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Research -Extension-Farmer Collaborative Linkage on Horticultural Technologies in South West Nigeria: A Case of NIHORT Adopted Villages

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Abstract: Effective linkage between technology generation, dissemination and utilization will bring about desired self-sufficiency in food production. Unused technologies are a waste of resources with no desired impact and as such technologies should be demand driven. This particular study was preceded by identifying the respondents' awareness and usage of some of already developed horticultural technologies from National Horticultural Research Institute (NIHORT). The study therefore was to determine the interest of farmers in horticultural technologies and decision for further collaboration. Existing NIHORT adopted villages (Osegere and Iya-Oje - Oyo State and Ogotun - Ekiti State) in South Western Nigeria were purposively selected for the study. Data were collected using Focus Group Discussion (FGD) and structured interview schedule. Results obtained were analyzed using descriptive statistics. Findings revealed that 93.1%, 89.7% and 66.7% of the respondents were interested in collaborating with NIHORT in pineapple, okra and exotic fruit production technologies respectively. Only 56.3%were interested in collaborative work on exotic vegetables. Ranking of constraints affecting farmers' interest on technologies were in the order of inadequate personnel> knowledge> capital. The FGD further revealed that farmers are interested in technologies which will improve their livelihood, their major constraint was capital outlay involved in horticultural production. Technology dissemination to farmers should be further strengthened in order to help improve the socio-political economy of the rural area which is also affected by its agrarian nature. This will greatly assist in sustaining the interest of the farming populace which will translate into adoption of horticultural technologies for improved productivity.

Key words: Interest · Collaboration · Dissemination · Horticultural farmer

INTRODUCTION

Horticulture is that aspect of agriculture that deals with production, distribution and utilization of fruits, vegetables, spices, ornamentals and landscape plants. It is in contrast to agronomy which deals with field crops and the production of grains and forage and forestry which deals with forest trees and products related to them [1]. The importance of today's horticulture industry globally, even in Nigeria cannot be overemphasized. Horticultural crop production on the average provides twice the amount of employment per hectare of production compared to cereal crop production [2]. Besides creating jobs on the farm, the horticultural sector also generates off-farm employment as in the case of export and value-added processing industries [3]. Also, horticultural crops can play a vital role in solving the global micro-nutrient crisis which accounted for over two billion people, the vast majority of whom are women and children suffering from micro-nutrient deficiencies [4]. Vegetables and fruits are the most sustainable and affordable sources of micro-nutrients in diets [5].

Technology is one of the resources required for agricultural production. According to [6] definitions of technology differ widely, depending on whether the intent is to embrace the totality of human works, in all societies and during all epochs. Rogers, [7]. Posit that technology is a design for instrumental action that reduced the uncertainty in the cause and effect relationships involved in achieving a desired outcome. Technology comprises of two components, hardware and soft ware. The hardware consists of physical tool that embodies technology. The software consists of information base for the tool. Technology generation (development) can be conceptualized as evolution of organized knowledge to solve problems. The main sources of knowledge creation and generation in sub –Sahara Africa including Nigeria has been the National Agricultural Research Institute (NARIs), the universities and the technology generation arm of the agricultural sector.

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National Horticultural Research Institute (NIHORT); the only horticultural research institute in sub-Sahara Africa; has the mandate of conducting research into production, processing, marketing and utilization of horticultural crops and operates on the premise of developing sustainable production and utilization of horticultural crops in Nigeria. Since NIHORT inception, several technologies have been developed on her different mandate crops, some of which include budded citrus seedlings, rapid multiplication techniques of plantain/ banana and pineapple. For any horticultural technology to reach the peasant farmers who are major beneficiaries in the country there is the need for some of their villages to be adopted by the research institutes thus forming the site for showcasing their technologies.

In 1996, under the National Agricultural Research Project (NARP) a World Bank assisted programme, the adopted village concept was introduced to the National Agricultural Research Institutes (NARIs) for developing and evaluating technologies emanating from NARIs. The villages were to help in the early evaluation and dissemination of the technologies while research institutes were to conduct their On-Farm Adaptive Research (OFAR) in the identified adopted villages. Each institute was to identify two communities in their mandate areas and select farmers who were willing to try out developed technologies on their fields. The villages were to serve as showrooms for convincing intending farmers and end-users on the viability of the technologies being promoted. Most research institutes identified villages during the NARP era but subsequently after NARP when the programme wound up and the funds dwindled, they were unable to carry out activities in these villages [8]. NIHORT continued with her three chosen adopted villages which are Osegere, Iya-oje and Ogotun (Oyo and Ekiti States respectively). Indeed NIHORT has been collaborating with farmers in the adopted villages on some of its mandate crops most especially on Plantain, Banana and Citrus. With the experience of farmers so far in the adopted villages it is therefore important to know whether they still have interest in further collaboration with the institute on some of her technologies. Therefore the study has the following objectives:

- Identify the areas and level of interest of respondents for further collaboration in horticultural crop technology.
- Identify the constraints affecting their interest in further collaboration of horticultural technologies.

