

Eco-Climate Memory of Yam Production of Izzi People, Southeast Nigeria

Okezie Kelechukwu* & Alessandro Musetta

Neighbourhood Environment Watch (NEW) Foundation, Abakaliki, Ebonyi State, Nigeria

*Corresponding author: Okezie Kelechukwu, Neighbourhood Environment Watch (NEW) Foundation, Abakaliki, Ebonyi State, Nigeria.

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Abstract

The environment in which people live influences their farming practices and the type of crops for cultivation and food production. The environment also determines the types of resources derivable or controlled, influencing the methods adopted in food production. Yam plays a significant role in the cosmology and cultural practices of the Izzi people. This study, therefore, investigates the indigenous farming system of the Izzi people of Ebonyi state, Northeast of Igboland. The plain land and temperate weather conditions provided great pull and push towards the cultivation of yam as the staple food of the people and for commerce. This study assesses the farming practices of the people and the extent to which the integration of indigenous knowledge can contribute, not only to the enhancement of food production but also to the concept of food security. It looks at the land tenure system and the role of women in the agricultural value chain. Research findings show that the Izzi people are reputed yam, cassava, and rice farmers though still at subsistence level. Yam is a traditional crop and still plays a significant role in today's cultural rites; religion, title-taking, and burials. Sadly, many indigenous species of the yams have gone into extinction, and a more significant number stands threatened due to climate change and other unsustainable agricultural practices. The research recommends that the agricultural practices adopted by the Izzi people be studied to improve them. Organic manuring, building resilience to the effects of climate change through enhanced crop varieties and training the smallholder farmer on sustainable agricultural practices and proper storage are pathways to food security in the southeast region and in Nigeria.

Keywords: Agriculture, Indigenous Knowledge, Climate Change, Food Security, Environment, Farming System, Inputs, Landscape.

Introduction

The origin of food production in West Africa is yet to be entirely determined. However, archaeological findings from Iwo Eleru and the artefacts associated with the site indicate early man's attempt to dominate his environment and meet his diverse dietary requirements [1]. Also, archaeological evidence shows that those who occupied the Nok sites and Daima were food producers, as evidenced by the presence of carbonised sorghum [2]. Human Beings have always remained farmers since human evolution, even in its primordial state as a hunter-gatherer. Food plays a critical role in the survival and to meeting the basic needs of humanity. Food falls within Abraham Maslow's theory of hierarchy and its sufficiency has not only sustained humanity but further promoted the emergence of cities and organised governance structures.

The landform is said to be the most essential variable in selecting a location for habitation and the type of agricultural practice by pre-history people. The environment in which people live influences their farming practices and the crops for cultivation [3]. It also determines the types of resources derivable and or controlled and further influences the methods adopted in their production. The cultivation system represents an equilibrium established by man after a series of trials and errors between himself and his environment [1].

[4] states that the arrival of man at the natural landscape, his attempts to meet his daily needs and wants, his spiritual expressions and social needs, influences the natural landscape such that with the progress of time, the natural landscape together with

its features and sites, become threatened. He states that human activities such as intensive subsistence agriculture, cutting down of trees, solid minerals exploitation and other developmental activities threaten the cultural landscape of an area. This position is proper for the cultural landscape of the Izzi.

Research Objectives

The primary objective of this research is to understand the agricultural practices of the indigenous people of Izzi, their innovations and challenges.

It further aims at understanding their land tenure system, role of women in the agricultural practices and role of yam in the socio-religious practices of the people.

Research Methodology

The Study adopted qualitative (descriptive) methods of research. Primary data were collected through interviews (structured and unstructured) and site visits. A total of 66 respondents were purposefully interviewed based on their expertise and knowledge of farming and traditional practices of the people. The researcher also employed participant-observer technique which aim at gaining first hand insight into their practices. The secondary data was sourced from relevant literature, journals, books, and periodicals.

Geographical Scope of Research

The study area is the Izzi speaking people in Ebonyi State. Izzi lies within the tropical rainforest region of southeast Nigeria. The Abakaliki plain, or the Abakaliki savannah, is part of the belt of derived forest zone originally of the rain forest zone. Rounded hills of volcanic origin and stands of forests stand out against the open landscape, which consists essentially of grassland with some swampy areas. Some parts of Izzi still have forests, especially areas that share boundary with Cross River State, and such areas have survived the encroachment of farmers and wild grass-fire. Palm trees are common tree species in rural communities.

