THE ROLE OF WOMEN IN THE FRUIT AND VEGETABLE SUPPLY CHAIN IN MAHARASHTRA AND TAMIL NADU, INDIA

THE NEW AND EXPANDED SOCIAL AND ECONOMIC OPPORTUNITIES FOR VULNERABLE GROUPS TASK ORDER UNDER THE WOMEN IN DEVELOPMENT IQC

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Women traders sort tomatoes in the Dharmapuri District

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The author's views expressed in this publication do not necessarily reflect the views of the United Sates Agency for International Development or the United States Government.

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ACRONYMS

CBO	Community Based Organization
FAO	Food and Agriculture Organization
HH	Household
MSAMB	Maharashtra State Agri Marketing Board
NFE	Non-Formal Education
NGO	Non-Governmental Organization
PFID	Partnership for Food Industries Development
PFP	Precision Farming Project
PRA	Participatory Rural Appraisal
R&D	Research and Development
RDO	Rural Development Officer
SHG	Self Help Group
TNAU	Tamil Nadu Agriculture University

GLOSSARY

Access:	The availability of resources.
Control:	Ownership and decision-making authority concerning a resource.
Gender roles and relations:	The often different roles men and women play in a society or culture based on their sex and the implications of these roles to the power relationships between men and women.
Gender division of labor:	The division of work based on whether one is male or female.
Gender "spaces":	The spaces men and women are assigned in the various spheres of life and society, e.g. in agriculture women are assigned to the "space" of home gardens; agricultural fields are assigned as men's "space".
Gender stereotyping:	Male and female behavior associated with their sex, e.g. women are assigned the role of child-rearing even though either sex can care for children.
Gender blindness:	A non-recognition of a distinction between men and women. This perception blindness leads to biases in favor of existing gender relations which tend to exclude women.

Gender sensitivity/awareness:	Recognizing that women and men are constrained in different, often unequal, ways as participants and beneficiaries in the development process.
“inside” and “outside” work:	Based on the gender division of labor, the work that is assigned to women is termed as “inside” work (the private sphere) and the work assigned to men is the “outside” work (the public sphere).
Productive roles/work:	The production of goods and services for consumption and trade.
Reproductive roles/work:	The care and maintenance of the household and its members, including child bearing and caring for children, preparing food, collecting water and fuel, house-keeping and family health-care.

EXECUTIVE SUMMARY

Economists and social theorists in recent years have reintroduced an emphasis on people in analyses of agricultural value chains. In these analyses, gender is a critical variable that affects, and is affected by, the economic, political and social norms that accompany how an agricultural commodity is cultivated, processed and marketed. Free market advocates have made the case that globalization provides additional opportunities for women to obtain and retain control over income, access to markets, and decision-making power. There is evidence, however, that women tend to lose out on income and control as a product moves from the farm to the market.

Although there is substantial literature on gender and agriculture, very little has been written about gender and horticulture in India. The existing literature consists mostly of studies on women in the workforce, technologies transferred to farmers, including women, and information about horticulture programs for women.

Study Rationale

India is the second largest producer of fruits and vegetables in the world. Women constitute almost 50 percent of the total workforce in this sector and traditionally represent the majority of the workforce in the horticulture-based nurseries. However, fruits and vegetables at present contribute only 25 percent of India's agriculture market value. The USAID/India agricultural program proposes to investigate and develop various opportunities in the marketing of horticultural products. USAID works with The Partnership for Food Industry Development (PFID), which specializes in this kind of activity.

The Precision Farming Project (PFP) of the Tamil Nadu Agriculture University is one of the main forces driving the spread of vegetable cultivation in the District of Dharmapuri. However, a limited participatory approach, especially at the planning stage, and a limited awareness of the distinct roles of men and women have resulted in the exclusion of poor farmers, women, and female headed households.

To shed light on both PFID and the gender issues raised under the PFP and to help USAID in designing other horticultural activities, this study was commissioned by USAID/India to focus on women's role in the horticultural supply chain and the social and economic impacts of the managerial and technical efficiencies on women. The study focuses on the roles, access, and decision-making of men and women in the three stages of the supply chain: cultivation, processing, and marketing.

Cultivation

Role: An increase in vegetable cultivation in India has led to an increase in the workload of women farmers, as most of this cultivation is traditionally done by women. However, despite women's substantial role, their work is undervalued. A major impact of the commercialization of vegetables has been the erosion of women's traditional knowledge of seed management, as farmers are now buying hybrid seeds for higher yield. In the cultivation of fruits such as mangoes and cashew nuts, which are high-value horticultural crops, men do most of the work and women are engaged only at the nursery stage.

Access: On balance, women have nearly the same access as do men to all inputs (seeds, land, and labor) in vegetable cultivation. This is not the case in mango and cashew nut cultivation, which is regarded as the work of men. Women's access to new technologies that save time and drudgery is limited. Whenever machines are used, be they sprayers or tractors, it is men who take up the task. Also, women agricultural laborers are paid less than their male counterparts based on the belief that women have less physical strength than men.

Decision-making: Women's role in decision-making ranges from advisory to recommendatory, but it is men who have the final decision-making power. Customary norms and traditional practices support the belief that the male is the breadwinner and head of family. It is only in female-headed households that women have decision-making power. That being the case, even women in female-headed households at times are dependent on the decisions of male relatives, such as a father-in-law.

Processing

Role: Women form the bulk of the labor force in the horticultural processing units, but they are concentrated in unskilled and low-paying jobs. Women are often temporary workers or have casual employment status.

Access: New horticultural processing units in India have increased women's access to work, especially as many of the tasks require patience, consistency and conscientiousness, traits traditionally associated with women. However, there is almost a total absence of women at the management level.

Decision-making: Laborers, both men and women, have no decision-making power or control over their wage rates. Women do not have the right to choose whether the work they do is skilled or unskilled, as they are automatically employed only in unskilled work on the basis of their gender.

Marketing

Role: Women farmers do not have much of a role in produce marketing, which remains the domain of the male farmer. The large traders and exporters are male operated while women are relegated to small-scale trading and retail.

Access: Restricted by socio-cultural norms, traditional practices, family rules, and household obligations, few women farmers are involved in marketing. Women's access to trading likewise depends on family members, especially their husbands, as each woman needs the approval of her husband to enter marketing and trade as a profession.

Decision-making: Women have essentially no decision-making power as husbands make virtually all decisions related to marketing, such as when to sell and to whom to sell. Similarly, women have little control over income generated by the marketing of produce as decisions on how to spend income ultimately reside with the male head of household.

Opportunities and Constraints

The common constraints for women are lack of education, lack of access to information, and socio-cultural norms and traditions. One opportunity for overcoming these constraints is the formation of self help groups. The groups have led to increased self-confidence among women and access to credit. Other constraints for women include the lack of legal ownership of land, an increase in workload because of the expansion of vegetable cultivation, the undervaluation of women's work and knowledge, the stereotyping of men's and women's work, low wages, and the increase in labor-intensive work and drudgery.

The horticulture supply chain is characterized by constraints and opportunities for women. There is, however, a substantial amount of ignorance regarding gender issues at all levels of the supply chain. At the same time, strategies and best practices are being adopted by women and their communities. Based on the insights resulting from this study, recommendations and suggestions have been made to guide USAID/India in its approach to working with women in the horticulture sector. The recommendations are as follows:

- Produce an inventory of best practices for each stage of the supply chain, such as men sharing housework and other practical solutions that gently encourage re-examination of socio-cultural norms.

- Enhance the work of self help groups by including them in NGO and government programs. As a corollary, identify women as leaders and experts in local communities, and help link the women leaders and groups to select government, NGO, and private service providers.

- Offer technical assistance to processing units and factories, the agriculture marketing boards, agricultural universities, and research institutes that focus on gender issues and participatory research and development related to horticulture.

- Design training programs for sensitizing the principal actors at all stages of the value chain, especially those in decision-making positions, to gender issues.

