
INTEGRATING SECONDARY SCHOOL AGRICULTURAL SCIENCE TEACHERS INTO AGRICULTURAL EXTENSION SERVICE IN ENUGU STATE

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ABSTRACT

This research work was conducted to ascertain the feasibility of integrating secondary school agricultural science teachers into agricultural extension service in Enugu State. Data were collected with a well-structured 92 item questionnaire from a sample of 184 secondary school agricultural science teachers and 15 agricultural extension management staff as well as 13 school management staff in Enugu State. This instrument was validated by three experts, one from the Department of Agricultural Extension, Faculty of Agriculture, University of Nigeria, Nsukka and two from the Department of Agricultural/Home Economics Education, Michael Okpara university of Agriculture, Umudike. The data collected were analyzed using mean, standard deviation and t-test. The results of the study revealed that Secondary school agricultural science teachers rated themselves competent and interested in the performance of most of the extension functions. There was also no significant difference in the mean ratings of both the male and female secondary school agricultural science teachers on their level of interest in carrying out extension functions. There was also no significant difference in mean ratings of the male and female secondary school agricultural science teachers on the motivational incentives they would derive satisfaction from in performing agricultural extension services. Based on the finding, it was suggested that both the extension management agency and school management agency should act in concert to achieve a hitch-free integration of these teachers into agricultural extension service in Enugu State.

Key: Integration, Extension services, Teachers, Secondary school, Agriculture

INTRODUCTION

Nigeria is generously endowed with abundant natural resources and a mild tropical climate with all year round high temperatures which do not pose any serious constraints to the growth of agricultural crops and raising of livestock. According to CBN (2000) report, these enormous resource base, if well managed could support a vibrant agricultural sector capable of ensuring self-sufficiency in food and fibre production for the teeming population. In recent years, agricultural

productivity has been on the decline in Nigeria and Enugu state in particular in spite of its natural endowments. In addition, most of all the agricultural activities in the state are carried out by the adult rural farmers. The rural farmers as reported by World Bank (1990) constitute about 75-80 percent of the work force in food production in developing countries. The rural farmers live in relatively complex, diverse and risk prone environments (Cess, 2004). The rural communities have inadequate rural infrastructure for example feeder

roads, water schemes, transport facilities and electricity. As a result, the farming population comprises predominantly of small scale, subsistent peasants, farming on average of two hectares of land and usually on scattered holdings (CBN 1991). Usually, farming activities are also carried out mainly by the rural farmers with traditional and rudimentary technology consisting mainly of hoe and cutlass. As the dominant activity of the rural people is agriculture, CBN (1991) report directed that efforts to raise rural productivity would require constructive alteration of the current technological base of domestic agriculture which so far offers little scope for rapid output expansion. The report further revealed that the efforts would require a sound emphasis on research and strengthening of extension service programmes.

Agricultural extension is one much advocated and applied strategy for effecting agricultural and rural development in any nation. Agricultural extension education which has its own origin in agricultural innovation dissemination to farmers is widely employed in providing different kinds of education to people outside the formal school system. According to Mama (2002) extension is a social action process geared towards bringing about change in behaviour relating to knowledge, skills, attitudes, values and practices in farming, nutrition, health, technology utilization, population dynamics and environmental issues. In the opinion of Ihimodu (2002) the role of extension in agricultural development is to assist the rural farmers through educational procedures to produce adequate food and fibre for both urban and rural requirements.

