GLOBAL JOURNAL OF AGRICULTURAL SCIENCES VOL 10, NO. 1, 2011: 19-25

 ISSN 1596-2903
www.globaljournalseries.com; Email: info@globaljournalseries.com

AWARENESS AND ADOPTION OF NIGERIA INSTITUTE FOR OIL PALM RESEARCH (NIFOR) TECHNOLOGIES BY FARMERS IN OWAN-WEST LGA, EDO STATE, NIGERIA

T. O. A. BANMEKE AND O. E. FAPOJUWO

(Received 20, April 2010; Revision Accepted 12, September 2011)

ABSTRACT

This study assessed the awareness and adoption of NIFOR oil palm technologies by oil palm farmers in Owan-West Local Government Area of Edo State. A simple random sampling technique was used to select four communities from the study area and 83 farmers were sampled from the communities using interview schedule. Data were analyzed using frequency count, percentages, mean, standard deviation, chi-square and Pearsonõs Product Moment Correlation (PPMC). Findings revealed that majority of the respondents were male (73.5%), while most of them fell between the ages of 40 years and above (71.1%), with many of them having a farming experience of 10 years and below (63.8%). Findings also revealed that 62.7% of the respondents are aware of NIFOR improved oil palm variety (tenera), while 54.2% have adopted and are still using this improved variety (tenera). The major constraints considered as affecting adoption of NIFOR disseminated technologies are land tenure practices ($\bar{x}$ = 4.49) and lack of interest in disseminated technologies ($\bar{x}$ = 4.37). Furthermore, there was a significant relationship between awareness and adoption of NIFOR disseminated oil palm technologies (r = 0.86; P<0.05) by the respondents. Based on the findings, it is therefore recommended that the land tenure system in the country be reviewed and that NIFOR should ensure that technologies being designed meet the potentialities of oil palm farmers alongside having comparative advantages over traditional practices.

KEY WORDS: Awareness, adoption, oil palm, technologies.

INTRODUCTION

Oil Palm (*Elaeis guineesnsis*) is a member of the family Palmae. The family comprises of over 4,000 species and the palms trunk is usually pitchy and soft, with a diameter of about 30 -60cm (Omereji, 2004). According to Opeke (1992), oil palm grows freely in West Africa especially in the southern latitudes of Sierra Leone, Nigeria, Ghana, Togo, Benin, Angola and Cameroon between latitudes 10^0 N & 10^0 S. Oil Palm is an economic tree that has a lot of importance to the economy of the country as well as the oil palm farmer.

Buchanan and Pugh (1995) espoused some of the economic relevance and importance of oil palm to Nigerian farmers when they noted that ñits leaf ribs are used in building, the leaves in thatching and the fiber in rope making. The palm wine obtained by tapping is a pleasant, intoxicating drink and palm oil is also a valuable source of vitamins in the indigenous dietsò Other uses of oil palm include the following: the dead palm is a valuable source of timber and a local source of fuel for cooking. The oil palm fruit is also processed into palm oil which is an important ingredient in the preparation of food in many cultures in the country. At the communal level, the oil palm bushes serve as collateral security for families or communities for securing loans. Arising from research effort, oil palm has now become increasingly applied in food and non-food products. Some of these non-food and food products where oil palm is applied include: soaps, loams, varnishes and coating materials, motor fuel, cakes, breads, margarines, cooking and frying oils, confectionary, ice cream, e.t.c., (Omereji, 2004)

There has been a drastic drop in oil palm production in the country. Nigeria was before 1965, the world leading producer and exporter of oil palm, and has since 1974 ceased to contribute to the export trade in the commodity, largely due to increased domestic demand in palms produce. Expansion in the level of production has since then not kept pace with growing domestic demand to enable the country to re-enter the export trade (Omoti, 2003). Although, the output of palm produce has grown steadily over time, the country today remains the third largest producer of oil palm after Malaysia and Indonesia, (Omoti, 2003).

NIFOR is mainly concerned with the development of new technologies such as the development of hybrids, new farming techniques, better processing techniques and other innovations to ensure that oil palm production by oil palm farmers is increased and improved upon.

Several technologies have been designed and developed by NIFOR to improve oil palm production. It therefore becomes pertinent to assess if farmers are actually aware of these technologies and how well they have been adopted so that these technologies would not only be limited to the purview of the researchers that designed the technologies.