- Provide technical assistance and training to industry and community networks on the national and international horticulture production standards, labor codes of conduct and corporate social responsibility mandates. These codes and standards reinforce the importance of addressing gender issues and the labor-related concerns of women.

- Initiate programs on entrepreneurship among women farmers, empowering them to participate more fully in commercial agriculture, especially horticulture.

- Identify relevant technologies that lead to women's skill development, access to agro-processing and reduction of drudgery.

- Conduct an in-depth study on gender within the horticultural value chain. However significant, this current study is only a snapshot of the supply chain. A more in-depth study conducted in India is essential as horticulture becomes increasingly important both economically and socially with increased demand for fruits and vegetables.

SECTION I

GOALS AND OBJECTIVES

India is the second largest producer of fruits and vegetables in the world. However, fruits and vegetables make up only 25 percent of the total value of India's agricultural production. Agriculture growth requires the sustained development of this sector, which has the potential to grow at an annual rate of 7 to 8 percent compared with 2 to 3 percent for cereal grains. India ranks first in the world as a mango producer, and mangoes are the favorite fruit across India. There are some 1,500 varieties, of which about 1,000 are marketed, yet India is a minor exporter of fresh and processed mangoes. Even at this level, mango and mango pulp represents 25 percent of food export value.

The USAID/India agricultural program proposes to investigate and develop various opportunities in the marketing of mangoes and mango-based products. USAID works with The Partnership for Food Industry Development which specializes in this kind of activity. The activity will focus on Ratnagiri District of Maharashtra, as a key Alphanso mango producing region. It will increase market access by small and medium mango growers, through new or stronger market linkages and improved competence to develop and meet national and international standards among producers, buyers, processors, and exporters.

The Precision Farming Project (PFP) of the Tamil Nadu Agriculture University (TNAU) is one of the main forces driving the spread of vegetable cultivation in the District of Dharmapuri. Michigan State University and TNAU are working together to strengthen TNAU's capacity to promote improved supply-chain management related to fruits and vegetables. However, a limited participatory approach, especially at the planning stage, and a limited awareness of the distinct roles of men and women have resulted in the exclusion of poor farmers, women, and female-headed households.

Therefore, to contribute to the effectiveness of PFID and the PFP and to help USAID in designing other horticultural activities, this study was commissioned by USAID/India to examine women's role in the horticultural supply chain and to examine the social and economic impacts of the managerial and technical efficiencies on women. The study focuses on the

gendered roles, access, and decision-making in the three stages of the supply chain: cultivation, processing and marketing.

The specific objectives of this analysis are to:

- identify the major emerging gender issues in the horticulture sector;
- identify the enabling and constraining factors affecting women; and
- recommend viable best practices.

SECTION II

METHODOLOGY

The assignment consisted of two parts: a literature survey and field visits. The literature survey was done primarily online to access the latest and widest range of sources. Based on this literature review and the Scope of Work provided by Chemonics International, key questions were developed to guide the field study. (Appendix I) In addition, a checklist was developed to assist in the data collection. (Appendix II)

The field study began with discussions with Mamta Kohli and Aleen Mukherjee of USAID/India who supervised the assignment. Discussions with the USAID/India team led to the identification of key contact persons in the field. The contacts were the Market Advisor of the Maharashtra State Agriculture Marketing Board, Pune and, in Tamil Nadu, the Dean of the Department of Horticulture and the Head of the Department of Fruit Crops of the TNAU, Coimbator.

In consultation with the contact persons, the researchers:

a. Identified contact persons who would also be key informants at the district levels;
b. Identified three key stages of the horticulture supply chain: cultivation, processing, and marketing; and
c. Developed categories of respondents to interview for each stage:

- Cultivation: farmers and agricultural laborers, both men and women;
- Processing: workers and laborers, both men and women; and
- Marketing: traders and retailers, both men and women.

Consideration was given to several criteria to assure a mix of respondents:

- *Farmers*: gender, size of land-holding (large and small), head of household (female-headed, male-headed), caste/community[1];

- *Agricultural laborers*: gender, employment status (seasonal, casual, contract workers);

- *Laborers in the processing units*: gender, age, marital status (of women), employment status (permanent, non-permanent, seasonal, casual, and contract), all types/stages of work;

- *Traders*: gender, caste/community, type of trader (large and small)

Once in the field, in consultation with field contacts and key informants, study coordinators further refined the categories of respondents based on the local circumstances and environment.

In the Dharmapuri District we interviewed the men and women of five households on big farms (defined as 8 acres or more), five households on medium farms (2 to 8 acres), and five households on small farms (less than 2 acres). Three landless households headed by women and 16 female agricultural laborers also were interviewed.

In the processing units for mangoes and tomatoes, we interviewed 18 women and four men laborers. In addition, almost all farming households processed turmeric so information on home processing was gleaned from them.

Both tomato and mango traders were interviewed. Four women small traders of tomatoes and five women retailers were interviewed as were male mango farmers and owners of processing units.

In the Ratnagiri District we conducted interviews with the men and women of five big-farm households, five medium-farm households, and five small-farm households.

The study interviewed 10 female and four male agricultural laborers; 15 female and eight male laborers in the processing units; and 10 male migrant workers. We also interviewed four women vegetable retailers from a self help group (SHG), as well as several male owners of processing units and farmers of mangoes and cashew nuts.

[1] At Dharmapuri District, Tamil Nadu, TNAU scientists working on the PFP project were transferring drip technology to farmers. One hundred farming households were involved in the project. Therefore, an additional criterion regarding farmers was adopted at this site: farmers included in the project and those excluded from it.

Men and women agricultural laborers gather in the Dharmapuri District.

Tools and methods

The literature review provided background information and a better understanding of the horticulture sector as well as key issues to be addressed.

Various participatory, rapid-assessment tools were used to gather data in the field, including agriculture calendars, activity profiles, group discussions and semi-structured interviews. For analytical purposes, we used a modified version of the Harvard Gender Roles Framework, including access and control profiles. We also identified the practical and strategic interests of women, the constraints they faced, and the opportunities they had to overcome those constraints.

Insofar as it could be obtained, we also collected information about when a particular vegetable or fruit became commercially important and the impact of newly introduced technologies.

Data analysis emphasized gender roles in connection with particular vegetables and fruits being cultivated and marketed in the study area. We paid special attention to variables such as key stakeholders; economic relations; markets; and institutional linkages, especially those involving community based organizations, government line agencies, and SHGs.

We primarily used two analytical tools:

(a) *Gender analysis*: Inquiries about division of labor by gender; identification of roles, rights, authority, and control; claims on produce and income; and a critical look at the technologies and market dynamics that influence the horticulture sector and women in particular.

(b) *Social Analysis*: Inquiries into the social dynamics of change, adaptation and resilience. This analysis included: (i) examination of the interaction of gender dynamics with other social variables such as class, caste, age, and economic status; (ii) exploration of the influence of external forces, i.e., the technologies and market dynamics impacting the existing social systems; and (iii) examination of the existing, reinterpreted and negotiated social (and gender) relations and patterns that have emerged in response to new technologies and changing market dynamics.

SECTION III

IMPLEMENTATION: THE PROBLEMS AND SOLUTIONS

Challenges associated with the assignment were as follows:

1. Lack of access to literature in printed copies was a major constraint. The consultant was located in a small town that did not have large libraries or institutional centers where such literature could be obtained. This constraint was overcome by accessing literature online.

2. Lack of a common language posed a problem, particularly in Dharmapuri, where most of the respondents spoke only Tamil. This problem was addressed with the assistance of key informants who acted as interpreters. Vital insights and information at times may have been lost in translation. In addition, when an interpreter is not aware of gender issues or not sensitive to them, perhaps because he is male, then gendered information may not have been considered relevant and as a consequence may not have been passed on to the researcher.

3. It was very difficult to have all the respondents come together at one place for the planned, one-day workshop. The respondents all worked and many of them were wage earners; they could not leave their jobs to attend a workshop. Also, the respondents were from different villages, making meeting logistics difficult.

