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Engendering Rural Livelihoods in Karnataka – A Socio-economic Assessment

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Abstract

The study has analysed the existing livelihood systems and has identified the problems being faced by the women at work in the Dharwad district of Karnataka state. The multistage random sampling technique has been used to select 120 respondents comprising equal number of landless, marginal, small, medium and large farmers and primary data were collected through personal interview method. The techniques of descriptive analysis, multiple regression analysis and Garrett ranking test have been employed. The study has revealed that crop production is the main source of livelihood. The employment in terms of number of humandays per household has been found the highest in the case of non-farm wage employment compared to crop production. The income has been observed to be higher under crop production than from non-farm activities. In all the major livelihood options, the participation of males was the highest in terms of absolute number of household members, followed by females and children. Apart from crop production, female participation has been found high in dairying and farm wage employment activities. The women face numerous employment-related problems, the major being back pain due to continuous working, long working hours and harsh climatic conditions at work. Considering the crucial role and importance of female labour in agricultural operations, suitable implements/ technologies/practices need to be designed and introduced which reduce their drudgery and health hazards in agriculture.

Key words: Livelihood security, Women empowerment, Garrett ranking, decision-making, gender, wage labour, Karnataka

JEL Classification: Q12

Introduction

Agriculture and allied activities support livelihoods of nearly 58 per cent of India's rural population. The rural livelihoods include farming, livestock-rearing, fisheries, small enterprises, farm labour, non-farm labour, services, etc. In recent years, land-based livelihoods of small and marginal farmers are increasingly becoming unsustainable. As a result, rural households are forced to look at the alternative means for securing their livelihoods.

The rapid changes at the macro level that India has witnessed since the early-1990s have contributed to the instability of the livelihood systems of the poorer sections of rural households. The slowdown in agricultural growth and productivity, changing cropping patterns, increase in migration, changing consumption patterns, government policies favouring industrial houses, among others have seriously undermined the food and livelihood security of the poorer households.

The majority of rural families are dependent on agriculture for their livelihood. However, due to fast depletion of natural resources, sub-divisions of

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landholdings and fluctuations in climatic conditions, the income from agriculture has been dwindling. Further, the introduction of new technologies and farming practices have given tremendous benefits to resourceful and educated farmers on the one hand, while depriving the small landholders of such benefits on the other. While farming is certainly an important factor in rural economies, rural areas contain a wide range of economic activities. It is only in recent years that a new paradigm of rural development has emerged that takes a broader view on the rural economy, incorporating economic activities other than farming, while highlighting the broad diversity of rural development processes. Generally this is referred to as the diversification of the rural economy.

In our country women play a pivotal role in the family and the community, shouldering several household responsibilities. Women constitute a significant proportion of unpaid family workers. For example, unpaid work on family agricultural enterprises accounts for 34 per cent of women's informal employment in India (compared with 11% of men's informal employment) and for an astonishing 85 per cent in Egypt (compared with 10% for men) (UNIFEM, 2005).

Besides domestic works, the activities that women undertake include farming, livestock-rearing, fisheries, wage labour and industrial and household enterprises — all these are productive but they are neither adequately paid nor their contribution is accounted in the national income. Women contribute more than half of the duties and responsibilities of a household but are hardly empowered to participate in the decision-making process.

It is believed that women's access to economic resources increases the share of household expenditures devoted to collective goods benefiting all household members (in particular the well-being of children) than income earned by men, who tend to use it more often to meet personal needs (Whitehead, 1981). The rural power structure is concentrated in the hands of males. The role of women at village level in various socio-economic and political activities or in decision-making is very insignificant and women face many problems in livelihood activities. In this context, the present study was carried out with the following objectives: (i) to identify the existing rural livelihoods in the Dharwad district of Karnataka and assess them by activity, farm

size and gender; (ii) to analyze the role of gender in farm and non-farm activities in terms of work participation, asset ownership and decision-making at household level; (iii) to identify the determinants of work participation by male and female members of the households; and (iv) to identify the problems faced by women at work in major livelihood activities.

Data and Methodology

For the study conducted in Karnataka, two taluks, namely, Dharwad and Kalghatgi, were randomly selected. From each taluk, six villages, and from each village, 10 respondents were selected cutting across five land-size groups, namely, landless, marginal (up to 1 ha), small (> 1-2 ha), medium (> 2 - 4 ha) and large (> 4 ha), making a total sample of 120 farmers.

