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ADOPTION STATUS OF DISSEMINATED TECHNOLOGIES ON THE  
ARTISANAL FISHERIES OF NIGER STATE, NIGERIA.

*Tropical and  
Subtropical  
Agroecosystems*

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[ADOPCIÓN DE TECNOLOGÍAS EN PESQUERÍA ARTESAL EN NIGERIA]

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**SUMMARY**

A study was conducted to assess the status of awareness and adoption of improved technologies disseminated by Agricultural Development Project in Niger State, Nigeria, among artisanal fisher folks using structured questionnaire in random sampling of respondent. This probed into the socio-economic characteristics of the respondents, their awareness and adoption status, perceived effectiveness of extension approaches, impacts of extension and constraints to adoption. Results showed that the age range of 20-50 years was dominant (87.5%), most were males (95%), with household size of 6-10 (47.5%) and 57.5% has less than primary school certificate in educational attainment. While, 57.5% were members of organization, 90.0% had no access to credit other than savings. Awareness levels of improved fisheries technologies were within a range of 47.5-72.5% with 27.5-50.0% adoption levels. Method demonstration (87.5%) and result demonstration (75.0%) were the major approaches used by the ADP. respondents ranked method demonstration as the most effective extension approach (65%) while 62.5% of the clientele had enhanced income due to impact of extension. The greatest constraint to adoption was high cost of recommended inputs as asserted by 95.0% of the respondents. The study concludes that more awareness creation is needed to enhance adoption of the technologies and recommended inputs in the adoption process must be affordable and available to fishermen

**Keywords:** Fisheries, technology adoption.

**INTRODUCTION**

The primary goals of agricultural extension outreaches are increased productivity, improved living standard, increased income and enhanced technical skills of farmers/fisher folks. The premise upon which the

**RESUMEN**

Se realizó un estudio para evaluar entre pescadores artesanales, el nivel de conocimiento y adopción de tecnologías difundidas por el Proyecto de Desarrollo Agrícola en el estado de Níger, Nigeria, por medio de un cuestionario estructurado. El cuestionario se enfocó en las características socio-económicas de los pescadores, su conocimiento y adopción de técnicas, percepción de efectividad de los enfoques de extensionismo, impacto del servicio extensión y las limitantes para la adopción. Los resultados mostraron que en el rango de edad de 20 a 50 años el dominante (87.5%), la mayoría fueron hombres (95%), con un tamaño de familia de entre 6 y 10 (47.5%) y 57.5% no tenía certificado de educación a nivel primaria. Mientras que 57.5% eran miembros de alguna organización, 90.0% no tenía acceso a fuentes de crédito más que sus ahorros propios. El conocimiento de nuevas tecnologías era de 47.5-72.5% con 27.5-50.0% de adopción. La demostración del método (87.5%) y del resultado (75.0%) eran los enfoques principales empleados por el proyecto de desarrollo agrícola. El 65% calificó el método de demostración como el sistema de extensión más efectivo, y 62.5% había incrementado su ingreso como resultado de la extensión. La principal limitantes para la adopción de las tecnologías recomendadas de acuerdo al 95% de los entrevistados fue el alto costo de los insumos. El estudio concluye que es necesario promover un mayor nivel de conocimiento para mejorar la adopción de tecnología y que los insumos recomendados en el proceso de adopción deben de encontrarse disponibles y al alcance de los pescadores.

**Palabras clave:** Pesquería, adopción de tecnología.

activities of Agricultural Development Projects (ADPs) are built in the Unified Agricultural Extension System (UAES) is therefore the realization of these goals. The unification of extension in the multi-state ADPs has led to significant extension outreaches to fishermen, fish processors and fish farmers at the grass

root level (NAERLS, 1999). In the ADP operational system, extension contacts are laid emphasis on as means of getting improved technologies, innovations and production recommendations to the clientele. Conventional methods include individual contact, group contact and mass media. The training and visit extension system (T & V) introduced the concept of contact farmer. Within the ADP operational pattern The Village Extension Agents (VEAs) operate in cells and disseminate technologies to contact farmers who in turn are supposed to pass on information to other farmers for adoption. Other extension strategies are also used to create awareness to larger groups of clientele. These activities of the ADPs are expected to achieve their end goals at the grass root either with immediate or long-term impacts. This study was carried out in Shiroro Local Government Area (LGA) of Niger State with the broad objective of assessing the status of adoption of disseminated fisheries technologies in Niger State.