Izzi is one of the major ethnic groups occupying the Northeastern edge of Igboland, with an approximate land mass of 1941. Sq. Km. (L.T Chuba 1961; [5,6]. It has a population density of about 200 people per square kilometre (Oyibe, 2018). It is a predominantly Igbo-speaking tribe, with few other non-Igbo groups living with the Izzi people in the same community (<https://lsnmst.github.io/izzi/#/Language>). It lies between longitude 6045' 36" North and latitude 8030'0" East. Today, Izzi people are found in Abakaliki, Ebonyi, and parts of Ohaukwu local government areas. The non-Igbo border infiltrated by Izzi indigenes is in Benue and Cross River states, where they are a negligible minority.

Izzi is both a dialect and a people. They claim common ancestry, tracing their origin from a man called Nnodo, the son of Enyi Nwogu, who came and settled in the Anmegu area in 1470 AD [7]. As mentioned, the Izzi people are located in three major local government areas: Abakaliki, Izzi and Ebonyi local government areas of Ebonyi state. The people of Izhiangbo in the Ohaukwu local government claim affinity with the Izzi people.

Izzi shares her boundary with the following non-Igbo peoples: the Oshopong and Intrigum (Mbembe people) in the eastern flank, Awkum-Ukele (North East), Egede Northern) and Otobolo / Utonkonm in the Northwestern flank [8].

The Izzi land is a vast expanse of land along the cross-river plain. The land consists of undulating plains. The soil structure of the area ranges from loam and lateritic Soil in the upland areas to clay loam soil in the flood plains and the river basin. The local names for the various soil types are: 'agbirigba' (laterite), 'utso' (clay) "ofutu" (clay plus laterite) and uda" (swampy clay soil).

Findings

The farmers are aware of the crucial importance of the physical characteristics of the Soil, and they employ best practices designed to conserve physical conditions for plant growth under intensive rainfall, such as heaping, ridging, mulching, and managing vegetation cover to minimise erosion. The size of the mounds depends on the soil characteristics. Swamp areas need higher mounds that could be as high as 118cm (3ft 11 inches) and have a circumference (width) of about 540cm. The soil water holding capacity of the upland areas is relatively too low, whereas the floodplains had adequate water holding capacity for crop production purposes [9].

Farming Practices of the People

The Izzi people practice two types of indigenous or traditional farming systems in Nigeria [10]. These are distant farming and back gardens or homestead farming. The distant farms are often operated under shifting cultivation as the land often results in a significant loss of soil fertility and, hence, low crop yields after a few cultivation cycles. The fallow period is to restore the soil fertility and could range from one to seven years, depending on the resources available to the farmer.

The homestead farm is sedentary and intensive, but soil fertility and productivity maintenance are enhanced by integrating litter falls, livestock, and organic wastes with an incredible array of arable crops, including vegetables, tree crops, and livestock farming.

The communal lands, which are distant from the homestead, are collectively shared as may be directed by the council of elders (ndi Ishiuke; nnaji-uhu), who determines virgin areas to be parceled out and cultivated during the farming season. According to Oketa (Personal communication, September 2018), land in Izzi symbolises wealth. The abundance of land for agriculture ensures a peaceful relationship, and its absence or limited availability could trigger war and conflicts.

As stated by [8], 'In as much as Izzi man has enough land for his farming activities he can be at peace with his neighbour, but limited land for his agricultural practices would always fuel inter-tribal conflicts'.

Land Tenure System

It is necessary to look at the land tenure/holding system and how it has promoted farming practices in the area. By custom, Izzi people do not sell lands. According to Chief Oketa (Personal communication, September 2018), every piece of land in the area was secured through warfare and so is never to be sold. Land could be communally, or family owned. The communal land is collectively shared as directed by the council of elders 'Ndi Ishiuke', who determines virgin areas to be parceled and cultivated. In sharing communal lands, preference is given, first, to titled men such as the "Ogbuinyinya", followed by the "jio-

ke", then "ogbu efi", then the "Okoro" and other elders. 'Uke' is the chief priest who sacrifices before every farming season and prays for abundant harvest and protection from the gods and the ancestors.

