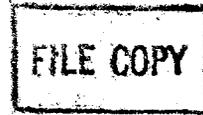
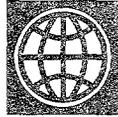


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# Developing Agricultural Extension for Women Farmers

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Katrine A. Saito  
Daphne Spurling

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Developing  
Agricultural  
Extension  
for Women  
Farmers

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Katrine A. Saito  
Daphne Spurling

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Washington, D.C.

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Katrine A. Saito is senior economist in, and Daphne Spurling is a consultant to, the Women in Development Division of the World Bank's Population and Human Resources Department.

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## ABSTRACT

The major determinants of agricultural productivity (agroecological conditions, macroeconomic and sectoral policies etc.) are common to all farmers irrespective of gender. And all farmers will be helped by strategies that improve the overall farming environment (such as technologies responsive to farmers' needs or improved input supply). Why then should women be a special focus of agricultural extension services?

Agricultural technology in the developing world has been designed and disseminated on the assumption that farmers are male. But, in fact, women have always played a particularly important role in the agriculture of developing countries. Moreover, as more men move into off-farm employment, increasingly women are de facto heading farm households.

Although small-scale agricultural production is carried out by family labor on family farms, the farm household is not always a single economic unit with common goals. Men and women often have different farming activities, resources, and benefits (and therefore incentives). These differences reflect both women's reproductive function and socio-cultural factors such as religion, caste or class, cultural norms and the formal legal system. In addition to their reproductive and domestic roles, women play critical and evolving roles in the production of food for the household, in pre-planting and post-harvest activities, in livestock, and increasingly, in cash cropping. Compared to men within the same household, women have a wider range of tasks and enterprises, dissimilar production constraints and different production objectives.

A reorientation of the extension messages is necessary to improve the congruence of technical messages and communication strategies with the reality of small-scale agriculture -- that is, that many smallscale farmers are female. This paper provides an overview of women farmers and their production systems, presents a framework for analysis of gender issues, suggests interventions and project components, and sets out guidelines for designing and modifying agricultural service projects.

## ACKNOWLEDGEMENTS

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This paper draws on *Agricultural Extension for Women Farmers in Africa*, World Bank Discussion Paper 103, by Katrine Saito and C. Jean Weidemann. The coverage of the current paper is broader both geographically and in content. Fewer studies have been conducted in other regions of the developing world, although two geographic reviews were particularly helpful. Nancy Axinn was commissioned to prepare a background paper *Agricultural Extension for Women Farmers in South Asia* and Jacqueline Ashby's *Women and Agricultural Technology in Latin America and the Caribbean* was written for a CGIAR (Consultative Group for International Agricultural Research) seminar in 1985.

## FOREWORD

In 1987 the World Bank launched a stronger and more focused initiative to integrate attention to women through its analytical work and lending. The potential contribution to economic growth and the reduction of poverty provide the rationale for any long-term effort by the World Bank. The Bank's women in development initiative is no exception. Expanding women's opportunities, especially in ways that enhance their productivity and earning potential, will improve women's own well-being and contribute to better economic performance, reduction of poverty, and better family living conditions. Over time it will also help to slow population growth and promote environmental sustainability. Because social and cultural forces influence women's economic productivity, deliberate and thoughtful effort is required to involve women more effectively in the development process. The Bank believes that priority should go to five fields: education, reproductive health, agriculture, private entrepreneurship, and the wage labor force.

The Women in Development Division is preparing a series of papers suggesting ways to improve opportunities for women in specific sectors. This paper on agricultural extension is part of the series. It is meant not only to guide the World Bank, but also to help people in governments, other development agencies, non-governmental organizations and other institutions to develop better strategies to assist women. The series complements other activities of the Women in Development Division and other offices in the Bank -- including country assessments, project evaluations, and research on poverty and women's productivity -- that increase the practicality and effectiveness of efforts to help women.

Ann O. Hamilton  
Director  
Population and Human Resources Department



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## EXECUTIVE SUMMARY

Despite rapid advances in agricultural technology and heavy expenditures by governments and donors on agricultural extension, as much as a fifth of mankind -- almost all in developing countries - still goes hungry. Extension programs can increase agricultural productivity and rural incomes by bridging the gap between new technical knowledge and a farmer's practices, but research and extension services usually assume that farmers are men. In fact, women play a critical role in a wide range of agricultural activities, and as men move into off-farm employment, women's importance to agriculture is growing. The specific needs and problems of women farmers must be addressed in the design and implementation of agricultural projects. This report provides guidance on how to do so.

### *Do the Research and Extension Needs of Men and Women Farmers Differ?*

Men and women farmers share many characteristics, but often have different constraints and production systems. The farm household is not always a single economic unit with common goals, resources, and benefits; family members may have different, even competing, interests. Gender affects the type and extent of women's involvement in farming, the constraints on their productivity, the intra-household division of labor and responsibility, and the control and use of resulting production and income. And these gender effects have widespread implications for extension and for the generation of new technologies.

Competently conducted extension should select strategies and technologies appropriate for different kinds of farmers, but research and extension services in the developing world reflect the erroneous assumption that farm managers and decisionmakers are men who will pass information on to their wives if they need it. As a result, extension typically is directed to male farmers about male enterprises and activities. And invisible barriers often prevent women from gaining access to extension information and activities.

Unless the design and implementation of agricultural projects address the specific needs and problems of women farmers, they will remain disadvantaged, and both family wellbeing and the agricultural sector will be adversely affected. This report provides information on women farmers and their production systems, a framework for analyzing gender issues, and, drawing on lessons and experiences, ideas for possible interventions and project components. The focus is on government-financed agricultural extension services in the Third World. The term "women farmers" refers both to women heading households and to women carrying out productive activities in a farming household.

### *Do Men and Women Engage in Different Agricultural Activities?*

Women play a critical role in the production of food for the household, in post-harvest activities, in livestock care, and, increasingly, in cash cropping. But women's agricultural activities are changing as mounting demographic pressure on the land, changing weather patterns, and environmental degradation result in increased rural poverty and male migration off the farm. Agriculture is becoming "feminized."

The roles of women farmers in the Third World vary widely but certain features are common. Women tend to concentrate their agricultural activities around the homestead, because of their domestic and reproductive roles and for cultural or religious reasons. Certain tasks, activities, or enterprises are often regarded as predominately "male" or "female", but women tend to have a wider range of activities and enterprises than men. Rural women have lower status and with few exceptions are more disadvantaged than men. And women have special obligations toward their husbands, their extended family, and their caste or class.

It is increasingly common for women to manage or operate farms on a daily basis in all parts of the world as men leave farms in search of paid employment. Men may be absent all day, several years, or somewhere in between. Women head between one-third and one-half of rural households in several African countries and of the poorest households in Pakistan and India. Women who head farming households tend to have few resources, little time, and many dependents.

### *Do Constraints on Agricultural Productivity Differ for Men and Women?*

Women's traditional role in agriculture reflects their reproductive role and such factors as religion, class or caste, cultural norms, and the formal legal system. In general, women are more home-bound, have fewer economic options and social interactions, and less access to information and resources than men. Women farmers are less able than men to raise their productivity because:

- *Land title and land tenure tend to be vested in men.* Occasionally this is a legal condition; nearly everywhere it reflects sociocultural norms. Land reform and settlement reinforce this bias. Land shortage is common among women.
- *Technologies women farmers need are relatively undeveloped.*
- *Extension systems have failed to reach women farmers.* Most extension agents are men and programs target male farmers either directly or through what they say and how they deliver advice. In much of the developing world, extension is hindered by cultural restrictions on male-female interactions.
- *Agricultural knowledge is inefficiently transferred from husband to wife.*
- *Women have limited access to credit and inputs* because of formal laws, lack of collateral, social factors, and criteria for participation in credit and cooperative groups. It may also be difficult to purchase inputs because of the time and energy needed to transport them.
- *Women's time and mobility are constrained* by their dual domestic and agricultural roles and the relative inflexibility of domestic chores. In many areas, women spend several hours a day collecting fuel, water, and fodder. Cheap, available, appropriate transport and other technologies are lacking.
- *Women's substantially greater illiteracy and lower school enrollment rates* hamper their access to and ability to understand technical information.
- *Rural women often lack incentives to increase productivity:* food crop prices are low, market infrastructure is poor, and husbands often control the income from the products of women's labor.

### *Understanding the Differences Between Men and Women Farmers*

For extension services to provide more appropriate technologies and messages to women farmers and select the best strategy for reaching women farmers, they must understand the roles of various household members in an area's agriculture. For this gender analysis, quantitative and qualitative information is needed on:

- *Activities:* Who within the household carries out which tasks and how rigid is the division of labor?
- *Resources and constraints.* Who has access to and control of resources and what are the implications are for those with limited access or control? How do the constraints under which men and women operate differ?
- *Benefits.* Who uses or benefits from production or controls income -- that is, what are the incentives for different family members?

### *Using Female Extension Agents*

In some areas, the gender of the agent is not important but in many it is. In certain Muslim areas it is impossible for a male agent to work with a female farmer. Even where there are no strong taboos, communication is generally easier for female extension workers.

Disproportionately few agricultural extension agents are women -- in 1989, an estimated 13 percent of agricultural field agents throughout the developing world, but only 7 percent in Africa in 1988 and 0.5 percent in India were women. Their recruitment is hindered by girls' relatively low enrollment rates in secondary and agricultural schools, and by cultural and family restrictions on their employment in rural areas. Recruitment can be encouraged by removing unnecessary selection criteria, improving training facilities and employment and living conditions, retraining other kinds of rural agents, and encouraging girls to enroll in agricultural schools.

The most effective use of the relatively few female agents is to facilitate contact between male agents and women farmers, to encourage women's groups, and to promote gender awareness in all agents through training. A women's extension program should be mainstreamed in a unified extension service as soon as possible.

### *Improving Extension to Women Farmers*

Male agents will continue to dominate extension services for some time. Three issues must be addressed in that connection: how to overcome male agents' stereotyped view of women farmers; how to overcome restrictions on interactions between men and women; and how to make extension advice and information more useful to women farmers. Male agents may need incentives to work with women farmers. They must also be better trained in gender awareness and communication methods, and extension messages must cover the wide range of women's agricultural activities.

Most rural communities have a long tradition of women's groups that exchange labor, mobilize savings and credit, help each other, and cooperate in social and ceremonial activities. Groups are a cost-effective way to deliver extension and inputs to farmers and to facilitate the adoption of new technologies. Many of the sociocultural difficulties of male-female interaction are alleviated when male

agents work with women's groups rather than with individuals. Moreover, women tend to speak out more freely in single-sex groups. The direct employment of para-extension agents by groups is a future possibility that offers an effective way to guarantee an agent's motivation to answer the farmers' needs.

Cohesion and homogeneity are important to group success. Using existing groups works better than starting new ones and it is important that the groups select their own leaders. New methods of communication may be needed for groups and for women. Gender targeting -- using female agents to work with women farmers, particularly groups, initially -- helps women farmers develop confidence and become familiar with the extension system. Then the female agent introduces the group to a male agent and moves on to work with other groups.

Criteria biased against women should be avoided in the selection of contact farmers. Restricting extension activities to the most productive geographic areas may also discriminate against women farmers.

How best to reach women farmers depends on the type of information to be conveyed, the stage women are at in the process of adopting the technology, and local circumstances -- including the communication technologies available. It is crucial that women have access to the media used and be able to understand the message. Radios and TVs may be located where men, but not women, may congregate. Illiterate women cannot read printed matter and audio-visual programs are useful only to women who understand the language being used.

Child care obligations, daily domestic and productive activities, and cultural taboos all limit women's participation in extension activities. More women will attend if programs are of sufficient interest and value and if activities are at a time and location convenient for women.

Increasing farmers' influence on and control over technology generation and dissemination should be built into the reward system of extension staff and into the key indicators used in the monitoring of extension service. Feedback must be encouraged and heeded; women farmers' needs are even less likely than men's needs to be communicated to researchers, managers, and others with the power to improve the extension system. Feedback can be through the extension service (encouraged by staff incentives), or through organizations of rural women.

### ***Improving the Supply of Technologies Appropriate for Women Farmers***

Current technical packages of interdependent elements require a quantum leap in farming practices that many farmers, including women, find difficult to achieve. And the immediate technological needs of women farmers are often not adequately addressed. Technologies are needed:

- *For a wider range of enterprises* (including home-consumed staples, fruits and vegetables, poultry, small animals).
- *For a wider range of activities* (including seed selection, food preparation and storage, agro-processing, transport, and other tasks commonly carried out by women).
- *To meet the production objectives of women farmers* (such as reliability, stability of yield, multiple functions, usable by-products, and taste, processing, and storage characteristics).
- *To alleviate the constraints of women farmers* (such as limited time, mobility, and access to resources).

Technologies should answer a pressing need; be appropriate to the farmers' situation; and be accurate, reliable, and relatively risk-free. Recommendations should be presented to farmers in an easily understandable fashion, using familiar ideas and units of measurement. Step-wise adoption should be facilitated by starting with a few "no-lose" steps that require little or no input and do not incur expenses that cannot be recouped. To produce such technologies calls for a reorientation of research to tap into farmers' indigenous knowledge and the rationale behind their current practices. Farmer-focused research should be conducted in the context of the farming and social system.

### ***Improving Project Preparation, Design, and Implementation to Increase Gender Awareness in Extension Services***

Extension projects that address a bias against women farmers should be *situation-specific* (appropriate for an area's sociocultural conventions) and *flexible* (responsive to changing circumstances, deficiencies in the original design, and increased understanding of women farmers). Projects should be able to expand successful strategies and test promising approaches.

Women farmers will be able to use extension information only if they have access to the complementary factors of production -- land, labor, and capital -- and markets. An enabling environment will give women access to financial and physical inputs, including appropriate technology, and will provide adequate incentives through appropriate policies on prices and infrastructure.

Successful project preparation requires understanding women's role in farming, their information needs, and how these needs can best be satisfied. Gender analysis can be backstopped by a gender-disaggregated household survey. Quantitative or subjective assessments of how well women are currently being served by the extension service can be used as indicators in monitoring and evaluation. If key information is not readily available, information gaps and mechanisms for data collection can be identified through a feasibility study. The impact of the project's proposed orientation (geographic areas to be targeted, for example, or technology to be promoted) on women farmers can then be assessed and components and strategies to aid women farmers can be identified. Farming systems and gender roles are changing continually, so diagnosis must be an ongoing activity.

Project design should explicitly target women farmers to avoid tokenism. Removing formal barriers to women's participation in extension is not enough to ensure that women will participate in and benefit from extension -- services and resources must be targeted to them.

It is recommended that projects include:

- *Pilot Women in Development (WID) schemes* to identify appropriate strategies and interventions for implementation on a wider scale.
- *An unallocated fund* specifically earmarked for activities that will assist women farmers.
- *Someone with responsibility for gender issues* on the preparation team and on subsequent teams and missions -- preferably a female national with a sociology or farming background.

The following steps will ensure that gender issues are fully considered in project design:

- Analyze by gender farmers' eligibility to receive project inputs and services and their ability to participate in project activities.
- Examine the capability of institutions and delivery systems to reach both men and women.
- Assess the appropriateness to men and women of proposed technical packages, information, messages, and technologies.
- Examine the distribution of benefits by gender and its effect on the impact of incentives.
- Evaluate the reliability of feedback mechanisms from men and women.
- Anticipate likely changes in the roles and status of women and link these changes to the project's expected impact.
- Identify needed components or adaptations, such as credit for women's income-generating activities; boarding facilities for women at training centers; workshops on topics important to women farmers; and the recruitment and training of a horticulturist. Reform of discriminatory laws is an important discussion point with governments.

Innovative or pilot projects should be evaluated mid-term for necessary adjustments and so successful features can be expanded. Adjustments might include changes in criteria for selecting contact farmers or group members or for eligibility to receive credit, as well as changes in the timing and location of extension activities, and the medium of communication.

### ***Conclusion***

Extension messages are effective only if they reach the client -- and they tend not to reach women farmers. This paper provides concrete examples and broad guidelines on how to change that situation.

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## Chapter 1: THE NEED TO IMPROVE EXTENSION TO WOMEN FARMERS

It is a paradox of our time that despite rapid advances in agricultural technology as much as a fifth of mankind -- mostly in developing countries -- still goes hungry. A gap exists between agricultural knowledge and its effective application, so that hunger is unlikely to be eliminated soon. In Sub-Saharan Africa, for example, per capita food output has failed to keep pace with the demand generated by a rapidly increasing population. At unchanged rates of food output and population growth, a food energy deficit estimated at 10 million tons of maize-equivalent recorded in 1990 will climb to 50 million tons by the year 2000. How much this paradox can be traced to a failure of research and extension systems to help farmers improve their productivity is a very difficult question of global dimensions. But at a more modest level it is a question that gives purpose to this report.

The major instrument public agencies use to disseminate knowledge to farmers is agricultural extension. Extension programs can increase agricultural productivity and rural incomes by bridging the gap between new technological knowledge and farmers' own practices. Extension provides information to farmers who through informal experimentation test, adapt and, if the technologies are appropriate, adopt them. Productivity is thereby improved by changing input/output ratios or farming practices. Effective extension services also elicit information about farmers' needs and concerns and convey them to research and technology centers to ensure that research agendas are relevant.

In the last 20 years, the World Bank alone has funded 460 projects involving agricultural extension in 79 countries. Despite an expenditure of almost US\$4 billion on extension components (excluding related measures such as training of extension agents), until recently there have been few evaluations of the impact of extension on agricultural productivity. Measurement difficulties are part of the problem. Three types of study have been undertaken: those that analyze the effect of extension on farmers' knowledge and adoption of new technologies; those that examine the impact of adoption on farm productivity; and those that weigh the benefits and costs of extension services and how extension services affect net returns. The studies generally show that extension has a significant positive impact on all three variables in both developed and developing countries, although the impact varies by region and by farming activity. Rates of return vary from 75 and 90 percent in Paraguay, for example, to 15 percent in India, 13 and 500 percent in Brazil, and 34 to 80 percent in a group of countries in Asia, Africa, and Latin America (Birkhaeuser, Evenson, and Feder 1991). One of the few studies on gender differences concluded that, other things being equal, female farmers use extension services more efficiently than male farmers do (see Box 1). More rigorous and extensive evaluations are needed of extension's effectiveness for all types of farmers and of the effectiveness of strategies to reach women.

Agricultural technology in the developing world has been designed and disseminated on the assumption that farm managers and decision-makers are men. This is no longer a valid assumption. The data show that women play an important role in agriculture in the developing world. Women's role is especially critical in the production of food for the household, although it is not confined to that activity. FAO, IFAD and other international agencies estimate that women account for 70 to 80 percent of household food production in Sub-Saharan Africa, 65 percent in Asia, and 45 percent in Latin America and the Caribbean. And men's movement into off-farm employment is strengthening women's role as agricultural decision makers. Increasingly, *the farmer in the developing world is a woman.*

Women's importance in agriculture is of significance to agricultural extension and

### Box 1: The Relative Efficiency of Male and Female Farmers

A multivariate study of the relative efficiency of male and female farmers in the Vihiga Division of Western Kenya found that women were better farm managers than men. Women were calculated to obtain 7 percent more maize than men at the same levels of physical inputs and similar weather conditions. Gender differences are even greater when other endowments are included. If women were to have identical quantities of land, fertilizer, extension and schooling that men now have, women's yields would increase by 9 percent over their current level and by 5 percent over male farmers' current yields. Furthermore, if women had one to three years of schooling and the same quantities of land and other inputs as men do, women's yields would increase by 24 percent -- or 19 percent over men's yields. Clearly, the case for investing in female farmers is strong.

Source: Mook 1973.

research. The woman farmer<sup>1/</sup> almost always has different production objectives than a man, more limited access to resources, less education, and more constraints on her time and energy because of her many responsibilities as a homemaker. Gender roles in agriculture are not set in stone; they change continually. These changes must be fully reflected in the design and implementation of agricultural projects, especially those with research and extension components, if we are to close the gap between technology and output.

Of course, agricultural extension alone will not guarantee an increase in farm productivity. That requires a steady flow of relevant, applicable information combined with land, inputs, labor, credit, markets, and appropriate pricing policies. Where the other factors of production are readily available and pricing policy is appropriate, the impact of research and extension can be very large indeed.

Many constraints on agricultural productivity are gender neutral. Indeed resource endowments (such as farm size) or social factors (such as tribe or caste) may have a greater influence on access to extension services and factors of production than gender. But within each social and economic group, women tend to face more constraints than men. Ideally, technologies and strategies are selected for the specific target groups identified and defined during the diagnosis stage, but the world is not ideal and the special needs and problems of women are frequently overlooked.

Governments and donors are increasingly recognising the importance of addressing gender issues in agricultural projects. In a PHRWD<sup>2/</sup> survey of Staff Appraisal Reports of 160 World Bank agricultural projects, the proportion of projects that include specific actions to benefit women increased from 16 percent in FY88 to over half in FY91. Projects in Africa took more account of gender issues; in the three-year period, 48 percent of agricultural projects in Africa included actions targeted to women (some marginally so, some significantly). Very few projects in Europe, the Middle East, North Africa, and especially Latin America and the Caribbean had activities targeted to women.

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<sup>1/</sup> In this paper, the term "woman farmer" includes women heading farming households, as well as women carrying out agricultural activities, including processing and marketing, within a farming household.

<sup>2/</sup> PHRWD is the Women in Development Division, Population and Human Resources Department, World Bank.

The World Bank's 1990 Annual Sector Review of Agriculture and Rural Development (1991a) called for steps to ensure that research and extension programs are designed to increase women's agricultural productivity. The Review recommended that this be done through more innovative methods than the usual recruitment of women extension officers and increased attention to horticulture and farm gardens -- activities that are typically the responsibility of women. This report is a response to that call. Its purpose is to provide agricultural project officers in and out of the World Bank with guidelines for designing and implementing government-funded agricultural extension projects that will more effectively help women farmers. These guidelines are based on practical lessons of experience garnered worldwide -- from the Bank's own limited experience and from bilateral donors and non-governmental organizations (NGOs). There is still much to be learned, especially about East Asia, Latin America and the Middle East. Nonetheless, it is considered timely to offer these guidelines now and to build upon them as more experience is accumulated.

The focus on women in this paper is not intended to discount the problems male farmers face. Many constraints common to men and women can be addressed by generally improving the agricultural environment and the responsiveness of agricultural services to *all* farmers. But gender-specific problems often need gender-specific solutions. Governments and donors must improve agricultural services in general, but they must also increase the focus on women farmers recognizing that there is no magic formula for reaching them. Interventions targeting women farmers must be tailor-made to fit local situations: in some countries there will be no need for special, affirmative action; but in areas of the same countries, or in other countries, it will be necessary.

The report describes women farmers and their production systems, provides a framework for analysing gender issues, discusses various aspects of generating and disseminating appropriate technologies for women farmers, and makes suggestions about effective project and project component design. More specifically, Chapter 2 discusses how gender affects women's roles in agricultural production, and describes the special constraints women face as farmers. The role of women within the agricultural production system, and within the household and community, must be understood before information and technology needs can be assessed and extension interventions designed. Chapter 3 discusses the imperfections of classic top-down, commodity-based research systems, suggests methods for gender analysis and ways to generate technologies suitable for women, and presents selected research and technology topics. Extension to women farmers will only be effective if the technologies offered are relevant and implementable. Chapter 4 examines the provision of extension services to women farmers and suggests how they can be improved. Finally, Chapter 5 suggests how projects can be designed to benefit women farmers. It lists the background information needed, recommends steps to be taken in project preparation, design and implementation, and suggests measures, project components and modifications. Chapter 5 and the descriptions of gender analysis and data collection from Chapter 3 are issued as a self-standing leaflet, *Designing and Implementing Agricultural Extension for Women Farmers: Guidelines*, for use in the field. Copies can be obtained from the Women in Development Division of the World Bank.



## Chapter 2: UNDERSTANDING HOW GENDER AFFECTS AGRICULTURAL PRODUCTION

### Gender Factors and Women's Roles in Agriculture

Agricultural enterprises and production systems are influenced primarily by agroclimatic conditions and modified by such factors as population density, market characteristics, and government policy. *Women's traditional role* in farming systems in the developing world is influenced mainly by the following:

- *Their reproductive role* -- bearing and rearing children and taking primary responsibility for domestic maintenance -- reduces their mobility and the time and energy they have to carry out farming activities. Women's reproductive function can pose a serious health risk and cause loss of energy when they are pregnant or breastfeeding.
- *Sociocultural factors* keep women more home-bound than men, reduce their economic options and social interactions, and restrict their access to the information and resources needed to respond to economic opportunities. Sociocultural forces that circumscribe male-female interactions tend to be more restrictive in rural than in urban areas, and in traditional than in more modern societies. What are these sociological forces?

(1) *Religious practices* that can limit women's mobility, social contacts and the types of activities they can be pursue.

(2) *Class or caste*. In Asia, the obligations and rights differentiated by class or caste in all three major religions (Hinduism, Islam, and Buddhism) affect women's agricultural roles. In many parts of Latin America, women's farming activities are differentiated by class: lower-class women participate actively and make decisions on a wide variety of farming tasks; but among peasants higher up the class strata, paid laborers do women's field work and husbands dominate decisionmaking. Barriers to communication between castes and classes hinder the effective delivery of extension.

(3) *Cultural attitudes* about gender roles and relationships that circumscribe women's activities, responsibilities, decisionmaking authority, and interactions with men.

(4) *Formal legal systems*, reinforced by custom, that relegate women to an inferior legal status in many developing countries. Women are typically discouraged from owning land or other agricultural assets, opening bank accounts or contracting credit in their own names, or even selling the products of their own labor without their spouses' approval. And where legal channels do exist, women are reluctant to use them to pursue their claims.

The same kind of gender factors shape the traditional intrahousehold division of labor and responsibilities on a farm. But, the role rural women actually play differs greatly today from their traditional role a decade or more ago. A number of related forces have brought about these changes, including the following:

- (a) High population growth rates and the pressure they bring to bear on land in many parts of the developing world has resulted in smaller landholdings that are less viable for family support. The worsening rural poverty that results has tended to force women into field activities and men into migrating to cities, mines, and plantations in search of paid employment. On smaller landholdings, women are more likely to farm and men to have off-farm employment; on larger holdings, men are more likely to undertake the field activities.
- (b) Environmental changes -- especially soil degradation and the decreasing reliability and amounts of rainfall -- are placing farm families under increasing stress. This is notable in the Sahel, for example, where environmental factors together with high population growth rates are changing farming systems. The increasingly urgent need for immediate income has led to shortcuts in fallow-field rotations.
- (c) Male migration in search of better income-earning opportunities, and the increasing incidence of AIDS in certain regions, are contributing to an increase in the dependency ratio (the numbers of old and very young relative to workers at a more active and productive age) and the higher proportion of women in rural areas. Agriculture is increasingly "feminized" as farms managed or run on a daily basis by women are becoming more common.

