Analysis of participation of farmers in participatory poultry production research in Lagos State, Nigeria

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Abstract

The aim of the study was to analyze participation of farmers in participatory poultry research (PPR) in Lagos State, Nigeria. The sample selected through a combination of purposive and random sampling, included 20 poultry researchers and 100 poultry farmers. Data were collected through a structured interview schedule and questionnaire, and analyzed by descriptive statistics. The study concluded that there are too few elements of farmer-researcher participatory poultry research (PPR) in Lagos State, farmers are more involved in contract and consultative participation than collaborative and collegiate, even though farmers' participation in all of them is very low and the level of use of PPR by researchers is very low. However, both farmers and researchers are highly willing to participate in and use PPR if the enabling environment and conditions are right. The constraints that militate against the use of PPR by researchers are inadequate motivation of researchers to use PPR by their organizations, the need for extra fund to execute PPR and inadequate skills and knowledge of researchers in using PPR. It is recommended that research institutes and universities should design and implement policies and programmes aimed at encouraging and motivating researchers in using PPR. Research institutes in collaboration with extension agencies should conduct training and workshops for farmers to build and increase their capacities, skills and knowledge to actively participate in PPR.

Keywords: participation, farmer participatory research, participatory poultry research

Introduction

One of the major developmental challenges facing most developing countries is their inability to adequately feed their ever-increasing population with the right proportion of calories and protein. The nutritional status of many Nigerians is therefore characterized by low calorie and protein intake. Most animal proteins are delicious but not easily affordable. Animal protein sources include fish, egg, poultry meat,

beef, milk, bacon, pork and mutton. The three most popular are frozen fish, beef and poultry egg and meat. Fewer farmers produce fish and cattle than poultry, especially in southwestern Nigeria. The level of poultry productivity is not yet commensurate with the level of poultry technologies being generated by Nigerian poultry production researchers (Ekeren, *et al*, 1995; Apantaku *et al*, 1998).

The development of the poultry industry has also been described as the fastest means of bridging the protein deficiency gap prevailing in the country. Most Africa diets (including Nigeria) are deficient in animal protein which results in poor and stunted growth as well as increase in spread of diseases and consequently death (Apantaku *et al*, 1998).

Poultry production has become a full time job for many and is considered to be a commercially viable enterprise contributing significantly to Gross National Product (GNP). The environment to which poultry birds are exposed include the housing system, the feed they consume, climatic factor and management systems. All these affect the performance of the birds (Abeke, *et al*, 1998; Isiaka, 1998). In Nigeria, the domestic birds notably reared are *Gallus gallus* (chicken), *Gallus domesticus* (local chicken), *Anas phatyrhynchos* (Duck), *Anser anser* (Geese) and *Meleagris gallopura* (Turkey). They are kept purposely for their meat, eggs and by-products like feather and droppings.

The problems associated with poultry production in Nigeria are low egg production, diseases and pests, low and poor performing breeds, poor weight gain/feed conversion, feeding and management problems and lack of capital (Apantaku, *et al*, 1998; Isiaka, 1998; Eekeren, *et al*, 1995; Famure, 1988). The solutions to these problems can only be found through appropriate research. However, poultry production research, as with all other aspects of animal science and agriculture require effective research approach to make meaningful impact on poultry productivity and farmers' level and standard of living. Most agricultural researches have been conducted using the wrong approach, especially the "top-down" approach instead of the participatory "bottom-up" approach that ensures farmers' participation in the development

of technologies that are meant to solve their problems (Apantaku, *et al*, 2003). Examples of such researches are – utilization of whole pods of *Albizia saman* in diets of growing rabbits (Oduguwa, 2006) and performance of West African dwarf sheep fed cassava peel-based diets (Ashaolu and Odeyinka, 2006).