Men own and share the land with their wives and children. However, the wife may inherit land from her husband as she ages and if the man has no grown-up male child. Also, a man can inherit a virgin land if no one lays claim to such a land. All the man needs to do when he sees a virgin land is to plant an 'ogbu' (*Ficus* spp) tree to serve as a notice. If, at the expiration of the notice, which could range from three to six months, no one presents himself as the owner, the new owner will notify the elders and proceed to do the rites of land ownership. The new land ownership requires the owner to present to the kindred a goat, yams and other requirements as prescribed by the 'ndi uke' to community members. The tokens will be shared among the Umunna. After that, that land becomes his family's land and property.

Farming Practices and Gender Roles

The primary staple crops planted in the area include yam, rice, and cassava. Other crops planted are maize, pepper, and other leguminous crops. The Abakaliki plain provides a large expanse of cultivable lands, and an average household farm is about five acres of land or more (Udenwe, Personal communication, September 2018). Farming in the olden days is regarded as a noble profession practiced by men with strength, and it is a means to honour and wealth for the farmer.

The commencement of farming practices in the past depended on specific weather patterns and the appearance of certain cosmological signs. For instance, the dropping of leaves of certain plants and the appearance of egrets called 'oku epfi' in the local dialect, signify that the farming season has arrived.

Land clearing and tillage commence around November to December every year called 'Okoro ebo'. During this period, the farmer slashes the farm and allows the leaves to remain and decay in the Soil. The slashed plants and leaf droppings serve for mulching and manures. However, the actual farming activities peak from late March / April up to May and is called 'okoro miri'. This is the peak of the rainy season.

Unlike other Igbo groups, the Izzi people have 13 calendar months and five weekdays, which are market names. They are Azua, Onuvu (iboko), Okpo, Nkwegu, and Ohoke. There are six weeks in a month in the Izzi calendar. Since other Igbo areas have four market days, the difference in days by the Izzi people may be ascribed to their years of cohabitation and trading with their cross-river neighbours.

Azua and Onuvu are days when a son works for the father in the father's farmland. Okpo day is for community / communal work (family, or age-grade work). Nkwegu is for the mother, while Ohoke is a day for the son to work on his farm, rest, or do whatever pleases him (Udenwe 2017: Oral communication). The Labourer is paid in kind with tubers of seed yams, while some may decide to wait till after harvest, in which case, some rows of yam tubers are given to the person as payment for his labour. The patriarchal nature of the people is pronounced here as the father has two days of labour allotted to him, while mother and son has one day each.

Women play significant roles in mixed farming and intercropping. According to tradition, women (wives) are permitted to plant their crops, especially water yam, cocoyam, maize, and cassava, at the crop boundaries under the direction of their husbands. The first wife (Head wife) takes leadership in the husband's absence and assigns duties and responsibilities to younger wives, including parceling out the lands to the sons.

Though women's role in subsistence farming in the area is recognised and accepted, they first need the approval of their husbands to grow and trade the crops, and in some cases, the husband may demand that all the money she realises from such sales is handed to him.

Description and Value of Some Crops in Izzi

Yam – king of all crops: Yam 'Ji' (*Dioscorea* spp) occupies a central position in the life and diet of Izzi man as the main staple crop. Yam plays economic, socio-religious, cultural, and political roles in the life and existence of the Izzi person. It is the leading staple food, a status symbol, and is used in socio-religious ceremonies. There are festivals associated with it, such as the Ojiji and Otutara, as well as other traditional title takings, marriage ceremonies and religious ceremonies.

The technique of yam cultivation is the traditional method using a vital aspect of African indigenous technology in designing and manufacturing the planting implement, especially the famous 'Abakaliki hoe'. Welding the giant hoes, which no other Igbo group can use effectively, the farmer piles enormous Soil into large mounds depending on the soil characteristic and type of crop. Yam mounds in swampy areas could be as high as 118cm (3ft 11 inches) (Fig.1) and have a circumference (width) of about 540cm. The mounds are made with special large hoes of various sizes ranging from 12cm X 12cm; 11cm X 10cm; and 8cm X 7 cm with a blade thickness of 5mm; 4.5mm or 3.5 mm respectively and according to the farmer's preference and use. They are fixed into a wooden handle made from thick woods of the mahogany species 'Inyim'. The hoes are made to scoop large quantities of Soil in one throw.