How do these gender factors affect women's roles in agricultural production? First, they cause women's farming roles to vary widely geographically; second, they affect the intrahousehold division of responsibility for agricultural production; and third, they further constrain women farmers' productivity. These effects are the focus of this chapter.

## **Geographic Overview**

Some women are restricted from all agricultural activity except that which is homestead-based (such as seed selection, vegetable production and the care of small animals, and agroprocessing); some participate fully -- sometimes autonomously -- in all field and agricultural operations. These roles tend to follow regional patterns.

### *Farming Women in Sub-Saharan Africa*

Women in Sub-Saharan Africa (SSA) play a pivotal role in agriculture, providing most farm labor and making the key decisions for many agricultural activities (Boxes 2 and 3). The International Labor Organization (ILO) estimates that 78 percent of women in SSA and only 64 percent of men are economically active in agriculture (Buvinic and Lycette 1988). Food production there has long been recognized as primarily a women's activity, but women also participate increasingly in other agricultural activities -- such as processing, cash cropping, animal husbandry, and marketing. And, increasing quantities of food are being marketed so the distinction between food crops and cash crops is becoming blurred.

**Box 2: Malawi: Profile of a Woman Farmer**

Sindima, a farmer in Malawi, is in her late thirties. She lives with her five children in an area with relatively good soils and dependable rainfall. Her husband left to find work in the city; she sees him infrequently. She heads the household, manages the farm, and does almost all the work. She farms about 2.5 hectares and is able to feed her family and produce some crops to sell. By local standards, Sindima is affluent. A development assistance program has been active in her village, so she belongs to a farmers' club and has access to the extension agent for information and credit for fertilizer and improved seeds. With this help, she plants a fairly complicated mix of crops, including half a hectare of hybrid maize to which she applies fertilizer. Although local maize is less productive, she continues to plant it because it tastes better and is less susceptible to insect damage in storage.

Sindima's fields require heavy labor -- with preparation, planting, weeding, and harvesting all timed to keep the land in production as long as the rains last. She also has household responsibilities: caring for the children, grinding maize, gathering firewood, and cooking. She even brews a little beer to sell at the market. Her children help -- the older girls walk to the well twice each day to get water and help search for firewood -- but she can afford to pay their school fees so she encourages them to get an education.

*Source:* Office of Technology Assessment 1988.

Men and women have asymmetric rights and obligations in many parts of the developing world but particularly in African households. Typically women are obligated to grow food for subsistence and to work on their "husband's fields." They use the income from their own enterprises and activities to meet their own needs and the needs of their children. Men, on the other hand, are obligated to provide the land; they control the income from the household's agricultural production, and tend to be responsible for housing, taxes, ceremonial and religious obligations, and at least part of the school fees. Men and women tend to be responsible for the production costs of their own enterprises. As a result of gender differences in rights and obligations, most African households are not a single profit-maximizing unit with a single set of objectives, but rather a joint enterprise with separate responsibilities and income streams and with resources allocated according to different preferences, needs, and customs.

**Box 3 : Nigeria: Women Farmers in Imo State**

As C. Ohuegbe, Chief Agriculturalist of the Imo State Agricultural Development Project (ADP), has observed, women in Imo State contribute more to food production and family labor than men. It is estimated that over 95 percent of the rural women are small-scale farmers who produce most of the food and bear the burden of day-to-day family subsistence. According to the diagnostic surveys of the agricultural extension zones, women perform almost all the cultural operations in food production. Such operations as bush clearing and burning, ridge/mound making, planting, fertilization, weeding, harvesting, storage, processing, and marketing are carried out by women. Women also have sole responsibility for cultivating compound farms (or gardens) where continuous cropping is done with household refuse. It was against this background of active participation in food production in Imo State that this ADP decided to give full and adequate technical and financial support to women farmers.

*Source:* Ohuegbe 1989

Distinct divisions of labor -- by crop, livestock and farming operation -- exist in most African countries. Men and women often have complementary roles for the same crop. The generalization that women produce food crops while men engage in cash cropping is becoming less true.

Women tend increasingly to do both and more: they market surplus food crops, engage in cash cropping, and, as they widen their search for income-earning opportunities, are also taking jobs as hired labor.

Traditional roles in Sub-Saharan Africa vary substantially between Muslim Nigeria, say, and the Kenyan highlands. But traditional roles are generally breaking down, especially within female-headed households. Available data show that in rural Africa, households headed by women are usually poorer than those headed by men because of fewer resident workers and smaller landholdings (Due and Magayane 1990). Yet male heads of household and farmers with access to resources are the primary clients of agricultural support services in Africa (Berger, Delancey, and Mellencamp 1984); while households headed by women tend to be the least well-served and to have less access to factor and non-factor inputs (Jiggins 1986; Due 1991; Buvinic and Lycette 1988).

### *Farming Women in Asia*

Women are heavily involved in agriculture throughout Asia, where regional differences reflect cultural, historical and religious diversity. Women's economic activities and social interactions in South Asia typically reflect by an inside/outside dichotomy (Acharya and Bennett 1983). Women in many conservative societies are confined largely to their compounds and may be confined to interaction with women of their own families. Yet many other women are free to participate actively in field production. In Nepal, for example, women have responsibility for an estimated 80 percent of agricultural production, mostly family subsistence farming (UNICEF 1987, quoted in Axinn 1990). On millions of small farms in South Asia, women tend to manage the homestead, keep livestock and poultry, and grow fruit and vegetables within the compound (see Box 4 on women's work in Pakistan). Women are also increasingly responsible for field crop production, even when it is not traditionally a culturally acceptable activity. In India, the proportion of women employed in agriculture, particularly as cultivators, has recently increased dramatically; men have moved into non-farm employment and women have supplied more of the heavy labor required for the High Yielding Varieties (HYV) of crops than men have. Analysts have found that higher incidence of female agricultural labor is positively correlated with agricultural growth and that the increased number of female wage-earners is a response to improved opportunities rather than the pressure of poverty. Despite strong sociocultural barriers to paid female manual work, increasing numbers of women from rural households are finding employment as agricultural wage laborers. The growth in the proportion of women cultivators has been even more dramatic. Women working as unpaid family workers in field crop production and other farming activities are another increasingly important -- and usually overlooked -- segment of the agricultural labor force (World Bank 1991c).

#### **Box 4: Women's Work in Pakistan**

Although there are significant regional variations in their agricultural role (depending on such factors as level of income, type of agriculture and season of the year), women in Pakistan are generally responsible for the cultivation of cotton, fodder crops, vegetables, and fruits; the care of livestock and poultry; the transplanting and weeding of most crops; most post-harvest agricultural processing, such as winnowing, grinding, and husking; and storage (including the building of storage bins). They also fetch water (for the family and livestock) and fuelwood, often at great distances, and they tend to undertake the maintenance of houses as well as some of the construction. These activities, together with housework, typically take up to 12 to 15 hours of a woman's day -- significantly more than men spend on productive work.

*Source:* World Bank 1989c.

Throughout South-East Asia and China, women are also heavily involved in agriculture. Within the Indonesian nuclear family, women tend to play an important role in decisionmaking, but outside the household they are generally subordinate to men. They are responsible for providing family food, collecting water and fuel, generating household income (including unpaid labor on the family farm), providing labor in exchange for a share of the crop, and generating an independent income from wage labor, handicrafts, agroprocessing, and marketing. Philippine women are noted for their many entrepreneurial activities, often in the informal sector and independent of their husbands.

#### *Farming Women in Latin America*

With less than 30 percent of Latin America's population rural-based, the Latin American agricultural situation is quite different from that in Africa and Asia where about two-thirds of the people live in rural areas. A marked dualism exists between large-scale, capital-intensive estate and plantation holdings on the one hand, and on the other, the *minifundias* that depend increasingly on off-farm earnings and remittances from migrants who leave the family farms (see Box 5 for a classification of rural women). In Bolivia, for instance, small and subsistence farms are common on the Altiplano and high valleys, whereas, in the lowlands, large-scale commercial farms depend on the significant immigration of highland smallholders as laborers. Haciendas and plantations are replacing permanent labor with temporaries who migrate from harvest to harvest. Women are particularly active on the small subsistence farms and tend to be the poorest of the poor. Throughout the continent, where land is scarce women do seasonally intensive manual work on horticultural crops for export.

Traditional peasant agriculture has been regarded as a "male farming system," but women's participation has been underestimated and the feminization of farming is increasing. The cultural ideal of appropriate behavior (*machismo*) decrees that field work be done by men and housework by women. This varies widely, however, depending in part on the strength of the Hispanic influence. Among the black and indigenous populations, for example, where this influence is marginal, rural women are the main agricultural producers. How much labor women contribute to agriculture depends also on the availability of off-farm employment for both sexes. The division of agricultural work by gender also depends on the crop, the nature of the work, the intensity of labor, and the level of mechanization (Ashby 1985; Davies 1987).

#### *Farming Women in North Africa and the Near and Middle East*

The diversity of women's agricultural roles in this region is typified by Turkey. In most of western Turkey, women are much involved in agriculture, particularly the production of fruits and vegetables and the rearing of livestock. There are fewer taboos against men and women interacting than in parts of eastern Turkey, where women's roles reflect traditional Islamic norms. In eastern Turkey, women are still active in farming, but more in the seclusion of their homesteads.

In the Maghreb, absenteeism is common on large landholdings among farmers practicing extensive agriculture. Many women are paid workers who prune, plant, weed and tend cattle. Many farmers in the mountainous areas have outside income from male relatives working abroad or as carpenters and masons in urban areas.

**Box 5: Types of Rural Women in Latin America**

<u>Social Class</u>	<u>Types of farms</u>	<u>Farm labor relations</u>	<u>Women's role on farm</u>
Traditional landed elite	Haciendas (precapitalist estates)	Employ permanent <u>minifundista</u> labor force	[ [ Owners or owners' wives [ either absent or [ partially resident
Moneyed landed elite	Estates and plantations	Employ mainly seasonal wage laborers	[ [ Resident wives of [ farm managers
Rural middle class	Capital-intensive farms	Employ permanent and seasonal wage laborers	[ [
Well-to-do smallholders	Small commercial farms	Use exchange labor, wage labor, family labor	Farm "housewives"
Peasants	Mixed commercial-subsistence	Family labor, hire out some labor for wages	Farm domestic and field workers
Rural poor	(a) <i>Minifundias</i>	Hire themselves out as labor for wages and farm in slack periods	Women <i>minifundistas</i>
	(b) <i>Landless</i>	Hire themselves out as labor	Women wage laborers: "female underclass"

Source: After Ashby 1985.

Male out-migration is particularly heavy in Yemen, where an eighth of the population works in paid employment elsewhere. The women left behind have had to assume the agricultural duties of the absent husbands and, as direct recipients of remittances, have greater decisionmaking power than would be expected in an Islamic country. About 80 percent of women live in rural areas and work the year round. In contrast, men mostly work seasonally on heavy work, technical (pesticide spraying) work, marketing and delivery, and cash crops, especially qat (*Catha edulis*).

**Patterns of Farm Management**

Extension and other services need to be provided to both men and women in farming families because of how responsibility and management are organized on farms. Kathleen Cloud (1985) identified five main patterns of farm management: separate enterprises, separate tasks, shared tasks, separate fields, and women-owned or women-managed farms. This separation of responsibility by gender underlies the need for rethinking the extension and research agendas (Matrix 1).

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**Matrix 1 : Implications of Different Gender Responsibilities in Farming for Agricultural Research and Extension**

<u>Farming pattern</u>	<u>Implications for agricultural research</u>	<u>Implications for agricultural extension</u>
Separate enterprises	Generate technologies for both men's and women's enterprises (e.g. for food and cash crops; for cattle and small ruminants; for fruit and vegetable production, processing, and storage; and for forest management.)	Target information on specific enterprises to the relevant operator
Separate fields	Consider any major differences in production conditions on men's and women's fields when generating new technologies; conduct on-farm trials on both men's and women's fields.	Extension Agents (EAs) should contact both men and women; and they should visit the fields of both.
Separate tasks	Conduct research on both men's and women's tasks; consider the tasks and the desired technologies in relation to the activity profile of the operator (and not of the household). Ex ante analysis can suggest the impact of proposed technologies on the demand for male and female labor, and on the agricultural activities of men and women.	Target information on tasks directly to the person doing the task.
Shared tasks	Consider whether a new technology would make a particular activity a separate task, and if so, what the implications are for the rest of the system.	Technical information should be given to both men and women performing the task.
Women-owned or women-managed farms	Generate technologies appropriate for the production conditions and constraints of such farms.	EAs should recognize women as primary decision makers on the farm and deliver extension directly to them.

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*Separate Enterprises*

In this pattern, women and men are responsible for the production and disposal of different crops and livestock in the household production system. At the same time, they may jointly participate in the production of others. Women's enterprises are often homestead-based for biological and cultural reasons. Horticultural crops, small livestock, and agroprocessing are common enterprises for women worldwide.

In Sub-Saharan Africa, a division often occurs between women's subsistence crops and men's cash crops; between cereal crops such as millet and rice, particularly when rice is grown as a cash crop; between women's horticultural and men's cereal crops; between women's non-irrigated and men's irrigated crops, such as swamp and irrigated rice; or between women's goats and men's cattle. Traditionally, women have specialized in keeping poultry and small ruminants and in gathering wild vegetables and tree crops. Women in Turkey are heavily involved in vegetable and milk production (livestock are kept in barns and often zero-grazed). They are not usually involved in mechanized agriculture. Among the Andean Indians, women's farming activities -- almost exclusively restricted to the area around the homestead -- include the care of small animals, the intensive production of horticultural crops, and such community efforts as spinning, wool weaving, and cheese-making. In China, the gender-based division of labor in agriculture is changing after rural reform and the move from collective to individual farming. When off-farm employment opportunities are unavailable, men tend to concentrate on crop production and women on livestock, handicrafts, and small-scale food processing. If off-farm activities for men are available, then women assume all the farming responsibilities. If off-farm opportunities for women exist, women also engage in "sideline" activities such as egg production.

### *Separate Tasks*

The assignment by gender of some or all of the tasks within a single cycle has obvious implications for the work men and women do. The separate task pattern, common worldwide, is particularly prevalent in rice production in Asia and throughout Sub-Saharan Africa. Men commonly prepare and plow the land and women select, store and plant seeds or transplant seedlings. Virtually everywhere, mechanized tasks are regarded as "male." Certain types of plant protection and harvesting may be assigned by gender. Processing, the storage and trading of cereals, and the production of vegetables, tree crops, and dairy products are often women's tasks and, indeed, may be the sole culturally acceptable activities for women secluded in their compounds. Milking assignments sometimes differ by animals: in the Sahel, for example, Tuareg men milk camels, women milk goats, and both may milk cattle. In fish-pond enterprises in China, women are accountants and bookkeepers while men feed and harvest the fish. Marked gender division of agricultural tasks typifies farm households in the Philippines and Indonesia.

### *Shared Tasks*

Except for secluded women and for home-based and mechanized activities, the sharing of tasks is common in Asia, North Africa, the Middle East, and Latin America. The pattern is least common in Africa where in many farming systems only labor-intensive tasks such as weeding and harvesting are shared. The implications of this pattern are clear. First, it is acceptable for both men and women to do the task; second, responsibility for undertaking the task is shared; and third, the farm is being run for the greatest good of the household in general, in other words, there is a household utility function. There is greater flexibility in meeting the labor demands of a shared task.

### *Separate Fields*

In this pattern (common in West Africa), wives and husbands produce the same crops but in different fields. The crop from a woman's field is usually for home consumption and local markets, while that from a man's field may be for a regional or national market. Separate fields are usually part of a larger system in which men and women both also contribute labor to the joint fields of the extended household. There can thus be three interlocking production systems on the farm: wives' fields, husbands'

fields, and joint fields. In addition, women's groups in the village may also have fields that they cultivate communally.

### *Women-Managed Farms*

One consequence of the increased migration of males is the growing number of farms managed on a daily basis by women. The duration of migration can vary -- from a day or week (as in parts of East Africa where men working in the cities frequently return to their *shambas*); to several months (as in the Philippines where male off-farm migration to take up paid employment is common during the dry season); to several years (as in Botswana, Jamaica, Lesotho and Yemen). In South America, women also migrate for several months a year in search of horticultural work.

This feminization of farming is occurring even where it goes against the cultural norm. In the Maghreb countries, for example, as a steady flow of young men leave for employment in the cities or Europe, more women are working in the fields and more households are headed by women. In Pakistan, an estimated one-third to one-half of the poorest families are headed by women (Axinn 1990). With nearly 80 percent of the economically active women engaged in agriculture compared with only 63 percent of the men, farming in India has increasingly become a female activity (Prasad, quoted in Axinn 1990). The number of households managed by women on a daily basis is growing especially rapidly in Africa. Female-headed households are particularly common in the Southern African Development Coordinating Conference (SADCC) countries. It is estimated that women head over half of rural households in Zimbabwe's Communal Areas, for example, and one-third to one-half of rural households in Botswana, Kenya, Malawi, and Zambia.

Access to resources and freedom of action vary widely for women heading farm households. Available data show that in rural Africa, households headed by women are poorer than those headed by men because they tend to have fewer resident workers and more dependents. If the wife is allowed decisionmaking powers and the use of cash remittances, she has a wider range of options; if not, her farming situation can be very difficult. In many cultures, the absent husband still regards himself as the farm owner/manager and expects his wife to carry out his instructions. In highly patriarchal cultures, farm management and the investment of remittances may rest in the hands of older men residing in the village. In other systems, however, the woman has considerable autonomy in decisionmaking and effectively becomes the farm manager. When off-farm earnings are good, women may withdraw from farming and return to the more culturally acceptable role of being a "housewife".

### **Constraints Women Farmers Face: Barriers to Access**

Women farmers generally have more difficulty than men operating effectively in factor markets. As a result, they incur higher effective costs for information, technology, inputs and credit. Their productivity is thereby lowered. Explanations for this inequality relate to childbearing, time, mobility, education, and an array of sociocultural characteristics. To design extension services that effectively help women farmers, it is essential to understand the nature of the special constraints they face. These are discussed in some detail in the following pages.

## *Women's Access to Land*

In most countries, land title is in the name of the male head of the household. Many constitutions legally support gender equality and women are becoming more aware of their rights, but social customs change slowly. The de facto situation in many countries is that women do not have land tenure or title and, particularly in land-short areas, may have difficulty in obtaining access to land. In South Asia, for example, even when women are legally entitled to land, custom may keep control in the hands of male members of the family or kinship group (Chen, quoted in Axinn 1990).

Land reform or settlement/ irrigation schemes rarely result in land being allocated in equal proportions to men and women (Box 6). In China, for example, it is reported that during rural reform women were allocated both less and inferior land on a per capita basis. A new law allows daughters to inherit land, but many women marry out of the village and are thus denied their share of land after marriage. Sometimes land reform provides usage rights rather than ownership, as in the Ejido scheme in Mexico. In the Maheweli Settlement Scheme in Sri Lanka, daughters are not allowed to inherit land and so are migrating out of the settlement scheme, thereby threatening the project's long-range viability (Carloni 1987).

Whatever traditional usufruct rights may have been, under colonial regimes in many countries the legal authority to hold land title was restricted to men. In Zimbabwe, for example, it was not until independence that women's legal status as "perpetual minors" was changed, thereby enabling them to hold land title in their own right. The lack of title discourages women's participation in agricultural support services, particularly extension and credit. Land ownership as a requirement for contact farmers in some countries clearly makes women's selection unlikely. Moreover, in most countries, title to land is the required collateral for obtaining credit from formal lending institutions and sometimes also from cooperatives. Women's insecure access to land makes it harder for them to obtain the credit they may need to fully implement extension advice or to make the most productive use of their labor.

Although women rarely have title to land, they commonly have rights to its use. When population pressure on the land is high, and the landholdings relatively small, men typically migrate in search of paid employment, and women have usufructuary rights to the small-holdings. In Kenya, for example, 40 percent of holdings of less than 1 hectare (ha.) are managed by women (World Bank 1989b). And in Malawi, where population pressure on the land is particularly high, the equivalent figure is one-half, and these holdings tend to be on less fertile land (Box 7). Women's rights to use land may be threatened when alternative land use opportunities are presented (Box 8).

### **Box 6: Access to Land in Honduras**

The Agrarian Reform Law of 1974 gives male Hondurans 16 years or older the right to direct access to land independent of any other qualification. For women, however, this right is restricted to unmarried mothers or widows with dependent children. Furthermore, if a male beneficiary dies or is incapacitated, the law gives preference for inheritance rights to a male child before the child's legally married mother. About 30 percent of rural households are headed by women or have women effectively in charge due to the seasonal migration of their spouses. Since 1985, only 4 percent of the direct beneficiaries of Agrarian Reform have been women.

*Source:* Política Nacional Para la Mujer, April 1989, quoted in Alberti 1990.

**Box 7: Malawi: Vicious Cycle of Smallholder Agriculture**

In Malawi 50 percent of farmsteads smaller than 1 ha. are headed by women. Some 83 percent of the smallholders consume all their own maize supplies before the new maize is ready for harvest. The shortage of food results in calorie deficits precisely when energy demands are highest - at the beginning of the rigorous planting season. These smallholders frequently sell their own labor to buy food. Children often fall ill from malaria and food shortages at this time, causing additional burdens. Because these smallholders sell their labor and have less time to allocate to their own farms, early maize weeding is delayed, significantly reducing yields. The cycle of maize shortage then repeats itself the next season. Unfortunately, the number of smallholders caught in this cycle is increasing with population growth and limited off-farm employment opportunities.

*Source:* Carr, private communication, 1989

**Box 8: Côte d'Ivoire: The Effect of Expanding Cultivation of Cocoa and Coffee**

As a result of the expansion of cocoa and coffee cultivation, land in the better-quality forest zone, previously planted with food crops, is now planted with coffee and cocoa. Thus, the conditions under which food crops were grown changed: (1) they were grown on poorer quality land further away from the village; (2) because coffee and cocoa are permanent crops, the possibilities for crop rotation were reduced; (3) the food crops grown were those which could be interplanted with coffee and cocoa; and (4) food crops were those that did not need care during peak coffee and cocoa operations. A reduced range of food crops was suitable for these new conditions, and there is evidence that at certain times of the year farm families had insufficient food. The seasonality of income from cocoa and coffee resulted in financial bottlenecks at certain times of the year. During such times, women were obliged to sell part of their food crop production, even though total food crop production was insufficient for two-thirds of the families surveyed. Food crops had to be bought later at higher prices.

*Source:* Kranz and Fiege 1984.

Often the land women are allocated consists of smaller, fragmented plots -- and extension agents may be reluctant to work with such scattered plots. Women's labor productivity is reduced and their time management problems are magnified when their holdings are geographically dispersed; they need more time to commute between plots and must transport tools, inputs, and harvested produce further. Child care is particularly difficult when fields are far apart; women must decide whether to take their children or make other child care arrangements. As a result, women have insufficient time to carry out recommended extension practices in distant fields. Diseconomies of scale not only reduce women's yields but cause extension agents to dismiss women as non-adopters.

Worldwide, households headed by women tend to have too little land. In Bangladesh, for example, many female heads of households are either landless or have small, marginal holdings. Fragmented holdings are a problem for both men and women in parts of Central America. In Guatemala and El Salvador, for example, many farms managed by women are less than a half hectare. And in Botswana, female-headed farm households tend to work fewer acres of land, have less farm equipment, and own fewer cattle and small stock than those headed by men (Kossoudji and Mueller 1981). In a recent Nigerian survey, women heading households farm only a third of the area farmed by households headed by men (0.8 ha. compared with 2.4 ha.) (Saito and others, forthcoming).

For any farmer, the lack of title or secure tenure, and access only to small (possibly dispersed or remote) plots are strong disincentives to adopting new agricultural techniques or investing in the land.

## *Lack of Technology Suitable for Women Farmers*

Technologies appropriate for the activities, farming objectives, and production conditions of women farmers are in short supply (see Box 9). In Indonesia, for example, after two decades of research concentrating on rice and paying scant attention to the "home garden," extension messages were of little interest to women.

### **Box 9: Agricultural Research and Women Farmers**

Current agricultural research tends to:

- Ignore crops and livestock, mostly women's, that do not appear in statistics.
- Ignore women's activities -- particularly postharvest activities.
- Develop technologies that use of high levels of inputs under optimum growing conditions.
- Present technologies as packages of interdependent elements (e.g., varieties, fertilizers, timely planting, clean weeding, and control of pests and diseases), the benefits from which depend on adopting the whole package. The all-or-nothing packages do not allow farmers to adopt new technologies partially and in steps as may suit their resource base, objectives, and risk-taking capabilities. Women farmers in particular may not be able to carry out all the recommended practices.
- Use a single-crop approach, ignoring the integrated, holistic nature of women's farming and the many benefits of mixed cropping (food security, risk aversion, environmental health, and efficient use of resources)
- By focusing on maximum productivity, ignore other objectives and desired characteristics (such as seasonal food sources, multiple use of crops, and processing and storage characteristics). In particular it overlooks the requirements of women farmers.
- Solve technical problems without consideration for the social consequences.

The inadequate supply of suitable labor and energy-saving farm and household technologies for women's activities impairs women's productivity (Box 10). It saps the energy and time they might otherwise have for participating in extension and other development programs. Everywhere, women are responsible for food preparation and cooking. In parts of Africa and Asia, several additional hours each day are needed to collect fuel and water (see Boxes 2 and 4). Only after completing these tasks do the women have time for farming, agribusiness activities, or extension programs. Not surprisingly, when asked how projects can best help them, women farmers commonly ask for labor-saving technology for processing agricultural produce.

### **Box 10: The Gambia: Women's Technology and Productivity**

In parts of The Gambia, women's labor productivity in individual farming has been estimated to be consistently 70 percent below men's. This is partly because women tend to grow crops with technologies that result in lower net returns on their labor time. But women also average lower labor productivity than men for the same crop and broad technology groupings. These differences are explained partially by women's limited access to labor-saving implements and their time constraints which usually result in women cultivating smaller parcels of land, with diseconomies of scale.

*Source:* Von Braun and Webb 1987.

Sometimes, the problem is not a lack of technology but impediments to its use by women. In Zambia, for example, weeding -- a major women's task -- can be performed six times faster with animal traction, doubling or tripling the rate of return (Allen 1984). For resource-poor women, the barrier of cost is compounded by the obstacle of cultural traditions that discourage women's use of animal traction (Box 11). However, despite the initial doubts of their husbands and the male extension specialists on animal traction, women in a pilot scheme in The Gambia were successfully taught to use draft animals on their irrigated rice fields. Women's access to both animal traction and fertilizer, according to that research, is more limited and costly than men's (GARD 1988).

