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A comparative study of the involvement of men and women farmers in improving farmers' participation in adoption of extension recommendation in Benue (Nigeria)

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ABSTRACT

This study was carried out to assess the comparative involvement of gender in participatory methodology in extension delivery in Benue State. Data for the study were collected from 90 project farmers [45 participating men farmers (PMFs) and 45 participating women farmers (PFFs)], in "Improved Farmers' Participation in Research and Extension" in Benue State (IFPREB), in two project communities. The instrument for data collection is the structured interview schedule. Percentages, means, and ANOVA were used in analyzing the data. The study revealed that women participate in application of options and observation of trials along side with men. However, their participation in selection of sites, decision-making, historical profiles, provision of composting materials and labour was low. Twenty five percent of the PFFs adopted AKAGA as their first low-input technology and 21% of the PMFs adopted AKAGA. Twenty seven percent of the PFFs adopted Neem as their second low-input technology, while 25% of the PMFs adopted Neem. The result of the hypothesis tested using ANOVA revealed that F_{cal} (8.9) > $F_{0.95}$ (2.77) showing that the treatment effect is significant. That is the null hypothesis is rejected and that at least one of the treatment means is statistically different from others. In order to find out which treatment means are different we use Fishers Least Significant Difference (F-LSD). The result of the F-LSD shows a 15-combinations of variables as a result of the difference in means for the 6 treatments. Among the 15 combinations of low-input technologies, 7 variables were found to be statistically different at both p > 0.01 and p > 0.05, while 8 variables were statistically equal at the same probability levels. AKAGA/pepper, neem/pepper, AKAGA/mucuna, neem/mucuna, pit composting /AKAGA, pit composting/SOS and neem/SOS were found to be different. Conversely, SOS/pepper, pit composting/pepper, mucuna/pepper, SOS/mucuna, neem/mucuna, pit composting /SOS, AKAGA/neem and AKAGA/SOS were found to be statistically equal.

Key Words: Adoption, Benue (Nigeria), Extension, Farmers' Participation.

INTRODUCTION

Agricultural extension strategies traditionally have focused on increasing production of cash crops by providing men with training, information and access to inputs and services. The introduction of training and visit system emphasized the selection of contact farmers as a mechanism for passing on information to other farmers in their area. However, the recommended selection criteria, such as title to land, literacy, or cooperative membership as well as male extension staff's assumptions about women's roles in farming, have largely excluded women's involvement (Aarnink and Kingma, 1991). Since most of the agricultural extension staff in developing countries of Africa are men; they tend to address themselves only to the problems of farming as seen by male farmers (Annon, 1990). Women had been excluded in extension as well as farm input and credit supplies (Ijere, 1991, Ogungbile *et al.* 1991).

Until 1989 (in Nigeria), there had not been any food production programme with agricultural extension component conceived and executed with women as an integral part of the planning process (Anyanwu and Agu, 1995). Development of participatory field research techniques led to a better understanding of the different needs, priorities, responsibilities,

resources and activities of men and women (Obinne, 2002).

A typical example of these participatory approaches is the "Improved Farmers' Participation in Research and Extension" in Benue State (IFPREB) of Nigeria. The project funded by the Department for International Development (DFID), started in 1998 as a new model for providing extension services to poor rural farmers in Benue State. The project was situated within the Cooperative Extension Centre (CEC) of University of Agriculture, Makurdi and the CEC Director also served as project Director. The main project inputs consist of multi-disciplinary field-teams, technical assistants, resources for short-term equipment, including vehicles, and field activities. The main goal of the project was to improve the capacity of poor farmers, especially women, to manage and sustain their agricultural resources and increase productivity in Benue State (CEC/IFPREB, 2000).

