Innovations

Indigenous knowledge, culture in agricultural development in Delta north agricultural zone of Delta state, Nigeria

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Abstract
Indigenous knowledge is regarded as the poor social capital. Indigenous knowledge refers to a generational type of knowledge that has evolved within the community, especially in a rural setting. It is a unique knowledge confined to a particular culture or society. The objectives of this study were to: Identify practical application of traditional knowledge in agriculture. Examine the benefits of indigenous knowledge to agricultural development. Identify constraints to indigenous knowledge in agricultural development. This study was carried out in Delta State of Nigeria. Twenty (20) farmers were selected from four (4) farmers groups making a total population of eighty (80) respondents for this study. Table 1 result shows that the respondents applied traditional knowledge in everyday routine of their farming activities. Table 2 results revealed that the respondents agreed there are benefits with indigenous knowledge practices. Table 3 result shows that the respondents agreed that indigenous knowledge is challenged by many factors. It is gradually disappearing and remains only in the memory of some old age people who live in remote rural areas. Conclusion, it is clear that traditional knowledge plays an important role in development of agriculture in different farming practices. Therefore to avoid total extinction of indigenous knowledge practices, documentation and dissemination of these knowledge practices deserve special attention, as they encompass knowledge.

Keywords: *1.Indigenous knowledge, 2.traditional knowledge, 3.agricultural development, 4.Delta State.*

Introduction

Indigenous knowledge is regarded as the poor social capital. Indigenous knowledge are generational type of knowledge that has evolved within the community, especially a rural setting. Indigenous knowledge is the main asset to invest in the struggle for survival, to produce food, to provide shelter and to achieve control of their lives. The concepts of indigenous knowledge, local knowledge, traditional knowledge, folk knowledge, community knowledge, traditional wisdom, rural people's knowledge, traditional science, farmers knowledge and indigenous technical knowledge are all terms for knowledge that belong to the rural populace, meaning the same thing. They are used interchangeably and to differentiate the knowledge developed in a given community from the international knowledge systems or scientific knowledge systems developed through universities, government research centres and private industries Olarewaju, (2009).

Greenier 1998) as cited by Olarewaju, (2009) defined indigenous knowledge as the unique, traditional, local knowledge existing around the specific conditions of women and men indigenous to a particular

geographical area. Rajasekeran (!993) defined indigenous knowledge as the systematic body of knowledge acquired by local people through the accumulation of experiences, informal experiments and intimates understanding of the environment in a given culture. The rural populace mostly the farmers are the custodians of indigenous knowledge systems in agriculture and have a greater understanding of their environments where they earn a living than the well trained scientists who lack rural experiences. Indigenous knowledge is unwritten, untapped and largely unutilized knowledge that are unique to a given culture and society (Das Gupta & Saha, 2008).

A lot of indigenous knowledge disappears mainly due to intrusion of foreign technologies, colonial education system that replaced the practical everyday life aspect of indigenous knowledge and development concepts that promise short term gains or solution to problems without being able to sustain it. The disastrous disappearance of indigenous knowledge is mostly seen to those who have developed them and make a living through them. Also there are serious implications for others that can be detrimental as well. For instance, when technologies, skills, problem solving strategies, artifacts and expertise are lost. Indigenous knowledge systems have extended perspective on the ecosystems and renewable ways of using natural resources. Today, there is a serious danger that a lot of indigenous knowledge is being lost and worthy knowledge about ways of living renewably ecologically and socially (Bishaw & Wubsher, 2020)

The role of the nineteenth century colonialism in defaming and ignoring indigenous knowledge of Nigeria and other colonial countries has negatively impacted on social value and attitude towards indigenous knowledge systems and as a result of the negative impact of the nineteenth century, many scientists and academics regarded indigenous knowledge systems as obsolete, insignificant and static. Indigenous knowledge systems have not been methodically recorded in written form and are not easily accessible to researchers in agriculture, policy makers and development practitioners (Das Gupta & Saha, 2008).

