

# Gendered Food Mapping on Gari-Eba in Nigeria

Understanding the Drivers of Trait Preferences and the Development of Multi-user RTB Product Profiles, WP1

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Ethics: The activities, which led to the production of this document, were assessed and approved by the CIRAD Ethics Committee (H2020 ethics self-assessment procedure). When relevant, samples were prepared according to good hygiene and manufacturing practices. When external participants were involved in an activity, they were priorly informed about the objective of the activity and explained that their participation was entirely voluntary, that they could stop the interview at any point and that their responses would be anonymous and securely stored by the research team for research purposes. Written consent (signature) was systematically sought from sensory panelists and from consumers participating in activities.

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# ABSTRACT

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The study empirically investigated Gendered Food Mapping on Gari-Eba in eight rural communities where people grow, process and consume cassava. Results showed that according to communities and varieties of cassava planted in order of preference among men and women groups in some the communities, Imo best, Durungwo, Isadap, ranked highest, while Try and see, Daberechi was seen as the best for the female groups and Ojuruala best for men's group. The variety that was ranked low by the women was Nwajenny and for the men yellow cassava. The sources for the planting materials were ADP, NRCRI, some other Agriculture Departments, neighbours and family. Results show that desirable traits of importance for females at purchase include: matured roots, long roots, heavy weight and moderate root sizes; the males indicated mature roots, no diseases and fresh sap on roots. For processing the traits of importance include: high gari yield, not dusty, low moisture content, and less chaff for male and females. Desirable traits for gari when looked at include: attractive, white, neat and yellow for male and females. When felt also include crispy, have weight, dry and coarse and desired taste was sour gari. All the respondents indicated that gari should have good smell that is not rancid (bad odour). The most significant constraints for the women were high cost of hiring labour, followed by long distance from house to the market and unavailability of transport.

**Key Words:** Cassava, varieties, gari, high gari yield, low moisture content, white gari, yellow gari, Gender, heavy weight, dry gari, sour gari

# 1 INTRODUCTION

This report is part of the RTBfoods project, Work Package (WP) 1. The main objective of RTBfoods is to deploy RTB varieties that meet user-preferred quality traits to increase the adoption and impact of improved RTB varieties in sub-Saharan Africa (SSA). To do so, the project is working to (1) Define what are the key user-preferred quality traits for a range of RTB food products (cassava, yam, potato, sweet potato, banana) through surveys with end-users (product profiles); (2) Link these product profiles with biophysical and functional properties of RTB food products, and develop laboratory-based methods to assess these properties in a quantitative manner; (3) Develop high-throughput phenotyping protocols (HTPP) for rapid screening of user-preferred quality traits in new RTB varieties; (4) Integrate key user traits into breeding and variety deployment programs.

WP1 provides the evidence base for user's preferred characteristics for the selected products that are the focus of the RTBfoods project. Varietal preferences start with the demand from a range of users, such as producers, processors, retailers and consumers along the food chain. User's varietal choices are informed by the preferences they have for certain characteristics of the crop (characteristics preferred) that can be linked to traits. Preferences for characteristics, are in turn, influenced by the products, and their variations, that users make (e.g. matoke in Uganda, gari, fufu or pounded yam in Nigeria), and for what purpose (e.g. urban or rural markets, household consumption). Users often have several specific characteristics that they prefer and/or have 'non-negotiable' sets of characteristics, such as, for producers, that the crop is high yielding or disease resistant. These different interests culminate into trait packages that can help explain the drivers of varietal acceptance.

Sometimes there are clear differences in the characteristics preferred by user groups that follow product/consumption profiles, but other times it is more complex. Different users of a crop may live in the same household; have different interests with how the crop is used and what products are made. This can result in multiple and, perhaps, contrasting preferences that vary according to the user's role in the food chain, meaning that the input and decision-making roles of different users is of primary importance in RTB crop breeding.

