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Use of Indigenous Knowledge in Rice Production in Ewekoro Local Government Area, Ogun State

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ABSTRACT

This study investigated the use of indigenous knowledge in rice production in Ewekoro Local Government Area of Ogun State. Three out of the ten political wards in Ewekoro Local Government Area namely: Mosan, Waisimi, Abalabi wards were randomly selected. Four villages were purposively selected from each of the wards to give a total of twelve villages. Ten respondents each were selected through snowballing method from each of the villages making a total of 120 respondents. The data were collected through the use of interview - schedule. The level of production of the farmers in the study area as well as the factors affecting the use of indigenous knowledge in rice production in the study area was determined. Data were analyzed with the use of Chi-square. Majority (70.83%) of the farmers involved in rice production are aged 51-70 years of age while males form the majority (74.17%) of rice producing farmers. Result further reveals that most (43.33%) of them have no formal education and 35.00 percent have 31-40 years of rice farming experience. Most (50.83%) of the respondents are producing below 4 tons of rice. Also, 96.67 percent of the respondents have never made use of ceremonies in cropping season while majority (55.83%) makes use of traditional medicine to test soil fertility. Significant relationship exists between age (X^2=27.96), education (X^2=19.07), religion (X^2=45.79) and the reliance on the use of indigenous knowledge at P=<0.05). Furthermore, insignificant relationship was also found to exist between frequency of visit of extension agents and the use of indigenous knowledge in rice production (X^2=47.12, p<0.0001). Age, education and religion determine the reliance on the use of indigenous knowledge. Moreover, frequency of visit of extension agents does not determine use of indigenous knowledge (IK). It is therefore suggested that farmers' level of education should be improved while efforts should be made to blend the traditional and conventional (improved) technologies in rice production with a view of increasing farmers' level of production.

INTRODUCTION

The total land area of Nigeria is 98.3 million hectare. However, it is estimated that only 3.4 million hectares are cultivated and rice occupies 550,000 hectares. Rice is one of the few cereal produced in the North and it has been successfully grown in the south too. Rice farming development started in Nigeria as early as 1919 when rice research was first conducted at Moor plantation, Ibadan, Nigeria (IITA, 1992). The main area of rice production in the Western state were Ilesa in Osun State, Ilaro, and villages like Ofada, Owode, Wasimi, Mokokoki, Oba and others now in Ogun State. It further stated that the Egba villages accounted for over 60percent of the state paddy output (OGADEP, 2001). The main upland rice varieties cultivated are "Ofada", Agbede" and IITA 257, WAB 189 i.e. "Egbeda Olubori".

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Earlier, in 1954 the National cereal Research institute was established in Nigeria for rice development and research. The prospects for improved rice production in Nigeria were greatly enhanced in the early 1960s and IITA chose a strategy of developing varieties for moderately intensified production, involving good weed control and high level of soil fertility to give yield 2.3ton/hectare (IITA, 1992). This was done intensively and it was reported that IITA had developed and released upland rice varieties such as ITA 128, ITA 117, 118, 150, 230, 235, 257, 301, 315, WAB189. These varieties are improved and resistance to drought and blast disease (OGADEP 2001). Of these, only ITA 150, 257, WAB 189 are commonly grown in Ogun State and has been widely distributed by OGADEP.

These three varieties are high yielding and early maturing (95days), also tolerant to drought. These varieties offer an effective means of raising farmers income. They produce long bright translucent grains that draw premium prices. In order to achieve the yield potentials of these varieties, the matching of genetic improvement and crop management is important. IITA also agreed that the reason for large unsuccessful efforts in the introduction of high yielding varieties in Nigeria is that varieties can only show a yield advantage under high level of management that are not typical of rice production traditions in Nigeria and Africa as a whole.

The challenges of this lie mostly in effective diagnosis of rice farming system to identify the major bane to effective crop management and high yield. However, researchers should not relent in developing improved varieties that can be more compatible to the peculiarity of our farming system. These beliefs have effect on both crop and livestock production and other aspect of agricultural production.

