

## **Relationship between Different Characteristics of Rural Women with their Participation in Mixed Farming Activities**

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### **ABSTRACT**

Since time immemorial, Iranian women have played a pivotal role in agriculture, the largest industry contributing to rural livelihoods. Hence, the present study was conducted in Tafresh area of Iran to examine factors influencing participation of rural women in mixed farming activities in 1999. This was a descriptive- correlation research project in which a total number of 300 rural women were selected through stratified random sampling technique and interviewed. A questionnaire was used as measurement tool for which the reliability coefficient was 0.90. According to the findings, sixteen characteristics of rural women had significant relationships with their overall participation in mixed farming. Nine variables, namely, women's age, husband's age, crop farming experience, animal husbandry experience, perceived role overload, total energy expenditure, energy expenditure in animal husbandry, time spent in animal husbandry and time spent in mixed farming were positively and significantly correlated with overall participation of rural women in mixed farming. Whereas, energy expenditure in mixed farming activities, women's education, husband's education, animal ownership, extension contact, energy and time spent in household activities were negatively and significantly correlated with the overall participation of rural women in mixed farming. Stepwise regression analysis revealed that 48 per cent of variation in the overall participation of rural women in mixed farming was explained by three variables: marital status, woman's education and time spent in animal husbandry.

**Keywords:** Energy expenditure, Mixed farming, Participation, Rural women, Time spent.

### **INTRODUCTION**

Pressure on the land, which comes from the advancement of agriculture under the pressure of human demographics, exerts itself first on the best land and tends to marginalize extensive production. Accordingly, the integration of crop farming and livestock husbandry, i.e. mixed farming, becomes imperative (Pagot, 1992). The integration of livestock husbandry and crop cultivation renders the two types of husbandry more viable and profitable. Mixed farming improves the employment opportunities and standing of small farmers in rural areas. In the present study, mixed farming is defined

as a system of farming in which both crop and livestock farming are combined for the purpose of meeting family requirements and profiting from both enterprises.

Since time immemorial, Iranian women have played a pivotal role in agriculture, the largest industry contributing to rural livelihoods (Anonymous, 1998). Mixed farming is also an important strategy to increase the income of resource-poor farmers. Rural women in a number of traditional societies raise small animals, such as goats and poultry to provide them with a traditionally acceptable source of income over which they may have some control. Although the main emphasis in governmental policies tends to

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be on large-scale livestock development, small-scale livestock production is an important component of many poverty alleviation programs (Eade and Williams, 1995). In the past few decades, many NGOs and GOs have placed more emphasis and attention to the gender issues related to agriculture.

For many years, women in Iran have participated in several farm activities and tended domestic animals. They have also performed almost all household activities. Hence, the main priority in the planning of development programs is to collect information on what women do and how their roles, tasks and contributions can be changed to benefit not only themselves but also the community as a whole.

## MATERIAL AND METHODS

The study was conducted in the Tafresh area of Iran where mixed farming is practiced as the main occupation in rural areas by men and women. The data were collected during the months May to June 1999. In order to enhance the representativeness of the sample, both the Markazi and Farahan districts of Tafresh were covered for gathering the data through a descriptive-correlation research design. By employing stratified random sampling technique, out of about 4000 rural households engaged in mixed farming activities (ISC, 1997), 300 rural women were selected from 40 villages. A questionnaire was developed to gather the data. In order to prepare a scale to measure participation of rural women in different mixed farming activities, 114 items were selected through an extensive review of literature and interviews with subject matter specialists as well as extensionists. This preliminary set of items was then subjected to rating by a group of 100 judges who had sound knowledge on the issue of the study. After collection of the judge's opinion, the "relevancy percentage" and "weightage score" were computed as two criteria of content validity. Considering the magnitude of the relevancy scores obtained and other cri-

