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An International Journal



Keywords: Calcareous mudstone; Soil properties; Taxonomic Classification; Nutrients

Introduction

Calcareous mudstone is a sedimentary rock and consolidated product of calcareous sands, limy mud and crushed shells (Anatala, 1996). It is composed of carbonates in the form of aragonite, calcite and dolomite. The mudstone formations have been referred to as River Shale group or the oldest marine carbonate sequence which are mostly impervious shale with

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Attitude of Research Scientists and Constraints to Effective Research Extension Farmers Input Linkage System Model In Nigeria.

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Abstract

Attitudes and constraints are two major factors with overbearing influence on the success or otherwise of any intervention programme. The study assessed attitudes of research scientists and constraints to effective REFILS model in Nigeria. Multi –stage sampling procedure was used to select 62 respondents from coordinating national research institutes in the country. Data were collected with the aid of structured questionnaire and analysed with descriptive statistics (frequency, percentages and means). Results show that the mean age of research scientist was 48.0 years, 73.8% were male, 97.6% were married, 31.0% had between 16-21 years of professional experience and 64.3% across the zones had doctoral degrees. More than one-third (35.7%) of research scientists had contact with farmers on monthly basis, while majority of the research scientists (54.7%) had unfavourable attitude towards REFILS model across the agricultural zones in Nigeria. Research scientists were constrained by lack of mobility (1.71 ± 0.55) and poor budgetary allocation to agricultural extension and research (1.71 ± 0.59) across the zones. It was concluded that respondents did not have positive perceptions of the REFILS model and were also confronted with different challenges. Based on these, it was recommended that morale of researchers across the zones need to be boosted through different incentives so as to improve their attitudes which will consequently reflect on the operational activities of REFILS in the zones.

Keywords: Agricultural Research Institutes, Extension Service, REFILS model

Introduction

The Research –Extension – Farmers – Input –Linkage System (REFILS) is an agricultural model in Nigeria that represents the framework for the coordination of research and extension activities in all agricultural zones of the country. Major REFILS activities under the framework are: conduct of diagnostic survey, monthly technological review meeting, Fortnightly Training (FNT), On Farm Adaptive Research and core extension activities through media like demonstrations, Small Plot Adoption

Technique, Management Training Plots (MTP), extension publications and annual REFILS workshop.

The target of REFILS is the small-scale resource poor farmers who produce 90 percent of the food consumed in the country (Ogunbodede, 2011) and maize is an arable crop which has been receiving attention of REFILS since inception.

The REFILS strategy was initiated in order to minimize or eliminate identified constraints such as linear information flow, basic and upstream research, low adoption of technology, technology

development without farmers' involvement and lack of feedback from farmers to research which affect effective research extension farmers' linkages in the country (Tologbonse, 2012). One of the major practices of REFILS is the adaptive research which is a component of farming systems research which takes into consideration the small scale farmers' practices and needs, and directed at the development and adaptation of new technologies to their varied local farming production conditions. One of the main objectives of REFILS is to get farmers involved in the process of solving their problems.

Farming system research approach encourages a problem oriented rather than an academic approach to planning agricultural research, thus influencing what and how technology is developed. It also encourages farmer- centered technology development by focusing attention on resource poor farmers. With this approach, the need for involvement of farmers in decision regarding the technologies to disseminate and how such could be utilised becomes imperative. Agricultural research institutes are saddled with the responsibility of conducting research into genetic improvement of major food crops and livestock in their areas of mandates. The strategy is to develop technologies for peasant farmers growing a wide range of commodities under marginally rain fed condition. This strategy emphasizes the generation of technology that minimizes the need for purchased inputs.

Agricultural research is very vital for sustainable national development. In Nigeria, research institutes have gone a

long way in the sourcing of agricultural technologies as well as improved agricultural inputs in all the components of agriculture such as improved crop seeds and cuttings, improved fish seeds (hybrid fingerlings), improved livestock and improved agro-forestry seedlings and suckers. Research scientists are at the fore front of generating proven technologies that are capable of reducing or eliminating drudgery associated with farming, thereby enhancing agricultural productivity and improving famers' livelihood. The overall success of the REFILS model rested on the support, activities and attitudes of research scientists. Amusat (2018) had also suggested that ability to identify and proffer solutions to problems confronting research scientists who are important stakeholders in the REFILS continuum would go a long way in bringing about effectiveness of REFILS model. Thus, there is the need to ascertain factors constraining research scientists and their attitude towards REFILS model.

