The Impact of Agricultural Modernization on the Peasant Women of Rajasthan, India

by

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PREFACE

The purpose of this thesis was to study the *impact* of agricultural modernization on peasant women. Three indicators were used: the decision to adopt modern farm technology, the impact on drudgery and work efficiency, and additional employment opportunities from such technologies. A comparison between female-headed and male-headed households showed no significant differences in decision-making by women. Second, findings indicate that women belonging to large landholding households make more decisions than those belonging to small or marginal households. It appears from these findings that women's participation in decision-making increases with the economic prosperity of the household. Third, a majority of women reported a *decrease* in *drudgery* and an *increase* in their *work efficiency* after the adoption of modern farm technologies. Fourth, a substantial proportion of households (40%) owning land reported additional employment opportunities from HYV Seeds, fertilizer, and plant protection techniques.

Data were analyzed from 623 households from Udaipur and Chittorgarh districts in Rajasthan, a state in northwest India. The data were collected by the Indian Council of Agricultural Research (ICAR), New Delhi, which began conducting a national survey on peasant women in 1988. The data set examined here has not been analyzed previously. Stratified random sampling procedure was applied, using gender and size of landholding as basis for stratification.

Chapter 1: Agrarian Change and Gender

India's agricultural development has been at once controversial and successful. The Green Revolution, which involves the use of High Yield Variety Seeds, fertilizer, irrigation (also known as the 'bio-chemical' package) and mechanization, was first introduced in India in mid-1960s. Controversies abound among analysts about the productivity, income and employment opportunities generated through these technologies. On the other hand, the Green Revolution has left little doubt about the country's ability to remain self-sufficient in food crops (which was a serious concern in the 1960s), especially wheat and rice (Rudra 1987; Goldsmith, 1990; Singh 1990). What is less clear is its effect on peasant women (Boserup 1970; Nelson 1979; Sen 1985; Whitehead 1985; Deere 1987).

In this chapter I will begin by briefly assessing India's path to agricultural modernization. Second, I will attempt to explain how these relate to gender in a changing agrarian economy. The purpose of my thesis is to study the impact of agricultural modernization, through the use of improved farm technologies, on the status of peasant women in Rajasthan, India.

India's Agricultural Development Strategy

Goldsmith (1990) attributes India's successful

transformation from a nation dependent on food imports to one that is self-sufficient (and even an exporter) to the adoption of High Yielding Varieties (HYV) of seed, particularly wheat and rice. However, the push to adopting the HYVs may not have been possible without the changes taking place in the Indian political scene (Varshney 1989). The end result of these changes was the adoption of a model suggested by experts from the Ford Foundation and Rockefeller Foundation (Rudra 1987; Varshney 1989; Goldsmith 1990). This model included the use of HYV seeds, fertilizer, and irrigation (seed-fertilizer-water intensive strategy), also known as a "package deal" (Rudra 1987:25).

The evaluators of the agricultural policy can be placed in two groups, those that focus on the spectacular increases in the country's productivity and those that show concern about its consequences for the rural poor, most notably the landless and marginal peasants. Goldsmith (1990) and Singh (1990) state that India's decision to adopt HYVs was essential if the country were to avoid the specter of famine and starvation. Griffin (1974) and Rudra (1987) concentrate on the inequalities generated as a result of the HYVs. Rudra (1987:23) argues that "it is utter nonsense to say that this technology is scale neutral." In short, the Green Revolution has been successful for those members of the peasantry that have been able to afford the expensive inputs. Griffin (1974:18) points out that peasants from this economic level

have also been members of state legislative assemblies.

Furthermore, there is an international dimension in the adoption of such techniques. In the case of fertilizers, for example, there has been a collaboration between India's big business names such as K.K. Birla, Dalmia, Bharat Ram, Kasturbhai Lalbhai, Khaitan, and multinational corporations such as Halcon International Inc., International Minerals and Chemicals Corporation, Texaco, United States Steel Corporation, Imperial Chemical Industries, National Iranian Oil Company, BASF, Toyo Engineering Corporation and Hitachi. This collaboration has led to a serious imbalance between the uses of organic and inorganic fertilizers in crop production (Rudra 1987:35). Given the highly oligopolistic and protected nature of the chemical fertilizer industry, according to Rudra, the situation is not going to change.

Gender and Agrarian Change

In the debate over the fate of agrarian change the gender question has largely been met with silence. But even as it is being slowly addressed, issues relating to gender have only complicated the controversies over the benefits of technological change (Bourque & Warren 1987:174).[1]

The groundwork for the examination of gender roles in the process of agricultural modernization was laid by Ester Boserup in her book on Woman's Role in Economic Development (1970). Her pioneering insight is that "economic and social

development unavoidably entails the disintegration of the division of labor among the sexes traditionally established in the village" (Boserup 1970:5). Since her observation, a number of feminist scholars have elaborated on this during the course of their studies. Deere (1987) has focused on the impact of agricultural modernization in the context of Latin America (especially in Rural Women and State Policy). Sen has carried out her work in South Asia (1985). Whitehead (1985) provides a cross-cultural perspective on technological change in her work on the conceptual and empirical issues related to gender roles in the changing agrarian economy.

Whitehead, along with the authors mentioned above, is concerned with the employment, productivity, and income-distribution paradigm associated with technological change in rural areas. However, there are "serious inadequacies" in terms of trying to study the employment and labor-demand effects associated with technological change (Whitehead 1985:29). First, Third World economies are not fully waged, making it difficult to calculate the wage employment created through technology. For example, there is little distinction in terms of types of labor input and within the class of worker, such as family, unpaid, permanent laborer, casual laborer or seasonal casual laborer (Whitehead 1985:31). In the case of women, who are largely casual workers in the labor force, the use of HYVs may lead to demand for their inputs during the peak of the harvest season (Sen 1985:41). However,

such seasonal demands do not necessarily "improve" the employment opportunities on an annual basis. A woman who gains more days of employment during the peak season still may have to remain unemployed or underemployed for the remaining part of the year.

Employment itself is dependent on the demand for labor in the given region. In Thanjavur district in Tamil Nadu, a state in southern India, the number of female laborers increased owing to small peasants becoming landless as a consequence of the introduction of high yield variety rice. (The adoption of HYV rice was risky since crop failure was high initially. Those small peasants who could not keep up with the expenses had to sell their land.) The women had to take up employment for the days available, and there has been a tendency for an overall decline in their employment (Sen 1985:56).

There is yet another side to the participation of females in the rural work force. For women who work as family laborers and as waged laborers, the use of HYVs has increased the overall work load. Whitehead (1985:37) engages in a lengthy critique of Chayanov's and the New Household Economics Model precisely for their inability to see the *intensification* in women's work in the process of technological innovation. The implications of such models are that family members internalize their preferences because of high regard and care for other family members. While this may be true, it leads to the invisibility of women's work, particularly their work

load. This may be occurring in the green belt areas of Punjab and Haryana, although as yet I have not come across case studies that show the above to be true in India.

The scenario presented in the last few pages suggests "parallels between the effects of gender and the effects of class" in the course of agricultural modernization (Whitehead 1985:29). For example, peasant women in Thanjavur district who lost their landholdings had to take up employment at whatever wages available. On the other hand, in prosperous households in Haryana women withdrew from agricultural work (Kaur 1988). Both these regions have been showpieces for India's agricultural performance, yet the impact on women has depended on the class to which they belonged. Similarly, gender has been an issue in both regions. In Haryana mechanization did not lead to women taking part in the mechanized activities, and in Thanjavur an increased number of women in the labor force resulted in a decline in the participation rates of women. Agricultural modernization, then, has a differential impact on women, depending on their class and their being females in a gendered society.

Finally, the discussion on gender and agrarian change cannot be complete without explicitly pointing out that technological innovations are not directly aimed at women (Nelson 1979; Whitehead 1985; Sen 1985; Deere 1987). Whitehead raises this issue in several contexts, including the intensification of women's work owing to agricultural

modernization. But more importantly, attention has been focused on those aspects of the crop cycle that get mechanized. There are five main subprocesses in agriculture: seed-bed preparation, irrigation, interculture, harvesting, and sale. Within each of these are still further processes: plowing, planking, leveling of soil, application of manure/fertilizer; bunding and maintaining water channels and water application to the fields; hoeing, weeding, and pest control; reaping, binding, threshing, and winnowing; and crop storage, transport, and sale (Sen 1985:44).

Some tasks in the above cycle have been mechanized, such as wheat threshing (in Punjab/Haryana), corn shelling, sugarcane crushing, sowing, and weeding. These are tasks previously performed by women but now being done by men (Sen 1985:46). Had the development planners taken note of the displacement caused to women in the process, a concerted effort could have been made to involve women in the mechanization process. This can still be done, but the cultural biases against women using machines are such that they are left out of the process. Besides, it is no secret that those who use machines are given higher wages, and the men have successfully availed themselves of the higher wages while the women have not been allowed to.

There are positive effects as well, owing to the new inputs in agriculture. India has tried to use labor-intensive strategies for agricultural growth. The use of fertilizers,

multiple-cropping techniques, and so on, have led to an increased demand for females in the labor force. However, their increased participation has not had a significant impact in terms of reducing rural poverty. Certainly for the women in Thanjavur district this was not the case! (Sen 1985:56)

Conclusion

India's agricultural growth strategy is guided by the use of HYVs, fertilizer, and irrigation. There continues to be serious concern about some aspects of the strategy, including the impact on the employment, income, and productivity of the rural population. Within this strategy gender has not received serious consideration, although women's issues began receiving greater attention with the work of Boserup. Boserup had predicted a breakdown in the rigid sexual division of labor, which has not always been the case in India. Mechanization, for example, has excluded women. While there have been increases in the participation of women in the labor force, peasant women have not seen an end to rural poverty. In short, agricultural modernization is not directed at women, while they may have to bear the brunt of the changes in the process.

In this chapter we discovered that "the gender division of labor in agriculture is responsive to a number of technical variables-the specific crops, and tasks, the labor intensity of the activity, the attendant degree of mechanization-and the social characteristics of the peasant household and the woman

herself-such as class, the family life cycle, kinship position, and age" (Deere 1987:4).

Theoretical explanations concerning gender roles in changing agrarian contexts will be summarized in the next chapter, which also will include a literature review of case studies done on peasant women in India. Then, in Chapter 3, I discuss the methods that have been employed in the study of gender roles in India, including a section on some of the underlying theoretical assumptions on methodology. Chapter 4 provides background information on rural Rajasthan, which is where the survey data used in this research were collected by the Indian Council of Agricultural Research. Chapter 5 is an analysis of the data. The focus of inquiry is the status of peasant women, using three indicators: the *decision* to adopt modern farming techniques, the impact on *drudgery* and *work efficiency* after their adoption, and the *employment opportunities* generated from the new technologies. The final chapter offers suggestions for further research.

Endnote

[1] Not everyone considers HYVs, fertilizer and irrigation as technological innovation. The common perception seems to construe technological innovation as *mechanized* agriculture, including the use of combines, harvesters, threshers, tractors and so on.

Chapter 2: Theoretical Perspectives on Gender Roles

The chapter has three purposes: first, define the concepts role and status; second, use three sociological perspectives to explain gender roles; finally, review these perspectives in light of the literature on women and rural development in South Asia. The three perspectives are functionalism, conflict theory and symbolic interaction theory. The broader objective of this chapter is to utilize theoretic sources to explain the concepts of gender roles in a changing agrarian context.

Definitions of Role and Status

The origin of current uses of the terms "status" and "role" was in Talcott Parsons' functionalist theory. *Status* is an organizing feature of human society (Lindsay 1990:1). It pertains to the various positions that people come to occupy as a result of their birth and social standing, hence the use of terms ascribed and achieved statuses. Examples of ascribed status include one's age, family, gender, and race. Examples of achieved status includes one's socio-economic position in society, marital status, educational level and so on. While one has no control over the former, the latter is assumed to reflect individual achievement.

Role is most commonly described as the dynamic aspect of status. It refers to the performance of the "rights and

duties" associated with a given status (Turner 1986:320). In other words, people occupy multiple statuses and perform multiple roles.

Functionalist Theory

The fundamental principles of functionalist theory came from the natural science of biology (Turner 1986:41). Just as the human body consists of various parts that make it possible for it to function, so do the various parts of society come together for it to maintain equilibrium (or operate homeostatically) (Turner 1986:55). Functional theory evaluates gender roles in the same light, that is, gender roles exist because they are functional for society. In preindustrial societies, for example, the division of labor by gender exists because of its usefulness for society (Lindsay 1990:5).

The major criticism of functionalist theory, as Lindsay points out, is that it is unable to explain the present diversity in gender roles. This criticism is not entirely fair since social change (which, by implication, includes diversity in gender roles as a result of modernization) is explained in the analytical functionalism of Talcott Parsons through the "informational hierarchy of control" or the "cybernatic hierarchy of control" (Turner 1986:70-75). Social change occurs through the exchanges among various levels of this hierarchy; these exchanges in turn lead to the differentiation of system units, establishing mechanisms of integration while

increasing the adaptive capacity of the system. But even prior to this conceptualization is Parsons' discussion of the processes of institutionalization. Institutionalization (of gender roles, for example) is achieved via processes in the social system which in turn lead to the formation of a structure of the social system (Turner 1986:64). In other words, a social structure is not static but rather a dynamic set of relationships.

Gerald Marwell's elaboration of functionalist theory takes a historical perspective on the differentiation of gender roles (Nielsen 1990:198). His insight is that differentiation can be both functional and dysfunctional depending on the societal conditions. In agrarian settings gender roles must be complimentary so as to maintain the family and requirements for running the farm. However, in industrialized societies such role ascriptions may be dysfunctional since technology, and the demands of industrial society render such ascriptions as unnecessary.

Marwell's theory is simplistic in that it does not take into account the differentiation of gender roles within agrarian societies. Women in rich peasant households require a different set of role ascriptions than those from poorer households. Besides, even in industrial societies gender roles have not undergone major changes in all respects; women continue to take charge of household work in spite of their participation in the labor force. Finally, as Nielsen points

out, Marwell's theory does not address why "one half of the complementary division of labor is rewarded less than the other" (Nielsen 1990:199).

Why is it, then, that the functionalist perspective has come under serious criticism? Lindsay (1990:6) believes that it is not so much the functionalist perspective that ought to be criticized but rather the use of the theory by those who wish to maintain the status quo: "Ideologically, functionalism has been used as a justification for the persistence of male dominance and overall gender stratification."

Conflict Theory

Conflict theory offers a different perspective on the nature of social reality, the underlying principle being the struggle among various groups for power and control. No area of social reality is free of conflict, whether this be the church, the family or the state. The foundation of conflict theory was laid by Marx, and the works of Dahrendorf, Coser, Habermas, among others, have added to this perspective. Dahrendorf's perception of conflict is through the "imperatively coordinated associations," which represent a "distinguishable organization of roles" (Turner 1986:152). But there are only two basic types of roles in Dahrendorf's theoretic scheme, the ruling and the ruled (Turner 1986:153). The female gender role is the one that is akin to the ruled; her roles are determined by those who rule, namely the males

in society.

The Marxist feminist perspective on gender roles is tied closely to the critique of capitalism (Nielsen 1990:216). Capitalism (the system itself and the individuals who own the means of production) benefits from women's subordination. While "subordination" is never defined clearly, it relates to the process of subordination, such as keeping women tied to the domestic sphere or as a reserve labor force during times of war and/or economic unrest. Gender roles, therefore, are maintained precisely because it is in the best interests of the capitalists (who have traditionally been males), which leads to the subordination of women.

There are several critiques of the Marxist feminist approach. First, capitalism cannot benefit from the division of labor (or gendered roles) because keeping women in the home does not allow for their exploitation--through low wages--in the market place. Second, the subordination of women is found in pre-capitalist societies as well (Nielsen 1990:217-218). Lerner's book, The Creation of Patriarchy, is a challenge to the traditional Marxist feminist approach (Nielsen 1990:222). She hypothesizes that women's subordination is rooted in their reproductive and productive labor. The first form of slavery, she argues, began with women, and it intensified as taboos were placed on women's sexuality and reproductive capability.

Blumberg's theory is largely concerned with the determinants of women's economic power (Nielsen 1990:230). The

very first requisite is women's participation in the production process. Second, they should have economic power at the macrolevel (the economic institutions); microlevel power does not translate into macrolevel power, so unless this changes, they will continue to have an inferior status in society. Third, women's participation in the labor force is a function of demand in the labor force rather than the so-called reproductive constraints of childcare and nurturing. With regard to gender roles, Blumberg argues that these roles are structured so as to keep women out of the economic system; when women do participate in the labor force their participation is determined by forces such as the marketplace or war (when men have to leave the factories to fight an another nation). Furthermore, men have successfully managed to restrict women's economic contributions to microlevel management, while the macrolevel continues to be dominated by men.

Turner's (1986:163) critical insight on conflict theory and its theorists is that they assume conflict "as a functional requisite for social change." This in turn leads to the problem of illegitimate teleology; conflict exists to meet the needs of the system. However, according to Turner, this issue can be resolved if conflict theorists address the problem of causes and functions of conflict (Turner 1986:183). Is conflict a cause of change or is it a function of change in the system? As far as gender roles are concerned the questions

that need to be addressed are the following: Can gender roles undergo change without conflict? Or, in order to see a change in gender roles, will women have to engage in conflict (as a strategy for change)? [Note: the term "conflict" should not be interpreted solely to mean violence; there are many forms of conflict. As Turner (1986:183) points out, it is important that conflict theorists define the term conflict in order to provide conceptual clarity for future theory construction.]

Symbolic Interactionism

Symbolic interaction is concerned with the relationships between society and the individual, and the meaning that individuals give to this relationship (Turner 1986:309). As Lindsay (1990) and Turner (1986) point out, symbolic interaction addresses the issue of micro and macro arrangements of the social structure. To what extent are the two reflected in each other? And how is it that one influences the other to change and maintain patterns of interaction in, what is called, the social system? It is correct to state that symbolic interactionist theory is concerned with microprocesses rather than institutional arrangements such as social class, class conflict and so on. Microprocesses, then, are discovered as links that tie the individuals to each other and the institutions that they have come to create. What came about in the search for such links has been called Role Theory (but only as one of the perspectives in the overall scheme of

symbolic interactionist theory) (Turner 1986:332).

Turner's view on role theory is that it covers a diverse range of perspectives, with one end being "structural" and the other being "processual" in orientation (Turner 1986:353). In structural role theory society is seen as a set of related statuses with role expectations dependent upon the status(es). As he points out, this conceptualization suggests an overly structured view of social reality; people are not creative executors of their role but rather tied down by the dictates of their statuses. But there are other problems with structural role theory.

One of the problems is that the structural approach does not adequately show the connections between the larger social structure and specific patterns of interaction (Turner 1986:362). As far as gender roles are concerned, it is vital that we understand the influences of the overall structure on prescribing and maintaining given patterns of interaction among and between the genders. This issue will be discussed in greater length in the next section of the chapter as we analyze "Dadi's family," a peasant household in Haryana, India. The methodological problems arising out of this approach will be discussed in the next chapter.

Opposed to the "structural" approach is the "processual" role theory of Ralph H. Turner. The theoretical framework explores the following issues: (1) the formation of roles, (2) the interactive aspects of role(s), (3) role(s) with respect

to the other, (4) role(s) with respect to the organization, (5) role in a given social setting, (6) role(s) and the individual enacting the role(s) (Turner 375:1986). These issues are explained in terms of tendency propositions. For example, "tendencies for role differentiation and accretion" occur as "behaviors, sentiments, and motives tend to be differentiated into units that can be termed roles; once differentiated, elements of behavior, sentiment, and motives that appear in the same situation tend to be assigned to existing roles" (Turner 1986:375). Hence a pattern in social interaction emerges.

The two propositions that are fundamental to Ralph Turner's process role theory are the "functionality" proposition and the "tenability" proposition. The functionality proposition has two components to it: role differentiation and goal attainment in an efficient, effective manner. People use roles to attain a desired goal in an efficient, effective way. The "tenability" proposition refers to the awards, reinforcements for performing a given role or set of roles. But the two propositions are not mutually exclusive in terms of role performance.

Turner creates other propositions based on the two stated above. For example, the more goal-oriented the interaction among individuals, the less operative will be the considerations with tenability. In short: tenability and functionality considerations vary with the "external

attributes of actors, such as power, and the degree of instrumentality of interaction" (Turner 1986:385).

Theoretical Perspectives in the South Asian Literature

Prior to a discussion of the three perspectives in the literature on rural women in South Asia, two points need to be mentioned. The first pertains to the uses of the term "role." Many titles in this area refer in one way or another to "the role of women in rural development." "Role" in these cases refers to the contribution or participation of women in rural development (Marlaire 1992). It does not necessarily refer to the sociological concept of the term as discussed in the beginning of the chapter. Having said this, these studies need not be discarded; rather it is the task of the reader to apply them to the appropriate theoretical perspective.

The second issue is with regard to the status of women in rural society. The term "status" has been used loosely in the literature, referring to political, economic, legal, and ideological phenomena (Mukhopadhyay & Higgins 1987:466). Mukhopadhyay and Higgins address the issue of subjective biases in the literature on the determinants of women's status. These biases came under increasing scrutiny after Whyte's study of ninety-three pre-industrial societies in The Status of Women in Preindustrial Societies. Rather than focusing on the passive, inferior status of women, the literature reveals the dynamic status of women in areas such

as arrangement of marriages (Mukhopadhyay & Higgins 1987:464).

Mukhopadhyay and Higgins discuss current advances in thinking about "key determinants" and conceptual schemes for understanding the term status. Recent research includes the following topics: study of male and female aggressiveness, strength, reproductive and economic roles, and the implications of reproductive roles. While strength has been advanced as an explanation for universal gender asymmetry, strength *per se* is not the issue. It is the "conscious choices and judgments" that have been passed from one generation to the next based on biological differences between men and women (Mukhopadhyay & Higgins 1987:474). This analysis has been advanced by Maclachlan's study of a South Indian village. He argues that patriarchy, patrilocality, male-female differentials in age at marriage, male management of agriculture, and gender-role--specificity which stresses motherhood for women and strenuous physical labor for men--have led to the dominance of males over females.