Figure 1: Yam mound in Izzi

The space between one mound and another could range from about one meter of a cubic yard to more than two cubic yards (Isichei, 1976), [6]. This procedure prevents rotting during the rainy season and allows for the successful growth of extremely large yams, often without using sticks to support the vines.

Some of the finest and sweetest yams commonly eaten in Igbo land come from the area. In the pre-colonial era, yams were exported southward to the Ibibio and Efik communities and Calabar through the Ebonyi, Okpauku and Cross Rivers [6].

Yam could be intercropped with pepper (*Capsicum* Spp) and cocoyam ('Ede' –*Colocasia Xanthosoma*), and later, when the yam tendrils have sprouted, cassava (*Manihot* spp) is planted. It should be stated that inter-cropping yam with cassava is a recent introduction, and traditional farmers still resist it. In the past, it was taboo to plant cassava and yam in the same mound. It is believed that cassava would compete with yam for soil nutrients if planted together, affecting the yield. The men cultivate yam, while the women cultivate cocoyam, water yam, cassava, and pepper.

After harvesting the yams, they are sorted, cleaned, and kept in the barns. The yams are tied in rows using barn sticks made from plants such as 'ogirisi' (*Newbouldia laevis*), 'Abosi (*Raphia nitida*) and 'Ogbu' (*Ficus* spp).

Knowing the importance of yam, one can infer that yam has been a part of the people since antiquity. Yam occupies a rich place in the culture and diet of every Izzi person. It is a status symbol (Jioke), a measure of wealth, used in religious festivals and passage rites. When a reputable farmer dies, he is buried with tubers of yam of the "Ozibo" species, placed between the toes of the

two legs. Yam also has a socio-linguistic context. For instance, the right hand is called 'aka Utara' (pounded yam hand), showing the high relevance of yam production in the area.

The varieties of yam planted in the area include *Dioscorea rotundata*, *Dioscorea bulbifera*, *Dioscorea esculenta*, and *Dioscorea alata*. Below is a brief description and characteristics of the various yams cultivated in Izzi.

1. Jimanu or igumu (*Dioscorea agenesis*) with subspecies such as 'Ozibo', 'woke', 'open', 'ogbaharuogboya' and 'agbocha'. Okpebe stock can be preserved and stocked to last longer than others.
2. Imaga (*Dioscorea rotundata*) with subspecies such as 'ugele' and 'abi' matures early, between 4 to 5 months, and is used for the traditional 'ojiji' festival in July.
3. Okoo (*Dioscorea bulbifera*) has subspecies such as Ishianyi, Okoshieta, and Nwagulu. The Okoo yam is eaten during the planting season and is rich in energy content.
4. Nvula (*Dioscorea alata*) has akpuruakputa, okwalekata, nvuleke, ogbonja and nvulite. Akpuruakputa, nvuleke, and nvulite are threatened with extinction today even though they are prescribed for diabetic patients, while Okwalekata is propagated and has an improved variety that is profitable.
5. Edu (*Dioscorea bulbifera*) is another yam species grown in the area, though it has almost become extinct. It has two species, the aerial (bulbils) and underground tubers. The people call them "Ogboji Ogboro Edu" and "Umuda Edu" and have medicinal values. According to [11], oxalate, tannins and phenols are significantly higher in the underground tubers, while the bulbils were richer in alkaloids. The 'edu', which is almost extinct, is a good source of protein, lipid, crude fibre, carbohydrates, and minerals. All these types of yams are stored and preserved in the yam barn called 'Obaji'.