During the 1998 and 1999 agricultural seasons, the project made overall assessments and plans. In 1999 the project was introduced in three pilot communities (Mbashoho in Ushongo LGA, Ai-inamu in Ogbadibo LGA and Mbamakem in Tarka LGA of Benue State). The local knowledge of community members was explored during community meetings to identify local farming problems and to develop low-input technologies to solve the problems identified. Local problems were identified through a mix of techniques: focus group discussion, direct observation, semi-structured interviewing, diagramming and mapping, listing, ranking and scoring and shared presentation. The low-input technologies developed through field participation with farmers were discussed with researchers and experts (from University of Agriculture, Makurdi) to find out if there was scientific backing for them. To cater for all groups, discussion groups were divided along gender, age, health, and wealth groups. Three broad categories namely, crop diseases; animal diseases and soil fertility were covered in the discussions. For each of these categories, different aspects were represented and discussed, and then assessed.

The low input technologies developed include: AKAGA (a mixture of *Annona senegalenses, Kyaya senegalenses, Anogessius leocapus*, Ginger and *Afromomum megulgata*) for the management of Newcastle/ coccidiosis /fowl typhoid in chicken; SOS (a mixture of sulphur, oil palm and baked soda) option for the management of scabies in goat/sheep; Neem and Pepper options for the control of pest (especially termites) on crop; Mucuna/lab lab and Pit composting for soil fertility. This has required the formation of Multi-Disciplinary Teams (MDT) from departments of animal, crop and soil science of the University of Agriculture, Makurdi and field staff from the Cooperative Extension Centre. The approach of IFPREB also required the services of Community Development Facility (CDF), as an institution building measure in the participation of local people. The facilitators' role was to establish a more participatory approach at village level.

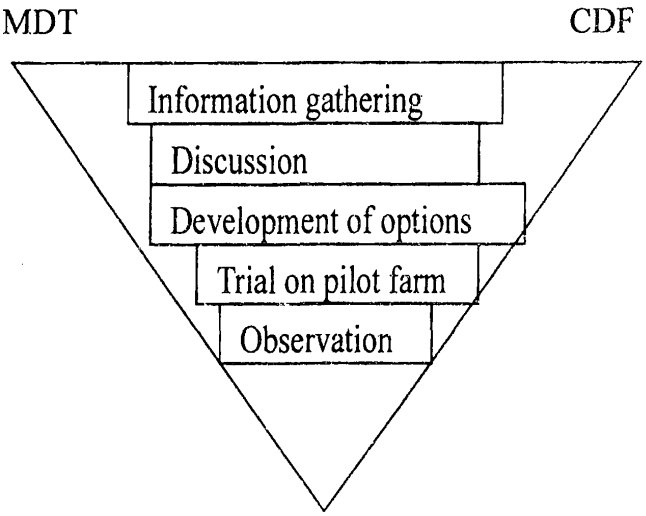

Figure 1. Triangular Representation of Learning and Skill Development of IFPREB

IFPREB was to meet the technological requirements of resource-poor men and women farmers through the development of joint strategies to maximize the use of locally available resources and participatory development of low-input technologies (local options). But since the introduction of IFPREB project in 1999 to date (2002), no empirical study has been carried out to assess the extent of involvement of resource-poor men and women farmers in the project. In this regard, the pertinent questions, therefore, are: to what

extents are resource-poor men and women farmers involve in the participatory methodology employed by IFPREB project? How early do men and women farmers adopt the low-input technologies introduced by IFPREB.

The major objective was to assess the comparative involvement of men and women farmers in improving farmers' participation in adoption of extension recommendations in Benue State (Nigeria). The specific objectives were to:

i) determine the nature of involvement of resource-poor men and women farmers in the participatory methodology presented by IFPREB.

ii) determine the earliness of adoption of IFPREB options by the men and women farmers.

It was hypothesized that there is no significant difference in the order of adoption of IFPREB- technical options by farmers.

