

Problems Faced by Rural Women in Participating Homestead Waste Management towards Achieving IPNS

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Abstract

The main purpose of this study was to find out the problems of participation in homestead waste management activities by the rural women towards achieving IPNS (Integrated Plant Nutrient System). The study was conducted with the 95 female group members of Soil Fertility and Fertilizer Management Project from the four Blocks of Gouripur Upazila under Mymensingh district. A pre-designed pre-tested interview schedule was used to collect data on women's personal characteristics and problems faced by rural women in waste management during March and April, 2007. Problem confrontation was also cross-checked through making Scored Causal Diagrams (SCDs). Two Focus Group Discussions were conducted to identify the wastes generated in the farming households. Extent of use of homestead wastes was identified through Resource Flow Diagrams. Mainly seven types of wastes were identified through discussion with women. These were cow dung, cattle-shed waste, poultry bird feces, crop harvest residues, kitchen waste, ash and rice husk. The wastes were mostly used as farmyard manure and diverted to field accordingly. About three-fourths (60%) of the rural women faced high problem and only 15% faced low problems in participating the waste management activities. While, SCDs explored that the main 'root' causes to 'low participation in homestead waste management activities' identified were lack of training on waste management, social/religious barrier, lack of grazing land and fodder/feed of the cattle. Rural women's age showed significant positive relationship, and their education, family cooperation and exposure to agricultural information showed significant negative relationship with their confronted problems of participation in homestead waste management.

Keywords: *Participation, rural women, problem confrontation, waste management, IPNS*

Introduction

Agriculture will be heavily burdened to feed a world population projected to exceed eight billion by the year 2020. In the next 25 years, the challenge for agriculture will not only be to meet the food needs of rapidly growing population, but also undertake it in a manner that is sustainable for present and future

generations (Gruhn *et al.*, 1995). To meet agricultural production and sustainable intensification goals over the short- and long-term, plant nutrients and soils need to be managed properly. In many areas, due to intensive cropping a depletion of soil organic matter occurs but organic matter is

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considered as the storehouse of plant nutrients.

Under such conditions, it is also difficult to introduce green manuring practices to minimize organic matter depletion. By-product of the crops are used to the fullest possible extent already, which is the reason that they are not left on the land to be returned to the soil. Although fertilizer nutrient applications are necessary for plant growth, to maintain soil fertility and to sustain agriculture over the long-term, over-application is wasteful as it does not increase crop yields and contributes to environmental damage.

It is recognized that homestead is a place where integration of the post-harvest activities are done. As a result, the wastes and the by-products of farming activities are generated while the kitchen and animal sheds are generating a huge quantity of wastes. For these post harvest activities and power management kitchen or animal shed wastes, rural women could play the major role and even more than that of male counterparts.

Since women constitute about half of the population and their contribution in agricultural production is quite significant, their participation and knowledge of homestead waste management is very much important. Women can change their living status in personal, social and economic dimensions through ensuring their

participation in farming activities. But the women can not participate in homestead waste management activities for which they like to participate due to known or unknown issues. These issues are very important to be revealed to remove those on way of fuller participation of rural women in homestead waste management activities. Thus, the main purpose of this study was to have an understanding of the problems faced by rural women to participate in homestead waste management towards IPNS. The following specific objectives were undertaken for the present study:

- a. to identify the wastes along with their sources come out from homestead;
- b. to find out the extent of use of homestead wastes for different purposes;
- c. to find out the problems of rural women to participate in homestead waste management activities; and
- d. to explore relationship between eight selected characteristics of the rural women and their problems of participation in homestead waste management activities. The characteristics were: age, education, family size, annual household income, family cooperation, exposure to agricultural information, awareness of environmental degradation and seasonal variability of involvement in waste management activities.

Methodology

Data were collected during 10 March to 11 April, 2007 from all the 95 female members of SFFP (Soil Fertility and Fertilizer Management Project) demonstration groups who received training on IPNS in Gouripur

Upazila of Mymensingh district. Pre-designed and pre-tested interview schedule was used to collect data from the selected rural women. Problem confrontation was also cross-checked through making Scored Causal

Diagrams (SCDs). Two Focus Group Discussions (FGDs) (Anonymous, 2003 and Popham, 1993) were conducted to identify the wastes generated in the farming households. The outcomes of two groups were merged together to get a list of wastes along with sources those come out from homestead. Extent of use of homestead wastes was identified through Resource Flow Diagrams (RFDs).

