
WOMEN'S ROLES IN AGRICULTURE: 1984
Diagnostic Analysis Workshop, Dahod Tank
Irrigation Project, Madhya Pradesh, India



WATER MANAGEMENT SYNTHESIS PROJECT

WOMEN'S ROLES IN IRRIGATED AGRICULTURE:
1984 Diagnostic Analysis Workshop, Dahod Tank Irrigation Project
Madhya Pradesh, India

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ABSTRACT

A Diagnostic Analysis Workshop was held January 16 to February 17, 1984 in Madhya Pradesh, India. Bhopal was selected as the site for the workshop because training and hostel facilities were available at the Academy of Administration, and Bhopal is near Dahod Tank Irrigation Project, the study area.

The purpose of the workshop was to provide Madhya Pradesh officials with the knowledge and skills needed for interdisciplinary analysis before they began to plan, design, and construct several USAID minor irrigation schemes. The Government of Madhya Pradesh also asked the workshop teams to identify the Dahod Irrigation Project's constraints and to develop a workplan for improving the project.

The program involved 25 professionals from the fields of engineering, agronomy, economics, farm extension, sociology, and Women in Development (WID). The participants worked in four interdisciplinary teams, each assigned to separate minors off the Left Bank Canal in the Dahod Irrigation Project. This report includes the information from the WID studies of the diagnostic analysis.

Women play an active role in Dahod's agricultural production and management. However, the degree varies depending on caste, wealth, age and household position. Women are less involved in more recently introduced agricultural practices such as fertilizer and pesticide application, HYV seed selection and irrigation practices. In part, this may be because they lack agricultural extension and training. The increase in male temporary migration to jobs in towns nearby may be increasing the demand for women's managerial roles and labor participation on the farm.

The villagers use the irrigation system for washing, livestock bathing, and cleaning. Recommendations for rehabilitating the Dahod irrigation system which include attention to village women's needs are presented in the Interdisciplinary Diagnostic Analysis of and Workplan for Dahod Tank Irrigation Project, Madhya Pradesh, India (Venkataraman, K.N. et al., 1984).

I. INTRODUCTION

A. Background of the Project

Both the Government of India and international donors have become increasingly aware of the importance of women's roles in agricultural production. A number of studies in South Asia have shown that these roles are changing with agricultural development. However, some controversy remains over the direction of these changes. Some have noted that agricultural development has created additional demands for labor, female as well as male (Blumberg, 1981; Rogers, 1980). Others have argued that women's participation is decreasing due to the greater profitability of agriculture which allows women to be replaced by hired labor (Dixon, 1980; Tinker, 1981).

Irrigation is a central element of agricultural development in India. Introducing new irrigation systems or rehabilitating existing structures is likely to affect women. This report examines women's roles at the Dahod Tank Irrigation Project in Madhya Pradesh, India and some of the potential impacts of irrigation on them. This report is the Women In Development (WID) component of an interdisciplinary diagnostic analysis workshop held January 16 to February 17, 1984 in Madhya Pradesh.

The Government of Madhya Pradesh plans to develop new irrigation systems. However, based on observations that existing irrigation systems are working below designed level, the government expressed an interest in diagnosing current problems with an existing irrigation system before developing new schemes. Thus, the Government of Madhya Pradesh asked USAID for a Diagnostic Analysis of Farm Irrigation Systems Workshop of the Dahod Project.

Dahod Project, a minor scheme operating for 26 years, was selected both because of its proximity to the state capital of Bhopal with its facilities for training and lectures and because of deficiencies in Dahod's irrigation system. Dahod Tank irrigates an area of 4,063 acres and is entirely rainfed, primarily from the monsoon runoff. The major crops grown in the area are wheat during rabi (dry cropping season) and paddy during kharif (monsoon cropping season).

The diagnostic analysis workshop primarily trains participants to evaluate irrigation problems. The U.S. team included members from the disciplines of agronomy, economics, farm extension sociology, irrigation engineering, and on-farm engineering as well as the WID component. The WID component was added to the project because understanding village women's roles could contribute to improved, efficient, and equitable irrigation development planning. Indian

participants in the WID component of the workshop included a co-trainer who is a sociology professor in the University at Jabalpur, Madhya Pradesh and four trainees who are gram sevikas (village level workers) in the Social Welfare Department.

B. Contents of this Report

This report presents the major findings from a two-week field study carried out as part of the diagnostic analysis training by the WID team members. It complements a complete interdisciplinary report on the entire project area (Venkatarman et al., 1984). Included in that report are a detailed background of the Dahod Tank Irrigation Project, interdisciplinary research findings, recommendations for rehabilitating the irrigation system, and a WID component.

This report was influenced by development literature on women, but it drew specifically from the previous experiences of Kate Cloud and Kathieen Kilkelly, who have examined issues of women and irrigation in South Asia. Following this introductory section which includes research methods and the socio-cultural background of the project area, section two examines village women's involvement in the on-farm agricultural system. Since irrigation impacts extend beyond the irrigated fields, section three of this report examines women's roles in domestic productive activities with attention to those most closely related to irrigation. Section four presents general conclusions. The report aims to achieve a broader understanding of how irrigation affects rural women.

We should stress that this report was derived from a training program which implies that errors will be made, and data may be incomplete. Difficulties were faced with selection of WID participants for the workshop; Appendices A, B and C discuss some of these methodological problems and outline the questionnaires the trainees used.

C. Diagnostic Analysis Methods

The field study involved two weeks of on-site work in the Dahod area. Four irrigation minors, two at the head reach and two at the tail reach, were selected for the diagnostic analysis. Each WID trainee joined an interdisciplinary team and was assigned one minor for study. The four WID trainees collected data primarily through formal interviews with village women. The WID co-trainers conducted the more open-ended discussions.

Data collection was a three stage process: beginning with a field reconnaissance, followed by a detailed questionnaire with sample farm women and finally, interviews with female farm laborers.

1) Reconnaissance

Interdisciplinary teams conducted the initial reconnaissance at each minor. The WID participants identified major problems and provided guidelines for designing a detailed questionnaire. Each trainee talked informally with women in villages along their minors and asked a variety of questions about village services to women, general social organization, types of agricultural work and water supply for domestic use.

2) Detailed Questionnaire with Farm Women

Based on the reconnaissance survey, a detailed questionnaire was devised for interviews with farm women. The questionnaire was divided into three sections. The first focused on demographic and background data characteristics of the farm family such as age, educational level of informant, and family composition. The second section of the interview concerned women's involvement in on-farm, irrigated agricultural production to identify areas of high and low involvement of women. A variety of questions concerning women's roles in decision-making concerning agricultural practices were asked.

The third section of the questionnaire focused on domestic production--questions about domestic activities performed by members of the family and their roles in decision-making. We were particularly concerned with household water supply and use, livestock production, home gardens, and grain storage.

Our goal was to find out what problems women had with the irrigated agricultural system, what roles they play in the functioning of that system, and what they suggest for improvements.