T. O. A. Banmeke, Department of Agricultural Extension and Rural Development, University of Agriculture, P.M.B. 2240, Abeokuta, Nigeria
O. E. Fapojuwo, Department of Agricultural Administration, University of Agriculture, P.M.B. 2240, Abeokuta, Nigeria

OBJECTIVES OF THE STUDY

The general objective of this study is to assess the awareness and adoption of NIFOR oil palm technologies by oil palm farmers in Owan-west Local Government Area of Edo State. In specific terms the study attempts to:

1. examine the personal characteristics of oil palm farmers in the study area;
2. determine the level of awareness of NIFOR disseminated oil palm technologies in the study area;
3. ascertain the frequency of contact between oil palm farmers and extension agents in the study area and;
4. ascertain the extent of adoption of NIFOR disseminated oil palm technologies as well as identify the constraints associated with the adoption of these technologies by oil palm farmers in the study area.

HYPOTHESES OF THE STUDY

The hypotheses of the study were stated in the null form that;

1) there is no significant relationship between the personal characteristics of oil palm farmers and the adoption of NIFOR disseminated technologies;
2) there is no significant relationship between the level of awareness and adoption of these disseminated technologies by oil palm farmers.

METHODOLOGY

The study was carried out in Edo state of Nigeria between August and September 2008. Edo State lies between latitudes 6.636^{o}N and 6.909^{o}N and longitudes 6.182^{o}E and 6.364^{o}E with a total area of 19,794sq. Km. Annual rainfall ranges between 1500 and 3000mm, with a binomial pattern with the peak period around May/June and September/October. (Edo state government, 2006) The weather and the soil type in most parts of the state are conducive for producing oil palm. Owan-west local government area was purposively chosen out of the 18 local government areas of the state because of the fact that oil palm is largely cultivated in the area. All oil palm farmers in the study area constituted the population of this study. Owan west local government area has 8 communities actively involved in oil palm production and for the purpose of this study four communities were selected from the eight communities using a simple random sampling technique. The communities were Uzebba, Euere, Sobe and Ivbiosi. A proportional sampling technique was used in selecting 19 oil palm farmers from Uzebba, 26 from Euere, 17 from Sobe and 21 from Ivbiosi, from a list of registered oil palm farmers with the ADP, making a total sample size of 83 farmers. Data for this study were obtained using a structured interview schedule. Respondentsô level of awareness of the technologies was ascertained by asking if they are óawareô or ónot awareô of a list of NIFOR technologies, while adoption was ascertained using a 3 point rating scale of óadopted and still usingô3, óadopted but discontinuedô2, and ónot adoptedô1 on a list of NIFOR technologies. Data obtained were subjected to descriptive statistics such as frequency count, percentage, mean, and standard deviation, while inferential statistics such as chi-square and Pearsonôs Product Moment Correlation (PPMC) were used to test the hypotheses of the study.

RESULTS AND DISCUSSION

Personal characteristics of respondents

Table 1 shows the personal characteristics of the respondents. Findings in Table 1 reveal that 71.1% of the respondents are above 40 years of age. This shows that most of the farmers are elderly, which is a common feature in most rural areas in Nigeria and that 73.5% of respondents are male, which indicates that oil palm cultivation is male dominated.

Also, results in Table 1 shows that many of the respondents (62.7%) are married, with 39.8% of the respondents being secondary school certificate holders. This finding reveals a low level of education among the respondents. Igodan et al (1990) had posited that educational level affects the adoption of recommended practice in a similar study. Findings in Table 1 also show that 63.8% of the respondents have farming experience of between 10 years and below and 45.8% of the respondents have farm sizes of between 1.1 to 4ha, which is an indication that most of the oil palm farmers in the study area are small scale farmers.

Respondentsô family size as shown in Table 1 reveals that the family size of between 4 and below are more (50.6%) in the total count.