The data were collected from the sample respondents by personal interview method using a well-structured and pre-tested schedule. The data were collected on the socio-economic characters of respondents, such as family size and composition, landholdings, asset position, occupational pattern and educational level, etc. The data on existing livelihood systems, income generation from farm and off-farm activities, activities performed by men and women, asset ownership, and decision-making aspects were collected from the selected farmers. The opinions of respondents were obtained with respect to constraints in livelihood activities.

Analytical Tools

For data analysis, descriptive analytical tools, multiple regression and Garrett ranking technique were employed.

Multiple Regression Analysis

The multiple regression models were employed to study the factors influencing participation of males and females in farm and non-farm activities based on their decisions. The estimated regression models were specified as follows:

$$\begin{aligned}
 Y_{iM} &= b_{i0} X_{i0} + b_{i1} X_{i1} + b_{i2} X_{i2} + b_{i3} X_{i3} + \dots + b_{ip} X_{ip} + u_i \\
 &= \sum b_{ip} X_{ip} \quad (i = 1, 2, \dots, n; p = 1, 2, \dots, k) \\
 Y_{iF} &= b_{i0} X_{i0} + b_{i1} X_{i1} + b_{i2} X_{i2} + b_{i3} X_{i3} + \dots + b_{ip} X_{ip} + u_i \\
 &= \sum b_{ip} X_{ip} \quad (i = 1, 2, \dots, n; p = 1, 2, \dots, k)
 \end{aligned}$$

where,

Y_M = Participation of male respondents in farm and non-farm activities,

Y_F = Participation of female respondents in farm and non-farm activities,

X_1 = Age of the respondent (in years),

X_2 = Education level (0=Illiterate, 1=Primary, 2=Secondary, 3=SSLC, 4=PUC, 5=Diploma, 6=Degree, 7=PG),

X_3 = Family size (Number of total members in the family),

X_4 = Annual income of the family (₹ per year),

X_5 = Family type (1=Nuclear family, 2=Joint family),

X_6 = Size of landholding (L=Landless, M=Marginal, S=Small, MD=Medium, LG=Large),

X_7 = Caste category (1 = Schedule caste, 2 = Schedule tribe, 3 = OBC, 4 = General),

X_8 = Present asset value (in ₹), and

u = Random-error.

Garrett Ranking Technique

The problems faced by women at work were prioritized by using Garrett ranking technique. For this, 14 problems were identified and all the 120 respondents were asked to rank the most important problems faced by them in the order of their seriousness. Then, the rank assigned to each problem by each individual was converted into per cent position using the following formula:

$$\text{Per cent position} = 100 (R_{ij} - 0.5) / N_j$$

where, R_{ij} stands for the rank given for the i^{th} factor ($i=1, 2, \dots, 14$) by the j^{th} individual ($j=1, 2, \dots, 120$), and N_j stands for the number of factors ranked by the j^{th} individual.

In the next stage, scores were determined for each per cent position by referring to Garrett's table. Then, the scores for each problem were summed over the number of respondents who ranked that factor and mean scores were calculated by dividing the total score with the number of respondents who gave ranks. Final overall ranking of the fourteen factors was done by assigning rank 1, 2, 3..., etc. in the descending order of the mean scores.

Results and Discussion

Socio-economic Profile of Sample Households

The socio-economic profile of the sample respondents in terms of age group, educational status, caste group, family type, type of house owned and family size has been depicted in Table 1. It was found that the majority of respondents belonged to middle-age (44%) and old-age (44%) groups and the young ones accounted for only one-eighth of the respondents in the Dharwad district. It was observed that 45.0 per cent of the respondents were illiterates, while the remaining respondents studied up to different standards. The majority of the sample respondents belonged to the 'Other Backward Caste' (OBC) (56.7%), followed by 'General Category' (33.3%) and 'Scheduled Caste' (10.0%) and none of the respondents belonged to the 'Scheduled Tribe' category. It was found that the backward caste households mostly performed farm and non-farm wage employment for their livelihood, whereas upper caste households performed crop production or related activities for their livelihood.

