



Original Article

Comparison of Adoption of Small Plot Adoption Technique (SPAT) Between Men and Women Farmers

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ABSTRACT

There have been arguments as to whether men or women farmers are better adopters of agricultural innovations. While some studies show that men are better adopters, other studies show that women are better adopter, and others show that no group is better than the other. The study was, therefore, conducted to compare the participation of men and women farmers in Small Plot Adoption Technique (SPAT) and their level of adoption of technologies disseminated through the technique with special reference to men's participation in SPAT- yam based and women's participation in SPAT -cassava based. To obtain a representative sample, the stratified random sampling technique was used. The state was divided into the three ADP zones or strata. The ADP zones were further stratified into extension blocks and finally cells. Three extension blocks were randomly selected from each of the three ADP zones using the balloting with replacement method. Hence, a total of 9 extension blocks were selected. The extension blocks were further stratified into cells, and two cells were randomly selected from each of the nine blocks giving a total of eighteen cells. The cells were further stratified into male and female farmers. Ten farmers were selected from each cell, which gave a sample size of 180 farmers (116 men and 64 women). The data collected was analyzed using both descriptive (means and percentages) and inferential (the student t-test) statistics. The student t-test for significance of difference between means was used to determine whether men and women farmers differed significantly in their adoption levels. The study found that women participated more actively than men farmers. 34% of the male farmers never participated/adopted the technology, while 31% participated/adopted the technology for a while and stopped; only 34 of the men continuously adopted the technology. But all the women in the sample participated and adopted the technology continuously. The difference between the mean adoption scores of the men and women farmers was found to be very significant at 1% level ($P < 0.01$) in favour of women. The null hypothesis, which stated that there is no significant difference between the mean SPAT adoption scores of men and women farmers was rejected, while the alternative hypothesis was accepted.

Keywords: Small, plot, adoption, technique, men, women, farmers.

INTRODUCTION

Small Plot Adoption Technique (SPAT) has become a very important means of getting farmers to be convinced of the merits of improved technology over their traditional practice. In this technique, farmers are encouraged to set aside about 10% of their area of farmland where they would be assisted by research and extension personnel to practice the improved technology, while the rest of their farms would be occupied by their traditional practice/technology. The improved technology may be setup beside or super imposed on the farmer's farm. At harvest, the yield from the improved technology and farmer's traditional practice are compared. The very significant difference observed in favour of the improved technology is so convincing, that the farmer would not hesitate to drop his/her traditional practice to adopt the improved technology, all things being equal.

There are arguments as to the extent gender influences adoption of agricultural innovations. While some argue that men are better adopters of agricultural technology, others claim that women are better adopters but are neglected as their contributions are not recognized and adequately rewarded. In this regard, Agbarevo (2007) observed that women are as good as men in adopting agricultural technologies but were handicapped because of unequal access to production resources and the burden of house chores in the favour of men. In the same vein Agbo (2004) argued that women produced over 60% of food consumed but were neglected by extension personnel in the scheme things. He observed that men were preferred as contact farmers, while special provisions were not made for nursing mothers and pregnant women attending extension seminars and workshops lasting for several days. With no special sleeping arrangement for such women farmers, they are prevented from attending such extension seminars and workshops. Furthermore, the colonial legacy which viewed men as better farmers than the women led to a situation in which male farmers were not only preferred as extension contact farmers but also references for agricultural development projects so that women became a marginal group with regard to education, commercialization of agriculture and general involvement in modern economy.

According to Bingen *et al.* (2007), some production activities are genderized as a result of constraints and different communication patterns, which are acted upon along gender lines. While agricultural activities largely take place along gender lines, there is no uniform genderization of production activities. This is because while some tasks are regarded as feminine in one community, they may be regarded as exclusive preserve of men in another and vice versa.

In the study area, Cross River State of Nigeria, yam production is essentially a male enterprise, while cassava production is feminine. The study, therefore, compared adoption of SPAT between cassava famers (female) and yam famers (male) to determine whether men or women farmers were better adopters, using Small Plot Adoption Technique (SPAT), which is a technique used in Farming System Research and Extension (FSRE). Kernga (2003) in a study on influence of gender on adoption found that women farmers more readily adopted new varieties more than men. The study conducted among farmers in Southern Mali, showed that the number of active male famers negatively correlated with adoption of new varieties. This is explained by the fact that women in the household own small land area, where they produce intensively to get maximum return in the area. Women are responsible for many expenses to maintain household members, and they need income to meet such expenses. Hence, gender based division of labour heavily influenced adoption among the farmers, he concluded.