To overcome the third challenge, in Dharmapuri District (Tamil Nadu) the respondents of Somanahalli village were informed that a meeting of the local self help group (SHG) was being held in the hope that most members would turn out. We seized the opportunity also because the meeting coincided with the festival of *Diwali*, when many people would have time off of work. The SHG members were asked to bring other respondents from nearby villages to the workshop. In addition, we arranged a vehicle to pick up a small number of respondents who were working in the processing units further away. Lunch was provided as a courtesy.

In Ratnagiri District (Maharashtra), we learned that the local rural development officer was holding a meeting for the SHG of the different villages at Pali and that almost all the respondents would be present. We asked the USAID regional development office (RDO) for permission to attend the meeting and to conduct a workshop once the meeting was over. After making the appropriate arrangements, the women were informed of the schedule.

We again arranged for a vehicle to pick up the men and women respondents from other villages that did not fall under the purview of the RDO's meeting. In both Dharmapuri and Ratnagiri, tea and snacks were provided for all workshop participants as a small gesture of appreciation and thanks for their cooperation.

SECTION IV

FINDINGS AND SYNTHESIS

THE LITERATURE REVIEW:

Several noteworthy findings emerged from the literature review on the role of women in the horticulture supply chain, one of the most significant being the limited amount of written material on the subject in India. There is an abundance of literature on agriculture in India but hardly any regarding the horticulture sector.[2] The documents that could be found were mostly studies on women in the horticulture workforce, where they are in the majority; various scientific papers on the technologies transferred to farmers, including women, which lead to higher efficiencies and greater incomes; and papers by government agencies and institutions about programs for women in the horticulture sector. All such literature emphasized the need to empower women in the sector.

Extensive literature can be found on gender and horticulture research conducted outside of India, such as the following:

- the links between the globalization and the nature of employment in the horticulture value chain; (Barrientos and Kritzinger, 2002; Dolan and Sutherland, 2003; Dolan and Humphrey, 2000)
- the impact on countries in the Global South and women in particular of opening up economies to the free market; (Dolan and Sutherland, 2003; Jones, 2004; FAO, Spotlight 2005)
- the influence of macro and micro economics, socio-cultural norms and practices, household and family dynamics on women's position within the value chain (Dolan and Sutherland, 2003; Evers and Walters, 2000; Kritzinger and Vorster, 1996; Collins, 2000; Shepherd, 2005)

[2] As mentioned in Section III on implementation problems and how they were addressed, the consultant was constrained in accessing printed copies of literature; therefore, the assessment provided above is based almost entirely on online research. Other studies may exist that were not captured in this review.

- the gender dimensions in the work force and employment; (Dolan and Sutherland, 2003; Kritzinger and Vorster, 1996; Collins, 2000)

- the impetus behind the present day labor arrangements and strategies adopted in the horticulture value chain; (Dolan and Sutherland, 2003)

- the importance of codes of conduct and corporate social responsibility regarding integrating gender into the value chain (Dolan, Opondo and Smith, 2003; Barrientos, Dolan, and Tallontire, 2001 and 2003; Njobvu, Smith, and Tallontire, 2004; Barrientos, FAO, 2002)

FINDINGS AND ASSESSMENTS FROM THE FIELD

This study examines women's role in the horticultural supply chain and the social and economic impacts of the managerial and technical efficiencies on women. The study focuses on the roles, access, and decision-making of men and women in the three stages of the supply chain: cultivation, processing, and marketing.

The study supports the work of USAID/India and The Partnership for Food Industry Development (PFID). Focusing on the Ratnagiri District of Maharashtra, the PFID activities seek to increase small and medium mango growers' access to markets, by:

- Identifying barriers to quality production, processing, packaging, distribution, and marketing;

- Identifying additional domestic and international markets for fresh and processed mango products;

- Analyzing existing and emerging high-growth markets;

- Identifying trends that potentially impact Indian mango exports, such as food safety and quality requirements set by retailers, buyers and government agencies; and

- Identifying gaps in capacity building and training needs required to meet standards and achieve acceptance in target markets.

Another impetus for the study is The Precision Farming Project (PFP), a collaborative effort of Michigan State University and the Tamil Nadu Agriculture University. The project introduced drip irrigation, which contributed to the spread of vegetable cultivation in Dharmapuri District. However, a limited participatory approach, especially at the planning stage, and a lack of adequate gender awareness resulted in the exclusion of poor farmers, women, and households headed by women. As a consequence, these

classes of people have limited access to new technologies that are proving to be of considerable benefit to farmers.

The lessons to be learned from this experience include the following:

1. Because of the limited use of participatory design and implementation within the project, it would be useful to implement a “learning and change” method. Such an approach would allow for project personnel to come together at certain intervals to review and change certain aspects of the project based on the feedback from the farmers and their own experience.

2. Little analysis was done to develop the criteria for selecting the farmers to be included in the project. This affects the distribution of project resources as the project provides a 100 percent subsidy to selected farmers in the first year, 90 percent in the second year, and 80 percent in the third year. It was determined that most of the farmers identified and selected were those who could afford to advance the remaining percentages needed in the second and third years. Many farmers could not fulfill the financial commitment and therefore were not selected. During one workshop, several participants asked, “What are you going to do for us poor farmers? We have not been included this year and next year we will not be included as we cannot afford to pay the 10 percent.”

3. The project suffered from gender blindness, namely the inability to recognize the difference between women and men and their problems, needs, roles, rights, and responsibilities. This was apparent from the exclusion of women in the target group. Only male farmers were invited to the project meetings and the trainings. Additionally, all the implementing scientists were men. Women mentioned during this study that it was the first time that the implementing scientists had talked to them directly or asked questions regarding their views about the project. They added that if there had been a woman among the scientists they would have attended the meetings held by the project and spoken out more openly.

THE INTERVIEW FINDINGS: DHARMAPURI AND RATNAGIRI

Cultivation

Farmers:

Roles

Vegetable cultivation for commercial purposes is quite widespread in Dharmapuri, largely because of the Precision Farming Project of the TNAU, whereas at Ratnagiri the researchers found women in only one village in the

Pali Gram Panchayat cultivating vegetables (spinach and *kulit*) for sale at the local market.

Formerly, in Dharmapuri, farmers would keep and store seed themselves as opposed to buying it from the local market. Seed storage was done mostly by women. However, as vegetables, especially tomatoes,[3] gradually became commercially important, farmers stopped storing the seed, buying hybrid seed instead.[4] As a consequence, the knowledge and skills women have acquired over generations regarding seed selection, preservation, and storage is being lost. This, in turn, suggests that women's traditional control over and access to seed may be diminished. Another consequence could be the loss of agro-biodiversity. The study found that farmers are cultivating hybrid varieties of fruits and vegetables, especially tomatoes, and have stopped growing or keeping local varieties of seeds.

There is a clear division of labor by gender in the horticulture supply chain based on the culturally assigned roles and "spaces" of women and men.

Women do most of the work in vegetable cultivation, including nursery management, weeding, transplantation, and harvesting — traditional roles that persist. And because more land is used for vegetable cultivation, women do more work than men. More labor and time is required for cultivation of vegetables than for cultivation of cereal grains.

Men spray, stake, and carry the harvested produce from the fields as these tasks require physical strength. Men also manage and maintain the irrigation systems, which traditionally is considered men's work.

Despite the arduous labor, women's work remains undervalued in comparison to the efforts rendered by men. Women are regarded as "helpers" of the men, not only by the men but by women themselves.

At Ratnagiri, because vegetable cultivation for commercial purposes has been embraced by an SHG, all the work is done by the women.

In addition to their role in cultivation, in both Ratnagiri and Dharmapuri women are primarily responsible for household chores, duties, and other such responsibilities. However, the consensus of women was that men increasingly help them sometimes with household chores. For example, one 70-year-old woman farmer said that when she was young her husband never helped her with any of the housework or "woman's work," but now she sees her son-in-law and grandson help their wives with such responsibilities.