Hypothesis: There is no significant relationship between selected personal characteristics of farmers and their interest in collaborating with NIHORT in some of her technologies.

MATERIALS AND METHODS

The study area was in the South Western Nigeria is one of the agro-ecological zones in Nigeria in which adopted villages are located. NIHORT adopted villages, Osegere and Iya Oje (Oyo) and Ogotun (Ekiti) States were purposively sampled. Focus group discussions (FGD) described by ASA [9] were used to collect qualitative data in which farmers were stratified into men, women and youth groups. Quantitative data was obtained through pre-tested structured interview schedule. Seventy five percent of the registered farmers in the adopted villages were randomly selected. The total sample size was eighty-seven. Data was analyzed using descriptive statistics (frequency, percentages, mean and ranking). The constraints were ranked using the 3-point scale as Very severe = 3, Severe =2 and Not severe = 1. The dependent variable is the interest in further collaboration in horticultural technologies which reflected in the level of their interest. The level of interest was measured with 3 point scale as high level of interest=3, medium level of interest =2 and low level of interest=1. In determining the relative position of each technology the total raw scores of respondents on their interest in further collaboration were expressed as IFCHTRS=3 (N1) +2(N2) +1(N3) and mean was calculated for each of the horticultural technology thus:

$$\text{Mean} = \frac{3(N1)+2(N2)+1(N3)}{3}$$

Where

IFCHTRS = Interest in further collaboration in Horticultural technology raw scores.
N = Number of respondent that responded.
S = Sample size.
M = Mean of Interest in further collaboration of Horticultural technology.

RESULTS AND DISCUSSION

Frequency and Level of Interest in Further Collaboration: Table 1 reveals the frequency and levels of interest of in further collaboration in horticultural technologies. Results show that 93.1% of the farmers are interested in collaborating with NIHORT in the aspect of pineapple production while 90.0% are interested in okra

Table 1: Distribution of respondents' frequency and level of interest in further collaboration in horticultural technologies

Level of interest Variables (Collaboration) Vegetables	Frequency	Low	Medium	High	IFCHTRS	Mean
Amaranthus	71(81.6)	1(1.2)	22(25.3)	48(55.2)	189	2.2
Cochorus	63(72.4)	11(12.3)	7(8.1)	45(51.7)	160	1.9
Pepper	75(86.2)	4(4.6)	6(6.9)	65(74.7)	211	2.5
Okra	78(89.7)	10(11.5)	1([12.7)	57(67.5)	203	2.3
Mushroom	68(78.2)	2(2.3)	23(26.4)	43(49.4)	177	2.0
Exotic vegetables	49(56.3)	3(3.5)	11(13.7)	35(40.2)	130	1.5
Fruit						
Citrus	71(81.6)	2(2.3)	10(11.5)	59(67.9)	199	2.3
Plantain	71(81.6)	2(2.3)	6(6.9)	63(72.5)	203	2.3
Pine apple	81(93.1)	5(5.8)	6(6.9)	70|(80.5)	227	2.7
Exotic fruits	58(66.7)	2(2.3)	12(13.8)	44(50.6)	158	1.9
Spices						
Garlic	62(71.3)	-	25(28.8)	37(42.6)	161	1.9
Ginger	68(78.2)	-	24(27.8)	44(50.6)	180	2.1
Ocimum	56(64.4)	-	28(32.2)	37(42.6)	137	1.6
Fruit juice processing	64(73.6)	1(1.2)	3(3.5)	60(69.0)	187	2.2

Source: Field survey, 2007. Figures in Parenthesis Are Percentages

Table 2: Percentage distribution of constraints to further collaboration in horticultural technologies

Variable	Frequency (%)	Score	Rank
Inadequate research and extension Personnel	84(96.6)	386	1st
Inadequate Knowledge of technology	80(92.0)	384	2nd
Finance	76(87.4)	371	30
Access to government extension agent	75(86.2)	337	4th
Pest and Diseases	67(77.0)	283	5th
Transportation	65(74.7)	316	6th
Marketing	64(73.6)	324	7th
Not aware of the existing technologies	62(71.3)	280	8th
No land	7(8.1)	190	9th