**Box 11: Constraints to Women's Use of Animal Traction**

- In many societies, the idea of women using animal traction is not culturally acceptable and the technologies may not be acceptable to the women themselves.
- Women often don't own traction animals and have no decisionmaking power over their use.
- Where the use of animals is a male privilege, the introduction of animal traction may cause women to lose existing sources of revenue.
- Animal traction for plowing usually increases cultivated areas in the short term, thus increasing the amount of weeding and harvesting -- often women's tasks. In the medium term, however, introducing animal-drawn weeding implements speeds up the operation and it then typically becomes a man's task. Women tend to do the relatively small amount of manual intra-row weeding.
- Community ownership of mills or presses raises the problem of deciding whether everyone should bring their own animal (husbands may not want their animals used) or whether the animals should be communally owned (with all the problems that entails).

*Source:* After Nelson-Fyle and Sandhu 1990.

In times of change, new knowledge and technologies are required. In China, for example, with the decline of collectives as the unit of production, individual peasant households are becoming involved in production, processing, and marketing, and are thus increasingly complex and autonomous economic units. Farmers -- including women -- need new skills in production, resource management, and marketing to help them cope with the change.

*Poor Access to Extension Services*

Worldwide, extension systems reach more men than women farmers. There is a general consensus, for example, that the extension system fails to reach women farmers in India (IBRD 1988; Mahapatra 1987; World Bank 1991c). Most states in India do not include women farmers among contact farmers -- even though 48 percent of India's self-employed cultivators in 1983 were women. The same reasons are given for why extension services do not reach women farmers in Indonesia, the Philippines, and most other countries: most extension agents and the 'lead farmers' they target are men. Male extension agents are generally unaware of the need to communicate differently with women and view rural women as farmers' wives, not farmers in their own right. Women's shyness around men, their

relative lack of access to factors of production, and their consequent difficulty adopting new technologies reinforce this misconception. So, male agents tend not to communicate with women farmers.

Extension messages and the timing and channels of communication are targeted to men. In 11 major rural development projects in Nepal, most new methods and machinery were made available only to men. Even the gender-sensitive Aga Khan Rural Support Program (AKRSP) trained Pakistani men in what are traditionally women's tasks of drying and processing fruit (Axinn 1990). In an extension project for indigenous people in Southern Chile, male extension agents talked only to the husbands. Fortunately, a social worker noted that after the Extension Agent's (EA) departure, husbands would discuss the advice with their wives, so the focus of the project was changed.

On the South Asian subcontinent, training programs for women farmers have been described as being unrelated to women's actual needs because they concentrate on the domestic rather than farming base; are timed for the season when women cannot be away from the farm; and last longer than reproductive and farming duties permit (babies and cows need daily feeding). Consequently, most training goes to women who are on the margin of agricultural production (young, unmarried, older, or elite). Attempts in India to select contact farmers who are representative of the population have not been successful, because those chosen tended to be members of prominent families and often had limited contact with active women farmers (Mahapatra 1987).

#### *Intra-household Transfer of Agricultural Knowledge*

Development planners have assumed that information given to male farmers will be passed along to other farming members of the household. This does not often happen. Experience indicates that agricultural knowledge acquired by men, unless they themselves will benefit, often does not "trickle across" effectively to women in the family (Box 12). Especially in a polygamous household, men are usually not expected to share information and it would be considered improper for a wife -- especially a junior wife -- to ask her husband what he learned from the extension agent that day.

#### **Box 12: Do Women Farmers Learn from their Husbands?**

When women farmers in Burkina Faso were surveyed about their technical knowledge and awareness of the extension service, 40 percent had some knowledge of modern crop and livestock production technologies. Relatives and neighbors were the source of information for most of these women; nearly one-third had learnt from the extension service; and only 1 percent had heard of the technologies from their husbands.

*Source:* Ministère de l'Agriculture et de l'Élevage, Burkina Faso, 1990.

Men are less likely to pass information along to women when crops or tasks are gender-specific. In Malawi, for example, wives of men in agricultural extension groups said their husbands rarely passed advice on to them. If they did, the women had difficulty understanding the secondhand advice or did not find it relevant to their needs (Evans 1989). Even when men are willing to share information with their wives, they may simply not be familiar enough with an agricultural operation or crop to share the information effectively. Mahapatra (1987), in India, found that women learned of the extension messages -- "some in a clear way and others not so clear" -- through indirect channels of communication such as husbands, neighbors and other villagers. However, this indirect effect of the extension system on women did not significantly change production. The challenge to any extension service is how best to communicate with the prime actors in the agricultural activity. Strategies and tactics to improve the transmission of technologies to women farmers are discussed in Chapter 4.

## *Women's Access to Financial Services*

Farmers require financial services for a variety of reasons. Sometimes they need seasonal credit to purchase agricultural inputs or to hire farm labor, or longer-term credit to buy capital equipment. More than half the women interviewed in the Kenya's Meru and Muranga areas, for example, cited cash shortage as an impediment to their use of improved seed, fertilizer and other inputs (World Bank 1989a). Moreover, farmers unable to afford recommended inputs will have less interest in extension and fewer contacts with agents. Savings can substitute for credit. Savings also provide a buffer against crop failures and a cushion ("insurance") against such agricultural risks as droughts and floods, which may contribute to farmers' ability to make more efficient investments (Binswanger and Rosenzweig 1986).<sup>3/</sup>

Although women may demand financial services, they have little access to formal credit or deposit facilities. Data from commercial banks in Andhra Pradesh India, for example, showed loan disbursements for women ranging from 6 to 12 percent -- but were zero for agricultural loans (World Bank 1991c). In Bangladesh, data gathered from 800 randomly selected households found only 2.8 percent of the borrowers of formal credit to be women (Hossain and Afsar 1989). These trends are not limited to South Asia. Similar statistics are reported from studies of women smallholders in The Gambia (Shipton 1986) and Kenya (World Bank 1989a).

Factors of both supply and demand limit the access of small-scale farmers, especially women, to formal financial services (Holt and Ribe 1991). On the supply side are the high transaction costs of administering small loans or collecting small deposits from a highly dispersed and possibly illiterate clientele<sup>4/</sup>; the high covariate risks associated with agricultural lending; and women's greater likelihood of lacking collateral or formal credit histories, which makes banks view them as riskier clients. In addition, interest rate ceilings imposed to make credit more accessible to the poor, have instead made it less so -- rationed credit, like other goods, has gone to those with wealth and influence, not to poor women (Von Pischke, Adams, and Donald 1983).

On the demand side, women smallholders' access to formal financial services has been constrained by:

- *Collateral requirements:* property and other assets that satisfy collateral requirements are usually in a man's name.
- *Transaction costs:* borrower's costs, such as paperwork expenses and time lost travelling and waiting, typically greatly exceed nominal interest payments (Adams and Graham 1984; Christen 1989). Moreover, the opportunity costs of forgone labor are especially high for women, because of their multiple work obligations in the household and marketplace.

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<sup>3/</sup> The Binswanger and Rosenzweig study, "Are Small Farmers Too Small to be Efficient?", has found evidence that small farmers may not be able to adopt profit-maximizing portfolios because they are less able to diffuse risks. They found that the risk-averse production strategies smaller farmers use can be less efficient and profitable than wealthier farmers' relatively risky investments.

<sup>4/</sup> The transaction costs of lending to small-scale farmers in the Philippines were found to be approximately three times the costs of lending to medium-to-large industry (Saito and Villanueva 1981).

- *Limited education and familiarity with banking procedures:* Rural women's low levels of literacy and numeracy make it difficult for them to overcome the procedural barriers of taking out a loan.
- *Social and cultural barriers:* Cultural traditions that restrict a woman's ability to travel alone inhibit her access to financial services, particularly in rural areas because branch locations are distant and public transportation often non-existent. More important, women are commonly excluded from agricultural cooperatives and social groups that provide credit or information on sources of finance (Lycette and White 1989).
- *The nature of women's agricultural activities:* Although women are increasingly involved in commercial crop production, many of the poorest produce primarily low-return, subsistence food crops. They may have difficulty generating cash to repay loans and may be reluctant to risk borrowing to buy improved inputs. Women may want seed money for income-generating activities, but loans are frequently tied to specific crops or livestock, and to the growing cycle.

Because women smallholders lack access to formal credit they tend to rely on informal sources and increasingly on quasi-formal programs. Informal schemes -- including rotating savings and credit associations (RoSCAs), merchants, moneylenders and collectors, and friends and relatives -- are the most common sources of finance for small-scale women farmers. RoSCAs -- which are found worldwide under different names, such as *tontines* or *esusus* in Africa and *arisan* in Indonesia -- are especially popular with poor women and demonstrate their propensity to save (Geertz 1962; March and Taqqu 1986). Most forms of informal finance, however, have limitations. They tend to be segmented from larger markets, which curtails lenders' access to funds and can reduce competition. They also have only a limited ability to provide term finance. It has been argued that as long as women must depend on informal markets, they will remain outside of the economic mainstream (Berger 1989).

More formal systems can benefit from the lessons of the informal financial schemes and attempts can be made to replicate those characteristics of the informal system that appeal to smallholders. These include low transaction costs for borrowers (and lenders) because borrowers live near the lender or are involved in multiple transactions (such as buying inputs or marketing output) with the lender; the immediate disbursement of loans in small amounts; and flexible repayment schedules. Moreover, informal credit markets charge interest rates that cover their operating costs, thus demonstrating that smallholders can pay market interest rates and undermining the rationale for subsidized formal sector credit.

To overcome the limits of formal and informal finance, governments, donors, and NGOs have developed innovative financial institutions to meet the savings and credit needs of poor people. These quasi-formal alternatives include specialized institutions within banks (such as the Unit Desa Program of the Bank Rakyat Indonesia and the National Agricultural Credit Bank of Morocco); intermediaries that retail credit to poor women from commercial banks (such as Women's World Banking); separate poverty-oriented banks (such as the Grameen Bank in Bangladesh, and SEWA Rural in India); and local saving and credit associations (such as village banking initiatives and more formal credit unions). These programs have provided financial services to rural women by:

- *Reducing transactions costs* for lenders and borrowers by introducing joint-liability group lending schemes, or village post-distribution systems or mobile banks that extend to rural areas.
- *Charging commercial interest rates.*

- *Targeting poor women* by offering small loans that do not appeal to men or by explicitly acknowledging that women will be significant share of the clients.
- *Establishing deposit facilities.*
- *Developing skills and institutions* (Holt and Ribe 1991). Women smallholders who have never used a bank or filled out a loan application must be taught how to do so. Similarly, institutions that have not previously worked with small farmers must develop systems that serve this clientele.

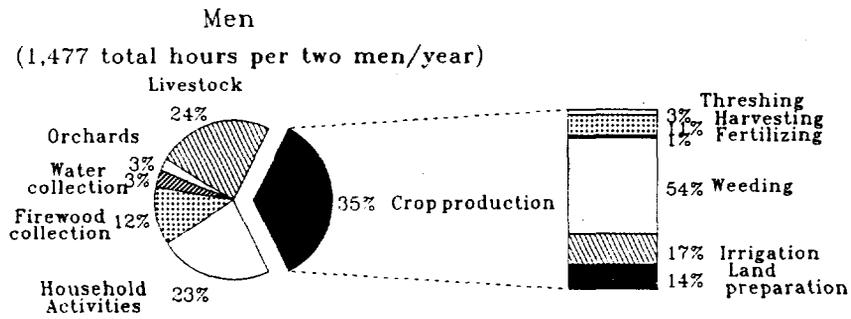
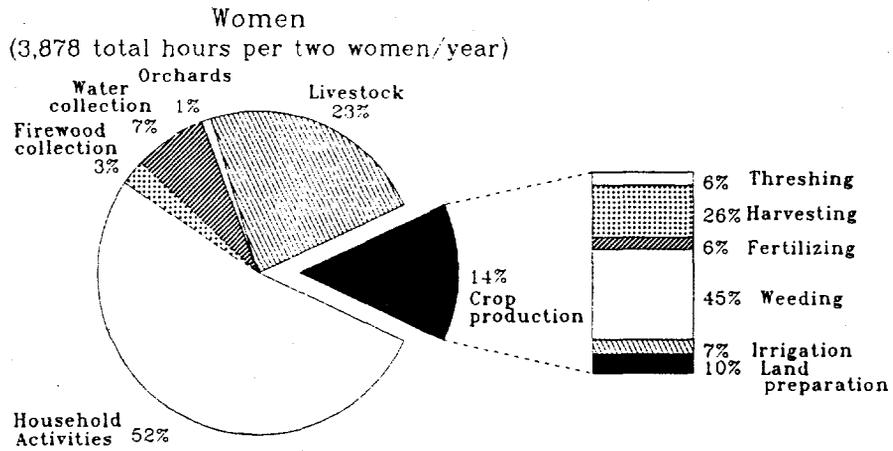
Although innovative financial programs have shown some promise, questions remain about their long-term financial viability. Many of these programs have failed or fallen short of expectations but some have reached the poor, including poor women farmers, without compromising the programs' financial discipline or institutional viability. The more successful programs (such as the Grameen Bank, SEWA in India, and Badan Kredit Kecamatan in Indonesia) primarily or exclusively serve women and have achieved repayment rates exceeding 95 percent. Only one program -- the Unit Desa program in Indonesia -- has become financially sustainable however. Its profits exceeded \$20 million in 1989, at which time it was serving 1.4 million borrowers and 6.7 million savers. Lessons learned from this experience may help other financial intermediaries meet low-income rural women's demand for agricultural credit.

#### *Lack of Mobility and Time*

Because of childbearing and inflexible domestic responsibilities, such as child care and food preparation, women are less mobile and have less uncommitted time than men. Gender differences in time use can be substantial (see Figures 2.1 and 2.2). In Africa, women spend considerable time and energy providing the family with food, fuel and water (Boxes 2 and 13). In Asia, livestock-rearing adds to their burden (Figure 2.2 and Box 4). In the Northern Highlands of Yemen, women work 12 to 18-hour days all year round, spending 4 to 7 hours collecting livestock fodder for the daily production of 2 pints of milk. Few studies of women's time allocation in Latin America have been published, but ethnographic studies describe rural women's traditional work as agriculturally related and entailing "onerous, repetitive tasks that occupy most of their waking hours" (Ashby 1985). Around the world, rural women work extremely long hours. They rarely have access to transport or to labor-saving technologies. As a result, women have little time to participate in regular extension programs and their ability to respond to productivity-raising opportunities is hindered.

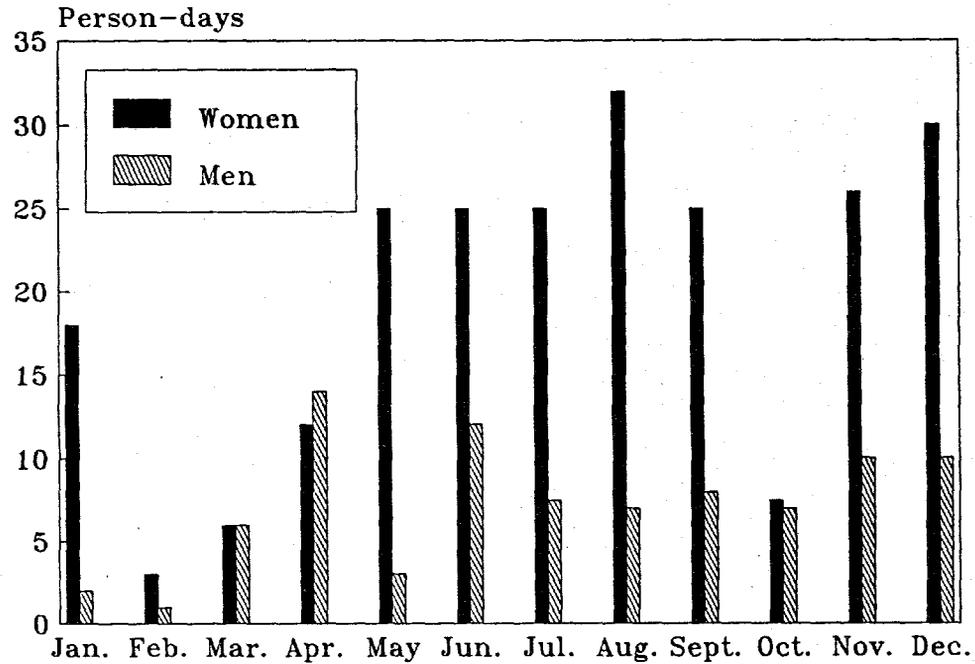
Project design must reflect awareness of women's lack of time and energy, and of the sometimes inflexible division of labor by gender and by age. The available labor of different household members is often not fungible; and, consequently, the total available labor in the household may not be a good measure of the labor actually available. Project design must also allow for the fact that women are less mobile than men because they have less time and less cash for transportation; are less likely to own transport, and may be restricted by sociocultural and religious barriers. Women farmers are far less able than men to attend training courses outside their villages (Box 14).

Figure 2.1: Household Labor Distribution for Household Activities and Crop Production in Gilgit District, Pakistan, 1988



Source: Khan 1989 in World Bank 1990a.

Figure 2.2: Gender-disaggregated Agriculture Labor Profiles for a 2.5 ha. Farm in Central Nigeria



Source: Adapted from Burfisher and Horenstein, 1985, pp. 25-26.

### Box 13: Women's Time Use

Studies of time use in rural Africa indicate women are likely to have fewer leisure hours than men. Researchers in Burkina Faso reported that men averaged twice as much time resting and relaxing each day as women (McSweeney 1979). The same study reported that women contributed almost as much time per day to food and cash crop production as men. Women did virtually all winnowing, threshing, food processing, and fetching of water. Men spent more time on community obligations, crafts and other professions, and listening to the radio or reading. A 1987 time allocation study in one Gambian village reported that women performed 53 percent of agricultural and 73 percent of domestic work compared with 33 percent and 6 percent, respectively, for men. Women were responsible for 58 percent of the total village time allocated to productive activities compared with 25 percent for men and 17 percent for children (Bastone 1987). In Bandundu, a principal agricultural region of Zaire where cassava is the main crop and women are the dominant farmers, women spend one-third of the day processing and preparing food (Eele and Newton 1985). Available data in Kenya indicate women spend one-third of working hours on food preparation and child care, which stretches their working day to 13-14 hours. Most of them spend 3 hours a day fetching water. (World Bank 1989a)

**Box 14: Zambia, Women Farmers' Access to Training**

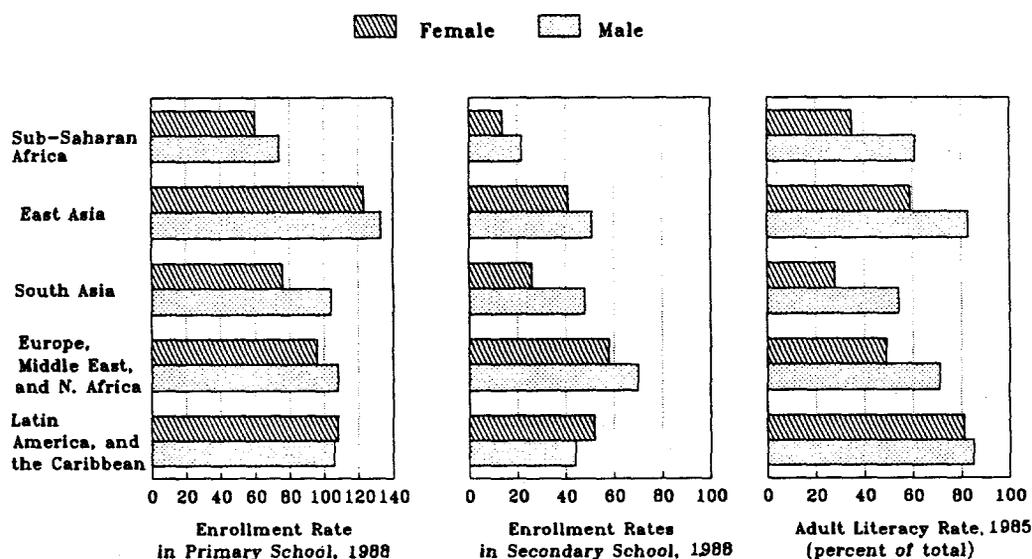
A study in Northern, Central, and Southern Provinces in Zambia reports that only 5 percent of the women in those provinces had attended farmer training courses. In the Eastern Province, only 15 percent of those attending were women. The aim was to raise women's participation to 25 percent; the main constraint was transportation. In the Samfya District, where 41 percent of the farm households are headed by women, no women attended the courses offered at the residential Samfya Farmers Training Centre throughout 1983. One of the main reasons was that women farmers who were heads of households were unable to take several weeks off from their village to attend classes. (Gaobepe and Mwenda 1980, and IRDP Annual Report 1982, cited in Safilios-Rothschild 1985)

*Lack of Education*

Women have substantially lower literacy rates and lower school enrollment rates than men in all regions of the developing world except Latin America and the Caribbean (Figure 2.3). Illiteracy is higher among the rural population than the urban, and evidence from South Asia indicates higher illiteracy among the lower castes or classes. Illiteracy rates vary widely among countries. On the Indian subcontinent, for example, the rural female literacy in Sri Lanka is a high 79 percent; in Pakistan it is only 7 percent. In most of Sub-Saharan Africa, the adult male literacy rate is almost twice that of females and boys are almost twice as likely as girls to be enrolled in secondary school. Gender-based educational discrepancies tend to be greater in countries where incomes are lower. In a study of extension for women in five African countries, FAO reported that most rural women were illiterate (Gill 1987). In the Maghreb, literacy rates are low for both men and women and little attention has been given to the education of women, who represent more than half the rural labor force. But the country's extensive radio and TV infrastructure could be used for educational purposes as there is a high rate of radio ownership in the rural population.

2.32 Economic and social factors often discourage women's education -- as demonstrated in *Letting Girls Learn* (World Bank 1991d). In China, the low level of girls' education reflects both the practice of removing girls from school to earn income or provide domestic labor and child care and the perception that the benefits from investing in a girl's education accrue to the family she marries into rather than to her natal family. So many Chinese girls lack the necessary qualifications for further training. By contrast, in South America, except for countries with large rural indigenous populations (such as Bolivia, Peru, and Guatemala), enrollment ratios in primary, secondary, and even tertiary education are as high or higher for women than men (UNESCO 1990). But the content of female education is narrow and traditional, concentrating on such subjects as home economics and child rearing. The South American Indians' prejudice against educating girls and learning nonvernacular languages is compounded by Spanish-only literacy programs and the concentration of secondary schools in urban areas (Mickelwait, Riegelman, and Sweet 1976).

**Figure 2.3 Enrollment Rates and Adult Literacy in Low and Middle-income Countries, by Region and Gender**



Note: Enrollment is expressed as ratio of numbers of pupils in school to population in standard age range. Exceeds 100 percent when some pupils are younger or older than standard age range.

Source: World Bank 1991b.

Women's access to agricultural extension and their ability to understand and use technical information are compromised by this lack of basic education. Studies supported by the World Bank have demonstrated the critical link between farmers' efficiency and education (Jamison and Lau 1982). The impact of education on production efficiency is particularly strong when extension agents are conveying modern, rather than traditional agricultural techniques (Box 15). In the long term, increasing school enrollment for girls will boost the productivity of female farmers. But effective extension services can also help narrow the productivity differential between more and less educated farmers, as a number of studies (including Schultz 1988) show.

**Box 15: Education and Farm Productivity**

Jamison and Lau (1982) examined 18 studies conducted in developing countries involving 37 sets of farm data. Controlling for other variables, they estimated the effect of education on farmers' production efficiency. They concluded that farm productivity increased on average 8.7 percent if a farmer had completed four years of elementary school. The effects of education were much more likely to be positive in "modernizing agricultural environments" than in traditional ones. This supports Schultz's earlier findings (1964, 1965). One of the few studies to compare the efficiency of male and female farmers concluded that both male and female farmers in the Vihiga Division of Western Kenya achieved higher maize yields when they had four or more years of education (Mooch 1973).

Women's relative illiteracy makes them less able than men to respond to written extension materials, but it need not hinder their learning new skills. NGOs in South Asia, for example, have demonstrated that illiteracy and low educational levels are not necessarily barriers to learning technical skills. Women have learned to give poultry vaccinations, run power tillers and rent out their tilling service, maintain irrigation pumps and sell water to cultivators, and provide carpentry services for the agricultural community. In Andhra Pradesh dairy cooperatives, illiterate poor women with few assets other than one or two milk cows or buffalo are competently carrying out artificial insemination, fat testing, and record keeping (Axinn 1990). When the ability to read and write is a criterion for selecting contact farmers, women tend to be excluded from extension activities. This requirement must be changed.

### *Lack of Incentives*

Even when women have access to adequate land, credit, extension activities, and inputs, they may have inadequate incentives to respond. Often, for example, prices for the food crops women produce are low because of government policy to hold food prices down for the sake of urban consumers; or there is poor market infrastructure; and the women have little or no control over the products or income from their sale. People are more productive when they personally benefit from their labor, but in many cultures, women do not have control over returns from their activities (see Box 16).

#### **Box 16: Incentives Improve Productivity in Guatemala and Kenya**

The results of an AID (Agency for International Development) agribusiness project in Guatemala illustrate the impact of appropriate incentives on women's productivity. Three poor Indian villages with very different incentive systems responded quite differently to the introduction of contract vegetable growing. In the village where women did not help in the fields, the project did poorly for lack of labor. In the village where women's work in the field conflicted with their independent incomes as market vendors and where payments were made for the vegetables grown were to husbands, project performance was better but not good. In the village where women worked in the fields and benefited directly from their own work, yields and the quality of the produce were by far the highest. (Carloni 1987).

In a study measuring the effectiveness of women's weeding in Kenya, researchers found that weeding increased yields 15 percent in households headed by men when women did not benefit directly from their work. By contrast, in households headed by women when women benefited directly, the same weeding regime increased yields by 56 percent, which was equivalent to the effect of applying fertilizers. (Ongaro 1988, cited in Collier 1990)

### Chapter 3: GENERATING APPROPRIATE TECHNOLOGY FOR WOMEN FARMERS

An extension system is only as effective as the technology it offers. The objective of classical top-down, commodity-based research systems is to maximize productivity per unit area of "major" crops and livestock. The technologies produced rely on high-yielding varieties grown in pure stands; high levels of inputs, including mechanization and irrigation; and optimum growing conditions. Extension messages are technical packages of interdependent elements, such as varieties, fertilizers, timeliness of planting, clean weeding, and control of pests and diseases. A farmer must adopt the total package to enjoy its benefits.

Classical research can greatly increase productivity in a short time for those farmers able to adopt the technologies it produces -- but adoption is not easy for resource-poor farmers, including women. Adopting technologies, partially, or in steps, is easier for their resource base, objectives, and risk-taking capabilities. Moreover, the promotion of a single-crop approach, which is typical in extension, ignores the integrated and holistic nature of women's farming and the many benefits of mixed cropping, such as better household food security, risk reduction and environmental benefits. Mechanization and the irrigation technologies are often developed and promoted with no consideration of the social consequences of introducing them.

Research has often failed to produce technologies that would improve the farming operations typically done by women. The assumption seems to be that farming women have the same options and constraints as men; too little priority is given to understanding the objectives of and constraints on women farmers and the range and content of their agricultural activities. Researchers tend to ignore crops and livestock that do not appear in official statistics but are often grown or kept by women. In addition, researchers have ignored such women's activities as postharvest operations and also the characteristics women seek in their products such as multiple uses, ease of processing and storage, and seasonal availability. It is important that researchers identify and understand the role women play in farming systems and find ways to generate technologies women farmers can use.

