FARMERS' INVOLVEMENT IN AGRICULTURAL PROBLEMS IDENTIFICATION AND PRIORITIZATION IN OGUN STATE, NIGERIA

S.O, Apantaku, A. Oloruntoba and E.O. Fakoya[1]

ABSTRACT

The main objectives of the study were to determine the level of farmers involvement in their (farmers) agricultural problems identification and prioritization for research and extension intervention, the willingness of farmers to participate in their own agricultural problems identification and prioritization and to identify those constraints which prevent involvement of farmers in problems and need identification and prioritization. Using multistage random sampling, 240 farmers were selected. Data were collected through the use of a questionnaire and a structured interview schedule and analyzed through descriptive and regression analyses. The study concluded that the level of farmers' involvement in agricultural problems identification and prioritization was low, farmers were very willing to be involved in their agricultural problem identification and prioritization. Majority of the technologies disseminated were not based on farmers' identified problems and felt needs. Some of the constraints that might have militated against farmers' involvement were poor motivation and encouragement of farmers by researchers and extension officers, lack of adequate knowledge of research and extension processes, ineffective and inefficient linkages between researchers, extension agents and farmers and lack of formal education by farmers. The study recommended that the management of the Ogun State Agricultural Development Programme (Extension sub-programme), agricultural research stations and universities conducting agricultural researches in Ogun State, especially Yewa North, should initiate policies and processes that will mandate their personnel to involve farmers in participatory agricultural problem identification and prioritization and other stages of agricultural research and extension processes. Developmental policies should be implemented in a bottom-up approach rather than a purely top–down approach so that farmers' opinion would be known.

1. INTRODUCTION

In predominantly agricultural economies like those of Nigeria and many developing countries, the problem of bringing about rapid improvement in per capital agricultural productivity of the country is a major concern to political administrators, educators and the general public at large (Alao & Asare, 1991). In order to achieve rapid and sustained agricultural productivity

[1] *Department of Agricultural Extension and Rural Development, University of Agriculture, PMB 2240, Abeokuta, Nigeria. E-Mail: samapantaku@yahoo.com*

of a country, Alao and Asare (1991) made it clear that certain essential elements must be present. These include land, labour, capital, agricultural innovations (improved planting materials, livestock species, new methods and many others) and agricultural research and extension services. Current research focus has been on farmers' participation in agricultural research and extension service (Ashby, 1999).

Involving users or clients in research and development is a principle of successful innovation. Farrington and Mann (1988) affirmed that it is important in order to ensure that the research is appropriate to their conditions. They also opined that understanding the condition in which resource poor farmers operate and the criteria by which they assess new technology is critical to the technology development and adoption process. This is why the promotion of farmers' involvement and participation is important.

Within the agriculture sector, senior research managers responsible for innovation development have highlighted "learning from and serving the users" as the basic tenet for achieving technical change in developing countries (Nickel, 1988). In the light of emphasis on research collaboration as well as end users consultation, farmers' involvement in agricultural research and development is now perceived as an essential feature of sustainable agricultural innovation by environmentalist and socio-economists (National Research Council, 1989 and Bhatnagar & Williams, 1992).

As a result of his vast experience in agricultural research, Heinrich (1993) stated that farmers involvement is critical to the generation of technologies that are relevant to farmers need and that their involvement should occur at the earliest stage possible in the process of technology generation. Farmers' ideas about the development of technologies are increasing at a considerable rate. More recently, experiences have shown that researchers have now realized the importance and are concerned about farmer-participatory research, which has hitherto not been given adequate attention.

Some concerns have come from people who recognize the relevance of farmer participation. Okali, Sumberg and Farrington (1994) drew attention to the costliness of participatory approach in both time and money. Ashby (1999) referred to the need to "scale – up" the degree of farmer's participation in agricultural research and extension. Therefore, how to scale up farmer participation to achieve broad coverage of a large number of farmers without

incurring excessive expenses and without compromising the quality of participation is now a key issue that has to be resolved (Ashby, 1991).

The submissions of various authors in development effort in the developing countries show that the development agents usually bring finished package to the rural farmers without giving them the opportunity of being involved either in the diagnostic, design or implementation stage. Apantaku (1999) found out that most of the technologies developed by the University of Agriculture, Abeokuta researchers were not based on farmers' problems.

