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**AGRICULTURAL RESEARCH INFORMATION SYSTEM OF NIGERIA:
AN ASSESSMENT OF INSTITUTIONAL EFFECTIVENESS**

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Abstract:

This study critically examined the effectiveness of agriculture research information system in Nigeria. Three Universities of Agriculture: The University of Agriculture Abeokuta (UAA), the University of Agriculture Makurdi and the University of Agriculture Umudike (UAU) in addition to three agricultural research institution. National Root Research Institutes (NRCRI), National Agriculture Extension and Liaison Services (NAERLS) and the institute of Agriculture Research and Training (IARST) were used for the study. A combination of document analysis and structural interview were used as instruments for data collection. Our findings indicate that success in agricultural production hinges on the adequacy of information communication and dissemination systems and in this regard, the agriculture research information system Nigeria is deficient. The paper recommended that more proactive and aggression selective dissemination of information should be pursued and a restructuring of research organization, one that would commit resources in an improved information system as well as a high quality and motivated research staff.

INTRODUCTION

It is now generally accepted in Nigeria that to stimulate agriculture production and to improve agriculture research require more effective agricultural information dissemination and management system. Availability accessibility and utilization of information is crucial to the development efforts of any nation's agricultural sector. At the national level, in policy making and planning, information is required for efficient control and use of resources, and in industry, it is needed for innovation. Conscious efforts are usually necessary to ensure that the availability, accessibility and utilization information is sustained by creating an enabling environment necessary for creative research efforts. The relation between the availability of information service provision and agricultural development has been demonstrated in developed countries as well as in developing ones. The importance of, and need for agriculture information, and its

implication for developing countries, including Nigeria have been stressed by many (e.g. Ali, 1999, Arunachalum, 2000, Salem, 2003 and Salmam 2005). Modern agricultural development has been attributed partly to the rapid spread of information and the ability of the developing countries to utilize research results. Increasingly, the dissemination of agriculture information and the utilisation of research results have been part of the key factors in agricultural development of any nation.

In her scientific information policy, Nigeria puts more emphasis on cost-efficiency and results. Agriculture is one area where there exists the perception that the application of result-oriented principles has viability. There is some evidence in support of this perception, for example, Nigeria has in the past been able to realize a doubling of agricultural output through innovation such as hybrid maize production and the development of the minisetete high yielding yam variety (Nwulia, 1986, Ojo 1991).

That the state is interested in product-oriented research can be further ascertained from the number of agricultural oriented institutions and financial investment in agricultural research and development (R and D). According to Nienke and Ayoala (2004) 81 government and higher education agencies engaged in agricultural research in Nigeria in 2000, together they employed over 1,352 full-time equivalent (fte) researchers and spent N 3.6 billion Naira in 1999 on agricultural research and development (R and D) equivalent to \$106 million in 1993 international prices (see table 1).

Although agriculture remains a key component of the Nigerian economy: currently contributing about 40% of the Nigerian GDP and employing about 70 % of the active population, Idachaba (1998) noted that the sector has however significantly underperformed its potentials. For example, the global Hunger Index Published by the International food Policy Research Institute (IFPRI) cited in Federal Ministry of Agriculture and Water Resources(FMAWR) (2006) which ranks developing countries on the basis of their dimension of hunger in the rang

0-100 with '0' being a state of "No hunger" and 100 as the worst status of hunger placed Nigeria at "20" in the ranks of 10-20 labeled as having a 'serious' state of hunger among compared Sub-Sahara African countries. Furthermore the food and Agricultural Organization (FAO) cited in (FMANR 2006) in its state of Food insecurity in the world, had indicated that Nigeria had over 12 million people reported as undernourished as at 2003.

World Bank (2000) also noted that Nigeria agricultural development today presents a mixed picture. Although progress is being made in area of agricultural institutional building, the agricultural production situation is not altogether favourable. First, real agriculture growth, which has been as high as 4% during 1989-1999, slowed to less than 2% for the period of 1990-1994, second, while exports of oil and oil products have marked increased, accounting for almost 80% of total export, traditional export market for cash crops have been lost and import of food and agricultural products have been increased significantly. Furthermore, the productivity of land and labour is below potential due to a combination of problems related to lack of appropriate data on trade policies, pricing and import policies and inappropriate investment.

According to Gathegi (1994) one of the major reasons of creating scientific information is that it will increase useful knowledge. To do this he went on to say that information has to be managed and disseminated adequately among scientists, policy makers, extension agents, where practical utilization occurs and among the farmers.

Agricultural research though an essential element of the information system, is not enough to realize the production requirement of the nation. Production requires more than mere generation of agricultural knowledge. It requires channels and linkages through which information can flow freely into areas where it can be used effectively. Effective information delivery service coupled with applied research and good practical training can enhance

agricultural development programme. This study therefore seeks to examine the current status of agricultural research information system in Nigeria.