Anthropologists over the last decade have rejected simple universal connections between reproductive roles and gender asymmetry. The current understanding is that reproductive roles have to be adjusted to fit economic roles (Mukhopadhyay & Higgins 1987:475). The young in many developing countries are not nurtured by their mother but cared for by grandparents and/or older siblings. These findings show that the issue of reproductive roles and gender asymmetry is in need of further

explanation. The current thrust in anthropology is to study gender as a system of symbols that are manipulated according to the given cultural context.

Kumari's (1989) study conducted in the Eastern region of the State of Uttar Pradesh addresses the social determinants of status in women-headed households. The problem is "Who, among them [women], assumes headship and why?" (Kumari 36:1989). Determining status is a complicated issue in the case of women. The *de jure* status (households without a male spouse, the male spouse is a transient resident, widowhood, desertion) and the *de facto* status (male member is absent temporarily, or contributes little/nothing to the household income) have to be taken into account prior to determining the head of the household. There are other issues too, such as who makes the decisions on behalf of the household, what are the demographic characteristics of such households, and how do cultural variables influence who becomes the head of the household.

The most interesting aspect of the study is the methodology in identifying female-headed households. The researcher consulted village elders in identifying appropriate households as well as "other knowledgeable and respected persons of the village" (Kumari 1989:41). Age, for example, was another variable that emerged as a determinant of female-headed households. All the issues discussed indicate the need to base the study of female status in the social context of

the situation, in this case, the determinants of *female headedness* in households.

Still other authors have focused on socio-economic determinants of female status. Bennett et al. (1989:9) in a summary report, present a schematic representation of "hypothesized female occupational status." The hierarchy of occupations listed is conventional domestic work, expanded domestic work, agricultural work on own farm (unpaid family work) and agricultural work for others (wage work). These occupations were then matched by the size of landholding of the household. Their study shows that women's status varies in the community and the family depending on the household. In a large landowning household for example, a woman's status will be low in the family but high in the community. This conclusion was reached after such issues as the extent of decision making and proportion of total household income contributed by women in the family were taken into account. Also, family assets determined the status of women, with women from landless households having the lowest status in the community.

There are many strengths and some concerns with the study. First, this a summary article and the methodology is not stated in the summary.[1] Without the methodology, in terms of defining terms such as status, the present study offers few concrete criteria for empirical study. However, the charts, such as "Hierarchy of women's work," are helpful guides to

understanding the status of women.

The authors hypothesize that conventional domestic work is considered high in status, whereas paid agricultural work is considered low in status, regardless of the socio-economic position of the household in the community. This can be validated or rejected by testing it in the village setting. Is it true, for example, that women themselves consider conventional domestic work as conferring a high status on them? If so, then what might be the possible reasons? For example, Zarkovic's (1987) study of the barriers to female participation in the labor force presents a more complex picture. Mentioning the case of the Sikh Jats, he writes, "However, these entrepreneurial farmers prefer *not* to work alongside the womenfolk: 'Sikh communities...do not view with favor the participation in farm work'[...]This attitude towards female workers was then extended to wage laborers who tended to be non-Jats[...], thereby restricting the capacity of females to respond to the increased economic opportunity provided by the green revolution" (Zarkovic 115:1987). These views on female status are male views which is why Bennett's hypothesis has to be treated with caution.

Functionalist Perspective. To move from the discussion of issues regarding the two concepts role and status in the literature, what are the findings that pertain the theoretical perspectives? The literature on rural women offers few instances where the functionalist perspective receives any

serious consideration. "Dadi's Family," a film made for the Odyssey anthropological series, and Kaur's Rural Women and Technological Advancement (1988) are two illustrations of the functionalist paradigm. "Dadi's Family" is a rich peasant household in the state of Haryana which has to confront the reality of their youngest male child's leaving the family farm for a career in the city. Rather suddenly the life cycle of the family is disrupted; the expectation that the family farm will be maintained by the *sons* is challenged (Weil 1991).

The view that various parts of a system or sub-system (the family being the sub-system in this case) come together to form a functional whole is not merely a theoretical perspective for Dadi; it has meaning in terms of the real consequences for the family and their farm. The status and roles of each member are clearly defined - the grandfather owns the land, the grandparents manage the finances of the farm and see to it that other members of the family (sons, daughters-in-law, grandchildren) jointly contribute to the success of the farm. The entire life cycle has been "mapped" (Bennett 1989:3).

But if the functionalist perspective offers the notion of stability/integration (homeostasis), Parson's theoretical scheme of the "cybernetic hierarchy of control" also explains systemic/sub-systemic changes. The "informational controls," which explain social change, involve the modernization of the social system, leading to a cultural system which no longer

regards the joint family as the norm. The personality system is manifest in the change (modernization) in employment opportunities and values of the younger son, who decides to leave the farm for a career in the city.

If we were to chart out the future of Dadi's family empirically, it would appear something like this from the functionalist perspective: The family will have to adapt to the changes while attempting to attain the goal of keeping the farm and family together as an integrated unit for the future. Issues of latency (meaning and cognition) are already beginning to be addressed by Dadi as she questions the status of modern women, referring to her daughter-in-law as unable to command the same respect as Dadi because she will never have the privilege of running a large joint family.

While it may seem obvious to some, the functionalist perspective on change and stasis is an elaborate one. It takes several dimensions into account, starting with the behavioral changes (involving personality) and extending to latency (problems in meaning and cognition in a situation of stasis and change). By so doing, this theoretical model addresses the empirical complexity characteristic in societies undergoing change.

Kaur's investigation on gender roles pertains to the impact of technological advancement on peasant women. Using Merton's functionalist perspective on technology, Kaur (1988:17) reminds the reader that the implementation of farm

technology is a social process. In short, one can draw parallels between class and gender in the adoption of farm technology. For example, women in rich peasant households were relieved from the drudgery of farm work with mechanization. On the other hand, female landless laborers lost employment opportunities due to mechanization of their tasks (Kaur 1988:36). In both cases women did not get to use the mechanized inputs on the farm; the rich peasant woman took greater charge of the domestic sphere while the female laborer lost her earnings from agricultural work.

I will now turn to the discussion of Zarkovic's (1987) article which illustrates Marwell's perspective on functionalist theory. The change in gender roles discussed by Zarkovic takes economic changes into account (although he does devote a section of the paper to why fewer females join the labor force owing to social barriers, which have been mentioned elsewhere in the chapter). Zarkovic, using census data from the states of Punjab and Haryana, shows the sectoral shift in female labor force participation rates. "The cultural and social framework", he argues, "was conducive to the shift of females out of and males into the primary labor force. We thus can see a fairly direct interaction of cultural factors with the economic factors such as profitability, wages, and the level of modernization" (Zarkovic 1987:115). The change in gender roles and the emerging social-economic order can be attributed to reasons offered by Zarkovic.

Zarkovic does not analyze the situation from a conflict perspective although the above can be explained in terms of Blumberg's conflict theory. While males and females were equally aware of the increase in wages, women were restricted owing to social factors. Their restriction is their oppression; while males were allowed to avail themselves of the new opportunities, women could not stake a claim in the new opportunities. The only time they did was during seasonal shortage in the labor force. (This perspective, however, excludes the possibility that at least some women themselves may have decided not to enter the labor force owing to an increase in the income of the male spouse.)

Conflict Perspective. In terms of conflict theory, the main concern is with the "invisibility" of female gender roles and the exploitation of their labor in the household, the farm, national and international economy. Female gender roles have been made invisible in a number of ways. First, the Census in India has been inconsistent with its definition of the term "worker." Devi (1989) and Mazumdar (1975) point out the changes in the definition between 1961 and 1971.[2]

According to the 1961 Census, a 'worker' was anyone who worked for even one hour in a day (Devi 1989:2). By 1971, a worker was anyone who engaged in "work"; that is, they were part of the waged labor force. These changes were apparent as the participation rates of women declined from 27.95% to 13.18% between 1961 and 1971. Mazumdar uses 1951 as the base

year and notes that the participation rates of women declined from 1,836,000 to 926,000 in 1971. The Census, armed with the power to make such changes, has added to the invisibility of these women. Whereas the common observation of gender roles in rural areas is precisely that domestic and farm work cannot be neatly separated (the peasant is at once a householder and a productive unit, as pointed out by Wolf [1966]), this legislation has successfully created an artificial division.

A second way development experts, researchers, planners and members of funding agencies make women invisible is by not paying adequate attention to their needs. Nelson (1979) and Loutfi (1980) argue that urban males are particularly likely to make the (biased) gender assumption that women's place is in the home. As Nelson points out, "men have in the past planned for, and researched about, men" (Nelson 1979:10). These are observations of the value placed on female gender roles in the process of modernization, not mere acts of speculation. The researchers mentioned above are experts in their fields. Loutfi was directing a rural program for women's employment under the ILO's World Employment Program (WEP) in 1980 (which is when her book was published). Nelson is a social anthropologist with experience in East Africa, where she studied rural-urban migrants.

Their work is valuable in that it highlights some of the very concerns that conflict theory is trying to address: development is not a value-neutral process. Those with <u>power</u>

(whether they themselves perceive it as such or not) direct change. Male experts bring to bear their conceptions of gender roles, which in turn expand or limit the opportunities available for rural women. It is their perception which counts, since they conduct the research, grant funds for programs, and evaluate the appropriateness of development programs.

Two of the more noted writers using the conflict perspective are Beneria (1985), and Mies (1986). There are points of similarity and divergence in their research concerns. These two, as well as Nelson (1979) and Loutfi (1980) have done extensive research in the area of sexual division of labor with the common conclusion that such a division exploits females, devaluing the female gender role.

The important question to address is this: What is the sexual division of labor? As Beneria (1985:2) points out, the sexual division of labor is based on the nature-versus-culture conceptualization of social reality. Women's work, their gender role, is devalued because it is considered an extension of nature. Women reproduce, which is attributed to nature and therefore beyond the realm of human control. By extension, also, women are also biologically predisposed to nurture and do the domestic chores. As these authors, among others, point out, this conceptualization is flawed. First, women in marginal and small-farm households cultivate the fields (although social barriers do restrict them in the cases

mentioned elsewhere in the chapter), working as unpaid workers. Second, the "naturalness" attributed to their domestic work actually results in a "double day" load (Beneria 1985:135). What is ignored, then, is not just their work but the burden that accompanies it.

Mies (1986) offers a striking insight into the sexual division of labor. The prescribed nature of gender roles has been used as a weapon by high-caste and upper-class men. In her study of three villages in Andhra Pradesh, a state in south India, the demands of poor peasants for distribution of land and statutory minimum wages are met with violence. She writes: "The victims of sexual oppression are often the women of landless laborers and poor peasants who have to work in the fields. Whereas the rich peasants and landlords keep their women "protected" in their houses, the poorer women have to work for their livelihood... [In] the context of the dominant patriarchal value system, they cannot be "protected," that is, to be 'respectable' is not to be exposed to the sight of other men" (Mies 1986:18). In short, gender roles are used as a basis to oppose the very processes of modernization that could benefit the great majority of the population (demand for equal wages, and land reform).

The overall application of the conflict perspective in the literature can be summarized in the following way:
(1) modernization has not given due recognition to the work done by women, as enumerated in the Census, for example, (2)

The sexual division of labor has been detrimental for females, with women having to be part of the "double day" load, (3) upper-class and upper-caste views on gender roles affect the development process, in some cases actually opposing it, (4) market forces have given women an opportunity to engage in a new role, that of becoming a laborer; however, there is little respite from the burden of their "natural" gender roles.

Symbolic Interactionist Perspective. The most notable aspect of symbolic interactionism is role theory. The main areas of study have been the multiple statuses that women occupy and the multiple roles that they perform. Gender roles have been studied, among other areas, in the agricultural modernization process. These areas are decision-making in the adoption of improved technologies (in terms of agricultural inputs), and participation in the labor force.

Devi (1988) offers a new approach to gender roles by comparing the gender role expectations and performance of farm women themselves, their husbands, and urban professionals. The conceptual framework of her study is from the perspective of structural role theory, utilizing Thomas's and Biddle's contribution in this area. The other major study is by Deipica Bagchi (1982), which is an examination of women's expected role in decision making given their labor input in sustaining the family farm.

Endnotes

1. I did ask in New Delhi for the 3-volume study but these are not available for public use. I was asked to read the three volumes at the UN office; this was not possible in my limited time period.

2. Beneria's (1985) Women and Development: The Sexual Division of Labor in Rural Societies also addresses this issue in the context of the inconsistencies in the International Labor Organization's (ILO) definition of "worker."

Chapter 3: Agrarian Change and Gender Roles: Methodological Issues and Applications in India

Underlying Assumptions and Methodological Options

Triangulation

The scientific observation of phenomena is done best when multiple research strategies are applied in its study. This is what is meant by the term 'triangulation.' As Denzin (1989:13) points out, the conventional understanding of the term was restricted to the use of multiple methodologies, but the concept can be extended to include different *types* of triangulation. These are data, investigator, theory, and methodological triangulation. Within these types sub-types may exist; for example, data triangulation can be a study of different time periods, in different locations or, of persons in a given time period at one location (Denzin 1989:237).

The main purpose of this chapter is to identify methodological issues and problems associated with the theoretical perspectives discussed in the previous chapter. Second, I will explain, and where necessary define, certain basic methodological concepts. Third, I will use the literature review to identify methods applied in the study of gender roles. Also, the major findings and weaknesses of the studies are included. The concluding discussion is a brief critique of the method of triangulation, emphasizing its application in the literature on gender roles in a changing agrarian context.

Theory and Research Strategy

Perhaps one of the most striking insights by Denzin (1989:4) is that theory and methodology cannot be put into two separate components; while theory is interpretation, methodology is a principled approach to the study of that interpretation. He applies symbolic interactionism to utilize various research methods. So far I have come across one case study in my area that utilizes conflict and symbolic interactionist perspectives through multiple methodologies. These findings leave one to conclude that triangulation usually remains an unrealized ideal in the discipline of sociology.

Conflict theory: Methodological problems related to the conflict perspective in general have not been addressed; Turner (1986:161), however, sees problems with Dahrendorf's dialectical conflict. The major criticism is that concepts, such as power, legitimacy, authority, interests, domination, subjugation are too broadly defined. Given the vagueness of the scheme, social reality can be seen as rife with conflict. In order for researchers to conduct empirical work, Dahrendorf needs to define his concepts in ways that they can be measured. It must be pointed out, however, that the lack of clear definitions is a problem with functionalism as well.

Symbolic interaction theory: Turner (1986) offers a critique of the methodological problems with symbolic interaction theory. However, he chooses to address his

concerns in terms of theory-building; symbolic interactionism suffers from the "vagueness of the links between the interaction process and its social structural products" (Turner 1986:352). Denzin (1989) puts the same concern in methodological terms. He offers "seven principles against which methods and sociological activity may be evaluated" (Denzin 1989:18). His third methodological principle is as follows:

> The investigator must simultaneously link human symbols and gendered conceptions of self and the social circles and relationships that furnish those symbols and conceptions. Too frequently, failure to achieve this link leaves studies of human conduct at an individual level; as a consequence, the impact of broader social structures on subjects' conduct can be indirectly inferred (Denzin 1989:10).

How does such a principle work? At the very basic level such a principle calls for a research act that allows the subject and the researcher to present experiences in the light of self and broader social structures. The study by Mies (1986) adequately analyzes how self and social structure are linked; the male landlords (their selves) uphold the economic structure (social structure) through acts of sexual harassment on women (link between self and social structure).

Within the symbolic interactionist perspective, role theory has come to occupy a central place. In terms of methods, measurement of role behavior "does not pose a major methodological obstacle, since it is the most observable of the phenomena studied by role theorists" (Turner 1986:364). The methodological problems arise when one tries to study self

and expectations related to roles. First, it is not possible to infer expectations from behavior simply because "expectations can only be known after the emission of the behavior they are supposed to circumscribe" (Turner 1986:365). Stated differently, it is not possible to predict role behavior independent of the expectations of self in the given role or roles. And without sufficient predictive power, a theoretical perspective is essentially useless (Turner 1986:365).

Second, it is possible to build an expectations structure through verbal accounts by individuals related to a particular role, infer the expectations guiding their conduct, and then predict how role behavior will "unfold in terms of these expectations" (Turner 1986:365). But this method also runs into the same problem, namely it is difficult to discern role expectations from the actual behavior.

The third alternative is to become active participants in the setting under study and in the process *develop a sense* of what types of expectations are guiding the behavior of the individuals (Turner 1986:365). This method has problems of replication because one field researcher's perception may not agree with any other researcher's. Turner states that such a problem can be overcome by the researchers themselves as they come up with a "negotiated" product in terms of a structure of expectations in a specific context. In applying this strategy, then, role theory can have some sort of predictive value.

Explaining Some Terms in Research Methods

Prior to the examination of methods employed in the study of South Asian peasant women, a useful strategy will be to define and explain some of the basic research methods.

Survey: In its most basic form survey research involves two types of methods, use of the interview and of the questionnaire. There are two main parts to a survey, its design and the analysis of the results. The design involves the use of interviews or self-administered questionnaires, with a sample of the population being chosen as part of the study (Denzin 1989:139). In probability sampling one of the most important procedures is random sample selection (Babbie 1990:75). First, it allows each element of the concerned population an equal chance of being selected. Second, it provides a basis for knowing the population parameters (knowing where the sample lies in a normal distribution if the given study were repeated a large number of times) and the estimated error in the study. While there are several types of sampling methods, the concern here is with stratified sampling.

Random stratified sampling helps ensure representativeness of the population to a greater degree than simple random sampling and systematic random sampling. The procedure applied in stratified sampling is to select

homogeneous segments of the population within the sample. For example, peasant populations can be arranged into male-headed and female-headed households, with further stratification based on land-owning and landless categories. The value of adopting this procedure to select people randomly from each category is that it helps reduce sampling error. How so? Because members of a homogeneous population are much more likely to express similar types of characteristics, reservations and so on. Therefore, predictions about them may be more precise than by lumping the entire peasant population together and applying a simple random sampling procedure. In this manner the appropriate sample population is selected (Babbie 1990:85).

Multivariate analysis is a procedure applied for analyzing survey data (Denzin 1989:140). The guiding principle of such an analysis is to measure the "degree of association" between two variables, with one designated as the dependent and the other as independent variable. To test for the strength of the relationship a third variable, or test variable, is introduced. For example, if there is a negative association between caste (independent variable) and women's participation in rural waged labor (dependent variable), then the higher the caste of the woman, the less likely she is to participate in rural waged labor. To rule out the possibility of a third factor, the researcher may include household income as a third factor. It may be that the participation of women

is dependent on household income rather than caste, in which case the original association will be ruled out. Or, caste and income may be closely associated, in which case another kind of statistical test, multiple regression, can reveal the degree to which each influences a change in the dependent variable, participation in the rural waged labor force.

Denzin (1989:140) mentions the utility of multivariate analysis to rule out rival causal factors. Multivariate analysis ensures this by taking external validity of the study into account; the use of randomization, as discussed above, is the key process. Internal validity is achieved when the analyst engages in the process of describing how the researcher-subject interaction may have affected the responses of the subject (Denzin 1989:140). These steps are not related to the process of multivariate analysis but can be expanded along with the measures described above.

Participant Observation: This method is built on three procedures (Denzin 1989:160). First, the observer shares as intimately as possible the life and activities of the subjects. Second, through direct participation the observer immerses herself/himself in the symbolic world of the subjects. Only by experiencing the meanings given by the subjects is it possible to understand their world adequately. Third, observers must carve out an identity for themselves because they continue to function as members of their academic community, applying the concepts and analytical schemes from

their discipline.

One kind of difficulty with this methodology relates to the problem of external and internal validity. External validity is taken care of by the practice of analytic induction (Denzin 1989:171). Analytic induction requires the formulation and, and with each added observation, the reformulation of a hypothesis to the point that it can be applied to the subjects in the study and makes it possible to universalize the findings to the population of concern. As Denzin points out, it is the responsibility of the participant observer to <u>demonstrate</u> that the problem of external validity has been resolved through the use of analytic induction.

There are two points that need to be made about participant observation. First, participant observation also employs survey techniques, although it does not make use of questionnaires or formal interviews. How so? It is the <u>logic</u> of survey methodology that is observed; that is, in order to get a complete picture of the phenomenon under study, it is important to draw a representative sample of the population (Babbie 1990:101). Second, participant observation is not a methodology that can be applied to all types of research projects. According to Denzin (1989:158), it is

> "one of the few methods currently available to the sociologist that is well suited to an analysis of complex forms of symbolic interaction. In contrast to the survey, which may be best suited to the analysis of stable forms of interaction, [it] can handle forms of interaction that are in change."

Applications in the Research Literature on India:

Survey research, and most notably the standardized-schedule interview method has been used to study gender roles. There are three specific studies that will be referred to: "Female Roles in Agricultural Modernization: An Indian Case Study" by Deipica Bagchi (1982); Rural Women: Management in Farm and Home by A. Laxmi Devi (1988); and, Rural Women and Technological Advancement by Malkit Kaur (1988).

The sampling procedure by Bagchi took ecological and social factors into account (Bagchi 1982:8). The villages were selected according to the major crops grown in various regions; wheat in the north, cotton in the west and rice in the southeast of the state of Madhya Pradesh in central India. A total of 16 villages were chosen, representing tribal as well as non-tribal populations. The population of the villages varied from 100 to 400, and 10 to 15% of the population was selected from each village giving a total sample size of 181 cases. The cases were selected on a random basis from the village register; they were stratified according to size of landholding, that is, small, medium and large. The study included female-headed households, although their exact number is not given in the study.

The officials of the State Department (of Madhya Pradesh) were asked to check the accuracy of the translation of the survey prior to the interviews. Interviews were done with husband-wife teams or females alone using a schedule-

structured questionnaire. The researcher observed that "once the initial discomfort of the interview situation eased, the female respondents were found to be surprisingly articulate about their activities, problems, and needs, often volunteered information" (Bagchi 1982:8).

The Statistical Package for Social Sciences (SPSS) was utilized at Southern Illinois University to analyze the data (Bagchi 1982:11). A total of 2308 variables were processed, grouped according to: (1) personal data, (2) land-labor relationship, (3) on-farm activities, (4) farm decision-making, (5) crop processing, (6) marketing, (7) subsidiary off-farm occupation, (8) and, employment patterns. The statistical tests applied were: (1) frequencies, (2) crosstabulations, (3) chi-square,
(4) variances, (5) correlations, and, (6) multiple regressions (Bagchi 1992).