#### Gender Analysis

##### *What is Gender Analysis?*

Understanding men's and women's roles in the farming system requires analyzing information about their:

- *Activities:* who carries out which agricultural tasks and how rigid is the division of labor?
- *Resources and constraints:* who has access to and control of resources, including such human capital resources as education, knowledge, time, mobility and energy? What are the implications for those with limited access or control? How do constraints under which men and women operate differ? (Table 3.1).
- *Benefits:* who benefits from the production or controls the income -- that is, what are the incentives and who receives them? (Table 3.2). (after Feldstein, Flora, and Poats 1989)

Examples of gender analysis tables are given in Annex 3.

Two obvious but important points are worth stating: (1) The results of gender analysis should be used at all stages of the project cycle including discussions with government officials. Gender analysis itself is no guarantee that project objectives will be attained; the information must be used to design appropriate projects and interventions. Carloni (1987) notes that "projects that did the best job of analysis rarely made appropriate adaptations to overcome barriers to women's participation or to increase the benefit to women." Box 17 illustrates the effect on project design of no gender analysis. (2) Women farmers themselves should provide the answers to questions about women farmers. Men tend to understate their wives' roles and may be unable to describe accurately tasks in which they do not directly participate. Moreover, responses should be verified by direct observation as women sometimes downplay their own agricultural roles (Box 18). Keen observation and talking with village women is preferable to expensive and complicated surveys that may be neither analyzed nor used. Enumerators require special training in the nuances of collecting data on women farmers. Indeed, it may be necessary to use female enumerators and possibly enumerators of the same caste or class. Methods of collecting data are described below.

**Box 17: What Happens Without Gender Analysis**

Managers of the USAID-funded Northeast Thailand Rainfed Agricultural Development Project assumed that men were the principal farmers and trained them to carry out field trials. In reality, many men had outside sources of income and were often away from the farm. Because the wives of "specialist" farmers received no training, crops were planted incorrectly and did not grow, power tillers provided by the project could not be used, and a nitrogen-fixing crop intended to fertilize rice did not get planted. Even when the husband was present, he incorrectly transmitted advice on crop production to his wife.

Source: Carloni 1987.

**Box 18: Columbia: Participant Observation Methodology Reveals Bias in Diagnostic Interviews**

Observers who spend a few hours a week helping out in the kitchen alongside wives found that women participated more in farming than diagnostic interviews with men had indicated. Wives spent much of their day cooking meals for the farm laborers (which was important for attracting workers and increasing the length of the working day). Women cultivated homestead plots for foods in daily demand. And although women seldom directly managed inputs or outputs of crop production, they influenced production decisions by managing consumption, by expressing interest, and by discussing high yielding or profitable crops.

Source: Ashby 1985.

**Data Collection for Gender Analysis**

Data collection methods that have been effective in planning services for female farmers, include farming systems research, such anthropological techniques as unstructured surveys, and direct observation by social and biological scientists. It is unnecessary to use all of these methods. Rather, the minimum data needs on female farmers should be identified and methodologies chosen accordingly. Matrix 2 summarizes the benefits and approaches of several methods of data collection.

**Table 3.1: Analysis of Resources (Access and Control) for Farm Production**  
(Example from two rice-producing villages in the Philippines)

Resource	Who has access	Who has control	Notes and implications
Land			
Irrigated site		MA > FA	NIA controls irrigation
Rainfed site		MA > FA	Control actually in hands of landlord (both sites)
Livestock			
Water buffalo		MA > FA	
Cattle		MA > FA	
Swine		FA	
Poultry		FA	
Cash		FA > MA	
Labor			
Family	MA, FA		
Exchange	MA, FA?		
Hired		FA > MA	
Own	MA, FA	MA, FA	
Tractor	?	?	?
Credit			
Formal	MA > FA	Requires collateral linked to rice	
Informal	FA, MA	Expensive	
Inputs			
Seeds		FA	
Pesticides		FA, MA?	
Household			
Rice hulls		FA <sup>m</sup>	
Electricity	MA, FA		Malanay only
Glutinous rice equipment		FA	Carosucan only
Fuelwood		FA <sup>c</sup>	
Cow dung		FA <sup>c</sup>	Especially Carosucan
Training	MA > FA		
Education	MA, FA		

Key: MA is male adult; FA is female adult; > is more than; NIA is National Irrigation Administration; <sup>m</sup> is Malanay irrigated site; <sup>c</sup> is Carosucan rainfed site;

? is information limited.

Source: Paris in Feldstein and Poats 1989.

**Table 3.2: Analysis of Benefits and Incentives**  
(Examples from Carosucan, a rice-producing village in the Philippines)

Products or proposed changes	Who has access	Who has control	Uses or characteristics <sup>b/</sup>
HYV rice		MA > FA	18% <sup>b/</sup>
Glutinous rice	FA	MA, FA	9%
Processed glutinous rice		FA	13%
Mung beans, vegetables, cowpeas		FA > MA	6%
Water buffalo, cattle		MA	9% draft, fattening, investment
Swine		FA	9%
Cash from wage labor		MA, FA	1-2%
Rice by-product/bran	FA	FA > MA	Swine > cattle
Leucaena leaves		FA > MA	Swine > cattle
Remittances		FA	16-17%
Cow dung			Fuel, manure

Key: MA is male adult; FA is female adult; > is more than.

a/ Including consumption; storage for later consumption, exchange, or sale; other domestic uses; exchange; sale; reinvestment in agricultural production (e.g. manure, fodder)

b/ Percentages indicate proportionate contributions to total household income.

Source: Paris in Feldstein and Poats 1989

Several rapid yet inexpensive methods -- such as informal surveys and a two-to-three-day field visit to the project area -- can be combined to provide *rapid rural appraisal*. Site-specific information on female involvement in agriculture can be obtained by questioning local officials and extension agents, especially female agents. One useful technique that requires only a few hours is to gather groups of women farmers (preferably without the inhibiting presence of their husbands and other male authority figures) and question them about their agricultural operations and the problems they face. One-time surveys and regular extension staff meetings also provide rapid low-cost data on women who farm. Care must be exercised that rapid surveys are not too superficial. A more elaborate survey design using a larger sample and random selection allows the results to be generalized.

One important and readily available indicator of the magnitude of women's agricultural responsibilities is men's off-farm employment rates. When more men work off-farm, women become more visible, and their farming responsibilities increase, although men may retain the major decisionmaking authority.

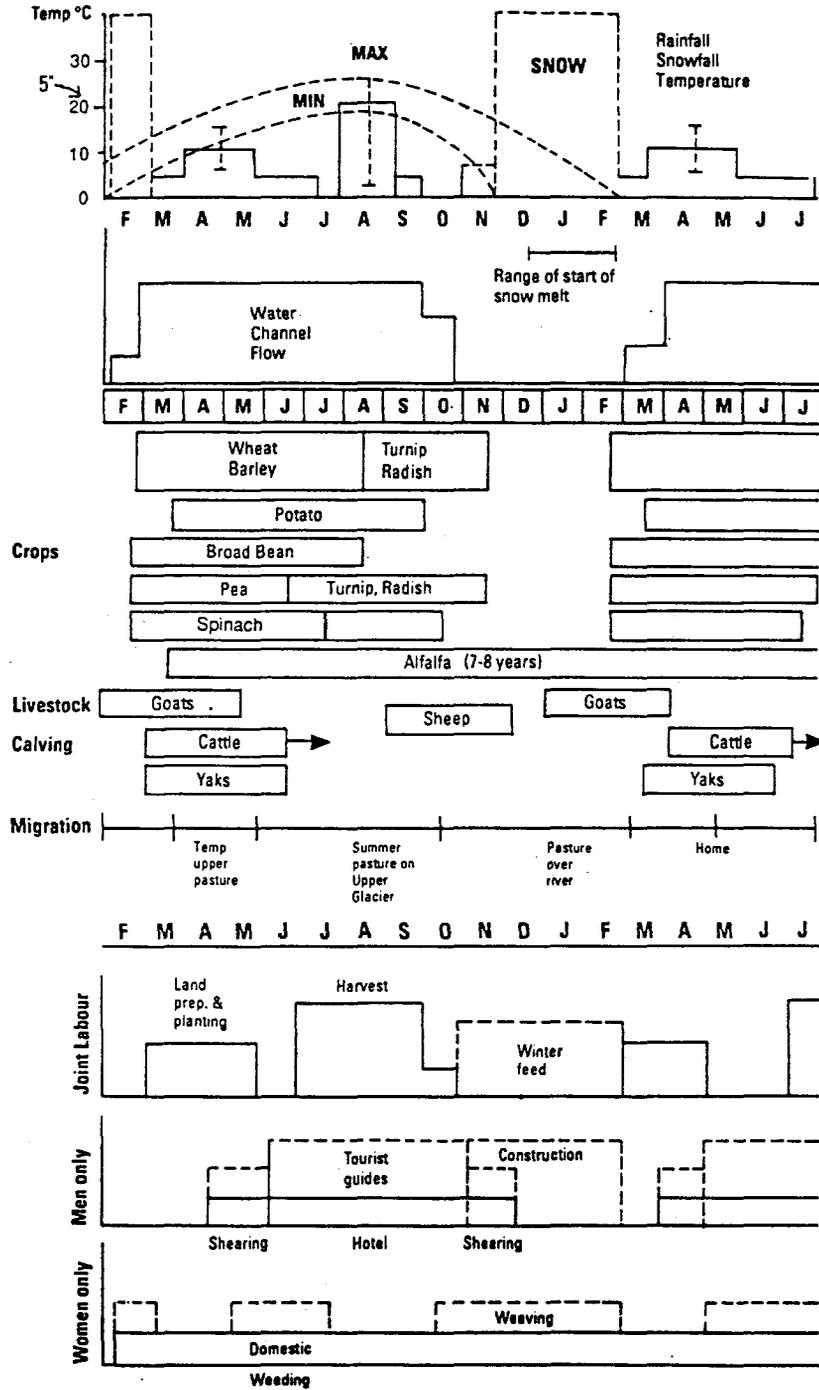
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## Matrix 2: Suggested Methods of Data Collection for Gender Analysis

<u>Methods</u>	<u>Methodology</u>	<u>Output/benefits</u>
Agricultural calendars (see Figure 3.1)	On a monthly basis, identify the person (s) (by gender, and by family position or hired) responsible for <u>inter alia</u> field operations for all enterprises, livestock rearing, agro-processing, wild products gathering, fuel and water collection, marketing, and hiring-out as labor.	Qualitative picture of activities for all enterprises and operations.
Spatial maps (see Figure 3.2)	Indicate on maps of fields or enterprises who is: responsible (R) provides labor (L) controls the resource (C) controls the benefits (B).	Visual description of the system gives a clearer picture of constraints, participants, and beneficiaries.
Seasonal labor profiles	Estimate personal days/month for each task during average farming season.	Quantitative -- useful for showing changes in farming cycle and labor allocation when new crops or techniques are introduced.
Informal surveys	Open-ended questioning of individuals.	Quick, informal, cost-effective way to describe farming practices, agricultural knowledge, and women's roles in agriculture. Danger: being too superficial.
Group and community interviews	Open-ended questioning of group representing more than one household.	Quick inexpensive overview of conditions and practices in an area.
Community portraits	For a variety of project villages.	Compare and contrast beliefs and practices across villages.
Household record-keeping	From carefully selected representative households.	Useful to determine family labor contributions, can substitute pictures of activities for use in non-literate societies.
Policy inventory techniques	List major policies affecting sector.	Overview of recent sectoral performance; assessment of impact of policy impact on women in agriculture, for example.
Household sample survey	Structured questionnaire to a sample that is representative of the population.	Time-consuming, expensive. Produces quantitative data.
Walking tour	By interdisciplinary team of scientists and farmers. Farmers take the lead and point out major features and problems.	Produces map locating main agro-ecological zones, farming systems, social groups, infrastructure; identifies main problems of community; and identifies key informants on various issues.

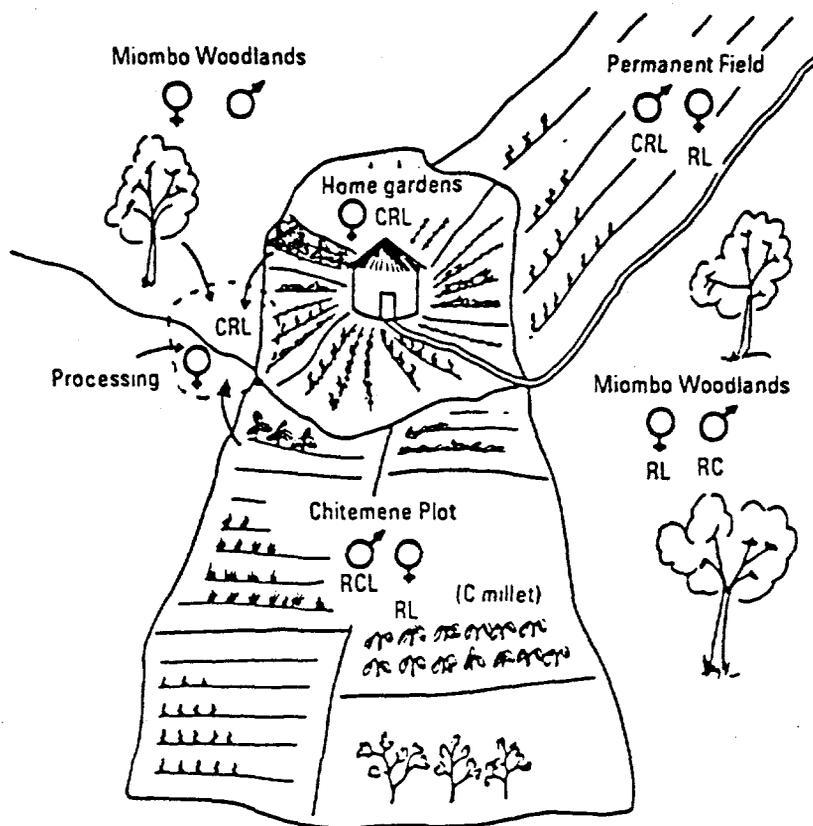
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**Figure 3.1: Seasonal Calendar for a Village in Northern Pakistan**



Source: Conway in Chambers, Pacey, and Thrupp 1989

**Figure 3.2: Spatial Map of the Chitemene System in North-East Zambia**



Source: Rocheleau 1987, quoted in Chambers, Pacey and Thrupp 1989.

C is control  
 R is responsibility  
 L is labor  
 ♂ = male  
 ♀ = female

## How to Generate Better Technologies for Women Farmers

Rural women are not a homogeneous group (Box 5), and they therefore need a range of technologies (Box 19). Understanding gender roles in agricultural production is essential for the development of a pertinent research agenda. Yet gender data are often unavailable or unused, and the link between the research/extension (R/E) system and women farmers is very weak. The agricultural technology needs of women farmers are rarely known. Governments in many developing countries are, with help from World Bank and other donors, attempting to improve research, extension, and the link between R/E and low resource farmers.

### *Reviewing and Restructuring the Current Research Program*

Ten years ago, the Consultative Group on International Agricultural Research (CGIAR) recommended that international centers include more women farmers in the technology generation process; increase the number of women from National Agricultural Research and Extension Systems (NARES) on training programs; and employ more women professionals. Reasons for variable progress on the implementation of these recommendations include a lack of contact between scientists and women farmers, the few scientists working on gender, the viewing of gender as a special project or the responsibility of national research systems (NARS), the lack of experienced social scientists, and an information gap. Remedial steps suggested were donor pressure on the centers to adopt an explicit gender perspective and incorporate gender analysis in the research agenda, the inclusion of gender issues in the regular review process, the training of NARS and CGIAR staff in the use of gender analysis, the use of networks to develop common themes and research methodologies, and the development of center-specific strategy statements on the implementation of existing recommendations (Poats 1990).

Agricultural research needs include: (a) a broader thematic scope to include processing, utilization and storage, and disciplinary scope to include the social sciences; and (b) a more collaborative approach to identifying the research agenda and generating and evaluating technology (Box 20). Socioeconomic research can also help determine the potential impact of proposed technologies: will they be adopted by women, and will they result in lost income, lost control of income, or additional demands on women's labor?

Current research programs should be reviewed from the perspective of gender to see how well they cover women's agricultural activities and address the problems identified by women farmers. Programs should, if necessary, be modified to reflect more accurately women's constraints (especially

### **Box 19: Varying Technology Needs of Rural Women in the Indian Sub-Continent**

The technology needs of rural women in the India subcontinent vary with:

- Degree of seclusion of women farmers (technologies for seed selection, agro-processing and storage, and livestock production should be appropriate for secluded women, and these plus field production technologies should be appropriate for less secluded women).
- Caste (limited access to and ownership of resources, and their labor obligations, should be reflected in technologies for caste women).
- Holding size (small marginal farms need a whole farming system approach if the family is to survive; the landless often have a small intensive vegetable plot).
- Tribe (scheduled and mountain tribes, for instance, have a particular wealth of knowledge on a range of enterprises on which to build).

Source: Axinn 1990.

time) and objectives (farming systems that are reliable and sustainable; products that taste good, are easily processed and stored; and enterprises that are multifunctional and produce usable by-products).

**Box 20: Guatemala's Team Approach to Extension and Technological Innovation**

The rural family is the basic unit that will generate rural development, so the basic unit for research and extension is an integrated extension agency team: a home economics teacher, a youth club promoter, and an agricultural extension agent. Initial training is given in farming systems research/extension (FSR/E) methodology, which places research and extension activities within the same model, overlapping and interacting with each other in a continuum. Rural families actively participate in technology testing, adaptation, and transfer activities that are conducted on their own farms. The team's work plan is based on a *sondeo* (survey), on-farm trials and farmers' tests, on-farm records of transfer plots, and information gathered during extension activities with groups of men, women and children.

Source: Ortiz and Yoc 1990.

*Changing Methods for Generating Technology*

Farmers want technologies that will improve their current farming practices. Current farming practices are the result of an "informal research" process -- individual farmers make small changes in response to circumstances and reflecting their objectives. One problem with informal research is its inability to respond rapidly to changes associated with population growth, the degradation of natural resources, and changing weather patterns. Another is the slow rate at which farmers disseminate information about improvements. Finally, farmers know only a few options and are limited in their capacity for experimentation.

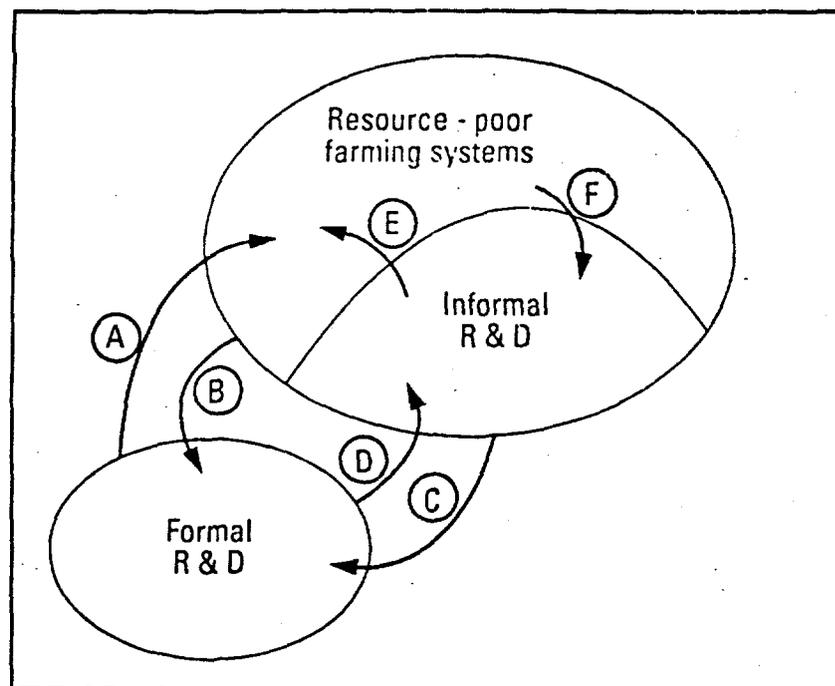
Various collaborative approaches designed to involve farmers more in the generation of technology include Farming Systems Research (FSR), adaptive research, links between research and extension, Research and Development, farmer participation, and "Farmer First." Chambers and Jiggins (1986) argue that a "farmer first" approach meets the diverse, complex needs of women farmers, relies on their knowledge of and concern about important issues, and uses their ability to identify priorities and solutions (see Box 21 and Chambers, Pacey, and Thrupp 1989 for successful examples of this approach). Figure 3.3 illustrates the links between various methods of developing technologies for resource-poor farmers.

**Box 21: "Farmer First" Approach: Women Farmers Choose Beans in Colombia**

In the Farmer Participation in Technology Assessment Project (CIAT and IFDC), scientists asked selected innovative farmers to rank beans before planning trials. One apparently unattractive small grain type was chosen when women took part in the discussions. The wives recognized the bean as a high yielding flavorful variety that had disappeared from the locality, one that proved to be profitable, and swelled on cooking. Farmers who preferred large-grained beans were entrepreneurial and either unmarried or recently married and living in the extended family. Farmers who preferred small-grained varieties headed households with children. If women farmers had not been involved in planning at an early stage, the variety and evaluation criteria preferred by them would have been omitted.

Source: Ashby 1989.

**Figure 3.3: Link Between Resource-Poor Farming Systems and Formal and Informal Kinds of Research and Development (R&D)**



- Note:**
- (1) *Classical top-down research and extension approaches* tend to stress link A, direct from formal R & D to the farming system, although in practice the link is usually more like D because farmers adapt as they adopt.
  - (2) *Farming Systems Research* places stress on link B in which practitioners of R & D learn directly from resource-poor farming systems.
  - (3) *The Farmer-First* approach aims to make informal R & D central and so stresses linkages C, D, E, and F.

*Source:* Adapted from Biggs, in Chambers, Pacey, and Thrupp 1989.

It is difficult to involve farmers in the research process. It goes against the scientists' culture to concede respect for farmers' logic and indigenous knowledge. Moreover, research needs to be demystified for both extension staff and farmers. Mutual respect must be developed, new methods learned, and an organizational framework established to involve farmers in every stage from problem identification to evaluation. Farmer participation is increasing, but only in rare instances are women farmers included (see Box 22). Different techniques may be needed to encourage women farmers to test new technologies (Box 23).

**Box 22: India: Women's Participation in FSR on their Farms**

Women farmers participating in farming systems research were asked to assign priorities to research objectives and the factors influencing their willingness to participate:

Women's priority for research objectives:

- Increase food availability.
- Improve economic return.
- Increase fodder production.
- Provide better source of cooking fuel.
- Increase resources for thatch preparation.
- Increase employment job opportunities.
- Provide opportunity to acquire skills.
- "Fit" better with established cropping patterns.

Factors influencing willingness to participate:

- Cash available for the inputs needed.
- The labor requirement of the research.
- The availability of the inputs when needed.
- Their own ability to take a risk.
- Whether they have the technical know-how (or whether it is part of the package).
- "Faith" or confidence in the technology

*Source:* Lightfoot, quoted in Axinn 1990.

**Box 23: Techniques to Encourage Women Farmers to Test a New Technology**

Individual farmers may be reluctant to test new technologies because they perceive a risk. A successful solution used in a Training and Visit project in Imo State, Nigeria, was the Small Plot Adoption Technique (SPAT). New varieties or production recommendations were tried out on 10m x 10m plots. Extension agents encouraged farmers to establish these plots in concentrated farming areas, alongside paths and at crossroads. Agents were then able to use the plots as demonstrations to many other farmers at minimal cost. The focus of more than 40,000 SPATs established has been "women's crops": cassava, rice, maize, and cowpeas. About 75 percent of the participating farmers were women.

*Source:* Okoro, 1989.

Farmers' rationale for current practices and their perception of risk and potential greatly influence whether they adopt a technology. Those factors, together with farmers' indigenous knowledge, should be the starting point for technology development. Again, gender is often a factor in whether or not indigenous knowledge is included at project design (Warren 1991). If women harvest "weeds" as vegetables, for example, they would not see a logical benefit in clean weeding -- but male farmers might. Together, researchers and women farmers should review current agricultural practices and discuss how to combine them with modern technologies. Involving the end-users in the initial stages of technology development, in identifying what technologies they need and what resources they can afford to pay for any new technology, will increase the likelihood of their accepting the technology.

## **The Gender Dimension in Selected Research Topics**

### *Crop Production and Products*

Including data from gender analysis has implications for research agendas and technologies. In general, women have a more integrated and holistic approach to crops and livestock, and time and resource use, and a more limited capacity to adopt modern technologies. The range of technology options available should be wide enough that clients can select what suits them. Technologies offered should emphasize the use of available (internal) rather than (external) purchased resources. Rather than apply fertilizers, for example, women could intercrop with legumes. They could use biological rather than chemical pest controls, minimum tillage techniques rather than tractor hiring, and an improved tool for one activity that releases time and energy to increase production in another (Box 24).

Research institutions are making some progress on crops commonly grown by women, particularly food and horticultural crops. Legumes such as cowpeas and beans, often grown by women, are of special nutritional interest because of their protein levels. Home-processed soybean products not only improve household nutrition, but also give rural women good income-earning potential. More research, however, is needed on the intensive homestead garden as an integrated production unit. With new and unknown crops, potential growers and consumers must see demonstrations of how to use the products and must taste samples to see if they will be willing to eat them, before or at the time that field production techniques are introduced.

### *Livestock Production*

Women commonly raise small ruminant animals and poultry, and often in conjunction with food production and processing. Cassava peelings and other by-products of small-scale food production, for example, combined with household wastes, are important feed for livestock. Owning a few animals can be an attractive, efficient subsidiary enterprise, complementing crop production. Animal nutrition is a major problem because of seasonal fluctuations in feed supplies and farmers' inability to purchase inputs. Alley farming and small intensive feed gardens for fodder production are promising technologies.

### *Agroforestry and Crop/Livestock Integration*

In many parts of the world, decreasing soil fertility and reduced fallow time in shifting cultivation systems are increasing the urgency of the need to promote sustainable sedentary farming systems and to integrate crops with beneficial (often leguminous) trees in the raising of livestock. Agroforestry (often known as alley farming) -- the practice of growing crops between fast-growing leguminous trees or shrubs whose roots fix nitrogen in the soil -- could greatly benefit women farmers. Depending on how the plants are managed, the prunings can be used as a nutritious source of animal fodder or as a mulch to reduce erosion, and to improve soil fertility by releasing nitrogen and potassium throughout the cropping season. The pruned branches provide fuelwood, stakes, and building materials. The primary benefit of alley farming is that the naturally released fertilizer allows women to extend the cropping period before they must revert to fallow. This is important where land is scarce, where usufruct rights end once the land goes into fallow, and where labor for clearing land is scarce.