teria such as coverage of diverse dimensions, in total 66 items were retained in the final format of the scale. To determine the reliability of the scale, this scale was administered to a group of 40 respondents, randomly selected in a non-sample area. After obtaining their responses, a split-half method was applied and the "r" value was found to be equal to 0.90 which was significant at the one percent level. It indicated a high reliability of the scale. In the present study, some nutritional variables such as energy intake and energy expenditure were measured through retrospective dietary assessment techniques. Through this method, dietary intake data for the previous 24 hours were calculated from the respondents with the help of a set of four standardized teaspoons, four plastic cups and four metal containers. All the 12 vessels were in varying sizes to measure the volume of different ingredients and raw equivalents of different foods for easy estimation. However, after obtaining the data about the name of the preparation, ingredients used, raw amount (g/ml) and cooked quantity (g/ml), total energy intake was calculated on the basis of the Food Composition Table of Iranian Foods (Sarkissian, *et al.*, 1980). Energy expenditure was also estimated using the standard tables for energy cost in different activities (Min/kcal) provided by FAO/WHO/UN (1985). The time spent pattern was also measured through a schedule prepared for this purpose.

In order to measure the extent of participation of rural women in mixed farming, an index was developed in which items related to the two main components of mixed farming (crop farming and animal husbandry) were included. Meanwhile, the items were placed in connection with the two levels of participation (i.e. participation in work and decision-making). In order to find out the net extent of participation of each respondent for each activity, an Index of Net Extent of Participation (INEP) was developed as follows:

$$\text{INEP} = \frac{X_1 + X_2 + X_3 + X_4}{\text{Total number of respondents in item}}$$

$X_1$  = Frequency of rural Women obtaining Score  $4 \times 100$

$X_2$  = Frequency of rural Women obtaining Score  $3 \times 75$

$X_3$  = Frequency of rural Women obtaining Score  $2 \times 50$

$X_4$  = Frequency of rural Women obtaining Score  $1 \times 25$

## RESULTS AND DISCUSSION

According to the data, women's age and their husband's age showed positive and significant relationship with work and overall participation of rural women in mixed farming (Table 1). In fact, during the ageing process how a rural woman moulds her actions by engaging herself with the physical and social environments around her are important for any consequential changes observed later in her work pattern. Therefore, as age advances, she gains more experiences, knowledge and skills, which help her to attain productive achievements on the

farms. These facts may justify some of the causes behind this finding, because higher participation was found in marginal and small farm families in which a majority of women belonged to the elderly group. Indeed, the study showed that 76 and 73.3 percent of women of marginal and small farm families belonged to the age group of more than 42 years old respectively (Shabanali Fami, 2000). In addition, family members are committed to one another's well-being at both the personal and structural levels. Hence, family commitment might have encouraged old women to work harder in overcoming the family's difficulties. Savane (1981) revealed that, in several parts of the

**Table1.** Relationship between independent variables with participation of rural women in mixed farming (Correlation coefficient).

	Characteristics (Independent variables)	Extent of participation (Dependent variables)		
		Mixed farming		
		Work	Decision-making	Overall
1	Women's age	0.12*	0.12*	0.14*
2	Husband's age	0.13*	0.07	0.13*
3	Women's education	-0.25**	-0.12*	-0.24**
4	Husband's education	-0.25**	-0.08	-0.23**
5	Crop farming experience	0.21**	0.16**	0.21**
6	Animal husbandry experience	0.23**	0.16**	0.24**
7	Animal possession	-0.16**	-0.11	-0.17**
8	Perceived role overload	0.25**	0.18**	0.24**
9	Inter-spouse communication	0.07	0.16*	0.09
10	Extension Contact	-0.15**	-0.15*	-0.16**
11	Total energy expenditure	0.29*	0.15	0.47**
12	E.E. <sup>a</sup> in animal husbandry	0.46*	0.36**	0.48**
13	E.E. in mixed farming	0.39**	0.24*	-0.28*
14	E.E. in household activities	-0.25*	-0.24	-0.28*
15	T.S. <sup>b</sup> in animal husbandry	0.43**	0.32**	0.45**
16	T.S. in mixed farming	0.37**	0.21	0.38**
17	T.S. in household activities	-0.37**	-0.21	-0.38**

\* Significant at 5% level

\*\* Significant at 1% level

<sup>a</sup> Energy expenditure

<sup>b</sup> Time spent



world, it is the adult women who do most of the work required to feed their family. Sądangi *et al.* (1996) also found positive and significant relationship between age and time devoted to some agricultural activities like the collection of Mahana flowers and seeds, looking after the farm etc.