The findings of the study show (1) a high degree of female participation in agricultural production and decision-making, (2) a gradual weakening of women's participation due to mechanization, and, (3) a fairly high level of indifference on the part of government officials to integrating women in rural developmental efforts. Let us look at the results in terms of decision-making in agricultural production. The findings show that the majority of decisions were made jointly in the adoption of cash crops and subsistence crops. The percentages ranged from 50% in the decision to adopt rice as

a cash crop to 83.1% in the adoption of wheat as a subsistence crop. Only in the case of adoption of rice as a subsistence crop was female decision-making alone as high as 12.3%. In fact, in about one-third of the cases men alone made the decision to adopt cash crops. Bagchi does not explain the increasing number of cases where men alone decided to adopt cash crops. This situation may be due to women's concern with subsistence crops to meet the nutritional needs of the family rather than with cash crops.

Bagchi (1982:23) found an inverse relationship between decision-making and size of landholding; with women in the large landholdings making fewer decisions pertaining to agriculture. Women in small and medium holdings showed a high level of participation, presumably due to their direct involvement in agricultural activities.

There are a few methodological weaknesses in the study. First, the researcher does not define what she means by the terms status and role, although the relationship between the two is indicated in the hypothesis: "The hypothesis to be examined in this paper...is that rural female participation in the garb of wage labor or unpaid labor, varying with economic-cultural preconditions, continues to be reasonably high notwithstanding substantial displacements due to modern technology" (Bagchi 1982:3). The assumption here is that if decision-making is an indicator of female status (as family laborer) then, her role should reflect participation in

decision-making (Bagchi 1982:15).

Second, Professor Bagchi does not provide a copy of her questionnaire in the paper. While this is not a requirement, it is certainly a useful supplement for those who may be interested in replicating or adapting the study. In personal communication with Professor Bagchi this author learned that the questionnaire may have been discarded, hence completely lost for future research projects. It is my firm conviction that if such losses are avoided there is greater possibility for systematic development of future studies on gender roles in the context of agrarian modernization.

Kaur's (1988:14) study in the state of Haryana also used the pretested structured scheduled interview method. The variation from the above study is that the districts were stratified according to advanced and backward regions, with Karnal being the technologically advanced (more tractors and irrigated land) and Bhiwani the backward region. Caste was the basis for selection (rather than size of landholding as in the above study), and stratified simple random sampling procedure was applied. The caste groupings were scheduled, lower, artisan, agricultural, prestige, and dominant caste (Kaur 1988:153). A total of 401 female respondents were selected.

Kaur makes use of the Udai Pareek and Trivedi Socio-Economic Status Scale developed in 1963. According to this scale socio-economic status is determined by caste, participation in community organizations, education, size of

landholding, type of labor performed on farm, residence (whether a hut or house built with concrete) and number of rooms, farm powers (buffalos and so on), material possessions, improved farm implements, and structure and size of the family.

The researcher provides a definition of status and role, emphasizing that a peasant woman occupies multiple statuses and hence multiple-roles (Kaur 1988:16). There is no specific hypothesis other than a "broad hypothesis that the new technology has differential impact on women because of the social structure of the society, where women occupy a low status" (18). She not only argues that women have differential access to new technologies in relation to men, but also that the socio-economic status of the household determines her access to such technologies. In terms of the impact of modern technologies, judged by level of mechanization and bio-chemical inputs (such as High Yield Variety seeds, fertilizers and chemicals), Kaur found that the participation of women in the work force declined with the progressiveness of the region. In regions with the lowest levels of mechanization, the majority of women, 94.5%, were in the work force either as paid workers or unpaid family workers (Kaur 1988:30).

As far as employment is concerned, it was found that regions with partial mechanization (that is higher use of bio-chemical inputs and some farm machinery) led to higher levels of employment, especially in the peak seasons. But in the

region with the highest level of mechanization (the use of a combine harvester), 47.7% of female respondents were working a fewer number of days and only 15.1% for more days (Kaur 1988:36). Her overall findings, however, show that for the maximum number of respondents (73.1%) there was no change in terms of the number of days of employment after the introduction of the improved technologies.

An analysis according to caste revealed that those who had received more days of employment were mostly the Outcastes. Among those working for fewer days, the majority were from the intermediate castes (34%), followed by lower castes (10%), untouchables (13.6%) and upper castes (10%) (Kaur 1988:39).

In terms of gender roles, Kaur's findings reveal that a number of factors influence these roles, such as caste, level of farm mechanization, household income, and size of landholding. In the case of women from the Outcastes, for example, partial mechanization offered greater income earning opportunities. For high caste women, full mechanization resulted in withdrawal from farm-related activities.

With regard to the positive or negative consequences of technological changes on gender roles a complex picture emerges. For some women mechanization meant a respite from the drudgery of farm work (Kaur 1988:44). But the negative aspect of such a development was that women were not part of the mechanized system - a traditional role in the family was taken

up by the women. Kaur does not tell us whether this was a voluntary decision on the part of the women. Still others lost their employment, which meant decreased earnings for families already living in a subsistence economy. These women experienced a loss in their status as workers, and contributors to family well-being.

The final case study, was in the state of Andhra Pradesh by A. Laxmi Devi. It has been selected for several reasons. First, it is one of the very best studies in terms of making adequate use of theory and choosing appropriate methods for the theory. It uses the symbolic interactionist perspective, with emphasis on role theory. The author spends an entire chapter (22 pages) discussing the conceptual framework of the study. The major areas of concern were role expectation (as seen by rural women, their husbands, and development experts and academicians), role performance (given the expectations), and finally, role prediction. The survey method was applied along with the structured-schedule interview. The use of the Udai Pareek and Trivedi (1963) Socio-economic Scale (also used by Malkit Kaur), the Paired Comparison Technique (for scores received by the experts), the use of various matrices (F Matrix, P Matrix, and Z Matrix), and statistical techniques such as averages, frequencies, percentages, t-test, F-test, zero-order correlations, and multiple regression analysis and path analysis make this a very thorough study of gender roles.

Second, this study presents a unique finding on the

nature of gender roles in a changing agrarian context. How so? It is important to point out right away that Devi studied traditional practices carried out by farm women, such as presowing, sowing, harvesting, and post-harvest activities (Devi 1988:41-42). Only in "allied" agricultural activities are modern practices, such as borrowing/repaying credit, discussing with specialists matters related to the farm, reading materials related to farming, and purchasing of agricultural inputs such as seeds, fertilizers, farm implements, considered. Therefore, unlike the research concerns of Bagchi and Kaur, Devi presents an overall picture of peasant women rather than those related only to agricultural modernization (such as the decision to use improved technologies).

Her findings show a significant difference (t-value significant at .01 level) between role expectations and role performance of peasant women, and between the experts' expectation and the actual performance of rural women (Devi 1988:94). There was not much difference, however, between the husbands' expectations of their wives and the actual performance of their wives (95). This indicates that husbands have observed their wives and were accurate regarding the role performance of their wives (Devi 1988:95). On the other hand, it also indicates that women were more ambitious about their role expectation than their husbands. As Devi points out, husbands are tradition-bound and therefore content with the

roles played by their wives.

Devi does not discuss the implications of the above in much detail. Suffice it to say that taboos and cultural expectations do hinder the participation of women, especially in middle and high economic groups, thereby creating a gendered society in terms of labor participation (Devi 1988:137).

Participant Observation as a method has been used by Maria Mies (1986) in Indian Women in Subsistence and Agricultural Labor. Her study was in three villages in the southern state of Andhra Pradesh. Mies decision to use this method are slightly different from those discussed elsewhere in this paper. She views participant observation as a strategy to bring about social change; social change can come about with the conscientization of the researcher and the subjects to oppressive structures, in this case patriarchy. Her findings show that patriarchy has become even more dominant with the onset of agricultural modernization. Men, more than women, have lost their jobs as a result of mechanization. Women's work has not been mechanized, but there is a surplus of female labor, due largely to the loss of small and marginal farms in the process of the Green Revolution. These farms could not keep up with the inputs needed for production in the market place, which in turn resulted in the peasant women's having to seek agricultural labor as a way to survive (Mies 1986:127). The large number of females, in turn, led to lower

wages for the female workers (Mies 1986:116). The people who benefitted most are the rich peasants who pay low wages for the work done on their fields.

The conclusion that one can draw from her study is that gender roles do not seem to have changed since patriarchal values have successfully dominated the forces of modernization. This has negatively affected gender roles since the majority of women face prospects of poverty and economic vulnerability. In other words, while women in marginal households and as laborers have always had to do a dual shift (work in the field and the home), modernization has brought no respite from them.

One weakness with the study should be pointed out. Mies (1986) never offers a definition of the term patriarchy, although she does provide the reader with a sense of what it means, exploitation of the poor by the rich. She does offer detailed evidence of how this occurs in the process of modernization, especially with lower wages as a means for oppressing the poor. As she points out,

> "If the real peasants and landlords were forced to treat their workers as real wage laborers and to pay them a living wage to cover the workers' reproduction costs, they would find it difficult to introduce modern farming techniques" (Mies 1986:127).

It may be argued that Mies does not use analytic induction to support the validity of her study. But her use of participant observation, interviews, and discussion show that the picture she provides is in fact a valid one. She observed

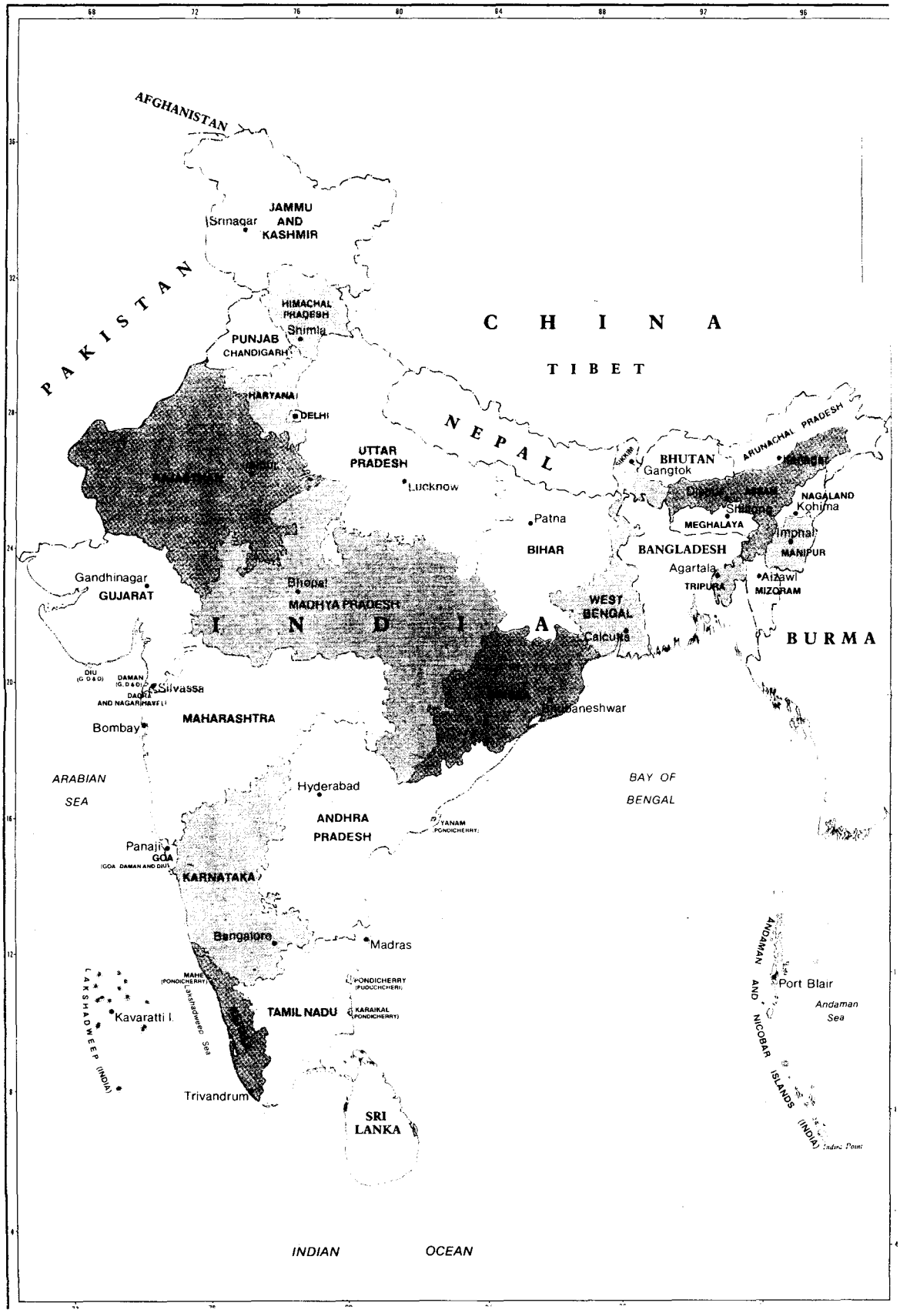
that women agricultural laborers had a keen perception of their own dilemmas; they stated that "we now want land, all the rest is humbug" (Mies 1986: v).

Conclusions

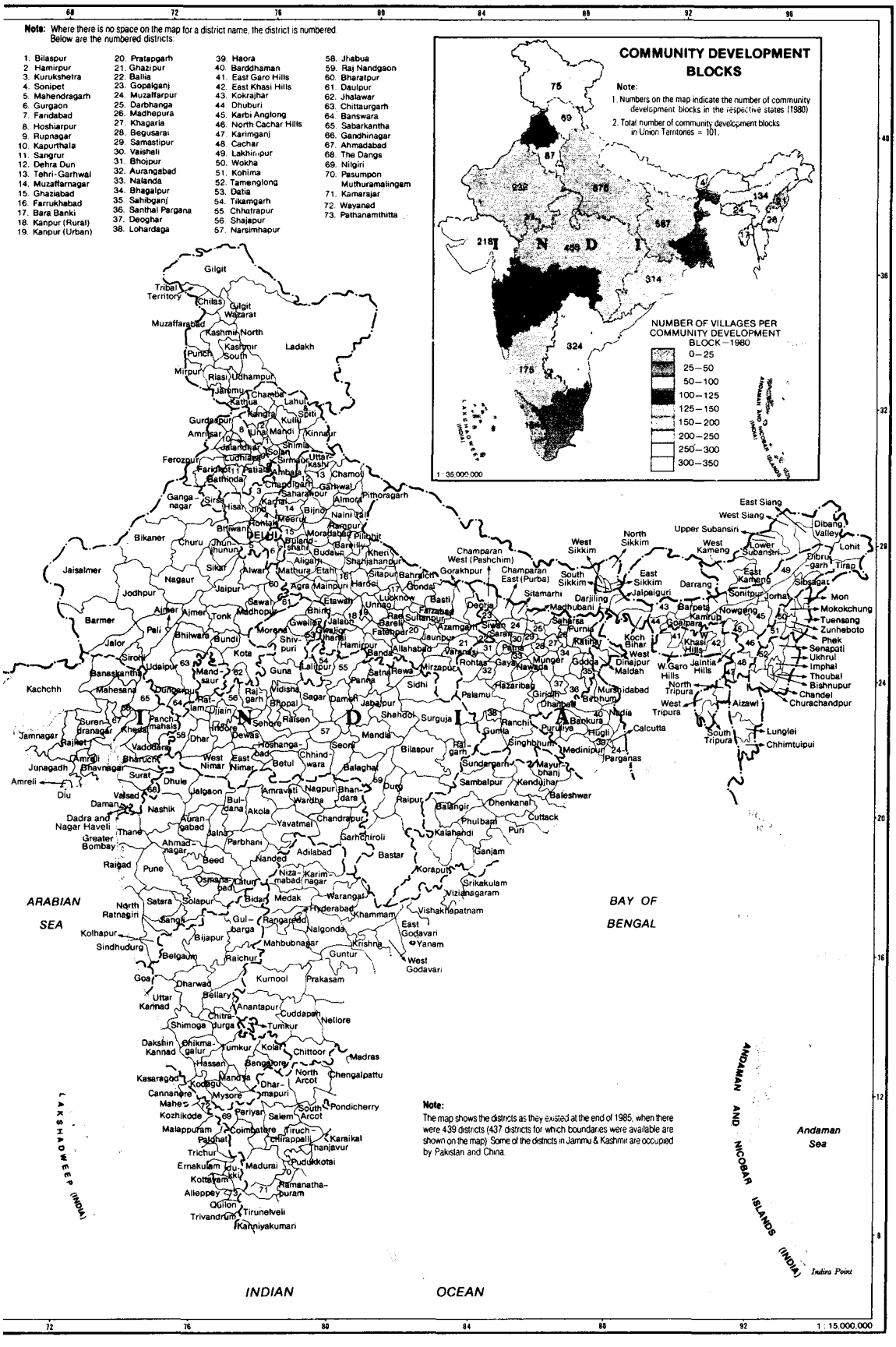
This chapter reveals a complex picture of gender roles through methods such as survey research, notably the structured-schedule interview method, and participant observation. Second, the findings are that gender roles are affected by the socio-economic level of the household. While small and medium sized farms showed a high participation of women in adoption of improved farm technologies, those in the large landholding households were not involved in this area. These women were circumscribed to the more traditional roles of family and taking charge of the domestic sphere.

In terms of the use of theoretical and methodological triangulation, the study by Mies (1986) comes closet to utilizing this technique. She uses conflict and symbolic interactionist perspectives along with participant observation and interviews with the subjects. With the exception of Mies (1986), researchers did not report going back to the site to observe changes in the situation. All the researchers cited time and money as limiting factors, which is one reason why they may not have been able to undertake methodological triangulation (at least to their satisfaction). However, with the exception of Bagchi (1982), the others reported visiting

the sites prior to conducting the study to get acquainted with the subjects and the village officials, who helped them draw a representative sample. Mies did not see the officials, since such action could have made the subjects suspicious of the motives of the researcher.



Source: Muthiah 1987:5.



Source: Muthiah:6.

Chapter 4: On Rajasthan

The state of Rajasthan is described in this chapter to provide background information for my case study, which is on two districts of the state, Chittorgarh and Udaipur. A brief discussion of the geography and the demographics of the state will provide the reader with an overview.

Geography

Rajasthan is the second largest state of India, with a total area of 342,272 square kilometers or 132,117 square miles (Raghuvanshi 1983:10). The northern and northeastern border is with Punjab, Haryana and Delhi, the eastern with Uttar Pradesh, the southeastern with Madhya Pradesh and Gujrat, and the western border with the State of Pakistan. The Aravalli Hills, one of the oldest mountain systems in the world, intersects the state from its southwest to northwest border, with two-thirds of the state lying northwest of the Aravalli range. Rajasthan is also known as the desert state of India; much of the northwestern regions, such as Bikaner, Jaisalmer, Jodhpur, Sikar, and Jhunjhnu, comprise the highly arid regions of the state. Chambal is the largest river of the state and flows on the eastern side of the Aravalli range.

The states in India are organized into several blocks, with each block made up of several villages, towns and/or cities. Rajasthan has 27 districts, 237 blocks, and 34,968 villages (Ministry of Agriculture 1990:1). The only new

district formed in the state is Dholpur (Premi 1991:127).

The Population

The total population of the state of Rajasthan, according to the 1991 Census, is 43,880,640 people (Premi 1991:100). The figures for the rural and urban population are available only from the 1981 Census, with 27.05 million residing in the rural areas and 7.21 million in urban areas (Ministry of Agriculture 1990:2). The literacy rate stands at 38.81 percent (which is the lowest in India); the male literacy rate is 55.07 percent, and the female literacy rate is 20.84 percent (Uniyal 1991:48). Given that the literacy rate in India is 52.11 percent, the male literacy rate is higher than the national rate although lower than the national male literacy rate, which is 63.86 percent (Uniyal 1991:47). The male literacy rate ranks as the fifth lowest in the country. The female literacy rate is low by national standards and by the all-India female literacy rate, which is 39.42 percent, making Rajasthan the lowest state in terms of female literacy.

With rural areas considered alone, the 1981 literacy rate was 17.99%, the figures being 29.65% for males and 5.46% for females. The rural male literacy figure is the fourth lowest, whereas the female rate is the lowest among rural areas in the country (Ministry of Agriculture 1990:12).

The sex ratio has always been a matter of concern in India. While in most parts of the world the population of

females is slightly higher than that of males, in India the reverse is true. The common method of reporting is the number of males per 100 females, but in India it is the number of females per 1000 males (Premi 1991:38). The national ratio is 946/1000, and Rajasthan's sex ratio is 913 females/1000 males, which is lower than the national ratio. Premi (1990:37-38) puts forward three questions as to why India has a low female to male ratio: (1) Have living conditions of females deteriorated? (2) Has the sex ratio at birth (SRB) become more favorable to males in recent years? (3) Has there has been a "greater underenumeration of females in the 1991 census as compared to the 1981 census?"

Premi explains the last question primarily in terms of the administrative and cultural barriers to reporting the number of females in the population. The census takers may be lax in their duty, in which case it is more then likely that females will not be reported (Premi 1991:46). Second, family members may not be willing to give out information about female members of the family. He shows a table of postenumeration checks carried out by the Census in India in 1951, 1971 and 1981. In each case, the number of females to males under-reported was 1.3, 1.2 and 1.1 per 1000. Also, Premi (1991:41) cross-checks his observation through another statistic, the decadal male and female death rates. According to this table the gap has narrowed, with the 1981 Census showing the lowest since 1901; the female death rate is +0.2

higher than the male death rate.

Let us look at the Census data more closely from the table below. While underreporting is certainly an issue, Premi (1991:37) points out that this applies largely to the discrepancies between the 1981 and 1991 figures rather than to the decline noticed over the decades since 1901.

Table 4.1: The Sex Ratio in India

Census Year	Sex Ratio
1901	972
1911	964
1921	955
1931	950
1941	945
1951	946
1961	941
1971	930
1981	934
1991	929

How does the female-to-male ratio figure fare in Rajasthan? In 1991 the ratio was 913 females/1000 males. While this figure is lower than the national figure, it is higher than that of Punjab's 888 females/1000 males. Punjab is considered to be one of the more prosperous states in India! (Some may argue that the 1991 figure should not be taken seriously since Punjab is in political turmoil; however, the 1951 figures--and those of subsequent decades--are also lower than the national figures.) In part this low ratio can be explained by the traditional Rajasthani practice of female infanticide. This was particularly true at the time of Rajput

kings who killed female infants, because they were not fit to become warriors.