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[3] The other vegetables are brinjal, cabbage, cauliflower and okra.
[4] Hybrids of tomatoes cultivated in Dharmapuri are US 618 (this is introduced by the PFP), Abhinab, Abhinash, PKM 1 (this is parent hybrid introduced by TNAU).

In the case of mangoes, it is the farmers on small farms and, to some extent, medium farms, who are engage in cultivation. On larger farms the work is done by laborers. The role of the male farmer on large farms is that of supervisor. He also arranges for and provides the required inputs. The women farmers, especially on big and medium farms, also act as supervisors – this is especially the case at Ratnagiri, where the big farm owners hire migrant laborers from Nepal. But this role is a self-appointed one, adopted out of their concern for their business as opposed to a compulsory or assigned role.

Work performed in the cultivation of crops is "gendered" to the extent that various fruits and vegetables are associated with either men or women based on the value (status and monetary) of the crop. Crops that are staple foods or that elicit more cash income are considered "major" crops. Such crops are cultivated extensively in better areas and all decisions pertaining to them are made by men. Traditional and subsistence crops that have a lower status or cash value are cultivated in smaller areas (sometimes on unused or degraded land) and are considered "minor" crops. These crops are considered to be within the woman's realm, and women are permitted to make decisions about their cultivation. That said, once these same crops become commercially important, men take over their management.

Vegetables in the districts where the study was conducted have been widely cultivated for commercial purposes for the past two years. Because this is such a short period of time, women are still performing their traditional roles in the cultivation of vegetables. But changes are already occurring with respect to women's roles. For example, women's role of seed management (selection, preservation, and storage) is disappearing as hybrid seeds are introduced commercially.

Access

In general, women have equal access to inputs (seeds, land, and labor) as regards vegetable cultivation. In all households interviewed, both the men and women reported that they worked in the fields. This is not the case, however, with mango plantations, where the work is done almost exclusively by men.

Female-headed households

The female-headed households interviewed were those of widows. These women have unique challenges. They have no legal ownership of land, so the areas they cultivate are either legally owned by their father-in-law or some other male relative, such as their son-in-law. Therefore, they do not control the land and even their access to it is dependent on the male relative.

Widows are left out of entire process of the commercialization and cultivation of vegetables. The study found that these women do not cultivate vegetables for commercial purposes as this is labor intensive, often requiring additional workers. With no marital partner in the household to support them, the women do not have the time to take on the double burden of performing both agricultural activities and household duties, nor can they afford to hire additional laborers. Most of the women cultivate crops that do not require much labor and care, such as groundnut, tapioca, and turmeric.

Widows also do not cultivate vegetables because they must be sold at markets where the women would have to bargain, an activity women traditionally shy away from. Instead, they rely on selling crops such as tapioca, which traders purchase by visiting villages, eliminating women's need to travel to market.

Women now have access to credit facilities because of the emergence of the SHGs. They can take out loans, not only from their SHGs but also from banks through the SHGs. They previously faced severe limitations in accessing credit. Although banks give credit using jewelry as collateral, very few women reported securing loans because to do so they would need permission from their husbands, parents or parents-in-law, which is rarely given. If permission is given, it is only because the husband or the family required the loan and had no other option. That being the case, no loans secured were for women's benefits or needs, the study found. Additionally, the process of accessing credit is typically long and bureaucratic. Women generally did not have the confidence to apply for traditional types of loans.

Women lack access to new technologies that would save time and eliminate drudgery. As is seen in the cultivation of vegetables, as well as mangoes, whenever it comes to the use of machines, such as sprayers or tractors, it is the men who perform the task. The reason cited is that men have more physical strength than women. A deeper analysis shows that new technologies are introduced to men. Men culturally have more mobility than do women and as a result men have more opportunity to access the technologies.

Decision-making and control:

Women are largely excluded from decision making with regard to the commercial cultivation of fruits and vegetables. All crops and finished products are controlled by men, and it is they who decide when and how to sell them. Even relatively minor decisions, such whether to hire contract workers to aid in processing, are made by the male head of the family.

Women have little decision-making power regarding major matters like buying, selling or renting land and houses; buying or selling livestock; or the selling of crops at market. However, this is not to say that women have no say at all. Decision making is a complex process influenced by many factors, and at times women advise and make recommendations

Women do not have much control over significant assets like land. Land in most cases is inherited by sons. Even in cases of female-headed households, the land is in the name of a male member of the family, a son, father-in-law or even a son-in-law.[5] This practice is based on the traditional view of the male as the breadwinner and head of the family.

[5] One 70-year-old woman in Dharmapuri began running a female-headed household when her husband left her to live with his second wife. Although she was given a plot of land by her husband, it was under his legal ownership. Later, the woman bought more land and all the land is now owned by her son-in-law, who is also the son of her brother.

Additionally, women do not have much control of cash income. Even though women hold the household money, they do not decide how to spend it.

Laborers:

Roles

Women laborers predominate in vegetable cultivation. It is they who do most of the work with nursery management, transplantation, fertilizing, weeding, and harvesting. Men are employed only for staking, spraying and carrying the fertilizer and vegetables.

In the cultivation of mangoes and cashew nuts, women laborers are employed in the nursery stage for weeding and cleaning. All the other tasks are done by male laborers.

Irrigation is traditionally done by men and grafting requires training that is provided only to them. Spraying, harvesting fruit, and carrying mangoes from the field to the homestead are thought to require great physical strength, which women are deemed not to have. Weeding, traditionally regarded as women's work, is done on mango plantations by men who use tractors.

Access and Limitation

At Dharmapuri, the increase in vegetable cultivation by farmers has resulted in more employment opportunities throughout the year for landless women who work as agricultural laborers. Vegetable cultivation is traditionally viewed as the work of women as the perception is that they are better suited for tasks such as weeding and harvesting, which require more care and time but less physical strength. Although in recent years jobs in vegetable cultivation have been created, the work is more labor and time intensive than that of cereal crops, and wages remain at the same low levels.

Women laborers employed by mango farmers do not have equal access to training. One farmer said that the reason for this is that women usually get married and move away, and this would mean loss of investment for a farmer. As a consequence, by virtue of their gender women are denied skill training.

At Ratnagiri, women laborers face competition for employment in the mango plantations from male migrant workers who come in groups from Nepal. Most of the big-farm mango growers hire these migrant laborers for work that is usually done by women. They do so, they said, because sometimes women are unavailable. Women's husbands often migrate to the cities for work, which leaves only the women to tend their households and farms. Also, even when the women are available, their household and farm chores often interfere with

their work, the farmers said. This inconsistency is unacceptable to employers as vegetable cultivation is time bound.

The employers mentioned several advantages to hiring the migrant workers from Nepal, all of whom are men. For instance, the men arrive as a group and take up the job as a collective, thus covering all the various tasks so the farmer does not have to find other workers. They live on the plantation so they are on duty 24 hours a day. They stay and work continuously for at least ten months, assuring continuity for the farmer. The effect of the migrant workers' presence is to limit employment opportunities for the women laborers in Ratnagiri.

Men and women agricultural laborers are paid at different wage levels, with women earning substantially less than men. Women's wages are 30 to 40 rupees per day while their male counterparts typically receive twice as much per day. This differential is based on the belief that women have less physical strength. While women reported that their wages were low and needed to be increased, they also agreed that men's work was heavier and required more physical strength.[6]

Decision-making and Control

Both male and female agricultural laborers have limited or no control over their wage rates. It is only contract workers who are able to bargain.

Women also do not have much control over the nature of their labor as it is determined by the perception that they are not able to do as much work as men, thus their wages are lower than that of men. Furthermore, women do not have control over how their earnings are spent. They, like the women farmers, spend their earnings according to the demands of their husbands and family.