In the case of husband's age the higher level of participation of rural women might be due to the higher probability of her husband being ill. Observations made by the researcher in many farm families showed that one of the basic solutions to cope with this problem in marginal and small farming families is a higher level of women's involvement in mixed farming activities, while in big farming families there are other sources of income to cope with the problem. Another reason is that, in marginal and small farming families, due to fewer young children and smaller size of the families, women find more time to help their husbands in farming activities. In this respect, Nouroozi and Iravani (1994), Singh *et al.* (1994) and Kishor *et al.* (1999) reported closely related findings.

Crop farming and animal husbandry experiences both had positive and significant relationships with work and overall participation of rural women in mixed farming (Table 1). This reveals that work participation in mixed farming is highly related to the experience of rural women in both the main components of this system. It means that, with an increase in rural women's experience, more tasks are expected to be performed by them. Thus, it might be concluded that lower involvement of young women in mixed farming activities could be due to their having less experience. Accordingly, different types of education and training programs can facilitate the process of rural women's involvement in mixed farming and bring young women to the scene to take up more responsibilities in agricultural development. Extension programs can play a vital role in bridging the knowledge and skill gaps of young and little-experienced rural women to the desired extent. These findings were in conformity with the results obtained

by Shivamurthy (1994), Mirmoezi (1995) and Umarani and Thangamani (1999).

Perceived role overload showed positive and significant relationships with work and overall participation of rural women in mixed farming (Table 1). Different types of mixed farming operations such as crop farming and animal husbandry activities have increased women's workloads as perceived by them. According to Holmboe-Ottesen *et al.* (1988), a greater participation of women in food production has a negative impact on their workload to the extent that the time and energy available for other necessary activities both within and outside the food-related field will not be sufficient to secure the basic needs of their families or themselves. In addition, the physical labor involved may itself be so heavy that is detrimental to the women's health.

However, development of appropriate technologies, either house or farm-related ones, is an important means to reduce female drudgery and thereby facilitate their participation in mixed farming. I believe that provision of social welfare services such as the establishment of kindergartens in rural areas would be helpful to reduce the perceived work overload of rural women. This type of relationship serves as an alarming signal to agricultural development practitioners that this part of system is not functioning well. Accordingly, we may face very soon with more and more producers who are getting prepared to leave mixed farming activities to non-farm jobs.

Some nutritional-related variables such as total energy expenditure, energy expenditure in animal husbandry and mixed farming activities, time spent in animal husbandry and mixed farming all showed positive and significant relationships with the work and overall participation of rural women in mixed farming (Table 1). Energy or time spent and participation taken altogether indicate the level of involvement of rural women in mixed farming from different viewpoints. However, the basic difference is that energy and time spent measure the actual physical involvement of rural women in the identified

activities at the time of investigation, whereas measurement of participation by index is mainly based on the opinion of respondents about what has become like a habit within the household over a long period of time. In the case of energy expenditure and time spent, a positive response to the same question implies the actual involvement of rural women in that activity at the time of surveying. Apart from this, the relationship between the above variables indicates that time and energy spent of rural women during the spring in animal husbandry activities has a relationship with the overall work pattern.

However, measuring women's participation through determination of their time allocation and energy expenditure patterns, if accomplished throughout the year, will be a powerful means of finding out seasonal variations and the actual involvement of women in different seasons. For instance, Karia and Tewari (1998) found that rural women in arid areas of Rajasthan State in India spent 3-4 hours more time in daily activities during the agricultural season as compared with the slack season.

Women's and their husband's education both exhibited negative and significant relationships with the work and overall participation of rural women in mixed farming (Table 1). This implies lower participation by educated rural women in physical activities related to mixed farming. This might be due to their being less experienced or their high level of socioeconomic status, because they mostly belonged to rich and large farming families. Likewise, the higher level of engagement of rural women from large and marginal farming families mostly started at a very early age and this may be another factor that hampered their schooling. In addition, their greater engagement in mixed farming activities has limited women's access to educational opportunities. This fact has been confirmed by Palmer (1985) and Safilios-Rothschild (1980).