The infant mortality rate in Rajasthan is 103/1000 live births, which is the fourth highest in the country (with Madhya Pradesh, Orissa and Uttar Pradesh recording still higher rates). The infant mortality rates in rural areas is 109, which is the fifth highest in the nation. The statistics for 1991 were not available, the above statistics are from 1987.

A statistic that may come as a surprise is the population below the poverty line in Rajasthan. The figures are available for rural areas between the years 1977-78, 1983-84, and 1987-88. In 1977-78, the population below poverty line was 8,270,000; in 1983-84 the numbers increased to 10,500,000; in 1987-88 the figures dropped to 7,737,000 (Ministry of Agriculture 1990:17). In terms of the percentage of the population below the poverty line in 1977-78, it was 33.5%; in 1983-84 it stood at 36.6%, and in 1987-88 it was down to 24.94% (Ministry of Agriculture 1990:18). As far as other states are concerned, Rajasthan's rural poverty rate in 1987-88 was eleventh lowest in the country. Figures for eight other states were not reported! In other words, for those states where figures were reported nine states had a higher percentage of their population below the poverty line, and seven had a lower percentage below the poverty line. Relatively speaking, then, Rajasthan does not seem to have

fared badly in terms of its rural population living below the poverty line.

The above figures also seem to be promising, given that the percentage below the poverty line has declined from 36.6% in 1983-84 to 24.94% in 1987-88. A closer look also shows that this is lower than the percentage reported in 1977-78. However, the reasons for the drop are yet to be explained, or at least this author did not come across analysis for the rather drastic drop within a short period of 4 years. It may well be that the government has changed its criteria for persons living below the poverty line. Or, it may be that the selection of years for reporting the percentage below the poverty line are such that the poverty line shows a drop. In other words, a complete presentation would include figures over the past several decades rather than the brief time periods shown in the table (which are 1977-78, 1983-84, 1987-88).

By simply examining the statistics one finds that 23 out of 25 states show a drop between 1977-78 and 1983-84 (Ministry of Agriculture 1990:18). Between the same years, five states showed a drop by about 50% (and two of these states by about 70%). Between 1977-78 and 1987-88, six states showed a drop by more than 50% in the rural population living below the poverty line (which is about one-fourth of all the states in India; there are 25 states in India). These figures are certainly impressive, but if this is partly or wholly a result of the

alternative reasons given above, then there is only an appearance in the drop, while the actual condition of the people may remain unchanged.

Rural Development Programs for Women

The Government of India has launched a number of rural schemes to improve the condition of rural women. These are the Integrated Rural Development Program (IRDP), Training of Rural Youth for Self Employment (TRYSEM), Development of Women and Children in Rural Areas (DWCRA), Rural Landless Employment Guarantee Program (RLEGP), and Jawahar Rozgar Yogna (JRY - Jawahar wage employment scheme). In the Seventh Five-Year Plan (1985-1990) there were 139,029 women that had benefitted under IRDP in Rajasthan, and 30,117 women trained through the TRYSEM during the same years (Ministry of Agriculture 1990:156-157).

A total of 1,377 women's groups were formed under DWCRA in Rajasthan in the Seventh Five-Year Plan (Ministry of Agriculture 1990:158). By 1991 eleven districts in Rajasthan were covered by DWCRA (Ministry of Agriculture 1991:168). (These districts are Banswara, Pali, Alwar, Jodhpur, Bhilwara, Tonk, Udaipur, Sikar, Barmer, Dholpur, Jalore.) Under RLEGP, 3,718,000 person-days of employment were generated for women (Ministry of Agriculture 1990:160). The JRY generated 7,695,000 persondays of employment (Ministry of Agriculture 1990:161).

Since the findings above are not reported in terms of

percentages of the total eligible rural female population in each state, it is not possible to come up with meaningful statements on how the rural women in Rajasthan compared to others. For example, in the IRDP scheme ten states showed a higher number and fourteen a lower number of women beneficiaries (Ministry of Agriculture 1990:156). But does this mean that rural Rajasthani women are eleventh highest in terms of the number of beneficiaries? Or lower/higher, given the smaller/larger number of eligible women beneficiaries in proportion to the total eligible rural female population as compared to other states? There is a way to work around this problem. The needed statistic is the total number of eligible rural women (age 18 and older) in the various states in India. However, the statistics reported are on a national basis rather than a state-by-state breakdown.

The findings on the number of person-days of employment generated under the various schemes should be treated with some caution. It is conceivable that the recording of the person-days could be inaccurate simply because the administrative costs of undertaking such a procedure may be too expensive. Also, given the rise in the number of casual women laborers, the number of person-days generated do not indicate whether the number of women in the permanent labor force increased or whether the generation was largely of a casual sort. These fine distinctions have to be identified prior to recognizing women as long-term beneficiaries.

It is equally important that one identify the abuses and needed improvements in the system. It may be that women belonging to the wealthier households or those with political connections fare better. While these schemes, such as IRDP, are to "assist the poorest of the poor first", this may not always be the case (Ministry of Agriculture 1991:5). A review of five DWCRA workshops in 1988 reported corruption on the part of officers in Imphal district in Manipur (Ministry of Agriculture 1988:28). The nature of the abuse was not reported.

In yet another workshop held in July-August 1991, National Workshop of Project Directors Reading Material and Discussion Papers on IRDP, TRYSEM & DWCRA, the directors reported that only 30% of the funds had been utilized for the year 1990-1991 (Ministry of Agriculture 1991:2). Perhaps the non-utilization of funds is not an indication of failure, but only that new avenues should be found to use these funds for the benefit of rural women.

Women in the Rural Labor Force

The number of rural women workers, according to 1981 Census figures, was 1,392,000 main workers, 1,864,400 marginal workers, and 9,764,200 non-workers (Ministry of Agriculture 1990:154). Of the main workers, 1,003,300 are cultivators, 230,900 agricultural laborers, 31,000 workers in the household industry and 127,500 classified as engaged in "Other" areas

(Ministry of Agriculture 1990:155). Given that the women engaged in the "Other" category is so large (more than half the number of those engaged as agricultural laborers), future Census figures should try to identify the occupations of this group of female rural main workers.

Yet another vital statistic is the daily earnings by the male and female rural workers. In the Basic Rural Statistics (1990) series data are available for the years 1964-65, 1974-75, and 1977-78 (Ministry of Agriculture 1990:19). For Rajasthan, men's and women's average daily earnings in agricultural occupations were Rs.1.64 and 1.08, 3.85 and 2.57, and 4.48 and 2.16 for the time periods indicated above. A cursory glance will reveal that not only are there differences in the daily earnings of men and women, but these differences have increased over the decades. For the years 1977-78 eleven states showed higher average daily earnings than Rajasthan, whereas in twelve states men received lower average daily earnings. Twenty-one states showed higher average daily earnings for women in 1977-78. Rajasthani women ranked third from the bottom in average daily earnings.

This author has not come across any analysis of Rajasthani women's participation rates in the labor force. It woule be worth knowing, for example, if there have been any effects on employment of female laborers since agricultural modernization (through the use of the HYV-package or "bio-chemical" package). As elsewhere, Zarkovic's (1987) analysis

of "The Effects of Economic Growth and Technological Innovation on the Agricultural Labor Force in India" is concerned solely with the States of Haryana and Punjab (two of the states where the Green Revolution first occurred.)

Agriculture

Rajasthan, like the rest of India, is largely rural with agriculture being the main occupation of the majority. The principal crops of the region are Bajra, grown in the Kharif or monsoon season between June and October, and wheat in the Rabi or winter season between the months of November and April (Raghuvanshi 1983:43). In 1988-89, 5,706,100 hectares of land (these are the latest statistics available) were cultivated for production of Bajra (Indian corn), which is the highest among Bajra producing states. Wheat was cultivated over 1,769,500 hectares of land, which is the sixth highest among the states producing wheat. A total of 14 other states produce wheat. The other crops grown are paddy, jowar (millet), maize, and barley (Ministry of Agriculture 1990:99).

In sum, the area cultivated under principal crops is 9,825,300 hectares for cereals, 2,917,500 hectares for pulses, and 12,742,800 hectares for foodgrains (Ministry of Agriculture 1990:100). The pattern of land utilization is as follows: 34,224,000 hectares of cultivable land, 2,248,000 hectares of forest land, 1,658,000 hectares for non-agricultural purposes, 2,800,000 hectares of barren land,

1,824,000 hectares of pasture and grazing lands, 26,000 hectares of land under miscellaneous tree crops, 5,755,000 hectares under culturable waste land, 2,256,000 hectares of current (1986-87 figures) fallow land, and finally 2,238,000 hectares of fallow land (other than the area reported under "current fallow" land) (Ministry of Agriculture 1990:98).

The use of agricultural technology will provide a more complete picture of the state of agriculture in Rajasthan. The most commonly reported technologies are fertilizers, agricultural implements and machinery, irrigation, and storage facilities (Ministry of Agriculture 1990:111-119). The use of three types of fertilizer is reported: nitrogenous fertilizers 149,692 tons, phosphatic fertilizers 62,010 tons, and pottasic fertilizer 3,113 tons (Ministry of Agriculture 1990: 111). Under agricultural implements and machinery are (Table 4.2):

A comparison with other states is of use only in so far as it can shed light on the level of agricultural development in Rajasthan. Such a comparison is difficult for a number of reasons. First, the climate of the regions determines the types of crops grown in the area, and soil fertility affects the output of crops. Second, the use of inputs such as farm implements and machinery is dependent on the exposure of the region to modern farm equipment. Third, social factors such as the distribution of wealth determines the level of adoption of technology. The concern is with the overall number of people using such implements, beyond the wealthy few. Since this

author does not have the necessary information a meaningful comparison will not be possible between Rajasthan and other states.

Table 4.2: Farm Implements/Machinery in Rajasthan

Farm implements/machinery	Numbers
Wooden ploughs	2,636,800
Soil stirring steel ploughs	140,700
Soil turning steel ploughs	136,100
Hand operated steel sprayers	8,500
Hand operated dusters	6,100
Power operated sprayers/dusters	2,400
Hand operated chaff cutters	516,400
Power operated chaff cutters	7,000
Animal carts	1,007,800
Animal operated sugarcane crushers	24,600
Power generated sugarcane crushers	300
Diesel engine pump sets	226,400
Electric pump sets	205,900
Power tillers	4,600
Tractors	54,700
Tractor-operated combine harvesters	1,200
Self-propelled combine harvesters	400
Wheat threshers	7,800
Paddy threshers	1,200
Multi crop threshers	1,000
Wet land paddlers	37,600
Olpad threshers	1,500
Pers wheel	47,200

A conclusion that one can draw about Rajasthan is that there is a long way to go before it can be said that adequate fulfillment of its agricultural potential has been realized. As Raghuvanshi (1983:53) points out, provision of irrigation facilities can turn the state into "a bread basket not only for the population of the state, but can also become an important supplier of her agricultural produce in the country." The total irrigated area is 7,873,000 hectares

(Ministry of Agriculture 1990:118). The sources of irrigation are government canals (1,205,000 hectares), tanks (12,400 hectares), wells (by tubewells 264,000 hectares and 179,000 by other wells), and 38,000 hectares by other sources (Ibid.: 119). A topic that needs further analysis is determining the optimal irrigation facilities for this state.

Landholdings

The Basic Rural Statistics series reports the size of landholdings in 5 categories: marginal (below 1 hectare), small (1-2 hectares), semi-medium (between 2-4 hectares), medium (between 1-10 hectares), and large (10 hectares and above) (Ministry of Agriculture 1990:121). What is confusing about the above categorization is the size of medium landholdings, since these are reported to be between 1-10 rather than 4-10 hectares. Also, there seems to be overlapping among the categories. For example, will 2 hectares be reported as "small" or "semi-medium"?

Part of this confusion can be resolved by understanding the method by which the classification is done. In the Manual for IRDP and Allied Programs of TRYSEM & DWCRA, the definition of the small farmer varies with the type of irrigated land (Ministry of Agriculture 1991:5). For example, a marginal peasant (below 1 hectare) with "Class I irrigated land, as defined in the State Land Ceilings Legislation" is classified as a small farmer. This does not explain the problem related

to the classification of medium-sized landholdings. Suffice to suggest that certain other criteria must be in place to identify medium-sized landholdings.

The numbers of operational holdings reported in 1985-86 were the following: 1,361,000 marginal, 924,000 small, 983,000 semi-medium, 987,000 medium, 508,000 large, and 4,763,000 of all sizes (Ministry of Agriculture 1990:122). The areas of operational holdings, in 1985-86, were 642,000 hectares as "marginal", 1,327,000 hectares as "small", 2,792,000 hectares as "semi-medium", 6,121,000 hectares as "medium", 9,790,000 hectares as "large", and 20,671,000 hectares as taking all sizes into account (Ministry of Agriculture 1990:123). What is not included in these series is the size of landholdings of female land owners, which could be useful for comparing the size of landholdings of men and women in the categories listed above.

Land Reforms

According to the 1989-90 statistics, the target for land reforms was 20,000 acres. Rajasthan managed to exceed this target by a slight margin, 176 acres (Ministry of Agriculture 1990:90). But there is no information as to how many landless peasants benefitted from the achievement, nor which categories showed a marked decrease/increase in the number of landholdings and which categories showed a decrease/increase in the area of landholdings. Why should all this information

be necessary? Simply because many of the so-called reforms take place on paper in India rather than benefitting the really needy peasant population.

Dutta's (1988) paper, "Structure and Distribution of Land Holdings in Bihar - A Temporal Analysis", addresses these issues directly. His analysis can be applied to the case of Rajasthan as well. Datta points out three things related to the issue of land reforms: (1) the sub-division of land due to population growth; (2) transfer of land in the name of heirs to evade land ceiling laws (so that the size of land owned by a family does not actually decrease); (3) the acquisition of land by the government for industrial and development purposes (Datta:599).

Conclusion

This chapter has provided general information and covered specific topics related to rural Rajasthan. The one major conclusion is that Rajasthan is one of the more backward states in India and is in need of significant inputs in terms of human and resource management.

Chapter 5: The Impact of Agricultural Modernization on the Peasant Women of Rajasthan

Introduction

This chapter covers two specific topics, beginning with the demographics of the area and the adoption of modern technologies there. Second, it provides a conceptual framework for the case study including the hypotheses tested and the findings from the study.

An analysis of the data set on Rajasthan by the Indian Council of Agricultural Research (ICAR) has not been done previously. This data set is a small part of an ongoing national project of the ICAR.

Methods and other background information about the survey are discussed in greater detail in Appendix A. Appendix B provides a layout of the survey, and a copy of the survey is included in Appendix C. For the purposes of this analysis, only portions of the survey were utilized. These were selected parts of Schedules 3 and 4, with analyses pertaining to the adoption of improved farm technologies by peasant women and the *impact* of modern farm technologies on the women. From Schedule 3, I review information on farm characteristics. I have not dealt with categories "Herbicide" and "Other" since the number of households utilizing these technologies was minimal. (herbicide use was noted in 6 households and the "Other" category contained 21 households.) From Schedule 4 I have restricted the to analysis to the first 6 questions under "Impact of Agricultural Modernization on the woman respondent

at Individual level." (The reasons for restricting to this portion of Schedule 4 will be discussed in the next chapter).

Demographics

The study was conducted in two districts of Rajasthan, Udaipur and Chittorgarh, which are in the eastern and southeastern plains and plateaus. They are part of the Aravalli Hill and receive relatively more rainfall than other regions of Rajasthan. Twelve villages were selected from each district:

Table 5.1: Villages Included in the Survey Districts

	District Udaipur	District Chittorgarh
1.	Brahamno-ka-Khernara	Mahudi
2.	Gorana	Swaroopgang
3.	Sayara	Panch Devla
4.	Gogunda	Bagund
5.	Peeladhar	Amarpura
6.	Kantoda	Kashmore
7.	Soniyana	Alod
8.	Madri Govaliya	Mircha Kheri
9.	Banjari	Kunwalia
10.	Khokar	Tamdia
11.	Kuraz	Thukrai
12.	Dhaneria	Nandwae

A breakdown by male and female-headed households, and by size of landholding in the districts is given in Table 5.2. From the distribution it is clear that there are more households in stratum one (which should have 6 x 24=144 households), and stratum five (which should have 4 x 24=96

households). Also, there are fewer households in the remaining four strata (which should have 4 x 24=96 households each).

Table 5.2: Number of Households per Stratum

	Stratum	Number of cases
1	Female-headed household (with land)	149
2	Female-headed household (landless)	90
3	Male-headed household (large landholdings)	94
4	Male-headed household (small landholdings)	95
5	Male-headed household (marginal landholdings)	107
6	Male-headed household (landless)	88
	Total:	623

A distribution of the population by caste shows the following:

Table 5.3: Number of Households by Caste

Caste	Number of cases
Scheduled Caste	114
Scheduled Tribe	44
Backward Class	35
Others	423
Missing Cases	7
Total:	623

The Scheduled caste consists of *Harijans* (a word coined by Gandhi to refer to the outcastes as 'Children of God"), the Scheduled tribe of members from tribal populations, and the Backward class of members from the lower castes in the caste hierarchy (Mies 1986:19). From Table 5.3 it is clear that a

majority of the respondents are in the 'Other' category, which means from the intermediate castes (those in the *Kshatriya* - warrior, *Vaishya* - business, and *Brahmin* - the upper caste). The caste structure is not as neat as this breakdown suggests, since there are numerous sub-castes, and not all members of the upper caste are *Brahmins*. In a study by Kaur (1988), the upper caste members comprise both the *Brahmin* and *Vaishya* castes. In other words, people with money now can claim membership in the upper castes, although traditionally this would not have been the case.

A crosstabulation between caste and stratum was done to see the distribution of various caste groups. From Table 5.4 it is evident that out of a total of 68 landed Scheduled caste households only two were in the large male-headed category. In other words, the data from the districts show a fairly rigid class hierarchy as well, with the Scheduled caste members being left out of the large landed category. Also, a proportionately larger number (34%) of female-landed households (compared to all male-landed at 24%) are in the lower caste groups making them a vulnerable socio-economic group. A chi-square test showed at a high level of significance that the relationship between the two variables, caste and landholding characteristics is not random.

Table 5.4: Landed Households in Each Caste Group

	Scheduled Caste	Scheduled Tribe	Backward Class	Other
Female-landed	25	12	14	97
Male-large	2	1	1	89
Male-medium	15	6	7	65
Male-marginal	26	6	3	71
Total:	68	25	25	322

Chisquare value: 39.21047
Degrees of freedom: 9
Significance: 0.00001

For my analysis, I used the following modern technologies adopted on farms: multiple cropping, commercial cropping, improved vegetables, farm machinery, fertilizers, high-yield variety seed, plant protection, and pesticide use. The information has been compiled from Schedules 3 & 4. The number of households that adopted each form of technology is given in Table 5.5:

Table 5.5: Farm Technologies Adopted

Adoption of Farm Technologies	Number of cases	& Percent
Multiple cropping	146	31.4
Commercial cropping	204	44.4
Improved vegetables	39	8.5
Farm machinery	43	9.4
Fertilizer	378	85.9
High-yield variety seed	279	65.9
Plant protection	197	51.8
Pesticide use	147	32.2

(Note: Many farms adopted more than one technology.)

A cursory glance reveals that improved vegetables and farm machinery were not adopted by a large number of households, while fertilizer and high-yield-variety seed were. For the most part, then, at least a third of the households had adopted one of the improved farm technologies. This calculation was based on the cases of households with land (the 158 cases of landless households, which included households without leased-in land, were excluded).

A crosstabulation of farm technologies by stratum was done. From Table 5.6 it is clear that the largest proportion of households adopting multiple cropping are in the male-large category. The next highest category are in the male-medium households.

Table 5.6: Adoption of Multiple Cropping by Stratum

Multiple cropping	Yes	No	Total
Female-landed	39 26.7%	107 73.3%	146 100%
Male-large	41 43.6%	53 56.4	94 100%
Male-medium	30 31.6%	65 68.4%	95 100%
Male-marginal	31 29%	76 71%	107 100%
Total:	176	266	442

A similar pattern is repeated for the adoption of commercial crops, although a larger number of female-landed households have done so than male-marginal households (Table 5.7). A notable exception is with fertilizer use, where the

general level of adoption across all four categories was at least 80%. These findings show that fertilizer was the most widely adopted modern technology in the area.

Table 5.7: Adoption of Commercial Crops by Stratum

Commercial crops	Yes	No	Total
Female-landed	59 41%	85 59%	144 100%
Male-large	55 60%	37 40%	92 100%
Male-medium	49 51.5%	46 48.5%	95 100%
Male-marginal	36 33.96%	70 66%	106 100%
Total:	199	238	437

A crosstabulation between district and adoption of improved technologies brings out a varied picture (Table 5.8). While Udaipur was ahead in adoption of multiple cropping, improved vegetables, and farm machinery, Chittorgarh was ahead in commercial cropping, pesticide use, seed, fertilizer use, and plant protection. However, from Table 5.5 it is clear that improved vegetables (8.5%) and farm machinery (9.4%) were the least adopted. Except for multiple cropping, Chittorgarh stands out as the overall more "progressive" district in terms of agricultural modernization. Furthermore, these findings come as a surprise, given that Udaipur is home to a well-known regional agricultural university in India.

Conceptual Framework of the Study

From the literature review it is apparent that the status of rural women's is dependent on several factors, such as their age, participation in farm work, employment, and the socio-economic level of the household. It is also true that the determinants of status often provide conflicting and contradictory information on what *really* constitutes women's status. Women from higher socio--economic households,

Table 5.8: Technologies Adopted by Each District

Technologies	Udaipur		Chittorgarh	
	Yes	No	Yes	No
Multiple cropping	106 72.6%	146 27.4%	40 18.9%	172 81.1%
Commercial cropping	45 18.2%	202 81.8%	159 75%	53 25%
Improved vegetables	23 10.4%	221 89.6%	16 7.5%	196 92.5%
Farm machinery	29 11.9%	215 88.1%	14 6.6%	198 93.4%
Pesticide use	52 21.3%	192 78.7%	95 44.8%	117 55.2%
Seed	128 56.1%	100 43.9%	151 77.4%	44 22.6%
Fertilizer use	179 77.1%	53 32.9%	199 95.7%	9 4.3%
Plant protection	98 46.2%	114 53.8%	99 58.9%	69 41.1%

typically those with large landholdings, have a lower status relative to men than those from middle and lower socio-economic households (Bagchi [1982], Bennett et al. [1989], Kaur [1988]). Women from the richer peasant families do not

contribute to field work or to the economic survival of the houehold to the same extent as women from medium, marginal and landless households. However, according to cultural norms, women's work in the house gives them higher status in society (Bennett et al. [1989], Mies [1986], Zarkovic [1987]).