Table 1: Major Yam Species Cultivated in Izzi and Their Importance

Specie	Sub Specie	Importance / Status
Yellow yam	Igumu,	It is highly valued in Izzi.
	Opoke Ocha	
	Opoke oji	Best for eating
	Oke akpuru	Near extinct
	Ozibo	Best for pounding
	Agadagidi	Rare ; extinct
	Anwoshi akata	Rare
	Iphara	Rare ; extinct
	Okpebe	Matures early
	Okpotsula	Extinct
Yellow yam	Ujara	Rare ; extinct
	Amagee	Quickest maturing. Used in ojiji
	Oko eru	Good for eating (rare)
	Oko Ishienyi	Rare
	Ocho Nwakpa	Extinct
Water Yam	Nvula mmanu	Available
	Nvula ite	Available
	Nvula mee	Reddish; rare
	Nvula eke	Rare
	Nwokiri	Very sweet (Rare / Extinct)

	Nwite Abaga	Rare
	Okpuru akputo	Rare
	Ewo Nenwo	Rare

Source: Okezie, Field Work

The impact of climate change is affecting the production of yam in the area. Igumu yam is sensitive to variables in weather. The major environmental factors that affect the yam production includes high temperature, late rainfall, long dry season and high relative humidity, soil erosion, among others (Udenwe, 2022, oral communication) and this collaborates the findings of [12]. Today, Igumu which is much treasured to other yams due to its peculiar taste is threatened by weather changes. The soil nutrients required for its growth and size has also been depleted because of erosion, and unsustainable agricultural practices of the people.

Use of inorganic manure as against the traditional organic manure also affects productivity. It is as result of decline in production of yams due to climate change that many of the yams earlier sited has gone into extinction or are threatened. Also, increase in human population has resulted in demand outweighing supply and by implication rise in cost of sale of yams. Unsustainable agricultural practices, mining, population pressure, flooding and drought have changed the integrity and preservation of the agricultural landscape both physically and aesthetically [13]. and results in the destruction of organic remains and agricultural soil shrinkage. The farmers in their efforts to adapt to the environmental changes have introduced early land preparation and planting, mixed cropping, some level of improved farming techniques such as ridge farming and used of improved yam seedlings. But more efforts and techniques are needed.

Sustainable agricultural practices should be encouraged if yam production will continue to sustain livelihood of the people. In the words of Ogundele (2014; 117), "every group behaviour must therefore be rooted in environmental and historical circumstances, otherwise the people become a bunch of social misfits". The environment is linked and connected to humans without whom man cannot exist. There is the need to build the capacity of the farmers in Izzi region to conserve their indigenous yam species and maximally exploit their agricultural resources to forestall the ugly consequences of climate change impact on agriculture and food security.

Taboos

Taboos are rules or laws guiding or restricting the conduct or practice of a particular person, place, or thing. Taboos are put in place for religious or social reasons. There are taboos associated with yam farming in Izzi land. For instance, it is taboo to uproot a yam. Doing such is like committing an abortion, and the offender could face summary expulsion from the village. Sacrifices are required to cleanse the land if such happens, and the offender faces severe consequences if he fails to do so.

Another taboo is harvesting and eating yams before the elders, 'Ndiuke', declare the yams fit for consumption or trading. Any person caught doing so faces severe disciplinary action.

Some festivals associated with yam include the Ojiji festival, which is the yearly yam festival. Another festival is the 'otu

utara', which is to 'feed' the dead in memory of departed parents and ancestors.

New Yam (Ojiji) Festival

Ojiji is a festival to mark the eating of new yam in Izzi. The festival is significant to every Izzi indigene, and it is celebrated with lots of fun and fairs because it marks the end of the famine period and usher period of harvest and abundance. It is taboo for an Izzi person to eat new yam before the Ojiji festival. The 'Ojiji' festival is flagged off with certain rites performed at the 'enya ojiji'. The Enya Ojiji shrine is located at Anmegu, called Ntegogu. The community elders called 'Ishiuke' will visit the forest a week (5 days in the Izzi calendar) before the Ojiji festival to perform certain rites.