However, in Nigeria, agricultural extension is the responsibility of the Ministry of Agriculture (MOA) and other associated agencies like Agricultural Development Projects (ADPs), the universities and non-governmental organisations (NGOs). In Enugu state for instance, the ADP which is a World Bank initiative carries out extension service in connection with the State

Ministry of Agriculture. In a statement of Jibowo, Siyanbola and Ogunjimi (2004) the establishment of ADPs, agricultural extension policy formulation became a joint issue between the extension administrators in the Ministry of Agriculture and the (ADPs). One of the crucial factors identified by Belay and Abebaw (2004) as contributory to the problem of food and fibre shortages is very weak and inefficient extension system chiefly as a result of inadequacy of personnel. This leads to inadequate area coverage. Other institutionally viable ways of reaching the rural farmers must be developed for agricultural technology development and dissemination. Personnel can be sourced from other agencies outside the extension institution for the purpose of reaching the local farmers who constitute the major clientele for extension service.

In the United States of America (USA), secondary school agricultural science teachers are involved on part-time basis in rendering agricultural extension services to school community farmers (Mama, 2002). In the same vein, Swanson (1990) reported that in Israel, volunteers and farmers with practical experience in farming are recruited to help render extension services. It is expected however that the success of this kind of strategy in Enugu State will hinge on the readiness of the secondary school agricultural science teachers to render such a service into the system as well as being accepted into the system.

The Enugu State Post Primary School Management Board (PPSMB) employ holders of the Nigerian Certificate in Education (NCE), Bachelor's or Master's Degree, Higher National Diploma (HND) and Ordinary National Diploma (OND) in Agriculture, males and females alike to teach agricultural science in secondary schools in the state. These teachers through their interaction with the students in the school and farmers in the community will be able to transfer technological and scientific developments to farmers either directly or indirectly. According to Olaitan and

Mama (2001) there are certain farming practices regarded as obsolete in modern agriculture that should be discouraged among students such as non-application of crop rotation, bush burning, deforestation and continuous cropping without fertilizers or manure. Knowledge of these practices can as well get to the farmers in rural communities through their wards in the school.

Integrating secondary school agricultural science teachers into agricultural extension service agrees with the suggestion of Cochran (2009) in his study of the role of peasant farmer organizations in transforming agricultural research and extension services in West Africa. The author further advised that a pluralistic strategy to agricultural extension services is best in combining different individual inclinations and different organizational potentials to ensure success in agricultural extension work.

The potency of integration has been identified by Yahaya and Olajide (2006) when he advised that the Youth should be integrated into agricultural technology transfer by the organization of virile youth clubs like Rural Youth Agricultural Extension Programme (RYAEP). The authors stated further that the Youth if integrated into farming when in school will be able to farm on their own during and after school.

Statement of the Problem

The rural farmers in the study area are mostly illiterates. Most of them too are aging and lack of certain basic amenities in rural communities as well as the drudgery in farming cause the youths to migrate to urban areas. The rate of learning of adults decline after middle age. This is caused according to Obibuaku (1993) by such factors as less acute vision and hearing, slower reaction time, increased fear of failure, set life style and greater reluctance to learn. These may be great impediments to the adult learner and would make extension education more difficult.

Most of the village extension agents in the state are not willing to do their work well. They visit the farmers only when it is convenient for them to do so. The unwillingness of many of the village extension agents has been identified also by ADP's Village Extension Agents Personal Communication (2002) as reported by Ajayi (2002) as a serious problem to extension service.

With the current proliferation of community secondary schools in the state, almost every community has one or two secondary schools now. Again, in line with the West African Examinations Council (WAEC) and National Examinations Council (NECO) regulations, almost all these schools offer agricultural science as a subject. Most of the teachers including agricultural science teachers are natives and reside with the rural farmers. The students also come to school daily from their homes as most schools in the state do not have boarding facilities. It is envisaged that aggravated agricultural and rural transformation may be achieved with the integration of secondary school agricultural science teachers into agricultural extension service in Enugu state.

It is therefore on the above background that this study is carried out to ascertain the feasibility of integrating secondary school agricultural science teachers into agricultural extension service in Enugu State.