3) Female Farm Laborers Questionnaire

Each woman interviewed was asked to identify one female laborer working for her family. This short questionnaire was to identify female laborers' participation in the irrigated agricultural system and determine the benefits to these women. Questions focused on what these women did for land owning families, the women's livestock ownership, and their potential problems with domestic water supply.

D. The Sample

The WID participants interviewed a sample of 39 farm women and 12 female wage laborers. The farm women were sampled purposely from each of the four minors designated for the diagnostic analysis in collaboration with the interdisciplinary teams. All were the wives of

landowners listed on the government registers. The following number of women were interviewed:

Head:	Minor 67:	11 of 63 cultivators
	Minor 123:	14 of 35 cultivators
Tail:	Minor 235:	6 of 10 cultivators
	Minor 244:	8 of 14 cultivators

The data on the two minors at the head reach and the two at the tail reach have been aggregated in this report since the sample sizes were small and the minors were located at such close distances from one another.

The women interviewed came from three principal villages: Dahod and Mundla in the head reach and Itaya Kalan in the tail. Dahod, located adjacent to the tank, is the largest village with approximately 280 families and a variety of services such as a school, hospital and electricity. Mundla, also in the head reach, is small with only 21 households and no facilities. Itaya Kalan, at the tail, consists of approximately 75 households and also has none of the facilities mentioned above.

The farm women interviewed were predominantly Hindus of the Dhakad caste (Table 1). They are said to be a sub-caste of Rajputs and a traditional peasant farming caste.

Table 1. Caste Distribution of the Dahod Project

Caste	Head	Tail	Total
Dhakad	15	11	26
Parmar	0	1	1
Meena	6	0	6
Chamar	1	0	1
Gadaria	1	0	1
Moslem	2	2	4

According to the government registers, Chamar and Gadaria are Harijan (scheduled Castes or Untouchables); Meena and Parmar are backward castes (government designation for certain lower caste groups).

The farm women interviewed were predominantly the wives of the household heads. Eight indicated they were daughters-in-law, and one was a widow with young sons. The average age of women interviewed was 38.7 years. The majority of the women interviewed were living in extended households averaging 9.4 persons in the head reach and 11.0 in the tail reach.

Average land holdings of farm families at the tail were significantly higher than at the head (39.78 acres and 17.7 acres respectively). This difference corresponds to the fact that in the village of Itaya Kalan at the tail approximately 20% of the village households were major landowners while the remainder were either landless or small landholders.

E. Socio-Cultural Framework

Women's roles in the Dahod area are ultimately linked to both social and cultural norms. At Dahod, as in much of central and northern India, these norms are often presumed to limit women's involvement in work outside the home. The diminished public or visible involvement outside the home, particularly among wealthier households, often leads one to believe that village women play only a minimal role in the farm production system. This report demonstrates, however, that women do play significant roles and points out areas of high and low female involvement in farm production.

Women's roles vary with age and relative position in the household. A woman usually moves to her husband's village at marriage. The young bride, new to the village, is frequently responsible for cooking and carrying out chores around the household. She observes purdah (veiling in the presence of elder males).

With age, women find greater responsibility in household decision-making. Gender no longer determines who performs tasks or makes decisions, but women's positions relative to other women in the household help determine them. For example, women interviewed frequently noted that it was their elders (both male and female) who ran the household and controlled finances. During the field study as well, participants found interviews easier with older women than with the younger, more recent brides because older women were more free to speak openly.

Post-marital residence and inheritance practices also limit women's access to land rights. Since women frequently leave their natal villages at marriage, control over family land is difficult to

maintain. Despite legislation requiring equal inheritance, there were no indications that women had control over any inherited land. A number of women were listed on the land-ownership records at the project site, but this appeared to be merely for the purpose of avoiding land ceilings.

Caste and wealth are also important factors in considering the roles that women play. Among upper caste and wealthier households, women are less likely to perform agricultural work or work outside the household. Wage laborers, often from lower caste groups, are hired either on an annual contract or a daily basis. Landowners aspire to supervisory roles.

The majority of farm women noted that they engaged in domestic and agricultural work. Thirty-eight percent said they performed mostly household work, and 56% reported they did agricultural work and household work. The caste (and wealth) variation is apparent here. All of the backward and Harijan caste women performed household and agricultural work while the Dhakad and Moslem women gave a variety of responses about the work they did.

II. THE ON-FARM AGRICULTURAL SYSTEM

A. Agricultural Activities

The diagnostic analysis at Dahod was conducted during the slack period of the rabi. Hence, men and women were doing little agricultural work. The WID participants discussed with farm women the various agricultural activities and asked who did them on their families' fields. While the WID participants did not collect data on time spent on the various activities, the economics participants asked male farmers to itemize the number of man, woman and child days used for different tasks. However, discrepancies emerged since in many cases, the farmers reported using no female household labor while their wives, interviewed by the WID participants, indicated that they did do these tasks. A more complete picture of the division of labor must await more detailed study.

As noted previously, women's roles in agricultural production depend on a variety of factors such as age, wealth, and caste. Additionally, the entire rabi season has greater cropping intensity and increased labor. Wheat, pulses and gram are grown in rabi while paddy and more recently, soybeans are grown in the kharif.

Male and female household labor divided agricultural tasks (Tables 2 and 3). Highest female participation was in weeding, harvesting, and threshing operations. Farm women at the head reach, however, also participated in planting by dribbling seed behind the plow. This was less significant at the tail perhaps because tractors have replaced this activity to a greater extent at the tail of the system where landholdings are larger.

Transplanting paddy did not use female household labor as highly as some other activities. However, it points to the practice of hiring wage laborers. For example, 71% of the households hired wage workers, predominantly female, to help transplant paddy at the tail, and 40% hired wage laborers at the head (Table 4).

Table 2. Gender Division of Agricultural Activities* Head Reach (N = 25).

	Household Females Only	Household Males Only	Both	Total Female Participation
	-----%			
Land preparation	4	56	36	40
Purchasing seed	8	60	28	36
Planting	60	8	32	92
Transplanting paddy	16	12	56	70
Weeding	28	4	60	88
Applying fertilizer	4	44	48	52
Protecting crops	4	72	20	24
Irrigating	4	64	20	24
Cleaning/maintaining watercourses	12	56	20	32
Harvesting	8	12	80	88
Winnowing/threshing	8	12	80	88

*Note that those who used only hired labor or did not respond are not included.

Table 3. Gender Division of Agricultural Activities* Tail Reach (N = 14)

	Household Females Only	Household Males Only	Both	Total Female Participation
	-----%			
Land preparation	7	50	43	50
Purchasing seed	7	43	50	57
Planting	21	43	29	50
Transplanting paddy	36	21	14	50
Weeding	50	14	14	64
Applying fertilizer	14	43	43	57
Protecting crops	14	29	57	71
Irrigating	0	57	36	36
Cleaning/maintaining watercourses	7	43	50	57
Harvesting	29	21	43	72
Threshing/winnowing	29	7	43	72

*Note that those who used only hired labor or did not respond are not included.