Animal ownership was found to have negative and significant relationships with the work and overall participation of rural

women in mixed farming activities (Table 1). The possible reason is that management of big herds of animals, particularly big animals like fattening cattle, is beyond the physical ability of rural women. In the case of small animals like sheep or goats, when it is expected that they should be grazed in natural pastures or surrounding mountains, it is not culturally acceptable to give this responsibility to rural women. Cho (1992) found that rural Korean women of wealthy families did not engage in farming as steadily as those in households of other classes. Moreover, dealing with big animals is beyond the physical abilities of many women. Singh *et al.* (1994) also reported closely related findings.

Extension contact showed both a negative and significant relationship between work and the overall participation of rural women in mixed farming (Table 1). This might be due to the visiting schedule of extension workers who had more contact with large farming families where the participation of rural women in mixed farming was low. It seems that small and marginal farm families treat their sick animals through traditional methods rather than calling a veterinary doctor for help. Some of the farm families either cannot afford the cost of this service or are unwilling to pay money for this type of private service. These are some possible reasons for the higher level of extension contact with women who live in large farming families. Lovel and Feuerstein (1985) found that women carry out many of the agricultural activities at subsistence level, yet technical and agricultural education is usually provided for men.

Energy and time spent on household activities exhibited negative and significant relationships with the work and overall participation of rural women in mixed farming (Table 1). In large families, rural women have to perform more and lengthier household tasks. This might limit them from being more involved in mixed farming activities. According to Karl (1995), women's status in the household affects their ability to participate in activities outside the home. A solu-



tion to the problem could be an equal partnership of men and women in sharing household responsibilities. This again needs some changes in cultural norms which could be brought about through educational programs and mass media interventions. Therefore, household responsibilities are a determining factor in the participation of rural women in work in mixed farming.

An examination of the data indicated a positive and significant relationship between woman's age and their decision-making participation in mixed farming (Table 1). This is because older women had more experience in mixed farming activities and thereby were able to understand the situation and possible solutions for tackling the problems. In fact, experience has taught them the appropriateness and effectiveness of various methods under different circumstances.

Having experience in crop farming and animal husbandry were positively and significantly correlated with the participation of rural women in decision-making in mixed farming (Table 1). Decision-making seems to be more highly dependent on experience than other issues in farming communities because, during the process of decision-making, farmers should examine different ways of solving problems and be able to analyze the advantages and disadvantages of each method. In mixed farming, this type of examination or analysis is largely connected with situational factors, family and community norms and the economic status of the household. Therefore, experience is more relevant for consideration as a resource in decision-making.

The possible reason for this positive and significant relationship between the perceived role overload and decision-making participation of rural women in mixed farming is again due to their higher experience (Table 1). A higher level of perceived role overload reveals that the concerned women have many jobs to do. Therefore, those rural women with a higher perceived role overload were more involved in mixed farming activities and thereby had greater competency in decision-making. Although the

workload of some women in large farming families may be tense as a result of their greater household responsibilities, they are not often consulted by their husbands because they have less experience and knowledge. These findings confirm the results of previous studies such as Lata *et al.* (1997), Renukaradhya (1983) and Prameelamma (1990).

Inter-spouse communication showed a positive and significant relationship with the decision-making participation of rural women in mixed farming (Table 1). This might be due to the higher involvement of rural women of small and marginal farming families in mixed farming. Because of their age, these women had lived longer with their husbands and had also cooperated and contributed more to the household economy. However, as Bennett (1988) revealed, individual decision-making within the household can be understood with reference to purely economic considerations.

With respect to nutritional-related variables, energy expenditure in animal husbandry and mixed farming and time spent in animal husbandry exhibited positive and significant relationships with the decision-making participation of rural women in mixed farming (Table 1). This indicates that, when rural women perform more animal husbandry or mixed farming activities, their participation in decision-making increases.