Therefore, the purpose of the study was to examine small-scale farmers' involvement in agricultural technology generation and utilization in Yewa North of Ogun State, Nigeria. Specifically, the study was designed to:

- determine the level of farmers involvement in their (farmers') agricultural problems identification and prioritization for research and extension intervention,

- determine the relationship between farmers socio-economic characteristics and their level of involvement in farmers' problems identification and prioritization,

- determine the willingness of farmers to participate in their own agricultural problems identification and prioritization,

- investigate whether agricultural technologies disseminated were based on farmers' identified problems and felt needs and

- identify those constraints which inhibit farmers' involvement in problems and need identification and prioritization.

1.1 Conceptual background: Participatory research process

Although farming systems research (FSR) itself is a means for integrating farmers into the research process and providing feed back from farmers to research and policy, there has been no shortage of critics, particularly among anthropologists, who claim that FSR is " top – down" (Tripp, 1989). It is even argued that this is inherent since farming system research possesses all the trappings and pitfalls of other formal institutions (Gatter & Sikana, 1989). Participatory research is probably the most vigorous area of development at the present time. Attempts to take farmers objectives, constraints and farmers

involvement into account in on – farm trials have long been a standard part of research procedure but, as Farrington and Mann (1988) pointed out, recent approaches go much further. Farmers are being involved in the definition of the research agenda, the conduct of research, the evaluation of results and dissemination of the findings.

Greater participation was argued from an efficiency point of view as follows (Mettrick, 1993):

- involving farmers in defining research agendas, conducting trials and evaluating results give chance to technologies which are more suitable to farmer circumstances,

- involving farmers affect their motivation and are more likely to be responsive to the researchers idea if their own views are respected,

- participatory method can tap indigenous technical knowledge,

- it would be uneconomic for researchers themselves to search for the specific local knowledge for the many recommendation domains that must necessarily be defined for the wide diversity and complexity of difficult environments (Farrington and Mann, 1988),

- by encouraging farmer experimentation and presenting scientific knowledge in a form farmers can absorb, researchers enhance the capacity of farmers to adopt technologies (Farrington and Mann, 1988) and

- farmers role in technology development becomes more critical and increasingly cost effective as the proposed technology becomes more complex (Sumberg & Okali, 1988). A more radical view argues that participation involves more than respect for indigenous knowledge but a sharing of knowledge.

Biggs (1989) identified some types of farmer involvement in the research process. These include: contractual arrangement, in which scientist contract with farmers to provide land or services; consultative, where scientists consult farmers about their problems and then develop solutions and collaborative, where both serve as partners in the research process.

1.2 Features of participatory research and development approach

Participatory research and development has some unique characteristics which will affect its institutionalization in the agricultural sector (Ashby & Louise, 1994). First of this unique characteristics is the client driven strategy. This is a situation where farmers' knowledge, needs, criteria, and preference have weight in decision-making about technical innovation. It also, more fundamentally, implies that farmers are actively involved in decision making about innovation, not just at the very late point in time when adoption or rejection occurs, but early in the process when the agenda for research is set, when specific themes are proposed, and when design features are determined. Addressing client needs means that the technology development process itself must be sufficiently decentralized to meet diverse farmers goals and to allow for site specific, local adaptation. Such decentralized technology development, the second major feature of participatory research and development, needs to be recognized to promote and reinforce multiple source of "horizontal" innovation (Biggs, 1986).

Next, applied researchers should take a proactive role in anticipating diverse clients needs in the form of assuring many options, not only "on shelves", but actually in the fields. National research programmes and regional experimental stations no longer need to produce "finished" technologies or final recommendations. Instead, to facilitate decentralized technology development, researchers should think in term of prototypes which encompass technological component which can be combined and managed flexibily to meet a given situation and a "menu" of potentially useful options to be screened and perhaps modified.

The notion of "prototype" according to Sperling (1992) implies exposing farmers both to early technological designs where farmers can be brought directly into experimental stations and onto farm sites set up for the purpose (Scherr, 1991), or simply exposed to a general technological model, outlined theoretically, rather than physically (Sumberg & Okali, 1989).