Purpose of the Study

The overall purpose of this study is to ascertain the feasibility of integrating secondary school agricultural science teachers in Enugu State into agricultural extension service. Specifically, the study intends to:

1. ascertain the level of competence of secondary school agricultural science teachers for performing agricultural extension functions;
2. determine the level of interest of secondary school agricultural science teachers in

participating in the provision of agricultural extension services on part-time basis;

3. determine the motivational incentives that secondary school agricultural science teachers would derive satisfaction in providing agricultural extension services;

Research Questions

1. What is the level of competence of secondary school agricultural science teachers for performing agricultural extension functions?
2. What is the level of interest of secondary school agricultural science teachers in participating in the provision of agricultural extension service time basis?
3. What are the motivational incentives that secondary school agricultural science teachers would derive satisfaction in providing extension service?

METHODOLOGY

The study adopted survey research design. This is because a structured questionnaire was used to obtain information from the respondents on integrating secondary school agricultural science teachers into agricultural extension service in Enugu State. Survey research design focuses on people; the vital facts of the people, their beliefs, opinions, attitudes, motivation and behaviour. In survey research, samples are drawn from populations from where the researcher infers the characteristic of the defined population or universe. The study was conducted in Enugu State. The State is made up of 17 local government areas with a total of 339 approved secondary schools. The state is as well divided into four educational zones. The population of the study was made up of 328 secondary school agricultural science teachers in Enugu State, 15 Area Inspectors of Education (AIE), and 25 extension management staff at the zones and headquarters. The total population was 368. The sample for the study consisted of 196

secondary school agricultural teacher's selected using stratified random sampling technique. To ensure fair representation, a sample of 60 percent (60%) was considered. Stratification is seen to ensure that the sample is representative of the characteristic(s) used to form the strata (Osuala, 2001). The entire population of 25 extension management staff and 15 school management staff was used for the study. A structured questionnaire containing 66 items was used to elicit information from the respondents to ascertain the level of competence of secondary school agricultural science in carrying out agricultural extension functions.

The instrument for data collection was subjected to face validation by three experts, two from the Department of Vocational Teacher Education (Agricultural Education) and one from the Department of Agricultural extension, University of Nigeria, Nsukka. These experts were requested to check the appropriateness of the items in terms of coverage, clarity of language and ambiguity. The reliability of the instrument was established using the split-half method. The instrument was pilot tested on 10 secondary school agricultural science teachers, 2 each from the extension management agency and school management board randomly selected by the researcher from the non-target population. The reliability co-efficient was determined with the application of Pearson's Product Moment Correlation Coefficient. Spearman -Brown step-up (Prophecy) Formula was applied to estimate the reliability of the whole-items. The reliability coefficient of 0.876 (0.88) was obtained: showing the items of the instrument were dependable. A structured questionnaire was administered and retrieved from the respondents by the researcher and five trained research assistants. The administration and retrieval of this instrument was through personal contact. Data collected for this study was analysed using descriptive statistics of mean and standard deviation to answer all research questions. In calculating the mean for the

various items, the responses in the questionnaire was scaled as follows for the research questions. The mean was used to determine the level of competence, interest and satisfaction for items of the questionnaire. A criterion mean that was equal to or greater than (>) 3.5 was taken as competence, interested and satisfaction while a criterion mean that was equal to or less than (<) 3.49 was taken as low competence, interest and satisfaction.

The three null hypotheses formulated were tested using t-test inferential statistics at .05 level of significance. This determined the acceptance or rejection of the null hypotheses. The null hypotheses were rejected if the calculated t-value was greater than the critical or t-table value at .05 level of significance. The null hypotheses were accepted if the calculated t-

value on the other hand was less than the critical or t-table value at the same .05 level of significance.

RESULTS

The results for the study were obtained from the research question answered and hypotheses tested through data collected and analyzed, and were presented in tables below according to research question and the hypotheses.

Research Question 1

What is the level of competence of secondary school agricultural science teachers for performing agricultural extension functions?

Table 1 Showed Mean ratings of secondary school agricultural science teachers on their level of competence.