It has been demonstrated that rice, unlike most cereals has high protein, minerals and vitamin content.

Economically, rice is divided into two main types viz.

(i) The swamp or low land rice which is grown in flooded irrigated area.

(ii) The upland rain fed rice when depends on rain for a source of water.

Rice is the only major grain crop that is grown almost exclusively as human food which has until recent times, swallowed a large proportion of the nations foreign exchange reserves. In 1978, 1979 and 1980, 563.85,245 and 387 thousand tones respectively were imported (FAO 1997).

The importance of rice derives from two main factors. One is the ease with which rice can be preserved and prepared for the table. The other is rising average income of the population, especially the urban population with the rising population coupled with the feel that rice is a convergent food for urban dwellers, it is definite that more rice will be demanded. IITA (1996) established that rice has a positive high-income elasticity of demand. Rice replaces tuber and root crops as well as other grain (maize, sorghum and millet) in the food basket of families as their income rises. Rice is not only important in Nigeria; it is the staple food of about half the world's population.

Indigenous knowledge refers to the knowledge generated used and developed by people in a certain area. It forms the basis of the art of identifying, combining, unfolding and protecting local resources. The compass partners realized that most indigenous knowledge system are based on the understanding that living world is made up of three worlds; the human world, the natural world, the spiritual world (compass 2002). The aspects are very important, a more recent effort was to document indigenous knowledge related to natural resources. Rural people have a way to get access to each of these resources, to claim defend and transform them.

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Upendra *et al* (2002) opines that many indigenous practices and technologies are still practiced by a number of people in the field of agriculture, health and education. Some farmers consult astrological timing for sowing transplanting, intercropping and harvesting. This means that indigenous practice play a very important role in the farming system and this is what most farmers still hold on to in their occupation.

Understanding the basic concepts of the various indigenous knowledge systems, therefore, is important for international cooperation and research. Though, the western knowledge system has gone a long way to develop powerful technologies.

Traditional agriculture is one of the oldest, yet one of the most advanced forms of food production. Traditional practices are a result of farmers choosing crop types or varieties depending on soil depths, water holding capacity, slope and drainage, and by observing their interaction with each other. The combinations of different agro-climates conditions, such as low rainfall, high temperatures and different soils, gave rise to various crop combinations and crop rotations. The limitation of lives hold labour further determined the type of crops and cropping patterns. Traditional agriculture generally ensured food security and preserved genetic divinity.

According to IIRR (1996), Indigenous knowledge (ITK) is the basis for self-sufficiency and self determination for at least 2 reasons:

1. People are familiar with IK practices and technology. They can understand, handle and maintain them better than introduced western practices and technologies.
2. IK draws on local resources. People are less dependent on outside suppliers that can be costly, scarce and available only irregularly.

According to Africa cosmovision, the different local specialists are linked to supernatural powers. For example, every traditional healer receives knowledge of how to use various trees and herbs from the spirit of his/her ancestors or other spirits. If you ask natural farming experts where their calculations come from, they all confirm that they dream or interpret natural signs, such as the movements of insects, birds or stars.

In most cases this valuable traditional knowledge is held in the mind of elderly people, and they may be lost their death if not imparted to new generation (Cosmos 2001)

Definition of Terms

IK (Indigenous Knowledge) as defined by this study are biomedical beliefs employed by rice farmers.

Statement of the Problem

Thirty six percent of Nigerian population is involved in agriculture (FAO, 1997), while United State of America and Israel have less than 4 percent of their population involved in agriculture: yet they have abundance and improved agricultural production for both domestic consumption and export (Emmanuel, 1995). In Nigeria, the government is still involved in the importation of rice from other countries to meet up with the local demand. It appears therefore that there are some production techniques not available or not properly applied by our farmers. Yield across the different ecosystems generally remain low and the output trend could be resolved with the proper understanding and regard for indigenous techniques that is practicable and appropriate for rice production (Gyekye,1996). The increase in demand for rice has made supply to fall short of demand due to the imbalance between production and population. Due to this imbalance there is need to fall back to the use of indigenous knowledge.