The third major feature of participatory research and development is the testing of many different "menus" tailored to different preferences and localities. Farmers take lead or at least act as equal partners in organization, experimentation, results evaluation and transmission of local recommendations. Lastly, the feature of accountability sharing is essential in participatory research. Those involved in the research become liable for the relevance and quality of technology on offer (Ashby & Louise, 1994).

2. METHODOLOGY

The study area (which is predominantly rural) is Yewa North Local Government Area (county) of Ogun – State with the headquarters at Ayetoro. It has a total land area of 2, 043.6 square kilometer and it is located at longitude 23°N and latitude 23°S. The population of the study consisted of all small-scale farmers in the study area who were involved in the production of maize and cassava. The study area consisted of 8 extension cells. Six cells were randomly selected from the 8 cells. The cells (all rural) were Imasayi, Igan-Igua, Igbogila, Oja Odan, Ibese and Ijoun. Each cell consisted of nearby villages. Forty farmers were randomly selected from each cell making a total of 240. (Each cell had a village extension agent attached to her).

Primary data were collected from the farmers through the use of questionnaire (for literate farmers that completed secondary level education) and structured interview schedule (for non-literate farmers, literate farmers that did not complete secondary education and those that indicated preference for interview). The three researchers (authors) personally assisted the respondents to complete the questionnaire and also conducted the interview. The questionnaire and interview schedule actually contained similar items and structure. The secondary data were obtained from journals, proceedings, books and the internet. The questionnaire and interview schedule consisted of 6 sections each. These were (i) socio-economic characteristics of respondents; (ii) involvement in agricultural problem identification and (iii) involvement in agricultural problem prioritization. The two involvement sections consisted of 10 questions (items) each, with four Likert scale options (very low, low, high and very high). The maximum score obtainable in each of the two involvement sections was 40. Other sections were (iv) willingness to participate in problem identification and prioritization (which contained a yes or no response and 10 question items with four Likert scale options of strongly agree, agree, disagree and strongly disagree); (v) agricultural technologies and information disseminated (whether based on identified problems and felt needs of farmers) and (vi) constraints to farmers' participation in agricultural problems identification and prioritization.

The instrument (questionnaire and structured interview schedule) was pilot-tested on 20 farmers, using the test-retest method at 2 months interval, before the actual administration. The farmers were selected from the study area, but not from the 6 cells (villages) that were actually sampled and studied. The questionnaire had a reliability coefficient of 0.78 while the structured interview guide had 0.87. The content validity was determined by giving the

instrument to two senior researchers and two professors in agricultural extension and economics for evaluation and suggestions. The instrument was adjudged to have a good content validity. Analysis of data collected was done by using descriptive statistics (frequency counts and percentages) and multiple regression. (Out of the 240 farmers selected, the researchers were able to contact or receive information from 220 farmers, a response rate of 91.67%).

3. RESULTS AND DISCUSSION

The data collected were analyzed and presented and discussed below.

3.1 Respondents socio-economic characteristics

Entries in Table 1 show that majority (70%) of the farmers were males while the remaining 30% were females. This probably implies that males are more involved in maize and cassava production than females in the study area. The table also indicates that a greater proportion (34.55%) of the respondents fell within the age range of 41-50 years, while 10% were between 21-30 years. Those that were within the age bracket 31-40, 51-60 and above 60 years accounted for 27.27%, 20% and 8.18% respectively. Their mean age was computed to be 48years. This indicates that probably the older and more experienced ones are involved in cassava/maize production, while the younger ones (below 30 years) are less involved or totally out of cassava/maize farming in the study area. Most (91%) of them were married. Those who had some form of education constituted 52%, 48% had no formal education. Fifty-eight percent were Christians while 39% were Islamic. A majority (40%) of the farmers cultivated between 2-5 ha of land, while about 23% cultivated less than 2 ha.