Table 1: Mean responses of agricultural science teachers on their level of competence in carrying out extension work

S/N	Agricultural extension functions	VHC	HC	C	LC	VLC	X	SD	Remark
1	Assessing farmers' training needs	20	150	10	4	-	4.01	0.50	Competent
2	Effective management of instructional facilities	100	50	24	10	-	4.30	0.90	"
3	Participation in rural development programmes	20	116	30	18	-	3.75	0.78	"
4	Keeping inventory of instructional facilities	111	66	-	-	7	4.49	0.84	"
5	Determining farmers' educational needs in livestock management	20	120	25	19	-	3.77	0.78	
3	Determining farmers' educational needs in crop production	64	90	20	5	-	4.08	0.73	"
7	Assisting in farm inputs' distribution and supplies	48	99	23	10	4	3.96	0.90	"
8	Processes of procurement of loan and credits	40	76	38	20	10	3.63	1.10	"
3	Plantation and agronomic crop production.	30	120	30	2	2	3.97	0.68	"
10	Implementation of agricultural programmes	37	140	5	-	2	4.14	0.55	"
11	Participation in workshops seminars and conferences	134	44	.	6	.	4.74	0.65	Competent
12	Writing proposals, technical reports and professional articles	58	120	2	4	-	4.26	0.68	"
13	Developing relationship with clientele	4	141	32	7	-	3.77	0.35	"
14	Preparing specific extension programme plans	33	43	99	9		3.54	0.84	"

S/N	Agricultural extension functions	VHC	HC	C	LC	VLC	X	SD	Remark
15	Developing cooperation with other agricultural services	10	145	-	21	8	3.70	0.90	"
16	Coordinating service staff	2	40	101	41		3.02	0.70	Low competence
17	Developing and maintaining a desirable staff relationship	30	135	-	-	19	3.85	1.04	Competence
18	Responding to clientele's requests at the right time	16	13	113	31	11	2.96	0.91	Low Competence
19	Using appropriate media and equipment	20	140	12	-	12	3.85	0.86	Competence
20	Improvisation of instructional materials	97	70	-	17	-	4.29	0.89	"
21	Varying instructional methods for both slow and fast learners	118	62	-	-	4	4.53	0.71	"
22	Evaluating extension programme effectiveness	19	80	16	30	39	2.76	0.37	Low Competence
23	Simplifying technical knowledge and skills for farmers.	111	54	11	4	4	4.43	0.87	Competence
24	Determining impacts of extension on productivity, income and employment	18	130	3	29	4	3.70	0.92	Competence
25	Organizing farmers for agricultural shows	30	24	118	8	4	3.37	0.88	Low Competence
26	Establishing rapport with farmers	41	114	-	25	4	3.89	0.98	Competence
27	Identifying community leaders and progressive farmers.	41	114	-	4	25	3.78	1.22	Competence
28	Identifying problems with new technologies	36	136	3	5	4	4.06	0.72	Competence

Data presented in table 1 above showed that the means of twenty-four items exceeded the real boundary limit of 3.5. The means for these items ranged between 3.54 - 4.74. From table 3 above, the secondary school agricultural science teachers rated themselves competent in carrying out these agricultural extension functions. On the other hand, table 3 also showed that the secondary school agricultural science teachers rated themselves low in competence in carrying out extensive

functions presented in items 16, 18, 22 and 25 with mean values of 3.02, 2.96, 2.76 and 3.37 respectively which are each less than the real boundary limit of 3.5.

Research Question 2

What is the level of interest of secondary school agricultural science teachers in participating in the providing of agricultural extension services on part-time basis?

Table 2 showed data analysis on the desired interest of secondary school agricultural science teachers in providing agricultural extension services.