Preferences for certain product characteristics stem from broader socio-economic and gender dynamics, which are in turn an integral part of understanding crop choice and use. Men, women, boys and girls play different roles in RTB food chains, and differ in their access to, perceptions of risk for, and ability to decide on use of improved varieties. For example, gender roles regarding household food security and marketing can mean that one gender may prioritise crop or product storability characteristics (in ground or after harvest) over yield characteristics. In addition, in locations with shared farming systems between men and women, such as in Uganda, one household member may have more decision-making authority on cropping decisions than others. Different varietal characteristics can also influence the level of labour and exertion involved in processing. In addition, consumers have their own sets of sensory preferences linked to different varieties, and consumers may have different preferences based on their background, gender, location or food culture. Therefore, characteristics that respond to multiple-use and multiple-user groups (such as yield and disease resistance), or differentiating segments of use, including men and women in all their diversity, are an important factor in breeding initiatives.

However, there is a gap in knowledge of preferences for RTB crops among different user groups, particularly food processors, retailers and consumers, and diversity within user groups (e.g. producers can have different size of landholding, access to extension etc.), as breeding programmes have historically focused on production related characteristics at the expense of post-harvest and consumer preferences. In addition, information on characteristics is often overly-simplified by not including information on the optimal range or description that would help breeders be able to meet user needs. Furthermore, there is little known about how gender relations and norms influence and result in preferred characteristics, along with varietal uses. WP1 aims address these gaps in knowledge under the RTBfoods project, which will contribute to shaping crop breeding to be more responsive to user needs along the food chain.

The WP1 approach uses interdisciplinary methods and lines of inquiry (food science, gender and economics) to collect evidence on the preferences of RTB product characteristics for different user



groups in the product chain and identify the factors that influence these preferences for men, women and other social segments, and how they may be prioritised differently (e.g. labour requirements and storability may be prioritised more for women, over yield characteristics). The delivery of the information is expected to support the capacity of RTB breeding programmes to be more demand-led. The approach has the following activities:

- Activity 1: State of Knowledge review
- Activity 2: Capacity strengthening and sharing
- **Step 2: Gendered product mapping**
- Step 3: Community-based RTB Food processing/preparation diagnosis
- Step 4: Consumer taste tests in rural and urban market segments

This report presents the findings for Step 2, Gendered product mapping.

The objectives of Step 2 are to:

- Understand who is producing, processing, selling and consuming the crop and product, from a gendered perspective.
- Understand the multiple uses and products of the crop and possible trade-offs between uses
- Identify the quality characteristics and descriptors by stakeholder group (e.g. producers, processors) and demand segment (e.g. rural consumers).
- Understand how gender influences preferences and prioritisation for characteristics.

This activity focuses on both the crop (cassava) and product (gari/eba), to identify the quality characteristics along the food chain (production, post-harvest and market) by different stakeholders, the multiple uses and trade-offs between uses, that may reflect different interests of men and women.

## 2 Background

Cassava is the most important staple crop in rural and urban households in southern Nigeria. Cassava is a significant component of diets in this region, of which consumption takes the form of mainly *gari* (toasted granules). Other important cassava products are chips/flour, fermented pastes (fufu), among others.

In all locations, cassava popularity has increased and is fast replacing yam and other traditional staple of the area, gaining ground increasingly as an insurance crop against hunger but also as a major cash crop (Waisundara, 2018). A large proportion of cassava, probably larger than from most other staples, is planted purposely for sale (Omotayo and Oladejo, 2016). In comparison with other staples, cassava generates income for more households. Considerable income is also generated from cassava processing. As women are largely responsible for growing and processing cassava, it provides them with an income-earning opportunity, enabling them to purchase commodities that, in many instances, contribute to household food security, gari is turned into eba.

The prominence of cassava, for food security and income, grew substantially in the early 20<sup>th</sup> century, particularly among women (Korieh, 2010). Typically, cassava is consumed daily and sometimes more than once a day in most of the homes. It is also a crop that can be harvested throughout the year. For these reasons, the crop plays a significant role in ensuring and stabilizing food security for rural households (Ezedinma et al., 2006). In addition, compared to grains, cassava is more tolerant to low soil fertility and more resistant to drought, pests and diseases. Echebiri and Edaba (2008) reported that cassava adapts to relatively marginal soil and erratic rain-fed conditions. Furthermore, its roots store well in the ground for months after maturity. It is a good thing because cassava is a drought resistant crop, does well in marginal soils and its also a food security crop (Kolawole *et al*, 2010). It is also an important industrial raw material and foreign exchange earner.