3.2 Farmers involvement in agricultural problem identification and prioritization

The average score of the 220 respondents on level of their involvement in agricultural problem *identification* was 15 out of the maximum obtainable score of 40, while the average score of the respondents on level of their involvement in agricultural problem *prioritization* was 8 out of the maximum obtainable score of 40. The average score of respondents on level of their involvement in agricultural problem *identification and prioritization* was 23 out of the maximum obtainable score of 80. This is low and implies that extension agents and researchers have not been adequately involving farmers in the

Table 1: Percentage distribution of respondents according to their socio-economic characteristics (n = 220)

Characteristics	No.	%	Mean/Mode
Gender			
Male	154	70.00	Male
Female	66	30.00	
Age Group (Years)			
< 21-30	22	10.00	
31-40	60	27.27	
41-50	76	34.55	48 years
51-60	44	20.00	
> 60	18	8.18	
Marital Status			
Single	10	4.54	
Married	200	90.91	Married
Divorced	8	3.64	
Widowed	2	.91	
Educational Background			
No formal education (nfe)	106	48.18	nfe
Adult education	24	10.91	
Primary education (or attended*)	52	23.64	
Secondary education (or attended*)	36	16.36	
Tertiary education (or attended*)	2	.91	
Farm Size			
< 2 ha	50	22.73	
2-5 ha	88	40.00	3 ha
6-9 ha	64	29.09	
10-13 ha	18	8.18	
Average Income in Naira (N)			
30,000-60,000	28	12.73	
60,000-100,000	58	26.36	
> 100,000	134	60.91	110,455
Religion			
Indigenous	4	1.82	
Christianity	128	58.18	Christianity
Muslim	86	39.09	
Others	2	.91	

**Included those who did not complete (drop-outs)*

identification and prioritization of their (farmers) own problems. Probably the technologies disseminated to them were based on problems of some other farmers in some other places or simply top-down from researchers.

About 37.5 % of the farmers responded "yes" to the question seeking to know if they have been involved in problem identification, only 20% said "yes" to the same question on problem prioritization while only 28% responded "yes" to the question seeking to know if they were ever involved in both problem identification and prioritization. Another implication of this low involvement is that the rate of adoption of disseminated agricultural technologies would continue to be poor, because the farmers were not party to the identification and prioritization of the problems/needs on the basis of which the technologies/innovations were generated.

3.3 Farmers willingness to be involved in problem identification and prioritization

Table 2 below shows that 96.4% and 97.3% of the respondents showed willingness to be involved in problem identification and prioritization respectively. The average score of the respondents on the willingness index was 35.5 out of the maximum obtainable score of 40. This indicates that farmers are very willing to learn and participate in the process of their own agricultural problem identification and prioritization. They will actively participate if the researchers and extension agents are willing to incorporate them into the system.

Table 2: Distribution of respondents by their willingness to be involved in problem identification and prioritization (n = 220)

Willing to participate	Based on felt needs and identified problems (no.)	%
In problem identification	212	96.4
In problem prioritization	214	97.3

3.4 Relevance of technologies and information disseminated to farmers identified problems and felt needs

Table 3 reveals that a good majority of the technologies disseminated were not based on farmers identified problems and felt needs. Only 37.27% of the 220 farmers said the technologies disseminated were based on their identified problems and felt needs. Majority of the farmers indicated that only 3 of the 9

agricultural technologies disseminated were based on their problems and needs. There is bound to be poor adoption of those technologies that were not based on their problems.

Table 3: Distribution of Respondents by Whether the Technologies and Innovations Disseminated Were Based on Their Identified Problems and Felt Needs. (n = 220)

Technologies disseminated	Based on felt needs and identified problems- (Yes)* (no.)	%
Planting of improved variety of maize e.g. TZSR – W. etc	172	78.2
Planting of improved variety of cassava e.g. TMS 30572, 30555	142	64.5
Growing of cassava + maize mixture on heaps/ridges	92	41.8
Use of herbicides (Primextra, gramoxone, etc.)	100	45.5
Use of fertilizer to improve soil fertility	74	33.6
Planting on Straight line of 0.9 x 0.9m on rows and between rows	56	25.5
Storing maize grain in silos	42	19.1
Construction and use of cribs	86	39.1
Use of pesticides on the field and in the store	176	80.0
Generally, the technologies and information disseminated were based on your felt need/problems.	82	37.27

**Multiple response (more than one technology identified)*

3.5 Constraints militating against farmers involvement in problem identification and prioritization

The major constraints which may hinder farmers involvement in problem identification and prioritization, as indicated by the farmers, are poor motivation and lack of encouragement of farmers to be involved in problem identification and prioritization by researchers and extension officers (92.3%), unwillingness of researchers and extension agents to involve farmers (90.9%) and lack of adequate knowledge of research and extension processes (61.8%). Others are inefficient and ineffective linkage between researchers, extension officers and farmers (59.1%) and lack of formal education by farmers (58.2%). These problems are not insurmountable. They can be easily addressed, hence

involving farmers in identifying and prioritizing their own problems will not be a problem.