## Box 24: Research Agenda for Women Farmers

<i>Constraints</i>	<i>Examples of Research Solutions</i>
<p>1. <u>Land</u></p> <ul style="list-style-type: none"><li>• Limited land</li><li>• Problems with soil fertility</li></ul>	<ul style="list-style-type: none"><li>• Multiple and relay cropping.</li><li>• Intensified cropping using fertilizer.</li><li>• Higher value enterprises requiring little land, such as poultry or rabbits.</li><li>• Value added through processing.</li><li>• Terracing and mulching.</li><li>• Alley cropping.</li><li>• Mixed farming, mixed crop/livestock systems using small ruminants.</li><li>• Fertilizers.</li><li>• Soil conservation.</li><li>• Using household refuse to make compost.</li></ul>
<p>2. <u>Credit</u></p>	<ul style="list-style-type: none"><li>• Low-input technology requiring management rather than purchased inputs.</li><li>• Inputs in smaller packages.</li><li>• Credit to women's groups.</li></ul>
<p>3. <u>Labor</u></p> <ul style="list-style-type: none"><li>• Availability and seasonal variations</li><li>• Physical strengths and weaknesses</li></ul>	<ul style="list-style-type: none"><li>• Labor-reducing technologies such as herbicides and multiple cropping.</li><li>• Appropriate mix of farm enterprises.</li><li>• Short-term varieties.</li><li>• Labor-saving equipment for such strenuous activities as water collection and food processing.</li><li>• Tools and machines designed for women's size and strength.</li></ul>
<p>4. <u>Tools and machinery</u></p>	<ul style="list-style-type: none"><li>• Animal traction and equipment.</li><li>• Tools such as hoes, small tillers, carts.</li><li>• Small affordable irrigation devices.</li><li>• Machines for harvesting/processing and adding value.</li><li>• Transport (e.g. modified bicycles and trailers).</li></ul>
<p>5. <u>Educational level</u></p>	<ul style="list-style-type: none"><li>• Recommendations in visual and verbal form.</li><li>• Group extension methods.</li></ul>
<p>6. <u>Sociocultural</u></p>	<ul style="list-style-type: none"><li>• Enterprises, technologies, and machinery acceptable to women.</li><li>• Appropriate extension delivery systems.</li></ul>

Despite the potential benefits of agroforestry, adopting it presents problems. Some problems are gender-neutral, such as difficulties of establishing trees and shrubs where livestock roam free. Others are gender-related (Box 25). Many of the uses to which prunings can be put are gender-differentiated and mutually exclusive. In many parts of the world, gender can also affect the right to

### Box 25: Alley Cropping and Gender Questions

<i>Elements of Agroforestry</i>	<i>Technical Specifications</i>	<i>Gender Implication</i>
<p>Functions or uses</p> <p>Soil fertility</p> <p>Tree products</p> <p>Mulch</p> <p>Fodder</p> <p>Fuelwood</p> <p>Other</p>	<ul style="list-style-type: none"> <li>• Improved crop production</li> <li>• Rate of production</li> </ul>	<ul style="list-style-type: none"> <li>• Who determines priority use?</li> </ul>
<p>Location</p>	<ul style="list-style-type: none"> <li>• Soil conditions</li> <li>• Water availability</li> <li>• Landscape niche (e.g., valley, slope)</li> </ul>	<ul style="list-style-type: none"> <li>• Whose space? Availability for desired use?</li> <li>• Private or public?</li> <li>• Conditions?</li> <li>• Distance from where product is used?</li> </ul>
<p>Arrangements</p>	<ul style="list-style-type: none"> <li>• Spacing between crop rows; within row Spacing; effect of each on crop production, tree production</li> <li>• Proportionality of species</li> <li>• Orientation to sun and crops</li> </ul>	<ul style="list-style-type: none"> <li>• Will differ according to whose field or crop is at issue</li> </ul>
<p>Species</p>	<ul style="list-style-type: none"> <li>• What characteristics are required? How well do the species achieve those benefits?</li> </ul>	<ul style="list-style-type: none"> <li>• Determined by dominant decision-maker about field and tree functions. <ul style="list-style-type: none"> <li>• Access to and availability desired species.</li> </ul> </li> <li>• Are there cultural prohibitions?</li> </ul>
<p>Management</p>	<ul style="list-style-type: none"> <li>• Effect of different cutting practices—frequency, kind of practice—on desired tree output, on fertility, on nearby crops (shade)</li> <li>• Mulching: depth for fertility effects</li> </ul>	<ul style="list-style-type: none"> <li>• Who has responsibility for plant establishment?</li> <li>• Who has harvest or cutting rights, and what do they imply in terms of frequency and nature of cutting?</li> <li>• Whose labor is required?</li> </ul>

*Source:* Feldstein, Rocheleau, and Buck in Feldstein and Poats 1989.

plant trees and the right to use land and trees. The benefits of agroforestry will only accrue over the long term, so farmers everywhere, but especially women because of their less secure land tenure, are reluctant to plant trees. Identifying the "concerns" of the potential adopters and establishing "congruence" between the farmers' interests and the new technology is critical to getting it more widely adopted. This happened at a research site of the International Institute of Tropical Agriculture (IITA). Recognizing that farmers believed trees to be a "male domain" that should not be on arable fields, extension workers began referring to the leguminous tree as the "fertilizer bush". The number of women farmers planting alley farms increased rapidly (Cashman 1991).

Extension services need to recognize that acquiring expertise in using new technologies is a process, not an event. Alley farming as an alternative to shifting cultivation, the basic lifestyle of many farmers, requires changes in farming behavior and cultural attitudes. Farmers need support to sustain their alley farms and to deal with the consequences of making different uses of the system's products, for example, mulch instead of fodder. Farmers need support from research and extension to establish and maintain their alley farms, and to deal with the consequences of choosing the alternative benefits of alley farming to shifting cultivation.

#### *Mechanization, Traction, and Transport*

Without technologies to reduce the tedious but essential tasks of daily living, women will have little time or energy to attend extension sessions, adopt recommendations, and thereby improve agricultural practices. Labor-saving technologies are considered to be women's greatest need, but energy-saving technologies are at least equally important. A review of women, technology, and rural productivity identified the most energy-consuming tasks as ridging, walking with heavy loads, pounding, lifting root crops, weeding, spreading manure, and threshing (Carr and Sandhu 1988).

Levels of *mechanization* vary around the world but, almost without exception, motors and tractors are regarded as a male province. When mechanized agriculture is promoted, women are typically marginalized as male farmers become richer. The operation is "taken over" by men, and women are either left with manual tasks or withdraw from field activities and lose whatever influence they may have had.

From Central America to Africa, animal traction is also regarded as "men's" work. There is evidence (from girls' plowing contests with boys in Sierra Leone and from areas bordering South Africa with heavy male out-migration) that women's size and strength does not prevent them using many ox-drawn implements (Starkey, personal communication). Indeed, a recent workshop on the Women in Agriculture Program in Nigeria noted the increased purchase and use of oxen for traction by women's groups. Animal traction is particularly helpful in carrying water, milling, and extracting oil--three time-consuming and laborious tasks generally performed by women (Nelson-Fyle and Sandhu 1990). Constraints on women using animal traction have already been discussed (Box 11).

Women farmers can have access to animal traction in three ways: they can hire animals and equipment (thus avoiding management and operating problems but taking a risk that they would not have the animals when they want them) or they can own the animals and equipment (but, due to cultural traditions, they may have to hire male labor to operate them). Finally, ownership could be cooperative, which reduces the cost for the individual but raises problems of cooperative management.

*Transporting* inputs, animal fodder, harvested produce, marketable produce, wood, and water is a major household activity that consumes much of women's time and energy. In Africa, where goods are by and large headloaded, women are estimated to do more than 75 percent of the transport undertaken by rural households in terms of time and more than 80 percent in terms of energy (see Figure 3.4 for Ghana data). Most trips are within and around the village, remote from the road network. The "missing middle" between headloading and motor vehicles is a particular problem for African women (Box 26). Elsewhere, bicycles and animals (bovines, donkeys, and llamas) are widely used. Wheelbarrows, carts, load-carrying bicycles, and bicycle trailers are all options for increasing the efficient use of human or animal power.

**Box 26: Filling the "Missing Middle": Rural Transport in Ghana**

The almost total absence of intermediate means of transport between headloads and truck was addressed in a World Bank project. Moving 1 ton-km with headloading takes about 2 person-days and costs about US\$3, with a bicycle trailer, it costs only 30 cents and takes 1 hour per ton-km. Crops often rot in the fields because of the shortage of labor, but individual loads are too small to warrant the use of a truck, even if it were affordable. Women were the main beneficiaries of a pilot component of the First Transport Rehabilitation Project, which introduced bicycle-trailers and farm carts and included an innovative strategy for overcoming the problem of affordability.

The trailers were locally made and the designs were modified based on feedback from users. Bicycles cost US\$120 and the trailer US\$150, a total that came to more than the per capita income. Another component of the project – the upgrading of paths between settlements and markets to feeder roads for non-motorized vehicles – was labor-intensive and used female labor provided through the agency of a local women's NGO. Part of the wage earnings are channeled into the NGO as savings to fund hire-purchase programs. Direct grants of seed money to start revolving funds are being explored in the context of a follow-up World Bank project. In this Muslim area, women who did not previously ride have taken enthusiastically to bikes and trailers. The initial response has been significant enough to indicate widespread acceptance and potential use on a large scale. As a spin-off, since the villagers started using the trailers as an "ambulance," a specially designed ambulance-trailer has been produced.

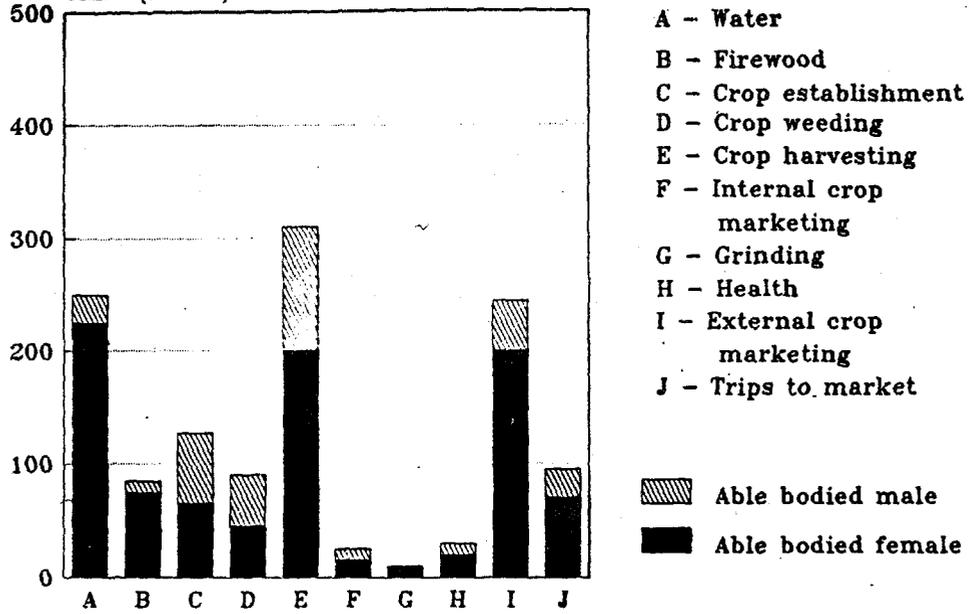
*Source:* Pankaj 1991.

*Postharvest Agroprocessing and Storage Technologies*

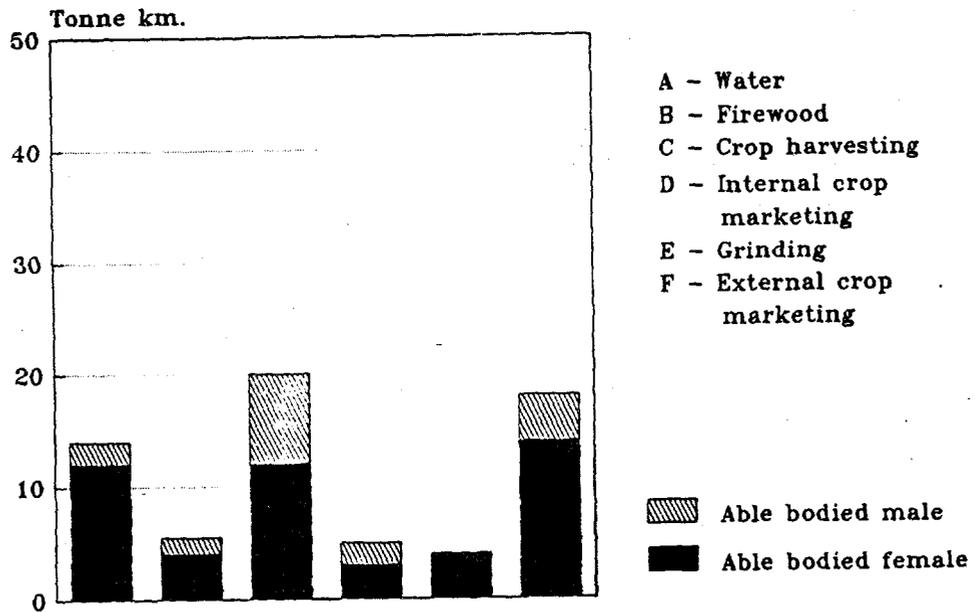
Research should do for household production activities what it has done for farm production activities. Long overdue are advances in technologies such as "simple equipment to break and remove the hard husk of sorghum that would eliminate the backbreaking work of so many women throughout Central Africa. Much of the work in agriculture in many countries of Africa is done by women [so] a part of agricultural research should be oriented to this activity of women" (Schulz 1982, 8-9). The need exists everywhere in the developing world. The Aga Khan Rural Support Program in Pakistan identified saving labor as an urgent issue, but according to a World Bank evaluation, the packages had little impact because of the inappropriateness of the technology (the nutcrackers were too heavy to operate, the butter churners were too large to take to summer pastures, and the carders for the spinning wheels caused problems) and because training in the traditional women's tasks of drying and processing fruit was initially given to men. (World Bank 1990a).

Figure 3.4: Analysis of Transport Activities of Able-bodied Adult Males and Females in Ghana

A. Time per person per year  
Time (hours)



B. Tonne km/per person per year



Source: Harrison and Howe 1989.

Income-generating activities are especially important to rural women and families. They provide self-employment, even out income flows, especially in the dry season, and can usually be done near the house. In Malawi, 41 percent of women borrowers repaid agricultural loans with income from their home businesses. Home businesses are readily combined with women's responsibilities for child care, food preparation, and household work. Technical information to make these enterprises more efficient and productive is vital to rural households.

Women farmers especially need appropriate household technologies that help them in fuelwood and water collection, food processing, and food preservation and storage. Much of the groundwork for developing appropriate technology for women -- especially stoves and postharvest equipment -- has been carried out. The problem is few people are aware that the technologies exist, they have not been adapted to local conditions, and equipment, spare parts, and repair facilities are often unavailable. Networking and adaptive research are needed and local rural manufacturers and repair shops need to be established. In Nigeria, for example, many of the technologies developed in the Rural Agro-Industrial Development Scheme have not been adapted for use in households or villages. But in some projects in Nigeria, staff members in technology institutes are working side by side with extension personnel -- an important step toward having technology tested by end-users, adapted, and sold at reasonable prices.

For women to benefit fully from food processing technology, machines should be:

- Inexpensive enough to be owned by women.
- Designed for women's weight, height, strength, and limb length.
- Small and inexpensive enough to be kept by individual women in their compounds or portable and communally owned, so women can combine work with child care and other domestic responsibilities.
- Simple in design, with a basic mechanism and interchangeable parts so they can be used to process different seasonal crops.
- Manufacturable and maintainable locally.

Too little attention has been paid to post harvest storage, which is critical for feeding the family through the hungry season and raising the prices women receive for their produce. In The Gambia, for example, there is no simple, inexpensive way to store onions so women must sell their produce during market gluts when prices are low. Traditional storage methods -- such as drying, smoking, and preserving -- must be improved to reduce the losses on vegetables, fruits, and meat that are now common. Grain storage -- an activity for which women are often partially responsible -- is an enormous problem. Large percentages of crops are lost annually because of inadequate storage facilities.

### **When is a Technology Appropriate?**

No two farmers are the same, but technology messages are issued as if they were. In an ideal world, farmers would use information "a la carte", exactly fitting individual farming and personal circumstances, to make informed choices about the options open to them. Research needs to provide enough information, economic background and scientific rationale about technologies so that extension staff can fine-tune messages to help individual farmers make wise choices. A farmer may need to choose between agricultural options or, for example, between trying a technology and sending a child to school. Extension staff need better understanding of individual farmers: of their farming situation, their technical

and family problems, their economic limits, and their practical constraints. As Mangan says "Extension agents should ask 100 questions before they give one recommendation" (personal communication 1991). Farmers for whom labor is the major constraint need technologies that increase returns to labor or require little effort. Farmers who lack money or credit need low-cost technologies. Again care must be taken that women farmers are not forgotten.

Technology and information developed jointly by farmers and research and extension staff should:

- Answer a need. Farmers' main priority is to find solutions to their most pressing needs or constraints.
- Be appropriate and relevant on individuals' situation within the target group/area.
- Be accurate and reliable so farmers develop confidence in extension advice.
- Be relatively low-risk. Yield stability is a major concern of poor women farmers responsible for feeding their families.
- Start with a few no-lose recommendations that require little or no effort. Two examples from Indonesia: cutting soya with a sickle and leaving the roots in the soil to release nitrogen, and covering urea with soil to stop sublimation (Mangan, personal communication 1991).
- Present technologies in easily understood units. For example, instead of recommending fertilizer in terms of kg per ha use match boxes per 10 plants. Or -- again from Indonesia -- cut rattan at so many arm-lengths per local unit of area rather than "harvest at sustainable levels."
- Allow farmers to adopt a package of technologies a step at a time by minimizing the number of changes needed at any one time. Start with less complicated technologies. For example, farmers are used to keeping their own seed, so begin with open pollinated varieties and move later to hybrid varieties that the farmer has to purchase each year. Or start with the changes that are most important for the success of the other inputs (for example, cultural practices).
- Not require expenditures that cannot be recouped. A crop planted late or unweeded cannot profitably respond to post-germination inputs, such as top dressing or pesticide sprays. In Togo, the Cotton Research Institute investigated the interactions between weeding regimes, fertilizer levels, and spraying programs. Fertilizer and spray recommendations were then based upon whether or not the previous fortnightly recommendation had been carried out (Figure 3.5). The condition of the crop was taken into account, and money was not wasted by proceeding to stages 2 and 3 until stage 1 was completed.

It is important to recognize that new technologies can shift economic control, employment opportunities, and profits from women to men. A classic case was the introduction of the palm oil press in Nigeria. Palm oil pressing had been exclusively a women's task, but with the introduction of new machine technology, men took over the activity. There were several reasons: the new technology was attractive; the machine -- designed for men -- was too large for women to handle; and the daily time schedule for using the press was inconvenient for women. Women lost access to by-products of the pressing, which they had formerly used for fuel; and, since all the oil extracted belonged to the men, women did not benefit from the increased oil production (Obibauku 1966).



## Chapter 4: IMPROVING THE DELIVERY OF EXTENSION TO WOMEN FARMERS

Extension has been based on the assumption that farmers are men, that women do only household activities, and that a man will pass information along to his wife if she needs it. Not only were these assumptions far from the truth, but the feminization of farming in many parts of the world adds urgency to the need to improve extension services to women. Extension systems have, by and large, not served the rural poor well, and most of the rural poor are women. Gender-related factors exacerbate the many farming problems of resource-poor female farmers. Often invisible, unspoken barriers keep women from gaining access to the agricultural information. The changes that must be made in the traditional principles of agricultural extension to reflect awareness of the gender dimension are shown in Box 27.

### Types of Extension Systems

Extension systems may be broadly based (with health, education, and other agricultural support services), or may stand alone. They may be funded from public sources, by donors (multilateral, bilateral, or NGO), or (directly or indirectly) from user fees. The executing agency may be the civil service, a university, commercial firms, or the private sector. They may be national or regional. Agricultural extension may be broad-based covering all agricultural enterprises, or may be restricted to one or a few crops. Often export crops, livestock, fisheries, and forestry have separate extension services. One system is usually dominant, but most countries have a mixture of systems in place. It is less common for farmers' groups to employ their own extension agents but that practice is the likely trend of the future (Box 38). The implications for women farmers of these different types of extension systems is given in Box 28.

The move toward privatization of extension (as is happening, for example, in parts of South America and the Maghreb countries) can hurt small farmers, including many women, who cannot afford to pay for extension and research services. In South America, the few national research and extension systems are weak; they are estimated to reach less than 5 to 10 percent of smallholders. Commodity marketing organizations often run their own extension systems and input companies provide additional information for larger, commercial farmers. Smallholdings, where little is produced for sale and few inputs are purchased, are essentially shut off from these sources of information.

Experience suggests a need for public subsidization of research and extension for women farmers. An effective extension program for women initially generates more food for the household, the first step in a virtuous circle. More food means higher nutritional intake, which means a firmer household security base, better health, and more productive energy to apply to agricultural and other activities. Improved household standards of nutrition and health -- private benefits -- are felt in the community at large and are thus a social benefit as well. The social benefits generated by research and extension programs for women farmers provide the economic rationale for public interventions and subsidies to encourage expanded output.<sup>2/</sup>

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<sup>2/</sup> Where the private benefits from research and extension accrue in the form of increased cash, say from crop sales, the intrahousehold distribution of benefits is much more complex. The magnitude of the social benefit will depend on who in the household controls cash flows. Studies of intrahousehold decisionmaking in terms of gender would suggest that the probability of securing positive social benefits is much greater when women rather than men control cash income.

**Box 27: Incorporating Gender Awareness into Agricultural Extension**

*Traditional agricultural extension principles*  
(Baxter, Slade, and Howell 1989).

Extension must provide agricultural knowledge and skills to help farmers solve problems and improve the returns on their farm investments. For low-technology agriculture this knowledge and skill is likely to be related to specific farm practices and technologies.

Extension staff must understand the production systems within which they are offering advice, the farm businesses or household economics with which they are dealing, and the scientific basis of the knowledge they are advancing.

Extension must be supported by a research system that produces properly tested and fully appropriate new practices and varieties that extension agents can recommend to farmers; and research must respond to the farmers' needs, reported through the extension agent.

Extension work may involve a range of methods but frequent visits to individual farms are important. This direct personal contact is essential to ensure that extension agents themselves fully appreciate the possibilities and constraints of the farm community in which they work and that advice is adapted to specific farm contexts.

*Changes Implied by the Gender Dimension*

The objectives of women and men farmers may differ and it cannot be assumed that women's main objective is "improved returns on farm investments". Women's multiple roles -- having and rearing children, domestic work, providing food and meals and family security -- all imply a wider range of farming objectives. And women tend to be heavily represented among the resource-poor and low-technology farmers.

The range of women's tasks and activities in agricultural production is much wider than men's. The extension service, being predominantly run by and composed of men, needs guidance and training to understand women's production systems, and to view farm businesses and household economics from the woman's standpoint.

For research to perform its enabling role and provide relevant information and technology, it must be informed by the special needs of women farmers: new varieties and practices appropriate to male farmers are not necessarily appropriate to female farmers (even when the resource base or technology level is identical).

Because of sociocultural constraints on male-female interaction, and because of time constraints due to their multiple responsibilities, new extension service delivery techniques will have to be devised if extension is to serve the needs of women farmers effectively.

Many countries have developed a separate extension system for women, often based on a cadre of home economists. The danger with separate systems is that they could marginalize women farmers, the women's extension system, and the female agents. A better route is an integrated or unified service that caters to the needs of women farmers the same way it caters to other special needs., such as livestock or irrigation. The evolution of extension services to women farmers in Nigeria is described in Annex 1.

Box 28: How Different Types of Extension System Serve Women Farmers

*Type of System*

*Implications for Women*

Rural or community extension

Multifunction and multisector approach used in the integrated rural development projects. Frequently under Ministry of Community Development. Called "animation rurale" in francophone countries. Extension agent acts as a link between the Rural population and the specialist ministries (such as agriculture, education, health). Advantage for women is the holistic approach which reflects all her roles: mother, provider of family necessities (food, water, and fuel), farmer, and income earner. Disadvantage: range of tasks covered limits time and expertise in any single task.

Integrated agricultural extension

Multifunction providing some or all of input supply, credit, extension, marketing, and other agricultural services.

Extension-only service (for example, Training and Visit)

Concentrates only on extension; no input supply, credit, or other functions. Group contacts provide opportunities for reaching women farmers. Can be structured to deliver information on women's enterprises, tasks and activities. Efficiency may be constrained by availability of other support services. Difficulty women have in getting accessing credit and inputs possibly a problem. Objectives of extension service and of supporting research geared to attainment of government policies. Recognition of needs of women farmers may be inadequate.

Commodity-based extension

Vertically integrated extension schemes based on a single marketed commodity. Ignores the farming system and the other enterprises and activities within the system, many of which are "women's." Recent moves to extend extension activities to other enterprises in the farming system, but emphasis still on the major crop. Credit and inputs may be restricted to the major crop. Objectives and supporting research aimed at increasing production of specified commodity. Examples are the *filieres* of francophone countries and single-export-crop, research institute-based extension.

Commercial firms

Extension tied to the purchase of fertilizers, pesticides, other inputs. Not available to farmers who lack resources (including many women), or where potential sales are insufficient (for instance, the subsistence sector). Objective to increase sales of company products. Research focused on company products.

University

If they have public funds to carry out extension activities, then may be able to address needs of resource-poor farmers, including women. If selling extension advice to raise funds, extension will probably not reach women. Presence of sociologists on the faculty an advantage to women.

Government-hired private firms

Private firms paid to carry out extension activities. How well they serve women farmers depends on mandate and on the evaluation and reward structure. A possible step in the move to complete privatization and user-funded systems.

Producer-employed

Groups of producers with common interests hire agents; with or without extension agents government assistance. Only true demand-led system. Agents highly motivated as continued employment depends on providing exactly what the farmers need. Has potential to respond to women's needs, but will depend on level of women's representation and influence in the group.

## The Gender of the Extension Agent

Does it matter if the extension agent is a man or woman? The answer varies enormously. In most developing countries, the agent's gender does matter but how much it matters depends on the sociocultural context. In some countries, it is impossible for a male extension agent to work with women farmers. In Yemen, for example, women have had to assume the agricultural duties of absent husbands but, because they are not permitted contacts with males who are strangers, extension still goes mostly to male farmers. And in much of South America, strong taboos against interactions between the sexes make male farmers unwilling to allow male agents to talk to their wives. In other countries, where there are fewer restrictions, the gender of the agent may be irrelevant. Where gender is less significant, communication skills and the value of extension messages are the criteria by which farmers judge extension agents.