METHODOLOGY

The study area, Benue State, lies in the middle belt zone of Nigeria between latitude 7° 44'E and 9° 55'E and between latitudes 6° 29'N and 8° 7'N. It lies within the southern guinea savannah and vegetational zone. It covers an area of 33,706km^2 and it is estimated that 75% of the population engage in rain-fed subsistence agriculture in the rural areas. They grow food crops like yams, cassava, soybean, rice, maize, guinea corn and millet. Most of the farmers keep livestock like goats, sheep, Pigs, cattle and poultry. The area experiences two major seasons, the dry and wet seasons. The dry season extends from November to March, followed by the rainy-season from April to October. The farm economy of the State is characterized by small sized and fragmented land holdings. Cultivation is done predominantly by traditional hand and hoe method and crop protection is still largely subsistence in orientation.

The 1991 census put the total population of Benue State at 2,780,398. Administratively, Benue State is divided into 18 Local Government Areas (LGAs), which make up the three agricultural zones (referred to as zones A, B and C)(BNARDA, 2000). The IFPREB project was introduced in 1999 in three pilot communities: Mbashoho, Mbarmakem and Ainamu, in Ushongo, Tarka and Ogbadibo LGAs in zones A, B and C, respectively. Two pilot communities (Mbashoho. and Anamu) were purposefully selected for the study. The rationale for the purposeful selection of these two communities out of the three communities served by IFPREB project in this study was that Mbarmakem in Tarka LGA belongs to the same ecological zone with Mbashoho in Ushongo and so only Ushongo was chosen.

The population for this study comprised 130 farmers (70 farmers were identified in Mbashoho, while 60 farmers were identified in Ai-inamu) that are directly participating in the IFPREB project and who reside in these two pilot communities. A simple random sampling technique was then used to select 90 participating farmers from the two project communities. This is a reasonably sample size for this study since the study involved a detailed work and numerous variables.

Participants were stratified into participating male farmers (PMFs) and participating female farmers (PFFs): men farmers, where both men and women are involved, but males taking the decision-making role; female farmers where both men and women were involved, but women taking decisions. The list of PMFs and PFFs was obtained from Cooperative Extension Centre, University of Agriculture, Makurdi.

The data for this study were generated from primary sources in the month of November, 2002. Structure interview schedule was designed to elicit information on the involvement of men and women farmers in the IFPREB project, as well as their order of adoption of low input-technologies.

The questionnaire was validated by some professionals in the Department of Agricultural Extension and Communication, University of Agriculture, Makurdi. The questionnaire was pre-tested at week intervals in each of the community selected for the study and 3 enumerators (who understood the local languages) were used to assist in administering the questionnaire to respondents.

A simple percentage was used to determine the extent of involvement of men and women farmers. Analysis of variance (ANOVA) was used to determine significant differences among the respondents' order of adoption while Fishers

Least Significant Difference (F-LSD) test (Madukwe, 2004) was used for separating the means.

Table1: Distribution of IFPREB project farmers based on participatory technique

IFPREB Participatory Technique	% Participating Farmers Male	Female
Historical profiles	18.0	2.0
Selection of site	26.0	0.0
Taking part in on-farm trials	80.0	84.0
Observation of trial/experiment	53.0	22.0
Provision of labour	24.0	9.0
Provision of composting materials	22.0	7.0
Decision making	18.0	2.0

Multiple responses recorded.
Source: Field survey data, November 2002.

RESULTS AND DISCUSSION

Involvement of the farmers in the participatory methodology.

Data in Table1 reveal that women farmers actively (84%) participated in the on-farm trials of low-input technologies with their male counterparts (80%). Twenty two percent of Resource-poor women farmers were involved in the observation of trial/experiment. This finding agrees with the finding of Obinne (1994) that women enjoy tours to observe other people's activities and they also like good demonstrations of activities. Evidence from other study in Nigeria (Olayiwole and Voh, 1993) indicates that women participate in almost all farming activities along side with men. However our findings in this study revealed that the participation of women farmers was low in the provision of compost materials (7%) and labour (9%), selection of site (0%), historical profiles (2%), decision-making roles (2%) as compared to their men counterparts: provision of composting materials (22%), provision of labour (24%), selection of site (26%), historical profiles (18%) and decision-making role (18%). The low participation of women in site selection, historical profiles and decision- making roles Could be attributable to the customary constraints in most rural areas of Nigeria and Benue State, in particular. These customary