Table 4.1: Personal characteristics of respondents (n = 83)

Age categories	Frequency	Percentage
25 years and below	3	3.6
25 ï 35 years	7	8.4
36 - 40 years	14	16.9
> 40 years	59	71.1
Total	83	100
Gender		
Male	61	73.5
Female	22	26.5
Total	83	100
Marital Status		
Single	15	18.1
Married	52	62.7
Divorced	3	3.6
Total	83	100
Educational Level		
No formal Education	10	12.1
Primary Education	20	24.1
Secondary Education	33	39.8
OND/NCE	14	16.9
BSc/HND	6	7.2
Total	83	100
Farming Experience		
10 years and Below	53	63.8
11 to 20 years	25	30.1
Above 20 years	5	6.0
Total	83	100
Farm Size (ha)		
1 ha & Below	35	42.2
1.1 -4ha	38	45.8
4.1-7ha	10	12.0
Above 7 ha	0	0
Total	83	100
Family Size		
Below 4	42	50.6
4 to 8	34	41.0
Above 8	7	8.4
Total	83	100

Source: Derived from study data, 2008.

Respondents' frequency of contact with extension agents

Table 2 reveals the frequency of contact that respondents have with extension agents. Findings in the Table indicate that 74.7% of the respondents have contact with extension agents occasionally. This result shows that most of the respondents do not have regular contact with extension agents. Okigbo, (1988), asserted that the lack of regular visits of extension agents to farmers may prevent their adoption of innovations.

Table 2: Respondents frequency of contact with extension agents

Frequency of contact with extension agents	Frequency	Percentage
Occasionally	62	74.7
Once in 4-5 Months	9	10.8
Once in 2-3 Months	9	10.8
Once in a month	2	2.4
Once in two weeks	1	1.2
Total	83	100.0

Source: Derived from study data, 2008.

Awareness of NIFOR disseminated technologies

Results in Table 3 reveal that 62.7% of the respondents are aware of the improved variety (tenera), 59.0% are aware of fertilizer application recommendation (i.e. NPK mg 1:1:1:2), 57.8% of the respondents are aware of the recommended planting distance of 9m in triangular arrangement and 7.6m between rows and nursery practice (i.e. use of nursery polythene bags.), respectively.

Table 3: Awareness of NIFOR disseminated oil palm technologies

Technologies	Aware	Not aware
Use of improved variety(tenera)	52 (62.7)	31 (37.3)
Recommended planting distance i) 9m in triangular Arrangement 7.62m Between the rows	48 (57.8)	35 (42.2)
ii) Inter Row Spacing for food crop 2-3m	47 (56.6)	36 (43.4)
Nursery practices		
i) use of Nursery Polythene Bags	48 (57.8)	35 (42.2)
ii) Single stage nursery	45 (45.2)	38 (45.8)
iii)Double stage Nursery	41 (49.4)	42 (50.6)
Mulching		
i) Vegetative Mulch	47 (56.6)	36 (43.4)
(ii) Black Polythene film	45 (54.2)	38 (45.8)
iii) Dust mulch or hoeing	44 (53.0)	39 (47.0)
Recommended insecticide application		
i)Ultracide	38 (45.8)	45 (54.2)
ii)Basudin	37 (44.6)	46 (55.4)
Recommended fertilizer application		
i) NPK. Mg 1:1:1:2	49 (59.0)	34 (41.0)
(ii)Compound Fertilizer 12:12:17:2	47 (56.6)	36 (43.4)
Recommended herbicide		
i) Folar 252^{TM}	38 (45.8)	45 (34.2)
ii) Gramuron	38 (45.8)	45 (34.2)
iii) Velpark 4	37 (44.6)	46 (55.4)
Harvesting		
i) Harvesting Pole	46 (55.4)	37 (44.6)
iii) Chisel Knife	44 (53.0)	39 (47.0)
Nifor small scale processing equipment		
i) Sterilizer/Cooker	40 (48.2)	43 (51.8)
ii) Rotary Stripper	38 (45.5)	45 (54.2)
iii) Digester screw press (DSP)	40 (48.2)	43 (51.8)
Planting of cover crops		
i) Pueraria Javanica	37 (44.6)	46 (55.4)
ii)Calapogonium mucunoides	38 (43.8)	45 (54.2)

Source: Derived from study data, 2008.