## 3 Methodology

There are four activities under Step 2 that take place in eight rural communities where people grow, process and consume the crop. These are:

- Key informant group interviews (KII) with community leadership.



- Sex-disaggregated Focus Group Discussions (FGD) with people who produce, process and consume the product. The FGDs specifically provide information on products, gender roles and social segments, processing steps and equipment, characteristics and descriptors that can be probed in further in IIs.
- Individual interviews (II) with community members who process the product (and produce the crop, if possible) in the community, conducted by a food scientist and gender specialist. The IIs provides individual/household level description of preferred characteristics and priorities at different stages of product processing, household decision making, and trade-offs.
- Market Interviews (MI) with key individuals or groups involved in marketing and trading activities.

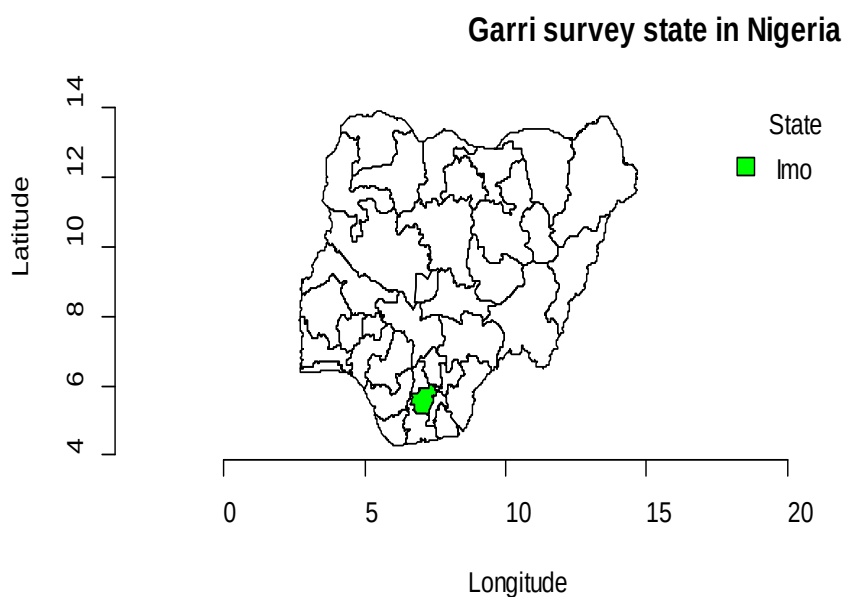
## 4 Findings: socio-economic context and product preferences

The sample, disseggregated by gender, is provided in the table below.