In order to do this, it is necessary therefore to examine the effectiveness of the information dissemination system at the research level by analysing the dissemination system and management structure. It is also necessary to look at the communication pattern of the agricultural researchers and their incentive for information gathering and utilization.

LITERATURE REVIEW

The effectiveness of agriculture information system policy is measured to a large degree by the effectiveness of the management system. According to Levitan (1997) information system (IS) is generally refers to as the interrelated process of gathering, organizing, storing and dissemination of information items. James and Yap (1996) defined the effectiveness of an information system as the extent to which a given information system is actually contributes to achieving organizational goals (s). Idachaba (1998) noted that there has been a lot of instability in the Nigeria agricultural research System since independent and concluded that the instability has had correspondent negative effects on the agricultural information dissemination systems in Nigeria.

The International Service for National Agricultural Research (ISNAR) (1981) noted that there is a lack of awareness among agricultural researchers of other research activities locally or internationally even in their own field of interest. Odhiambo (1995) posits that local scientists lacked background information, such as contained in Back issues of journals with which to initiate research projects. They were unable to access relevant information contained in widely scattered international journals and lack access to translation services to literature in language other than English. Local scientists also suffered from an acute lack of trained information workers and scientific documentation centers (Adedigba, 2000).

Nolan (1993) stated that information-handling capabilities constitute the nervous system of any society. It is the ignition key to innovation and self-sustaining development, driving the inventiveness and adaptiveness of local artisans, and small entrepreneurs into a national development effort in all disciplines of human endeavours. Nzotta (1995) noted that adequate provision of information is the soul of research and that the importance of access to accurate, reliable and up-to-date information at every stage of research cannot be over-emphasized. He concluded that without such information, there could be unnecessary duplication of research and waste of scarce resources. French (1990) observed that there is little knowledge about the users of agriculture information both in the industrialized and developing countries. Russell (2004) lamented that there is scarcity of documentary evidence on the actual information needs of agricultural user and concluded that no one is sure of what is the user of agricultural information really needs. French (1990) therefore suggested that the agricultural research information system study and identify the needs of each category of user for effective service delivery.

METHODOLOGY

For this study, a combination of document analysis and structural interview with researchers in the area of agricultural was utilized. Respondents were staff of the following: University of Agriculture Umudike (UAU) and the National Root Crops Research Institute (NCRI), Umudike, The University of Agriculture Makurdi (UAM) and the University of Agriculture Abeokuta (UAA) and the Institute of Agriculture Research and Training (IARST) Ibadan.

To identify respondents for the study, staff list of research personnel were obtained from UAU, NRCRI, UAM, NAERLS, UAA and IARST. Two methods were used to obtain these lists, where the institution was willing to provide such a list it was obtained directly from the office concerned. Where a list could not be obtained this way, an annual report or other document that contained such a list was used. This was done for IARST and NAERLS. Using these lists, a quasi-

random list of respondents was constructed by picking out every 5th name on the list. In this way, 60 respondents were selected. This represented 40% of the sample. The questions for the interview focused on:

- a. The respondent's information gathering and dissemination activities.
- b. The respondent research activities and
- c. The respondent, perception of the research environment and policies relating to scientific information in their areas.

Inputs from previous work Gathegi (1994) was adopted in designing the instrument for data collection for this study.

RESULTS AND DISCUSSIONS

Table 1: Composition of Agriculture Research Expenditures and Total Researcher, 2000

Types of agency	Spending				Share	
	1999	1993	Researchers	Spending	Researchers	Agency in sample
	Naira	International dollars				
		(Millions)	(fte's)		(Percent)	(Number)
Government	2,215.3	65.8	8394	62.1	62.1	22
Higher Education	1,352.6	40.2	512.5	37.9	37.9	59
Total	3,567.9	106.0	1,351.9	100	100	81

Nienke and Ayoola (2004).

Table 2: Collegial Awareness and Location (N60)

Awareness of Colleagues Elsewhere		Indication of where Colleagues are Located	
	%		%
Affirmative	66.0	Local	57
		Foreign	33
Negative	24.0	Missing data	10

Table 3: Frequency of Collegial Communication

	%
Regularly	35.0
Occasionally	30.50
Sometimes	20.50
Not at all	10.00

As indicated in Table 2 and 3, a significant number of researchers think they are aware of local colleague doing research in their area, and they do engage in some level of communication with them.