Respondents' adoption of disseminated technologies

Table 4 reveals the adoption of NIFOR disseminated technologies by the respondents. Results as shown in the Table reveal that 52.4% of the respondents have adopted and are still using the improved oil palm variety (tenera). Furthermore, 97.6% of the respondents never adopted technologies that are related to the use of herbicide (velpar k 4). This may be explained by the level of awareness of these technologies as indicated in Table 3. It has been noted that awareness often precedes the adoption of innovation. Van de Ban and Hawkins (1996) posited that for the full adoption of any agricultural innovation, the farmer need to be aware of such innovation.

Table 4: Adoption of NIFOR designed technologies

Technologies	Adopted and still Using	Adopted but discontinued	Not adopted
Use of improved variety (Tenera)	45 (52.0)	4 (4.8)	34 (41.0)
Recommended Planting Distance			
i) 9m in triangular arrangement 7.6m between the rows	35 (42.2)	9 (10.8)	39 (47.0)
ii) Inter row space for food crop 2-3m	26 (31.3)	15 (18.1)	42 (50.6)
Nursery practice			
i) use of nursery polythene bags	26 (31.3)	14 (16.9)	43 (51.8)
ii)Single stage Nursery	24 (28.9)	17 (20.5)	60 (72.3)
iii) Double stage Nursery	11 (13.3)	13 (15.7)	59 (71.1)
Mulching			
i) Vegetative Mulch	22 (26.5)	17 (20.5)	44 (53.0)
ii)Black Polythene Film	24 (28.9)	17 (20.5)	60 (72.3)
iii) Dust mulch or hoeing	7 (8.4)	7 (8.4)	67 (83.1)
Recommended insecticide			
i) Ultracide	1 (1.2)	14 (16.9)	68 (81.9)
ii)Basudin	3 (3.6)	12 (14.5)	68 (81.9)
Recommended fertilizer			
i) N.P.K. Mg 1:1:1:2	27 (32.5)	19 (16.9)	42 (50.6)
ii)Compound Fertilizer 12:12:17:2	24 (28.9)	15 (18.1)	44 (53.0)
Recommended herbicide			
i) folar 25^{TM}	5 (6.0)	7 (8.4)	71 (85.5)
ii) Gramuron	Nil	6 (7.2)	77 (92.8)
Harvesting			
i)Chisel Knife	17 (20.5)	10 (12.0)	56 (67.5)
Nifor small scale processing equipment			
i) Sterilizer/cooker	8 (9.6)	12 (14.5)	63 (75.9)
ii) Rotary stripper	9 (10.8)	8 (9.6)	66 (79.5)
iii)Digester screw press (DSP)	4 (4.8)	2 (2.4)	77 (92.8)
Planting of cover crop			
i) Pueraria Javanica	4 (4.8)	6 (7.2)	73 (88.0)
ii)Calapogonum Mucunoides	3 (3.6)	8 (9.6)	72 (86.7)

Source: Derived from study data, 2008.

Constraints limiting adoption of NIFOR disseminated oil palm technologies.

Table 5 shows some factors limiting respondentsô adoption of NIFOR disseminated oil palm technologies. Table 5 indicates that land tenure practice ($\bar{x}$ = 4.49), lack of interest in the NIFOR disseminated technologies ($\bar{x}$ = 4.37), lack of awareness of these disseminated technologies ($\bar{x}$ = 4.33) are the major reasons the farmers adduced for not adopting these technologies. It is obvious that most of farmers do not have permanent control over their farms making it impossible to take decisive actions on their farms. Furthermore, Rolling and Pretty (1996) opined that one major reason for non-adoption of technologies by farmers is because they are often times finalized before farmers get to see or hear about them. This may be attributed to why they lack interest in these technologies.

Table 5: Constraints limiting adoption of disseminated technologies

Factors	Means	Standard deviation
Land tenure practice of the community	4.49	0.63
The lack of interest in disseminated technologies	4.37	0.48
Not aware of disseminated technologies.	4.33	0.76
Disseminated Technology are not different from old practice	4.17	0.92
Information about disseminated technologies are too late	4.01	0.77
Information about disseminated technologies are inadequate	3.87	1.35
Non-availability of input to practice the disseminated technologies	3.69	1.07
Disseminated Technologies is difficult to practice because of lack of finance	3.60	1.28
High cost of input	3.41	1.36
Extension agents are not effective in disseminating technologies	3.37	1.47
Disseminated Technologies are labour intensive.	2.41	0.93
Disseminated Technologies are complex to practice	2.11	1.03

Source: Derived from study data, 2008.