Eight characteristics of the rural women were considered as independent variables (Garrett and Woodworth, 1981) in this study. The selected characteristics were: age, education, family size, annual household income, family cooperation, exposure to agricultural information, awareness of environmental degradation and seasonal variability of involvement in waste management activities. Problem faced by rural women in homestead waste management was selected as the only dependent variable of the study. Different descriptive statistical methods were used in describing the dependent and independent variables. Coefficient of correlation (r) was

used for exploring the relationship between the independent and dependent variables.

Problems faced by rural women in participating homestead waste management towards achieving IPNS were measured through achieving opinions of rural women against 12 selected statements with a three-point rating scale i.e. 'severely confronted', 'moderately confronted' and 'not at all' having corresponding scores of '2', '1' and '0'. Thus, problem confrontation score of a respondent could range from '24' to '0'.

To cross-check the rural women's problem confrontation of participation in homestead waste management towards IPNS, Scored Causal Diagrams (SCDs) of Participatory Farm Management (PFM) (Galpin *et al.*, 2000) methods were used. SCDs were used to examine in detail the causes and effects of problems and to identify the 'root' cause which need to be addressed, and to analyze the relative importance of the problems and prioritize them.

Findings and Discussion

Identification of homestead wastes

In this study, two FGDs were done with the rural women in two villages. These rural women were included in the main list for personal interview. Mainly seven types of

homestead wastes were identified through discussion along with their sources of generation. These are shown in the following Table1.

Table 1. Major homestead wastes and their sources

Sl. No.	Name of the wastes	Sources
1	Cowdung	Cattle shed and other places in homestead
2	Cattle shed waste	Cattle shed
3	Poultry bird feces	Poultry shed
4	Plant/crop harvest residues	Threshing floor and planting area in homestead
5	Kitchen waste	Kitchen
6	Ash	Kitchen
7	Rice husk	Threshing floor

In the farming communities, the crop residues are the main wastes in the homestead. This is almost common in all household. While an important waste in the farming household is cowdung but this is decreasing day by day due to decreased rearing of cattle. For this reason supply of cowdung as manure to soil is becoming less and less gradually.

Extent of use of homestead wastes

In order to investigate the extent of use of the selected homestead wastes, Resource Flow Diagrams (RFDs) were prepared with the help of one group of respondents. At first diversified use of all seven homestead wastes were identified with their proportions and then they were accumulated to complete the flow of materials to different purposes.

Cowdung is mainly used as Farm Yard Manure (FYM) (85%) and compost (10%) preparation. So, it is a good sign of utilization for crop field amendment. Only 4% of cowdung was found to use as biomass fuel which results ash and goes to field as pesticide, mulch etc. Cattle shed wastes also showed similar trend like cowdung. Three-fourths (75%) of the cattle shed wastes were utilized for FYM and 20% used for compost. Ultimately it goes to the crop field. In household a little amount (4%) of this waste was used as fuel and the ash was dropped in the crop field. Only 1% of cattle shed waste was dumped. This is also encouraging that these wastes were applied mostly in the field to minimize the cost of chemical fertilizer and improve soil properties. Thus, cattle shed wastes played a significant role to achieve IPNS.

Poultry bird feces were mostly used as Farm Yard Manure (80%). Compost prepared from the poultry bird feces was found 19% and

both of the manure and compost goes to the field for crop production. Thus it is hopeful that all kinds of livestock wastes were utilizing for soil improvement to ensure better soil fertility and productivity. Highest proportion (70%) of the plant/crop harvest residues were used as fuel. Most of the people in rural areas extensively used plant/crop harvest residues to meet the fuel demand. So a minor part of plant/crop harvest residues were adding in the field in the form of compost or FYM.

Kitchen wastes mainly produced manure (70%) and compost (5%) which were utilized in the crop land. Fish and meat cleaning water were directly applied in the homestead vegetable garden for better growth of plant. A small amount of livestock feed also comes from the kitchen waste. A noticeable amount (40%) of ash applied in the crop field as pesticides. In rural areas it was also used for cleaning kitchen wares which had no direct impact on crop production. Very less amount of ash was found to be sold by the landless farmer. The major (84%) use of rice husk was as animal/poultry feed. It was used as fuel in a very low quantity and then it went to the field or was used in the kitchen.