Table 4. Percentages of Households Hiring Wage Labor (both male and Female) by Task

	Head (N=25)	Tail (N=14)
	-----%	
Land preparation	24	36
Planting	16	14
Transplanting paddy	40	71
Weeding	52	64
Irrigating	20	36
Harvesting	48	71
Threshing/winnowing	36	71

Of the 39 farm women interviewed, 14 (56%) at the head reach and 12 (86%) at the tail reach indicated that they hired wage-earning women to do some work on their fields. Since the tail village is dominated by a few wealthy Dhakad families, they appear to better afford hired wage workers.

As was expected, women's roles in irrigation-related activities were quite low. If women participated in irrigating, they constructed small bunds to guide the flow of water over uneven and large fields. Women also noted their involvement in cleaning watercourses. Some translation problems may have caused confusion over this question since little maintenance work was observed on the existing watercourses. Women probably collected grasses and weeds along the watercourse banks for livestock fodder; any maintenance itself may have been an unplanned consequence.

A number of factors influence agricultural work at the project area. Mechanized agriculture is growing in importance as more and more farmers purchase tractors. Threshing machines are now more common. The dribble planting that women traditionally have done behind the plow is being replaced by mechanized practices.

On the other hand, irrigated agriculture has increased the cropping intensity and thereby the need for labor, particularly at harvesting time. Female agricultural laborers noted that recent soybean

cultivation, though currently unirrigated, has benefited them because wage rates are higher (Rs. 10-12 per day versus Rs. 5-8 per day for other crops).

A third factor influencing agricultural labor is the growth of an industrial area, 10 km from the project area. No farm women interviewed indicated that they worked in the industrial complex. However, more men are working there or in Bhopal, 35 km away. Young boys are going to school in both places as well. Women indicated that they needed to be close to home to take care of their families and children. The impacts of this apparent shift are difficult to measure. However, it may indicate more female involvement in certain agricultural tasks and farm management.

Sixty-nine percent of the farm women claimed that they participated in some agricultural field work. However, the studies indicated that type of work and degree varied according to wealth. For example, among farm families owning less than 13 acres (N=13), 76% indicated they did harvesting work; of those holding between 13 and 25 acres (N=15), only 13% indicated they did harvesting work, and of those who held more than 25 acres (N=11), none did any work.

B. Decision-Making

The WID participants asked farm women to identify the household members who helped make decisions about agricultural practices. While it was evident that female household members did contribute to farm management decisions, the information and knowledge they possessed to help make those decisions were less clear.

Overall, 87% of the farm women interviewed indicated that they were involved in some of the farm decisions (Tables 5 and 6). Women in the household appeared to be most highly involved in decisions concerning planting time, transplanting paddy and weeding fields. The high involvement in these decisions conforms to the women's increased labor participation in these activities.

Table 5. Gender Division of Agricultural Decision-Making* Head Reach (N=25)

Decision	Household Females Only	Household Males Only	Both	Total Female Involvement
	-----%-----			
Timing of planting	12	8	80	92
Timing of trans- planting paddy	12	24	60	72
Acreage of wheat	8	44	48	56
Acreage of paddy	8	36	52	60
Acreage of soybean	8	36	40	48
Seed selection	8	48	44	52
Fertilizer purchase	8	64	24	32
Timing of irrigation	4	40	52	56
Cleaning/maintaining channels	12	44	40	52
Weeding	28	16	56	84
Marketing	8	52	24	32

* Survey questions not answered are not included in the table.

Table 6. Gender Division of Agricultural Decision-Making* Tail Reach (N=14)

Decision	Household Female	Household Male	Both	Total Female Involvement
	-----%-----			
Timing of planting	0	21	78	78
Timing of trans- planting paddy	14	21	64	78
Acreage of wheat	0	36	64	63
Acreage of paddy	0	36	63	63
Acreage of soybean	0	36	57	57
Seed selection	0	57	43	43
Fertilizer	0	86	14	14
Timing of irrigation	0	50	50	50
Cleaning/maintaining channels	14	21	64	78
Weeding	7	29	64	71
Marketing	0	50	50	50

* Survey questions not answered are not included in the table.

Areas of lowest involvement in decision-making were in marketing, soybean production, purchased seed selection and fertilizer selection. This may indicate that women are less involved in decisions that require recently introduced knowledge. Extension agents or government stores provide this information about new varieties of seed, chemical fertilizers and soybean production. Data suggest that women lack access to information about rapidly changing agricultural practices.

Approximately half the women interviewed noted that female members of the household were involved in deciding when to irrigate. In open-ended discussions with farm women, wealthier women who did little agricultural work seemed to play an important supervisory role. They

would go to the fields to bring food, to pick greens for meals and to inspect fields. Exactly what knowledge these women used to conclude that a field required irrigation water remains unclear, however.

The self-defined role as supervisor was commonly cited during the interviews. Again, age and relative position in the household were important. Younger farm women frequently noted that their elders, both male and female, made the farm decisions.

The sample of farm women included four women whose husbands did not manage the farm. One husband was mentally handicapped, one woman was a widow and two women had husbands who worked in the industrial complex nearby. In all these cases, the women's managerial roles were important.

While cases where women were the sole managers of their farms were unusual, we did meet two widows (though not in the sample) who had no older children in the home and were carrying out the farm responsibilities. It is uncommon for women to be sole managers, and they may lack access to information concerning new agricultural practices.

C. Perceived Irrigation Problems

Farm women were asked questions concerning problems with and desired improvement in agricultural production and the irrigation system. Understanding their perceptions of problems would contribute to understanding the overall constraints. Since the respondents were aware that the diagnostic analysis team was attempting to find out about the irrigation system, their responses usually addressed irrigation issues. Hence, it is difficult to know if we were recording "courtesy responses" or if water related problems were most critical to agricultural production.

When farm women were asked what their most significant problems were in farming their land, aside from irrigation problems, they responded variously. Half of the responses noted water problems, ranging from waterlogging to lack of water. Farm women were also concerned with supply and quality of seeds, noting that they were not available at the required time, and (when available) they were of inferior quality. Some individuals said their land was not level. They also reported labor shortages and difficulties in paying for irrigation water (when requested). Natural disasters such as hailstorms also concerned a few women whose fields had suffered damage recently.

When farm women were asked specifically about irrigation problems, the majority in both the head and tail responded that timing was their greatest concern. The number of women at the tail who

acknowledged timing as a constraint was higher than at the head (92 and 60%, respectively). This substantiated the other disciplines' findings concerning poor and inadequate timing of irrigating at the tail (Table 7).