Characteristics of indigenous knowledge are; (1) it is local, rooted to a particular place and experienced by people living in those area or place. (2) Indigenous knowledge is transmitted orally or by observation or through demonstration and imitation. (3) Indigenous knowledge is the consequences of everyday practical engagement in life and is continuously reinforced by experience and trial and error. (4) Indigenous knowledge is empirical rather than theoretical knowledge. (5) Indigenous knowledge is essentially characterized with repetition and when even new knowledge is included. (6) Indigenous knowledge is continuously being produced and reproduced, discovered as well as lost. It is constantly changing. (7) Indigenous knowledge is shared to a greater extent than other forms of knowledge. (8) Indigenous knowledge is devolution in practices and interactions in which people themselves are engaged (Tinashe, 2016).

Culture is defined as the ecological conditions and the traditional institutions that assist to keep in existence the community. The generation, adaptation and use of traditional knowledge are greatly controlled by the culture; economic; social; political and geographical contexts that contribute to generate indigenous knowledge. Indigenous knowledge systems show great diversity among ethnic groups and locations, that promotes a situation of constructive dependence instead of destructive dependence of modern development. The proofs is found in myths, rules, taboos, ethos and regulations that form part of the local culture (Egeru, 2012)

Indigenous knowledge systems have a great view of the ecosystems and of renewable ways of sustaining natural resources. It has emphases on genetic resources, pastoral management and agro forestry. It spans the entire range of human experience including history, linguistics, politics, arts, economic, administration, psychology, engineering, medicine and fishing (Das Gupta & Saha, 2008).

Living diversity in nature corresponds to a living diversity of cultures. With cultural and environmental changes, both biodiversity and the traditional knowledge systems are important to sustainability of agricultural development and are being lost at an unbelievable rate (Tinashe 2016). He stressed further that poverty is the main reasons for the very swift loss of biodiversity and indigenous knowledge systems. The pressure of poverty increases the distress on natural resources and diverts people from complex indigenous knowledge systems to easy and simple knowledge such as chemical agriculture. Also, the introduction of modern commercial agricultural technologies from West displaces and eliminates indigenous knowledge practices and favour modern practices like mono-cropping and has led to the degradation of natural resources, poorer nutrition and loss of informal channels of communication (Larson, 1998).

Traditional knowledge provides the foundation for grassroots agricultural development and decision making. It is found that the traditional knowledge of ecological zones, natural resources, agriculture, aquaculture, forest and game reserve management is far more sophisticated than assumed before. Additionally, this knowledge offers new models for development that are both ecological and socially sound. Indigenous knowledge has immersed value in agriculture.

Objective of the study

The objectives of this study were to:

- Identify practical application of traditional knowledge in agriculture.
- Examine the benefits of indigenous knowledge to agricultural development.
- Identify constraints to traditional knowledge in agricultural development.

Research Methodology

This study was carried out in Delta State of Nigeria. Delta State consists of three (3) agricultural zones. These are Delta North, Delta Central and Delta South. For the purpose of this study Delta North was randomly selected. Delta North has nine (9) local government areas. Two (2) Local Government Areas were purposively selected for their pronounced indigenous knowledge. Ika South Local Government Area and Ika North East Local Government Area respectively. Agriculture is the major occupation of the people in both LGAs. Four (4) registered farmers groups from both LGAs were purposively selected as respondents for the study. Two (2) farmers groups from each LGA. Twenty (20) farmers were selected from the four (4) farmers groups making a total population of eighty (80) respondents for this study. The instrument for data collection is schedule interview and a well structured questionnaire. Responses from objectives ii and iii were measured on a 4-point Likert-type scale with values of strongly agreed =4; agreed =3; disagreed =2; and strongly disagreed =1. A cut off point of 2.50 was used to determine respondents agreed or disagreed. Hence, a mean score of ≥2.50 depicts agreed while less than ≥2.50 stand for disagreed. The data collected were analyzed with simple percentage, mean and standard deviation.