The Ojiji festival is often held in August every year after the new moon is sighted. One notable event in the day is that it must rain though lightly during the day of the celebration. A week before the general festival, four 'Ndiuke' from Amagu and two Ndiuke from Ebia will assemble at Ophoke Anmegu and, from there, go to the Enya Ojiji shrine. The gifts for sacrifice include kola nut, the dried meat of ram, which is offered to the shrine on behalf of the whole of Izzi. The earth goddess 'Ali' is appreciated for new crops, and prayers are offered for a bountiful harvest, good health, peace, and prosperity. The elders who go to sacrifice at the shrine must be spiritually clean and should not eat or drink anything newly harvested, including rainwater, or else they will die. They go to the shrine early in the morning naked, rubbed completely with camwood (*Pterocarpus soyaaxii*).

New yams are allowed in Izzi markets a week before the celebration, announcing the celebration proper and an invitation to the festival on the next 'Iboko' market day. The women get up early in the morning to prepare food that friends, and family will eat. Omage yam is used to celebrate the event.

The pounded yam and fermented cassava 'utara' are served with Beniseed (*Sesamum indicum*) sauce, commonly called 'essence' with lots of meat. Fathers also make available fresh palm wine, which is always from the best tapper in the village. Both the young and the old are allowed to dress in their native dress and to visit friends and relatives far and near to celebrate the ojiji festival. Ojiji celebration is an expression that the outgoing year was favourable and rewarding. It symbolises a year of a bountiful harvest and marks the beginning of the New Year, signifying joy for the arrival of the new yam and new year.

At the grand finale of the yam festival, all the villages come to their ancestral home at Amegu for the Ojiji festival (plates 14a&b). The Amagu Cultural Centre is today the hub for the celebration, and among the activities done on the day are the roasting, sharing, and eating of the yam after prayers and incantations by the Ishiuke. After that, the various masquerades entertain spectators, and the famous okweregedede war dance displays their war tact with machetes.

Otutara (Feeding of Ancestors) Festival

Another festival of great importance and still widely practised in Izzi land is the 'otutara' festival. It means the festival for the feeding of the dead - departed parents, family members and ancestors. It is celebrated two times in a year viz, the lesser otutara and the greater otutara.

The otutara is likened to the Catholic feast of all souls. The ceremony invokes the blessings of the ancestors and parents of the living members of the family. The family's eldest member (head) conducts the rites and prayers for the entire family. The lesser otutara (otutara Onanwu) is done between March /April every year (Udenwe, oral communication).

The greater otutara and its festival begins with the sighting of the moon in the ninth month (September) of the year and is celebrated on 'Nkwegu' market day. Before the event, homes, compounds, playgrounds, and village paths are cleared, weeded, and cleaned. Mud houses are repainted and everywhere looks clean. During this celebration, a family member who lives away from home returns and presents yams and fowls for sacrifice to ancestors and fathers who have passed on.

On the Nkwegu market day of the celebration, a special soup made from Mahogany seed, *Alfelia Africana* and commonly called 'Ofe akparata'. The recipe consists of akparata powder, assorted beef, dry fish, pepper, palm oil, salt to taste. It is eaten with pounded yam, prepared by the women and served in a special clay plate. The most senior in the family goes to the parents' graveside, collects enough of the pounded yam, dips it into the soup and places it at the sides of the grave. They are placed twice on the right and left sides, while the gizzards and some meat parts are placed between the pounded yam balls. This signifies the feeding of the dead.

A day after the 'otutara' which is 'Iboko' or 'oboko' day comes the climax of the festival and witnesses lots of merriment, sharing gifts and showing goodwill to one's neighbour (Udenwe, Oral communication). The festival also has some spiritual implications. If for instance, someone dies on the otutara day or a day after, that is the 'Iboko' market day; such death is considered an abomination. The person is considered a witch or sorcerer, 'mgbesi', and the person is never accorded a befitting burial. It is also said that anyone who dies on that day will have lizards and soldier ants feast on the body, signifying that such a person lived an evil life.

The Otutara festival is a day of celebration, friendship, gift ex-

change, atonement and the discipline of a disobedient child and men and women who misbehave. It is also noted that any woman who has not completed the second burial rite of her late husband is not expected to sleep in her house that day.

A day after Otutara is the 'Okpo' day. It is a period of village cleansing and driving away all wizards, witches, and witchcraft from the community. At dusk of the day, half-clad women move around the entire village, picking all droppings, shouting, hitting on instruments, and calling on all that is evil to depart from the village. The materials collected from the village rampage are deposited on the village outskirts. It is believed that after this traditional cleansing by the women, all the witches in the village must die, and the village is renewed spiritually.