Table 7. Most Significant Problems Perceived with the Irrigation System

	Head (N=25)	Tail (N=14)
	-----%-----	
Timing/quantity	28	50
Timing/gov't management	24	36
Timing/canal disrepair	8	0
Timing/labor shortage	0	7
Quantity/canal disrepair	8	0
Quantity/gov't mgt.	8	0
No water to some fields	4	0
Canal disrepair/gov't mgt.	8	7
No problem	12	0

While we expected farmers at the tail to be more constrained by quantity of water than those at the head, we found that approximately 50% of the farm women at both locations saw this as a second major problem.

Farm women saw poor government management of the irrigation system as the third most significant problem. Forty-four percent indicated this problem at the tail and 40% at the head. Informal conversations indicated that women lack faith in and disregard government intervention.

Farm women were also asked how the irrigation system should be improved. The responses were highly varied and did not correspond to the problems they had noted. Though timing was seen as the major constraint, canal lining was the major desired improvement (Table 8).

A commonly held view, not just at Dahod itself, was that lined channels could cure all irrigation problems, even though the lined main canal was in poor shape.

Table 8. Desired Improvements in Irrigated Agricultural System

	Head (N=25)	Tail (N=14)
	-----%-----	
Lining canals	16	64
Lining/timing	8	21
Drainage	4	0
Pump water to high fields	4	7
Land leveling	4	7
Information	8	0
Improved seed/tools	8	0
Field channels	12	0
No response	32	0

D. Agricultural Extension Services

Little attention has been given to providing agricultural training for women. Although male extension agents were in place at Dahod, there was no indication that they spoke with farm women. Farm women responded that their agricultural information came from their husbands or other family members, not from extension agents. All women interviewed at the head would like to have more agricultural information. Nine out of 14 at the tail wanted more. The difference between the head and tail may reflect the greater (domestic-oriented) extension and institutional support offered at Dahod Village.

Among those who expressed interest in obtaining further agricultural information, few identified specifically what kind they desired, and the women were not asked to elaborate. However, among those who

did specify, fertilizers were the most commonly desired information, followed by seed varieties.

At present, female extension workers rarely receive agricultural training, and often it is culturally inappropriate for male extension agents to speak with women. The field demonstrations, the "Training and Visit" system, and agricultural camps put on by the Block Development Office and Farmer's Training Center, claimed to have low female attendance in general. Efforts to increase female attendance must include convenient meeting times and locations close to target villages, and female extension workers must receive more agricultural training.

III. THE DOMESTIC PRODUCTION SYSTEM

A. Domestic Activities

Women's roles at Dahod were more prominent in domestic activities than in agricultural work. However, their central role in the domestic sphere provides an important component in the total irrigated agricultural system and general welfare at the project site. As in on-farm agricultural roles, women's roles in the home varied with age, caste, and wealth. A woman usually stayed around the home. Wealthier women often hired poorer women to sweep floors, plaster the house, clean latrines, clean grain, and collect fodder for livestock.

As expected, areas of highest female involvement were in cooking, child care and care of grain after harvest (Tables 9 and 10). Women's lowest involvement was in grazing livestock and marketing. These tasks require travel outside the village to a distance of 6-8 km. The data support the notion that women are less involved in tasks that require traveling some distance from the village.

Degree of involvement in domestic productive activities seemed to vary with wealth of the family. For example, in households owning less than 13 acres (N=13), 97.1% of the women interviewed indicated that they were involved in preparing fodder in the home. Among those owning between 13 and 25 acres (N=15), 71.4% were engaged in this activity. And among those owning more than 25 acres (N=11), 45.4% were engaged in it.

While domestic activities were many and varied, tasks such as supplying household water, post-harvest grain care and livestock production appeared to be more closely linked to the developing and functioning of the irrigation system. Therefore these are discussed in greater depth, recognizing the

Table 9. Gender Division of Domestic Activities* Head Reach (N=25)

	Household Females Only	Household Males Only	Both	Total Female Participation
	-----%			
Cooking	96	0	4	100
Getting water	76	0	16	92
Collecting fodder	16	32	44	60
Preparing fodder	32	20	40	72
Milking livestock	8	48	28	36
Making ghee	60	0	4	64
Grazing livestock	8	28	12	20
Collecting firewood	8	68	20	28
Kitchen garden care	4	8	0	4
Primary child care	96	0	0	96
Grain care	80	4	16	96
Marketing	12%	72%	12%	24%

*Percentage of respondents who used only hired labor or who responded "not relevant" are not included.

Table 10. Gender Division of Domestic Activities* Tail Reach (N=14)

	Household Females Only	Household Males Only	Both	Total Female Participation
	-----%			
Cooking	100	0	0	100
Getting water	86	0	7	93
Collecting fodder	43	7	43	86
Preparing fodder	57	7	29	86
Milking livestock	29	36	29	58
Making ghee	64	0	7	71
Grazing livestock	0	43	29	29
Collecting firewood	7	36	36	43
Kitchen garden care	0	0	7	7
Primary child care	100	0	0	100
Grain care	93	0	7	100
Marketing	7	43	29	36

*Percentages of respondents who used only hired labor or who responded "not relevant" are not included.

importance of other support activities such as child rearing and food preparation.

B. Services of Domestic Wage Workers

Poorer and often lower caste households contributed to a variety of domestic activities for the farm families (Table 11). Grazing, fodder collection and fuel collection were the most frequent tasks in which wage labor was hired. While not included in the survey questionnaire, house construction and grain cleaning for wealthier families also involved female agricultural laborers.

Table 11. Percentages of Households Hiring Wage Labor (Both Male and Female) for Selected Domestic Tasks

	Head (N=25)	Tail (N=14)
	-----%	
Food preparation	0	0
Water fetching	8	0
Fodder collection	20	29
Preparing fodder	16	14
Milking	0	7
Ghee	0	0
Grazing	40	29
Fuel	28	36
Kitchen garden care	8	0
Child care	0	0
Grain care	4	7
Marketing	0	0

C. Livestock Production

Except for grazing, and in some instances, fodder collection, farm women indicated that they played an important role in livestock care. Livestock were an important part of the villager's production system. While the economists found low investment returns for cows and buffalo, villagers stressed the importance of ownership for milk, ghee (semifluid, clarified butter), and dung for fuel. Women played a central role in processing all these products. Women often collected grasses while weeding and harvesting small plots of berseem (a clover). While cows were sent with the herdsman, buffalo were more frequently retained in the kalyan (home corral) and stall fed. A number of women noted that irrigation had benefited the villagers because they could support more livestock with a greater potential for fodder production and availability of water.

Villagers indicated they preferred buffalo because of the high fat content in their milk for making ghee. A few families had purchased Haryana breeds, known for being more productive.

The higher average of large stock at the tail conforms to the picture of greater, more concentrated wealth in land holdings there among the sample farm families (Table 12).

Table 12. Average Ownership of Cows, Buffalo and Bulls

	Head	Tail
Cows	1.8	3.2
Buffalo	1.7	3.1
Bulls	1.8	2.4

D. Domestic Water Supply

Water supply for household use at the project site is closely linked to the irrigation system in a variety of ways. This supply, however, varied from village to village.