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Hypotheses of the Study

Ho_1: There is no significant relationship between the socio-economic characteristic of the farmers in the study area and effect of biomedical beliefs on rice production.

Ho_2: There is no significant relationship between farmers level of production and their effect of biomedical beliefs on rice production.

Ho_3: There is no significant relationship between the extent of use of the biomedical beliefs and it effect on rice production.

METHODOLOGY

The study was carried out in Ewekoro Local Government Area of Ogun State. Three out of the 10 political wards in Ewekoro Local Government Area were randomly selected. These are Mosan, Wasimi, Abalabi wards; 4 villages are selected purposively from each of the wards due to their high involvement in rice production making a total of 12 villages and 120 respondents.

TABLE 1: Sampling procedure

L.G.A.	Wards	Villages	Number of Respondent
	Mosan	Osupori	10
Ewekoro		Oteye	10
		Temo	10
		Oluwagun	10
	Wasimi	Wasimi	10
		Aaba	10
		Baye	10
		Lugbena	10
	Abalabi	Alatere	10
		Olajide	10
		Kajola	10
		Oteyi	10
Total			**120**

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RESULTS AND DISCUSSION

TABLE 2: Socio- economic Characteristics of Farmers (n= 120)

	Frequency	Percentage
Age Range		
< - 40years	11	9.17
41 – 50years	20	16.67
51 – 60years	40	33.33
61 – 70years	45	37.50
> - 70years	4	3.33
Sex		
Male	89	74.17
Female	31	25.83
Marital Status		
Married	110	91.67
Single	4	3.33
Divorced	3	2.50
Separated	1	0.80
Widowed	2	1.67
Religion		
Christianity	36	30.00
Islam	37	30.83
Traditionalist	47	39.17
Level of Education		
None	52	43.33
Adult Education	3	2.50
Primary Education	40	33.3
Secondary school	17	14.17
Post secondary	8	6.67
Years of Experience		
No response	16	13.33
< - 10years	7	5.83
11 – 20 years	14	11.67
21 – 30 years	22	18.33
31 – 40years	42	35.00
41 – 50years	13	10.83
> - 5.0 years	6	5.00
Farm size (ha)		
Less than 1	3	2.50
1 – 1.5	11	9.17
2 – 2.5	63	52.50
3 – 3.5	32	26.67
3.5 and above	11	9.17
Religion		
Christianity	36	30.00
Islam	37	30.83
Traditionalist	47	39.17

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Table 2 indicates that 37.50% of farmers involved in rice farming activities are aged 61-70 years while only 9.17 are less than 40 years of age. This shows that farming activities in the study area comprises mostly the aged. This implies that production of rice will be minimal and this could lead to increase in the price of rice. Also, 74.17% of the respondents are males. This shows that most of the respondents are males with few females who help in lighter jobs on the farm. This may be attributed to the tedious work that needed to be embarked upon during land preparation especially when it involves opening up of new land.

Furthermore, table 2 reveals that most (91.67) of the respondents are married, 3.33% are single, 2.50% are divorced while 0.80% are separated and 1.67% are widowed. The fact that a greater number of the respondents are married implies that there will be increase in number of labour available for rice production activities. Most (43.33%) of the farmers have no formal education while only 6.67% have post secondary education. This implies that the lack of education of most of the farmers might make them hold on to the use of IK practices.

Also, most (39.1%) of the respondents are traditionalist, as implied on table 2. This means that most of the farmers might be committed to IK practices and hence resistant to any innovation that is brought to them. Apart from this, table 2 shows that most (64.16%) of the farmers had 21-50 years of experience in rice production. This means they are in position to give a better view on indigenous rice production practices. The longer periods of experience in this field might have enriched their knowledge about indigenous farming practices. Table 2 further shows the distribution of farmer according to their farm size. Most (52.50%) of the rice farmers have a farm size of 1.6-2.5ha., while only 9.17% have a farm size of 3.6ha and above. It could be due to the fact that they are indigenes of the study area. It gives them opportunities to carry out farming activities on a fairly large scale.