The apparent advantage men have over women farmers is partly attributable to the educational advantage men have over women. In this regard, Tanko (2007) observed that the advantage men have over women in formal education accounted for the disparity in the level of adoption. Similarly, Bashu (2004) observed that 85% of female headed households in Cross River State were within the poor category, and that women were disadvantaged in the ownership of and cash crops as cultural norms were in favour of men.

MATERIALS AND METHODS

The population of the study consisted of all the resource-poor farmers who participate in agricultural extension programme in Cross-River State. The sample size consisted of one hundred and eighty resource-poor men and women farmers selected from the three ADP zones in the State. Sixty farmers were selected from each zone, giving a total of 180 farmers with 10 farmers from each of the cells in the blocks selected.

To obtain a representative sample, the stratified random sampling technique was used. The state was divided into the three ADP zones or strata. The ADP zones were further stratified into extension blocks and finally cells. Three extension blocks were randomly selected from each of the three ADP zones using the balloting with replacement method. Hence, a total of 9 extension blocks were selected. The extension blocks were further stratified into cells, and two cells were randomly selected from each of the nine blocks, giving a total of eighteen cells. Ten farmers were selected from each cell, which gave a sample size of 180 farmers (116 men and 64 women).

The instrument used for data collection was a structured interview schedule/questionnaire for farmers. The interview schedule/questionnaire was designed to elicit information on farmers rating of their participation in Small Plot Adoption Technique (SPAT). The method of validating the instrument used to ensure its reliability was the test-retest technique. The extension agents and enumerators assisted the researcher in administering the copies of the questionnaire.

The questionnaire was a 3- point graphic rating scale designed to measure farmers' participation/adoption in Small Plot Adoption Technique (SPAT). Thus, a 3-point graphic rating scale of 1, 2 and 3 add up to 6, which gives 2 as mean, when divided by 3. To obtain an adoption score, farmers' responses were categorized into 3: (a) never adopted, (b) adopted and stopped, and (c) adopted and still using innovation, to which numerical values 1, 2 and 3 were assigned respectively. The scale was modified thus: a mean >2.5=high adoption level, 2 – 2.5, poor adoptin level, < 2.00 =very poor adoption level.

The null hypothesis which stated that there is no significant difference between the SPAT adoption levels of men and women farmers was tested for significance using the t-test of significance of difference between means at 95% confidence level (P 0.05). This is given by the formula:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2 + S_2^2}{N_1 + N_2}}}$$

Where:

\bar{X}_1 = mean adoption score of men farmers

\bar{X}_2 = mean adoption score of women farmers

S_1 : standard deviation of adoption scores of women farmers

S_2 : standard deviation of adoption scores of men farmers

N_1 : number of men farmers

N_2 : number of women farmers

RESULTS

Table 1 shows frequency distribution between male and female farmers' participation in SPAT and adopting it. It indicates that forty out of one hundred and sixteen male farmers never participated in nor tried the Small Plot Adoption Technique (SPAT). Thirty six tried it and later opted out, while forty have been participating and adopting innovations through SPAT. On the other hand, all the sixty four women in the study registered with Cross River State Agricultural Development Programme (ADP) participated in SPAT and adopted cassava based SPAT interplanted with melon and maize

Table 1: Frequency Distribution of Male and Female Farmers' Participation and Adoption in SPAT

Sex	Never tried	tried & Stopped	always participating/ Adopting	Total
M	40	36	40	116
F	0	0	64	64
Total	40	36	104	180

Table 2 shows percentage distribution of adoption rates between the men and women farmers. The table indicates that one hundred per cent (100%) of the women participated and adopted SPAT, while thirty four percent (34.483%) of the male farmers refused to try the Small Plot Adoption Technique (SPAT), thirty one percent (31.034%) tried/adopted it for a while but later opted out, while only thirty four percent (34.483%) participated in SPAT yam based and have continuously adopted it.

Table 2: Percentage Distribution of Adoption Rates of SPAT Between Male and Female Farmers

Sex	Never tried	tried & Stopped	always participating/ Adopting	Total
M	34.483	31.034	34.483	100
F	0	0	64	64

Table 3 shows that the mean adoption levels of male and female farmers as well as the t-test analysis of significance of difference between mean adoption rates of men and women farmers. The table indicates that the mean adoption level of farmers was 1.8, while that of women was 3.00. The difference between their adoption levels was 1.20. This difference was found to be statistically significant at 1% level and 179 degree of freedom using student t-test of significance of difference between means. The null hypothesis that there is no significant difference between the SPAT adoption levels of men and female farmers was rejected, while the alternative hypothesis was accepted.