In the study area, it was found that more or less every family had been trying to involve themselves in homestead waste management activities to utilize their household products for better crop production. In the past years they were not aware of this participation aspect but now-a-days they are steeping to homestead waste management activities due to training on this aspect. In order to rank participation status in seven waste management activities total score was calculated for participation in each of the waste management activities (Table 2).

Table 2. Ranking of total score of the extent of participation in different waste management activities

Waste management activities	Total score	Rank order
Kitchen wastes	2512	1
Plant/crop harvest residues	2100	2
Ash	1980	3
Poultry bird faces	1829	4
Rice husk	1796	5
Cattle shed wastes	1639	6
Cowdung	1314	7

Problem confrontation in participating homestead waste management activities

The score for problems faced by the rural women in participating homestead waste management activities ranged from 10 to 20 with an average of 15. More than half of the

rural women faced high rate of problems to participate in homestead waste management towards IPNS (Table 3) and the distribution of the respondents showed a standard proportion.

Table 3. Rural women according to their problems faced

Categories of problems faced	Rural women		Mean	SD
	Number	%		
Low (score 0-8)	24	25	15	3.41
Moderate (score 9-16)	54	57		
High (score 17-24)	17	18		

Higher observed mean value than that of possible value (score 0-10) and 75% of the respondents' position in either medium or high category of problems denote their severity of problems faced in waste management. Living in poor rural settings it gives the impression that the respondents women were logical to face such high problems of homestead waste management activities. Because, the most of the families in rural areas utilize their farming and household wastes to meet their daily household needs. They have less scope to prepare and use the wastes for land nutrition reclamation. In a similar study of Hossain (2002) dealing with problem with farmers' problems faced for using manure for IPNS also showed that 51% of them faced high problem. Nazneen (2004), in the same way,

found that 91% of the women faced high to very high problems in utilizing their endogenous farming resources.

In order to have a close look into the problem statements in the problem facing scale, ranking of each statement was done (Table 4). Table shows that 'Lack of awareness of judicial homestead waste management for using soil improvement', 'Lack of skill to perform activities of modern waste management', 'Crude and straight use of wastes for homestead consumption' were the 1st, 2nd and 3rd ranked problems as felt by the rural women. Some of the responsibilities for the first two problems rest with extension and development organizations to resolve them to an acceptable level. On the other hand, the third one expresses the sturdy realities of

rural families in Bangladesh that wastes are very much exhausted as biomass fuel and

house-building materials.

Table 4. Status of each statement in problem confrontation scale

Statements	Rank order
Lack of awareness of judicial homestead waste management for using soil improvement	1
Lack of skill to perform activities of modern waste management	2
Crude and straight use of wastes for homestead consumption	3
Less number of cattle and poultry to generate waste to manage	4
Less knowledge on benefits of using homestead wastes for crop land amendments	5
Feeling of waste management process as laborious and time consuming	6
Less grazing land for livestock	7
Less interest of rural women to manage wastes for homestead and farming land	8
Lack of social inspiration for participation of rural women in waste management	9
Shortage of biomass fuel for rural households	10
Less motivational campaign of extension agencies towards proper homestead waste management for farming use	11
Complexity of scientific management of homestead wastes for crop production	12

Problems faced by the respondents in participating waste management activities towards achieving IPNS were cross-checked through making Scored Causal Diagrams (SCDs) of Participatory Farm Management (PFM) method. Problems in participating homestead waste management activities were discussed with the respondents, assuming the 'end problem' being 'low participation in homestead waste management'. Firstly the problems mentioned by the respondents were listed, secondly diagrams were drawn by them on a large paper on the ground to show causal relationships between the problems, and finally scoring of selected problems was performed again by them. In this way SCDs was prepared by the group of respondents (Figure 1). The problems identified by the group has been listed here with their relative importance indicated by the original score numbers as shown inside the parentheses.