**METHODOLOGY**

Niger state is located in the Middle Belt agro-ecological zone. The zone hosts a number of research institutes and universities. Specifically the location of the National Institute for Freshwater Fisheries Research (NIFFR), New-Bussa in the state advantaged it to directly benefit from improved technologies developed in the institute’s mandate areas. Two fishing villages – Zumba and Shakona were purposively selected for this study in Shiroro L.G.A, Niger state. In each village, 20 fisher folks were randomly selected and interviewed with the aid of structured questionnaire. This brings the total sample size to 40 fisher folks. The questionnaire probed into their socio-economic characteristics, their levels of awareness and adoption of improved fisheries technologies, extent of extension contacts by the ADP and impacts of such contacts. Descriptive statistics of frequencies, means and percentages were used for data analysis.

**RESULTS AND DISCUSSION**

**Socio-economic Characteristics**

The socio-economics (personal) characteristics of the fisher folks are presented in Table 1. The economically active age groups consist of 20 – 50 years (87.5%). Adoption of innovation is known to be higher in middle age (Vabi and Williams, 1991). Males (95.0%) dominated the fisher folk’s population. Although only 5% of the respondents are females, it is significant to note that fishing is not an exclusive male occupation. Moderate household sizes are common with 35% for those with not more than 5 members and

majority (47.5%) having between 6–10 members per household. Most of the fisher folks (35%) have Koranic education and 22.5% non-formal instructional/vocational training. The implication of these is that adoption of modern technologies can be hampered, since level of education is known to be influential in adoption decision of farmers (CMMYT, 1993). 32.5% of the fisher folks have between 1–10 years experience in business, while 27.5% have been in the business between 11– 20 years. 57.5% of respondents were members of cooperative societies, while a significant numbers (42.5%) were non-members. Majority (90%) finance their business activities from personal savings (Figure 1). The implication is that without adequate credit sources fisher folks would continue to operate at mere subsistence level.

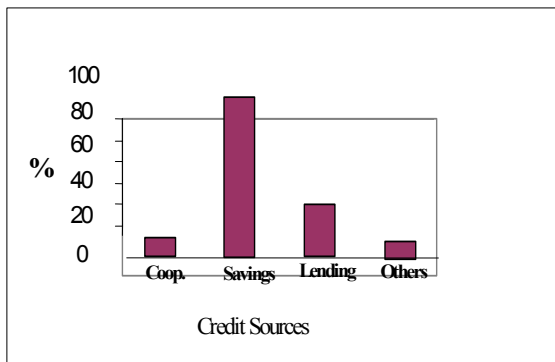


Figure 1. Distribution of Fisher folks by Sources of Credit.

**Awareness and Adoption of Improved Technologies.**

In any research–extension system, the development of improved technologies must be backed up with efficient dissemination (Arokoyo and Bolorunduro, 1995). Approaches/strategies used will determine to a great extent the awareness creation and adoption level of such technologies (Fliegel, 1984). Table 2 shows that fisher folks awareness and adoption of the technologies are at various levels. However, awareness creation of improved smoking kilns seems to have intensified (72.5%), taking into consideration the UNDP/ADP intervention with the introduction of smoking kiln at Shakona village. This has influenced the adoption decision of fisher folks (50%) to embrace this technology as a popular fish processing method. This will significantly reduce losses due to improper smoking of fish catches.

Table 1: Personal Characteristics of the respondents.