In general, however, rural women tend to be shy and reluctant to speak up in the presence of male agents or men from the same village. Women lack confidence because they are less educated and have less contact with the outside world. They see men as authority figures whose decisions they are to follow. Projects on forestry in Zimbabwe and agriculture in Malawi found that male extension agents raised in the same culture often expect women farmers to follow their directions and do not encourage their questions. These problems can be relieved if women farmers meet in separate groups, if some activities are targeted to women and, where possible, if female agents work with them (Box 29).

There is evidence from many countries that, even where relatively few social barriers to male-female interaction exist, communication with women farmers is better when female extension agents are used. But it is always best to enlist the support of husbands and male leaders before embarking on women's agricultural programs of any sort. Males may resist supporting programs for their wives until they see direct benefits -- as happened in Malawi (Evans 1989).

### Box 29: Cameroon: Extension Agents and Women Farmers

In the early stages of the MIDENO project in Cameroon, extension agents (EAs) were encouraged to meet with farmers groups, but individuals could also ask EAs to visit their farms. Farmers who purchased inputs were visited often. Analysts found that farmers who experienced farm visits and group meetings understood the recommendations better and were more likely to adopt them than those who only attended group meetings. Assistance was supposed to be the same for men and women, but men in the survey received eight times more individual farm visits than women did. Male farmers were not reluctant to ask for farm visits. Many women indicated that they did not think they could or should ask for a visit because their farms were "too small," "too poor," or "too far away." Others thought visits were reserved for farmers who purchased inputs, something fewer women did than men. For their part, the EAs concluded that women did not ask for visits because they were not interested. It was evident that the strategy of asking farmers to step forward to request visits was not as appropriate for women as for men (Koons 1988). The situation improved under later project initiatives for expanded extension to women farmers (Walker 1990).

### *Using More Female Extension Agents*

Recruiting more female agents is an obvious, and in some areas the only, strategy for increasing the number of female beneficiaries. But how can the supply of women extension agents be quickly increased? And once they are available, how can they be integrated into the extension system? How do you get male colleagues to accept and support them? How do you deal with conflicting family

responsibilities? How do you ensure adequate logistical support for them? If only a few female agents are available, how can they be most efficiently employed? And how can female agents be helped to overcome cultural constraints to women living, traveling, and working in rural areas? The issues and solutions are summarized in Box 30 and discussed below.

Box 30: Making Better Use of Female Extension Agents (EAs)	
<i>Objective</i>	<i>Possible Solutions</i>
Recruit and train more female EAs.	<ul style="list-style-type: none"> <li>• Increase female enrollment in secondary school.</li> <li>• Target growth rates for female enrollment in agricultural colleges.</li> <li>• Locate agricultural colleges in rural areas.</li> <li>• Abolish unnecessary entry qualifications.</li> <li>• Remove maximum age limit.</li> <li>• Permit married women and widows to work as EAs.</li> <li>• Provide separate boarding facilities, where needed.</li> <li>• Improve public relations to encourage agricultural careers among girls, parents, and potential recruits.</li> <li>• Recruit from specific geographic areas.</li> <li>• Recruit women with agricultural degrees and diplomas (as has been done in India and Nepal and is being tried in Turkey)</li> </ul>
Retrain other rural female agents such as home economic and community workers.	<ul style="list-style-type: none"> <li>• Review original training curriculum and identify skill gaps.</li> <li>• Give brief (6-8 week) training in agricultural topics.</li> <li>• Integrate into unified extension system.</li> <li>• Provide close supervision and support from agricultural colleagues</li> <li>• Offer in-service training.</li> </ul>
Make use of less academically qualified female agents.	<ul style="list-style-type: none"> <li>• Increase involvement of local women or use of female para-extension agents to link women farmers to existing existing extension staff and to services available at the district/zonal levels, or to provide information, inputs, and service.</li> </ul>
Equalize the status of female and vis-à-vis male agents.	<ul style="list-style-type: none"> <li>• Provide same curriculum in training institutions.</li> <li>• Provide same conditions of employment.</li> </ul>
Solve transport and housing problems, particularly in areas where women cannot live and travel alone.	<ul style="list-style-type: none"> <li>• Assign women in pairs.</li> <li>• Provide each pair with appropriate transport.</li> <li>• Recruit from the area.</li> </ul>
Make more effective use of female agents.	<ul style="list-style-type: none"> <li>• Use "gender targeting".</li> <li>• Use as subject matter specialists or resource people in sensitizing male agents.</li> </ul>

### Recruiting more female agents

Where interactions between the sexes are culturally unacceptable and where the content and delivery of extension services and activities are biased against women, the very few female agents cannot adequately serve the many women farmers. A world survey of agricultural extension (Swanson,

Farner, and Bahal 1989) showed 13,000 to 20,000 farmers and laborers (male and female) per female agent in developing regions and only 2,000 to 3,500 per male agent. Female staff members represented 11 to 20 percent of extension services, although in Africa and the Near East the numbers at field level were much lower (Table 4.1). These regional figures mask range variations between countries. In Asia, for example, China accounted for half the agents. Data from other sources show that in India in 1989, of the total cadre of 65,598 extension staff professionals, only 357 (0.5 percent) were women. In Bangladesh, 3.6 percent of extension staff are women and, at the present rate of recruitment, the 15 percent quota will be met in 25 years (Axinn 1990).

**Table 4.1: Extension Agent/Farmer Ratio and Female Extension Agents**

	Agent/farmer ratio <sup>a/</sup>	Women as percentage of	
		All extension staff <sup>b/</sup>	Field extension staff
Africa	1:1,809	11.1	7.0
Asia and Pacific	1:2,661	14.8	14.1
Near East	1:2,499	19.5	9.5
Latin America	1:2,940	14.5	13.9
Europe	1: 431	15.7	6.6
North America	1: 325	39.2	15.0

a/ Ratio computed by dividing the number of economically active adults in agriculture by the number of field extension officers and assistants available and then taking the mean ratio by country for each region.

b/ Includes administrative personnel and subject matter specialists.

Source: Adapted from Swanson, Farner, and Bahal 1989, Tables 12 and 17.

Recruitment involves issues of quality and quantity. Ideally extension agents should have roots in rural areas and hands-on experience in agriculture. But women from rural areas are less likely to have the educational qualifications needed and recruits from towns are more reluctant to take rural postings. Steps needed to recruit more rural women include offering special incentives or building agricultural schools in rural areas.

It will take time to recruit and train more female agents because the enrollment rate of girls in agricultural schools is low. In some countries, female enrollment in agricultural training institutions is relatively recent. The Yemen Arab Republic's agricultural schools were opened to girls in 1980, for example (Hamada 1985). Strategies to increase female enrollment in agricultural schools include (1) targeting growth in enrollment rates, (2) reviewing admission policies; and (3) increasing the enrollment of girls in secondary schools -- the factor most highly associated with female agricultural

training. Entry requirements irrelevant to the job that may constitute barriers to female enrollment should be eliminated. Intermediate agricultural institutions should have enough places and boarding facilities -- separate, if necessary -- for female students. Parents and girls should be informed of employment opportunities for women in agriculture. And once they are in agricultural training, female students must be offered the same curriculum as men (Box 31).

**Box 31: Zambia: Training and Posting Women Extension Agents**

The Agricultural Colleges of Monzé, Mpika, and the Natural Resource Development College train agricultural extension officers. Until 1982, however, the syllabus used in the two-year agricultural training course was different for men and women. Women were not given full-scale agricultural training and on graduation were placed in the Home Economics Section of the Ministry of Agriculture and Water Development. This was unacceptable to women who wanted to become agricultural extension agents.

According to a 1984 survey by the Zambian Department of Agriculture, female agents represented only 9 percent of the extension agents in provinces where the proportion of households headed by women is very high. In the Northern and Luapula provinces for example, only 6 percent of the extension agents are women, whereas in Lusaka, where the proportion of households headed by women is lower, 24 percent of agents are women. There is a clear need to step up the training of female extension agents and post them in the field, where they are most needed.

*Source: Safilios-Rothschild 1985.*

Unnecessary restrictions must also be lifted. Agricultural extension systems must be able to accommodate married women extension agents. The practice -- common in some African countries -- of expelling women extension agents once they marry or become pregnant discourages women from joining the service and wastes scarce training resources. Moreover women tend to have heavier reproductive and domestic responsibilities early in life. Lifting maximum age barriers would allow the recruitment of mature, experienced women and widows who may still have 20 years of active working life.

Redeploying home economists and other female agents

Training and recruiting new female extension agents is a long-term process. A short-term solution is to redeploy female agents who are already teaching rural women subjects closely related to agriculture (see Boxes 30, 32 and 33).

**Box 32: Upgrading Female Outreach Workers in Burkina Faso:**

Despite the overwhelming importance of women in agriculture, there are not enough female "motivators" (rural outreach staff) to assist them. Burkina Faso has 942 male extension workers but only 139 female motivators. Most female motivators received only a few days or weeks of retraining on agricultural topics; male agricultural extensionists had at least nine months. A World Bank mission proposed that women motivators receive the same training as male agricultural counterparts to increase their acceptance by male farmers, and that men and women have the same title.

*Source: Safilios-Rothschild 1986.*

### Box 33: What Home Economists Can Do

#### Home economists can:

- Identify and mobilize groups of women to receive regular extension advice.
- Help extension planners collect gender-disaggregated data or compile labor and activity profiles on rural women. Home economists are well versed in the dynamics of rural households and know who makes decisions and how family labor is mobilized.
- Teach income-generating skills related to processed foods and handicrafts, drawing on their knowledge of home gardening, food processing, and available technology to diversify farm income – especially during the dry season.
- Serve as agricultural agents (with retraining).
- Help introduce new crops or foods using their knowledge of food preferences, uses, and storage. In Nigeria, home economists aided the adoption of a new crop, soybeans, which they taught women how to grow and use. Home economists can also help farm families with dietary advice, especially for vulnerable groups such as children being weaned, and pregnant and lactating mothers.

In many countries, home economists and social and community development workers constitute a large female professional cadre. Home economists are particularly common in anglophone countries, where they are known as domestic or home scientists. Some are also trained nutritionists and community development workers. A few home economists teach in schools, but many work in extension where they traditionally focus on women's domestic and reproductive roles, sometimes supplemented by home gardening and small livestock care. They may help organize women into groups; they may also backstop extension agents on farm production recommendations and provide additional information to farmers on the use, storage, and marketing of food. Nigeria, for example, had about 4,500 trained home economists before some were retrained as agricultural extension agents. Similarly, in francophone Africa female agents (animatrices) of various ministries or agencies do similar work and also help with community development and the organization of cooperatives.

In areas that have no female agricultural extension workers, these rural female agents represent a resource. Because of their vast numbers, the regularity of their contact with rural women, and the institutionalized nature of their work, these agents could be very effective in providing agricultural extension advice to rural women. Home economists often have training in agriculture; those who do would require only short courses to fill skills gaps. Redeployment of animatrices, rural social workers, and the like might involve longer agricultural training (see Box 30).

In the Philippines, the successful reorientation of the irrigation schemes revolved largely around community organizers (COs), two-thirds of whom are women. COs have degrees in community development or social work, come from farming families, and have a strong ideological commitment to the rural poor. They live in the villages and integrate well with the farming community. COs act as facilitators or catalysts, offering encouragement and providing information and advice. (Korten and Siy 1988).

### Using para-extension agents

Some countries are investigating the feasibility of using female para-extension agents. Relatively uneducated woman would be given short crash courses in agriculture and would usually be posted to their home villages. This strategy will only work with selective recruitment, adequate training, and integration into the existing system. In India, for example, leaders from among farm women are carefully selected, and given broadly based training; they then shoulder responsibility for forming and training groups, and furthering the delivery of extension. These *sanyojikas* will receive honoraria and basic support from the government but, to increase accountability and avoid a "civil service attitude," the honoraria will be paid to the group for transmission to the *sanyojika* they employ. In Turkey, wives of male extension agents are to be trained and given part-time positions as village group technicians.

Para-extension agents are also being used in Latin America. In Guatemala, female agricultural representatives are selected by the community and the extension agency and hired part-time by the Ministry of Agriculture. They act as links between the women and public sector institutions and, together with home economists, organize groups of housewives and young women. Group activities have expanded to include field evaluation, processing evaluation, and multiplication of new varieties. The women themselves are involved in the on-site community evaluations, so they are good promoters of the new technologies (Ortiz and Yoc 1990).

### Special considerations when employing female agents

Even when female agents are trained, some male farmers and extension agents have difficulty accepting them as full-fledged professionals. The need to convince male farmers that female extension agents are professionally equal to their male counterparts was recognised in an extension project in the Gambia (Manneh 1988). Where male farmers are likely to resist accepting female agents, village leaders and male colleagues or supervisors should accompany and introduce them on their initial rounds, explaining their role and qualifications.

Family responsibilities make it difficult to post women to rural areas. Women are expected to move wherever their husband is posted and prefer urban posts because of children's schooling. A solution that worked in Imo State, Nigeria, was to select new female agents from the local government area where they would serve. In Bangladesh, in selecting students for agricultural training institutions, extra points were given to individual students from areas difficult to fill (Axinn 1990). Axinn provides several examples that refutes the assumption that educated women will not live in rural areas or cannot be employed as EAs. The successful women's dairy cooperative program in Andhra Pradesh, India, has college-educated women extension supervisors who live in pairs in villages, travel on mopeds, and advise farmers on cattle management and cooperative organization. In 1985 in Nepal, 75 college-educated women applied to the Production Credit for Rural Women Program for 12 posts in remote areas, a day's walk from any transportation scheme.

Men and women should have equal access to staff housing, equipment, and transportation. And women joining the service should understand that they use the same mode of transport as men unless cultural conditions or pregnancy prevent them from doing so. Axinn points out (in connection with the Indian subcontinent, but it is pertinent elsewhere), that "the women officers in NGOs travel on bicycles, mopeds and motorcycles, and are a local demonstration that women can live and work in communities where it is the cultural norm that they cannot."

Since women engage in more activities -- both in and out of agriculture -- than men, the question arises: should the extension service to women be integrated to include, for instance, nutrition, family planning and health, and income generation? Female agents in particular are likely to receive questions outside their immediate area of responsibility. For agricultural questions, extension agents with women clients require backstopping by subject matter specialists (SMSs) covering a wide range of specialities. For nonagricultural questions, the extension service should maintain a good liaison with other ministries (such as the health ministry for family planning) to provide such services.

### *Using Female Agents as Subject Matter Specialists and Supervisors*

Subject Matter Specialists provide technical training and guidance to extension workers. They link research and extension, and thereby help formulate extension messages. As extension systems target more women farmers, two questions arise: Is it necessary to create special SMSs, such as the Rural Women SMSs proposed by Benor and Baxter (1984)? Are separate SMSs for women farmers likely to marginalize or improve services for women farmers?

Initially, extension services may need a special rural women's SMS to organize women's contact groups, to provide the gender input at regular training sessions for field staff, and to help develop extension recommendations that are situation-specific and meet local demands. These special SMSs are probably the most cost-effective means of improving extension to women farmers. In addition, there should be someone at subdivisional, district, and headquarter levels with specific responsibility for the program for rural women. To avoid institutionalization of these special SMSs, however, they should be mainstreamed in a unified extension service. They can, for instance, be given spheres of responsibility and job descriptions that deal mainly but not wholly with women as livestock specialists, postharvest specialists, horticulturists, and farm management specialist, for example.

As extension services for women farmers expand, new subject matter areas that may require technical backstopping by SMSs include: dry season activities for extra income, home gardens, food processing, postharvest storage, marketing, income-generating activities (especially from agroprocessing), poultry and livestock enterprises, resource management and conservation, appropriate technology, nutrition, home improvement, and sanitation. Home economists and similar agents serving rural women can advise on some of these topics but others may require new specialists. In Imo State, Nigeria, for example, additional SMSs for rural women are planned for new income-earning enterprises to complement the home economics SMSs now working on food production and utilization.

If systems can afford only a few SMSs to help rural women, they should concentrate initially on diagnosing women's agricultural activities and constraints and modifying messages accordingly as well as on developing new messages based on that diagnosis. Their other major tasks should be to organize women to participate in extension and to take a proactive role in stimulating appropriate research.

Another opportunity for incorporating gender issues in extension services arises when female agents are in supervisory positions. The duties of female block supervisors can, as in Bangladesh, include the following additional elements: identifying the needs of women farmers, identifying appropriate ways for male EAs to reach women farmers, helping male block supervisors plan and manage demonstrations appropriate for women farmers, arranging special training for women's groups, working

with secluded women to develop systems to access information and inputs on a long-term basis, and supporting research that helps women producers.

*Making Better Use of Male Extension Agents*

Despite recent efforts to recruit and retrain female agents, male agents will continue to dominate extension services. If agricultural support services to women farmers are to improve, ways must be found to change the stereotyped attitudes of male agents and cultural problems concerning male/female interactions (Boxes 34 and 35).

Box 34: Making Better Use of Male Extension Agents	
<i>Issue</i>	<i>Solution</i>
Stereotyped attitude to women farmers	<ul style="list-style-type: none"> <li>● Change attitude in pre-service training courses.</li> <li>● Reinforce with regular gender related in-service training courses.</li> <li>● Provide similar training for mid-level technical and administrative staff, including trainers and designers of extension programs/systems.</li> <li>● Encourage awareness of gender roles in any topic of discussion.</li> </ul>
Extension methodology	<ul style="list-style-type: none"> <li>● Provide training in extension and communication with women farmers.</li> <li>● "Gender targeting".</li> <li>● Use groups of women farmers.</li> <li>● Adopt gender-neutral criteria for selection of contact farmers or groups.</li> <li>● Choose language and medium of communication to suit women.</li> <li>● Choose time and location to suit women.</li> </ul>
Content of program	<ul style="list-style-type: none"> <li>● Adopt an integrated, holistic farming system approach rather than specialist crop, livestock, etc..</li> <li>● Widen range of enterprises and tasks covered.</li> <li>● Train to increase diagnostic and problem-solving skills.</li> <li>● Provide technology options rather than prescriptive messages.</li> </ul>
Incentives	<ul style="list-style-type: none"> <li>● Set agents' annual work objectives in gender-disaggregated terms.</li> </ul>

The need to address these problems is particularly acute in countries with heavy male migration and limited social contact between men and women for cultural reasons. In the Yemen Arab Republic, where there is little social contact between men and women and men migrate in search of paid employment, the following strategy has been proposed: (1) male EAs should be from the villages to which they are assigned and should be culturally and socially acceptable to the farming community, (2) they should know exactly what women on the farm do and how the work is done, and (3) they must be sincerely committed to working with women and believe that women can contribute to agricultural production.

Extension agents' negative attitudes toward women should be addressed through training and supervision. Pre-service agricultural training institutions need to offer all students practical, supervised field work with women farmers to reinforce classroom training in communication skills and technical information on women's crops and livestock. Colleges of agriculture probably need to develop

new training materials for EAs so that they can effectively help female clients.

Male extension agents and their supervisors already in the service often need to be retrained to work with women farmers. Middle-level extension personnel generally don't understand women farmers' particular needs. Regular training sessions and special seminars and workshops in which staff interact with women farmers can be used to overcome attitudes and retool workers. The training should emphasize diagnosis in the field of women's agricultural activities and constraints, the organization of rural women for extension purposes, techniques for working with women farmers, and feedback to supervisors and researchers on the technology and messages women farmers need.

**Box 35: Malawi: Male Agents Resist Including Women Farmers**

The Dowa West Rural Development Project in Malawi aimed to increase the incomes and improve the standard of living of 9,300 smallholder families in Dowa West District. Project components included strengthening the agricultural extension services and providing agricultural extension and credit for the target group. Women were identified as beneficiaries in the preparation report, which specified that 60 percent of the agricultural labor is provided by women and that 30 percent of the households are headed by women. Five years after the start of the project, female participation was still low (19 percent of the total). A key factor inhibiting women's participation was male extension agents' resistance to working with women farmers.

*Source: IFAD 1985.*

Gender targeting -- using women extension agents as the initial contact with women farmers -- is an effective system for introducing extension services to women farmers. It is a logical complement to the group approach, providing a means of establishing effective communication between women farmers and the extension services despite the limited number of female extension agents. Female agents are assigned to work with women's groups and establish trust and credibility with the members. They help the groups gain confidence in dealing with the agent and encourage them to raise questions about recommendations. When that process is finished, the female agent gradually introduces the group to the agent assigned to the area, who is generally male. The female agent then moves on to work with other women's groups.

In Cameroon, the MIDENO project found the gender-targeting strategy most important for groups of medium or low cohesion in areas where male agents have particular difficulty approaching women farmers. Male extension agents with negative attitudes to women farmers will be more interested in working with women's groups that are beginning to adopt extension messages and are more receptive to new practices (Walker 1990).

Incentives are more likely to motivate male agents to work with female farmers than coercion would. Incentives should be integrated into the reward structure of the extension system in the form of special citations or training, or by linking performance rating and promotion to specific gender-related targets (particularly acreage or production targets). An annual evaluation -- as occurs when the agent is employed by a group of or containing women -- would be the most effective incentive.

### **Communicating with Farmers**

Not only is it important to enable male agents to work with women farmers, but it is important to find ways to get more village women in contact with agricultural services and to improve the way EAs and women farmers communicate. Few farmers are in direct contact with the extension service on a one-to-one basis either as Contact Farmers or in Contact Groups. Most farmers have

indirect contact either through relatives or neighbors who are Contact Farmers or group members or through mass communication channels such as in the print or audio media or agricultural shows.

### *Using Traditional Women's Groups*

Identifying cost-effective ways to deliver extension and inputs to farmers is critical to sustaining extension services and financing recurrent costs. Using male, female or mixed groups to receive agricultural information offers economies of scale by maximizing the farmer/agent ratio. Travel time is saved and the extension agent has more time to spend on the actual task. In Kenya this cost-effectiveness was greater with women's groups because women were willing to meet in larger groups than were men. The reason was probably the age-old tradition of group self-help efforts among women. (World Bank 1989a). Groups also facilitate the adoption of new techniques. In a group setting farmers can learn and practice new technical skills before embarking on their own activities. Group decisions to implement new practices carry more weight than individual decisions, and otherwise reluctant extension clients are encouraged to adopt new ideas. Often the cohesion in groups fosters peer learning as well as learning from extension agents. Moreover, groups can be particularly effective in reinforcing knowledge among illiterate farmers, who can then rely on collective memory. Additional advantages are that groups allow members to pool resources for production or for collateral to obtain credit; provide an effective way to share expensive equipment that individuals could not afford; facilitate the distribution of inputs, such as planting materials; and provide a collective voice with which to convey the needs of farmers to extension officials.

Groups offer special advantages to women farmers. When male agents work with women's groups rather than individual women, problems of male/female interaction are reduced. In some countries, such as in South Asia, men do not like their wives to meet alone with male agents, but they often have no objection if groups of women meet with the agent. Moreover, women in a single-sex group tend to speak out more freely than they would either in groups where males are present or when they are working individually with a male extension agent (Box 36).

Groups have a long tradition in most rural communities, particularly among women. Rural women form groups to exchange labor, mobilize savings and credit, provide mutual-help, and cooperate for social and ceremonial purposes. Savings and credit clubs are an important source of informal credit for those who are ineligible for formal credit or reluctant to approach formal financial institutions. Women's savings groups (such as *esusu* in Nigeria, *tontine* groups in Francophone Africa, *arisan* in Indonesia) require regular contributions -- and members take turns having the use of the collected

#### **Box 36: Malawi and Burkina Faso: Women-Only Versus Mixed Farmers Groups**

Women unanimously preferred farmers' groups for women only over mixed sex groups in Malawi's Phalombe Rural Development Project. When meeting with EAs, women felt freer to discuss and develop their ideas. In mixed-sex groups, the men delayed repayment and used the money for other businesses -- so women, who have better repayment rates than men, preferred to obtain credit in women-only clubs. (Evans 1989).

The use of farmers' groups is also common in Burkina Faso's extension system. But women expressed a strong preference for women-only groups where they could express themselves more freely. A World Bank mission recommended that agricultural extension demonstrations be held separately on the collective fields of female and male village groups (Safilios-Rothschild 1986)

funds. When formal credit is channelled through groups, group pressure keeps repayment rates high. Labor exchange and mutual support groups are also common, both for the physical advantages of extra help on laborious tasks and the social pleasure of working together. In The Gambia, for example, labor pooling among women is so common that women spend a third of their individual fieldwork time in other women's fields (Von Braun and Webb 1987). The poorer women in South Asia typically identify with self-help groups, sharing paddy transplanting or other productive activities, rather than with group activities of a social nature. Joint production and income-earning groups are also common. Self-help groups in Kenya and other parts of Africa often build and maintain community facilities such as clinics, wells, roads, and bridges. Such groups provide an immediately usable channel through which resources and information from government or donors can flow.

Women's groups in all parts of the developing world have proven to be effective contacts for extension. But women's groups must be part of the mainstream extension system and not a means of further marginalizing women. In Pakistan, for example, a review of programs that successfully involved rural women noted that an essential element for success was the organization of women into self-governing, purposeful groups (Box 37). Women's clubs (Mahila Mandals), women's cooperatives, or wives of men's cooperatives, women's savings groups, and the Small Farmers Development Program or the Production Credit for Rural Women are already-existing groups that could be involved in agricultural extension. Morocco has two extension approaches: contact groups and mass meetings to which all local women are invited and encouraged to attend. The mass meetings are held in the house of a "receptive and interested woman" whose friends and neighbors also attend. At these informal meetings, women can ask questions and freely express their problems.

**Box 37: "Village Organizations are an Excellent Vehicle for Technology Transfer"**

The Aga Khan Rural Support Program in Pakistan provides village-level women's organizations with technical assistance and training for specific women's production packages (home-based poultry, nurseries, vegetable production) and labor-saving technologies, and for training in organization and management. For their part, women's group members undertake to meet and save regularly. Women's organizations are not eligible for grant-assisted infrastructure projects.

In the three years from 1986 to 1989, the number of organizations increased by 53 percent, savings by 148 percent from Rs. 1.6 million to Rs. 5.9 million (\$80,000 to \$290,000), and membership by 20 percent. The number of organizations receiving credit rose from 10 to 246. Of the short-term loans, nearly half were for fertilizer and a quarter for poultry. One-tenth of the organizations had long-term loans, 70 percent received training in vegetable production, and half had a collective vegetable demonstration plot.

These organizations have facilitated women's access to much-needed social services and provided a conduit through which technology can be quickly shared with them. They have helped both to reduce women's isolation and to build self-confidence while developing technical and management skills. The contrast in women's outlook between "with" and "without" villages is immediately apparent.

*Source:* World Bank 1990a.

Extension planners should note that where credit is the principal component of a project, women may be inhibited from participating in farmers groups that are formed expressly to channel credit. Because women do not often have access to land title, it is usually men who join such groups. Moreover, women heading their own households are less likely than men to own enough land to market surplus

produce. Credit packages delivered to groups should be carefully conceived so that women are not deterred from joining and thus deprived of the benefits of both credit and valuable technical advice.