Source: Field survey, 2007. Figures in Parenthesis Are Percentages

production followed by interest in fruit (66.8%). The least interest is in exotic vegetables 56.3%. In the same vein the result reveals further that pineapple technology had the highest IFCHTRS and mean of 227and 2.7, followed by pepper technology with IFCHTRS and mean of 211and 2.5. Interest level of the farmers for corchorus, spices (Ocimum and Garlic), exotic vegetables and fruits were with IFCHTRS farmers and mean of 160 and 1.9,137 and 1.6,162 and 1.7,130 and 1.5,158 and 1.9 respectively. These low values could be as a result of the low awareness of these crops. Focus group discussion (FGD) revealed the uncertainty of concerning favorability of soil and climatic conditions for the growth of exotic fruits and vegetables. Though the farmers are interested in collaborating with NIHORT on spice production, they are however skeptical about venturing into its production because of suitability of prevailing climatic conditions.

Constraints in Further Collaboration in Horticultural Technologies: The different constraints being encountered by farmers of NIHORT adopted villages towards collaborating with the research institute in relation to developed technology are shown on Table 2. Four top priority constraints were in the order: Inadequate research and extension personnel > Inadequate knowledge of technology introduced> Finance> Access to government extension agents. Information gathered from the FGD indicated non – availability of research and extension staff from the Institute to consolidate upon the technologies which had earlier been introduced thus bringing about gaps which culminate into inadequate knowledge of technology introduced to the farmers since there was no effective monitoring. Skill gap analysis carried out in the Institute in 2008 [10] revealed that only 49% of existing vacancies in the research cadre had been filled and this may be

Table 3: Chi-Square table showing relationship between effects of selected personal characteristics and interest and collaboration of Farmers on horticultural technologies

Variable	Value	df	Assym. Sig. (2 sided)	Decision
Age	31.647a	12	.002	S
Sex	2.510a	12	.285	NS
Marital Status	5.983	2	.200	NS
No of children	32.971a	9	.000	S
Occupation	36.653a	15	.001	S
Education	12.725	5	.026	S
Religion	11.561a	6	.073	NS
No of family	15.655	4	.004	S
Position in the family	7.051a	4	.133	NS
Indegene	.0279	2	.986	NS
Income	5.979	8	.650	NS

linked to the prevalent economic crisis which is limiting employment of qualified personnel. Some of the technical aspects were not properly grasped by the farmers suggesting that level of education may affect techno logy comprehension. It has been reported that farmer's adoption of improved technologies is influenced by level of education [11, 12]. There is an existing link between the grassroots extension agents and the villages but lack of vehicle has hampered mobility extension staff for effective performance of monitoring activities. Finance as a constraint to collaboration may be because the farmers are largely small scale farmers with no collateral to obtain government funding for farm expansion. National Agricultural Research Strategy Plan reported [13] that only 5% of total volume of loans from formal sources goes to small – scale farmers [14]. Also affirmed that though farmers have positive perception of technology, they faced problems in technology application due to lack of capital, lack of direction from the government and extension and lack of compensation policy in case of crop failure.

Effects of Selected Personal Characteristics on Interest and Collaboration of Farmers on Horticultural Technologies: Interest and collaboration of farmers on horticultural technologies was significantly ($p< 0.05$) affected by farmers' age, number of children, occupation, education and household size (Table 3). The Presidential Initiative on cassava encouraged a lot of youth to return to the village and engage in farming activities. This portends a good signal for the agricultural sector especially prior to the take off of the programme since the bulk of the farming populace were elderly people. That the rural economy is largely agrarian will further stimulate the farmers' interest to embrace new technologies which are targeted at improving productivity at farm level. Also the effect of educational level may be an indication that, increase in number of literate farmers can stimulate interest in new technologies. Their family size and number of children is also an added advantage because culturally they can be used as family labour.

CONCLUSION

Findings from the study revealed that farmers' interest was highest for pineapple technology. Farmers are interested in collaborating with NIHORT on spice technology but were skeptical whether the climatic condition in the southern part of the country will favour its cultivation. The most limiting constraint as identified by farmers was inadequate research and extension personnel. Based, on the findings it was then suggested that farmers should be encouraged to go into spice production because of its profitability and health benefit as some spices has been reported to thrive well in southwestern part of Nigeria .Also scientists should be motivated and facilitated through proper funding for monitoring and follow –up visit. Women and youth should be given special consideration when capacity building programmes are introduced. Also, farmers should be encouraged to form cooperative societies so as to address constraints of capital. Farmer's continuous collaboration on Horticultural technologies and consequent adoption of such will serve as a way to strengthen the socio-political economy for rural development since the adopted villages are agrarian in nature.

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