TABLE 3: Participation in Agricultural Production

Other Farming Activities	Frequency	Percentage
No response	3	2.50
Food crop production	43	35.83
Cash crop production	28	23.33
Food processing	22	18.33
Hunting	24	20.00
Total	**120**	**100**

Table 3 shows that almost all the respondents are involved in some other farming activities. Food crop production recorded the highest (35.83%). They engage in these activities in order to ensure household food security. This could be as a result of problems encountered on rice farms such as bird infestation.

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TABLE 4: Other characteristics

Means of Acquiring land	Frequency	Percentage
Inheritance	79	65.83
Rent	13	10.83
Purchased	21	17.50
Gift	7	5.83
Varieties of Rice	**Frequency**	**Percentage**
ITA 257	2	3.33
WAB 189	52	43.33
WAB 450	16	13.33
OFADA	37	30.83
ITA 128	8	6.67
Operation	**Frequency**	**Percentage**
Subsistence	3	2.50
Commercial	117	97.50
Form of labour utilization		
Family	38	31.67
Hired	21	17.50
Family and hired	61	50.83
Market Channel	**Frequency**	**Percentage**
No response	26	21.67
Trader at site	3	2.50
Wholesale market	91	75.83
Source of fund	**Frequency**	**Percentage**
Bank	19	15.83
Credit	18	15.00
Esuzu	72	60.00
Family	10	8.33
Others	1	0.83

Table 4 reveals that 64.83% inherited their farm lands. This also supports the assertion on table 2 that most of the farmers in the locality are indigenes. Table 4 shows the variety of rice planted by the farmers in the study area. Only 3.33 percent of the respondents grow IITA 257, 43.33% grow WAB 189 and 30.83% grow Ofada. This indicates that WAB 189 variety of rice is being grown widely followed by Ofada variety of rice. It implies that the respondents will accept only innovation that yields better result. Table 4 indicates that 97.50% of the respondents are into commercial production of rice, while only 2.50% are subsistence farmers. This could mean that rice is being produced in

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large quantities. About 30% of the respondents make use of family labour while a higher percentage (50.83%) make use of both family and hired labour on their farms. This could account for reasons why most farmers marry more wives and have more children to serve as labour on their farms. Table 4 shows that few (24.17%) of the respondents sold to traders at site while 75.83% sold to wholesale market. Also, 60% of the rice-producing farmers make use of Esusu while 8.33 source for fund from family members. This could mean that farmers do not depend on credits and bank loans because they do not have collateral.

TABLE 5: Common Biomedical Beliefs in the area

		Yes		No		No response	
	Biomedical beliefs	**Freq.**	**Percentage**	**Freq.**	**Percentage**	**Freq.**	**Percentage**
1.	Ceremonies in cropping season	2	1.67	118	98.33	-	-
2.	Use of village Astrologers	-	-	120	100.00	-	-
3.	Use of rituals	66	55.00	54	45.00	-	-
4.	Use of Ancestral spiritual force	51	42.50	69	57.50	-	-
5.	Communicating with supernatural force	53	44.17	66	55.00	1	0.83
6.	Consulting rain makers	3	2.50	1.14	95.00	3	2.50
7.	Making vows to Gods	5	4.17	114	95.00	1	0.83
8.	Use of thanksgiving ritual for harvest	63	52.50	57	47.50	-	-
9.	Mixed Agric. With varieties of medicinal plant	38	31.67	82	68.33	-	-
10.	Traditional medicine to test soil fertility	77	64.17	42	35.00	1	0.83
11.	During to control rabbit and grass cutter	48	40.00	66	55.00	6	5.00
12.	Indigenous technology to control grass cutter	54	45.00	65	54.17	1	0.83
13.	Battery cell to control termite	90	75.00	30	25.00	-	-
14.	Traditional means to scare birds	90	75.00	30	25.00	-	-

Table 4 indicates that 55 % of the respondents believed that use of rituals is a common practice in rice production while 64.17% felt that use of traditional medicine to test soil fertility is common. This means that farmers are traditionally inclined in their agricultural practices.