1. Dahod Village

At Dahod village, in the head reach, drinking water is supplied by a single cement-lined well located at one end of the village. Electricity pumps water to taps shared by a number of families and in a few cases, to individual households. Women said that during the summer season, water from the taps was diminished though it did not appear to dry up completely.

The water level in the well may depend on the extensive seepage along the main canal adjacent to and up an incline from the well. We recommended renovating the main canal system to curtail the seepage losses and monitoring the water supply in this well (Venkatarman et al., 1984).

Some wage-earning women interviewed claimed that they did not have close access to a tap and therefore took drinking water directly from the irrigation tank (unpurified). We do not know how common this is among poorer families at Dahod.

While farm women were grateful for the drinking water supply, they also noted poor drainage in the village lanes. They claimed that the muddy streets were responsible for illness. Small children often defecated in the streets which, combined with standing water, created a medium for parasitic diseases.

For washing clothes, bathing themselves, and watering livestock, Dahod tank villagers use the Dahod tank as a central water supply and the main canal when irrigation water was running. Perhaps most significant, however, is the vast seepage from the canal drains into a small pond which villagers who live farther from the tank use. Once again, rehabilitating the main canal may dry up or diminish this water source. On the other hand, this standing water and its proximity to the village may contribute to the incidence of malaria.

Seepage water from the main canal also drains into small plots of berseem located adjacent to the village. Women frequently cut the berseem for their livestock. The proximity to the village alleviates transporting fodder from greater distances. The degree to which berseem production will be curtailed after rehabilitating the main canal remains to be seen.

2. Mundla

At Mundla, also located in the head reach, the primary source of water is a naturally running stream located next to the village. A cut portion of the bank provides standing water for livestock. Nearby, temporary wells are dug adjacent to the ziria (a stream) for drinking water which percolates up from the stream bed. Villagers also bathe and wash at the stream.

In addition to the stream, one farm family had installed a pump well which three families used. Due to division in the village, other families were barred access to the water. We are uncertain the degree to which this was caste-based.

Mundla is some distance from the irrigation canals and does not benefit from them for domestic use. However, a pipeline is being constructed to supply drinking water from the Dahod tank to the industrial complex nearby. The pipeline runs adjacent to Mundla village, but no attempt has been made to provide an adequate drinking water supply to this village.

3. Itaya Kalan

The sample village of Itaya Kalan, located near the tail reach, also received domestic water from the irrigation system. For drinking water, farm families had hand pumps in their homes, and the Harijan community had a neighborhood pump. Women interviewed noted that water availability had increased with irrigation which raised the ground water table. Yet, they also noted seasonal problems of low supply.

Water drained from the irrigation system into a village pond used for washing clothes and watering livestock. When this dries up in the summer (April and May), villagers use water from a stream 1 km away. The seepage water from the main canal may drain into this stream, though the extent of the stream's dependence on seepage is unclear.

A recently formed irrigation panchayat (smallest local governing body at the village level) planned to purchase an electric pump to irrigate dry fields using the village pond water. The increased use of electricity would qualify the village for electricity for their homes, currently not supplied by the government. This pond also provides a source of income to one caste group who cultivate singarda (a small fruit which grows in standing water). The scheme may negatively affect this enterprise and water for domestic purposes.

The Irrigation Department must provide a domestic water supply to villages near an irrigation system where feasible. This seemed to have been adequately carried out in most instances. Seasonal shortages remain a problem, however. Drinking water supply, particularly for wealthier families, appeared to improve over the years except at Mundla village. Workplan recommendations for rehabilitating the physical system include attention to domestic water supply (Venkatarman et al., 1984).

E. Post-Harvest Grain Care

Farm women indicated a high degree of involvement in post-harvest care of grain in the home. They maintained storage facilities, dried grain when there were moisture problems, and cleaned the grain for grinding. Grain grinding is rarely done with hand mills since villagers now have access to electric grinding mills in the area. While both rice and wheat are cultivated, wheat is the main staple food, prepared as chappatis (a flat bread). Rice is only consumed on festive occasions.

Traditionally, grain is stored in kothi (large, air-tight, mud storage bins). These are constructed at the time of a marriage in the household and hold grain used for home consumption and seed for sowing during the following season. Women interviewed said that the mud storage keeps the grain dry but does not prevent rodent damage.

The government encourages metal storage containers, but only three households in the sample had them. Women reported that though metal bins prevent rodent destruction, they do not prevent moisture damage. These were used for grain to be sold. Storage for later sale, however, appeared to be quite limited; the economists noted that farm families preferred to sell most grain immediately after the harvest.

Pesticide use in grain storage areas is minimal; frequently, women put neem (margosa leaves) in with the grain. A few women indicated that they did not use chemical pesticides because they were afraid of poison. However, rodent, insect, and moisture problems were noted by all respondents. The loss ranged up to 20 kg per 100 (20%).

F. Kitchen Gardens

Few farm women interviewed claimed to have kitchen gardens. Only three women at the head (12%) and one woman at the tail (7%) indicated they had one. However, casual observations indicated that many families sporadically planted squashes and vegetables around the house or kalyian. It may be that farm women thought the term "kitchen garden" meant a large formal garden. Though certainly important to the family diet, less formal vegetable gardening may have been under reported.

Women noted that they lacked space for kitchen gardens (the house compounds are quite compacted). They did not want to maintain gardens away from the house due to possible theft. The second major constraint was available water.

Commonly, farm families maintained fruit trees such as mango, guava, papaya or lemon. At the tail, this was slightly more common

where 50% had some fruit trees compared to 28% at the head. Females in the household primarily cared for these trees. The women noted that they lacked space and water supply.

Among the wage-earning women interviewed, kitchen gardens were also common. These women noted, however, that during times when food and employment were scarce, they collected mahuva (a wild fruit) from the forest. When cooked, it is similar to popcorn, and they make country liquor with it. Among these women, the availability of land and water were also the major constraints to vegetable growing.

G. Economic Opportunities

Few farm women at the project site had independent sources of income. One farm woman in the sample worked as an agricultural wage laborer in addition to working on her own fields, and one woman earned additional income as a seamstress. Farm women did not work in the industrial complex nearby though husbands and brothers-in-law did. Women who received any income noted that they gave it to the elders of the household to dispense. In one instance, a woman highlighted the issue of education and women's market roles. She noted that her husband would not let her go to the market, claiming she would be cheated by vendors since she could not add.

The greatest potential income to the sample farm women, though minimal, was in livestock production. Primarily this involved the sale of milk; 36% at the head and 21% at the tail sold milk regularly. Only two women (8%) in the head reach, and none in the tail reach sold ghee.

While women's income was extremely minimal, their spending pattern and their priorities for potential spending interested us. The responses were broad, and unfortunately, more detailed information was not found. The questions, as framed in the questionnaire, were likely too broad and translated by the trainees and the respondents. Farm women were asked what they spent cash on when they had it and what they would spend it on if they had more. Miscellaneous household items were singled out as the most important items purchased, but we do not know specifically what these were in each case (Tables 13 and 14). In general, they referred to food, clothing, toys for children and ornaments.