Consequently, the following objectives were addressed in this study:

- a) identify the profile of research scientists who are in Nigeria;
- b) assess the researchers' frequency of meeting with farmers;
- c) ascertain the attitude of research scientists towards REFILS model in Nigeria; and
- d) determine constraints militating against effective REFILS model among researchers in Nigeria.

Methodology

Multi stage sampling procedure was used

and 50% of the agricultural zones in the country were randomly selected. The selected zones were Southwest, North central and Northwest zones. Then, zonal research institutes in the 3 zones were purposively selected based on their mandates to coordinate REFILS in their zones

The three zonal coordinating research institutes in the three selected zones are; Institute of Agricultural Research & Training, Ibadan from Oyo state in the Southwest zone, National Cereal Research Institute, Badeggi from Niger state in the Northcentral zone and Institute of Agricultural Research, Zaria from Kaduna State in the Northwest agricultural zone.

The selection of research scientists was done through a three stage sampling procedure of three categories of scientists (zonal coordinator, team leaders or state coordinators and scientists in Farming System Research and Extension Programme in zonal research institutes). The first stage involved purposive sampling of the three zonal coordinators in the three national agricultural zones of Southwest, Northcentral and Northwest zone followed by the purposive sampling of all the team leaders in the three national agricultural zones i.e. the team leaders in the three coordinating research institutes. Lastly, research scientists in the Farming System Research and Extension Programme were also purposively sampled. This is hinged on the fact that this set of scientists/researchers were directly involved in REFILS activities in their various research institutes. Finally, 42 research scientists were selected comprising of 1 zonal coordinator, 6 team leaders and 9 scientists from farming

system research and extension staff from IAR&T (Southwest zone), 1 zonal coordinator, 8 team leaders, and 5 farming system research & extension staff from NCRI (Northcentral) and 1 zonal coordinator, 6 team leaders and 5 farming system research and extension staff from IAR, (Northwest). Attitude of Research Scientists were measured through a 5 point likert scale of Strongly agree (5), Agree (4), Undecided (3), Disagree (2) and Strongly disagree (1) for positive statements and these were reversed for negatively worded statements (1,2,3,4,5). Constraint was also measured by making a list of possible constraints of Research Scientists to REFILS and respondents indicated the severity of the constraints through a 3 point scale of serious constraints, mild constraints and not a constraint.

Results and Discussion

Researchers' personal characteristics

Age:

The age distribution of researchers shows that 57.1% of research scientists across the zones were between 45-54 years of age with mean age of 48.0 ± 7.0 years. This infers that majority of them are active and still have more years to contribute to the research system of the country. The data further reveals that 73.8% of the respondents were male, while 26.2% were female across the zones. Proportionately, Southwest had the highest (43.7%) number of females compared to other zones. This means that most of the research practitioners were male. This finding is consistent with that of Saingbe (2008), Amusat and Olajide

(2013) who reported male domination of research practitioners in Nigeria. Also, all (100.0%) of the researchers in the Northcentral and Southwest were married, while majority (97.6%) were also married in the Northwest. This implies that, there was no single unmarried researcher in the Northcentral and Southwest and that almost all the researchers were married across the zones. Alao (2004) and Ajuka, Ifenkwe and Iheke (2011) also found that majority of the practitioners in Nigeria's agricultural research system are married.

The distribution of researchers by academic qualification shows that 66.7%, 64.3% and 62.5% had Doctor of Philosophy (Ph.D) in Northwest, Northcentral and Southwest, respectively. Summarily, 64.3% of the respondents across the zones possessed Ph.D. This reveals that most of the research practitioners had Ph.D. Possession of Ph.D by research scientists may likely enhance the quality of technological breakthroughs in National Agricultural Research Institutes (NARIs). Finally, the Table above reveals that less than half (41.6%) of researchers in the Northwest possessed 16-21 years of experience. Also, 31.0% of researchers across the zones had between 16-21 years of experience. The implication of this finding is that majority of the researchers are highly experienced and have a long-term interactions with other stakeholders and will also be capable of generating technologies targeted at solving practical field problems.

Researchers' frequency of contact with farmers

The data in Table 2 reveals the frequency of

the researchers' meeting or contact with farmers in study area. The result shows that one third of researchers in Northwest (33.3%), less than half in Southwest (43.8%) and more than half in Northcentral (57.1%) met or had contact with farmers monthly, monthly and quarterly, respectively. The result gathered across the zones reveals that 35.7% researchers were having contact with farmers on monthly basis. This means that majority of researchers had contact with farmers on monthly basis. This is in line with REFILS programme where Technology Review Meeting (TRM) for all stakeholders is held monthly to review activities of the past month and also proffering solutions to farmers' problems. The finding in the Northcentral where majority of researchers contact farmers quarterly may be due to the shortage of fund or logistic problems which had necessitated the shifting of monthly review meeting to quarterly in the zone.