Table 3 suggests that the most frequency of communication as shown in table 2 involves mostly local researchers. Also the small number (33%) of foreign colleagues known would however suggest a gap in the use of information created elsewhere and perhaps some duplicative research. This finding agrees with earlier study by Ike (1992) who noted that local scientists lacked background information of their foreign counterparts and were also inadequately equipped to access relevant information contained in widely scattered international journals. Agricultural scientists in Nigeria often feel isolated both within Nigeria and from other countries. This could be due to the learnness in number and the sparse distribution of the research system and consequently, the researchers.

Table 4: Local Availability of Journals and Evaluation of Library Services (N60)

Availability	%	Evaluation	%
Availability locally	65.00	Satisfactory	60.00
Not locally available	22.00	Unsatisfactory	25.50
		Cannot evaluate	14.50
Missing data	3.00	-	-

Table 5: Library use Frequency and Purpose (N60)

Frequency	%	Purpose	%
Once a week	15.00	A. Using the internet facilities	25.00
Twice a week	25.50	B. Consult new materials	15.50
Twice a week		C. Both A. and B	60.00
More than twice a week	59.50	-	-

Table 4: Suggests that respondents felt that essential journals in their area of research were locally available as majority 65% of the respondents indicated so and that library and information services were satisfaction. This would however suggest a very low threshold of satisfaction since researchers (33%) indicated of isolation from their foreign colleagues (see table 2)

Information is the live-wire of research and the library plays a significant role in information acquisition and management, little wonder (59.50%) of the respondents used the library more than twice a week for both internet services and consulting book purposes. (See table 5).

Table 6: Evaluation of UAU, NRCRI, UAM, NAERLS, UAA, and IARST N60

Evaluation	UAU %	NRCRI	UAM %	NAERLS	UAA	IARST
Excellent	50	46	56	46	56	25
Very good	35	30	31	34	30	45
Good	10	10	8.5	16	10	26
Missing data	5	8	4.5	4	4	4

Table 7: Adequacy of Dissemination of Research to other Researchers N60

Adequacy of Dissemination	%
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Adequately Disseminated	20
Inadequately Disseminated	80
Not disseminated at all	0

Table 6 and 7 indicate that the creation and dissemination of research findings within the agricultural research information remain deficient.

When asked to assess six (6) agricultural research information systems in Nigeria- the University of Agriculture Umudike (UAU), the National Root Crop Research Institute (NRCRI), the University of Agriculture Makurdi (UAM), the National Agriculture Extension research Liaison Service (NAERLS), the University of Agriculture Abeokuta (UAA), and the Institute of Agricultural Research and Training (ARST), the respondents scored the highest favourable 50%, 56% and 56% to the three Universities of Agricultural in Nigeria as against 46% and 26% to their counterparts Agricultural Research Institute (see table 5). Because the Universities of Agriculture appear to receive more financial support from the government than the Agriculture Research Institutes and as a result remain most viable, agricultural research system in Nigeria, the result is suggested to be valid.

Similarly, 80% of the respondents indicated that information dissemination among researches is inadequate, while an insignificant number of 20% said dissemination of information is adequate.

Table 8: Criteria for Promotion.

Criteria N 60	%
Publication	65.15
Long service	30.00

Additional training	15.28
Any other	0.00

Table 9: No of articles within proceeding five years and where published N60

	Total	Average per Scientists
Local	280	4.66
International	80	1.33
Total	360	6.09

Table 8 indicates that publication was the main criteria for promotion. Thirty percent (30%) of the respondents cited long services as a criterion while 15.28 indicated advanced training received while on employment.

As a result of the publication criteria, there was an indication of a reasonable level of publication as average number of articles published within the proceeding 5 years was about six, mostly in local journals, an average out of every five articles per scientists within the proceeding five years (see table 9).

Table 10: Perceived Adequacy of Researcher Compensation N 60

Responses	%
Adequate	65.14
Not adequate	34.86

Research compensation is also an important factor in the effectiveness of a research system. There are some improvement in the compensation and rewarding of research scientists in the agricultural system. Table 10 suggests that more than half 65% of the respondents consider their compensation adequate. This should not mean satisfaction with the research system, a point discussed earlier.

Conclusion

New information technology application may well necessitate substantial rethinking of the appropriate organizational structure of the Nigerian agricultural research information system. Both the management and dissemination of information depend largely on the adequacy of communication system, i. e. journal in which research findings are communicated, conferences, meetings and also infrastructure that support telecommunication and information management system. An evidence of inadequacy of communication system is the high number of inadequately disseminated of research to other researchers.

There is therefore the need to pay attention on how information is disseminated within the research system if the country is to benefit from information generated from agricultural research. More proactive and aggressive Selective Dissemination of Information (SDI) needs to be pursued in order to deliver information to the point where it is needed. Specifically, a restructuring of organization is necessary, one that would commit resources to an improved information system as well as a high quality and motivated research staff.

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