Results and discussion

Table 1: The application of traditional knowledge in agriculture

S/n	Items	SA	A	D	SD	Mean	St.d	Remark
1.	Soil fertility and classification	55 (68.8%)	22 (27.5%)	3 (3.8%)	-	3.65	.55	Very Serious
2.	Building of farm stead	36 (45%)	41 (51.2%)	3 (3.8%)	-	3.41	.57	Very Serious
3.	Plant breeding and pathology	25 (31.3%)	31 (38.8%)	19 (23.8%)	5 (6.3%)	2.95	.89	Very Serious
4.	Animal breeding and diary farming	36 (45.0%)	22 (33.8%)	7 (8.8%)	10 (12.5%)	3.11	1.01	Very Serious
5.	Plant disease and pest management	34 (42.3%)	31 (38.8%)	12 (15.0%)	3 (3.8%)	3.20	.83	Very Serious
6.	Horticulture	33 (41.3%)	30 (37.5%)	9 (11.3%)	8 (10.0%)	3.10	.96	Very Serious
7.	Weather patterns	35 (43.8%)	30 (37.5%)	10 (12.5%)	5 (6.3%)	3.19	.89	Very Serious
8.	Crop harvesting and storage	34 (42.5%)	33 (41.3%)	9 (11.3%)	4 (5.0%)	3.21	.84	Very Serious
9.	Animal disease and pest management	25 (31.3%)	39 (48.8%)	13 (16.3%)	3 (3.8%)	3.06	.79	Very Serious
10.	Crop and animal protection	23 (28.7%)	36 (45.0%)	13 (16.3%)	8 (10.0%)	2.93	.92	Very Serious
11.	Knowledge of crop medicinal values	26 (32.5%)	38 (47.5%)	11 (13.8%)	5 (6.3%)	3.06	.85	Very Serious

Source: Field Survey, 2022

Table 1 result shows that the respondents applied indigenous knowledge in everyday routine of their farming activities and accomplishments. This agreed with Tinashe, (2016) that for many years Indigenous knowledge has steered farmers in planning agricultural productions and conservation of natural resources, as different types of indigenous agricultural knowledge can be obtained from different sources and communities. Also, the effectiveness of this indigenous knowledge in agriculture by indigenous people without chemical agriculture could be traceable to their fertility, longevity and natural strength unlike the chemical agriculture that has health implication. Bishaw & Wubsher, (2020) opined that indigenous people play a vital role in sustainable small holder farming in rural areas of the world, their indigenous knowledge and understanding of ecological systems and local biodiversity, the preservation and continued evolving use of this knowledge is embedded in recognizing indigenous peoples fundamental right to follow their own ways of growing food

Table 2: Benefits of Indigenous Knowledge

S/n	Items	SA	A	D	SD	Mean	Std. Dev	Remark
1.	It is environmentally healthy	42 (52.5%)	29 (36.3%)	5 (6.3%)	4 (5.0%)	3.36	.82	Very Important
2.	Minimum risk factor	28 (35.0%)	39 (48.8%)	10 (12.5%)	3 (3.05%)	3.15	.78	Very Important
3.	It relies on genetic and physical diversity.	27 (33.8%)	35 (43.8%)	14 (17.5%)	4 (5.0%)	3.06	.85	Very Important
4.	It exploits local resources.	34 (42.5%)	30 (37.5%)	11 (13.8%)	5 (6.3%)	3.16	.89	Very Important
5.	Adaptable to meet multipurpose needs	22 (33.8%)	42 (52.5%)	9 (11.3%)	2 (2.5%)	3.18	.73	Very Important
6.	It is based on cultural values	30 (37.5%)	38 (47.5%)	8 (10.0%)	4 (5.0%)	3.18	.81	Very Important
7.	It fits into local farming system	31 (38.8%)	41 (51.2%)	5 (6.3%)	3 (3.8%)	3.25	.74	Very Important
8.	Practices and technologies are transferable easily	24 (30.0%)	42 (52.5%)	11 (13.8%)	3 (3.8%)	3.09	.77	Very Important
9.	It is available and easily understood	29 (36.3%)	30 (37.5%)	12 (15.0%)	9 (11.3%)	2.99	.99	Very Important
10.	It is horistically world view	30 (37.5%)	31 (38.8%)	4 (5.0%)	15 (18.8%)	2.95	1.09	Very Important

Source: Field Survey, 2022

Table 2 results revealed that the respondents agreed there is benefits with indigenous knowledge practices and the benefits of indigenous knowledge in agricultural development remain very paramount to the people in rural areas. The results agreed with Bishaw & Wubsher, (2020) who stated that people in rural communities uses indigenous knowledge in food production, processing, preservation, storage and ensured their food security. Indigenous technological innovations is the most appropriate adaptations to the environmental and cultural conditions of the societies that creates them, so some agricultural innovations can be borrowed from indigenous knowledge based in other cultures to increase awareness of the feasibility of using indigenous knowledge to enhance and facilitates development in agriculture.