A theme running through this paper has been the failure of the research and extension systems to respond to the needs of women farmers. Women lack a collective voice to demand help, and male extension agents often lack incentives to do anything to help them. Groups afford a vehicle for developing a "demand-led" and "women-farmer-focussed" approach that, if successful, could address this problem. If groups, with government assistance, were to employ their own extension agents, motivation to keep their jobs would spur these agents to obtain the information, inputs, and other necessities their farmer clients need (see Box 38 for examples of groups employing their own extension agents).

Existing groups are preferable to new ones because group cohesion and homogeneity are important (Box 39). If new groups are to be formed, care should be taken that members have common goals and that the group does not become dominated by the elite or those of a higher class or caste. Family groups in which some women are reluctant to speak up should also be avoided. In Chile, for the first 1-2 years of an extension exercise, agents work with individual farmers while they identify and assess the existing groups within the village: who are the members, what do they have in common, and how cohesive is each group. Then the agents decide which group can most effectively use extension efforts.

**Box 38: Using Groups for Farmer-Focused Extension**

In Bangladesh, a few community groups, under the auspices of NGOs, have started selecting and supporting their own extension agent. In India, groups of farmers growing 1-3 ha. of grapes also employ extension agents.

When the agent's salary and continued employment depend upon the farmers' satisfaction, these agents are motivated to respond to farmers' needs. Poor farmers are unable to completely pay for extension activities, but the central government can underwrite the approach by reimbursing part of the salary and supplying other benefits.

**Box 39: Women Farmers Groups in Kenya**

Women farmers' groups are used extensively in Kenya as the contact for extension. A recent survey found that 67 percent of field extension agents work with women's groups. Of these, 38 percent work with more than three women's groups. The average group membership was found to be 35, and most members belong to lower-income groups of the rural community. Such groups thus constitute an important means of reaching the less progressive farmer. Already established groups tended to be most effective in extension: 62 percent of those surveyed were already functioning as self-help family groups. EAs follow up group meetings with visits to the individual women farmers and report that these women tend to adopt extension messages more readily than individual contact farmers.

*Source:* World Bank 1989a.

Selection of group leaders is best left to members, particularly in existing traditional groups. These organizations are likely to have their own norms, criteria, and reasons for selecting leaders. It may be useful for extension agents to discuss the criteria suggested for the selection of contact farmers before asking groups to identify leaders for extension work.

Extension methods may need to be adjusted for Contact Groups, and should vary depending on whether the groups have all-male, all-female or mixed membership. The length of the visits must be extended to allow interaction among group members, and the timing of visits is especially important for women. Group meetings should cover topics of common interest. Meetings in villages are convenient but are an inadequate substitute for field visits, particularly when farming practices are to be demonstrated and observed. The use of groups in extension is relatively new and there is much to be learned about group dynamics and delivery methods.

### *Using Women as Contact Farmers*

Extension services cannot contact every farmer in a country so certain farmers or groups or geographic areas are selected. The criteria used in the selection has a major impact on the level of women's participation in extension activities. Selection criteria commonly used that are likely to discourage the participation of women farmers include land ownership, literacy, and the ability to purchase inputs. A bias against female farmers may also be created when the advice of village chiefs and elders is sought. The characteristics for which farmers should be selected are shown in Box 40.

#### **Box 40: Selecting Contact Farmers**

Women are more likely to be selected as Contact Farmers if criteria for selection emphasize farming ability and if extension agents make the selection. In Muranga District, Kenya, for example, more than half the Contact Farmers were women in areas where the selection criteria included active involvement in farming and availability to meet agents. But in areas where land ownership was a selection criterion or where chiefs selected Contact Farmers, fewer women were Contact Farmers (World Bank 1989a). Contact Farmers should be selected for certain characteristics. Contact Farmers should:

- Represent the local range of farm size, cropping patterns, and socioeconomic conditions and be regarded by other farmers as worthy of imitation.
- Be active, practicing farmers.
- Be willing to adopt extension recommendations on at least part of their land, allow other farmers to observe the new practices, and be willing to explain them to other farmers.
- As much as possible, come from different families.
- Be from geographically dispersed farms.

Three approaches have proven effective in Kenya: encouraging chiefs, ministers and political leaders to take a public stand at local gatherings and in the media in favor of female contact farmers; emphasizing the selection of women farmers during training programs for extension agents; and encouraging extension agents to select contact farmers on the basis of merit rather than for patronage (World Bank 1989a). Actual experience in working with women contact farmers often persuades male extension agents that this approach is effective. Evidence from Nigeria and Kenya, for example, indicates that some male agents prefer working with women farmers because women are more likely to follow their advice and are doing most of the farming anyway (Nnonyelu 1987, World Bank 1989a).

Researchers in parts of South Asia have found that women from large landholding families who act as supervisors share any information they have with the women laborers, unlike their male counterparts. Both sides benefit -- the women laborers from higher wages because of the skills training, and the landowners from improved practices -- so the recruitment of landed females as contact farmers is suggested as a means of reaching landless, marginal women.

Scarce resources can force a government to limit extension activities to selected areas. The use of criteria such as agricultural and livestock potential, infrastructure, and extension agency resources is likely to exclude marginal areas with scarce land and low productivity -- precisely those areas in which households headed by women and male out-migration are most concentrated. In Honduras the change to providing extension only to selected sites reduced the proportion of female farmers among extension clients.

Quotas for female contact farmers emphasize the need to include more women and raise the consciousness of agents about the issue, but general targets and benchmarks are preferable provided they are preceded by thoughtful analysis of prevailing agricultural practices and followed by frank and open discussions among agents.

Proactive, voluntary approaches are best. All agents should be properly trained in analyzing farm households to recognize the resources, constraints, incentives, and obligations of household members, including women. They should also be taught to organize and communicate with women farmers. They should then monitor a proportion of women farmers for participation in extension activities, extension methods used, responsiveness to extension messages, and adoption rates.

#### *Using Appropriate Methods of Communication*

Agricultural extension is communication -- the "marketing" of agricultural technologies to a targeted audience. Extension agents can more easily communicate with farmers if they use a suitable method and vehicle of communication to deliver to the intended audience. Which method of communication to use depends on cultural differences, the communication technologies available, the farmers' stage in the adoption process, and local circumstances. Box 41 compares types of personal contact and audio-visual media, Box 42 describes the range of methods used in a project in the Philippines and Box 43 presents an evaluation of the costs, effectiveness, and suitability of various media for Indonesia.

The adoption of a new technology is a process that takes place over time. The five stages in technology adoption are (Baser 1988): (1) awareness that a new technology exists; (2) sufficient interest to seek more information; (3) evaluation of the probable impact of the technology; (4) possible testing in a small-scale trial; and (5) incorporating the idea into usual practices. In the early stages repetition or the ability to review or reread an extension communication is important. Later stages require interactive communication, preferably direct, although it can be simulated in plays.

4.47 *Printed matter* is the least useful method where levels of female literacy are low (in most rural areas) but can be combined with literacy programs. Pictorial representation -- in drawings, cartoons, or photographs -- is a good addition to the printed word. Possible formats includes posters, calendars, leaflets and storybooks. The photonovels of Indonesia use photographs in a comic book layout.

#### Box 41: Methods of Communication for Agricultural Extension

Method	Implications for women farmers
Direct to Contact Farmer (CF)	<ul style="list-style-type: none"> <li>• Most effective means of exchanging information and discussing problems.</li> <li>• EAs can meet only limited number of farmers.</li> <li>• Criteria for selection as CF may be biased against women.</li> <li>• Contact may be hindered by restrictions on interaction between genders.</li> </ul>
Direct to groups, meetings or demonstrations	<ul style="list-style-type: none"> <li>• Good potential if women can join and fully participate. More farmers in contact with EAs, peer learning and group reinforcement.</li> <li>• Criteria for selection may be biased against women.</li> <li>• Women's time constraints may limit attendance at meetings.</li> <li>• Choice of language important as women may only speak the local dialect.</li> </ul>
Indirect contact through CFs or groups	<ul style="list-style-type: none"> <li>• Women are less inclined than men to approach a Contact Farmer (particularly a male progressive farmer) for information.</li> <li>• Secondhand messages are imprecise.</li> </ul>
Printed matter such as newspapers, leaflets, brochures, periodicals, flip charts, posters	<ul style="list-style-type: none"> <li>• Women less likely than men to be literate or to know a language other than the local dialect.</li> <li>• Visual (comics or cartoons) may be preferable to written forms.</li> </ul>
Radios and cassettes, TV and videos	<ul style="list-style-type: none"> <li>• Choice of language important.</li> <li>• Women may have more limited access than men to TV, radio or cassette player.</li> <li>• Timing of broadcast or playing of cassette or video when women able to attend.</li> <li>• Serial or "soap opera" (or cartoon strip) useful to (a) attract audience, (b) reinforce message, (c) present discussion from several viewpoints, and (d) provide additional information on a planned basis.</li> </ul>
Puppets, theater, folk media leaflets	<ul style="list-style-type: none"> <li>• Allows use of real life examples that are personalized and entertaining.</li> <li>• Choice of language and time of presentation important.</li> </ul>

*Radio* has a long history as a communication tool, especially in agriculture. Its low cost and wide reach make it a relatively simple, effective technology for development. *Television* is less widely used because of production and equipment costs. Sub-Saharan Africa contains about 8 percent of the world's population but it has only 2 percent of the world's radio receivers and 0.7 percent of the world's television receivers. An estimated 70 percent of rural Africa now has radio coverage, but access varies widely between rural and urban areas, men and women, and among countries. Elsewhere, radios and television are more widespread, although televisions may be found in places not frequented at all by women (such as tea-houses in Turkey) or in places that women are less likely to go (such as block offices). Audio and video cassettes, running off generators where there is no electricity, have extended the reach of both radio and television broadcasting.

*Radio and television* are promising as adjuncts to -- not as substitutes for -- face-to-face extension, and are especially effective in reaching illiterate audiences and women in seclusion (Box 44). Drama and comedy have a drawing power (unfortunately Radio Nepal provides comedy through a cantankerous old lady). The ability to return to the same subject many times and, using a dramatic

#### **Box 42: Innovative Communications in the Philippines**

- *Extension messages in soap opera.* During a 5-month period, Central Visayas Regional Project's extension messages were incorporated into the 30-minute soap opera "Buntag na Alexandro," which was aired five times a week by a government radio station.
- *Broadcast media participation.* Instead of providing canned materials for broadcasting, the project involved the radio stations in the planning and production of the material, thus increasing their commitment to it.
- *Contractual services* were used for special skills — such as scriptwriters, and illustrators; only core staff were retained.
- *Field staff and agencies* were involved in the production of audio-visual materials for their sites. This was done initially by means of a photography seminar.
- *The drama group* was composed primarily of youths initially trained in scripting and presentation. The storyline of each drama was based on real-life situations and problems and carried project-related messages. Audience participation, particularly in problem-solving, was an integral part of the program.
- *Posters* were used to communicate news, the names of adopters, testimonials of adopters (what they say about the project), and notices about specific project-related activities.

*Source:* ACIPHIL 1986.

approach, discuss a subject from various viewpoints is important where group decisions are reached by consensus. Messages should be timed to coincide with agricultural operations, and it is crucial that programs be broadcast when women have access to radios and the time to listen. Despite the assumption that only men have the interest or time to watch, much of India grinds to a halt for an hour on Sunday mornings so everyone can watch a farming series. Broadcasters should also remember that, because of their lower education levels, women may be more comfortable with local dialects than with national languages. Radio forums or listening groups are more effective and stable over the long term when structured around traditional groups that have functions other than radio listening. Radio messages be planned in conjunction with the messages from extension agents. Evidence from Ghana, for example, has shown that female farmers question extension agents about subjects already discussed on the radio.

#### **Box 44: Nigeria: Rural Radio Ownership**

In Northern Nigeria, Olayiwole (1984) reported 100 percent radio ownership in one of two Muslim villages studied and 97 percent in the other. Fifty-four percent of Muslim women in the second village listened to farm broadcasts and 85 percent tuned in to women's programs.

**Box 43: Media Comparison Chart, Indonesia**

Media type	Features of Media				Types of Messages		
	Ease of dissemination	Cost effectiveness	Spread of impact	Easily reviewed by user	Can motivate	Can inform & instruct	Can demonstrate techniques
Radio	H	H	H	N	H	M	N
Calendar/poster	M	H	M	H	M	M	N
Photo-novel	M	H	M	H	H	M	L
Video-scope	L	M	L	N	H	H	H
Slide-Tape	L	H	L	N	M	H	M
TV	H	L	H	N	H	H	H
Stage play	L	L	L	N	H	L	L
Movie	L	L	M	N	H	H	H
Demonstration	L	M	L	N	L	H	H

H = High      M = Moderate      L = Low      N = No

*Note:* A good rule to remember: use every medium that the farmer has access to and can control and that you can afford.

*Source:* Mangan, personal communication, 1991.

*Videocassettes* have been used successfully for training extension agents to strengthen "farmer-to-farmer" sharing of technical information and experiences in Latin America and in India -- a kind of visual demonstration plot. Video courses could be prepared for low-resource farmers, including women, and distributed to local extension units together with supporting visual and printed materials. Such a package could be taken to villages for viewing by farmers -- followed by discussion and supervised practice sessions. Although special programs will be needed for specific audiences, they can be viewed by, and so educate, both men and women. Experience has shown that illiterate women are excellent video camera operators -- they have a visual expertise unhampered by experience of the written word -- and home in on the meaningful scenes to record. TV and videos are becoming increasingly popular in the Yemen where Muslim women can view the programs in the seclusion of the women's

quarters (Hamada 1985). In Cote d'Ivoire solar-powered TVs in village centers play videos of football matches that attract audiences who afterwards stay to watch agricultural extension videos.

### *Giving Women Farmers More Access to Meetings, Courses, and Demonstrations*

Women's attendance at meetings, demonstrations, and courses will increase if their needs and convenience are made a priority. This means:

- Scheduling meetings and demonstrations during women's free(est) time in the day or evening.
- Locating meetings and demonstrations where they are convenient for women to attend -- such as close to homesteads.
- Locating demonstration plots along frequently traveled paths.
- Meeting with women as they market or pound maize or work communally.
- Holding courses at the time of year slackest for women.
- Providing transport to training centers.
- Providing mobile training centers.
- Providing separate residences for women at training centers.
- Providing child care facilities or encouraging cooperative child care.
- Breaking courses into smaller modules as it is easier for women to attend a two-day than a four-day course.
- Providing training at the homestead for women in seclusion.

And above all:

- Ensuring that the content is interesting to her. If messages are irrelevant to her needs, why should she bother to meet the EA or attend the demonstration or course?

*Mobile training courses* can be particularly helpful for women farmers. They are much more accessible to women who cannot (or are not allowed to) stay away from home for the required training time. In Zambia, for example, a recent evaluation found the mobile training courses used by the Agricultural Sector Support Program very effective for female farmers: about a one-third of the participants in mobile courses in the Eastern province were women. As a result, the government has moved from Farmer's Training Centers to mobile training.

*Agricultural fairs and shows* provide a good opportunity to demonstrate women's productive skills and special accomplishments. Citations and awards of fertilizer, seeds, sprayers or other farm tools provide recognition and incentives.

### **Monitoring and Evaluation**

Monitoring and evaluation (M&E) is a short-term management tool which over the longer term can influence the formulation of policies and future activities. For evaluations, data and analysis are needed to show:

- What is being tried and at what costs.
- How cost-effective specific measures are in terms of women's participation in extension and farming activities, productivity, and production.
- What the long-term benefits are in terms of agricultural output and farm income.

*Monitoring* gives managers feedback on how and how much extension has progressed compared with what was planned. Monitoring must be continuous, not perfunctory and intermittent, to ensure that interventions can be guided and modified as necessary. *Evaluation* seeks to explain, and if possible measure, the efficiency of implementation relative to costs and accrued benefits.

*Key indicators* are the yardsticks against which progress is measured during the course of a project and should reflect project objectives. Key indicators and target values are needed for the final objective (based, for instance, on rate of adoption, output, yield) and for the in-between stages (for instance, knowledge of the technology). Using an adoption rate as a key indicator of the effectiveness of extension monitors both extension per se and complementary factors: that the word was spread, that the message was useful, that inputs were available, that incentives were present, and so on. Adoption should be measured incrementally for women farmers, who are more likely than men farmers to be only partial adopters.

Current thinking on M&E is to use multiple approaches to data collection. Emphasis should be on rapid, cost-effective methods that capture the complexities of households and the implications for extension of gender differences. Many of the simple, gender-sensitive techniques outlined in Chapter 3 are also useful for monitoring the impact of projects on women. For example, information contained in reports of field trips by extension and research staff can be used for analysis. Monitoring against set gender-disaggregated indicators obliges staff to consider women farmers.

*Monitoring* involves three stages of data collection: (1) *Built-in record-keeping and reporting* on implementation of planned activities: numbers attending, dates, locations. Project management should receive this mainly quantitative information routinely with minimal supervision and some spot checks. (2) *Diagnostic monitoring*, which provides qualitative information and explains the results of routine monitoring. Data from different sources need to be studied and discrepancies investigated. Ability and skill are needed in the extension agency to trace the activities of women farmers and to ask such questions as why they did or did not attend extension activities and whether a change in time or location would be better. These informal, nonrepresentative fact-finding visits are difficult and M&E staff need training in who to talk to, where to go, what questions to ask, and how to ask them. (3) *The sample survey*, if necessary, to confirm or quantify the diagnostic findings. If several women suggested that cooperative child care during extension meetings would facilitate their attendance, the sample survey would determine the need and level of support for this initiative. The sample survey is more focused and therefore more useful and cost-effective if designed on the basis of the results of record-keeping and diagnostic monitoring.

To *evaluate* how effective extension projects are in reaching women, at least four questions should be asked:

- Does the project make a specific effort to reach women? If not, should it? Can it be modified to do so?
- Is the project, in fact, reaching the targeted women (for example, female farm managers)?
- Are the targeted women benefiting from project activities?
- What effect is the project having on targeted women?

If the project is a pilot or has innovative features, a mid-term evaluation should be scheduled to allow adjustments to be made and to identify features that could be implemented on a broader scale.

## Chapter 5: GUIDELINES FOR PROJECT PREPARATION, DESIGN AND IMPLEMENTATION

Helping women to contribute fully to agricultural development requires understanding their role in the farming system and household, making appropriate technical information available, and identifying suitable strategies for reaching women farmers with this information. Gender analysis makes this possible. This final chapter offers guidelines in designing new and modifying existing projects to more effectively deliver extension to women. It discusses from the gender perspective four principles of project design and three mechanisms that must be built into each project, outlines information needed at project preparation, and describes the steps to be followed at project design and implementation. The principles, methods and strategies given here for extension projects are broadly applicable to other types of agricultural projects, such as irrigation or settlement (Table 5.1).

Gender issues must always be considered in the design or modification of extension projects. Four organizational principles underlie effective extension to women farmers: projects should be tailored to the specific situation; projects should be flexible; women farmers should participate in the planning process, and women's programs should be mainstreamed into a unified extension service. And three mechanisms are essential to effective extension projects: mechanisms for diagnosis, feedback and the transfer of information. These aspects of project design are discussed further below.

### Principals of Project Design<sup>6</sup>

#### *Situation Specificity.*

Women farmers are not in the same situation the world over. Cultural and legal limits on women's roles and access to resources and benefits vary even within countries. Strategies and project components to improve extension to women farmers should reflect the specific sociocultural conventions in an area or country, as well as match the resources and structures of the extension system in place and allow for differing natural resource endowments, economic strategies, and management styles. Effective extension requires setting objectives specific to the situation including goals to be reached with, for, and by women farmers; selection of specific target groups including different categories of women; and decentralization of authority and encouragement of local initiative.

#### *Project Flexibility.*

A special effort is needed to understand women's roles and the constraints they face, and to overcome deeply entrenched prejudices surrounding gender factors. All necessary information may not be available at project preparation; interventions and strategies may have to be based on less than ideal data. In any case, farming systems and gender roles are not static. Projects need the flexibility to make mid-course corrections in response to a better understanding of women farmers, to changes in agricultural production patterns, and to deficiencies in the original design. Projects should be able to test promising approaches and expand successful strategies.

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<sup>6</sup> After World Bank, *Agricultural Extension: The Next Step*, 1990.

Table 5.1: Gender Issues in Agricultural Projects and Components

Issues to consider from a gender perspective	Type of Project or Component									
	Extension	Credit	Irrigation/ Settlement	Research	Animal Traction & Mechanism	Crop Divers.	Crop Rehab.	Livestock	Natural Resource Management	Food Security
Gender division of enterprises & activities	x	x	x	x	x	x	x	x	x	x
Gender-differentiated constraints	x	x		x	x	x		x	x	x
Gender division of resources	x	x		x	x	x		x		x
Gender differences in farming objectives	x	x		x		x	x	x	x	x
Participation in On-Farm research	x		x	x		x		x	x	x
Participation in extension activities	x	x	x			x		x	x	x
Suitability of credit (type, duration)	x	x		x		x		x		x
Suitability of extension messages	x	x		x		x		x	x	x
Suitability of technology/equipment	x	x		x	x	x		x	x	x
Legal restrictions on land title/tenure/access	x	x	x	x		x		x		x
Cultural restrictions on land title/tenure/access	x	x	x	x		x		x		x
Eligibility to receive credit	x	x		x		x		x	x	x
Cultural restrictions on access to credit	x	x		x		x		x	x	x
Cultural restrictions to ownership of technology	x			x	x	x		x		x
Cultural restrictions to use of technology	x			x	x	x		x	x	x
Access to water	x		x			x		x	x	
Access to inputs	x	x		x		x	x	x	x	x
Time and energy constraints	x			x		x		x	x	x

There are two ways to increase the flexibility of components targeting women farmers. First, particularly where resources are extremely scarce or success strategies difficult to identify, agricultural extension projects should include WID pilot schemes that focus on principles and mechanisms. These pilots should create an environment in which women farmers and extension agents work together to evolve strategies that can be implemented projectwide as soon as possible. Annex 1 describes the transition from Women in Agriculture (WIA) pilot schemes to countrywide implementation in Nigeria.

Second, an unallocated fund specifically earmarked for initiatives that will help women increase their productivity should be included at project preparation. The fund would be over and above the components identified with detailed costings. At any time during the project cycle, national governments could identify, prepare, and cost requests for using these special funds. Allocations would then be made, with the Bank's approval. The unallocated fund would give the project flexibility, would enhance institution building, and would assure that gender issues remain visible.

#### *Farmer Participation in Planning Extension Services.*

Accountable and responsive extension requires that farmers articulate their needs and their views about the information and activities currently offered and the new areas in which they want assistance. Farmers currently have little influence on and control over the technology generation and dissemination systems for which they are the clients. Circumstances must be created in which farmers' demands can be heard. Increased farmer participation -- which at the simplest level is feedback -- needs to be built into the reward system and incentives for extension staff, and into the key indicators used in monitoring extension services. Participation by women farmers is especially constrained by the low status often accorded to them and the rigid hierarchical structure of many extension systems. Organizations and groups of rural women offer opportunities for increased participation. At the village level, women's groups should decide on the information and activity program they need from the extension service during the following season. At district, regional, and national levels, representative officials or members should participate in policy, design, program planning, and management discussions. And female extension staff should participate in all stages of the project cycle.

#### *Mainstreaming of Extension Activities to Women Farmers.*

Extension services to women farmers should be mainstreamed in a unified and integrated extension service to all farmers. Initially, a special initiative to involve women in extension may be needed within the main extension system. This "affirmative action" approach is essentially a learning experience for farmers and agents. Different approaches can be tried and the lessons drawn can be the basis for an integrated approach. Without mainstreaming, there is a danger that women's programs will be marginalized and that the bureaucracy responsible for women's programs will become entrenched.

## **Functional Mechanisms for Effective Extension<sup>7</sup>.**

### *Diagnosis.*

Diagnosis of the opportunities and problems of different categories of women farmers should be conducted at project preparation and as an ongoing activity. Neither agriculture nor gender roles are static, so extension services need regular updating. If projects are to address the differing needs of male and female farmers, gender disaggregated data and analyses are needed by policymakers, managers, and frontline staff of extension and related activities. Gender analysis is a specialized study which the borrower may lack the capability -- knowledge, attitude, and skills -- to carry out. Although the capability of the person doing the gender analysis is more important than his or her gender, often a woman may be preferred or even essential.

A gender-sensitive person, preferably a female national with a social science or agricultural background and gender analysis training, should be included on the project preparation team and subsequent missions. This person would have special responsibility for gender issues. This would assure continuity and continuing attention to women farmers (see Annex 2 for generic terms of reference).

### *Feedback.*

The quality control mechanism in a good extension system is the feedback of information from farmers to researchers, managers, and others with the power to make improvements. Many farmers, including women, can formulate and express their needs. These needs -- especially those of women -- tend not to be heard. Feedback from grassroots to the senior levels should occur within the extension service and can be encouraged by staff incentives. Feedback can be strengthened by involving organizations of rural women.

### *Information Transfer.*

The provision of technical information and its use by farmers is the heart of extension. Communication systems must be tailored to the type of information, stage in the adoption process, and client characteristics. Information on crop prices and fertilizer availability can be spread by mass media; learning new skills and gaining confidence to try a new technology requires continuing personal contact. Men and women farmers may differ in literacy rates and languages spoken, and in their access to newspapers, radios, and video. Similarly, visits of extension agent and other extension activities must take account of constraints on women's time and mobility and cultural restrictions on personal interactions. Some communication channels, such as local radio, may be a solution to some constraints of women farmers but will need careful planning and cannot entirely replace personal contact.

Farmers accept information they think will be useful, and their views should drive the supply of information. Both male and female farmers should help set overall extension objectives, formulate information needs, and rate the performance of extension staff.

Whether farmers can use extension information and adopt technologies depends partially on external factors. Where men and women have different enterprises or outlets for their produce,

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<sup>7</sup> After World Bank, *Agricultural Extension: The Next Step*, 1990

different responses to price changes can be expected. Women farmers cannot or will not use the information unless they have incentive to use it and access to the factors needed to do so.

## **Project Preparation**

The key ingredient for successful preparation is understanding women's role in farming, their information needs, and how these needs are being and can best be satisfied. These gender issues must be considered in relation to the selected orientation of the project. The choice of a geographic area, a specific target group, the introduction of private extension or input delivery, the promotion of specific enterprises or technologies (such as animal traction or irrigation), may have different impacts on male and female farmers. Until these different impacts are predicted, the benefits and beneficiaries of the project cannot be assessed, and components and strategies that will aid women farmers cannot be identified. Following are guidelines on what to look for and how to look for it.

### *What Information to Look For.*

Gender analysis, preferably backstopped by a gender-disaggregated agricultural household survey, is essential for an understanding of men's and women's differing roles. Key indicators indicate how seriously the government and extension service take women farmers and gender-equality. They provide an insight into the demand and supply of information and services to women farmers.

a) Gender analysis. Gender analysis is the qualitative and quantitative disaggregation by gender of (a) activities, (b) resources and constraints, (c) benefits, and (d) participation in extension (or project) activities (see Chapter 3 for details and Annex 3 for sample tables).

b) Key Indicators. The following key indicators cover the basic information needs at project preparation (tables cited are in Annex 3). Indicators should be assessed quantitatively if possible. When qualitative assessments are needed they must be kept objective. More information will be needed after the orientation of the project has been determined and in later stages of project design.