In a sense, then, the researcher has to tread a delicate territory between ideal norms (values) and behavioral norms, since, for obvious reasons, neither can be ignored. Social definitions of reality have to be understood, grasped, and highlighted prior to making generalization of the situation. Simultaneously, the task at hand is to explore status in larger political and economic terms; housework does not provide status, in term of prestige and power, although ideal norms may dictate just that.

To explain this situation requires both theoretical and methodological dexterity. No one theory can explain such a complex situation. No one method can explore the issues at hand. In the present case I am concerned with gender roles and status in a changing agrarian context. The issues discussed are not all original; several have been examined previously in the literature. What needs examining are the findings on Rajasthan, in order to illustrate the situation of Rajasthani women. The questions I raised and the hypotheses I tested are discussed below.

Indicators of status. What indicators can we use to identify the status of rural women in female-headed households, compared with medium, marginal and landless male-

headed households? I will use decision-making as an indicator of status in rural households. As it is true that women's labor input is vital to sustaining the peasant farm, I expect to find a high level of input in adopting modern farm technologies. In terms of landless households, employment of women in the labor force is essential to sustaining the household. I hypothesize that their status is likely to improve with employment. In other words, their contribution to the household economy is an indicator of their status.

Second, the findings in the literature are that women in small and marginal households have to bear the burden of a "double day" load, for they take care of households chores as well as work in the fields (Beneria 1985). How far have modern technologies alleviated the drudgery of farm work and improved their work efficiency? If these technologies do indeed reduce drudgery and improve work efficiency, then in some respects women's overall status is affected for the better.

Hypotheses. The hypotheses that I wish to test in my case study are:

1. Women in landed female-headed households are involved to a greater degree in decision-making than women in landed male-headed households.
2. Women in large landed households are less involved in decision-making than other landed categories regardless of the gender of the head of the household.
3. The adoption of improved farm technologies reduces the drudgery and improves the efficiency of the work of

women.

4. The adoption of modern farm technologies results in additional employment opportunities for the majority of women.

Findings

I will use frequency tables to indicate the extent to which women are involved in the decision to adopt improved farm technologies. To analyze these frequencies a comparison will be made between the male head of the household and the respondent herself.

Table 5.9: Women's Participation in Decision-making*

Decision to adopt multiple cropping	Frequency	
Female householders		
Respondent herself**	20	13.2%
Other family members	1	.7%
Relative/friend	0	0%
Sub-total:	**21**	**13.9%**
Male householders		
Male Head	55	38.2%
Other family members	3	3.2%
Relative/Friend	3	3.2%
Sub-total:	**61**	**44.6%**
Other (extension workers, "ancient," "forefathers")	**57**	**39.6%**
Total:	**39**	**100%**

*Includes all categories of decisions listed separately in Table 6.10.
**Includes one case of joint decision-making.

Table 5.9 shows that the male head made the decision to adopt multiple cropping more often than the female respondent. A similar finding is true for commercial cropping with the male head deciding 48.5% of the time and the female respondent deciding in 19.6% of the cases. Table 5.10 gives the percentage breakdown for the other technologies. It shows that the male head has made decisions more often than the female respondent.

Table 5.10: Decision-making by Male Head and Female Respondent (in percentages)

Decision to adopt	Male Head	Female Respondent
Multiple Cropping	38.2	13.2
Commercial Cropping	48.5	19.6
Improved Vegetables	53.8	30.8
Farm machinery	44.2	23.3
Pesticide Use	34.7	15.6

For testing the first hypothesis--that women who are heads of landed households participate more in decision-making than from other women--the female-landed category was compared with male-landed categories, which were collapsed to represent one category. A chi-square test was done for each of the improved farm technologies. From tables 5.11, 5.12, 5.13, 5.14, and 5.15 we find statistical significance only in the case of the adoption of improved vegetables. In the cases of multiple cropping, commercial cropping, farm machinery and pesticide use such women do not make significantly more decisions.

Table 5.11: Decision to Adopt Multiple Cropping

Stratum by gender	Female-landed	Male-landed	Row Total
Male Head	9	45	54
Female Respondent	6	11	17
Column total	15	56	71

Chisquare value: 2.69
Degrees of freedom: 1
Significance: 0.10083
Continuity Correction: 0.19353

Table 5.12 Decision to Adopt Commercial Cropping

Stratum by gender	Female-landed	Male-landed	Row Total
Male Head	25	73	98
Female Respondent	11	28	39
Column total	36	101	137

Chisquare value: 0.10459
Degrees of freedom: 1
Significance: 0.74639
Continuity Correction: 0.91374

Table 5.13 Decision to Adopt Improved Vegetables

Stratum by gender	Female-landed	Male-landed	Row Total
Male Head	1	19	20
Female Respondent	4	7	11
Column total	5	26	31

Chisquare value: 5.16052
Degrees of freedom: 1
Significance: 0.02311
Continuity Correction: 0.07818

Table 5.14 Decision to Adopt Farm Machinery

Stratum by gender	Female landed	Male-landed	Row Total
Male Head	4	13	17
Female Respondent	2	8	10
Column total	6	21	37

Chisquare value: 0.04538
Degrees of freedom: 1
Significance: 0.83131
Continuity Correction: 1.00000

Table 5.15: Decision to Adopt Pesticide Use

Stratum by gender	Female landed	Male-landed	Row Total
Male Head	12	37	49
Female Respondent	3	19	22
Column total	15	56	71

Chisquare value: 1.0733
Degrees of freedom: 1
Significance: 0.3002
Continuity Correction: 0.4705

"Continuity correction" values are stated in the tables since these show the actual probability of observing a relationship, that is, women in female-landed households are likely to make more decisions than women in male-landed households, in the population. Given that the sample size is small, the "continuity correction" statistic corrects for the sample size. Even in the case of adoption of improved vegetables the value is .07818, which is closer to a significance level of .05 than the other types of technologies.

decision-making by women in female- and male-headed households is the age structure of women in female-headed households. Given that the majority of households are in the 50+ age group, these may have been male-headed households, that is, women would have exercised similar types of authority to those of other male-headed households. In Chittorgarh, 38 out of 72 households (53%), and 43 out of 76 households (57%) in Udaipur are in the 50+ age group. What needs investigation are the 31 households in Chittorgarh that have a male spouse but have been categorized as "female-headed." Given the social set-up in India, it is unusual for a household to be categorized as "female-headed" while a male spouse is present in the household. Further evidence of this is the high percentage in the "widow" category (50% in both districts).

Table 5.16: Chittorgarh: Age Structure of Female-landed Households

Age by typology	18-29 years	30-39 years	40-49 years	50-59 years	60+ years	Row Total
Without adult male: widow		4	10	10	12	36
unmarried						
Male spouse disabled			1			1
With husband	1	12	4	11	3	31
No information on the husband			2	1	1	4
Column Total	1	16	17	22	16	72

Table 5.17: Udaipur: Age Structure of Female-landed Households

Age by typology	18-29 years	30-39 years	40-49 years	50-59 years	60+ years	Row Total
Without adult male: widow		6	10	7	15	38
unmarried						
Male spouse disabled						
With husband		1	3	1	1	6
No information on the husband		3	10	8	11	32
Column Total		10	23	16	27	76

Table 5.18: Women and decision-making[1]

Decisions by gender and size of landholding	Females	Males
Marginal	19 22%	66 78%
Medium	28 27%	77 73%
Large	56 36%	98 64%
Total:	103	241

An interesting finding emerges with regard to decision-making within each landed category. The results seem to indicate that the number of decisions women make increases with the size of landholding. In other words, women in large landholding households are not less likely to make decisions than women in other landholding categories. These findings suggest that women's power to make decisions, which is an indicator of their status, improves with the economic prosperity of the household.

The general trend with regards to drudgery and work efficiency is that the adoption of improved technologies, HYV variety seeds, fertilizer, and plant protection techniques, leads to a *decrease* in drudgery and an *increase* in the work efficiency of peasant women. It should be noted that "drudgery" and "work efficiency" are not defined in the survey, these are reported based on the responses of the women. Tables 5.19 to 5.21 refer to the individual technologies:

Table 5.19: HYV Seeds: Drudgery and Work Efficiency

HYV Seed	Drudgery		Work efficiency	
Reduced	144	61%	12	5%
No change	76	32%	145	64%
Increased	17	7%	69	31%
Total:*	237	100%	226	100%

* The discrepancy between the totals occurs because some surveys did not have a response for "work efficiency."

Table 5.20: Fertilizer: Drudgery and Work Efficiency

Fertilizer	Drudgery		Work efficiency	
Reduced	194	58%	17	5%
No change	121	36%	122	37%
Increased	22	6%	191	58%
Total	337	100%	330	100%

In terms of employment opportunities, the results are not clear, especially in the case of landless households. I will discuss why this is the case in the next chapter. The

Table 5.21: Plant Protection: Drudgery and Work Efficiency

Plant Protection	Drudgery		Work efficiency	
Reduced	101	59%	7	4%
No change	52	31%	60	38%
Increased	17	10%	89	57%
Total	170	100%	156	100%

available results show that fertilizer has been most widely adopted, and has created additional employment for peasant women than the other two technologies. Table 5.22 shows the total number of households, landless and landed, that reported additional employment opportunities from these technologies:

Table 5.22: Additional Employment Generated by Improved Farm Technologies

Technologies	Landless Households	Landed Households
HYV Seeds	1	3
Fertilizer	12	102
Plant Protection	1	1
Total:	14	105

Table 5.23 refers to households, landed and landless, that gained additional employment from two and all three of the technologies. However, these numbers illustrate that the majority of women did not gain additional employment from these technologies. Since the numbers available for landless households are not reliable, those for landed households do show that the majority (over 50%) of peasant women did not

gain additional employment. The total number of peasant women

Table 5.23: Additional Employment from a Combination of Farm Technologies

Farm Technologies	Landless Households	Landed Households
HYVSeed + Fertilizer	6	1
HYVSeed + Plant Protection	1	0
Fertilizer + Plant Protection	59	0
HYVSeed + Fertilizer + Plant Protection	6	1
Total:	72	2

belonging to landed households who gained additional employment is 177, which is 40% of all landed households (regardless of the gender of the head of the household).[2]

Endnotes

[1] The numbers shown in this figure were arrived at in several steps. First, the landed female-headed households in both districts were broken down by the size of their landholding into large, small and marginal landholding households. Second, I manually went through each survey of female landed-households and noted all those cases where the respondent herself had made 1-5 decisions. Similarly, I noted all those cases where the male-head had made 1-5 decisions in these households. (For example, a landed female-headed household could have adopted 4 technologies, of which the male-head made the decision to adopt all four technologies. In this case the

female respondent herself had not made a single decision.)

Whether the decision was made by the respondent herself or the male-head was determined by the code given for each answer. (Please turn to Appendix C, Schedule 3 page number 4 for information on the codes.) It may be a cause of confusion that a female-headed household could have decisions made by the "male head." The term "male head" implies the spouse (deceased or living) of the respondent rather than who is the head of the household, because in the case of female-headed households it the female respondent who functions as the head.

Third, the computer generated numbers for landed male-headed households where either the respondent herself or the male-head had made 1-5 decisions regarding adoption of improved farm technologies. The computer was able to generate these numbers because the size of their landholding had already broken down done in the survey (stratum 3, 4, and 5). Also, at the time of data entry I did not code the landed female-headed households into large, medium and marginal households. Fourth, all the decisions made by the respondent herself were summed up, giving a total of 103 decisions made by women across all categories. Similarly, all the decisions made by the male-head were summed up, giving a total of 241 decisions made by men across all landed categories.

[2] This percentage was arrived at after dividing 177 households by 442 , the total number of landed female- and male-headed households.

Chapter 6: Summary and Conclusions

Summary of Findings

The purpose of this thesis was to study the impact of agricultural modernization on the status of peasant women. There were four hypotheses that were tested using three indicators of status, decision-making, impact on drudgery and work efficiency, and additional employment opportunities generated from the adoption of improved farm technologies.

The findings show that there is no significant difference in terms of decision-making between female- and male-headed households. One probable reason for this is the age-structure and marital status of respondents in female-headed households; the majority were in the 50+ age group and were also widowed. These households may have been male-headed, which means women would have exercised the same types of authority in decision-making as those in male-headed households. Also, the findings in Chittorgarh show that 31 out of 74 households were female-headed even though the male spouse was alive. This is unusual given that the male is the assumed head of the household unless he is deceased. It may well be that such households are characterized by an absent spouse (working as migrant laborer) or the male spouse is underemployed or unemployed (in which case the woman becomes the head of the houehold).

Whatever be the reason for the large number of female-headed households, it is true in India that they constitute

the poorest households in the nation (Aggarwal 1986). The findings in Table 6.4 show that even in the case of female-landed households a proportionately larger number (34%) than male-landed households (24%) were in the lower caste groups, which indicates that they are in the lower socio-economic group. These findings have led some researchers such as Kumari (1989:3) to contend that female-headed households should be treated as a separate socio-economic category. She calls for a separate and special place for them in all development programs.

Second, women in large landed households participated more in decision-making in the adoption of improved technologies than those in small and marginal households (Table 5.18). These findings suggest that women's status, in terms of decision-making, is likely to improve with the economic prosperity of the households. One has to be cautious with these findings because it is also true that women in larger households are more likely to withdraw from work in the fields than women in small or marginal houeholds (Bennett 1989, Kaur 1988, Bagchi 1982). It may well be that these women do not engage in field work, although they continue to make decisions related to field work.

The above findings do seem to challenge what other authors have contended (Bennett 1989, Kaur 1988, Bagchi 1982) that women's labor input in the farm is likely to improve their status in the family, giving them a greater say in

decision-making.

Third, the majority of women reported a decrease in drudgery and an increase in work efficiency with the adoption of improved technologies such as HYV Seed, fertilizer and plant protection techniques. Given that peasant women have to undergo a "double day" load, an improvement in their working conditions also improves their status because they are spared from being mere beasts of burden.

Fourth, the improved technologies did not create additional employment for the majority of women in landed households. Sixty percent of them either reported no additional employment or a lack of awareness of these technologies. However, a substantial proportion, 177 landed households (40%) reported additional employment, including 72 households that gained from either two of the three or all three of the improved technologies.

Some Suggestions on the Survey

There are two major issues that need to be addressed with regards to the survey. First, it appears that the field staff were not given adequate training to carry out the survey. This became evident in the analysis of the data on additional employment in landless households. The majority of surveys in Schedule 4, ("Impact of Agricultural Modernization on Farm Women") belonging to landless peasant households in Chittorgarh district were either left blank or the respondents

were not asked information regarding additional employment.[1]

As many as 26 out of 48 surveys belonging to landless female-headed households (54%) and 23 out of 48 surveys belonging to landless male-headed households (50%) were left blank. A total of 73 out of 96 (76%) peasant women in landless female- and male-headed households in Chittorgarh district never got to answer the question on additional employment. After combining the number of such households in both districts, Chittorgarh and Udaipur, a total of 102 out of 178 (57%) respondents were not asked for information pertaining to additional employment from the improved farm technologies. (Accurate information in this area could have gone a long way in contributing to policy decisions, both at the state and national level.)

The analysis of the data is being done by the Indian Council of Agricultural Research (ICAR) in New Delhi. I do believe that greater communication between staff in New Delhi and Rajasthan could have prevented some of the lapses from occurring. For example, the staff in New Delhi could have benefitted by having a copy of the Hindi translation of the questionnaire from the regional agricultural university in Rajasthan. Also, a temporary staff could have been appointed between New Delhi and Rajasthan to help train the field researchers. For example, in Schedule 4 the question "What new skill have you gained?" was left blank in the majority of cases. In one case the field staff has put down "Cannot

explain" for the question. Still other cases have responses like "More yield." A standard translation could have prevented this from occurring, and helped the field staff in their work.

As stated at the beginning of last chapter, I restricted my analysis to sections "a" through "f" and left out sections "h" through "k." The latter sections contained information on the different seasons in which employment was available, the number of days in each season, the impact of additional employment on the work load of the peasant woman, and so on. The information contained in this section was incomplete or left blank. Given that the follow-up questions were not always answered correctly, I focussed on the first six questions of Schedule 4.

Second, there are conceptual issues in the survey design that need to be addressed. Applying stratified random sampling procedure means that there are social implications of stratifying the peasant population (in this case by gender and by size of landholding). These implications are of particular importance to peasant women. For example, the reasons for a peasant woman in the large or marginal landholding group saying 'No,' when asked "Whether the improved technology provided you additional employment?", are probably different. A peasant woman from a large or medium sized landholding household may have said 'No' because there may be hired hands to do the field work. Or, social norms may dictate against her working for wages. Whereas the peasant woman in the marginal

household may not be looking for additional employment because she has the family farm to work on. The survey method, particularly the design of the schedule-structured interview method is such that it does not take into account the everyday social realities of peasant women.

Implications for Further Research

Data triangulation, a methodological concept introduced earlier, can go a long way in supplementing the information gained through the survey method. By combining the schedule-structured interview method with in-depth interviews we can get a rich and varied picture of peasant women, and peasant households. Let me take yet another area of inquiry, decision-making. To test whether decision-making is indeed an indicator of women's status it is necessary that the researcher spend time observing how decisions are made in the household. Rather than relying solely on how many times a male or female decided to adopt an improved farm technology, we can obtain information from observations and interviews on such issues as who initiated the topic of adoption, how did they come to know about it, and so on.

Let me also include one more area of inquiry. Tables 6.19 to 6.21 refer to drudgery and work efficiency. Another worthwhile approach to study the impact of improved technologies would be to compare those villages where such technologies were adopted and those where these were not. By

observing the types of task women perform, and the time consumed in the execution of tasks such as plant protection, and providing fertilizer to the fields, the researcher can make an assessment for themselves whether the adoption of these technologies do indeed reduce drudgery and increase the work efficiency. In the case of HYV Seeds (Table 6.19), for example, the majority of women experienced a reduction in drudgery but experienced no change in terms of work efficiency. First hand observation would certainly help explain why this is the case. In addition, a comparison could be made regarding drudgery between households that do and those that do not adopt HYV Seeds.

The next step is to ask ourselves how we can go about making data triangulation a reality. India has been relatively successful in terms of increasing the number of graduate students in universities. There has to be a coordinated effort between scientists working for the government, scientists primarily engaged in the academic field, and students. The current survey can expand its research base by having students and staff carry out in-depth interviews with peasant women in the surveyed villages, by participating in and observing their lifestyle.

Data triangulation is also important if theory triangulation is to be fully utilized. In the context of India the use of the functionalist paradigm is certainly important since it highlights those social structures and processes that

sustain rural society. The meanings that people give to their social set up are vital to understanding the structure of rural society. In this sense, then, the functionalist and symbolic interactionist paradigms can both be utilized. But clearly the use of these two paradigms are not enough for several reasons.

First, the gendered nature of rural society keeps women from participating in several areas, most notably in the use of farm machinery, access to rural bank credits, land ownership and so forth. Second, a functionalist approach to rural society will overshadow the contributions of those women who have tried to change their own lifestyle, and whose example may well change the lifestyles of other peasant women. Besides, by taking an overly functionalist view the researcher may overlook the everyday costs to women, such as the "double day" work load on women. What is required for the study of peasant women in rural society is to know their social structure, and the conflicts that arise as a result of maintaining their social system. The more difficult task for the researcher, then, is to see the appropriateness of each paradigm without sacrificing the social reality of their subjects.

Endnote

[1] For example, when a respondent was asked if they were "Aware" of the improved technologies, and the respondent

answered "Yes" then they should have been asked if they gained additional employment from these technologies. In the majority of cases the field researcher stopped after asking the second question on the survey "Has it been adopted by your/your farm?" It appears as if (and here I am simply guessing) the researcher did not read the other questions otherwise they would have quickly realized that a respondent could have gain additional employment from these technologies even though she belonged to a landless household. There was just one case (in Udaipur district) where the field researcher did both, ask the respondent if she was "aware" of the technologies and then went on and asked her if she had gained additional employment from these technologies.

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Appendix A: Background Information on the ICAR Research Project on "Participation of Women in Agriculture and Impact of Agricultural Modernization on Farm Women."

Purpose:

In June 1988 the Indian Council of Agricultural Research (ICAR, an agency of the Government of India) began a national survey on peasant women. The purpose of the survey is two-fold:

(i) to study the participation of women in various farming activities;

(ii) to study the impact of agricultural modernization on farm women.

The survey is designed to analyze those areas of agricultural production where women have traditionally contributed and to suggest methods of improving their working conditions, productivity and income, specifically through the transfer of appropriate technologies. Another goal is to strengthen the data base of the country and thereby improve the research system of the country. The then Union Minister for Agriculture, Mr. Bhajan Lal, in his address at the "International Conference on Appropriate Agricultural Technologies for Farm Women" stated:

> Since farm women play a pivotal role in agricultural production, the Indian Council of Agricultural Research has been concerned about preparing them for their active participation in agricultural production system.
> (Indian Council of Agricultural Research 1988:14)

Methodology:

Schedules. The survey consists of five schedules. Each schedule is concerned with information on a particular topic. Schedule 1 asks for information on the village. Data are elicited on the area of irrigated land in the village, accessibility by road (namely, whether the village is connected by all-weather road), electrification of the village, the availability of various facilities in or near the village and, the wage rate of agricultural and non-agricultural labor. At the household level, man-headed and woman-headed families are distinguished in recording data about landholdings, etc.

Schedule 2 pertains to information on the individual family. Particulars about the family include: land holding; crops grown during the year; education level of family members; their off-farm occupation, if any; household items possessed by the family; farm items in the family, such as bullock, tractor, local (or *desi*) plough, improved plough and so on; the type of farm operations carried out by men and women, and the number of hours devoted to each activity (such as land preparation, organic manuring, sowing, fertilizer use, processing of produce, marketing and so on); operations carried out by men and women in animal husbandry, poultry keeping and fisheries, and the number of hours contributed each by sex in the listed operations.