Relationship between personal characteristics of respondents and adoption of NIFOR disseminated oil palm technologies

Result of the chi-square analysis is presented in Table 6. Findings indicate that there are no significant relationships between age (χ^2 = 5.90; P>0.05), gender (χ^2 = 3.16; P>0.05), educational level (χ^2 = 2.02; P>0.05) farming experience (χ^2= 5.57; P>0.05) and the adoption of NIFOR disseminated oil palm technologies.

Table 6: Relationship between personal characteristics and adoption of disseminated technologies

Variables	df	χ^2	Probability Level	Decision
Age	5	5.90	0.31	Not significant
Gender	1	3.16	0.07	Not significant
Educational Level	4	2.02	0.73	Not significant
Farm Size(ha)	2	5.57	0.06	Not significant
Family size	2	0.33	0.84	Not significant
Farming experiences (years)	4	6.58	0.14	Not significant

Source: Derived from study data, 2008.

Relationship between awareness and adoption of NIFOR disseminated oil palm technologies.

Result of the correlation analysis as presented in Table 7 show that there is a positive and significant relationship between awareness and adoption of NIFOR disseminated oil palm technologies (r = 0.08, P<0.05). This finding is as expected because awareness of an innovation often precedes the adoption of such innovation. This result corroborates the assertion of Yates (1995) that for an innovation to be fully adopted, the farmers need to be aware of such an innovation.

Table 7: Relationship between awareness and adoption of disseminated technologies

Variables	df	r	Probability level	Decision
Awareness and adoption of NIFOR disseminated Technologies	1	0.86	0.00	Significant

Source: Derived from study data, 2008.

CONCLUSION AND RECOMMENDATIONS

Based on the findings of this study, it can be said that there is a general low level of awareness of the NIFOR disseminated technologies which in turn has resulted in a low adoption of these disseminated technologies. The adoption level was basically affected by the land tenure practices and lack of interest in NIFOR disseminated oil palm technologies. It is therefore recommended that the management of NIFOR should re-organize and strengthen the extension department in terms of manpower and funding in order to create awareness of these technologies among oil

palm farmers which would lead to the adoption of these technologies. NIFOR should ensure that technologies being designed meet the potentialities of these oil palm farmers and at the same time have comparative advantage over traditional practices. Finally, it is important to have a synergy of efforts among NIFOR and ADPs that are basically saddled with the responsibility of carrying out extension activities.

REFERENCES

Buchanan, K. M. and Push, J. C., 1995. Land and people in Nigeria. University of London Press, London. pp. 47-53.

Edo State Government. 2006. Culture, People and Topography of Edo State. http://www.edostategov.org, accessed 29th October, 2008.

Igodan, C. O., Onaji, P. E. and Ekpere, J. E., 1990. Factors associated with the recommended practice for oil palm production in Nigeria. Journal of Agricultural Administration and Extension 29: pp.149-158.

Okigbo, B. N., 1988. ñSustainable agriculture in tropical Africaò A paper presented at the International Conference on sustainable Agricultural Systems, Columbus, Ohio. 19-23rd September.

Omereji, G. O., 2004. The oil palm industry in Nigeria: Cultivation, Processing and Trade. Ambik press Limited, Benin City, pp 1-15.

Omoti, U., 2003. Oil palm research at NIFOR, Nigeria. Bureau of development of Research on tropical oil crops (BUROTROP). Bulletin 19:43-46

Opeke, I. K., 1992. Tropical tree crops. Spectrum Books Limited, Ibadan, pp 29- 30.

Rollings, N. and Pretty, J. N., 1996. Extension role in sustainable agricultural development, improving Agricultural Extension, A reference manual. F.A.O. Rome, PP. 175 ï 184.

Van Den Ban, A. W. and Hawkins, H. S., 1996. Agricultural Extension. 2nd Edition, Black Well Science limited, London, pp. 96 ï 119.

Yates, R. A., 1995. ñMethods for technology transfer for agricultural development in sub-Saharan Africaò In B. T. Karg, V. M. Akoburdu and R. J. Manyours (editors) Constraints for crop production, Proceedings of International Workshop held at Cotonou, Republic of Benin, 19-23 September, PP 187-204.