In terms of family type it was found that nuclear family system formed a sizeable proportion (60.0%) of the population and it was on the rise over years. The average family size in study district was 6.43 with male members marginally outnumbering the female members. Almost all the households in the study area possessed tiled houses. None of the respondents had shed type of house. This indicated that the sample households belonged to above average/medium level in terms of socio-economic status.

Livelihood Options, Employment and Income

Livelihood Options

The major sources of livelihood and their adoption levels by the sample households have been listed along with employment generation and income provision in Table 2. A large proportion of respondents (65.0%) had crop production as their sole livelihood source, followed by farm wage employment + non-farm wage employment (10.0%), crop production + non-farm wage employment (9.2%), non-farm wage employment (5.8%), crop production + farm wage employment + non-farm wage employment and farm wage employment and farm wage employment + rural

Table 1. Demographic profile of sample households in Dharwad district of Karnataka

Particulars	Dharwad taluk (No.)	Kalghatgi taluk (No.)	Dharwad district (No.)
Age group			
Young (18-35 years)	8 (13.3)	6 (10.0)	14 (11.7)
Middle (36-50 years)	22 (36.7)	31 (51.7)	53 (44.2)
Old (> 50 years)	30 (50.0)	23 (38.3)	53 (44.2)
Educational status			
Illiterate	27 (45.0)	26 (43.3)	53 (44.2)
Primary (1-7)	13 (21.7)	21 (35.0)	34 (28.3)
Secondary (8-9)	5 (8.3)	2 (3.3)	7 (5.8)
SSLC	10 (16.7)	6 (10.0)	16 (13.3)
PUC	3 (5.0)	4 (6.7)	7 (5.8)
Degree and above	2 (3.3)	1 (1.7)	3 (2.5)
Caste			
SC	8 (13.3)	4 (6.7)	12 (10.0)
OBC	33 (55.0)	35 (58.3)	68 (56.7)
General	19 (31.7)	21 (35.0)	40 (33.3)
Family type			
Nuclear family	36 (60.0)	28 (46.7)	64 (53.3)
Joint family	24 (40.0)	32 (53.3)	56 (46.7)
Family size			
Male	2.08 (32.8)	2.08 (32.0)	2.08 (32.4)
Female	1.85 (29.1)	1.97 (30.2)	1.91 (29.7)
Children	2.42 (38.1)	2.47 (37.9)	2.44 (38.0)
Total	6.35 (100.0)	6.52 (100.0)	6.43 (100.0)

Note: Figures within the parentheses are percentage values.

Table 2. Livelihood sources – Adoption, employment and income in Dharwad district

Sl. No.	Livelihood sources	Practising households		Employment		Annual income	
		No. of households	% to total	No. of humandays	% to total	Amount (₹/year)	% to total
1	Crop production	78	65.00	169.2	7.47	130949	12.66
2	Crop production + orchard plantation	1	0.83	212.0	9.37	465000	44.96
3	Crop production + dairy	1	0.83	204.0	9.01	47500	4.59
4	Crop production + non-farm wage employment	11	9.18	156.1	6.89	31000	3.00
5	Crop production + petty business	1	0.83	214.0	9.45	23000	2.22
6	Crop production + farm wage employment + non-farm wage employment	3	2.50	115.7	5.11	17111	1.65
7	Farm wage employment	2	1.67	237.0	10.47	22000	2.13
8	Non-farm wage employment	7	5.83	334.5	14.79	31250	3.02
9	Rural artisanship	1	0.83	130.0	5.74	36000	3.48
10	Petty business	1	0.83	146.0	6.45	192000	18.56
11	Farm wage employment + rural artisanship	2	1.67	177.5	7.84	18500	1.79
12	Farm wage employment + non-farm wage employment	12	10.00	167.8	7.41	20042	1.94

artisans. A few households sourced their livelihood from the following sources: crop production + orchard plantation, crop production + dairy, crop production + petty business, rural artisans, and petty business. Since, not much industrialisation or growth of secondary and tertiary sectors has taken place in the district, farming and relative activities still form the main source of livelihood in the region. The other probable reason for their over-dependence on agriculture could be the high level of illiteracy of the rural people. The landless respondents were dependent on wage employment for their livelihood.

