men and women are cleared away, and after the concrete results of specific projects like Plan Sierra in the Dominican Republic are studied, can serious changes begin to be implemented.

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