From various studies conducted so far, it has been deduced that effective agricultural research is very crucial to agricultural development in developing countries (Jiggins 1988). Interaction with the farmers and communities has been enhanced by the use of participatory methods since the mid 1980's. These have brought the direct involvement of farmers in data generation and evaluation, in the choice and assessment of technology, and in the direct management of experiments in the field (Collinson, 2001). Over the last fifteen years participatory methods have revolutionized the relationship between small farmers and research scientist, from scientists "using" farmers in an extractive mode in the early days of farming system research (FSR), to, in best contemporary practice, fully collegial partnerships between scientists and small farm communities (Biggs, 1989). Participatory diagnosis in farming systems research is important for an understanding of farmers' priorities, management strategies and resource constraints. It is particularly vital for the identification and subsequent shaping of solutions, including improved technologies (Collinson, 2001). The full benefits of participation are gained only when farmers have an active role in setting the course for research (Merill-Sands *et al*, 1989; Ashby, 1990; Roling, 1989). Participatory research is a principle of successful innovation. Technologies developed through this approach are usually appropriate to farmers' technical level and culture. Such technologies are also relevant to farmers' needs, easily and readily adopted by participating

farmers and their colleagues, thus increasing their productivity and ensuring sustainability.

In spite of the abundance of poultry technologies developed by researchers, poultry productivity in Nigeria is still far from its maximum potential. One of the queries is the approach of research that generated the technologies. Were farmers involved in the technology generation? It is on this basis that the study attempted to:

- 1) describe the socioeconomic characteristics of respondents in the study area,
- 2) describe the types of participation in participatory poultry production research (PPR) participated in and used by poultry farmers and researchers,
- 3) determine the extent of participation and use by farmers and researchers respectively in participatory poultry research,
- 4) determine the willingness to participate in and use participatory poultry research by poultry farmers and researchers respectively in the study area and
- 5) identify constraints that may militate against farmers participation and researchers use of participatory poultry research.

Agricultural Research

The agricultural research subsystem is primarily responsible for generation of new agricultural knowledge and technologies (Mettrick 1993; Idowu, 1988). There are three types of agricultural research. These are:

- a) **Basic (or Fundamental) Agricultural Research:** This is a continuous process of using the abstract principles of pure natural sciences to find out the why, how, and **wherefore** of all operations in agricultural **production** and management, and their basis

in sciences. This type of research results into discoveries of new methods, technologies, techniques, varieties and strains. A basic researcher generates knowledge with little concern for its possible applications.

- b) **Applied Agricultural Research:** This type of research is the application of technologies derived from practice and also from the basic (fundamental) research to the improvement of specific materials or conditions, whereby new insights are found. The results lead, for example, to a higher genetic potential in the form of high yielding or disease resistant varieties, new cropping patterns, new cultural practices, or better approaches to farm organization. Therefore, the applied researcher is primarily concerned with the application of models and theories to specific problems (Conroy, 2005).
- c) **On-Farm (Adaptive) or Developmental Research:** Adaptive research aims at reaching a research output that is suited to specific ecological and socio – economic conditions of the farmers. It is usually carried out on the farmers' farm, with the farmers providing the land or space, but the researcher not taking over the farmers' own pen or cultivated land. It prevents the supply of technologies that do not fit farmers' conditions. Other forms of on-farm research do not involve farmers' involvement. By common practice, adaptive research quite generally becomes a part of the applied research system (Idowu, 1988; Mettrick, 1993; Schulz, 2000). In practice, basic, applied and adaptive researchers should normally interact with one another. Any of the three types of agricultural research may be conducted using

participatory means, active participation and involvement of farmers.

Conceptual background: Types of farmers' participation in research

In a summary of the findings of ISNAR (International Service for National Agricultural Research) study, Merrill-Sands and Kaimowitz (1989) and Biggs (1989) identified four distinct types of farmers' participation:

- a) **Contract Participation:** Scientists contract with farmers to provide inputs, land or services. In this approach, the farmers' role is passive and participation is not an explicit objective. The investigating researchers manage the trials themselves so as to maintain tight control over the variables. Multi-location testing is a good example of contract participation. Although this mode cannot by itself be considered as client-oriented research, it may form an important component of such efforts.
- b) **Consultative Participation:** Scientists consult farmers about problems and then develop solutions. This type of participation has been likened to the "doctor-patient" relationship. Researchers use formal and informal surveys to define farming systems and diagnose priority problems. They then design experiments to test various solutions or to better understand identified problems. The emphasis is on adapting technology to the socio economic as well as the agro-ecological conditions facing the farmers. They involve farmers mostly in the diagnosis and later in the evaluation of proposed solutions (Conroy, 2005).
- c) **Collaborative Participation:** Scientists and farmers collaborate as partners in the research process. This approach, which

involves more intensive and continuous interaction, is found in about a third of the programs reviewed. Researchers actively draw on farmers' knowledge and experimentation in seeking solutions to identified constraints. Regular meetings are held between farmers and researchers to understand current farming practices, set priorities among research problems, develop potential solutions, monitor progress and jointly review results.

- d) **Collegiate Participation:** Scientists work to strengthen farmer's informal research and development systems in rural areas. The emphasis is on increasing the ability of farmers to carry out research on their own, as well as request information and services from the formal research system. This mode of participation is often used with large-scale commercial producers, but less common with resource-poor farmers.

These various types of farmers' participation are not mutually exclusive. Different modes are appropriate for different institutional settings and for different research problems and objectives. Researchers can use them together or sequentially (Merrill-Sands and Kaimowitz (1989; Ashby, 1990; Biggs, 1989; Sarvaes and Arnst, 1992).

Materials and Methods

Study area

The study area is Lagos State Nigeria. The capital of Lagos State is Lagos, which is also the commercial capital of Nigeria. Lagos is perhaps one of the fastest growing cities in the world, with a projected population of 25 million in year 2010 (UN-Habitat, 2003). Lagos plays host to a set of highly educated and enlightened citizens over and above most other parts of Nigeria and has the largest concentration of national and

international private sector organizations. The chief occupations of the people are business/trading and agriculture. Food crops, such as cassava, yam, maize and vegetables are grown in the area. Fruit crops, such as oranges and pineapple and livestock production are popular. Livestock produced include sheep, goat and poultry. Lagos State is divided into 20 local government areas. The Lagos State Agricultural Development Agency is government agency chiefly responsible for agricultural development and extension service. It is structured into 2 zones (East and West). The east zone has 8 extension blocks while the west has 6.

Population, sampling method and sample size

The study populations are poultry farmers in Lagos State and poultry science researchers of Lagos State Agricultural Development Authority (LSADA) and other poultry researchers from research institutes and universities that have been closely collaborating with LSADA for the past five years (since 2000) in generating poultry production technologies such as feed processing, compounding and raw materials selection, debeaking and deworming methods and vaccination to mention a few. Five extension blocks were purposively selected, 3 (Epe, Ikorodu and Odogiyen) from east zone and 2 (Badagry and Alimosho) from the west. The blocks selected were based on prevalence of poultry farming in the blocks. Twenty poultry farmers were then selected randomly from the list of poultry farmers in each of the 5 blocks making a total of 100 poultry farmers. All the available poultry researchers employed by LSADA and other collaborating poultry researchers were selected. A total of 20 were finally contacted.

Method of data collection and analysis

Primary data for the study were collected using structured interview guide for poultry farmers

and questionnaire for researchers. The researches considered were both on-farm and on-station. The structured interview guide was structured into 5 sections. The first section is on socioeconomic characteristics of the farmers and the second is on the identification and description of farmer participatory poultry research (PPF) participated in. The third section attempted to determine the extent of farmers' participation in PPF. It was in form of 6-item Likert-type questions (Strongly agree, Agree, No Opinion, Disagree and Strongly disagree). The fourth section sought to determine the willingness of farmers to participate in PPF and the fifth section identified the constraints militating against their participation.

The first section of the questionnaire attempted to identify the socioeconomic characteristics of the researchers and the second is on the identification and description of farmer participatory poultry research (PPF) approaches used. The third section attempted to determine their extent of use of PPF. It contained a 6-item Likert-type questions (Strongly agree, Agree, No Opinion, Disagree and Strongly disagree). The fourth section, also in 6-item Likert-type questions, sought to determine the willingness of researchers to use PPF and the fifth section sought to identify the constraints militating against their use of PPF. Data collected were analyzed using descriptive statistics.