Table 4: Distribution of respondents by constraints militating against farmers involvement in problem identification and prioritization (N = 220)

Constraints	Yes (no.)*	%
Poor motivation and encouragement of farmers to participate by researchers and extension officers	205	93.2
Lack of willingness of researchers and extension agents to involve farmers in problem identification	200	90.9
Inefficient and ineffective linkage between researchers, extension officers and farmers	130	59.1
Lack of formal education by farmers	128	58.2
Lack of adequate knowledge of research and extension processes by farmers	136	61.8
Lack of interest in participatory problem and needs identification by farmers	39	17.73
Lack of confidence to work as partners with researchers and extension agents	40	18.2

**Multiple response*

3.6 Relationship between farmers' socio-economic characteristics and level of involvement in problem identification and prioritization

Regression analysis was used to determine the relationship between the identified variables and farmers' involvement in problems identification and prioritization.

The regression equation model is:

$$Y = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7$$

Where

Y = Farmers involvement in problem identification and prioritization

β_o = Constant; $\beta_1, \ldots \beta_7$ = Parameters with unknown variables

X_1 = Gender; X_2 = Age of Farmers; X_3 = Marital status

X_4 = Religion; X_5 = Farm size; X_6 = Income; X_7 =Education

i.e. $Y = 41.9 - 1.47X_1 - 0.345X_2 - 2.60X_3 + 0.154X_4 + 0.730X_5 + 0.66X_6 - 4.10X_7$

Predictor	**Coef**	**Stdev**	**t-ratio**	**P**
Constraint	41.874	7.782	5.38	0.000
Gender	-1.467	1.954	-0.75	0.454
Age	-0.3454	0.7803	-0.44	0.659
Marital Status	-2.598	2.351	-1.11	0.272
Religion	0.1542	0.7168	0.22	0.272
Farm size	0.7303	0.9281	0.79	0.433
Animal Income	0.661	1.134	0.58	0.561
Education	-4.102	1.566	-2.62	0.010*
S =7.796	Rsq =9.5%	R – sq (a) (j) = 3.3%		P = 0.165

**Significant at .05 level*

Generally, the omnibus multiple regression analysis indicates no significant relationship between farmers socio-economic characteristics and their level of involvement in problem identification and prioritization at .05 level. However, only education has a significant relationship with level of involvement in problem identification and prioritization.

4. CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this study, it is concluded that:

- The level of farmers' involvement in agricultural problems identification and prioritization was low.

- Generally, the socio-economic characteristics of the farmers had no significant relationship with farmers level of involvement in problem identification and prioritization., however the level of education is the only variable having a significant relationship with the level of involvement in problems identification and prioritization.

- Farmers are very and readily willing to be involved in their agricultural problem identification and prioritization.

- Majority of technologies disseminated were not based on farmers identified problems and felt needs.

- Some of the constraints that may militate against farmers' involvement are poor motivation and encouragement of farmers by researchers and extension officers. Farmers were neither motivated nor encouraged to participate in problem identification and prioritization. Others were farmers' lack of adequate knowledge of research and extension processes, ineffective and inefficient linkages between researchers, extension agents and farmers and lack of formal education by farmers. Based on these conclusions, the following recommendations were made:

  - Agricultural researchers and extension officers covering Ogun State, Nigeria, especially Yewa North Local Government Area (county) should initiate participatory agricultural research and extension, which will involve farmers at every stage of the research and extension processes.

  – The management of the Ogun State Agricultural Development Programme (Extension sub-programme), agricultural research stations and universities conducting agricultural researches in Ogun State, especially Yewa North, should initiate policies and processes that will mandate their personnel to involve farmers in participatory agricultural problem identification and prioritization and other stages of agricultural research and extension processes. Developmental policies should be implemented in a bottom-up approach rather than a purely top–down approach so that farmers opinion would be known.

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