Woman's level of education had a negative and significant relationship with the decision-making participation of rural women in mixed farming (Table 1). This might be because formal education is less efficient in providing appropriate knowledge or skills for mixed farming. The majority of educated rural women were young and had a low level of experience in mixed farming. However, Nouroozi and Iravani (1994), Singh *et al.* (1994), Mirmoezi (1995), Bhaumik *et al.* (1996), Sadangi *et al.* (1996), Kumar and Fulzele (1998) and Umarani and Thangamani (1999) reported closely related findings.

Extension contact was another variable, which exhibited a negative and significant

relationship with the decision-making participation of rural women in mixed farming. It is obvious that a majority of extension workers have focused their attentions in transferring supportive services like inputs rather than technical knowledge. Many of extension contacts occurred with large farming families in which the participation of rural women in mixed farming was low. It also may be due to the limited access of rural women to female extension workers. Even the present female extension workers impart knowledge on household activities such as childcare, carpet weaving and sewing rather than on productive activities. Therefore, extension education should be reoriented from being a tool of input delivery to farmers into a human resource development strategy through education and communication.

Energy expenditure in household activities had a negative and significant relationship with the decision-making participation of rural women in mixed farming activities (Table 1). Higher involvement in household activities was equal to less engagement in mixed farming activities. Since work and decision-making participation are highly correlated to each other, when work participation in a specific activity is low, one expects to observe a low decision-making participation in the same activity.

A look at Table 2 gives the results of the stepwise regression analysis projecting all the relevant steps involved. As seen, the predictive power increases with the inclusion of each variable in the successive steps. In this analysis, step number three was con-

sidered as the last step since as much as 39 per cent of the variation in the work participation of rural women in mixed farming was explained by those three variables. Time spent in animal husbandry emerged as the most important factor, explaining by itself eighteen percent of the variation in work participation of rural women in mixed farming. The rest of the variables included in the model, namely women's education and marital status in that order, accounted for another 21 per cent of the variation in mixed farming. The "F" value shows that the models were statistically significant at each step.

In a further analysis depicted in Table 3 step number two was considered as the last step since as much as 61 per cent of the variation in the decision-making participation of rural women in mixed farming was explained by those two variables. Marital status emerged as the most important factor by itself explaining, fifty nine percent of the variation in decision-making participation of rural women in mixed farming. Another variable included in the model, woman's education, accounted for another two per cent of the variation in decision-making participation of rural women in mixed farming. The "F" value shows that the models at each step were statistically significant.

In addition, a look at Table 4 shows that step number three was considered as the last step since as much as 48 per cent of the variation in overall participation of rural women in mixed farming was explained by those three variables. Marital status emerged as the most important factor by itself explaining thirty per cent of the variation in

**Table 2.** Stepwise regression analysis of independent variables with work participation of rural women in mixed farming.

Steps included	Variables	Variables entered	Value of R <sup>2</sup>	Percentage of explained variation	Increase in percentage of explained variation	"F" value
1	X <sub>1</sub>	Time spent in animal husbandry	0.18	18	18	15.53**
2	X <sub>2</sub>	Women's education	0.32	32	14	14.91**
3	X <sub>3</sub>	Marital status	0.39	39	7	8.49**

\*\* Significant at 1% level

**Table 3.** Stepwise regression analysis of independent variables decision-making Participation of rural women in mixed farming.

Steps included	Variables	Variables entered	Value of R <sup>2</sup>	Percentage of explained variation	Increase in percentage of explained variation	“F” value
1	X <sub>1</sub>	Marital status	0.59	59	59	104.23**
2	X <sub>2</sub>	Women’s education	0.61	61	2	4.36*

\* Significant at 5% level

\*\* Significant at 1% level

**Table 4.** Stepwise regression analysis of independent variables with overall participation of rural women in mixed farming.

Steps included	Variables	Variables entered	Value of R <sup>2</sup>	Percentage of explained variation	Increase in percentage of explained variation	“F” value
1	X <sub>1</sub>	Marital status	0.30	30	30	31.55**
2	X <sub>2</sub>	Women’s education	0.41	41	11	13.16**
3	X <sub>3</sub>	Time spent in animal husbandry	0.48	48	7	10.1**

\*\* Significant at 1% level

overall participation of rural women in mixed farming. The rest of the variables included in the model, namely women’s education and time spent in animal husbandry in that order, accounted for another 18 per cent of the variation in overall participation of rural women in mixed farming. The “F” value shows that the models at each step were statistically significant.