Contract work is a relatively new practice in vegetable cultivation in Dharmapuri, having emerged during just the past two or three years. This practice previously was only used in the cultivation of major crops (rice, tapioca, and turmeric) and fruit (mango and coconut) grown for commercial purposes. In this practice a number of laborers get together and form a group to address a specific task, such as planting, transplanting, weeding, harvesting, or packing, for a lump sum. This method has given the laborers some bargaining leverage and thus some level of control of their labor. Two novel features of this practice are that women laborers come together as a group without involving men and, unlike usual contracts, the money is shared equally among all members of the group, including the group's contractor.

Processing

[6] An example of this differentiation regarding physical strength is that while weeding women used tools that would remove 1 to 2 kilograms of soil while men used bigger implements that would remove up to 5 kilograms of soil.

Farmers-Cum-Owners

Role

The role of men and women in processing depends on the process type and scale. Large-scale processing incorporates modern technologies and employs men from medium and large farms. Women farmers have no role in large-scale processing, which involves high-value crops such as tomatoes, mangoes, and cashew nuts. Small-scale processing involves conventional methods and is done in households by women. With turmeric, for instance, men harvest and transport the crop to the homestead. The washing, cleaning, boiling, cutting, and packing is done by women.

Access and Limitation

Women have no access to new technologies because their role in large-scale processing is highly limited, even in family-owned, large processing units. The processing units are considered "outside" work because they involve new technologies and employees, whereas processing done at home is considered "inside" work and thus the sphere of women.

Laborers

Role

Women make up most of the labor force in processing units, but the vast majority is concentrated in tasks that are considered unskilled. Management representatives concede women have not been trained to take on skilled jobs. Tasks performed by women in the processing units include washing, peeling, deseeding, cutting, slicing, sorting, counting, grading, packing, labeling, canning, and sweeping waste. These tasks require patience, consistency and conscientiousness, qualities that are associated primarily with women. Some tasks, such as removing stones from fruit and sweeping waste, are regarded as menial jobs. By comparison, men are employed largely in "skilled" work (operating tractors, trucks and machines), "heavy" work (loading, lifting, and carrying) and "risky" work (cutting, slicing, and security). In the allocation of tasks, there is a clear pattern based on whether one is a male or a female.

Women workers in the processing units usually are temporary employees. They serve as daily wage earners, even those who are employed year-round. That said, there are very few permanent laborers[7] among men as well. The main reason cited for this arrangement is the seasonal nature of the industry.

[7] The only permanent employees in processing units are managers, guards, and in some cases drivers.

The arrangement nevertheless serves to give management additional control over workers. As the women laborers said “We know we are under-paid, but we dare not ask for higher wages for fear of being replaced. We can be let go from our jobs at any time for any reason, so we must be careful.”

Access

The opening of area processing units has increased employment opportunities for women as many of the tasks to be performed require patience, consistency and conscientiousness. All managers interviewed reported that they preferred to employ women for such tasks because women are known to perform them better than men. During the peak season, both men and women are entitled to overtime compensation. There are, however, a number of challenges and constraints associated with overtime.

First, working overtime at times is required. Regular overtime poses difficulties for women because they still must tend to household and family responsibilities.

Second, unmarried girls typically are not allowed to work overtime by their families. Socio-cultural norms and family rules do not permit young women, especially those who are unmarried, to stay out late even for paid work.

Third, personal safety is an issue if transportation is not provided after dark, and often transportation is not available, the women reported.

The most apparent gender distinction in the horticulture supply chain is the limited number of women in management. The patterns in job allocations limit women’s access to training and skills development and, as a consequence, to their opportunities for upward career mobility. While the women interviewed had confidence that they could perform jobs that required additional skills, their supervisors perceived that they could not operate machines, again citing their relative lack of physical strength.

Women consistently earn less than men. Women’s daily wage ranges from 30 to 40 rupees per day in Dharmapuri to 40 to 60 rupees per day in Ratnagiri. Men’s earnings range from 60 to 150 rupees per day at Dharmapuri to 70 to 200 rupees per day at Ratnagiri (working from 9 a.m. to 6:30 p.m.). Even as managers generally regarded the work women perform as unskilled, leading to less pay, they also agreed that some of the tasks women perform do require skill. This contradiction exposes the gender-based inequity that characterizes the wage earnings of men and women.

Contract workers hired during the peak seasons receive about 20 to 30 rupees per day more than factory workers.[8] Some factory workers had wanted to work on a contract basis but were threatened by management who said they would not hire the workers again after the season was over.

Another limitation that women face is a lack of communication between themselves and management. This occurs because essentially all supervisors are men and women do not feel comfortable voicing their concerns to men. The women workers interviewed said they would prefer to work under a woman supervisor so that they could communicate with management.

> Women workers from one of the mango processing units said once there had been a woman supervisor and they had felt much freer to talk with her about their problems and needs. But after just two weeks the woman was removed from her job. The women said they thought that she was demoted because she had raised concerns on their behalf with the management.

The study also found that married women have problems managing their factory work and domestic responsibilities, and they said the only way to accommodate both was to extend their work day. Unmarried girls do not face this problem. They do not have to shoulder the same amount of household responsibility because in their absence other family members will provide help. Married women are also limited by their responsibilities as mothers. Unlike fathers, mothers do not work in the factories until their children are three years old.

Decision-making and Control

Women laborers in the processing units have no control over their wage rates and no ability to decide what type of work they perform. Management assigns them only to unskilled tasks. Additionally, because women tend not to work as contract laborers, they are denied even the minor decision-making associated with such arrangements.

Both married and unmarried women have little control over their wages, although in this respect married women have a slight advantage over unmarried women. Married women can make suggestions to their husbands as to how money should be spent. Unmarried women not only give their entire wage to the head of the family, whether male or female, but also have little or no say in its expenditure.

Overall, the management of the processing units and the communities in which they are located would benefit from training in the use of corporate social responsibility, labor codes of conduct, and horticulture production

[8] These contract workers came from other district and/or states. In this case, the workers at both Dharmapuri and Ratnagiri came from the Kerala and Karnataka districts.

standards. Companies adopt such standards to reduce adverse labor practices within their supply chains and to project an image to the public that features the integrity of the firm. Many of these standards and codes address the working conditions of certain groups, such as women. This is particularly important in horticulture supply chains where there is a high level of female employment.

Marketing and Trading

Roles

Women farmers have little role in the marketing of vegetables. Marketing is still very much a man's role and very few women are involved in marketing their produce.[9] If they are involved it is with small-scale trading.

Men are the big traders and exporters while women traders form the bulk of the small traders and retailers. Among the smaller traders at Palacode trading center, which is one of the larger venues for trading tomatoes in Dharmapuri District, 300 out of more than 1,000 traders are women.[10] The day we visited the market center, 60 traders were present, four of which were women. Also at the trading center, there were 23 women retailers and 10 men retailers.[11]

The women small traders buy vegetables from the farmers or from middle-men who bring their produce to the trading center and then sell to small shops in their localities.

Women typically are the small retailers, selling vegetables at the roadsides or in their villages. Informal observations consistently revealed that many more women than men sell at the roadsides. Women do their domestic chores in the early morning or late at night to make it possible for them to sell their crops at the roadside or market.

Access and Limitation

Traders at the Palacode market in Dharmapuri District said that of the farmers who come to sell vegetables, about 20 percent are women. Again, various norms and beliefs regard marketing as a male domain; women are perceived to know very little about such work. The women interviewed reported that there was no need for women to market when men were available to do so. In cases

[9] For example, the traders at Palacode market said that only about 20 percent of the farmers who came to sell the vegetables were women.
[10] Source: Traders from the market.
[11] The traders at the market said that an equal number of women and men retailers, roughly 500 of each, came to buy the tomatoes at the center.

where men were not available, the women said they would be ready to take up this role.

Women have some access to cash income from the marketing of vegetables and mangoes. However, this access depends on individual households as well as the position (daughter, mother, daughter-in-law, or mother-in-law) of the woman in the household. The more senior the woman the more access she has to the money, but this does not necessarily mean that women have freedom to spend money as they choose. On the contrary, women are expected to spend money on household and family requirements. Men, on the hand, spend cash income in whatever way they want, often without consulting the family, the interviews revealed.