Table 2: Mean responses of secondary school agricultural science teachers on their level of interest on extension work

S/N	Agricultural extension functions	VHI	HI	U	LI	VLI	X	SD	Remark
1.	Assessing of farmers' training needs	60	116	-	-	8	4.20	0.26	Interested
2.	Effective management of instructional Facilities	21	159	-	1	2	4.08	0.49	"
3.	Participation in rural development Programmes	20	160	1	-	3	4.05	0.51	"
4.	Keeping inventory of instructional facilities	106	55	6	-	17	4.27	1.17	"
5.	Determining farmers' educational needs in livestock management	78	82	12	-	12	4.17	1.03	"
6.	Determining farmers' educational needs in crop production.	38	124	-	15	7	3.93	0.94	"
7.	Assisting in farm inputs, distribution and Supplies	43	98	35	-	8	3.91	0.90	"
8.	Processes of procurement of loan and credit facilities	18	100	66	3	-	4.00	0.69	"
9.	Plantation and agronomic crop production	84	64	31	-	-	4.29	0.74	Interested
10.	Supervising the development and implementation of agricultural programmes	119	54	7	4	-	4.57	0.67	"
11.	Participation in workshops, seminars and conferences	128	50	-	6	-	4.63	0.66	"
12.	Writing proposals, technical reports and professional articles	42	109	33	-	-	4.05	0.64	"
13.	Developing relationship with clientele	64	90	20	5	-	4.08	0.73	"
14.	Preparing specific extension programme plans	74	84	-	14	12	4.05	1.14	"
15.	Developing cooperation with other agricultural services	37	140	-	5	2	4.14	0.55	"
16.	Coordinating service staff	50	128	6	-	-	4.63	0.66	"

S/N	Agricultural extension functions	VHI	HI	U	LI	VLI	X	SD	Remark
17.	Developing and maintaining a desirable staff relationship	24	142	2		4	3.96	0.70	"
18.	Responding to clientele's requests at the right time	28	120	2	15		3.88	0.76	"
19.	Using appropriate media and equipment	30	150	-	2	2	4.11	0.34	"
20.	Improvisation of instructional materials	101	71	-	10	2	4.41	0.38	"
21.	Varying instructional methods to suit both the slow and fast learners	60	100		20	4	4.04	0.98	"
22.	Evaluating extension programme effectiveness	25	122	20	10	7	3.80	0.88	"
23.	Simplifying technical knowledge and skills	40	77	37	30	-	3.69	0.99	"
24.	Determining impact of extension on productivity	10	146		23	5	3.72	0.85	"
25.	Organising farmers for agricultural shows	21	131	15	17	-	3.85	0.74	"
26.	Establishing rapport with farmers	24	140	8	5	7	3.92	0.79	"
27.	Identifying community leaders/progressive farmers	128	50	6			4.63	0.66	"
28.	Identifying problems with new technologies	18	160		6		4.03	0.48	"

Data presented in table 2 above have shown that the means for all the terms were above the real boundary limit of 3.5. Table 4 therefore showed that the secondary school agricultural science teachers rated themselves to have interest in carrying out all the extension functions presented in this table.

Research Question 3

What are the motivational incentives that secondary school agricultural science teachers would derive satisfactory in providing agricultural extension service?

Table 3 showed data analysis on the desired motivational incentives secondary school agricultural science teachers would derive satisfaction from in providing extension service

Table 3: Mean response of secondary school agricultural science teachers on the motivational incentives they would derive satisfaction in providing extension services

S/N	Motivational incentives	VHS	HS	U	LS	VLSI	X	SD	Remark
1.	Honorarium from the extension agency	70	108	4	-	2	4.33	0.63	Satisfied
2.	Payment of extension allowance	90	91	-	3	-	4.46	0.59	"
1.	Participation in seminars workshops and conferences	55	123	4	2	-	4.42	0.55	"
2.	Provision of extension service without incentives	2	4	96	40	42	2.37	0.90	Low satisfaction
3.	Voluntary appreciation by farmers'	20	69	10	67	16	3.05	0.99	"
4.	Mere recognition of the teachers as extension agents	50	70	-	53	11	3.52	1.32	Satisfied
5.	Regular promotion and salary increase	60	60	-	60	4	3.61	1.30	"
6.	Job security, welfare scheme and encouraging initiatives	124	56	-	3	1	4.65	0.63	"
7.	Opportunity for further training	40	136	-	8	-	4.13	0.61	"
8.	Provision of separate but enhanced salary scale for participants	144	30	1	-	9	3.82	0.92	"