- Gender equality in laws and public policies (Table A)
- Gender in farming and extension activities
  - Value of available gender analysis data (Table B)
  - Female farmer participation in planning the extension program (Table C)
  - Necessity for special extension strategies (Table D)
- Organization of the extension service
  - Coverage of gender issues in directives, recruitment, and training (Table E)
  - Distribution of extension staff by gender (Table F)
  - Female enrollment in agricultural education (Table G)
  - Mobility of extension agents by gender (Table H)
  - Media output specifically for women (Table I)
- Farmers and extension activities
  - Extension agent to farmer ratio (Table J)
  - Contacts between extension agents and male and female farmers (Table K)

- Male and female farmer participation in extension activities (Table L)
- Major farming organizations of project area (Table M)
- Farmers and extension information
  - Utilization of production credit by gender (Table N)
  - Information demand and supply (Table O)
  - Adoption of major recommendations (Table P)

*How to Look for this Information.*

When the required data are not available, it may be necessary to conduct a feasibility study to identify gaps and to include in the project design the establishment of a system for obtaining the information in the future. Local consultant(s) would, if necessary, conduct a gender analysis and other necessary surveys using Rapid Rural Appraisal techniques. The main aim would be not to fill in questionnaires but to provide an understanding of gender roles in farming and advice on extension methods and strategies acceptable in the country.

**Recommended Steps in Project Design<sup>8</sup>**

Simply targeting women does not guarantee success. Different types of women farmers should be explicitly identified at project appraisal as targets or beneficiaries, and their needs and available resources should be determined. Specific measures must then be included to assist them, and key indicators used by the extension service and in project supervision should reflect their importance in the agriculture of the area. The following steps will ensure that the gender dimension is considered fully.

*(1) Decide on project orientation.*

Project orientation -- area of country, target group, irrigation scheme -- is chosen on agronomic and economic grounds.

*(2) Clarify gender roles and their implications for project strategies.*

What does the project propose to do to improve agriculture? What farming activities will be promoted by project interventions? What is the existing division of labor between men and women in these activities? How do these activities fit in with the total pattern of women's productive and domestic activities? What innovations are being proposed? What are the implications of the proposed project orientation and components for different household members?

*(3) Analyze eligibility to receive project inputs and services and to participate in project activities.*

What inputs will be provided? In light of the existing division of labor, which household member should receive these inputs? Can women qualify to receive inputs in their own name and right? What are the prerequisites of eligibility? How many target households in the target group fit these criteria? Which household member should participate in project activities (such as soil conservation, water user

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<sup>8</sup> After Carloni 1987.

groups, training, extension)? Even if there is no formal discrimination against women, how will the location and timing of activities affect women's participation? Does the proportion of women in the pool of eligible participants match the division of labor? Are there de jure or de facto restrictions on access to land, credit, or membership in groups or cooperatives?

*(4) Examine outreach capabilities of institutions and delivery systems.*

Do existing institutions and delivery systems have direct contact with male and female farmers in proportion to their farming activities? If not, why not?

*(5) Assess the appropriateness of proposed technical packages, messages and technologies.*

How do men and women differ in their resources and constraints? Are the technical packages applicable to all farmers or only to those with certain types of resources (such as irrigated land, several head of cattle, labor surplus, and animals for traction)? Do the technical packages contain elements that are traditionally restricted to either sex (such as animal traction and pesticide spraying)? How many farmers in the target group have the right kind of land? How many farmers, given gender-specificity of tasks and male migration, can meet any additional labor requirements? How many farmers can raise the necessary cash? What implications do gender differences have for the spread of innovations to poor farmers or households?

*(6) Examine the distribution of benefits and its effect on incentives.*

Given the gender-based division of labor and control of income from different crops and activities, what interest will women have in intensifying their production or adopting the package? Do the direct returns for women outweigh any additional effort? If the project affects marketing, are women likely to lose an independent source of income?

*(7) Consider the reliability of feedback mechanisms.*

If women play a major role in project-related activities, such as vegetable production, how will project planners find out whether the proposed technical innovations are acceptable to them? What provisions are made for local women and men to participate in selecting and testing technologies and in evaluating results? Do monitoring and reporting systems distinguish between male and female participants?

*(8) Anticipate probable changes in the roles and status of women and link these to the expected impact of the project.*

How will women farm differently as a result of this project? How will the project affect women's access to and control over land, labor, capital, inputs, and expertise? Will women's workload increase or decrease? What will happen to their independent income, to their control of crops and the income from sales, and to their voice in household decision-making on expenditures and other issues? How will changes in women's access to and control of land and productive resources affect food availability and project objectives? How will changes in women's ability to earn an independent income affect the household cash flow? And how will it affect their ability to provide for their families? How will women's workload affect such things as child care and family nutrition?

*(9) Identify needed measures or adaptations.*

Using the previous steps as a guide, identify what changes are needed in institutions, delivery systems, technical packages, and feedback mechanisms to overcome the barriers to women's access to project inputs and their ability and incentive to participate.

*Examples of Measures to Benefit Women Farmers.*

Three categories of measures to benefit women farmers can be included in project design.

(a) Designing better messages.

- Conduct gender analysis.
- Recruit a horticultural or small ruminant research and development officer.
- Join networks such as Women in Rice Farming Systems (WIRFS) or Information Centre for Low External Input and Sustainable Agriculture (ILEIA).
- Visit examples of successfully conducted farmer-focussed research.

(b) Improving extension services.

- Hold workshops to sensitize males agents.
- Provide childcare during training sessions for women farmers or female agents.
- Recruit more female agents by
  - providing boarding facilities for women students at agricultural schools.
  - retraining home economics and other rural female agents.
- Produce radio or television programs aimed at women farmers (and presented by women announcers).
- Provide transport for female agents.
- Train extension agents in farmer-focussed extension methodologies.

(c) Providing complimentary inputs.

- Provide seed money or credit for women's income generating activities, such as for agroprocessing equipment.
- Discuss with government reform of discriminatory laws.

## **Project Implementation**

Gender aspects are relatively new in the design of Bank projects, so it will often be necessary to modify or adapt existing projects or components. Continuous monitoring allows the performance of the extension service to be tracked against the indicators used (or identified) at project preparation. Problems can then be identified and rectified.

*Examples of Modifications in Existing Projects to Increase the Numbers of Female Beneficiaries.<sup>9</sup>*

- Change the focus of project activities (for example, increase the relative importance assigned to "women's" crops, livestock or activities).

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<sup>9</sup>after Carloni, 1987

- Improve the messages. For example, broaden the research agenda to cover the enterprises and tasks of women farmers; conduct more on-farm research on women's fields; appoint female SMSs.
- Increase the number of women in the pool of eligible participants (for example, change the criteria for selecting contact farmers or for membership in extension groups; train male agents to work with female farmers).
- Adapt credit components (for example, focus on smallholdings; reduce the minimum size of loans; use group liability rather than land title for collateral; reduce costs by loaning to groups).
- Improve outreach in the delivery systems (for example, reduce time and distance to input suppliers and markets).
- Improve the location and timing of project activities (for example, provide one-day or mobile training rather than residential; hold evening meetings; identify a time and place that women congregate -- such as markets or sites for communal work -- and use these settings as entry points).
- Improve residential training for women farmers (for example, provide child care or separate boarding facilities for women).
- Choice of language and communication network (for example, use the vernacular; recruit local agents who speak the vernacular; use verbal or pictorial communication rather than written; communicate with groups rather than individuals).
- Increase the supply of information, technologies and facilities that women specifically need (for example, market information, and intermediate transport technology; appropriate tools and equipment; training in the operation and maintenance of equipment).

## Conclusion

Increasing the extension service's contact with female farmers will not in itself ensure increased productivity, output, or family welfare. But extension can be an important catalyst if all the needed complementary factors are in place. These include access to land, labor, credit and inputs; appropriate technical information; access to markets; and adequate incentives. Effective extension requires information and technologies suitable to the client, an environment that enables the client to take advantage of the technologies, and a channel of communication. Extension messages cannot be effective unless they reach the client -- and messages tend not to reach women farmers. This need not be the situation. As the examples and case studies given in this paper demonstrate, there are many ways of reaching women farmers effectively without transgressing cultural mores. The answer is to find a method suitable for both the local traditional culture and the local financial and human resources and institutional organization. Within a heterogenous country, it may be necessary to use several approaches. The main driving force must be the desire of management for an extension service that supports all farmers. Managers must be willing to face up to the problems, and they must be innovative in finding solutions and influential in persuading members of staff to change approaches and attitudes.



## **ANNEX 1: THE WOMEN IN AGRICULTURE PROGRAM IN NIGERIA**

In just over four years, the Women in Agriculture (WIA) program in Nigeria has evolved from three pilot projects to a national program central to the Nigerian government's agricultural strategy. The Bank played a catalytic role in the process. The program, which was cited at the World Bank's Executive Board as a "model" for developing and delivering extension to women farmers, provides a useful example of how to involve government, donors and the farmers themselves in developing an effective and relevant extension service.

### **History of the WIA Program**

A series of consultancies in 1986 highlighted shortcomings of the extension system in reaching women. Pilot activities were started in three states with differing socio-cultural and agronomic conditions. The approaches tested included gender-disaggregation of diagnostic field surveys to identify who does what tasks and with what technology, and brain-storming on gender issues at fortnightly T&V training sessions. The lessons learnt provided a basis for modifying the extension programs in both these and the other states. Over the next two years, the program expanded to all states. Home Economics agents were given short training courses and appointed as specialist Women in Agriculture (WIA) agents in an initially separate extension service.

Further evolution occurred following a June 1989 workshop of WIA participants from all states and senior officials from the Federal and State agricultural ministries. Action plans were developed, the Federal Agricultural Coordinating Unit (FACU) became fully involved, the WIA agents were integrated into the states' Agricultural Development Programs (ADPs), and the Bank hired a female Nigerian agriculturist to work full-time on the WIA program in the Bank's Resident Mission.

The enormous progress of the WIA program has not been without problems. Most commonly cited is the lack of transport - a problem pervasive to all extension agents but often affecting WIA agents more severely since women are less inclined to ride large motorcycles. Several states have circumvented this by purchasing "lady cycles" (mopeds). Appropriate labor-saving technologies for the varied activities of women farmers generally exist, but are neither produced locally nor distributed widely in rural areas. This issue was the focus of a second workshop in February 1991. There was also some reluctance by a few Home Economists to become WIA agents, and some reluctance by men in the extension service to work with WIA agents.

### **Overall achievements**

The two principle achievements of the WIA program are government ownership and management, and modifications to the extension program making it more helpful for women farmers. Specifically, these changes include:

- Modifications of the T&V system to optimise the use of the few women extension agents in the Moslem areas in the north and enable them to reach women farmers.
- Better diagnosis of information and technology needs by gender.
- The use of female EAs to introduce male EAs to women farmers - female agents visited two zones per month, to establish contact with women farmers, particularly groups, and to introduce the male agent to them.
- The identification and use of women's groups for extension, credit and community woodlots. A concerted effort has been made to enable women's groups to become registered cooperatives with the legal status to facilitate access to bank credit. In several states, the WIA programs have supported initiatives of women's groups to establish community woodlots - the women managing the woodlots and controlling the take-off for fuel.
- A doubling of female EAs (from 425 to 804) and tripling of female Contact Farmers, with particularly large increases in the northern states, over the 18-month period between the national workshops.
- Integration of the WIA program into the existing extension services of World Bank-funded ADP projects and, especially for technology and credit, into a new Bank project on agricultural technical support.

### **Three-pronged Approach to Implementation**

The WIA program was developed using a three-pronged approach of Annual Strategy Workshops; thematic discussions by ADP and World Bank staff to influence the technical messages; and field level implementation assistance from FACU apex and regional coordinators, and from a full-time, female Nigerian agriculturalist in the World Bank's resident mission. At the annual workshops, rolling three-year Action Plans, developed for each state by the WIA participants, outline broad objectives and strategies, and detail programs for each of the three years covering staff and training needs, and organizational structure. The appropriate technology needs of rural women are considered; work plans, problems and success stories are discussed; implementation teams are identified; and performances compared and appropriate recognition given to good performers.

**Factors contributing to the success**

- The existence of an UNDP Project which provided a ready source of crucial and flexible funding to get the program started.
- Use of ongoing World Bank projects and loans which were modified to fund the program.
- Use of existing structures in government - the ADPs in each State permitted decentralization of authority and regional diversity in approach.
- Building of capacity at the apex (FACU) with the establishment of senior-level positions for 5 WIA coordinators, one in its headquarters and the others in each of FACU's regional offices.
- Use of existing human capital - a cadre of home economics agents with some agricultural training within the Ministry of Land and Natural Resources.
- Interlinkage of support from Bank and government at both the national and state level.
- Consistently strong support for the WIA program by FACU which will now be taking the lead in the program, and the Bank's role will be one of providing support.

**ANNEX 2: GENERIC TERMS OF REFERENCE FOR THE STUDY OF GENDER AND AGRICULTURAL EXTENSION**

These terms of reference can be adapted for use in project identification, preparation, and appraisal, or for adding a gender focus to existing agricultural projects.

**Objectives**

1. Determine the significant agricultural activities of women farmers including field crops, livestock, farm forestry, processing, marketing, storage and income-generating enterprises, and the constraints faced in carrying out their tasks.
2. Assess how the agricultural extension service now meets the needs of the main groups of women farmers (crops/livestock focus, women farm managers/women farm partners and if applicable, women in seclusion), and identify technical, logistical and attitudinal constraints facing the extension service in supporting the agricultural activities of women farmers.
3. Ascertain the extent to which technology generation/research system is able and actually does respond to the technical needs of women farmers.
4. Identify nature and extent of training needed by extension and home economics staff to improve their support for women farmers, and identify location of such training.
5. If appropriate, plan with extension staff pilot or project interventions aimed at improving services for women farmers, and establish a plan to monitor and evaluate the success of the undertaking.

**Recommended Methodologies**

1. Gender Analysis: to understand gender roles in the farming system, analyse information about men's and women's
  - activities** -- who carries out which agricultural tasks and how rigid is the division of labor?
  - resources** -- who has access to and control of resources, and what are the implications for those with limited access of control?
  - benefits** -- who benefits from production, or controls the income, or participates in or benefits from extension (or project) activities?

Tables 3.1 and 3.2, and Matrix 2 (all in Chapter 3) and Annex 3 provide examples of gender analysis.

2. **Rapid Rural Appraisal techniques including interviews with key informants and groups affected, and analysis of project documents and existing data:**
  - (i) discussions with women farmers on their farms and in household compounds, women's groups, community leaders, and adult members of selected households;
  - (ii) interviews with chief extension officer, zonal, block and village extension staff and home economics/women in agriculture staff;
  - (iii) interviews with agricultural and social researchers at research institutes and universities; and
  - (iv) discussions with staff of other ministries/institutions working with rural women, e.g. Ministries of Community Development, Women's Affairs; NGOs and foundations and with agencies involved in rural services, e.g. credit inputs, marketing.
3. **Attend fortnightly meeting or Monthly Technical Review Meeting if possible.**
4. **If and when a detailed study is needed of interactions between various farming and other activities within households, do as case studies.**

**ANNEX 3: EXAMPLES OF GENDER ANALYSIS TABLES AND KEY INDICATORS  
FOR PROJECT PREPARATION**

The two types of information required at project preparation are a description of women's farming systems and a description of the current and desired extension services to women farmers. The following tables provide examples of the background information needed for the design of project interventions that will benefit women farmers.

- **Gender analysis of**
  - activities,
  - resources and constraints, and
  - benefits and incentives.
  
- **Key indicators of**
  - the extent to which men and women need different technical information and extension strategies (Tables B and D below);
  - how well the agricultural support services currently serve all target groups of farmers, including women (remaining tables); and
  - what measures, interventions or project components would improve extension services to women farmers (derived from answers in all tables).

If information such as numbers of female contact farmers or numbers of loans to women is not available, the collection of gender disaggregated data should be encouraged. Quantitative data at project preparation can form the basis of targets for selected key indicators against which the progress of the project can be measured. Other tables are qualitative and thus indicative in nature. These subjective assessments, on a suggested 1-5 scoring system, will emerge as "gut feelings" after discussions with government staff, farmers and others. They may appear somewhat arbitrary but are important in deciding if and how the project should benefit women farmers. The questions on page 96 are suggested topics to be raised with farmers.

**GENDER ANALYSIS: Activities**

	Males	Females
<i>Crop production</i>		
Crop ..... or Field 1		
Task 1 .....	.....	.....
Task 2 .....	.....	.....
Task 3 .....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
Crop ..... or Field 2		
Task 1 .....	.....	.....
Task 2 .....	.....	.....
Task 3 .....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
Crop ..... or Field 3		
Task 1 .....	.....	.....
Task 2 .....	.....	.....
Task 3 .....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
<i>Livestock production</i>		
Animal .....		
Task 1 .....	.....	.....
Task 2 .....	.....	.....
Task 3 .....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
Animal .....		
Task 1 .....	.....	.....
Task 2 .....	.....	.....
Task 3 .....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
<i>Household production</i>		
Activity .....	.....	.....
<i>Off-farm production</i>		
Activity .....	.....	.....

**GENDER ANALYSIS: Resources and Constraints**

F=female, M=male A=adult, C = child	Access M/F, A/C	Control M/F, A/C	Notes	Implications for project activities
<i>Land</i> Who uses How it is used	..... .....	..... .....	..... .....	..... .....
<i>Water</i> ..... .....	..... .....	..... .....	..... .....	..... .....
<i>Labor</i> Own Family Hired	..... ..... .....	..... ..... .....	Time ..... Mobility ..... Energy .....	..... ..... .....
<i>Capital goods</i> ..... .....	..... .....	..... .....	..... .....	..... .....
<i>Inputs</i> Purchased ..... ..... Produced on farm ..... .....	..... ..... ..... .....	..... ..... ..... .....	..... ..... ..... .....	..... ..... ..... .....
<i>Cash</i> ..... .....	..... .....	..... .....	..... .....	..... .....
<i>Agricultural credit</i> ..... .....	..... .....	..... .....	..... .....	..... .....
<i>Markets/transport</i> ..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....
<i>Agric. Knowledge</i> Extension contact Indigenous know	..... .....	..... .....	..... .....	..... .....
<i>Education</i> ..... .....	..... .....	..... .....	..... .....	..... .....
..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....

**GENDER ANALYSIS: Benefits and Incentives**

M = male, F = female A = adult C = child	Access to produce M/F, A/C	Control of produce M/F, A/C	% contribution to household income	Uses or characteristics (see note below)	Implications for project activities
<i>Crop products</i> ..... ..... ..... ..... ..... .....	..... ..... ..... ..... .....	..... ..... ..... ..... .....	..... ..... ..... ..... .....	..... ..... ..... ..... .....	..... ..... ..... ..... .....
<i>Livestock products</i> ..... ..... ..... .....	..... ..... ..... .....	..... ..... ..... .....	..... ..... ..... .....	..... ..... ..... .....	..... ..... ..... .....
<i>Household products (eg agroprocessing)</i> ..... ..... ..... .....	..... ..... ..... .....	..... ..... ..... .....	..... ..... ..... .....	..... ..... ..... .....	..... ..... ..... .....
<i>Off-farm activities</i> ..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....

Note: Uses and desirable characteristics of products including uses of all parts of the plant or animal

- a. consumption
- b. storage for later consumption, exchange or sale
- c. other domestic use (eg, fuel, building material)
- d. exchange
- e. sale
- f. reinvestment in agricultural production (eg, manure)
- g. other

Source: All three gender analysis tables are based on Feldstein and Poats 1989

## KEY INDICATORS FOR PROJECT PREPARATION

Table A: Gender Equality in Laws and Government Policies

	nil	1	2	3	4	5	>	high
Is there meaningful equity under the law ... - in land title or tenure? - in access to formal credit?								
Is there meaningful reference to women in ... - the agricultural development plan? - government discussions with Bank staff? <i>[if low score then consider the following question]</i>								
Is any de jure or de facto bias against women likely to ... - compromise the success of the project? - worsen the situation of women as a result of the project? <i>[if high score then open talks with government or reconsider the project]</i>								

Table B: Value and Use of Available Gender Analysis Data

	nil	1	2	3	4	5	>	high
How useful is any available gender analysis of farming activities for the preparation and design of the proposed project? <i>[if low score then need to commission a gender analysis]</i>								
To what extent is there gender division of enterprises, tasks, resources, incentives, etc?								
To what extent are men and women separate economically?								
To what extent do men and women have different technology needs?								
To what extent will the orientation of the project ( e.g. irrigation, specific enterprises, input supply) affect men and women differently?								
To what extent will the proposed components affect women's access to, and control over benefits? <i>[if high scores then need to ensure that the differential impact is taken into account when the orientation of the project and selection of project components is finalized]</i>								
To what extent are there cultural constraints on male/female interactions? <i>[if high score, need careful selection of suitable extension strategies]</i>								

Table C: Farmer Participation in Program Planning

	nil ----- > high 1 - 2 - 3 - 4 - 5				
Level of female participation on annual extension program planning (scale of 1-5; 1=no participation, 5=full control)					
- at village level					
- at provincial level					
- at national level					

Table D: Necessity for Special Extension Strategies

	nil ----- > high 1 - 2 - 3 - 4 - 5				
How necessary are different extension strategies . . . - for men and women? - for different categories (caste, secluded, farm size) of women? <i>[if high score then ask ... ]</i>					
Are special extension strategies being provided?					
What proportion of women farmers are being reached by the extension service? <i>[if low score, then ask ...]</i>					
To what extent do selection criteria bias against ... - women as contact farmers? - women as members of groups or co-operatives?					
How suitable are the media (type, language, access, literacy, etc.)?					
How suitable are the location and timing of meetings? <i>[if above scores low then strengthen appropriate sections, or choose suitable project components]</i>					

**Table E: Coverage of Gender Issues in Directives, Recruitment and Training**

nil ----- > high  
1 - 2 - 3 - 4 - 5

To what extent are gender issues adequately covered in: <i>[if low scores then need to improve the organization and attitudes within the extension service]</i>					
- extension service operational directives or guidelines?					
- extension service objectives?					
- extension agent incentives?					
- pre-service training?					
- in-service training?					
- technical message formulation?					
- routine training sessions?					
Is there an effort to <i>[if low scores, and feasible to use female agents, then explore ways to increase recruitment and training]</i>					
- recruit female EAs?					
- retrain female rural agents?					
Is there an effort to train extension agents in <i>[if low scores then improve pre- and in-service training]</i>					
- communication methodologies?					
- diagnostic and problem solving methodologies?					

**Table F: Distribution of Extension Staff by Gender**

Position	Total	Percent Female	Average years post-primary education	
			Male	Female
Agricultural Extension Agents				
Home Economics Extension Agents				
Supervisors				
Subject Matter Specialists				
Provincial Extension Officers				
National Extension Officers				
Liaison Officers				

**Table G: Female Enrollment in Agricultural Education**

Level	Total Enrollment (in numbers)	Female Enrollment (as % of Total)
Certificate:		
Diploma:		
Degree:		
Post-graduate:		

**Table H: Mobility of Extension Staff, by Gender**

Percentage of Staff in different positions using various methods of transportation:	Bicycles	Mopeds or Motor Scooters	Motorbikes	Cars/Trucks
All Extension Agents				
Female Extension Agents				
All Supervisors				
Female Supervisors				
All SMSs				
Female SMSs				

**Table I: Output of Media Specifically for Women.**

Type of production	Total number produced in past 12 months	Percent relevant to most women	Percent specifically targeted to women	Name examples targeted to women
Printed material - official lang.				
- vernacular				
Posters, billboards, etc.				
Video tapes for sale/rent				
TV programs (< 10 min.)				
(> 10 min.)				
Radio programs . . .				
- announcing weather, prices				
- technical, explanatory				
Result demonstrations				
Method demonstrations				
Farmers days, exhibits, ag. shows				

**Table J: Extension Agent to Farmer (M/F) ratio**

Total number of Extension Agents	
Total number agriculturally active population	
Ratio -- EA:Farmer	
Percent females in agriculturally active population	

**Table K: Contacts Between Extension Agents and Farmers**

Contact farmers regularly visited per EA in 2/4 week period - total number: - of whom female farmers:				
Groups regularly visited per EA in 2/4 week period	Total	Male only	Female only	Mixed
- number:				
- average number of farmers per group:				
- of whom female farmers:		nil		
Average number female farmers (contact + group) regularly visited per EA in 2/4 week period:	Total	Male	Female	

**Table L: Farmer Participation in Extension Activities**

	On-Farm Research	Day Training	Residential Training			
Total number of farmers participating						
Female participation as percentage of total						

**Table M: Major Farming Organizations**

List below the major farmer organizations in project area	Check where applicable			
	Mostly male	Mostly women	Mixed	Used with extension activities
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

**Table N: Utilization of Production Credit by Gender**

Year	Total amount of credit	Percent to women farmers	Total number of loans	Percent to women farmers
1970				
1980				
1990				

Table O: Information Demand and Supply

nil ----- > high  
1 - 2 - 3 - 4 - 5

What is the value of the feedback mechanism to determine the technology needs - of all farmers? - of women farmers? <i>[if low score, then consider a survey and establishing a mechanism for feedback]</i>					
To what extent are women farmers included in setting priorities for technology generation and adaptation?					
To what extent are the messages suitable for the resources and constraints of most women farmers?					
To what extent are the messages congruent with women farmers' range of activities? <i>[if low score, list separately the other information and technology needs of women farmers]</i>					
To what extent do women farmers estimate the technical messages to be useful? <i>[if low score, improve research &amp; development]</i>					
To what extent do women farmers estimate the extension services to be useful? <i>[if low score, improve extension services to women]</i>					
To what extent are tools and equipment available for women farmers? <i>[if low score, consider including as a component in the project]</i>					
To what extent are EAs able to fine-tune messages? <i>[if low score, improve pre- and in-service training]</i>					

Table P: Adoption of Major Recommendations, by gender

State population used eg farmers in contact with extension services, or all in project area ..... .....	Areas of recommended innovation (eg, improved seeds, pesticides) Suggested sources: M & E units or informal discussions with farmers							
	Aware (%)	Use (%)	Aware (%)	Use (%)	Aware (%)	Use (%)	Aware (%)	Use (%)
Women Farmers								
Men Farmers								

**Some Qualitative Questions**

1. What do women farmers think their main problems and constraints are? .....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....
  
2. Do women farmers think their lives are better than those of their mothers? .....  
Why or why not? .....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....
  
3. Would women farmers like their daughters to go into farming? .....  
Why or why not? .....  
.....  
.....  
.....  
.....  
.....  
.....  
.....
  
4. What are some of the qualities or methods that women farmers consider important in an Extension Agent? .....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

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