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TABLE 6: Effect if Use of IK in Rice Production

		Positive		Negative		No effect	
	Biomedical beliefs	Freq.	Percentage	Freq.	Percentage	Freq.	Percentage
1.	Ceremonies in cropping season	42	35.00	-	-	78	65.00
2.	Use of village Astrologers	54	45.00	3.7	30.83	29	24.17
3.	Use of rituals	70	58.33	3.8	29.17	15	12.50
4.	Use of Ancestral spiritual force	24	20.00	29	24.17	67	55.83
5.	Consulting rain makers	1	0.83	2	1.67	117	97.50
6.	Making vows to Gods	3	2.50	2	1.67	-	-
7.	Use of thanksgiving ritual for harvest	45	37.5	40	33.33	35	29.1
8.	Use of mixed Agric. With varieties of medicinal plant	30	25.00	8	6.67	82	68.3
9.	Traditional medicine to test soil fertility	66	55.0	53	44.17	1	0.83
10.	During to control rabbit and grass cutter	28	23.33	20	16.66	72	60.8
11.	Indigenous technology to control grass cutter	34	28.33	20	16.66	66	55.0
12.	Battery cell to control termite	82	68.33	8	6.66	30	25.00
13.	Traditional means to scare birds	44	36.67	46	38.33	30	25.00

Table 6 shows the frequency distribution of the various effect of IK. Only 35.00% of the respondents indicate that ceremonies in cropping season have positive effect while 65.00% did not perceive it as having any effect. The use of rituals has a positive effect as indicated by 58.33% while 97.50% felt that consulting rain makers has no effect on their rice production activities. This could mean that some IK might have no impact after all.

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TABLE 7: Level of Production

	Frequency	Percentage
Not applicable	30	25.00
< 4tons	28	23.33
4 – 8 tons	59	49.17
9 – 15 tons	3	2.50

Table 7 shows that 25% of the respondents did not make use of any IK while 49.17% of the respondents recorded 4-8 tons of rice in their production activities. This shows that the use of IK has an impact on some of their farming activities. This agrees with the survey carried out Joke de jonge (2002) that farmers can add earth cosmos relation and spiritual dimensions to enhancing their farming activities.

TABLE 8: Annual Income from Rice Production per Year Before and After the Use of Biomedical Beliefs

	Frequency	Percentage
Before		
No response	1	0.83
Not applicable	28	23.33
N 2,500 – N 5,00	23	19.17
N 5001 – N 7,500	38	31.67
N 7,501 - N 10,000	21	17.50
> N 10,000	9	7.50
After		
No response	1	0.83
Not applicable	27	22.50
N 2,500 – N 5,00	17	14.17
N 5001 – N 7,500	16	13.33
N 7,501 - N 10,000	9	7.50
> N 10,000	50	41.67

Table 8 reveals that 56.67% of rice producing farmers realizes over N5,000 from their farming operations before the use of IK. Only 23.33% indicated that they often do not sell their rice produce. After the use of IK, the income of farmers rose as indicated by 41.67% of the farmers who earn over N10,000 annual income from rice production. This means that most farmers consume their goods within the household. Production was found to be low before the use of IK. This shows that the income of farmers before the use of IK practices are very small compared to what they made after the use of IK practice. This implies that IK have positive effect on farming activities.