Pre-testing and reliability of instruments

The draft interview guide and questionnaire were subjected to review for content validity by three experts (a poultry science researcher and 2 agricultural extension professors). Their inputs were incorporated into the final draft. Pre-testing was thereafter conducted using the test-retest method, at an interval of four weeks. A reliability coefficient of .83 was obtained for the interview guide while the questionnaire had .81.

Results and Discussion

Socioeconomic characteristics of respondents

Farmers: Table 1 shows the characteristics of respondents. Majority (77%) of the farmers are males. This offers an opportunity for the farmers to participate in participatory poultry research (PPR) because males have more time and resources and are more independent than females in less developed nations like Nigeria. About 74% are within the age range of 30-50 years, with an average of 46.2. This age range is usually more active and can be an asset to farmers' participation in PPR. Sixty five (65%) earn an income range of N 140,001-N200,000, with a mean of N194,832. This income level is quite modest and gives the financial resource base that may encourage farmers to participate. Most (64%) of the farmers have more than 10 years of poultry farming experience, with an average of 14.6 years. This shows the farmers have enough experience and knowledge of poultry farming. They are deeply knowledgeable in the management and production techniques, felt problems and probable solutions to the problems in poultry production. In addition, 85% have secondary education and above. The two characteristics above should help the farmers participate effectively in PPR. The average stock size is 1485 birds and 71% of the farmers keep more than 1000 birds.

Researchers: Majority (80%) of the researchers are males, 75% are married while 75% are above 40 years of age with a mean of 48.8 years. Seventy percent have PhD degrees in related discipline and 70% also have at least 10 years experience in poultry research with an average of 12.3 years (see Table 1).

Description of the types of participation in PPR participated in and used by poultry farmers and researchers

Table 2 shows the distribution of types of farmers' participation used by and participated in by poultry researchers and poultry farmers respectively in the study area. Under what could be classified as contract participation, 4 of the 20 researchers indicated that, in some of the researches conducted, they requested farmers to provide some birds and the feeds/feed ingredients they used for feeding them. Some other inputs such as drugs, water, disinfectants and housing repairs materials were provided by the farmers. Eighteen percent of the farmers indicated they participated in this. In most cases, the researcher bore the cost of the materials. Farmers also participated by managing the pen house with strict instructions from the researchers. The management practices included watering, feeding, cleaning, pest and diseases prevention and control, and security. Nineteen percent (19%) and 20% of the farmers and researchers respectively indicated this.

In consultative participation, 28% of the farmers indicated that they participated in identification of poultry problems and development of solutions to address the problems with the researchers, while 30 % of the researchers said the same thing. The diagnosis and identification of priority problems and felts needs followed a similar pattern, with 26% and 30% of the farmers and researchers indicating this. Another consultative participation element was the evaluation of the perceived effectiveness of proposed solutions jointly by farmers (22%) and researchers (25%). In what may be termed collaborative participation, 9% of the farmers indicated they were involved in intensive and continuous interaction with the researchers on execution of the research programme. The researchers discussed with farmers on *what, why*

Table 1: Distribution of respondents' socio-economic characteristics

Farmers (n=100)	Characteristics	Freq. (%)	Farmers (n=100)	Characteristics	Freq. (%)
Sex			Religion		
Male		77	Christianity		51
Female		23	Islam		47
			Traditional		2
Age (year)			Income Level (in Naira)		
<30		8	<80,000		10
30-40		12	80,001-140,000		12
41-50		62	140,001-200,000		65
51-60		11	>200,000		13
>60		7	(mean = N 194,832)		
(mean = 46.2 yrs)			Marital Status		
Educational Level			Single		10
Adult literacy		6	Married		82
Primary education		9	Widow		4
Secondary education		67	Divorced		4
Post-secondary education		18	Size of Stock		
Poultry Farming Experience			<500 birds		12
<5 years		12	500-1000		17
5-10		22	1001-1500		58
11-15		48	>1500		13
>15		18	(mean = 1485 birds)		
(mean = 14.6 years)			Poultry Researchers (%)		
Poultry Researchers (%)			Characteristics (n=20)		
Characteristics (n=20)			Religion		
Sex			Christianity		(65)
Male		(80)	Islam		(35)
Female		(20)	Education (Degree)		
Marital Status			Masters		(30)
Single		(25)	Ph.D		(70)
Married		(75)	Poultry Research		
Age			Experience (years)		
30-40		(25)	5 -- 9		(30)
41 -- 50		(45)	10-15		(46)
> 50		(30)	>15		(24)
(mean = 48.8 years)			(mean = 12.3 years)		