End problem

Low participation in homestead waste management activities (100)

Intermediary problems

- (i) Lack of knowledge and experience (50)
- (ii) Not aware of environmental degradation (20)
- (iii) Low decision-making ability in family (20)
- (iv) Conservativeness (10)
- (v) Lack of interest (10)
- (vi) Women are restricted to go outside (15)
- (vii) Lack of adequate livestock (25)
- (viii) Decreased animal waste (25)

Root causes

- (i) Lack of training on waste management (50)
- (ii) Social/religious barrier (15)
- (iii) Lack of grazing land and fodder/feed (10)
- (iv) Perceived complexity in waste management (10)
- (v) Lack of cooperation among the neighbors in rearing livestock (8)
- (vi) Disease and lack of proper treatment of cattle (5)
- (vii) Stealing of cattle (2)

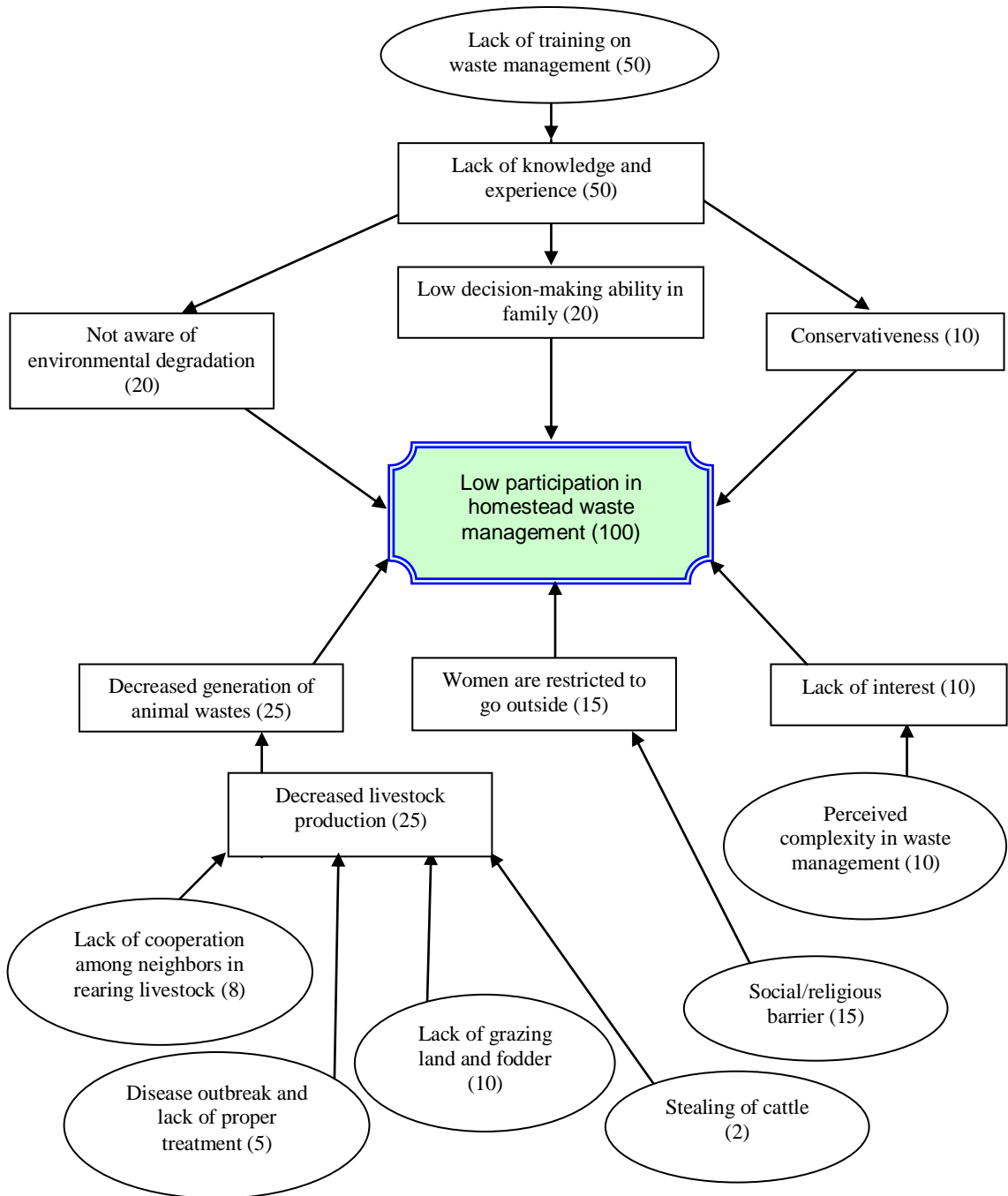


Figure 1: Scored Causal Diagrams showing the participation barrier of women in homestead waste management