Young unmarried girls generally are unable to trade in the marketplace. Socio-cultural norms prohibit this participation. Women who enter marketing are either married or, if unmarried, are elderly. Even for these women, access to the marketplace depends on the permission of male family members. Child-rearing responsibilities also limit women's ability to market. There is simply not enough time to devote to both the household and the marketplace, many women find. Some women leave the market earlier than men to fulfill their household responsibilities, and when the pressure of household duties is high, women do not go to the markets at all.

Women traders face limitations at the trading center in part because there are no procedures to facilitate orderly marketing. For example, women are at a disadvantage when they must jostle and struggle onto the trucks for produce or be the first to buy produce from farmers. Off-loading produce from trucks may depend on male laborers, which can be difficult for women to find. Male traders have the advantage of unloading their own produce should no laborers be available. Both men and women need to arrange transportation to take their produce from the market to its final destination, which can be especially difficult for women.

In Dharmapuri, all the women traders and retailers belong to the Valliyar Kulla Sathiriyar community (the Valliyars). The immigrant community, the Kongu Vellala Gonder (Gonder) does not feel comfortable marketing. Their social norms and family rules are particularly strict. The Valliyars, native to the area, feel a greater sense of safety in their community. Therefore, social and family restrictions on women may not be as rigid. However, immigrant communities have come to the region with new agricultural knowledge and technologies and have begun to buy land from the Valliyars. The Gonder women of this community were thus engaged full time in agriculture. The Valliyars, now with less land, looked for alternative livelihood opportunities. This change resulted in the Gonder women being allowed to market.

Decision-making and Control

Husbands make all marketing decisions, such as when and to whom to sell. Women sometimes make suggestions or recommendations but final decisions are made by men. The reason given is that women are not knowledgeable about marketing. Even women who sell their produce at the markets, such as at Palacode, typically have the men in their lives fix the price of the produce they sell. This assessment emerged from the comments of the Palacode small traders and retailers. They noted that it was easier to negotiate prices with the male farmers because they are flexible, whereas the women farmers do not lower the prices they quote.

Mangoes and cashew nuts are marketed directly to traders and retailers by male farmers. The fruits and nuts are sold to the traders, owners of processing units or middlemen. Processed products are sold by the processing units to the traders, retailers and occasionally are exported directly. Women have no role in, access to or control over mangoes and cashew nuts, which are high value crops in India.

The decision to include women in marketing and trading likewise is made by men. This is because although women themselves decide to work in this area, they still have to have the permission of their husbands to do so.

Women must give all accounts of their business to their husbands. This was true even in the case of a woman retailer whose husband works in Bangalore and comes home only once a month.

Opportunities and Constraints

Several opportunities and constraints for women emerged from the workshop discussions in the field. Some of the constraints and opportunities are common to all women. Others are specific to farmers, agricultural laborers and laborers in the processing units.

Common constraints included lack of education, restrictive socio-cultural norms and traditions, and lack of access to information. The women and men in the workshops suggested several solutions: literacy training and educational campaigns (both formal and informal); gender sensitization workshops in the villages; and visits to other places to expose the men and women to cultures that don’t face such challenges.

Common opportunities included involvement in SHGs, increased self-confidence, and access to credit. Such advances can be enhanced by further supporting SHGs and including them in government and NGO programs and

activities; identifying and using local women as leaders[12] and experts[13]; supporting exchange visits for the SHGs; training select SHG members on group management and leadership; and linking the SHGs to government offices, NGOs and private sector contacts.

Constraints and Opportunities for Farmers

Constraints

The major constraint women farmers face is the inability to own land. In virtually all cases, land is owned by the male head of family. Women also are overburdened with household chores, providing food for the family, tending livestock, and working alongside the men in the cultivation of crops. Also, poor farmers and female-headed households are left out of the horticulture supply chain.

Opportunities

In Dharmapuri a practice has emerged whereby land acquired by a woman after marriage may be legally registered in her name. This practice is prevalent among the younger generation of the Gonder community, which migrated to the district from Salem, Trichengodu and Rasipuram about 50 years ago. This is a major community in Northern Tamil Nadu, known to be very traditional. Even though this practice was initiated by virtue of helping to mitigate inheritance disputes of land between a deceased male's family members, it has ended up benefiting women overall who have gained rights to their husbands land.

[12] This reference pertains to women who form an SHG or are recognized as a leader by its other members.

[13] "Experts" here means women who are recognized in their village or community as an authority on, for instance, seed, soil fertility, cultivation methods, identification of fodder, etc. These women could serve as resources alongside the scientists and other professionals in projects and programs. This would raise their confidence, self-esteem and at the same time earn them income, as they too should be paid for their expertise and time.

In Ratnagiri, consultant Chanda Gurung on right interviews a female-headed household.

In female-headed households, the absence of male heads of family provides them the opportunity to serve as decision makers and could serve to increase women's access to resources.

Constraints and Opportunities for Agricultural Laborers and Laborers in Processing Units

Constraints include stereotyping in the division of labor between men and women and lower wages for women than for men. With agricultural labor, women have seen a rise in employment as the sector expands but also an increase in labor-intensive work and drudgery. Female processing unit workers often are prevented from transitioning to more skilled work or to higher levels of management based on their gender.

There are more employment opportunities for women both as agricultural laborers and as workers within the processing units because of the expansion of horticultural products. Additionally, women occasionally earn increased income from overtime, especially in the processing units.

Constraints and Opportunities for Traders and Retailers

Again, gender stereotyping has an impact on the division of labor within the marketplace. Men dominate marketing. Time devoted to marketing by women is curtailed by their domestic and child-rearing responsibilities.

One opportunity for women: There is a large number of women retailers who could be organized into an SHG or union.

Lessons Learned

It is not only individuals, but communities that embrace, tolerate, oppose, or ignore gender ideologies in response to new interventions and dynamics.

The first lesson emerged from the practice of registering land acquired after marriage under the wife's name among the younger generation of the Gonder community at Dharmapuri. This community, which migrated to the district and is regarded as traditional, has allowed its younger generation greater latitude and ignored select ideologies, thus partially transforming gender relations in the community. This phenomenon may be attributable in part to the migration, which necessarily exposed the community to change.

A second illustration is the involvement of the women of the Valliyar in Dharmapuri in marketing. This community of original inhabitants is very traditional. However, with the gradual loss of their agricultural land to the Gonder community and their need to seek other work opportunities, the community selectively ignored the traditional divisions of labor as both men and women moved into alternative livelihoods.

The second lesson is that women adopt innovative methods and strategies to negotiate and bargain in the face of transformations and new practices. By way of example, in Dharmapuri, women agricultural laborers are forming groups to work on a contract basis in order to receive higher wages. An SHG in Ratnagiri has been cultivating vegetables for commercial purposes. As a group the women have more freedom to enter the marketing sector and more control over their income than they would as individuals. Also, in Ratnagiri a woman farmer engaged in the production of vermicompost for commercial purpose has started to decrease the size and weight of the packing from 50 kilograms to 25 kilograms so that the women workers can carry and load the material, which otherwise is done by men. With this modification, women workers are able to perform a task that commands higher pay.

Practical and immediate concerns for livelihood lead not only to innovative strategies but also to transformations in socio-cultural norms and practices.

SECTION V

RECOMMENDATIONS

During the course of this study, several strategies and best practices were identified and significant lessons were learned. Based on these strategies, practices and lessons, this study recommends the following:

1. **Develop** an inventory of best practices. Those identified in the course of this study were:

> (i) Registration of land acquired after marriage under the wife's name. This practice has given women a wide range of opportunities in many spheres.
>
> (ii) A decrease the size and weight of vermicompost packing from 50 kilograms to 25 kilograms. Women workers can carry the lighter bags and thus do the task of loading, which is otherwise done by men. This change would enable women access to a higher paid task.
>
> (iii) Group cultivation of vegetables for commercial purposes, as was done by one SHG. This approach has afforded the SHG members the freedom to enter the marketing sector, which was not possible when they worked as individuals, and by association provided them a greater measure of control over their income.
>
> (iv) Forming into groups by women agricultural laborers to work on contract basis and earn higher wages.
>
> (v) The Valliyar women are very traditional, however, with the gradual loss of their agricultural land to the Gonder community and their need to seek other work opportunities, the community selectively ignored the traditional gender divisions of labor as both men and women moved into alternative livelihoods.