Source: Field Survey, 2005

Table 2: Distribution of respondents based on their participation in and use of PPR

Types of Participation in PPR	Farmers Participated in (n=100)	Researchers Used (n=20)
	Yes (%)	Yes (%)
Contract Participation		
Farmers provide birds, feeds and other inputs for the researchers	18	20
Management of the pen house with farmers and provision of some services	19	20
Consultative Participation		
Problems identification and development of solutions with farmers.	28	30
Diagnose priority problems with farmers	26	30
Evaluation of proposed solution with the farmers.	22	25
Collaborative Participation		
Intensive and continuous interaction with farmers on execution of research programme	9	10
Monitoring of progress and joint review of research results with farmers.	6	10
Farmers investigating the relationship between productivity and feeds and breeds	7	10
Research observation, data taking, Recording and keeping with farmers.	6	10
Collegiate Participation		
Seminars and discussion sessions with farmers to strengthen farmers capacity to carry out research on their own.	2	5
Participation in informal research and development programmes .	1	5
Source: Field survey, 2005		

and how of the research. This element was indicated by 9% and 10% of the farmers and researchers respectively. Farmers were also asked to look out for their perceived relationship between breeds and feeds and level of poultry productivity. This is making the farmers to investigate in their own ways if feeds and breeds affect productivity. This occurred in few researches conducted. However, the proportion of respondents that indicated this was very low

– 7% of farmers and 10% of researchers. About 6% of the farmers indicated that researchers involved them in monitoring of research progress and review of research results. Here farmers participated in monitoring if the research was accomplishing its aim and if the results and performance of the birds so far is good or not. Farmers (6%) also participated in observing the experiment, taking, recording and safekeeping of research data for the researcher. The farmers were

trained to do this by the 2 researchers who indicated they did this.

Under what could be classified as collegiate participation, one researcher invited 2 poultry farmers to a seminar on poultry research. During the seminar the farmers were able to learn few things about poultry research. This was quite inadequate as it was not a deliberate seminar to strengthen the farmers' capacity to carry out research. In few occasions, the same researcher had tried to discuss with the farmers the process of some aspects of poultry research. The researcher had also deliberately involved one farmer in informal poultry disease control research. This was aimed at building the farmer's capacity to carry out the same research on his own.

Extent of participation of farmers and poultry researchers use of PPR

The average score of the poultry farmers on their level of participation in PPR was 6/30. This is low, indicating that poultry farmers were not allowed to participate well in PPR by the poultry researchers. It was only 11% of the farmers that indicated that they have participated in one form of poultry research or the other before. It is the responsibility of the researchers to involve farmers in their research. There is little or nothing the farmers can do if they were not encouraged and prompted by researchers to participate. A similar trend was obtained on the level of poultry researchers use of PPR. An average score of 8/30 was obtained from the 6-item Likert-type questions that sought to measure their level of use of PPR. Only 25% of the researchers indicated that they have used farmer-participatory poultry research before. These scores are low and in line with the farmers' average score on their level of participation in PPR. Participatory technology research and development still lags behind in the livestock

sector, where there is a considerable scope for greater and better farmer participation (Conroy, 2005). It should be noted that none of the socioeconomic characteristics of both the farmers and researchers had any significant relationship with the level of use or participation.