Table 13. Priority for Current Expenditure Pattern

	Head (N=25)	Tail (N=14)
Personal items	1	5
Household items	17	4
Agricultural equipment	1	0
Land and home improvements	0	1
Children	0	1
No response	6	3

Table 14. Farm Women's Desired Expenditure Pattern*

	Head	Tail
Progress of family	10	0
House construction	7	9
Agricultural improvements	3	9
Food, clothing	3	2
Education	3	1
Marriages	0	1
No response	4	1

*Some informants indicated more than one response.

When asked what they would like to spend cash on, the women ranked house construction and agricultural improvements highly. The responses may have been biased since the "progress of family" respon-

ses were generated by one trainee. Yet, it was apparent during the field studies that house construction and repairs were highly prestigious - particularly fired brick and cement construction to replace the mud homes. This prestige item may strongly compete with agricultural investments.

H. Domestic Decision-Making

Given that women's roles are more centered in the household, their involvement in domestic decision-making should be greater than in agricultural decision-making. However, the picture was less than clear. In fact, women appeared to be more involved in agricultural decisions about such tasks as planting and weeding than some of the domestic decisions (Tables 15 and 16). The responses again may have been biased due to the emphasis on irrigated agriculture.

Table 15. Domestic Decision-Making Heau Reach (N = 25)

	Household Female Only	Household Males Only	Both	Total Female Participation
	-----%			
Food purchase	8	36	56	64
Home improvements	16	32	52	68
Livestock purchase/sale	8	52	36	44
Purchase clothing	16	56	28	44
Type of fodder	12	68	20	32
Amount harvest sold	12	48	40	52
Getting loans	4	68	20	24
Repaying loans	4	68	20	24
General household expenditures	24	40	32	56

Table 16. Domestic Decision-Making Tail Reach (N = 14)

	Household Females Only	Household Males Only	Both	Total Female Participation
	-----%			
Food purchase	7	21	43	50
Home improvements	14	21	64	78
Buying/selling livestock	7	57	36	43
Purchase clothing	2	14	64	86
Type of fodder	29	43	21	50
Amount harvest sold	7	50	43	50
Loans	0	93	7	7
Repayment of loan	0	93	7	7
General household expenditures	7	40	36	43

Women were minimally involved in securing or repaying loans. This was expected since the general pattern was one of low female involvement outside the home and village, and securing loans requires contact with bank officials.

Despite the low female involvement in loan decisions, a large percentage of women were involved in control of family finances. Younger respondents noted that their parents-in-law held control, however. Once again, relative position and status within the household is an important factor in decision-making.

I. Extension Services

Available institutional services varied depending on the location in the project area. Dahod, a relatively larger village, had a community center, hospital facilities, and middle school. During the diagnostic analysis, a women's camp was held at Dahod with approximately 50 village

women attending. The subject of the camp was home nutrition and family planning.

Gram sevikas (female village level workers) from the social welfare department are supposed to be posted in rural areas to provide information about home nutrition, health, child development and social welfare. The gram sevikas train four months in these subjects. Despite the fact that the gram sevika training center is close to Dahod, no village women interviewed had any knowledge of or exposure to a gram sevika. Nothing indicated there was one in the project area. Of the farm women interviewed, only 20 at the head and 7 at the tail had had contact with extension services (all at the women's camp).

Though the government's efforts to reach village women were highly commendable, they appear to be more ideal than real. No gram sevikas were available, and those camps that have taken place have not been followed up. A woman at the Farmers' Training Center placed the blame on the villagers, claiming it was difficult to carry out village level activities at Dahod. She explained that the village was highly dominated by one wealthy family.

Extension services to poorer and lower caste women appeared to be more effective. Half of the 12 wage-earning women interviewed had had contact with some extension services. Perhaps their greater involvement in activities outside the household encourages their participation in extension service activities.

While no systematic data were collected on internal organizations within the communities, few formal organizations existed for women. Informal gatherings were primarily based on kin and religion, such as group worship and prayer at individual homes.

Panchayats were required by government law to elect one woman. Often these women did not know they were elected, and in one village, the elected woman did not live there anymore.

At the time of the diagnostic analysis, an irrigation panchayat had recently been established. Women interviewed were aware of the organization and were eager to get involved. No woman member had been elected. Women noted that they would have difficulty being given a voice if they could join, however.

J. Perceived Improvements in Family Welfare

Farm women generally felt that irrigation had a positive effect on their families' nutritional status and health, and it had increased the amount of cash available to the family. Despite these responses on the survey questionnaire, women informally indicated that health problems such as malaria had increased since irrigation had begun.

Women also said informally that the large recent expenditures for seeds, fertilizers and general agricultural inputs diffused the impact of increased cash. The frequent travel of male household members to the city also drained the greater income. Yet 88% at the head and 86% at the tail noted that irrigation had increased cash availability for their families.

All respondents felt that irrigation had improved the family diet because they could now purchase vegetables with cash or barter. Previously, they had few vegetables for home consumption and less purchasing power.

One new crop, though currently not irrigated, that could have a significant impact on nutrition is soybeans. These are currently not consumed at home since village women claim they do not know how to prepare them. Soybean production will probably increase in importance as a cash crop over the next few years, and with extension and training, soybeans will be used for home consumption as well.

The full impact of irrigation development on nutritional status would require a more detailed study. As cash cropping increases, it could have serious consequences for farm family welfare.

K. Wage-Earning Women

Often, agricultural development schemes have adverse effects on poor and landless women. Only a total of 12 wage-earning women from sample farm families were interviewed. Yet, these interviews provided insights into irrigation system use by different segments of the population and highlighted labor issues in the project area.

The women interviewed were primarily landless. Two women claimed to have been granted two acres of land next to the irrigation tank at the time of its construction. However, during khari, this land was submerged under water and uncultivable. During rabi, they were unable to take advantage of the irrigation water because the fields were higher than the water in the ditch.

The women interviewed all had varied sources of income. In agricultural work, they were often engaged by three or four families and performed a variety of services in the household and the fields. Planting, weeding, harvesting, winnowing and transplanting paddy were all regular jobs they did. They also cleaned and plastered homes, cleaned grains, ground spices and collected fodder and fuel for landowners. All were paid in kind for some of their services and claimed they preferred this since it assured the family of food. Established relationships with a few families were important since in some cases, they meant using a landowner's hand pump for water, fodder for livestock and dung for fuel.

The Forestry Department established a government nursery adjacent to Dahod tank and irrigated with the water from the tank. This employed

approximately 20 village women (two in our sample). These women were trained in nursery care and gardening. It appeared to be a successful adjunct use of the irrigation system which provided employment for poorer women.

Nine out of 12 women felt strongly that irrigation improved their wage-earning opportunities. But they felt the soybean harvest, currently unirrigated, had benefited them most because wage rates were higher for harvesting this crop.