Attitudes of researchers to REFILS activities across the zones

Table 3 reveals that in the Northwest, majority of researchers strongly agreed with the statements that round pegs are not put in round holes in Nigeria REFILS programme (4.33 ± 0.65); REFILS has strengthened the linkage between agricultural stakeholders in my zone (4.16 ± 0.93); with REFILS, farmers are now aware of the technologies on crop production (4.00 ± 0.85), and REFILS programme is an improvement on the formal REF Linkage (4.00 ± 0.42).

Table 1 Distribution of researchers by their personal characteristics

Variable	NW (n=12)		NC (n=14)		SW (n=16)		Total (=42)	
Age	F	%	F	%	F	%	F	%
35 – 44	1	8.3	5	35.7	5	31.3	11	26.2
45 – 54	7	58.3	8	57.1	9	56.3	24	57.1
55 – 64	4	33.3	1	7.1	2	12.5	7	16.7
Mean age							48.0±7.0	
Total	12	100.0	14	100.0	16	100.0	42	100.0
Sex								
Male	9	75.0	13	92.9	9	56.3	31	73.8
Female	3	25.0	1	7.1	7	43.7	11	26.2
Total	12	100.0	14	100.0	16	100.0	42	100.0
Marital Status								
Married	11	91.7	14	100.0	16	100.0	41	97.6
Divorced	1	8.3	-	0.0	-	0.0	1	2.4
Single	-	0.0	-	0.0	-	0.0	-	0.0
Total	12	100.0	14	100.0	16	100.0	42	100.0
Years of experience								
< 10	2	16.7	4	28.6	4	25.0	10	23.8
10 – 15	3	25.0	4	28.6	4	25.0	11	26.2
16 – 21	5	41.6	4	28.6	4	25.0	13	31.0
22 – 27	2	16.7	2	14.3	3	18.7	7	16.6
> 28	-	0.0	-	0.0	1	6.3	1	2.4
Mean ± SD	18.4 ± 10.2		14.8 ± 8.3		14.3 ± 8.4		15.4 ± 9.2	
Total	12	100.0	14	100.0	16	100.0	42	100.0
Academic qualifications								
MSc	4	33.3	5	35.7	6	37.5	15	35.7
PhD	8	66.7	9	64.3	10	62.5	27	64.3
Total	12	100.0	14	100.0	16	100.0	42	100.0

Source: Field survey, 2021

Table 2 **Distribution of researchers according to their frequency of meeting with farmers**

Variable	North West (n = 12)		North Central (n = 14)		South West (n = 16)		Total n = 42	
Frequency	F	%	F	%	F	%	F	%
Fortnightly	3	25.0	1	7.1	1	6.2	6	14.3
Monthly	4	33.3	5	35.8	7	43.8	15	35.7
Quarterly	2	16.7	8	57.1	4	25.0	14	33.3
Yearly	2	16.7	-	0.0	4	25.0	6	14.3
Never	1	8.3	-	0.0	-	0.0	1	2.4
Total	12	100.0	14	100.0	16	100.0	42	100.0

Source: Field survey, 2021

Conversely, researchers in the zone strongly disagreed with the statements that REFILS has enhanced effective delivery of agricultural extension in my zone (1.08 ± 0.28); REFILS has equipped farmers with better knowledge on crop production (1.75 ± 0.62); and lastly REFILS activities have not made extension delivery more effective than it has been (1.75 ± 0.75).

The researchers in the Northcentral strongly agreed with the statements that REFILS has strengthened the linkage between agricultural stakeholders in my zone (4.57 ± 0.51); through REFILS, the yield of crops per hectare has increased (4.50 ± 0.85); with REFILS, researchers are now getting necessary feedback from the field (4.42 ± 0.64); and with REFILS, farmers are now aware of the technologies on crop production (4.42 ± 0.64).

In the same vein, researchers in the Northcentral strongly disagreed with; REFILS activities have not made extension delivery more effective than it has been (1.50 ± 0.51); the zonal steering committee of my zone is moribund (1.57 ± 0.51); and

cost of REFILS activities in each is more than the benefits accrue to the end users of technologies (1.64 ± 0.49).