Characteristics	No.	%
<u>Age</u>		
20 – 30	11	27.5
31 – 40	11	27.5
41 – 50	13	32.5
51 – 60	3	7.5
> 60	2	5.0
<u>Sex</u>		
Male	38	95.0
Female	2	5.0
<u>Household size</u>		
1 – 5	14	35.0
6 – 10	19	47.5
11 – 15	6	15.0
> 15	1	2.5
<u>Highest Education</u>		
Non – Formal	9	22.5
Koranic	14	35.0
Primary	7	17.5
Secondary	4	10.0
Tertiary	6	15.0
<u>Year of Experience</u>		
1 – 10	13	32.5
11 – 20	11	27.5
21 – 30	8	20.0
31 – 40	5	12.5
>40	1	2.5

### Assessment of VEAs Recommendations and Interaction with Fisher folks.

The study also probed into the respondents' assessment of the usefulness of VEA's recommendations to fisher folks, since the VEAs play crucial roles in grass root technology delivery (Fliegel, 1984). This fact is alluded to by the result of this study, as 65% of fisher folks found such recommendations useful, while 35% felt they are very useful (Table 3). Almost all the respondents (97.5%) were aware of the activities of VEAs and some (17.5%) of fisher folks interviewed are contact farmers. Fifty (50%) of those who are non-contact farmers occasionally received advices from the contact farmers amongst them. The implication of this result is that information flow from contact to non-contact fisher folks would have been greatly hampered, thereby bringing into question the role of contact farmers in mass dissemination and adoption of improved technologies, if not for the activities of the VEAs.

Table 2. Awareness/Adoption of Disseminated Capture Fisheries Technologies

Technology Disseminated	Awareness		Adoption	
	No.	%	No.	%
1 Maintenance of fishing gear	19	47.5	13	32.5
2 Hygienic handling of fresh fish	24	60.0	20	50.0
3 Appropriate fishing mesh size	25	62.5	15	37.5
4 Preventing losses of fishing gears	26	65.0	19	47.5
5 Hygienic processing size	21	52.5	12	30.0
6 Preventing insect pest menace	20	50.0	15	37.7
7 Improved smoking kiln	29	72.6	20	50.0
8 Packaging dried fish	24	60.0	12	30.0
9 Keeping quality of fresh fish.	24	60.0	11	27.5

Table 3. Fisher folks Assessment of VEAs Recommendations and Interaction

Assessment.	No.	%
<b>Usefulness</b>		
Useful	26	65.0
Very useful	14	35.0
<b>VEA-Interaction</b>		
Aware of VEAs	39	97.5
Contact farmers (CF)	7	17.5
Received advice from CF	20	50.0

### Effectiveness of Extension Approaches

Conventional extension methods for disseminating information on production recommendations include individual contact, group contact and mass method e.g. radio, T. V. publications etc; while approaches/strategies are used to enhance farmers skill in the gradual adoption stage or convince farmers in the long term benefits of a technology (Hornik, 1988). Such approaches include the use of Small Plot Adoption Techniques (SPAT), Management Training Plot (MTP), Method demonstration, Result demonstration, Field days and Agricultural shows.

The study reveals that Village extension agents employed individual contact methods (40% of respondents) and group contact method (60% of respondents). Method demonstration (87%) and result demonstration (75%) are the most popular approaches used by the VEAs. Niger State Agricultural Development Programme (NSADP) also employs organization of Field days (47.5%) for mass dissemination of technologies. Fund constraint was reported to limit the organization of Agricultural

Shows, while MTP is virtually alien to the fisher folks. The use of SPAT is limited to ADP contact farmers, which are always a very few proportion of farmers in any state (Table 4).

The effectiveness of an extension approach as perceived by farmers would determine to a great extent the adoption of production recommendations (Fliegel, 1984). From this study, 65% of respondents considered method demonstration as effective in influencing their adoption decision as against 57.5% for result demonstration. However, 15% of respondents considered both methods as very effective. Only 30% of fisher folks considered Field days to be effective (Table 5).

Table 4: Extension Methods and Approaches used by EAs to Disseminate Information.