Employment in Various Livelihood Options

The employment provision, measured in terms of number of humandays per household per year, was the highest in non-farm wage employment (334 humandays), followed by farm wage employment (237 humandays), crop production + petty business (214 humandays), crop production + orchard plantation (212 humandays), crop production + dairy (204 humandays), farm wage employment + rural artisanship (177 humandays), crop production (169 humandays), farm wage employment + non-farm wage employment (167 humandays), crop production + non-farm wage employment (156 humandays), petty business, rural artisanship and crop production + farm wage employment + non-farm wage employment.

The plausible reason for non-farm wage employment to be highest was its availability throughout the year whereas crop production is seasonal in nature and offers employment only at critical states of crop growth. These results are in line with Tuteja (2007).

Income from Various Livelihood Options

The average annual income per household was the highest in the case of crop production + orchard plantation (₹ 4,65,000), followed by petty business, crop production, crop production + dairy, rural artisans, non-farm wage employment, crop production + non-farm wage employment, crop production + petty business, farm wage employment, farm wage employment + non-farm wage employment, farm wage employment + rural artisans and crop production + farm wage employment + non-farm wage employment. It was found that there was a difference in the income of the respondents' households in different activities.

Though the average annual income per household in the case of crop production + orchard plantation was very high (₹ 4,65,000), it was only one large farm household that practised this livelihood option. Hence, it could be an exception. It needs to be studied in detail in other areas.

It was observed that the average annual income in the most practised livelihood of crop production (by 65% households) was ₹ 1,31,000, which was reasonably good to enable the household for a comfortable livelihood. The annual income from next two livelihoods, viz., farm wage employment + non-farm wage employment (₹ 20,082), and crop production + non-farm wage employment (₹ 31,000), practised by 10.0 per cent and 9.2 per cent of the sample households, respectively, was meagre and provided only 'hand-to-mouth' livelihood.

Farm-size-wise Livelihood Adoption, Employment and Income

Farm-size-wise Livelihood Adoption

In large farm-size category, a majority (96.5%) of farmers had adopted crop production as livelihood activity. It was followed by crop production + orchard plantation and petty business (Table 3). The medium farmers earned their livelihoods mainly from crop production (80%), followed by crop production + non-farm wage employment and crop production + dairy activity. Small farmers also were actively involved in crop production (86%). The participation of marginal farmers in crop production was much less (46%) in relation to other farm-size categories and their other livelihood options were: crop production + non-farm wage employment and crop production + farm wage employment + non-farm wage employment. As expected, the landless respondents derived their livelihoods mainly from farm wage employment + non-farm wage employment (60%), followed by non-farm wage employment, farm wage employment, farm wage employment + rural artisanship and rural artisans.

It was observed that crop production had been adopted as livelihood option by all farm-sizes, except landless households. Also, as the farm-size increased, the participation of household members in crop production and related activities increased. Due to their weak economic base, the landless households had adopted wage employment – onfarm and non-farm –

Table 3. Farm-size-wise livelihood adoption, employment and income in Dharwad district

Livelihood	Participation (No. of household members engaged)					Employment (Average No. of human-days)					Average income (/year)				
	L	M	S	Md	Lg	L	M	S	Md	Lg	L	M	S	Md	Lg
Crop production	-	37 (45.68)	70 (86.42)	72 (80.00)	83 (96.51)	-	76 (22.23)	121 (20.08)	187 (33.53)	263 (42.37)	-	21133 (36.12)	34619 (35.28)	81500 (43.62)	341818 (34.22)
Crop production + orchard plantation	-	-	-	-	2 (2.23)	-	-	-	-	212 (34.13)	-	-	-	-	465000 (46.56)
Crop production + dairy	-	-	-	6 (6.67)	-	-	-	-	204 (36.68)	-	-	-	-	47500 (25.42)	-
Crop production + non-farm wage employment	-	31 (38.27)	4 (4.94)	12 (13.33)	-	-	153 (44.67)	146 (24.33)	166 (29.71)	-	-	20714 (35.40)	22500 (22.93)	577833 (30.96)	-
Crop production + petty business	-	-	3 (3.70)	-	-	-	-	214 (35.65)	-	-	-	-	23000 (23.44)	-	-
Crop production + farm wage employment + non-farm wage employment	-	13 (16.05)	4 (4.94)	-	-	-	114 (33.10)	120 (19.94)	-	-	-	16667 (28.48)	18000 (18.35)	-	-
Farm wage employment	4 (6.67)	-	-	-	-	237 (22.64)	-	-	-	-	22000 (17.22)	-	-	-	-
Non-farm wage employment	13 (21.60)	-	-	-	-	335 (31.96)	-	-	-	-	31250 (24.45)	-	-	-	-
Rural artisanship	3 (5.00)	-	-	-	-	130 (12.42)	-	-	-	-	36000 (28.17)	-	-	-	-
Petty business	-	-	-	-	1 (1.16)	-	-	-	-	146 (23.50)	-	-	-	-	192000 (19.22)
Farm wage employment + rural artisanship	4 (6.67)	-	-	-	-	178 (16.96)	-	-	-	-	18500 (14.48)	-	-	-	-
Farm wage employment + non-farm wage employment	36 (60.00)	-	-	-	-	168 (16.02)	-	-	-	-	20042 (15.68)	-	-	-	-