(vi) In both Ratnagiri and Dharmapuri, women are primarily responsible for the household, but increasingly men help them with household chores, especially within the younger generation.

2. **Support** and enhance the SHGs, which have raised women's confidence and provided them with financial and other support. Include SHGs in the programs and activities of government agencies and NGOs. Identify and use local women leaders and experts in projects and activities. Introduce the SHG to the concepts underpinning cooperatives through training and technical assistance. Link the SHGs to relevant government, NGO and private (service providers) sectors.

3. **Address** institutional gender blindness. The mere increase in the numbers of women participating in the horticultural sector does not automatically result in sensitivity to women's issues. This is made glaringly clear by the fact that, despite more female students in the agricultural universities, there is still a considerable degree of ignorance regarding gender issues. Furthermore, the conventional "top-down" approach is still the method used by government line agencies as well as agriculture research institutes in their programs and projects. Address these issues by:

(i) Offering technical assistance to processing units, agriculture marketing boards, agricultural universities, and research institutes on gender issues and participatory research and development as they relate to horticulture. For example, engage the agriculture universities supported by USAID by sending selected faculty to the annual three week "Gender, Organizational Change, Agriculture and Leadership Training" at the International Agriculture Center in Wageningen, The Netherlands.

(ii) Providing training to sensitize the principal actors at all stages of the supply chain, especially those in decision-making posts, to gender issues.

4. **Provide** technical assistance and training to community and industry networks on the national and international horticulture production standards, labor codes of conduct and corporate social responsibility mandates. These codes and standards reinforce the importance of addressing gender issues and the labor concerns of women. Corporate social responsibility is now widely accepted by business, and has led to the adoption and implementation of codes of conduct for fair labor practices. However, the study found that in small and medium processing units there is little understanding of or knowledge about such codes, not only among the laborers but also among unit management. A strategy to counter this would be to disseminate information through the horticulture networks about these standards and to provide the industry with technical assistance and training.

5. **Design** and implement programs on entrepreneurship for women farmers. There is tremendous opportunity for women in horticulture marketing. That women are gaining confidence through the SHGs is highly promising, and entrepreneurship programs would further women's empowerment and enable them to overcome the barriers that keep them from reaping gains associated with commercial agriculture. One such program might focus on forming women's vegetable-growing and marketing cooperatives through the SHGs, and providing related training.

6. **Alleviate** women's low status in the horticulture sector by initiating programs to identify the relevant technologies that could lead to women's skill development, access to agro-processing, and drudgery reduction.

7. **Conduct** an in-depth study on social aspects within the horticultural value chain, including a gender analysis. This current study is only one snapshot of the supply chain. A more in-depth study conducted in India is essential for three major reasons: First, horticulture is becoming an increasingly important enterprise with increasing demand for fruits and vegetables; second, women form the predominant workforce within the sector, yet are undervalued and generally invisible; and third, there has not been a thorough examination of the intersection of horticulture and gender within the Indian context or of poor and marginalized peoples.

ANNEX I

IMPLEMENTING PARTNERS AND KEY CONTACTS

Key Contacts

A. For Dharmapuri District, Tamil Nadu:

Tamil Nadu Agriculture University, Coimbatore

1. Dr. Vadivel
   Dean, Department of Horticulture

2. Dr. Balamohan
   Head of Department of Fruit crops

3. Dr. I. Muthuvel
   Assistant Professor (Horticulture) & Assistant project officer
   Tamil Nadu Precision Farming Project

4. Mr. M. Ravikumar
   Senior Research Fellow (horticulture)
   Tamil Nadu Precision Farming Project

5. Mr. Sivakumar
   Senior Research Fellow (seed technology)
   Tamil Nadu Precision Farming Project

B.Ratnagiri District, Maharashtra:

Maharashtra State Agri Marketing Board (MSAMB), Pune

1. Mr. Sunil Borade
   Market Advisor

2. Mr. S.D. Kharmale

Horticulture Development Officer
Divisional office (Mango Export Facility)
MSAMB, Ratnagiri

3. Mr. Yaswant P. Jawale
   Horticulture Development Officer
   MSAMB, Pune

4. Mr. Sanjay Gurav
   Plant Operator
   Divisional office (Mango Export Facility)
   MSAMB, Ratnagiri

ANNEX 2

KEY QUESTIONS UTILIZED IN FIELD INTERVIEWS

1. What are the roles and responsibilities of men and women in the different stages and sub-stages[•] of fruit/vegetable supply chain (from production through marketing)?
2. What are the decision-making roles of men and women in these positions?
3. Who controls and who participates in the cultivation/harvesting, processing, and marketing, of agricultural crops? How exactly? Who benefits from them? Who remains excluded or isolated? (This could be on the grounds of gender, age, class, caste, economic status, religion, ethnicity, etc.)
4. What is the decision-making role of men and women concerning access and control over the key resources (land, labor, knowledge, capital, technology, etc.) in this sector?
5. Have the roles/tasks of women changed in any way as a result of new technologies and market forces/dynamics?
6. Has women's time and labor inputs increased or decreased with the introduction of new technologies and market forces/dynamics?
7. How have the transformations due to technologies and market forces/dynamics in this sector affected/impacted women's:
   (a) independent income, status, self-image and self-esteem, health, mobility, etc.?
   (b) traditional rights and opportunities of access, control and decision making process?
8. What are the adaptations, strategies and resilience have women have adopted as a result of all the transformations?
9. What changes have occurred in the social and gender dynamics due to these changes?

[•] 3 stages - cultivation, processing, marketing. Each of these sub-stages will have will have further stages for example:
Cultivation: Site selection, seed selection, land preparation, planting, weeding, harvesting, etc.
Processing: storage, the respective stages and work required in the particular fruit/vegetable processing work like peeling, drying, crushing, using any particular machinery, packaging etc.
Marketing: pricing, transporting, actual selling, etc.
These sub-stages will be further revised in the field in consultation with the people involved.

10. What are some of the emerging issues in terms of gender equity that have come about due to the introduction of technologies and as a result of the market dynamics?

ANNEX 3

CHECK LIST

1. ***Division of labor***
   - What are the roles of women and men in the existing gender division of labor in the different stages and sub-stages in this sector?
   - Are either men or women excluded from any task/stage? Why?
   - What are the new tasks that have come about due to the changes?
   - To what extent do men and women take over from each other? For what reasons – hardship, work pressure, profit, etc?
   - Are women mainly paid or underpaid family workers or wage laborers?
   - If women are wage laborers also then is there a difference in the wages of men and women?
   - What is the seasonality/cycle of these tasks and occupations?

2. ***Access to and Control over resources (means of production, service and facilities) and opportunities:***
   - Do men and women have equal access to and/or ownership of or usufruct of:
   - Land, harvest,
   - Capital, credit
   - Agricultural inputs (seeds, fertilizers, etc)
   - Agricultural implements/tools/machinery
   - Processing facilities and technologies
   - Information, skill training
   - Transportation
   - marketing
   - Are there gender differences in eligibility to receive services and trainings?
   - Are there gender differences to get access to technologies and information?
   - What are women's main constraints?

3. ***Appropriateness of Technologies***

- Are the technologies appropriate for both men and women?

4. ***Participation in Decision-making:***
   - Are women involved in the decision-making and planning at the household or factory level in the different stages?
   - What are the terms of their involvement?
   - In which stage are women most involved?
   - Are any categories (based on age, religion, class, caste, ethnicity, etc.) of women excluded?