Among the ‘root’ causes ‘lack of training on waste management’ got the highest score then ‘social/religious barrier’. It was highly logical because lack of training caused lack of knowledge and experience resulting in low decision-making ability, not aware of environmental degradation, conservativeness and accordingly there was low participation in homestead waste management activities. Social/religious barrier keep away the women from any development work so their participation in homestead waste management activities were restricted by this problem. According to the score, in third position two ‘root causes’ was placed viz. ‘perceived complexity in waste management’ and ‘lack of grazing land and fodder/ feed. Complexities result laziness and lack of interest for participating in waste management activities. Lack of grazing land and decreasing trend of fodder for livestock rearing are very much prominent. Most of the

families in village were resource poor so cooperation among the neighbors in rearing livestock was very poor. The poor rural women cannot afford treatment of the diseased animal and thus, avoid the risk of rearing livestock. Stealing of cattle was a minor problem for rearing livestock so it placed in the last rank. When the livestock production is lessening and ultimately the generation of animal wastes is decreasing. So it resulted to low participation in waste management activities.

Suggested solutions to the ‘root’ causes

Participants of the group engaged in the preparation of SCD were requested to mention possible solutions to the ‘root’ causes of low participation in homestead waste management activities. They made the following suggestions through discussing with one another. Giving priority to the needs the suggestions are presented in Table 5.

Table 5. Suggested solutions with way to achieve them

Sl. No.	Suggested solutions	Way to achieve
1.	Arranging special training programs on homestead waste management towards IPNS	Need GOs and NGOs collaboration
2.	Encouraging the rural women in homestead waste management through different extension communication media like personal contact of extension personnel, result demonstrations, block demonstrations, television, radio, newspaper, leaflet, booklet etc.	Extension personnel should be more careful about women participation in homestead waste management activities
3.	Performing awareness campaign for the farmers about environmental degradation through application of chemical fertilizers, uncared handling of pesticides etc.	Farmers should be motivated to aware the women in their family by different communication media
4.	Emphasizing the necessities of rural women participation among the rural people with the help of local leaders, <i>imams</i> , <i>purohit</i> etc.	Government can create special programs with the well known NGOs
5.	Rural women should be encouraged by understanding them that waste management activities are profitable for crop production.	Extension resources can play a major role with attractive television programs
6.	Creating micro-credit facilities especially for the rural women on livestock rearing.	GOs and NGOs can take proper steps in this matter
7.	Rural women are to be motivated for working together with neighbors to get more profit such as preparing shed for compost, rearing animal in same land, etc.	Mass motivation should be needed by GOs and NGOs. Group discussion among village can also be helpful

Participation of the rural women in homestead waste management activities is an important issue for controlling environmental degradation and development of socio-economic condition of the rural people. The study reveals that participation of the rural women in homestead waste management activities was medium to high, which is encouraging. Thus, proper strategy and need-based support should be ensured in order to secure full participation of the rural women in homestead waste management activities. Not only the SFFP but also the other projects with different stakeholders of agricultural sector need to take necessary steps in this connection. Linkage between GO and NGO need to be strengthened to ensure effective participation of the rural women. The issues that might be dealt with are input and technical information supply, training, motivation campaign and others.

Relationships between rural women's selected characteristics and their problem confrontation

Computed 'r' value of the relationship between age and problems faced by rural women in participating homestead waste management was positively significant (Table 6). Thus, it could be said that with the increase of age of the respondents their extent of problems in participation in homestead waste management activities increases. Rural women face innumerable problems regarding the homestead waste management. Yet, the study indicated that there was a significant link between the aged women and their worse problems in this matter. Hossain (2002), Rahman (1995) and Mansur (1989) found similar findings in their respective studies.