Willingness by poultry farmers and researchers to participate in and use PPR

An average score of 26/30 was obtained on poultry farmers' willingness to participate in PPR, while the average for poultry researchers was 22/30. A total of 93% and 95% of the farmers and researchers respectively indicated that they are willing to participate in and use PPR. This is quite encouraging. It shows that both researchers and poultry farmers are willing to try the farmer-participatory poultry research. Therefore, there are potentials for farmer participatory approach in poultry research. The farmers will definitely participate if invited to do so and the researchers will invite farmers to actively participate in their research, if the conditions are right. The research may be on-farm or on-station. It may be in form of contract, consultative, collaborative or collegiate participation, which is intended to develop the capacity of the farmers to carry out informal research on their own. Livestock farmers will gain even greater benefits from their livestock if they are given a greater say in research and technology development (Conroy, 2005).

Constraints Militating Against Farmers Participation and Researchers Use of PPR

Table 3 below highlights constraints that militate against farmers' participation and researchers use of PPR. The constraints indicated by researchers are inadequate researchers motivation by their organizations to use PPR (90%), extra funds and inputs required (80%), farmers not having the formal training (in poultry or animal science) to enable them participate (80%) and inadequate skills of researchers in using PPR (75%). Others

Table 3: Distribution of respondents by constraints militating against participation in and use of PPR

Researchers' Constraints (n = 20)	%	Farmers' Constraints (n = 100)	%
Inadequate researchers motivation by their organizations to use PPR	90	Low encouragement, poor attitude and motivation of researchers	83
Requires extra funding and inputs	80	Inadequate knowledge and skills in poultry research methods	79
Farmers do not have the formal training to enable them participate	80	Poor remuneration of farmers in participating in PPR	78
Inadequate skills of researcher in using PPR	75	Conflicts with other farm activities	65
Extra efforts and time required by researchers	60	Extra time is required to participate in PPR	55
Poor attitude and lack of interest of researchers in using PPR	30	Requires extra energy and efforts	46
Poor attitude and lack of interest of farmers to participate in PPR	15	Inferiority complex in working with learned researchers	18

Source: Field survey, 2005

are that extra efforts and time are required by researchers to implement PPR (60%), poor attitude and lack of interest of researchers in using PPR (30%) and poor attitude and lack of interest of farmers to participate in PPR (15%).

The constraints identified by farmers are low encouragement, poor attitude and motivation of researchers (83%), their inadequate knowledge and skills in poultry research methods (79%) and poor remuneration of farmers in participating in PPR (78%). Others are conflicts with their other farm activities (65%), extra time required to participate in PPR (55%), extra energy and efforts required (46%) and inferiority complex of farmers in working with learned researchers (18%).

The research organization needs to motivate and encourage the researchers to use PPR. This may be done through extra funding, especially for on-station trials. Seminars and workshops may be organized on farmer-participatory research methods. On the part of the farmers, the research and extension organizations may organize workshops for them on PPR. Some token may be paid to the farmers for their participation in PPR.

Conclusion and Recommendations

Based on the findings of this study, it is concluded that there are few elements of farmer-researcher participatory poultry research (PPR) in Lagos State. Farmers are more involved in contract and consultative participation than collaborative and collegiate, **even though** farmers' participation in all of **them** is **very low**. The level of use of PPR by researchers is very low. However, both **farmers and** researchers are highly willing to **participate in and use PPR** if the enabling **environment and** conditions are right. These elements indicate that there are great potentials for **farmer participatory poultry research in the study area** that could be improved and built upon. The constraints that militate **against the use of PPR by researchers** are **inadequate motivation of researchers to use PPR** by their organizations, the need for extra fund to execute PPR and inadequate skills and knowledge of researchers in using PPR. If these could be addressed, PPR would be enhanced and sustainable poultry development ensured.

Based on the conclusions of this study, it is recommended that:

1. Research institutes and universities should design and implement policies which will encourage and motivate researchers in using PPR. This may include extra funding and remuneration for using PPR, training and workshops on skills in PPR.
2. Research institutes in collaboration with extension agencies should conduct training and workshops for farmers to build and increase their capacities, skills and knowledge to actively participate in PPR.

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