Schedule 3 is on the adoption of improved technologies by

farm women. Three areas were chosen for the original study: the home, homestead (kitchen garden), and the farm. Questions asked relate to awareness of the existence of improved technologies; and which person(s) decided initially on the adoption of the technology.

Schedule 4 is on the impact of agricultural modernization on farm women. The impact is studied at two levels: the individual and the community. Individual impact is studied through questions on awareness of improved technology; the decision to adopt the technology; the effect of such adoption on drudgery, work efficiency, provision of additional employment; and finally, the effect of additional employment on total workload on the woman. Impact at the community level is studied through questions relating to the participation of women in various women's organization (for example, cooperatives); their interaction with other institutions, such as banks; exposure to media (through radio, television, newspapers, neighbors); participation in Extension/Development Programmes.

In Schedule 5 questions relate to the participation of women in different enterprises, the income they derive from certain enterprises and the expenses incurred on the household, homestead and farm. The word enterprise is meant to include all activities undertaken by women, traditional as well as non-traditional, such as non-agricultural labor.

Sampling and Personnel. Forty-four districts were selected from the entire country. Each regional Agricultural University (20 in all) selected 2 districts from its region for administering the survey. In addition to the universities staff from 2 ICAR institutions, the Central Rice Research Institute, Cuttack (Orissa) and Directorate of Rice Research, Hyderabad, carried out the field survey. It was left to the individual university to designate the staff most appropriately suited for carrying out the survey. It appears that the staff may have been from one or all of the groups listed below:

(a) students from the agriculture university

(b) staff from the agriculture university

(c) temporary trainees for conducting the survey.

It was the responsibility of the field staff to translate the survey from the English language into the regional language. In short, the training, supervision and collection of data were all left to the regional universities.

The two districts selected from each state were done so for purposes of comparison. While one district was to be agriculturally progressive the other one was of lower agricultural productivity. The general criteria for a progressive district were the following:

(a) high crop yields

(b) adoption of modern practices, such as irrigation facilities. Specific criteria for "progressive" and "non-

progressive" were left to the individual university to decide.

Each selected district was divided into 3 continuous, relatively homogeneous strata based on agricultural development, cropping pattern and so on. From each stratum 2 blocks were randomly selected and from each block 2 villages were selected randomly. Thus, 12 villages were selected from each district. To state the above information in a different way:

3 (homogeneous strata) x 2 (blocks) x 2 (villages from each block) = 12 (villages/district). From each state 2 districts were selected. Therefore, 24 villages were selected from each state.

Each village was divided into the following sub-strata:

(A) 6 families of woman-headed farmers (without size distinction)

(B) 4 families of woman-headed landless agricultural labor

(C) 4 families of man-headed large farmers

(D) 4 families of man-headed small farmers

(E) 4 families of man-headed marginal farmers

(F) 4 families of man-headed landless agricultural labor.

The land owning population was divided further divided into 3 categories:

(A) large = > 5 acres

(B) small = 2.5 - 5 acres

(C) marginal = < 2.5 acres

All the families, in their respective strata, were selected at

random from the given village population. In sum, 26 families were selected per village, and 624 families were selected from 2 districts of each state.

A typology was created to distinguish the various female-headed households. Four criteria were specified:

(A) without an adult male member (due to widowhood, divorce or separation, desertion, unmarried)

(B) spouse is disabled

(C) spouse is unemployed (or underemployed); earning wife functions as head

(D) with adult male other than husband a woman is accepted as the family head if she is (1) widowed (2) divorced or separated, (3) deserted, (4) unmarried.

The Indian Council of Agricultural Research is responsible for providing an overall direction to the study, processing the raw data and presenting a report on the project. The data collection process is yet to be completed from all the states.

The data analyzed in this thesis are from the state of Rajasthan in the districts of Chittorgarh and Udaipur. This study, therefore, is a small part of an ongoing national project in India.

Appendix B: Variables in the Survey of "Participation of Women in Agriculture and Impact of agricultural modernization on farm women"

Chart 1: Basic Organization of the Survey

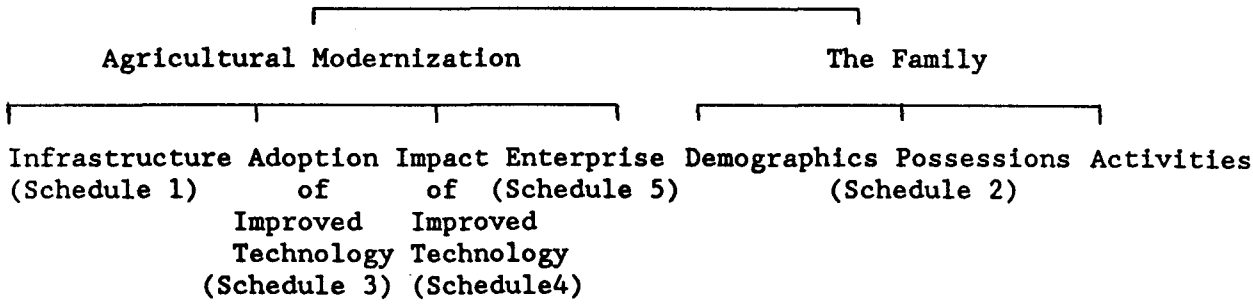


Chart 2A: Agricultural Modernization: Infrastructure

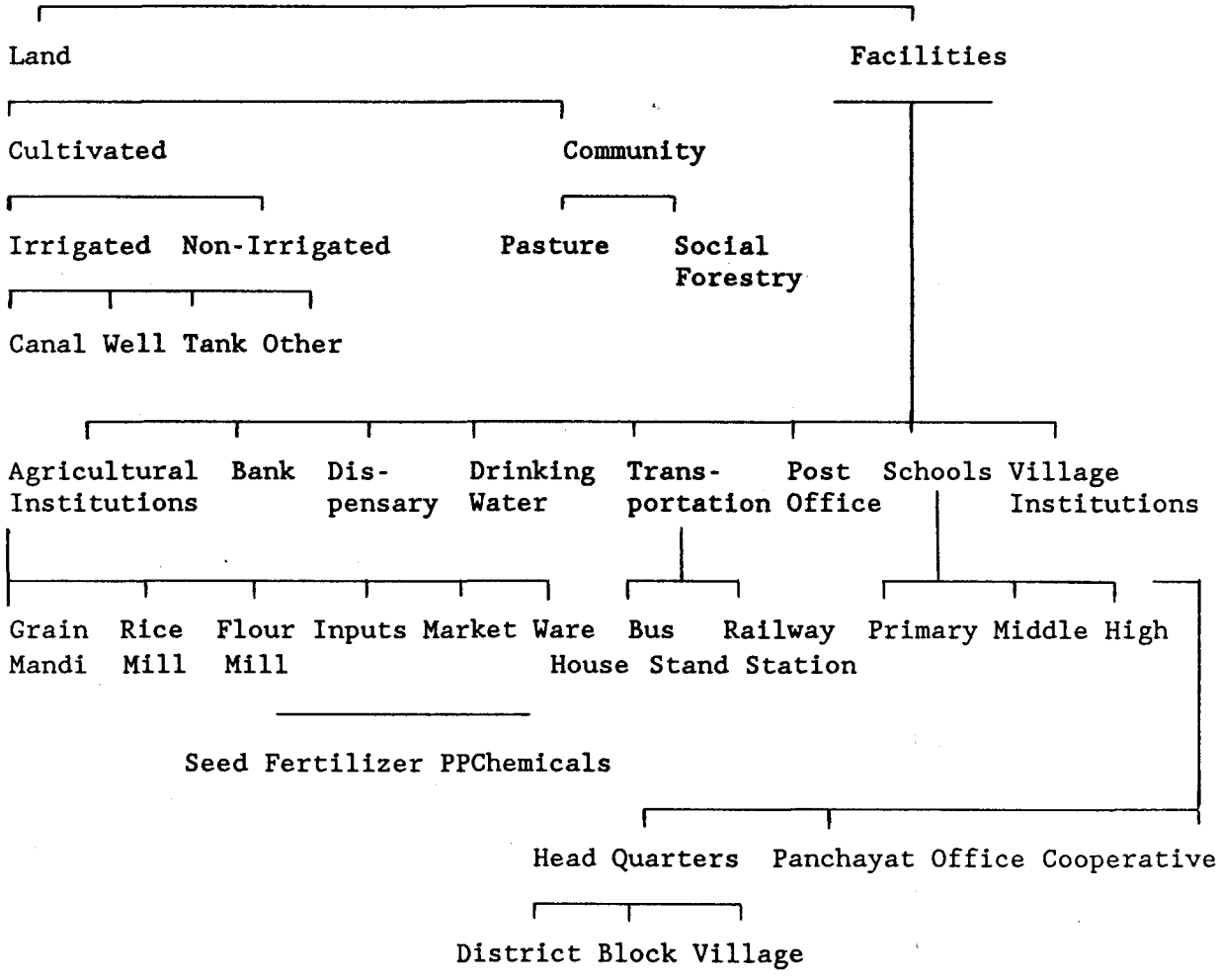


Chart2B: Agricultural Modernization: Adoption of Improved Technologies

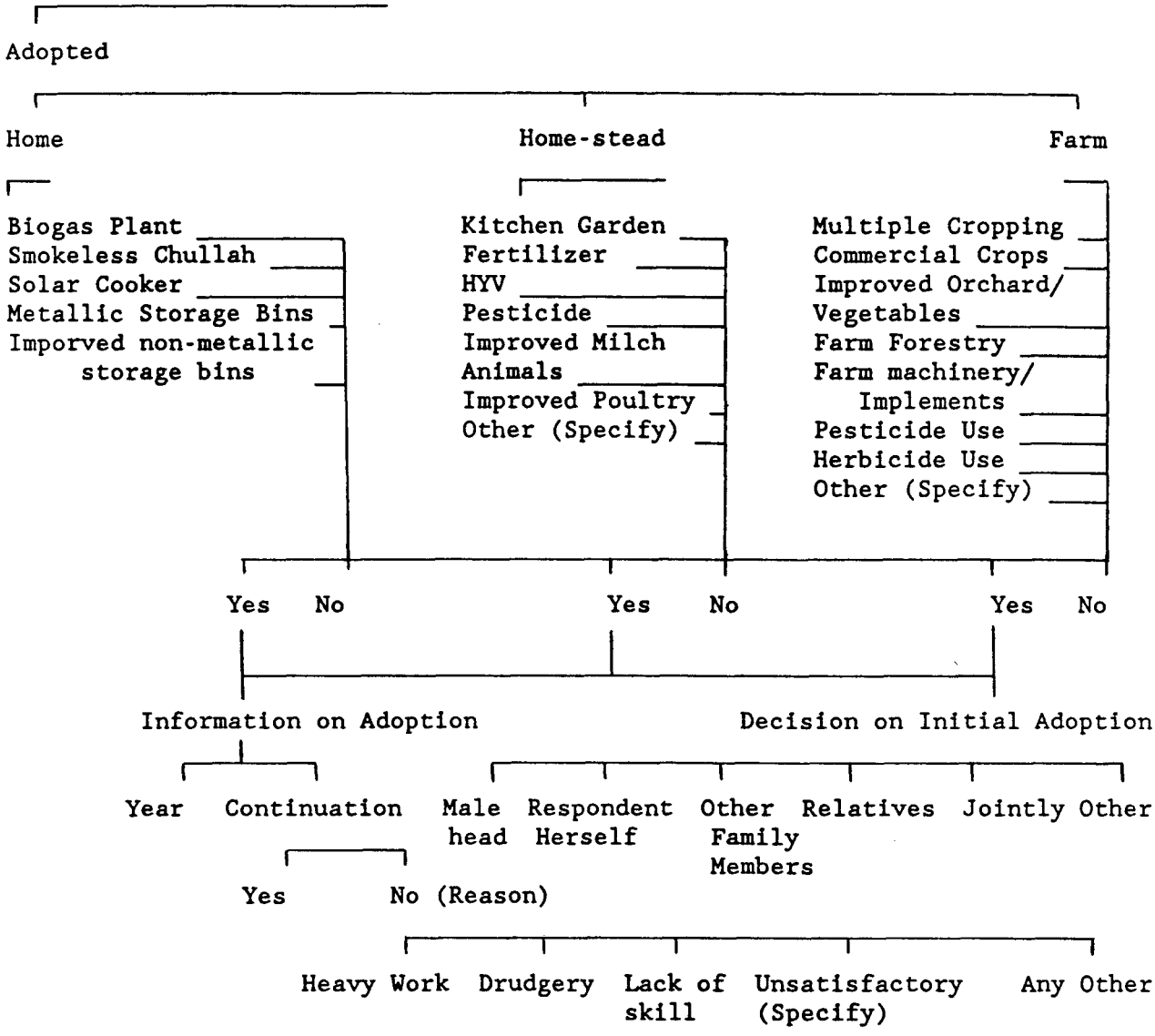
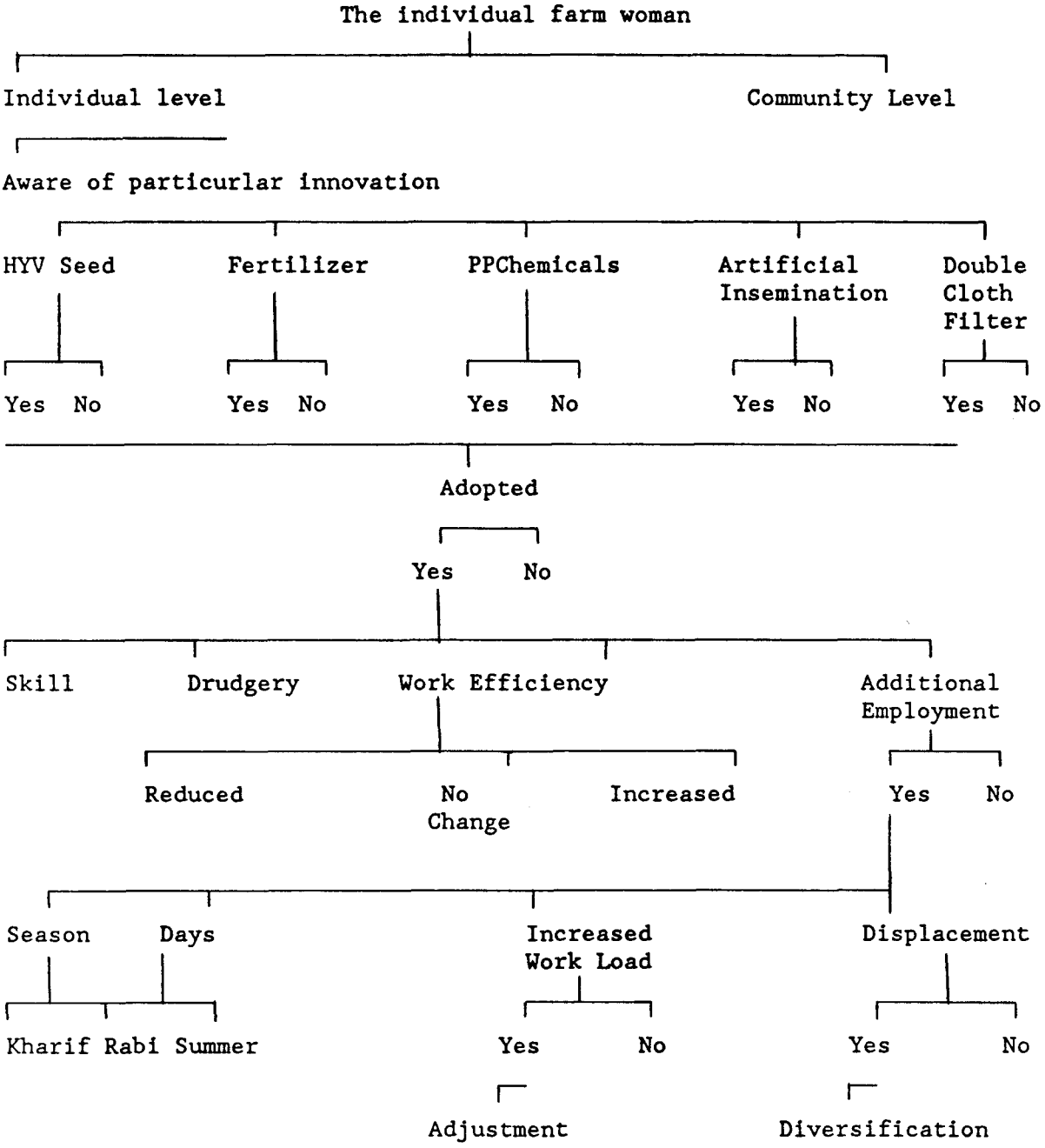


Chart 2C: Agricultural Modernization: Impact of agricultural modernization on farm women



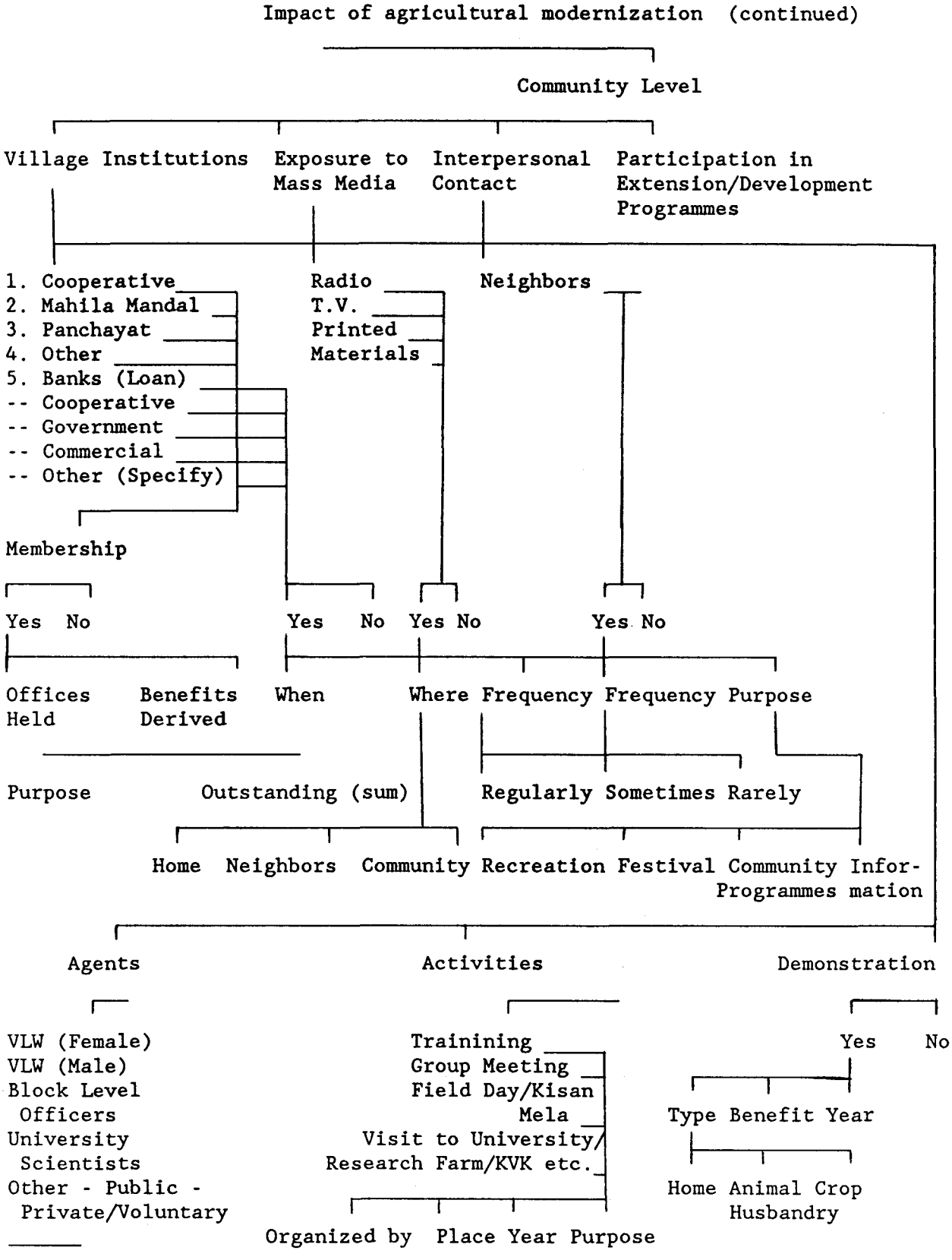
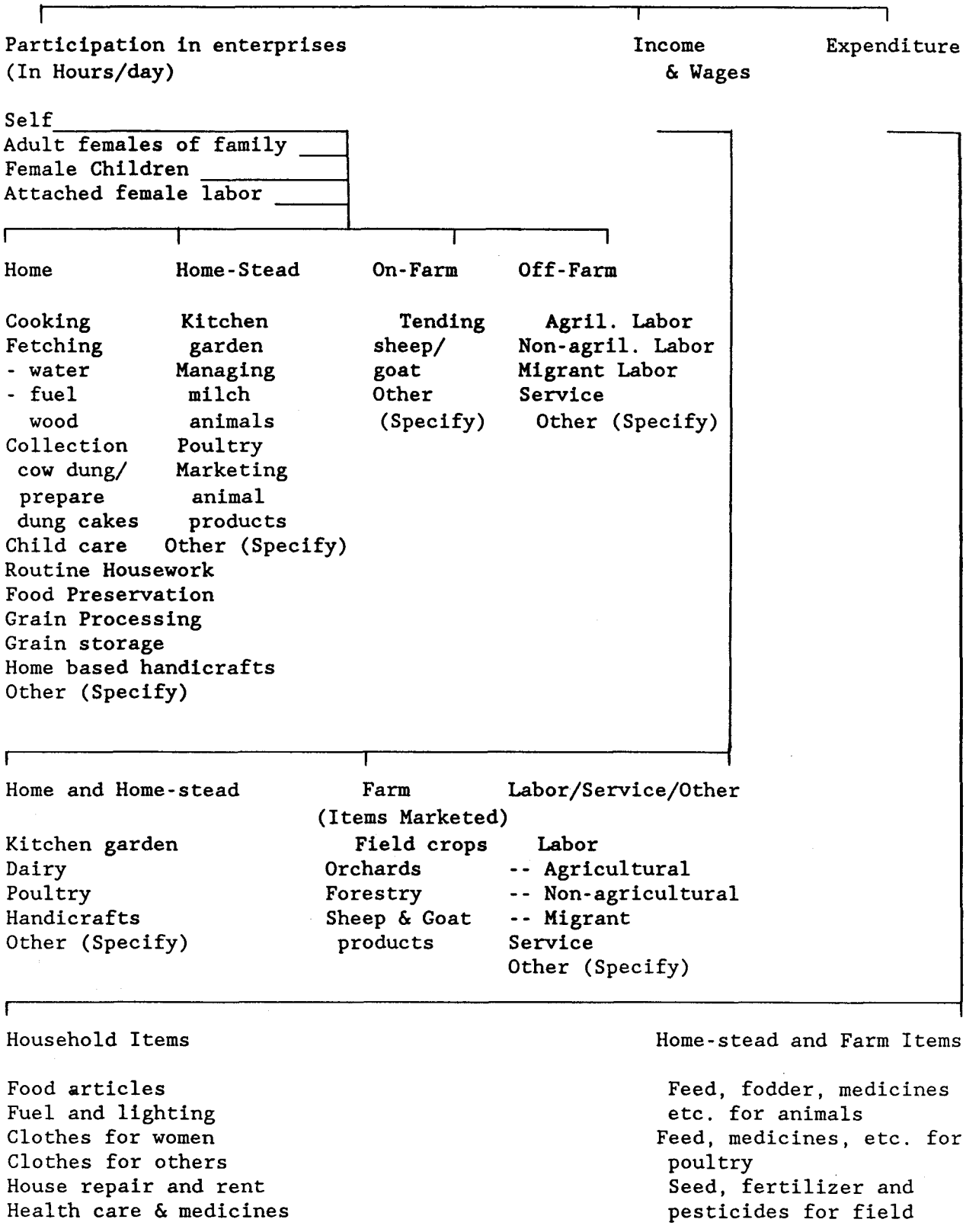