Table 3: Constraints to Traditional Knowledge

S/n	Items	SA	A	D	SD	Mean	Std. Dev	Remark
1.	Death of old indigenous people	44 (55.0%)	32 (40.0%)	2 (2.5%)	2 (2.5%)	3.48	.68	Very Serious
2.	Poverty	27 (33.8%)	39 (48.8%)	12 (15.0%)	2 (2.5%)	3.14	.76	Very Serious
3.	Lack of documentation	23 (28.7%)	36 (45.0%)	15 (18.8%)	6 (7.5%)	2.29	.8845	Very Serious
4.	It is obsolate and out of date	28 (35.0%)	36 (45.0%)	8 (10.0%)	8 (10.0%)	3.05	.93	Very Serious
5.	Unsupportive cultures	33 (41.3%)	31 (38.8%)	11 (13.8%)	5 (6.3%)	3.15	.89	Very Serious
6.	Practices and technologies are time demanding	28 (35.0%)	35 (43.8%)	10 (12.5%)	7 (8.8%)	3.05	.91	Very Serious
7.	Restricted only to those who have the knowledge	35 (43.8%)	30 (37.5%)	15 (18.8%)	-	3.25	.75	Very Serious
8.	Lack of proven scientific procedural explanations	31 (38.8%)	36 (45.08%)	11 (13.8%)	2 (2.5%)	3.20	.77	Very Serious
9.	Lack of replicability	26 (32.5%)	32 (40.0%)	17 (21.3%)	5 (6.3%)	2.99	.89	Very Serious
10.	Breakdown of external intervention in the face of crisis	39 (48.8%)	30 (37.5%)	7 (8.8%)	4 (5.04%)	3.30	.83	Very Serious
11.	Uneven distribution across individuals and communities	23 (28.7%)	37 (46.3%)	16 (20.0%)	4 (5.0%)	2.99	.83	Very Serious
12.	Introduction of modern agricultural practices	29 (36.3%)	39 (48.8%)	12 (15.05%)	-	3.21	.69	Very Serious
13.	Misappropriation of the knowledge by outside researchers	31 (38.8%)	33 (41.3%)	12 (15.06%)	4 (5.0%)	3.14	.85	Very Serious
14.	Loss of indigenous people's territorial base	30 (37.5%)	28 (35.0%)	15 (18.8%)	7 (8.8%)	3.01	.96	Very Serious

Source: Field Survey, 2022.

Table 3 result shows that the respondents agreed that traditional knowledge is challenged by many factors. It is gradually disappearing and remains only in the memory of some old age people who live in remote rural areas. In the study area, poverty is the main reason local people abandon their manual clearing of bush and weeding of farmland as well as some farm operations coupled with migration of many able youths to abroad and cities, causing manual labour to be expensive, hence the local people choose chemical farming since spraying of chemical will last them 2-3 months before the weeds are grown again. Despite advances in scientific knowledge on agricultural development, the benefits of the development have not reached vast majority of the rural poor. So, dismissing traditional knowledge as unimportant and irrelevant, may encouraged rural people to adapt practices that could lead to objectionable effects. Egeru (2012) agreed with the above assertion and added that indigenous knowledge is challenge by rapid socioeconomic and environmental changes.

Conclusion and Recommendation

It is clear that indigenous knowledge is an important tool in development of agriculture in different farming practices. It farming practices in different areas should not be maligned. Therefore to avoid total extinction of indigenous knowledge practices, documentation and dissemination of these knowledge practices deserve special attention, as they encompass knowledge, which are valuable in times of crisis or adaptation to the changing conditions. Modern technologies should be harmoniously blended with indigenous knowledge for sustainable development of agricultural productions and society in general

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