The researchers in the Southwest strongly agreed with the statements that REFILS has strengthened the linkage between agricultural stakeholders in my zone (4.68 ± 0.47); with REFILS farmers are now aware of the technologies on crop production (4.68 ± 0.47); REFILS has increased the adoption rate of technologies (4.50 ± 0.63); and with REFILS researchers are now getting necessary feedback from the field (4.43 ± 0.51).

On the other hand, respondents in Southwest strongly disagreed with the statements that there is no justification for the huge amount of fund spent yearly on REFILS (1.12 ± 0.34) and REFILS activities have not made extension delivery more effective than it has been (1.12 ± 0.34).

As shown in Table 3 ; REFILS has strengthened the linkage between researchers and other stakeholders

Table 3 Distribution of researchers' attitude to REFILS across the zones

S/N	Statements	Northwest Means	Northcentral Means	Southwest Means
1.	REFILS has enhanced effective delivery of agricultural extension in my zone	1.78 ± 0.57	1.78 ± 0.57	1.81 ± 0.83
2.	REFILS has strengthen the linkage between agricultural stakeholders in my zone	4.16 ± 0.93	4.57 ± 0.51	4.68 ± 0.47
3.	With REFILS, farmers are now aware of the technologies on maize production	4.00 ± 0.85	4.42 ± 0.64	4.68 ± 0.47
4.	REFILS has increased the adoption rate of maize Technologies	3.91 ± 0.66	4.07 ± 0.83	4.50 ± 0.63
5.	REFILS is a conduit through which the government agencies on agriculture used to siphon money in the country	2.50 ± 0.90	1.85 ± 0.53	1.75 ± 0.44
6.	There is no justification for the huge amount of fund spent on REFILS yearly	2.33 ± 1.07	4.28 ± 1.13	1.12 ± 0.34
7.	With REFILS, maize farmers are now aware of the improved varieties that can be grown in their ecological areas	3.50 ± 0.90	1.71 ± 0.46	4.37 ± 1.20
8.	With REFILS, researchers are now getting necessary feedback from the field	4.00 ± 0.85	4.42 ± 0.64	4.43 ± 0.51
9.	The zonal steering committee of REFILS in my zone is moribund	1.83 ± 0.71	1.57 ± 0.51	1.87 ± 1.36
10.	The composition of members of zonal steering committee for need to be changed	3.75 ± 0.75	3.14 ± 1.09	2.18 ± 1.22
11.	The Zonal Technical Committee for REFILS is no longer functioning in my zone	2.91 ± 1.08	3.14 ± 1.09	2.31 ± 0.87

12.	The Zonal Coordinator for REFILS must be a graduate of agricultural extension and rural development for effectiveness and efficiency	2.00 ± 1.12	3.07 ± 0.82	3.37 ± 1.50
13.	REFILS activity like MTRM is no longer holding as stipulated	3.75 ± 0.75	2.14 ± 0.66	2.18 ± 1.22
14.	Through REFILS, the yield of maize per hectare has increased	3.08 ± 1.16	3.14 ± 1.09	3.37 ± 1.45
15.	REFILS has equipped farmers with better knowledge on marketing outlets for their maize Production	1.75 ± 0.62	4.50 ± 0.85	2.62 ± 1.36

Source: Field survey, 2021

especially farmers and has thus greatly increased their productivity particularly in term of yield. Results showed that through REFILS, farmers are now aware of more improved technologies with increased rate of adoption and yield.

Categorisation of researchers' attitude to REFILS across the zones

Table 4 reveals that majority of researchers in the Northwest (66.7%) and the Southwest (87.5%) did not have favourable attitude towards REFILS, while the majority (92.9%) of researchers in the Northcentral had favourable attitude to REFILS. This may be due to inadequate funding, especially the extension services of the different States in the zones who are supposed to collaborate and transfer the technologies generated by research institutes to farmers. Summarily, more than half (54.8%) of research scientists across the zones had unfavourable attitude towards REFILS.

The implication of this finding is that majority of researchers in the National Agricultural Researchers Institutes (NARIs) under the umbrella of Agricultural Research Council of Nigeria did not have favourable attitude towards REFILS. This might not be unconnected with paucity of fund in the research organisation which hamper research work and also the comatose situation of the extension system which disturbed the flow or slow down the pace of technology dissemination in the research institutes. This finding is in consonance with Adebawale (2008) who reported that for agricultural research to be effective and researchers to put in their best certain factors such as adequate funding, capacity building, provision of adequate facilities, favourable and stable government policies which are lacking need to be put in place. Furthermore, Kolo (2012) also reported grossly inadequate, irregular and untimely release of funds for the agricultural sector in Nigeria.