Table 2: Distribution of farmers based on technical options

Order of Adoption	Group	IFPREB Options (% adoption) AKAGA	SOS	Neem	Pit Composting	Mucuna	Pepper
First	PMF	21.0	9.0	12.O	14.0	2.0	0.0
	PFF	25.0	0.0	12.0	2.0	3.0	0.0
Second	PMF	18.0	7.0	25.0	3.0	5.0	2.0
	PFF	8.0	2.0	27.0	2.0	1.0	0.0
Total		72	18	76	21	11	2.0
Mean(X)		18	4.5	19	5.25	2.75	0.5

Source: Field survey, November 2002
Calculated analysis
$F_{cal}(8.9)^* > F_{0.95}(2.77)$
*Significant (P> 0.05)

F-LSD = 8.012*
= 10.9825**
*Significant (P> 0.05)
**Significant (p>0.01)

SOS sulphur, oil and baked soda
AKAGA Annona senegaleses, Kyaya senegaleses, Annogessius leocapus, Ginger and Afromomum megulata.

Constraints prevent women from contributing actively their opinion in the presence of their male counterparts. Extension education should encourage active participation of women in information sharing. By sharing information within and amongst the farm groups, the farmers develop their skills. They prioritise their needs and assess what resources are available to initiate new income generation activities.

Order of adoption of IFPREB options by the farmers

Table 2 reveals that 25% of the PFFs adopted AKAGA as their first low-input technology and 21% of the PMFs adopted AKAGA as their first low-input technology. Their corresponding aggregate score was 46 percent. The farmers choice for AKAGA could be attributable to it effectiveness in the management of Newcastle/Coccidiosis/Fowl typhoid in chicken. Twenty-seven percent of the PFFs and 25% of the PMFs adopted Neem as their second low-input technology. Their corresponding aggregate score was 52 percent.

Further investigation using ANOVA reveals that $F_{cal}(8.9) > F_{0.95}(2.77)$ showing that the reatment effect is significant. That is the null hypothesis is rejected and that at least one of the treatment means is statistically different from the others.

In order to find out which treatment means are different we use Fishers Least Significant Difference (F-LSD). The result of the F-LSD shows a 15- combination of variables as a result of the difference in means for the 6 treatments. Among the 15 combinations of low-input technologies, 7 variables were found to be statistically different at both $p>0.01$ and $p>0.05$, while 8 variables were statistically equal at the same probability levels. AKAGA/pepper, neem/pepper, AKAGA/mucuna, neem/mucuna, pit composting/AKAGA, pit composting / SOS And neem/SOS were found to be significantly different. Conversely, SOS / pepper, pitcomposting /pepper, mucuna/pepper, SOS/mucuna neem/mucuna, pit Composting/SOS, AKAGA /neem and AKAGA / SOS were found to be statistically equal.

CONCLUSION

The main focus of this study was to investigate the involvement men and women farmers in the participatory research in Benue State. The study dealt with the nature of involvement of resource-poor men and women farmers in the participatory methodology in extension delivery presented by "Improved Farmers' Participation in Research and Extension" in Benue (IFPREB).

Women farmers enjoy on-farm trials; and observation of trial/experiment like their male counterparts. Amongst the low-input technologies developed during the field participations with male and female farmers AKAGA was found to be the first low-input technology adopted by both male and female farmers.

There is the need to revisit the present extension system in order to maximize the opportunity for increased farmer's participation in extension research and delivery through the development of authentic people's organizations and empowerment of farmers to take responsibility for extension activities. In particular, it must be emphasized that the use of participatory approaches in extension delivery in Benue will provide an enabling environment for men and women farmers to participate actively in extension activities.

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