5. ***Benefits*** (wage, cash income from sale of goods and services, status, self esteem etc.)***:***
   - What benefits do men and women get?
   - Do men and women derive equal benefits from the sector?
   - What benefits must women give up as a result of the changes in this sector?
   - What benefits must women give up as a result of the chain of transformation and changes?

6. ***Impacts (of the technologies and market dynamics):***
   - Are there any positive impacts on women? E.g. -
   - reduction of workload
   - increase in income generation
   - more leisure time
   - better health
   - enhanced status
   - more involvement in decision-making
   - opportunities for skill training, accessing information
   - Are there any negative impacts? E.g. –
   - increased workload
   - no access to or loss of income generation
   - loss or reduction of traditional authority
   - exclusion of particular groups such as lowest income groups like female heads of households, from services
   - greatest benefits to a particular group only, such as higher income groups

ANNEX 4

DISTRICT PROFILES

A. DHARMAPURI

Dharmapuri district is situated in the Northwestern corner of Tamil Nadu. The total geographical area of the district is 4497.77 Sq kms. The climate is generally warm. The hottest period of the year is generally from the months of March to May with the highest temperature going up to 38 C in April. The climate becomes cool from December until February, touching a minimum of 17 C in January. The average annual rainfall of 895.56 mm. The soil type ranges from black to mixed loam. Out of the total geographical area of4,49,777 hectares (ha); forest area constitute 1,63,817 ha (36.40%);barren and uncultivable land 19,648 ha (04.40%);land put to non-agricultural use is about 29,821 ha (06.60%); culturable waste is 7,326 ha (01.60%); permanent pastures and other grazing lands 6,209(01.40%);land under miscellaneous tree crop and groves (not included in net area sown) 2,170 (00.50%); current fallow 60,589 (13.50%); other fallow land 6,875 ha (01.50%);net area sown1,53,322 ha (34.10%) and area sown more than once 15,767 ha (09.30%). The total cropped area in the district is 1,69,089 ha.

As per the 2001 census the total population of the district is 12,86,552, out of which the male population is 6,66,418 (52%) and female population is 6,20,134 (48%), with a sex ratio of 931/1000. 85% (10,93,635) of the total population live in rural areas and 15% (1,92,917) are urban based. The total literacy rate is 71% while the male and female literacy rates are 61% and 50% respectively.

The District economy is mainly agrarian in nature. Nearly 70% of the workforce is dependent on agriculture and allied activities. The district is one among most backward and drought prone area in the state. The main crops cultivated are rice, millet, pulses, sugarcane, mango, coconut, tamarind.

Dharmapuri district forms a major horticultural belt in the state; almost all types of fruits and vegetables are cultivated in the district. As the area is drought prone it has become essential to switch over to cultivation of drought

tolerant perennial fruit crops in this district. It has the highest area under the fruit crops. Mango is the main horticulture crop of this district: the district accounts for nearly one-third area under mango and nearly one-half of the mango yields in the state. Nearly 80% of the mango crops are of the Thottapuri variety (Banglora) commonly referred as Kilimukku. The district has the 2nd highest area under tomato and accounts for 22% of the area in the state. Palacode is the main area where tomato is cultivated.

Dharmapuri district is endowed with sizeable reserves of granite, quartz, and malibdinum, which is identified as a good conductor.

(Source: 1. Dharmapuri District Profile http://www.dharmapuri.tn.nic.in/index.htm

2. Field notes – taken from the information provided by the key informants and respondents as well as from observation)

B. Ratnagiri

Ratnagiri is a district in the state of Maharashtra, India. The district constitutes nine tahsils or sub-divisions. The geographical area of this district is 800,183 hectare, out of which 225,500 ha (27.56%) is under cultivation,14.06% remains uncultivated, 0.8% is under forest cover, 10.00% under pasture and miscellaneous plantation, 23.4% is under non-agriculture use and 22.55% is under barren and cultivable waste.

Being a coastal area, there is not much variation in the temperatures during the day and throughout the season. The average temperature ranges from a maximum of 31.4 C to a minimum of 22.7 C. The southwest monsoon prevails from June to September and the average rainfall is 3787mm. The proximity to the sea results in humid climatic conditions throughout the year. The humidity level reaches an average of 74.7% during the mornings and 68.0% during the evenings.

The major soil type of the district is laterite and alluvial. Rice based residual moisture crop cultivation is followed in the district.

As per the 2001 census the total population of the district is 16,96,482, out of which 15,04,341 of the population live in rural areas and 1,92,141 are based in urban areas. Out of the total population 3,65,462 are farmers and 55,470 are agricultural laborers. Out of 1,87,390 farming families, nearly 45% have small holdings up to 1-2 ha, 21.18% have large holdings (above 5.00 ha) and 18.55 have medium holdings (2-4ha). The literacy rate is higher in males (86.28%) than females (65.98%). Migration of the male population to metropolitan cities like Mumbai in search of employment is high in the district.

Major crops and fruits cultivated here are rice, finger millet (nagli), small millet (vari), pulses, groundnut, mango, cashew nut, coconut. According to the staff of MSAMB, grapes too have been introduced at some areas recently.

Besides, agriculture, fishing and fisheries are a major occupation in the coastal areas.

Due to the high rainfall during the monsoon followed by scarcity of water at other times, the farmers especially the poor ones, cannot cultivate vegetables extensively. Apart from this, most of the coastal areas are hilly and have rocky surface which poses big problems to the farmers: they have spread about 5-6 inches of soil on the surface by bringing it from other areas before they can plant and cultivate their vegetables. For planting mangoes the farmers use explosives like dynamite and gelatin to break the rocky surface. Similarly they have to spend more for irrigation too. These are the major constraints for the poor farmers.

(**Source:** 1. **KVK in Service of Farmers**, 2004, Krishi Vigyan Kendra (Shrigaon), Ratnagiri, Directorate of Extension Education, Ratnagiri, Maharashtra)

2. Field notes – taken from the information provided by the key informants and respondents as well as from observation)

ANNEX 5

CODES OF CONDUCT

Codes of conduct are regulatory standards covering the production processes of Southern producers exporting to Northern markets. These codes have come about since the last decade due to the various concerns of consumers, retailers, auctions, European regulators and civil society organizations, which led to increasing pressure on companies to account for the ethical impact of their operations. Therefore, during the 1990s a number of regulatory measures were adopted to address the quality, social and environmental impact of global trade. Thus the codes of conduct are a part of a trend towards self-regulation that is itself an element of the dominant pattern of globalization. However, codes are linked to national and international frameworks, and must be used in conjunction with them in order to protect worker's rights. Many codes are explicitly based on core International Labor Organization conventions and the UN Declaration of Human Rights, and state that relevant national legislation must be applied.

In the horticulture industry, codes were initially imposed to protect the health and safety of consumers in importing nations and include various trade agreements and standards enacted at international, regional and sub-regional levels. By the mid 1990s the scope broadened to focus on the implications for the health, labor and human rights of people involved in the supply chains of developing countries.

These codes were introduced from three different origins:

- *dominant buyers* such as supermarkets and importers/wholesalers (company codes);
- *trade associations* linked to the horticultural sector (sectoral codes); and
- *independent bodies* comprised of businesses and a range of civil society organizations (multi stakeholder codes).

Along with this, a number of horticultural producer associations in developing countries have also developed their own codes to protect the image and the legitimacy of their industries in European markets.

With regard to gender issues and concerns, the gender dimensions of codes are not straightforward, and are also related to age, marital status and place of origin. Furthermore, the standard set by the code largely depends on the broader legal and social framework operating in the country and the extent to which it addresses issues of gender inequality. Thus, although numerous codes have been introduced in the sector, the extent to which code content addresses gender concerns is highly variable.

(Source: Dolan, C., Opondo, M. and Smith, S., 2003, **Gender, Rights and Participation in the Kenya Cut Flower Industry,** NRI Report No. 2768, Chatham: University of Greenwich)

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