Note: Figures within the parentheses indicate percentages.

L = Landless, M = Marginal farmers, S = Small farmers, Md = Medium farmers, Lg = Large farmers

as source of their livelihood. Marginal farmers, who owned a small piece of land, followed both crop production as well as non-farm wage employment activities. Small and medium farm-size households had adopted crop production as the major livelihood option along with other sources for their livelihood.

Farm-size-wise Employment

The large farmers derived maximum employment from crop production (263 humandays, 42% of the total humandays earned), followed by crop production + orchard plantation (212 humandays) and petty business. The medium farmers derived employment in crop production + dairy (204 humandays, 37% of total), followed by crop production (187 humandays), and crop production + non-farm wage employment (166 humandays). The employment being directly related to farm-size, the participation of small and marginal farmers reduced in crop production and increased in wage employment. The small and marginal farmers had diversified their livelihood sources. The small farmers, derived highest employment from crop production + petty business (35.7%), followed by crop production + non-farm wage employment (24.0%), crop production (20.0%) and crop production + farm wage employment + non-farm wage employment (20.0%). In the case of marginal farmers, "crop production + non-farm wage employment" was the major livelihood option (practised by 44.7% households), followed by crop production + farm wage employment + non-farm wage employment (33.1%) and crop production (22.2%). For landless households, wage employment was the major source of livelihood and some worked as rural artisans also. The landless and marginal households preferred to opt more remunerative and regular jobs outside agriculture.

Farm-size-wise Income

The large farmers in the study area got their highest share of income from crop production + orchard plantation (46.6%), followed by crop production (34.2%) and petty business (19.2%). The medium farmers earned highest annual income from crop production (43.6%), followed by crop production + non-farm wage employment (31.0%) and crop production + dairy (25.4%). Similarly, in the case of small farmers, the highest income was sourced from crop production (35.3%), followed by crop production

and petty business (23.4%), crop production + non-farm wage employment (23.0%) and crop production + farm wage employment + non-farm wage employment (18.3%). Marginal farmers too got their annual income almost equally from crop production (36.1%) and crop production + non-farm wage employment (35.4%) and then crop production + farm wage employment + non-farm wage employment (28.5%). The landless farmers earned their income mainly from rural artisanship (28.2%), followed by non-farm wage employment (24.5%), farm wage employment (17.2%), farm wage employment + non-farm wage employment (15.7%) and farm wage employment + rural artisanship (14.4%).

It was observed that of the total annual income, 34 to 44 per cent was earned from 'crop production' alone across all farm-size categories. But its contribution decreased with decrease in farm-size and the share of wage employment increased in annual income.

Gender-wise Work Participation and Employment

Gender-wise Work Participation

The 'crop production' being the main livelihood source for the majority of respondent households, the participation of men, women and children was higher in 'crop production' than in any other livelihood option (Table 4). It was also observed that in all the four major livelihood options, the participation of males was higher (in terms of absolute number of household members) than of females and children. In percentage terms, the females participated more than males in livestock-rearing and non-farm wage employment. The children mostly participated in crop production and non-farm wage employment.

In crop production, the participation of males was mostly in strenuous operations, such as ploughing, harrowing, spraying chemicals, etc. while females were involved in weeding, winnowing, grading, harvesting, etc.