Otutara is still celebrated despite consistent attempts by the Christian religion to diminish its practice and stigmatise its adherents as fetish, idol worshippers. It is one of the cultural practices of Izzi people that may not last beyond two decades, going forward, except there is a strategic push for cultural revival or renaissance.

Ecological and Cosmic Calendar of Izzi People

Ecological and cosmic calendars are living knowledge systems that continuously incorporate the relationships, bodies-cosmo and embody ancestrally. Like any Indigenous people, the Izzi people have their own calendar, which is presented here graphically with the aim of documenting and transmitting their knowledge. The calendar is drawn with Izzi People cultural leaders through the scientific coordination and documentation by the researcher and assisted by Alessandro Musetta. The Izzi calendar (fig 2) is reproduced through symbolism in time and description, capturing the farming ecology and the yam festivals of Ojiji and Utu-utara and other identified festivals. It is reproduced with the aim of implementing every possible measure to ensure the recognition of the Izzi people's knowledge and cultural rights about their traditional and biocultural heritage. The use of TK (Traditional Knowledge) notices developed by the organisation Local Contexts was operationalised.

The TK (Traditional Knowledge) notice is a visible notification that there are accompanying cultural rights and responsibilities that need further attention for any future sharing and use of this material.

Local Contexts Project ID : 6914414e-a315-4e5c-8b2f-839de7d93509

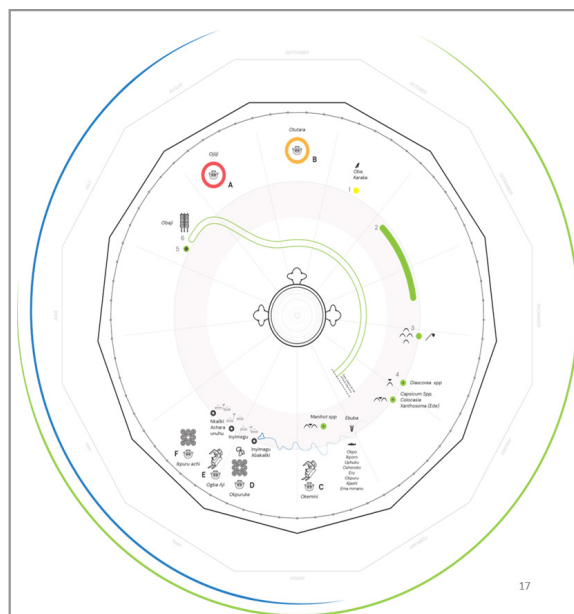
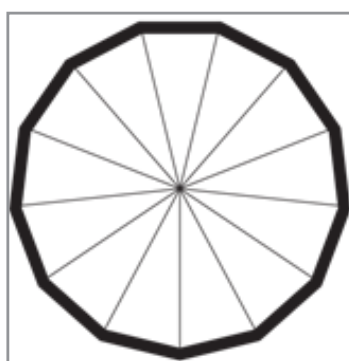


Figure 2: Izzi People Ecological and Cosmic Calendar (<https://Isnmst.github.io/izzi/>)

Legend

Izzi people have 13 calendar months and five weekdays, which are market names (Azua, Onuvu, Okpo, Nkwegu, and Ohoke).

Specific knowledge linked to festival rituals are considered sacred, secret, or private, and only certain people or families can and should have access to them.



1. Plants drop their leaves and egrets (Oku epfi) appear. This is evidencing the farming season has arrived.
2. Before planting, farmers slash land and allow the leaves to remain in the soil. Leaf droppings serve for mulching and manures.
3. Welding the special large hoe known as the Abakaliki hoe, farmers pile soil into large mounds according to soil characteristics to grow yam, the region's leading staple food. Yam mounds in swampy areas could be high as 118 cm and have a circumference of about 540 cm.
4. Mounds are sown with *Dioscorea* spp. Yams are intercropped with *Capsicum* Spp and *Colocasia Xanthosoma*, known locally as Ede. More recently, *Manihot* spp has also been introduced for intercropping.
5. Yams harvesting
6. Yams are sorted, cleaned, and kept in the barns, known locally as Obaji barns
- A. Ojiji festival
- B. Otutara festival
- C. Okemini is a peace festival, aiming to bumper harvest and to ask for protection and prosperity. Masquerades and cultural war dances are performed.
- D. The Okpuru fishing festival takes place at the natural lake

of Okpuru uke, near Inyimagu. Rituals are performed involving the women living in the nine villages that constitute the Inyimegu community.