Table 6. Correlation between the characteristics of the rural women and their problems of participation in homestead waste management (N=95)

Dependent variable	Independent variables (Selected characteristics of the respondents)	Computed 'r' value
Problem of participation in homestead waste management activities	Age	0.211*
	Education	-0.275**
	Family size	0.130
	Annual household income	0.122
	Family cooperation	-0.243*
	Exposure to agricultural information	-0.274**
	Awareness of environmental degradation	0.142
	Seasonal variability of involvement in waste management	0.117

* = Significant at 0.05 level of probability (table value = 0.202 with 93 df)

** = Significant at 0.01 level of probability (table value = 0.263 with 93 df)

Based on the computed 'r' value the relationship between education and problems faced by rural women in participating homestead waste management was negatively significant. That means increased education of the women led to better solution to their problems of participation in

homestead waste management. This finding conforms to the outcomes of the studies of Kashem (1977), Islam (1987), Rahman (1995) and Roy ((2007). Thus, in the present study, it can be told that education of the respondent played significant role on their extent resolving problems of participation in

homestead waste management activities. Sustainable crop production through IPNS requires some background knowledge about land management and the measures to keep the soil free from degradation.

Based on the computed 'r' (-0.243) value the relationship between family cooperation and problems faced by rural women in participating homestead waste management was negatively significant. Therefore, it could be mentioned that better cooperation from family members of the respondents ensured better solution to the problems faced by the women towards participating homestead waste management. Similar findings were also found in studies of women's problem confrontation by Hossain (2002), Akter (2003) and Nazneen (2004). Family cooperation is a crucial matter of women in case of taking part in any activities. The rural women's participation in homestead waste management and the resolution to the problems therein also depend on the cooperation from the family members. The more cooperation the rural women would get from the family the more they could resolve the problems in homestead waste management activities.

The computed 'r' (-0.274) value shows that the relationship between exposure to agricultural information and problems faced

by rural women in participating homestead waste management was negatively significant (Table 6). Therefore, it can be told that better exposure to agricultural information of the rural women played significant role in their extent of participation in homestead waste management activities. Hossain (2002), Nazneen (2004), Nahid (2005) and Roy (2007) found similar relationships in their respective studies.

Better exposure to agricultural information of the rural women playing significant role on their extent of participation in homestead waste management seems due because, the rural women having more exposure to extension contact used to come in touch with various extension resources such as: development officials, various kinds of printed materials, television, radio etc. containing agricultural information. All these sources of information might be the influencing factor for increasing the participation in homestead waste management activities by the rural women.

Family size, annual household income, awareness of environmental degradation and seasonal variability of involvement in waste management of the rural women did not show any significant relationships. The findings might have need for further investigation.

Conclusion

Findings of the present study and the logical interpretation of other relevant facts might lead to draw the following conclusions:

- ♦ Diversified utilization of homestead wastes was found to apply these in the crop field. Yet the quantity was not adequate. The homestead wastes could be utilized more towards IPNS through

ensured the participation of rural women in waste management activities. In spite of diversified use of homestead wastes, the significant portion is diverting to field which ultimately assisting to achieve IPNS. Homestead wastes were seen to divert mostly to crop field. This encouraging scenario should be

maintained sustainably towards achieving IPNS which may rather aid in securing food/nutrition to the rural folks.

- ♦ Rural women faced a major problem in participating proper homestead waste management practices due to inadequate knowledge and experience. Thus, special care may be taken by concerned NGOs and DAE to motivate and train the rural women towards better performance in waste management. On the other hand, due to existing social norms and religious values, rural women are reluctant to come in contact with male extension worker. So, more female extension workers are to be engaged for effective and successful implementation of the rural women's development activities. In case of unavailability of female extension worker, male extension workers should continue their works keeping close

relationship with farm families. Age, education, family cooperation and exposure to agricultural information of the rural women are supportive to a great extent to motivate the rural women who are also related with changes in education, practice and profit generation.

- ♦ A good number of problems at different levels were found hindering participation of the rural women in homestead waste management activities. Apart from few problems, majority of these were created for lack of rural women's proper knowledge and experience. As those problems more or less fell under jurisdiction of different GOs and NGOs, these organizations could play a significant role by helping rural women in effective participation in homestead waste management.

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