Marital status was found to be a very influential factor in the regression models. Since, after the death of husband, women have to take more responsibilities in mixed farming, development programs, including extension, have to pay more attention to the needs and problems of these women who make up a considerable portion of rural households. The study conducted by Shabanali Fami (2000) in the Tafresh area showed that in almost all the selected activities of mixed farming, widows had higher level of participation in mixed farming than rural married women. Widows work harder and longer than married women due to many reasons such as the lack of a husband or, sometimes, son’s availability, more liberty, control and

power in decision-making, running small and labor-intensive enterprises, low access to improved technologies as well as a higher commitment towards family members. As a result, their participation is significantly different from the other group.

Women’s education appeared as the second predictor in the three models. Women’s education had negative relationship with participation, which is due to the low level of experience educated women and their overburdened roles in the house. In addition, their husbands did not consult educated women in decision-making process owing to their lower physical involvement and experience in animal husbandry. Whereas, illiterate women were more involved in the making decisions related to animal husbandry as a main component of mixed farming as a result of their higher level of work participation and experience.

Time spent in animal husbandry was another predictor variable that appeared in two of the models. In fact, time spent and work participation in animal husbandry activities are like the two sides of a coin. It seems that



rural women participate more in animal husbandry than crop farming because livestock rearing provides them with a continuous and consistent income and food.

### CONCLUSION

In conclusion, the relationships established between the selected independent variables and the participation of rural women in mixed farming can serve as a guideline for both researchers and extension personnel to consider the needs and problems of different farm women groups while developing and transfer of agricultural technologies.

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## بررسی رابطه بین ویژگیهای مختلف زنان روستایی با مشارکت آنها در فعالیتهای کشاورزی تلفیقی

ح. شعبانعلی فمی

### چکیده

زنان روستایی از دیرباز در فعالیتهای اقتصادی به ویژه کشاورزی نقش کلیدی ایفا نموده‌اند. بنابراین توانمندسازی این بخش از نیروی انسانی در کشاورزی از اهم اهداف سازمانهای دولتی و غیردولتی در ایران می‌باشد که در زمینه توسعه کشاورزی یا حفاظت منابع طبیعی فعالیت می‌کنند. از آنجایی که مشارکت زنان در فعالیتهای تولیدی و حفاظتی بخش کشاورزی متأثر از عوامل مختلفی است. شناسایی این عوامل گامی در جهت برنامه‌ریزی مؤثر برای توانمندسازی این قشر در توسعه کشاورزی است. این تحقیق به بررسی رابطه بین ویژگیهای زنان روستایی با میزان مشارکت آنها در کشاورزی تلفیقی به عنوان نظام

بهره‌برداری غالب در ایران می‌پردازد. برای تجزیه و تحلیل رابطه مذکور از روشهای آماری همبستگی و رگرسیون گام به گام استفاده گردید. نتایج حاصله حاکی از آن است که همبستگی معنی‌داری بین شانزده ویژگی فردی؛ اقتصادی- اجتماعی؛ روان‌شناختی؛ ارتباطی و تغذیه‌ای زنان روستایی با میزان مشارکت آنها در کشاورزی تلفیقی وجود دارد. این ویژگیها عبارتند از: سن زن؛ سن شوهر؛ تجربه کشاورزی؛ تجربه دامداری؛ درک از سنگینی مضاعف نقش؛ کل انرژی صرف شده؛ کل انرژی صرف شده در دامداری؛ کشاورزی تلفیقی و فعالیتهای منزل؛ زمان صرف شده در دامداری؛ کشاورزی تلفیقی و فعالیتهای منزل؛ سطح سواد زن؛ سطح سواد شوهر؛ مالکیت دام و تماس ترویجی. تجزیه و تحلیل رگرسیون گام به گام نیز نشان داد که ۴۸ درصد تغییرات در میزان مشارکت کل زنان روستایی در کشاورزی تلفیقی به وسیله سه متغیر وضعیت تأهل؛ سطح سواد زن و زمان صرف شده در دامداری تبیین می‌گردد.