Women's labor opportunities remain unclear from our study. Farmers often reported severe seasonal labor shortages due to the industrial complex luring male labor away. However, women noted that chaitu (migrant laborers) came from Gujarat and Maharashtra and depressed wage rates. Landholder's complaints may have referred to non-harvest heavy operations such as plowing in which women do less work.

In general, labor patterns seem to be changing in the Dahod area. Men, both landless and landowning, are more often working outside agriculture. The full implications of this shift are not known; more women may be drawn into laborer and managerial (among landowners) roles. While mechanized agriculture is one way of counteracting seasonal labor shortages for heavier operations, it may have negative effects on female employment opportunities such as sowing, harvesting and threshing.

IV. CONCLUSIONS

The aims of this report were to identify areas of female involvement in irrigated agricultural production and to identify some potential impacts of irrigation development on them. These aims led to a study of women's on-farm activities and managerial roles. However, irrigation development affects many other aspects of community welfare. While our study could not examine all those aspects, it did include attention to farm women's domestic roles and agricultural wage-earning women. It should be stressed, however, that this study forms part of an integrated interdisciplinary approach to understand the Dahod Tank Irrigation Project.

The following highlights general conclusions, based on our work at Dahod. These are only preliminary conclusions:

1. Farm women play an active role in agricultural production and management decisions. However, the degree varies depending on age, relative position in the household, caste and wealth. The type of agricultural activity performed also influenced degree of female involvement. Women actively participated in harvesting, weeding and threshing. They played a minimal role in irrigation activities; they did note, however, that they constructed small bunds to guide the water over the fields.

Farm women, even when not doing actual labor in the fields, frequently noted their role as supervisors. Their roles in decision-making were greatest in planting, transplanting paddy and weeding. Little is known about the expertise women have to help make these decisions.

2. Agricultural extension services to women are non-existent. Most farm women received information from their husbands or family members. The majority of women wanted more agricultural information. Their low involvement in recently introduced irrigation practices may indicate an increasing gap in agricultural knowledge between men and women. Greater agricultural extension to farm women may improve farm management practices and general family welfare.

3. Wage workers, both male and female, are an important part of the irrigated agricultural system at Dahod. While males are increasingly seeking off-farm work in towns nearby, wage-earning women continue to work in agricultural labor. Though wage-earning women felt that irrigation had increased employment opportunities, the increase in mechanized agriculture may displace these women in the future. Efforts must be made to assure these women a source of income under changing agricultural conditions (i.e., government nurseries). Currently, established relations with landowners and payment in kind appear to be important mechanisms for coping with a system in which the wealthier landowning families gain the most.

4. Timing of irrigation water was the most severe constraint noted by the farm women, followed by the quantity of water and poor government management. As was expected, farm women at the tail had more grievances about timing. This was confirmed by the diagnostic analysis teams' observations about more severe constraints in the physical system at the tail.

5. Slightly over half of the farm women said they did household and agricultural work equally while 36% reported doing mostly household work. In the home, women were most responsible for child care, cooking, and caring for grain after the harvest. Degree of work outside the domestic sphere seemed to depend on caste and wealth. Upper caste and wealthier women were more frequently involved in domestic activities.

The percentage of females involved in domestic decision-making was not significantly higher than the percentage involved in some agricultural decisions. Women indicated the least involvement in loan decisions. This conformed to their low general involvement in activities and decisions that require contact with people outside the village.

7. Livestock production, care of grain after the harvest and domestic water supply are all closely linked to the irrigation system. These involve activities in which women play important roles. Efforts to rehabilitate the irrigation system must take account of domestic needs (Venkataraman et al., 1984).

8. Women's income generating opportunities are limited among the farming sample. Agricultural wage-earning women on the other hand earn income from a wide variety of sources. Though the data were extremely sketchy, it showed that farm women expended money most frequently for house construction and agricultural implements.

9. Extension services for women concerning home nutrition and health have reached the Dahod area more than agricultural extension. Nutrition and health extension services appears to have reached wage-earning women more than farm women. Few farm women had received nutritional or health training. The lack of knowledge about soybean preparation, though now a crop increasing in importance, is a good example of the lack of agricultural extension services.

10. The majority of farm women felt that irrigation had improved health, nutrition and the amount of cash available. They felt some benefits had been diffused because of greater expenses for schooling, agricultural inputs and travel to urban centers. While increased wealth with irrigation may draw farm women out of agricultural labor, women maintain a role in management decisions. However, their lack of knowledge and extension may limit their management roles.

V. APPENDICES

A. Methodological Issues

While the contents of this report are a general picture of women's roles at the Dahod project area, it should be stressed that they are only a preliminary picture. The training objectives of the workshop limited on the amount and accuracy of data we collected. Additionally, problems in coordinating the WID component contributed to incomplete data. The Indian WID participants arrived late in the workshop, and none of the trainees spoke English. As a result, their understanding of the project objectives was limited. The following highlights some of the methodological problems encountered; it is hoped that this will provide guidance for future WID components in WMS II or similar projects.

Because the WID participants arrived late, they were unable to help design the questionnaires. This was unfortunate, given their knowledge of the area. Lack of time to review the questionnaires, once formulated, meant that poorly designed questions could not be corrected. Additionally, because of translation problems, some data had to be discarded.

We had anticipated complimenting the formal questionnaires with open-ended discussions with village women. These discussions were few, however, due to trainees' lack of time and expertise in interview techniques and agriculture. Though limited, the more informal discussions and observations were an important component of the research.

It also became apparent that many questionnaire responses were "courtesy responses," oriented towards irrigation topics. Since the respondents, as well as the trainees, were aware of our study's focus, their responses were biased in this direction.

We felt that the listing of activities and decision-making often led respondents to a single uniform answer for a whole list of questions (Appendices B and C). A more adequate method might be to single out a particular subject, i.e., seed selection. Questions about who performed the task, who makes decisions and what knowledge they have about the subject could be discussed all at one time rather than in a different section. Ideally, it would be more informative to discuss these topics in an open-ended way which would allow the participants to better understand village women's management roles.

Discussions with agricultural wage-earning women were very important to our understanding of problems in the project area. Though we had a limited sample, we felt that irrigation development influenced these women. While no research was conducted on management topics, there were hints that some minor management decisions were carried out by wage-earning families who maintained close ties with the landholders.

Overall, the WID component examined a range of topics; some were more directly related to irrigated agricultural production than others. The choice of topics to be covered in future training and research remains problematical. A broad based approach may be desirable. For example, this broad base allowed us to touch on equity issues (e.g., wage-earning women) and domestic production as well as agricultural production.

Another option is to focus in depth on women's roles in irrigated agricultural activities and management. At the Dahod Project, we were constrained by the fact that the WID participants had little training in agricultural topics studied during the workshop. This focus in future workshops would require giving initial training in irrigated agricultural topics and data collection to the WID participants prior to the workshop.