Impact of agricultural modernization (continued)
Community Level
Village Institutions
Exposure to Mass Media
Interpersonal Contact
Participation in Extension/Development Programmes
1. Cooperative
2. Mahila Mandal
3. Panchayat
4. Other
5. Banks (Loan)
-- Cooperative
-- Government
-- Commercial
-- Other (Specify)
Radio
T.V.
Printed Materials
Neighbors
Membership
Yes No
Yes No
Yes No
Yes No
Offices Held
Benefits Derived
When
Where
Frequency
Frequency
Purpose
Purpose
Outstanding (sum)
Regularly Sometimes Rarely
Home
Neighbors
Community
Recreation
Festival
Community Programmes
Infor-mation
Agents
Activities
Demonstration
VLW (Female)
VLW (Male)
Block Level Officers
University Scientists
Other - Public - Private/Voluntary
Trainining
Group Meeting
Field Day/Kisan Mela
Visit to University/ Research Farm/KVK etc.
Yes No
Type Benefit Year
Home Animal Husbandry Crop
Organized by
Place
Year
Purpose

Chart 2D: Agricultural Modernization: Women in enterprises, income derived and expenditure incurred



Household Items	Home-stead and Farm Items
Education	crops, horticulture &
Newspaper, magazines etc.	kitchen garden
Travel and transport	Irrigation expenses
Marriage and allied items	Labor wages paid
Rituals and ceremonies	Other (Specify)
Tobacco, narcotics & liquor	
Entertainment & Recreation	
Other (Specify)	

Chart 3A: The Family: Demographics

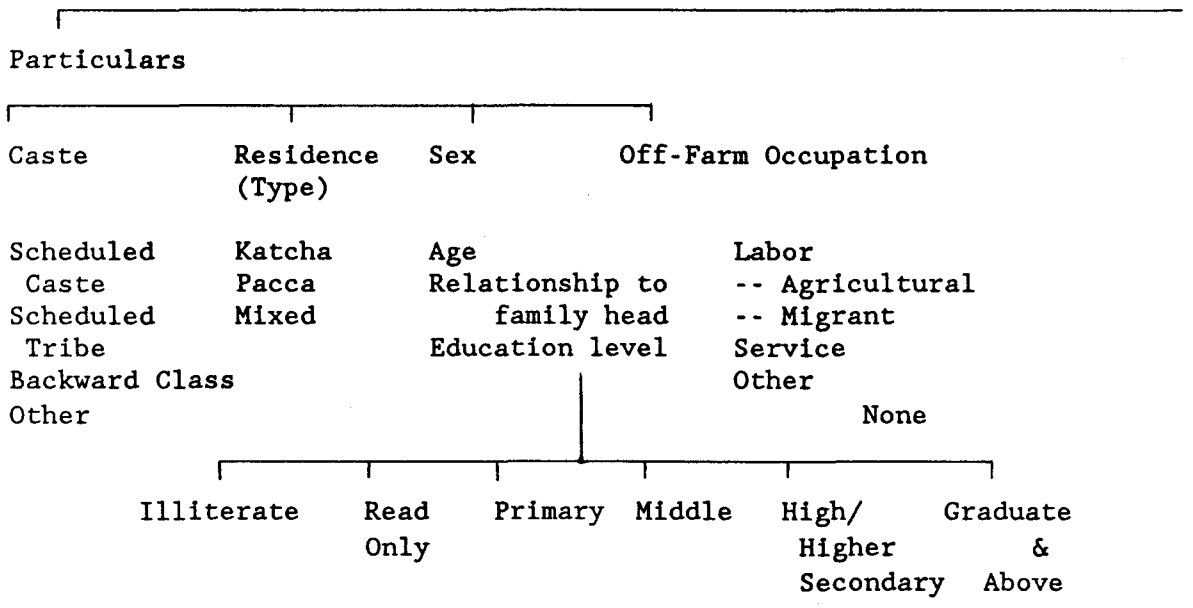
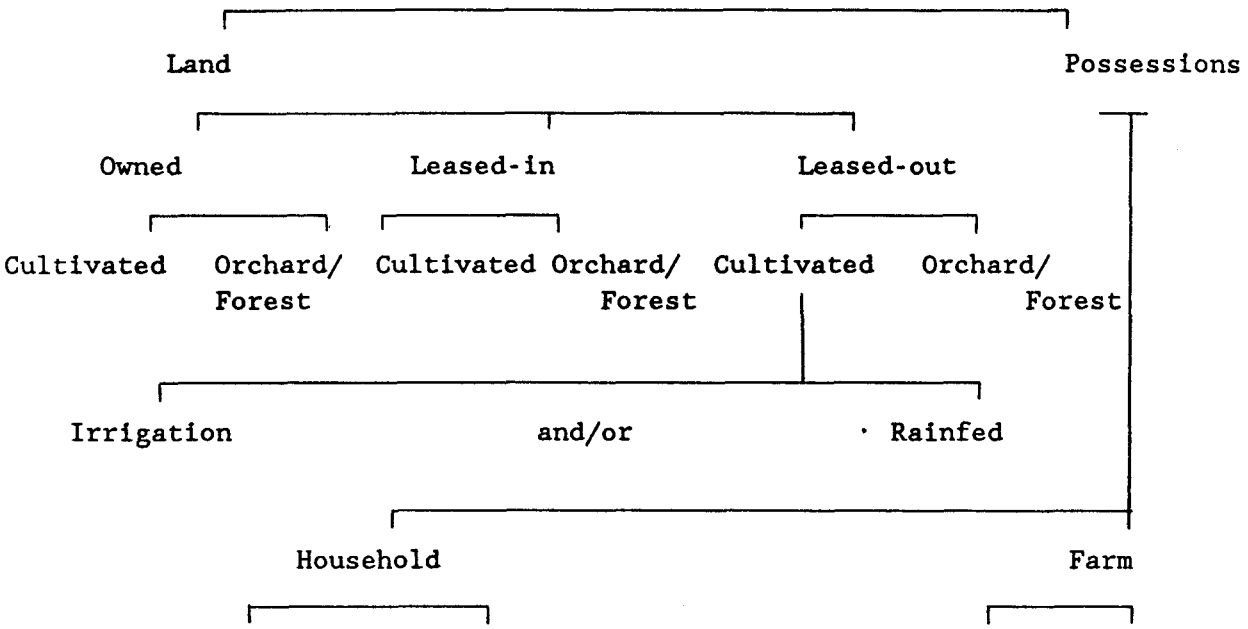
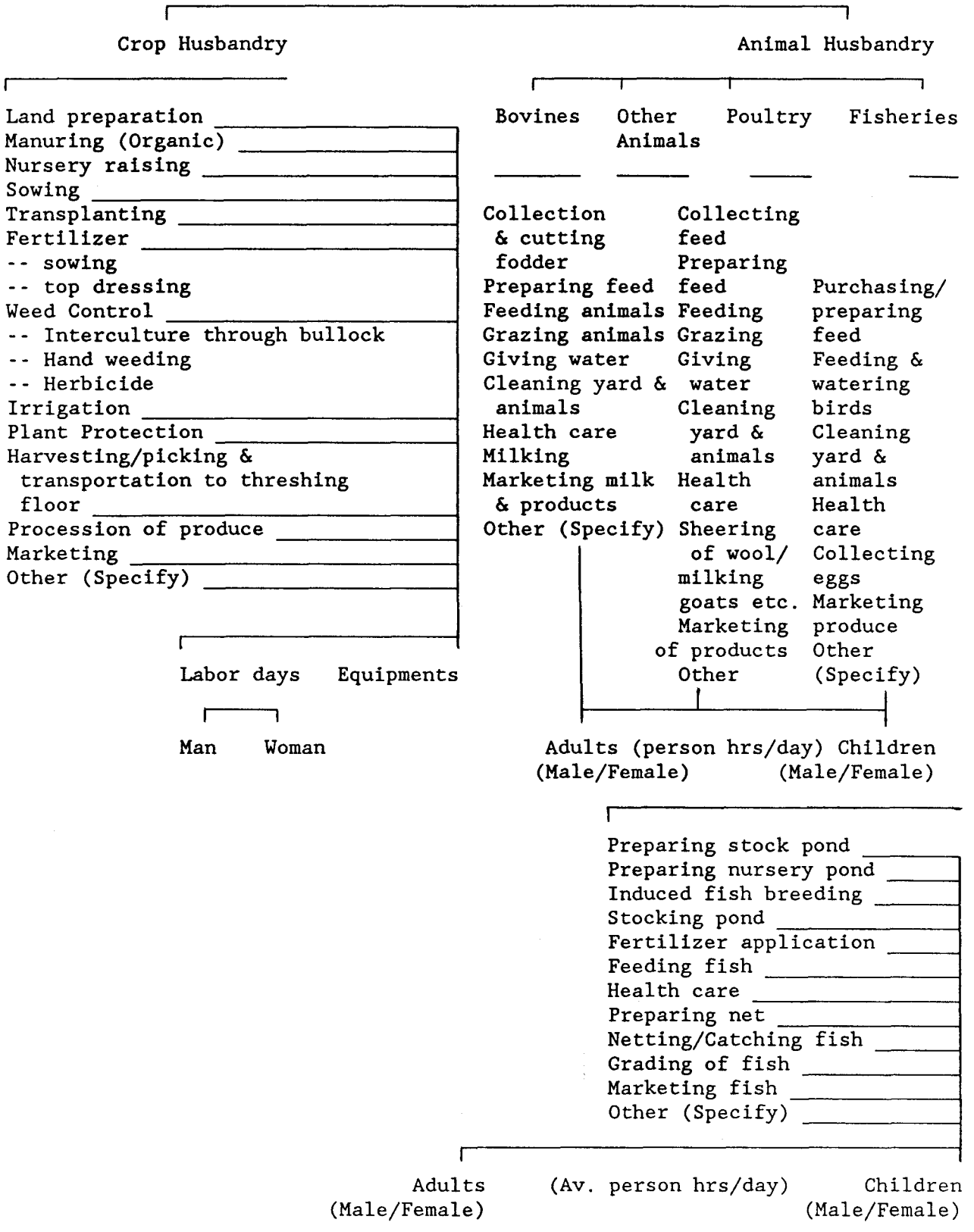


Chart 3B: The Family: Possessions



Item	Year of acquisition	Item	Year
Cycle		Bullock	
Motorcycle/Scooter		Tractor	
Car		Cattleshed	
Water tap connection		Poultryshed	
Electricity connection		Godown	
Radio		Bore well	
T.V.		Pump Set	
Electric fan		Desi plow	
Table & Chairs		Improved Plow	
Electric Appliances		Seed Drill	
Time piece/Wall clock		Chemical Duster	
Sewing machine		Chemical Sprayer	
Pressure cooker		Harvester/Combine	
Other modern kitchen utensils		Thresher	
Gas stove/electric stove		Winnower	
Smokeless chullah		Chaff-cutter	
Solar cooker		Cow	
Biogas Plant		Buffalo	
Non-metallic storage bins		Sheep & goat	
Metallic storage bins		Poultry	
Handicraft items (Specify)		Other (Specify)	
Other (Specify)			

Chart 3C: The Family: Activities



I.C.A.R.RESEARCH PROJECT

ON

PARTICIPATION OF WOMEN IN AGRICULTURE

AND

IMPACT OF AGRICULTURAL MODERNIZATION

ON FARM WOMEN

SCHEDULES
and
INSTRUCTIONS

DIVISION OF AGRICULTURAL EXTENSION
INDIAN COUNCIL OF AGRICULTURAL RESEARCH
KRISHI BHAWAN, NEW DELHI - 110001

1988

GENERAL INSTRUCTIONS

1. The study will be undertaken in 44 selected districts in the country. The field survey will be carried out by the staff of 20 Agricultural Universities and two I.C.A.R. Institutions, namely the Central Rice Research Institute, Cuttack and the Directorate of Rice Research, Hyderabad. Each of them will be responsible for two districts, one representing a high level of agricultural modernization and another, a low level. The over all direction of the study, processing of data and preparation of the project report will be the responsibility of the Division of Agricultural Extension, I.C.A.R., New Delhi.

2. *Sampling procedure*. Each district selected for the study will be divided into three contiguous, relatively homogenous strata, taking into consideration agricultural development, cropping pattern, etc. From each of the three strata two C.D. blocks will be selected at random and from each block two villages will be selected, again at random. Thus, in all 12 villages will be covered for the survey in each district.

Within each selected village all the agricultural families, including agricultural labour families, will be listed. These families will be divided into the following six sub-strata:

(a) Woman-headed families of farmers (without size distinction)
(b) Woman-headed families of landless agricultural labour
(c) Man-headed families of large farmers
(d) Man-headed families of small farmers
(e) Man-headed families of marginal farmers
(f) Man-headed families of landless agricultural labour

From the first sub-stratum 6 families, and from the remaining five sub-strata 4 families each, will be selected at random. These 26 families will be covered by the survey in each selected village.

3. *Schedules:* For data collection interview method will be followed with women respondents. For entering data, 5 schedules have been drawn up.

4. It would be interesting if *some case studies* are also made on different categories of farm families; and on some other selected families *Participant Observations* are made by women scientists from the universities/ Institutes/projects. In both case study and participant observations, the set of schedules may serve as a guideline. Such studies will supplement the major study based on the large scale sample survey being conducted by schedules approach.

5. Space below code Should not be filled except when specified.

SCHEDULE - 1

VILLAGE PARTICULARS

INSTRUCTIONS

1. This schedule is to be convessed for each selected village and the various items included in it pertain to information for the village as a whole.

2. Area particulars to be furnished under items 2 and 3 may be obtained as far as possible from the village Patwari, Karnam or V.L.W.

3. Area under different sources of irrigation refers to the net area; i.e. area of a field irrigated in two or three seasons in a year will be counted only once, even if two or more crops are raised in the same field in successive seasons in a year.

4. Information required under Item 8 is the summary which is to be prepared only after preparing the lists required under item 11 and 12.

5. Migrant labour should include those who are normally resident in the selected village but shifting from the village to outside (for work) and also those who normally reside outside but shift to the village (for work). Approximate number of male and female agricultural labour of both these categories will be indicated in the respective columns, for each of the three seasons i.e. kharif, rabi and summer separately. It may be noted that those who go out for agricutural or other items of work to neighbouring villages or a nearby town, but return to their homes in the village every night, should not be considered as migrant labour.

6. The wage rate under item 10 should include both the cash and the kind part, if such part payments are common. In such cases the money value of the kind part should be ascertained and added to the cash part. The wage rates are those normally prevalent for the major part of the year and not any special rate given during some period of labour shortage.

7. Agricultural families to be listed under items 11 or 12 should include all those who are cultivating land, raising orchards, maintaining dairy or other farm animals, catching fish from ponds/rivers/sea or provide labour for agricultural operations in farms cultivated by others (Agriculture should be taken in its wider sense including horticulture, animal husbandry and fisheries).

8. The concept of woman-headed and man-headed families should be properly understood and kept in mind while listing the agricultural families under item 11 or item 12. Before filling the particulars for a family, it should be carefully examined whether the family head is a woman. As an aid for this purpose, as many as ten types of woman-headed families are indicated in the note below the list under item 11. If a family falls under any one of them it should be considered as woman-headed and the relevant information should be recorded under item 11. If it does not belong to any of these, ascertain whether the family head is an adult male. If so fill up the particulars under Item 12.

9. If the head of a woman-headed family is unmarried or divorced, in the identification column write D/o and along with it father's name. In other cases write W/o, to be followed by husband's name (whether the husband is alive or dead).

10. Use the lists of woman-headed and man - headed families (items 11 and 12) for randomly selecting families to collect information in schedules numbered 2,3,4 and 5.

SCHEDULE 1

VILLAGE PARTICULARS

1. Name of district and village

	Name	Code (Not to be filled)
District		
Village		

2. Area particulars of the village (acre)

Total geographical area	Cultivated land (including orchards)		Community land	
	Irrigated	Rainfed	Pasture	Social forestry

3. Area under different sources of irrigation (acre)

Source	Canal	Well	Tank	Others, if any
Net irrigated area				

4. Weather the village is connected by all-weather road ?

No (1)	Yes (2)

5. Weather the village is electrified ?

No (1)	Yes (2)

6. Distance of different places from the village

Place	District HQ.	Block HQ	V.L.W. HQ.	Grain mandi	Weekly market place	Bus stand	Railway Station
Distance (KM)							

7. Distance of different facilities from the village

Facility	Source of drinking Water	Dispensary	Rice mill	Flour mill	Ware-house	Agril. input dealer		
						Seed	Fertilizer	P.P. chemicals
Distance (KM)								
Facility	Panchayat Office	Post Office	Bank	Cooperative	Veterinary centre	School		
						Primary	Middle	High
Distance (KM)								

8. Number of agricultural families in the village under different categories (to be obtained from the lists of female - headed and male-headed agril. families under items 11 and 12)

Sex of family head	Number of families in size class			
	Large > 5 ac	Small 2.5 - 5ac	Marginal < 2.5 ac	Landless
Female-headed				
Male-headed				

9. Details of migrant agricultural labour

Season	Shifted from village to outside			Shifted to village from outside		
	Approx.No.		Purpose	Approx.No.		Purpose
	Male	Female		Male	Female	
Kharif						
Rabi						
Summer						

10. Labour wage rate Rs/day

Type of work	Wage rate Rs/day	
	Man	Woman
Agricultural		
Non-agricultural a) Unskilled		
b) Skilled		

11. List of woman-headed agricultural families including those of landless labour

Serial	Name of family head	Size of holding (acres)	Identification (Husband's/ Father's name	Serial number in the substratum		Type of women - headed family (Please see Key at the end of item 11)
				Cultivator	Landless Labour	
1.						
2.						
3.						
4.						
5.						

Serial	Name of family head	Size of holding (acres)	Identification (Husband's/ Father's name)	Serial number in the substratum		Type of women-headed family (Please see Key at the end of item 11
				Cultivator	Landless Labour	
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19						
20.						
21.						
22.						
23.						
24.						
25.						
26.						
27.						
28.						
29.						
30.						
31.						
32.						
33.						

Key for identification of different types of woman-headed families and codes allotted to them.

Nature of female-headed family	Code	Nature of female-headed family	Code
A. Without any adult male member; with female head as:		D. With adult male members (other than husband); a woman accepted as family head, who is:	
(a) Widow	1	(a) Widow	7
(b) Divorced or Separated	2	(b) Divorced or Separated	8
(c) Deserted	3	(c) Deserted	9
(d) Unmarried	4	(d) Unmarried	10
B. Male spouse disabled; wife functions as family head	5		
C. Male spouse unemployed (Under employed); earning wife functions as head.	6		

12. List of man-headed agricultural families including those of landless labour

Serial No.	Name of family head	Size of holding (acres)	Identification Father's name	Serial number in size class			
				Large > 5 ac	Small 2.5 - 5ac	Marginal < 2.5 ac	Land-less
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							

Serial No.	Name of family head	Size of holding (acres)	Identification Father's name	Serial number in size class			
				Large > 5 ac	Small 2.5 - 5 ac	Marginal <2.5 ac	Land-less
16.							
17.							
18.							
19.							
20.							
21.							
22.							
23.							
24.							
25.							
26.							
27.							
28.							
29.							
30.							
31.							
32.							
33.							
34.							
35.							
36.							
37.							
38.							
39.							
40.							
41.							
42.							
43.							
44.							
45.							

SCHEDULE - 2

PARTICULARS RELATING TO THE SELECTED FAMILY

INSTRUCTIONS

1. Under Identification block entries are to be made only for the first four items (for the remaining items in this block entries in terms of codes will be made subsequently to facilitate computer processing of data). Enter the names of District and Village. Indicate the sub-stratum number as indicated below:

Woman-headed families	Sub - stratum Number	Man-headed families	Sub - stratum Number
Farmer	1	Large farmer	3
Landless agril.		Small farmer	4
labour	2	Marginal farmer	5
		Landless Agril. labour	6

Within each sub-stratum the selected families will be serially numbered (1 - 6 in sub-stratum 1 and 1 to 4 in the other 5 sub-strata)

2. Answers to items 3 and 4 should be entered by a tick mark (✓) in the space provided. The main occupation of the family should be first determined keeping in view the note below item 4 (with *). Local income refers to the income derived by the head of the family as well as other members of the family (normally residing with him/her) from sources located within or nearby the village. As for example, if a family member gets income wholly or partly, through employment in a neighbouring village as an agricultural labour the same should be taken into account.