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TABLE 9: Factors Affecting Use/Non Use of Biomedical Beliefs

Factors	Use		Non-Use		Not Applicable		Total
	Freq	%	Freq	%	Freq	%	Freq
Age	3	2.50	70	58.3	47	39.1	120
Sex	-	0.83	45	37.5	74	61.6	120
Education	41	-	101	84.17	19	15.83	121
Religion	18	34.1	38	31.6	41	34.1	120
Poverty	2	15.00	-	1.02	85.00	-	120
Access to extension agent	98	1.67	116	96.67	2	1.67	120
Family heritage	22	81.67	-	-	98	81.67	120
More yield	80	66.67	-	-	40	33.33	120

Table 9 indicates that 66.67% make use of IK because of more yields while 84.17% make use of it due to their level of education. This is in agreement with Familusi (1992) that older people are very conservative and place some trust in tradition.

Taboo in the Use of Biomedical beliefs

TABLE 10: The frequency distribution of some taboos that affects IK

Biomedical Beliefs	Taboo	Not applicable		Yes		No	
		Freq	%	Freq.	Percent	Req.	Percent
Use of dung to control rabbit & grass cutter.	Rain after application render it ineffective	28	23.33	92	76.67		
Use of battery cell.	Careless application of battery cell could be poisonous	12	26.67	87	72.50	1	0.83
Traditional mean of bird scaring	Defecating on the farm render it ineffective.	24	20.00	96	80.00	-	-

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Table 10 shows that 76.67% of the respondents believe that taboo such as rain after the application of dung in the control of grass cutter render such practices ineffective. Mean while, as high as 80% felt that defecating in farms could render some IK ineffective. This means that the application of some IK could be rendered ineffective by certain acts.

Access to Extension Agent

TABLE11: Frequency of Access of the Farmers To Extension Agent

	Freq	Yes percent	Freq.	No percent	No freq.	Response percent
Access to extension agent	113	94.17	6	5.00	1	0.83

Table 11 shows that majority (94.17%) of the farmers have access to extension agents. This means that despite the fact that extension agents visit them, they still engage in the practices.

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Explanation of the Chi-Square Analysis Result

TABLE 12: **Relationship between the socio economic characteristic of farmer and use of IK in rice production**

Socio economic characteristic	X^2 value	Degree of production	Probability		Decision
Age	27.975	4	<.0001	Sig.	Reject Ho1
Sex	1.2257	1	0.2684	Not Sig.	AcceptHo1
Marital status	4.7169	4	0.3177	Not Sig.	AcceptHo1
Education	19.074	5	0.0019	Sig.	Reject Ho1
Religion	45.793	2	<0.0001	Sig.	Reject Ho1

Ns Not Significant

Sig. Significant

Table 12 reveals that age (X^2=27.97), education (X^2=19.07), and religion (X^2=45.79) are significantly related to use of IK at P<0.05. This means that age for instance would determine farmers' use of IK. Old farmers might use it more often in their farming operations than younger ones.

Table 13: Test of relationship between frequency of visit of extension agent and the use of IK

	X^2 value	Degree of freedom	Probability		Decision
Agent visit	47.117	4	0.819	NS.	Accept H_{O6}

Table 13 reveals that there is no significant relationship between frequency of visits of extension agents and the use of IK in rice production (X^2=47.12, p=>0.05) This means that visit of extension agent does not determine the use of IK in rice production activities. This is an indication that farmers would use IK irrespective of the visits of the agents.

CONCLUSION

The finding shows that age, education, religion has significant relationship with the use of biomedical belief, while sex, marital status has no significant relationship with the use of IK. There was no significant relationship between frequency of visits of extension agents and use of IK.

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RECOMMENDATION

Based on the finding of this study, the following recommendations are made:

1. The agriculture Development Agencies should find ways of improving upon some of these IK practices with a view to blending them with conventional (improved) extension innovation.
2. Efforts should be made by the agricultural development agencies to facilitate a high level of communication and literacy level of rice producing farmers through consistent adult education programmes.
3. The farmers should be given the opportunities of regularly attending workshops, seminars, informal discussion etc with the objective of making the farmers enjoying full participation in each of these programmes.
4. There is need to increase the stock of knowledge of the extension agents with respect to IK of farming practices on one hand and increasing the knowledge of the farmers with respect to improved innovations on the other hand.

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