<b>Method/Approaches</b>	<b>Freq.</b>	<b>%</b>
<b>Method</b>		
- Individual contact	16	40
- Group contact	24	60
<b>Approaches</b>		
- SPAT	1	2.5
- MTP	-	-
- Method demonstration	35	87.5
- Result demonstration	30	75.0
- Field day	19	47.5
- Agric shows	-	-

Table 5: Perceived Effectiveness of Extension Approaches

Approach	Not effective		Effective		Very Effective	
	Freq.	%	Freq.	%	Freq.	%
SPAT	-	-	1	2.5	-	-
MTP	-	-	-	-	-	-
Method demonstration	3	7.5	26	65.0	6	15
Result Demonstration	2	5	23	57.5	6	15
Field day	1	2.5	12	30.0	4	10
Agric Show	-	-	-	-	-	-

**Impacts of Extension Activities.**

Achievement of extension goals is expected to indicate significant impacts on fisher folks (Bembridge, 1993). Result of the study shows that 62.5% of respondents had enhanced income after adopting improved fish processing technologies, 55% had increase in income from adopting capture fisheries technologies, and 42.5% had enhanced nutrition, while 55% developed confidence in extension through increased adoption of other improved technologies (Figure 2).

**Constraints to Adoption of Improved Technologies**

The adoption of improved agricultural technologies is influenced by socio-economic factors, institutional factors and attributes of such technologies (Bembridge, 1993). The study did not probe into the relationship between adoption of technologies and these factors, but rather sampled fisher folk’s opinion on possible reasons for non-adoption of technologies. Cost, Non-availability of recommended input, and the ease of handling of recommendation play major roles in adoption decision of the fisher folks (Figure 3).

Figure 2: Distribution (%) of Impact Indicators of Extension Activities on Fisher

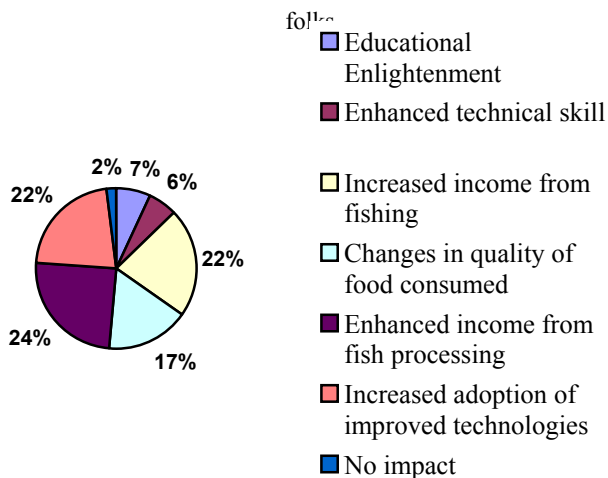
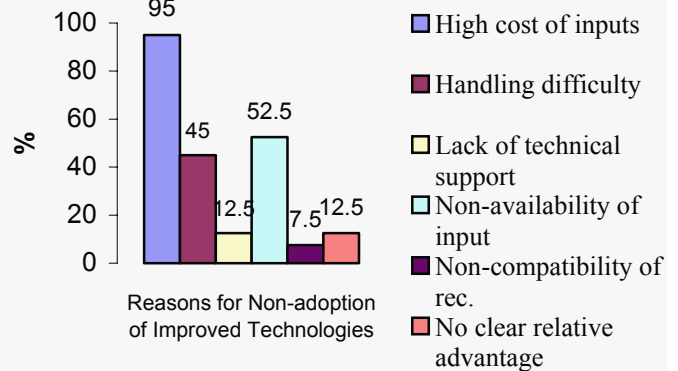


Figure 3. Distribution (%) of Reasons for Non-adoption of Improved Technologies



## CONCLUSION AND RECOMMENDATIONS

The study has shown that appreciable levels of awareness and adoption of disseminated technologies exist in the state among artisanal fisher folks. The Agricultural Development Projects also achieved a fair level of extension goal. However, greater levels of impacts can still be achieved, if more extension contacts can be made *ceteris paribus*. It is recommended that the group contact approach rather than the contact farmer concept be further embraced by the Agricultural Development Projects in the training and visit extension system practiced in Nigeria to improve the benefits of extension contacts to larger groups of fisher folks. Also, awareness of improved technologies must be intensified, and recommended inputs must be affordable and available to the fishermen.

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Submitted 24 September 2003 -- Accepted November 21, 2003