Gender-wise Employment

A perusal of Table 4 revealed that in all the major livelihood options, the participation of the males was higher (in terms of absolute number of household members) than of females or children. In general, the males derived highest employment from livelihoods

Table 4. Gender-wise work participation and employment of household members in Dharwad district

Livelihood	Household members engaged (No.)			Employment (Average humandays/year)		
	Male	Female	Children#	Male	Female	Children#
Crop production	153 (68.00)	96 (64.00)	13 (56.52)	88.1 (7.80)	71.0 (7.42)	10.2 (5.67)
Crop production + orchard plantation	1(0.44)	*	1 (4.35)	134.0 (11.88)	*	78.0 (43.54)
Crop production + dairy	2 (0.89)	4 (2.67)	*	39.0 (3.46)	165.0 (17.26)	*
Crop production + non-farm wage employment	23 (10.22)	17 (11.33)	7 (30.43)	57.6 (5.10)	49.7 (5.20)	48.7 (27.20)
Crop production + petty business	2 (0.89)	1 (0.67)	*	21.0 (1.86)	193.0 (20.18)	*
Crop production + farm wage employment + non-farm wage employment	9 (4.00)	8 (5.33)	*	60.9 (5.40)	54.8 (5.73)	*
Farm wage employment	2 (0.44)	3 (2.00)	*	74.0 (6.56)	163.0 (17.05)	*
Non-farm wage employment	7 (3.12)	4 (2.67)	2 (8.70)	171.5 (15.20)	120.8 (12.63)	42.3 (23.59)
Rural artisanship	3 (1.33)	*	*	130.0 (11.52)	*	*
Petty business	1 (0.44)	*	*	146.0 (12.94)	*	*
Farm wage employment + rural artisanship	2 (0.89)	2 (1.33)	*	104.0 (9.22)	73.5 (7.69)	*
Farm wage employment + non-farm wage employment	21 (9.34)	15 (10.00)	*	102.3 (9.06)	65.4 (6.84)	*

Note: Figures within the parentheses indicate percentages.

included male children only; the female children were not directly involved, but provided support services only.

*indicates '0' values.

which were of regular nature like non-farm wage employment (172 humandays, 15.2%), petty business (146 humandays) and rural artisanship (130 humandays). On the other hand, females got more employment in crop production + petty business (20.2%), followed by crop production + dairying (17.3%), farm wage employment (17.0%) and non-farm wage employment (12.6%).

Determinants of Participation in Farm and Non-farm Activities

To identify the determinants of work participation of the members of respondent households in farm and non-farm activities, multiple linear regression models were employed separately for males and females (Table 5).

Male Members of Respondent Households

A perusal of Table 5 revealed that nearly 50 per cent of the variations in work participation by males was explained by all the eight independent variables included in the model. It is also observed that five variables, namely, age, education, size of landholding, annual income of family and present asset value significantly influenced the extent of participation of male members of the respondent households in farm and non-farm activities. Age, education, annual income of family and present asset value had a positive and significant influence on work participation, while size of landholding had a negative significant impact. In other words, as age and educational level of the males

Table 5. Determinants of work participation of male and female members of respondent-households in farm and non-farm activities

Sl. No.	Variable	Male members		Female members	
		Multiple regression coefficients	t-value	Multiple regression coefficient	t-value
1	Intercept	-0.003	-2.50*	0.009	1.33
2	X ₁ = Age	0.000	2.33*	-0.001	-0.79
3	X ₂ = Education	0.001	3.03**	-0.002	-2.77**
4	X ₃ = Caste category	-0.001	-0.77	0.004	2.84**
5	X ₄ = Family type	0.001	0.35	0.002	0.55
6	X ₅ = Family size	0.000	0.50	0.000	-0.34
7	X ₆ = Size of landholding	-0.001	-2.00*	0.008	9.37**
8	X ₇ = Annual income of family	0.001	3.78**	-0.001	-1.91
9	X ₈ = Present asset value	0.001	3.60**	-0.242	-9.85**
	R ²	0.4973		0.7143	
	F	13.73**		34.6913**	

Note: ** and * denote significance at 1 per cent and 5 per cent probability levels, respectively.

increased, the burden of livelihood earning also increased, and as a result, their work participation increased. The annual income of family and present asset value have also depicted a positive association with work participation; that is, higher the annual income and present asset value, the higher was the work participation in farm and non-farm activities. This implied that there was no change in their earning behaviour due to their higher level of income and asset value, indicating that they were not complacent with their present socio-economic status but strived hard to earn more for a still better standard of living.