A third option is to focus in depth on topics which can best use the host country women's existing expertise. In India, this expertise was home nutrition and health. Clearly, irrigation has a strong impact on these areas. Irrigation development influences domestic water supply, health problems and changing dietary patterns with irrigated crop production. These are important features of adequate irrigation system design and management.

There are advantages and disadvantages to each approach. The choice most likely will depend on the interdisciplinary focus of particular research and the selection of host country WID participants. The broad focus of the appended questionnaires should not be taken as the only approach to understanding women's roles in irrigation.

B. Outline of Farm Women Questionnaire

I. Background Data

- A. Name of interviewer
- B. Team number
- C. Agricultural plot number
- D. Name of person interviewed
- E. Relation to household head
- F. Religion
- G. Caste
- H. Acres owned
- I. Age of person interviewed
- J. Education level
- K. Family members living in household (list)
 1. Males: ages relation to household head
occupation
 2. Females: ages relation to household head
occupation
- L. How would you describe the work you do?
 1. Mostly housework
 2. Mostly agricultural work
 3. Both equally
 4. Other (explain)

II. Agricultural Production

- A. Describe who generally does the following activities in your family fields
 1. Land preparation
 2. Purchased seed selection
 3. Home seed selection
 4. Fertilizer selection
 5. Manure preparation
 6. Fertilizer application
 7. Planting seed

- a. Dribble behind plow
 - b. Broadcast
 - c. Transplanting paddy
- 8. Weeding
 - 9. Pesticide application
 - 10. Protecting crops
 - 11. Irrigating
 - 12. Cleaning/maintaining channels
 - 13. Harvesting
 - 14. Threshing
 - 15. Marketing

III. Agricultural Decision-Making

- A. Describe who generally makes the following agricultural decisions about your fields
 - 1. Time of planting
 - 2. Time of transplanting
 - 3. Acreage of wheat to be cultivated
 - 4. Acreage of paddy to be cultivated
 - 5. Acreage of soybean to be cultivated
 - 6. Type of seed to use
 - 7. Acreage of fodder crops to be cultivated
 - 8. Type of fertilizer
 - 9. When to irrigate
 - 10. When to clean channels
 - 11. Amount of pesticide to apply
 - 12. Timing of weeding
 - 13. When to market harvest
- B. Describe the most significant agricultural problem your family faces?
- C. How do you get information about agricultural practices?
 - 1. Would you like to receive more information? If yes, what kind?
- D. What is the most significant problem with irrigating your fields?
- E. If there were a local irrigation organization, would you like to join?

IV. Domestic Production

- A. Where do you get water for household use?
 - 1. Are there any problems with this water supply? (Explain)

- B. How do you supply water to your livestock?
- C. Describe who generally does the following activities for your family.
1. Cooking
 2. Fetching water
 3. Making dung cakes
 4. Gathering fodder
 5. Preparing fodder in home
 6. Milking livestock
 7. Making ghee
 8. Grazing livestock
 9. Collecting firewood
 10. Caring for children
 11. Grinding grain
 12. Washing clothes
 13. Caring for grain in home
 14. Purchasing food from market
- D. Do you have a kitchen garden? Y/N
1. If yes, who cares for it?
 2. How do you water it?
- E. Does your family own any fruit trees? Y/N
1. If yes, who cares for them?
- F. Do you grow soybeans? Y/N
1. If yes, do you keep any for home consumption? (Explain)
- G. Do you regularly sell any of the following:
1. Milk
 2. Ghee
 3. Dung cakes
 4. Firewood
 5. Home crafts
 6. Other (explain)
- H. When you have cash, what do you prefer to spend it on? (Explain)
- I. If you could earn more money what would you spend it on?
- J. How do you store grains after the harvest?

1. Insect problems (kilos lost)
2. Rodent problems (kilos lost)
3. Moisture problems (kilos lost)

V. Domestic Decision-Making

- A. Describe who generally makes the following decisions in the household.
 1. Foods to purchase
 2. Home improvements
 3. Purchasing/selling livestock
 4. Clothing
 5. Fodder for livestock
 6. Harvest to be sold
 7. Bank loans
 8. Repayment of loans
 9. Household expenditures
- B. Do you every go to any women's meetings or extension/training?
If yes, explain.
- C. Would you like more information about household activities (health, nutrition, etc.)?
- D. How has irrigation affected (Explain):
 1. Family health?
 2. Diet?
 3. Amount of cash?
- E. What, if any, improvements in the irrigation system should be made?

VI. Daily Schedule

- A. Describe your typical day during the following seasons:
 1. Early rabi
 2. Late rabi
 3. Early kharif
 4. Late kharif

C. Outline of WID Wage Laborer Questionnaire

1. Name of Interviewer
2. Team number
3. Family name of laborer
4. Religion
5. Caste
6. Total family members (females: earning/non-earning; males: earning/non-earning)
7. Do you do work mainly for this one family? Y/N
 - a. If no, for approximately how many families?
8. Which of the following activities do you regularly do?
 - a. Sowing
 - b. Weeding
 - c. Cutting fodder
 - d. Harvesting
 - e. Threshing
 - f. Transplanting
 - g. Other daily work (describe)
9. Are you usually paid in cash or grain? How much per day?
10. Does your family own any land?
 - a. If yes, is it irrigated? (Any problems?)
11. Number of livestock owned (list)
 - a. Buffalo
 - b. Bull
 - c. Cow
 - d. Goat
 - e. Chicken
 - f. Other
12. If livestock, how is fodder provided?
 - a. Do you ever graze your livestock around the irrigation channels?
 - b. Problems with providing fodder?
13. Where do you get water for your livestock?

14. Where do you get water for household use?
 - a. Seasonal problems?
15. What other sources of income do you have besides agriculture?
16. Has irrigation increased or decreased your opportunities for wage work? (Explain)
17. Have you ever received any extension or training from the government? If yes, what?
18. Do you have a kitchen garden?
 - a. If yes, where do you get water for it?
 - b. Any problems?
19. What foods do you usually prepare for your family?
20. Is the wage work you do sufficient to feed your family?
 - a. Are there ever times when no wage work is available?

D. Glossary

Backward Castes - A Government designation for certain lower caste groups, who are also beneficiaries of "protective discrimination" laws

Berseem - A clover

Chaitu - Migrant laborers

Chappatis - A flat bread

Ghee - Semifluid, clarified butter

Gram Sevikas - Female village level workers

Harijans - "Scheduled Castes" or "Untouchables." Under Indian law, Harijans are classified as being particularly disadvantaged and hence eligible for certain benefits.

Kalyan - Home corral

Kharif - Monsoon cropping season from June to October

Kothi - Mud storage container

Mahuva - A wild fruit

Neem - Margosa leaves

Panchayat - Smallest local governing body at the village level

Purdah - Veiling of a bride in presence of elder males

Rabi - Dry cropping season from November to February

Singarda - Small fruit which grows in standing water

Ziria - a stream

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