E. During the Ogba Aji festival of the Inyimegu community, gifts are exchanged, cultural dances and masquerade are performed.

F. During the Ikpuru Achi festival that takes place in Nkaliki Achara-Unuhu, traditional rain making, and dances are performed, while fishing skills are demonstrated.

Conclusion and Recommendations

The finding agrees with Morgan's (1958, in Ottenberg 2005:19) statement that this rural Igbo community developed a sophisticated form of agricultural strip fields going out at right angles on both sides from a main village path, suggesting careful planning and land allocation.

To ensure soil fertility, the Izzi farmer does not exhaust the soil nutrients but has incorporated the shifting cultivation practice that requires rotating from one land to another, allowing the soil to rejuvenate naturally. Apart from this, he uses organic manures in his farmland. He carries all his kitchen waste, including animal waste, to a dug-up area, which, after some time, is scooped and spread over his crops. He uses mulching significantly to en-

sure his crops are not burnt through intense heat. The leaves he put inside the soil for soil nutrient is called “Ozu”, which could be left in-state for up to 3 years.

Farming practices such as shifting cultivation, intercropping, and forest resources conservation help in environmental protection. USAID's Collaborative Research Support Program for Sustainable Agriculture and Natural Resources Management (SANREM) recognise that indigenous knowledge is essential in sustainable development (National et al., 1991). The indigenous farming practice accelerates biodiversity and ecosystem conservation and discourages the killing/hunting of female pregnant and small animals. The farmers grow soil enrichment plants, conserve water, and increase soil fertility through sound agricultural practices. It is on record that the total output of indigenous smallholder farmers provides over 60% of the world's food supply and consumption today.

Using the UNESCO criteria for best practices (Innovativeness, impact, sustainability and inspiration, the researcher believes that the Izzi indigenous agricultural value chain passes the criteria for best practice considering their innovation and adaptation to their environment and proper utilisation of their green resources. Their agricultural practice has the potential to solve the problem of food insecurity if researched with an eye to improvement and aligning indigenous knowledge to modern intelligent agricultural practices.

Poverty, hunger and malnutrition are the results of modern-day imperfections in food ecosystem, which never existed in the region in the past. The use of chemical fertilisers against green waste manures should be discouraged. The quantum of organic wastes that challenges significant cities of Nigeria are manures that could be converted and used in farms. The indigenous farmer knows that nothing is waste and has a cycle of reusing and recycling his waste. Again, mono-cropping impoverishes the soil and degrades the landscape. Agro-forestry, a new concept today, was practiced in antiquity in Izzi land, and this should be strengthened if we are to institutionalise eco-smart agricultural practices.

There is a need to encourage the indigenous farmer by building their capacity to adapt -where necessary – to modern farming techniques [14]. The smallholder farmer should be protected from the effects of climate change, which modern activities have thrust upon him. One of the mitigating measures could be through compensation for crop failure. The government should provide subsidies and assist smallholder farmers with inputs to grow food and reverse food insecurity and poverty in many African states.

Women farmers need to be empowered, and the land-holding system that denies them access to personal farmlands should be abolished. Also, there is a need to encourage indigenous agricultural technology. Instead of land tiller machines, mound-making machines that incorporate the indigenous practice with modern technology could be produced rather than allowing the old practice to die. The type of hoe and mound is a part of a people's culture. Culture should not be allowed to die. Instead, it should

be improved by building on or strengthening existing knowledge gaps. A situation where farmers are forced to adopt techniques and practices to which they have no input should be discouraged. The local farmer has wisdom, which the modern world needs to address food insecurity problems. Therefore, the indigenous farmer should be seen as a partner in progress, and his ideas should be considered, evaluated and accepted as much as they remain relevant to modern needs and sustainability.

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