Contrastingly, as the size of landholding increased, work participation in farm and non-farm activities decreased, may be because large farmers have to spend more time on management and control of resources than on working in own or other's farms. The variables, namely, caste category, family type and family size did not have any influence on the work participation of male members of the respondent households. Similar results have been reported by Rizwana *et al.* (2006) also.

Female Members of Respondent Households

All the eight variables included in the regression model explained nearly 71 per cent of the variations in the participation of female members of the respondent households in various livelihood activities (Table 5).

These findings are in agreement with those reported by Suradkar and Nirban (2001).

Contrary to participation of males, the determinants of females' participation were distinctly different. Of the eight variables included in the model, only four were significant, namely, education, caste category, size of landholding and present asset value. Amongst these significant variables, education and present asset value had a negative influence and caste category and size of landholding had a positive influence on the work participation of females.

Problems Faced by Women at Work

The opinions of the female members of the sample households, prioritized based on the Garrett score, have been listed in Table 6 and discussed below.

The physical drudgery in the form of 'back pain due to continuous working', 'weakness', 'long working hours', 'harsh climatic conditions' was reported to be the major problem in undertaking livelihood activities. 'Lower wage/wage not commensurate with work' was another problem reported by the females. 'No baby care facility in/nearby the field' to look after the children was another problem expressed by the working women.

The insufficient supply of drinking water, routine and boring nature of work, lack of washroom/ toilet

Table 6. Problems faced by women in major livelihood activities

Sl.No.	Particulars	Mean Garrett Score	Rank
1	Back pain due to continuous working	66.7	1
2	Long working hours	65.9	2
3	Harsh climatic condition	64.9	3
4	Weakness due to working	63.6	4
5	Lower wage / Wage not commensurate with work	57.3	5
6	No baby care facility	53.4	6
7	Insufficient supply of drinking water	50.6	7
8	Routine and boring nature of work	49.4	8
9	Lack of washroom/ toilet facility	46.8	9
10	No encouragement for good work	44.5	10
11	Lack of improved agricultural technology leading to more exertion	43.5	11
12	Dominance of males	42.3	12
13	Inconsistent supervisor	42.0	13
14	Sexual harassment by co-workers or employer	6.0	14

facility, no encouragement for good work, lack of improved agricultural technology leading to more exertion, dominance of male, inconsistent supervisor, sexual harassment by male co-workers/supervisor, were the other problems faced by women at work. Hence, there is a need to develop equipments that reduce women drudgery and save time while working in the fields. Similar findings have been reported by Dhillon *et al.* (2007) and Sandhu *et al.* (2007).

Conclusions

The study has found that a large proportion of sample respondents practise 'crop production' as their livelihood, followed by 'farm wage employment + non-farm wage employment'. Since most of the landless and marginal farmers are economically weak, farm and non-farm wage employment constitute the main source of their livelihood. The wage labour increases with the increase in farm-size. The males of a household have been found more engaged in crop production than female because strenuous farm operations such as ploughing, harrowing and harvesting are undertaken by them. The females are involved more in weeding, winnowing, grading, etc. Apart from crop production, female participation has been found high in dairying and farm wage employment activities.

The study has found that five variables, namely, age, education, size of landholding, annual income of

family and present asset value significantly influenced the extent of participation of male members of the respondent households in farm and non-farm activities. The annual income of family and present asset value have depicted a positive association with work participation. In contrast, as the size of landholding increased, work participation in farm and non-farm activities decreased. In the case of women, as the size of landholding increased, their work participation increased. In contrast, as the educational level of females increased, their work participation in farm and non-farm activities decreased. The asset value also influenced the work participation of females negatively.

The physical drudgery in the form of 'back pain due to continuous working', 'weakness', 'long working hours', 'harsh climatic conditions' was reported to be the major problem in undertaking livelihood activities. 'Lower wage/wage not commensurate with work' was another problem reported by the females.

Considering the crucial role and importance of female labour in agricultural operations, suitable implements/technologies/practices need to be designed and introduced which reduce their drudgery and health hazards in agriculture. The formation of cooperatives such as NGOs, SHGs, ladies clubs, etc. may be encouraged to enhance organisation of women and their bargaining power in the society.

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