Table 3: t-test Significance of Difference between the Mean Adoption Rates of Men and Women Farmers

Groups	n	X	SD	P 0.05	t-cal	Result	Decision
M	116	1.8	0.834	1.96	12.98	Sig.	HO rejected
F	64	3.00	0.00				

**Significant at 1% level

DISCUSSION

Results of analyses of data obtained in the study show clearly that women were better than men farmers in participating and adopting the technology demonstrated by SPAT. SPAT (cassava based) was used to assess women farmers' participation and adoption, while yam

based technology was used for men. Details of the results showed that only forty out of one hundred and sixteen male ADP farmers regularly participated in SPAT (yam based) and continuously adopted the technology representing 34.483%. However all the sixty four women ADP farmers regularly participated in SPAT and also continuously practiced the technology representing 100% adoption.

The finding that women are much better adopters of extension technologies than men is supported by Kernga (2003) who equally reported that women were better adopters than men in a similar study. Agbo (2004) equally observed that women not only produced about sixty percent of food available but were also better adopters of extension recommendations than men. Furthermore, in support of the findings of the study, Tanko (2007) observed that the advantage men have over women in formal education accounted for the disparity in the level of adoption.

It has been observed that women are disadvantaged in many respects which impeded their participation in agricultural and extension programmes, for example, they lack free access to education, they do not own land in many African countries (Aarmink and Kingma, 2007). Moreover, they have limited access to production resources. They cannot easily access credits from banks because they may not be able to provide the needed collateral since they do not land and houses because if a woman builds a house, it belongs to the husband (Agbarevo, 2007). And when a piece of land given to woman is discovered to be more fertile than that of her husband, it would be retrieved from her and given to her husband, while a less fertile land would be reallocated her because women's access to land is highly restricted, and only lands with marginal productivity are reserved for women, among other impediments (Ike & Ogba, 2005; Drapper & Kumma, 2006).

Against the widely held notion that men were better adopters than women farmers, the study found that gender based division of labor influenced adoption patterns as men were better adopters of certain innovations, while women were better adopters in other innovations. In other words resource-poor men are not necessarily better adopters than resource-poor women farmers (Agbarevo, 2007). This finding is supported by Agbo (2004) who observed that, contrary to the widely held opinion that men were better than women; women were in fact, more engaged in farming activities than men and produced over 60 percent of the total food produced. He went further to posit that due to this wrong view that men were better farmers than women, and that place of women was the home, a situation in which men have since been used as contacts, or reference for agricultural extension delivery, developmental projects and policies still exists. Equally in support of the findings of the study in this regard, Adisa and Okunade (2005) observed that despite women's substantial contributions to agriculture, they have continued to be systematically marginalized and underdeveloped in commercial agriculture and economic analysis and policies, while men's contribution remain central, and often the sole focus of attention. Men appear to be better famers (which they are not) because women do not receive equal opportunities or decision making privileges as men. They equally encounter more difficulties than men in gaining access to land, credit, technical services and commercial market outlets. They concluded that despite the obvious neglect of women's position and contributions to the agricultural sector, they have remained the filers of the nation's food basket.

However, in spite of these impediments women have continued to contribute very significantly to food production and processing. The impediments mentioned were responsible for greater number of men participating in extension programmes as the study found. Out of the one hundred and eighty farmers selected as sample for the study, only sixty four were women because few women were participating in ADP activities. But in spite of

this, they were more active than men and more readily adopted technologies than men with specific reference to SPAT – yam based and cassava based.

CONCLUSION

The study has shown that men are not better adopters of extension innovations than women. In fact the study has shown that women could be better adopters than men. However, while the study found that women farmers are better adopters of technology disseminated through the Small Plot Adoption Technique (SPAT) in Cross-River State, it may not be correct to conclude that women would be better adopters in all cases in the study area. But it has shown that men should not be regarded as better adopters of extension innovations. The greater number of men participating in extension programmes and projects is indicative of the various impediments and marginalization women face in agriculture and in the society at large. Ownership of land and size of land has been found to influence adoption but women do not inherit land in most parts of Africa, among other deprivations.

The study recommends that more women should be used as contact-farmers as sex should not be a consideration for selection of contact farmers. There should be deliberate policy by government and government agencies to waive some conditions for women that would help them have greater access to production resources. For example, less stringent conditions should be imposed on women in accessing credit, among others. Extension personnel should make special sleeping arrangements for pregnant women and nursing mothers attending seminars and workshops lasting several days. More women should be recruited as extension personnel to reach more women as culture in Africa places restrictions on men's contact with female folk.

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