Table 4 Categorisation of researchers' attitude to REFILS across the zones

Variable	NorthWest (n = 12)		NorthCentral (n = 14)		SouthWest (n = 16)		Total (n = 42)	
A ttitude	F	%	F	%	F	%	F	%
Favourable	4	33.3	13	92.9	2	12.5	19	45.2
Unfavourable	8	66.7	1	7.1	14	87.5	23	54.8
Total	12	100.0	14	100.0	16	100.0	71	100.0

Mean $\pm$ SD 67.8 $\pm$ 8.12

Source: Field survey, 2021

Researchers' constraints to effective REFILS across the zones

Table 5 shows that poor budgetary allocation to agriculture research and extension (1.66 $\pm$ 0.65) ranked 1st as the most severe constraints faced by researchers towards REFILS in Northwest, while in the Northcentral and Southwest, lack of mobility (2.00 $\pm$ 0.00) and (1.62 $\pm$ 0.61) respectively ranked 1st as the most severe constraints to effective REFILS. However, data obtained across the zones, shows that lack of mobility (1.71 $\pm$ 0.55) and poor budgetary allocation to agricultural extension and research (1.71 $\pm$ 0.59) ranked 1st among the constraints to effective REFILS on the part of researchers. Adequate budgetary allocation to agriculture has been a subject of discourse over the years in Nigeria with federal government refusing to observe the 2003 Maputo declaration on agriculture and food security which states that "at least 10% of national budgetary resources should be committed to agriculture and rural development within five years of the declaration."

Conclusion and Recommendation

It is apparent that majority of research scientists in Nigeria are male, in their active age, highly experienced and with Ph D degrees. Most of them are having contacts with farmers to execute their statutory assignments such as diagnostic survey, technology review meeting, on farm adaptive research and zonal workshop on monthly and quarterly basis. More than half of the scientists in Nigeria are not having favourable disposition towards REFILS and are however constrained by lack of mobility and poor budgetary allocation to agriculture in the country.

Based on the conclusion of the study, it is recommended that:

1. The research scientists should improve on the regularity of meeting or contacting farmers to build their capacity on modern ways of farming.
2. The morale of researchers in the country need to be boosted through different incentives such as regular payment of salary, provision of utility vehicles and other facilities to work with, so as

Table 5 Distribution of researchers' constraints to effective REFILS across the zones

	North West (n = 12)		North Central (n = 14)		South West (n = 16)		Total (n = 42)	
Constraints	Mean	Rank	Mean	Rank	Mean	Rank	WMS	Rank
Lack of mobility	1.50 ± 0.67	5 th	2.00 ± 0.00	1 st	1.62 ± 0.61	1 st	1.71 ± 0.55	1 st
Lack of incentive from governments	1.50 ± 0.67	5 th	1.92 ± 0.26	3 rd	1.50 ± 0.63	2 nd	1.64 ± 0.57	3 rd
Lackadaisical attitude of farmers	0.58 ± 0.66	9 th	1.42 ± 0.64	8 th	0.89 ± 0.71	8 th	0.97 ± 0.74	9 th
Lack of facilities/tools to work with	0.58 ± 0.66	2 nd	1.71 ± 0.61	5 th	1.12 ± 0.71	6 th	1.45 ± 0.70	6 th
Poor budgetary allocation to agricultural extension and research	1.66 ± 0.65	1 st	2.00 ± 0.00	1 st	1.50 ± 0.73	2 nd	1.71 ± 0.59	1 st
Unstable government policy	0.58 ± 0.66	2 nd	1.64 ± 0.63	7 th	1.31 ± 0.70	5 th	1.50 ± 0.67	5 th
Dwindling number of extension agents. (High farmers: Extension ratio)	0.58 ± 0.66	2 nd	1.85 ± 0.36	4 th	1.43 ± 0.81	4 th	1.61 ± 0.66	4 th
Inability to access necessary inputs by farmers	0.91 ± 0.66	7 th	1.71 ± 0.61	5 th	1.12 ± 0.80	6 th	1.26 ± 0.76	7 th
Incessant strike within research and extension organisations	0.91 ± 0.79	7 th	1.21 ± 0.69	9 th	0.87 ± 0.71	8 th	1.00 ± 0.73	8 th

Source :Field survey, 2021

Figures in parentheses are percentages

to improve their attitudes which will reflect on their operations.

- Government needs to increase the budgetary allocation to agriculture in line with Maputo declaration in which Nigeria was a signatory and particularly increase on the funding of National Agricultural Research Institutes.

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