Based on the data presented in table 5 above, all the items have mean scores above the real boundary limit of 3.5 except for items 60 and 61 with mean values of 2.37 and 3.05. This indicated that the secondary school agricultural science teachers would derive satisfaction in providing extension service with all the motivational incentives presented in table 3 except that of provision of extension service without incentives and voluntary appreciation by farmers.

DISCUSSION OF RESULTS

Results in table 1 above revealed that the secondary school agricultural science teachers rated themselves competent in carrying out most of the

extension functions. The teachers however rated themselves low in competence in the discharge of the following extension functions namely, coordinating service staff, responding to clientele's requests at the right time, evaluating extension programme effectiveness and organizing farmers for agricultural shows. The highlight of the teachers' competence in the performance of the extension functions implied that the teachers were ready to devote total commitment to the programme. The areas where the teachers were rated to have low competence under-scores the importance of an orientation programme for them. The results of this study accords well with that of Scissions (1982) and Androulidakis and Siardos (1992) who asserted that

extension agents' competence must be in accordance with the task areas which they would be exposed to in order to be successful.

Results of this study in table 2 above revealed that the teachers have interest in the performance of all the extension functions presented. Competence and interest are likely two inseparable indices for an extension agent to perform effectively on his task areas. This is in agreement with the findings of Mama (2002) that the success of integrating agricultural science teachers into extension service would hinge on the competence and the interest of the teachers in rendering extension services. Results of the z-test analysis presented in table 10 on male and female secondary school agricultural science teachers' desired interest in extension work revealed that there was no significant difference in the mean ratings of the male and female agricultural science teachers' desired interest in extension work.

Furthermore, the result of this study in table 3 showed that the teachers were willing to perform extension services with all the items for motivational incentives except for the provision of extension service without incentives and voluntary appreciation by farmers. In the face of the dwindling economy, the opportunity for these teachers to earn additional income must have led to outright rejection of provision of extension service without intrinsic motivational incentives. This finding is consistent with Herzberg (1966) Two-factor theory of job satisfaction which states that only the fulfilment of the motivator factors which are intrinsic to the job could lead to positive satisfaction. Herzberg argued further that even though the hygiene factors which are extrinsic to the job could prevent dissatisfaction but cannot contribute to positive satisfaction. This study also indicated that there was no significant difference in the mean responses of male and female agricultural science teachers' desired motivational incentives. The consistency in the mean

ratings of both the male and female agricultural science teachers on their desired motivational incentives underpinned the position of Olaitan and Mama (2001) that job satisfaction and life satisfaction are synonymous as both cannot completely be divorced from one another.

CONCLUSIONS

Based on the findings of this study, the following conclusions were made:

1. the secondary school agricultural science teachers rated themselves competent in performing most of the extension functions
2. The teachers rated themselves as having interest carrying out all the extension functions presented
3. The teachers would derive satisfaction in the provision of extension service with motivational incentives
4. Some constraints envisaged could hamper the integration of the teachers into extension service were identified.

RECOMMENDATIONS

It is recommended that

1. Policy provisions should be made by government to accommodate the new institutions for effective discharge of duties by the teachers
2. Farmers who are the major clientele for extension service should be encouraged to make periodic reports of the performance of these teachers for possible comparison and inferences in the level of output
3. To show serious commitment of these teachers to extension services, lesson notes and periodic schemes of work designed by them should be checked by the supervisors and the

monitoring team to enhance information dissemination.

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