3. After determining the main occupation, obtain information on the subsidiary occupations which may be nil, one or two. Record not more than two subsidiary occupations, which may be animal husbandry, agril. labour (local), etc. If the main occupation is 'Crop husbandry', 'Any other' under occupations include 'Poultry keeping', 'Bee Keeping', Fisheries, Artisan, Service, etc.

4. In recording particulars of family members, care should be taken to include all members related to one another, living together and having a common kitchen. If relatives have separate kitchens, whether they are living together or not, they will not be considered as belonging to the same family.

5. Under 'Education level' indicate the answer by the code number, using the key provided at the foot of the page.

6. The concepts of 'Labour days' and 'Person-hours' should be properly understood. If 5 persons work for the first day and 2 persons for the second day, the total number of labour days is 7; person hours can be understood similarly.

7. Before recording the number of labour days under item 12 read the note below. If any operation (say picking of cotton) is done more than once, the total number of person days should be worked out and recorded.

PARTICULARS RELATING TO THE SELECTED FAMILY

1. Name of family head

2. Father's/ Husband's name

3. Sex of family head (Please indicate by a tick (✓) mark)

Male (1)	Female (2)

4. Occupation of the family (Please indicate by a tick (✓) mark)

Type	Main	Subsidiary
Crop husbandry		
Animal husbandry		
Agricultural labour (local)		
Migrant labour		
Any other (specify)		

Identification	Code
District	
Village	
Sub-stratum	
Holding Serial No.	
Sex of family head	
Occupation	
Caste group	
Holding size class	

*Fill only the first four items as per instructions

* Main occupation of the family is the one which accounts for the largest local income (usually over 50%). Other occupations, if any, are subsidiary.

5. Caste group of family (Please indicate by a tick(✓) mark)

Scheduled caste (1)	Scheduled tribe (2)	Backward class(3)	Others(4)

6. Type of residential house (Please indicate by a tick (✓) mark)

Katcha (1)	Pacca (2)	Mixed (3)

7. Land holding particulars.

Type		Owned land		Leased - in		Leased - out	
		Acre	Cent	Acre	Cent	Acre	Cent
Cultivated	Irrigated						
	Rainfed						
Orchard & Forest							
Uncultivated							

8 Crops grown during last year .

Kharif			Rabi			Summer		
Name	Area		Name	Area		Name	Area	
	Acre	Cent		Acre	Cent		Acre	Cent
1.			1.			1.		
2.			2.			2.		
3.			3.			3.		
4.			4.			4.		
5.			5.			5.		
6.			6.			6.		

9. Particulars of family members, their education level and off-farm occupation, if any.

Serial No.	Name	Sex Male(1)/ Female(2)	Age (yrs)	Relation-ship to family head.	Educa-tion level	Off-farm occupation, if any				
						Agril labour (local)	Migrant	Service	Any other (specify)	Nil
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Adults (> 15 yrs.)										
1.										
2.										
3.										
4.										
5.										
6										
7										
8										
9										
10										

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Children (< 15 yrs)										
1.										
2.										
3.										
4.										
5.										
6.										
7.										
8.										
Attached permanent labour										
1.										
2.										
3.										

*For education level use the following codes.

Illiterate	Read only	Read & write	Primary	Middle	High/Higher Secondary	Graduate & above
1	2	3	4	5	6	7

10. Household item in possession of the family

Serial No.	Item	Possession No (1)/Yes(2)	Year of acquisition (approx.)	Code
1.	Cycle			
2.	Motorcycle/Scooter			
3.	Car			
4.	Water tap connection			
5.	Electricity connection			
6.	Radio			
7.	T.V.			
8.	Electric fan			
9.	Table & chairs			
10.	Electric appliances			
11.	Time piece/Wall clock			
12.	Sewing machine			
13.	Pressure cooker			
14.	Other modern kitchen utensils			
15.	Gas stove/electric stove.			

Serial No.	Item	Possession No (1)/Yes(2)	Year of acquisition (approx.)	Code
16.	Smokeless chullah			
17.	Solar cooker			
18.	Biogas Plant			
19.	Non-metallic storage bins			
20.	Metallic storage bins			
21.	Handicraft items (specify)			
22.	Any other (Specify)			

11. Farm inventory items in the possession of the family

Serial No.	Item	Possession No(1)/ Yes(2)	Year of acquisition (approx.)	Code
1.	Bullock			
2.	Tractor			
3.	Cattleshed			
4.	Poultryshed			
5.	Godown			
6.	Bore well			
7.	Pump set			
8.	Desi plough			
9.	Improved plough			
10.	Seed drill			
11.	Chemical duster			
12.	Chemical sprayer			
13.	Harvester/Combine			
14.	Thresher			
15.	Winnower			
16.	Chaff-cutter			
17.	Cow			
18.	Buffalo			
19.	Sheep & goat			
20.	Poultry			
21.	Any other (Specify)			

12. Details of operations carried out by men and woman in crop husbandry are to be filled for 3 major crops in the farm, including vegetables & fruits

Type of operations	Major crops								
	1			2			3		
	Total labour days/ acre		Equip-ments/ imple-ments used	Total labour days/ acre		Equip-ments/ imple-ments used	Total labour days/ acre		Equip-ments/ imple-ments used
	Man	Woman		Man	Woman		Man	Woman	
1. Land preparation									
2. Manuring (organic)									
3. Nursery raising									
4. Sowing									
5. Transplanting									
6. Fertilizer use at									
a)Sowing									
b)Top dressing									
7. Weed control									
a) Interculture through bullock									
b) Hand weeding									
c) Herbicide									
8. Irrigation									
9. Plant protection									
10. Harvesting/picking & transporting to threshing floor									
11. Threshing & Transporting to house/godown									
12. Processing of produce									
13. Marketing									
14. Any other (specify)									

* Please enter the names of three crops against 1, 2 and 3
If any operation is performed more than once, the total labour days should include all of them.
* If the equipment/implement is improved, add (imp.)

13. Details of operations carried out by men and women in animal husbandry, poultry keeping and fisheries.
(to be filled for all the type of animals maintained on the homestead/farm)

i) Number of animals kept on the home-stead or farm

Brovines		Other farm animals	
Type	Number	Type	Number
Bullocks		Sheep	
He-buffaloes		Goats	
Cows		Pigs	
She-buffaloes		Poultry birds	
Young stock		Any Other (specify)	

(b) Person-hours per day spent by family members for various items of work relating to farm animals.

Bovines (Cattle & buffaloes)					Other Animals.				
Operations	Av. number of person-hours spent per day				Operations	Av. number of person-hours spent per day			
	Adults		Children			Adults		Children	
	M	F	M	F		M	F	M	F
1. Collection and cutting of fodder.					1. Collection of feed.				
2. Preparation of feed					2. Preparation of feed.				
3. Feeding of animals					3. Feeding				
4. Grazing of animals					4. Grazing				
5. Giving water to animals					5. Giving water				
6. Cleaning the yard and animals					6. Cleaning the yard and animals				
7. Health care					7. Health care				
8. Milking					8. Sheering of wool/ milking of goats etc.				
9. Marketing of milk and products					9. Marketing of products.				
10. Any other (specify)					10. Any other (specify)				

(c) Person-hours per day spent by family members for various items of work relating to poultry keeping and/or fisheries.

Poultry					Fisheries				
Operations	Av. number of person – hours spent per day				Operations	Av. number of person – hours spent per day			
	Adults		Children			Adults		Children	
	M	F	M	F		M	F	M	F
1. Purchasing/ preparation of feed.					1. Preparation of stock pond.				
2. Feeding and watering of birds.					2. Preparation of nursery pond.				
3. Cleaning the yard and birds					3. Induced breeding of fish.				
4. Health care					4. Stocking of pond				
5. Collection of eggs					5. Fertilizer application to pond.				
6. Marketing of produce					6. Feeding of fish				
7. Any other (specify)					7. Health care of fish				

Fisheries				
Operations	Av. number of person – hrs spent per day			
	Adults		Children	
	M	F	M	F
8. Preparation of net.				
9. Netting/ catching of fish				
10. Grading of fish				
11. Marketing of fish				
12. Any other (specify)				

SCHEDULE - 3

ADOPTION OF IMPROVED TECHNOLOGIES

INSTRUCTIONS

1. Under item 4 information relating to adoption of technologies on biogas, smokeless chullah, seedrill etc. are to be collected and recorded. For ensuring the completeness and consistency of such information a cross check may be made with the entries on items listed in schedule 2 (pages 3 and 4) for the same family.

2. The answers to columns 2,4,5 and 6 under item 4 should all be indicated in terms of code numbers only. For columns 2 and 5 the appropriate code number is 1 or 2 as the case may be. For the codes relating to columns 4 and 6 the keys have been provided at the last page (page 3) with * and ** respectively.

3. Improved milch animals covered under homestead will include the cross-bred cows as well as cows and buffaloes of improved breeds of Indian origin.

4. Improved poultry generally covers those supplied under assistance programmes to weaker sections. It also includes those birds which were obtained by special effort by any of the members of the family concerned.

5. Under 'Off-farm' the information to be recorded pertains to agricultural labour, as main or subsidiary occupation. Use of hand tools like improved sickles are to be covered under this item.

ADOPTION OF IMPROVED TECHNOLOGIES BY FARM WOMEN

1. Name of women respondent

2. Father's/husband's name

3. Identification code
(not to be filled while convassing)

4. Decision on adoption of improved technology and its continuance or discontinuance

Technology	Whether any time adopted No (1)/Yes (2)	If Yes, year of initial adoption	Who decided on initial adoption (code)*	Whether adoption continued No (1)/Yes (2)	If no, reason for discontinuance. (code)**
1	2	3	4	5	6
A. Home					
(a) Biogas Plant					
(b) Smokeless chullah					
(c) Solar cooker					
(d) Metallic storage bin					
(e) Improved non-metallic storage bin					
B. Home-stead					
(a) Use in kitchen garden of					
(i) fertilizer/pesticide					
(ii) HYV					
(iii) Pesticide					
(b) Improved milch animals					
(c) Improved poultry					
(d) Any other (specify)					

Technology	Whether any time adopted No (1)/Yes (2)	If Yes, year of initial adoption	Who decided on initial adoption (code)*	Whether adoption continued No (1)/Yes (2)	If no, reason for discontinuance. (code)**
1	2	3	4	5	6
C. Farm					
(a) Multiple cropping (specify sequences)					
(i)					
(ii)					
(iii)					
(b) Introduction of commercial crops (specify crops)					
(i)					
(ii)					
(iii)					
(c) Improved vegetable/orchard crops (specify crops)					
(i)					
(ii)					
(iii)					
(d) Farm forestry (specify crops)					
(i)					
(ii)					
(iii)					
(e) Farm machinery/ implements/ improved hand tools (specify)					
(i)					
(ii)					
(iii)					
(f) Pesticide use (specify)					
(i)					
(ii)					
(iii)					

Technology	Whether any time adopted No (1)/Yes (2)	If Yes, year of initial adoption	Who decided on initial adoption (code)*	Whether adoption continued No (1)/Yes (2)	If no, reason for discontinuance. (code)**
1	2	3	4	5	6
(g) Herbicide use (specify crops) (i) (ii) (iii) (h) Any other (specify) (i) (ii) (iii)					

* For indicating who decided, use following codes

Male head	Self (Respondent herself)	Other family members		Relatives & friends		Jointly	Any other (specify)
		Male	Female	Male	Female		
1	2	3	4	5	6	7	8

** For indicating reason for discontinuance of technology use the following codes.

Heavy work	Drudgery	Lack of skill	Unsatisfactory (specify)	Any other
1	2	3	4	5

SCHEDULE - 4

IMPACT OF AGRICULTURAL MODERNIZATION ON FARM WOMEN

INSTRUCTIONS

1. Under item 4 fill up before hand the five identified improved technologies, three relating to crop husbandry, one to animal husbandry and one to home management. Their order should be the same for all sampled families in a district.

2. Answers to questions (a) to (1) under item 4 should be filled separately for each of the 5 technologies and in terms of the codes provided.

3. Offices relating to institutions/associations under B-5 (b) are President, Vice-President, Secretary, Executive member etc. of the respective institutions.

4. For recording 'Purpose' under item B-5 (d) use the key provided below. The serial number in the key may be used as the code.

5. Printed materials under B-6 (g) relate to those on agricultural, allied and home related subjects only.

6. In respect of B-8 (d) specify the types of activities on which benefit of demonstration (usually free) or subsidised programme was availed. If for a particular activity the benefit availed is 'Demonstration' indicate the answer by a tick (✓) mark under 'Demonstration'. If the answer is 'Subsidised programme' it may be indicated similarly.

IMPACT OF AGRICULTURAL MODERNIZATION ON FARM WOMEN

1. Women respondent's name:

2. Husband's/Father's name:

3. Identification code
(not to be filled while canvassing)

Impact of Agricultural Modernization on the woman respondent at Individual level

4. What is your personal experience in respect of the following improved technologies?

	Improved agricultural/allied technology identified at the state level				
	1	2	3	4	5
(a) Are you aware having knowledge about the improved technology? No(1)/Yes(2)					
(b) Has it been adopted by you/in your farm? No(1)/Yes(2)					
(c) What new skill have you gained by its adoption? (specify)					
(d) What is its effect on drudgery? -Reduced(1) -No change(2) -Increased(3)					
(e) What is its effect on work efficiency? -Reduced(1) -No change(2) -Increased(3)					
(f) Whether the improved technology has provided you additional employment No(1)/Yes(2)					

	Improved agricultural/allied technology identified at the state level				
	1	2	3	4	5
(g) If yes, in which season? - Kharif(1) - Rabi(2) - Summer(3)					
(h) How many additional days in all? (Approx. number)					
(i) Whether the additional employment increased overall work on you? No(1)/Yes(2)					
(j) If yes, what adjustment did you do to cope with the increased work load?					
(k) Was this displacement of your labour partly or wholly, due to adoption of the improved technology? No (1)/Yes (2)					
(l) If yes, what kind of diversification of your time / occupation has taken place during that period of displacement /					

Impact of Agricultural Modernization on the Woman Respondent at Community level

5. Participation in village institutions
(a) Are you a member of any village institution ?

No.(1)	Yes (2)

(b) If yes, specify the institutions and the office (s) held, if any.

Serial No.	Institution/ Association	Membership No(1)/Yes(2)	Office(s)held, if any	Benefit derived Nil(1)/Moderate (2)/ Substantial(3)
1.	Cooperative			
2.	Mahila Mandal			
3.	Panchayat			
4.	Any other (specify)			

(c) Have you ever taken loan in your name from any of the following institutions?

No(1)	Yes(2)

(d) If yes, please indicate the following details.

Serial No.	Institution	When taken (approx . yr)	Purpose	Code	Outstanding amount(Rs)
1.	Cooperative				
2.	Government				
3.	Commercial bank				
4.	Any other(specify)				

*Please check the following purposes.
(1) Construction of well/tubewell
(2) Deepening of old well/tubewell
(3) Purchase of land
(4) Purchase of farm animals
(5) Purchase of farm machinery/equipment
(6) Construction of smokeless chullah
(7) Installation of biogas plant
(8) Purchase of grain storage bin
(9) Crop loan
(10) Purchase of sewing machine
(11) Any other (specify).

6. Exposure to Mass Media

(a) Do you listen to farm/home-based agricultural programmes on radio?

No(1)	Yes

(b) If yes, where do you listen?

Home (2)	Neighbour's place (3)	Community set (4)

(c) How often do you listen to such radio programmes?

Regularly (2)	Sometimes (3)	Rarely (4)

(d) Do you see farm/home-based agricultural programme on T.V.?

No.(1)	Yes

(e) If yes, where do you see?

Home (2)	Neighbour's place(3)	Community set (4)

(f) If yes, how often do you see such T.V programmes?

Regularly (2)	Sometimes (3)	Rarely (4)

(g) Do you read or get read printed material relating to agriculture or allied subjects?

No(1)	Yes

(h) If yes, of what type?

Newspaper article(2)	Farm periodical(3)	Leaflet, pamphlet, etc.(4)

(i) How often do you read them?

Regularly (2)	Sometimes (3)	Rarely (4)

7. Interpersonal contact

(a) Do you get time to mix with your neighbours/villagers?

No.(1)	Yes

(b) If yes, how frequently do you interact with neighbours/ villagers?

Almost daily (2)	Once or twice a week (3)	Once in a while (4)

(c) Normally, what are the purposes for which you interact with them?

Just for a change/ recre-ation (2)	On fest-live/so-cial oc-casions (3)	Particip-ation in community programmes (4)	For information on improved agricultural technology	
			Seeking (5)	Giving (6)
Any other (specify)				

8. Participation in Extension/Development Programmes

(a) How frequently do you come in contact with the following extension personnel?
(Indicate by a tick(✓) mark the appropriate answer)

Serial No.	Extension/Development Personnel	Frequency of contact		
		Never or rarely(1)	Once in a while(2)	Frequently (3)
1.	V.L.W.(Female)			
2.	V.L.W.(Male)			
3.	Block Level Officers			
4.	University Scientists			
5.	Any other Extension agencys (Private,public/ Voluntary(specify)			

(b) Which of the following activities were attended by you during the last five years?

Serial No.	Activity	Organised by	Place	Year	Purposes of the activity
1.	Training				
2.	Group meeting				
3.	Field day/ Kisan Mela				
4.	Visit to univer-sity/Research farm/KVK etc.				

(c) Have you availed benefit from any demonstration or subsidised programme?

No.(1)	Yes (2)

(d) If yes, indicate the activities for which benefits were availed.

Serial No.	Type of activity and its specification	Benefit availed		Year of the programme
		Demonstration	Subsidised programme	
1.	Home Activities (Specify)			
	(a)			
	(b)			
2.	Animal husbandry (Specify)			
	(a)			
	(b)			
3.	Crop husbandry(Specify)			
	(a)			
	(b)			
	(c)			

SCHEDULE - 5

PARTICIPATION OF WOMEN IN DIFFERENT ENTERPRISES, INCOME DERIVED AND EXPENDITURE INCURRED

INSTRUCTIONS

1. This schedule should be convassed first time for every family sampled. Subsequently for fifty percent of the sampled families it will be convassed once every month, for the subsequent 12 months.

2. Eventhough this schedule is for a month, data to be recorded under item 5 pertain to a period of one week only, i.e. seven days prior to the day of interview. This has been prescribed in order to minimise error due to memory recall of the respondents. The average number of hours per day spent on the various items listed refers to the average for the past seven days, i.e. the past week.

3. Informauon to be obtained and recorded should be for the woman respondent and individually for other female members of the family (adults and children above 8 years) as well as attached female labour. For identifying the female members, the details of family members recorded in Schedule 2, item 9 can be made use of.

4. Under item 5-A (h) include the time spent in hand pounding of paddy to rice and that on the preparation of beaten rice.

5. Home-based handicratts under item 5-A(j) include coir products, basket making, stitching garmets, small scale manufacture of toys, soap etc.

6. In respect of women folk of fisherman families, grading and marketing of fish should be covered under 'any other (specify)' - i.e under item 5-D(e).

PARTICIPATION OF WOMEN IN DIFFERENT ENTERPRISES

INCOME DERIVED AND EXPENDITURE INCURRED

(To be convassed once every month)

1. **Woman respondent's name:**
2. **Husband's/Father's name:**
3. **Date and month of interview:**
4. Identification — Code

District	
Village	
Sub-stratum	
Holding Serial No.	
Sex of family head	
Occupation	
Caste group	
Holding size class	

5. Details of time spent at home, home-stead, on-farm and off-farm in various activities during the past one week (Number of hours per day)

	Average number of hours per day spent by									
	Self	Other adult females of the family			Female children			Attached female labour		
		(i)	(ii)	(iii)	(i)	(ii)	(iii)	(i)	(ii)	(iii)
A. HOME										
(a) Cooking										
(b) Fetching water										
(c) Fetching fuel wood, twigs etc. and chopping wood.										
(d) Collection of cow dung and preparation of dung cakes/coal dust balls.										
(e) Child care										
(f) Routine household work(cleaning, washing,etc.)										
(g) Food preservation (papad making, pickling etc.)										
(h) Grain processing (parboiling, dehusking,grinding,etc.)										

	Average number of hours per day spent by									
	Self	Other adult females of the family			Female children			Attached female labour		
		(i)	(ii)	(iii)	(i)	(ii)	(iii)	(i)	(ii)	(iii)
(i) Grain storage										
(j) Home based handicrafts.										
(k) Any other (specify)										
B. HOME-STEAD										
(a) Kitchen garden										
(b) Managing milch animals, bullocks & young stock.										
(c) Poultry keeping.										
(d) Marketing of animal products.										
(e) Any other (specify)										
C. ON-FARM										
(a) (i)										
(ii)										
(iii)										
(iv)										
(b) Tending of sheep,goat, etc.										
(c) Any other (specify)										
D. OFF-FARM										
(a) Agril. labour (local)										
(b) Non-agril. labour										
(c) Migrant labour										
(d) Service										
(e) Any other (specify)										

6. Income from Marketed products and Wages earned during the month *

Home and home-stead items marketed		Farm items marketed		Wages & other income from outside.	
Item	Approx. income (Rs)	Item	Approx. income (Rs)	Item	Approx. income (Rs)
1. Kitchen garden		11.Field crops		31.Agril.labour (local)	
2. Dairy		12.Orchards		32.Non agril. labour	
3. Poultry		13.Forestry		33.Migrant labour	
4. Handicrafts		14.Sheep & goat products.		34.Service	
5. Any other (specify)		15.Fisheries		35.Any other (specify)	
		16.Any other (specify)			

* This should include only those items for which cash receipts were involved.

7. Expenditure incurred on household, home-stead and farm items during the month *

Household items	Approx. Expenditure (Rs)	Home-stead & farm items	Approx. expenditure (Rs)
1. Food articles 2.Fuel & lighting. 3. Clothes for women 4. Clothes for others 5. House repair & rent		21. Feed,Fodder, medicines, etc. for animals. 22. Feed,medicines, etc. for poultry. 23. Seed,fertilizer and pesticides for field crops, horticulture and kitchen garden	
6. Health care & medicines. 7. Education 8. Newspaper,magazines,etc. 9. Travel & transport 10. Marriage & allied items.		24. Irrigation expenses. 25. Labour wages paid 26. Any other (specify)	
11. Rituals & ceremonies 12. Tobacco, narcotics & liquor. 13. Entertainment & recreation. 14.Any other (specify)			

* This should include only those items for which cash payments were involved.