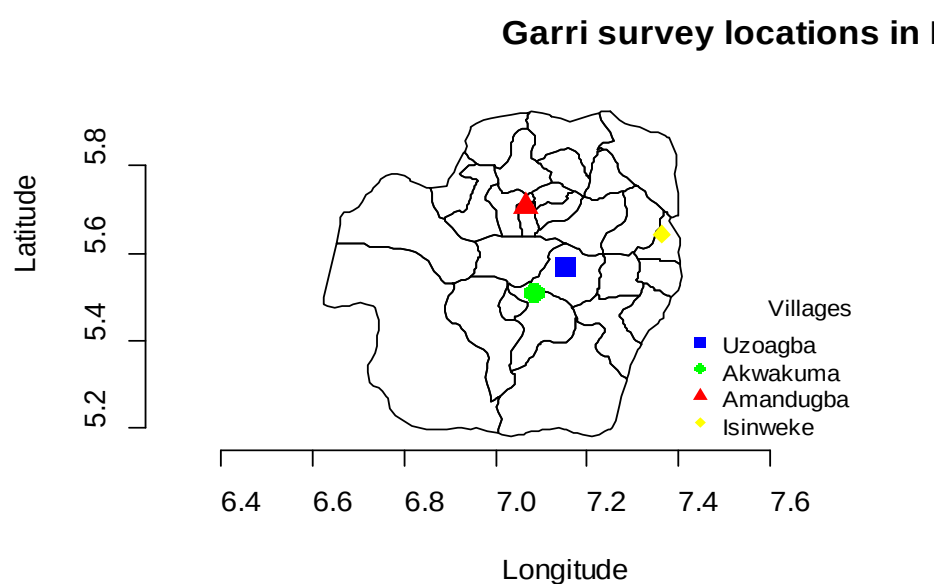
**Table 1: Sample information**

| Zone<br>South<br>(Imo) | East | List of Localities: Big, Small Cities, Villages | No of individual Interviews |        | No of Focus Groups | No of Market Interviews |        | No of key Informant Interviews |        |
|------------------------|------|-------------------------------------------------|-----------------------------|--------|--------------------|-------------------------|--------|--------------------------------|--------|
|                        |      |                                                 | Male                        | Female | (1 male, 1 female) | Male                    | Female | Male                           | Female |
| <b>Owerri Zone</b>     |      | Uzoagba, Ikeduru,                               | 4                           | 6      | 2                  | 2                       | 0      | 2                              | 0      |
|                        |      | Akwakuma, Owerri North                          | 2                           | 8      | 2                  |                         |        |                                |        |
| <b>Orlu Zone</b>       |      | Amandugbalsu LGA, Imo State                     | 3                           | 7      | 2                  | 0                       | 2      | 2                              | 0      |
| <b>Okigwe Zone</b>     |      | Isinweke, IhitteUboma, Imo State                | 2                           | 8      | 2                  | 1                       | 1      | 1                              | 0      |

This study took place in one south eastern states of Nigeria – Imo state. Other complementary studies were conducted by IITA-Nigeria in South west and North central (Osun and Benue states). Scholars have asserted that the importance of cassava in Imo state could help, if intensified and processing advanced, could improve the lives of many households in the state (Onyemauwa, 2012).



**Figure 1: Location of Imo State, Nigeria (Abia is not included)**



**Figure 2: Location of communities involved in the research, Imo state, Nigeria (Abia is not included)**

## 4.1 Social segmentation and livelihoods

Key informants described their communities in segments related to ethnicity, migration status and wealth. The population in the sampled communities are predominantly 'Indigenes', who are people originally from that geographical area. There was also a proportion of the population that are considered 'foreigners', people primarily from Togo, who constitute approximately 3% of the population. It is clearly indicated that the communities here have three different wealth categories of farmers, which include the rich, middle class and poor/peasant farmers. However, more than half of the population of the communities studied have more poor farmers than rich farmers, except for Umundugbalsu that constituted 55% for rich farmers and 45% for poor farmers. In almost all

communities, poor farmers were predominately women, predominantly married women and female headed households.

**Table 2: Social segments**

| Community name      | Social segments (%)                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UzoagbaUmulougba    | Ethnicity: Igbo (97%), and Togolese (3%). Migrants from other Igbo speaking areas and states like Enugu and Oguta.<br>Wealth: Rich farmers: [Male (60%), Female (40%)], For Poor Farmers: [Male (20%), Female (80%)].                                                                                                                                                                |
| UmuibeAkwakuma      | Ethnicity: Igbo (80%), Yorubas (10%), Togolese (5%), Hausa/Fulani (3%) others (2%)<br>Wealth:<br><ul style="list-style-type: none"> <li>Rich farmers (40%), [Male (65%), Female (35%)],</li> <li>Middle class (60%)</li> <li>peasant/poor farmers (40%): 5% for men and 35% for Female farmers</li> </ul> Population: Male Farmers (all ages) (30%), female farmers (all ages) (70%) |
| Umundugba, Isu      | Ethnicity: Igbo (85%), Yorubas (10%), Togolese (2%), Hausa/Fulani (3%)<br>Wealth: Rich Farmers (55%) Poor farmers (45%), Male Rich farmers (60%), Female rich farmers (40%), Male poor farmers (30%), Female poor farmers (70%)                                                                                                                                                      |
| Isinwekeihitteuboma | Ethnicity: Igbo (96%), other Ethnic groups (4%)<br>Wealth: Wealthy farmers (20%) (5% female, 15%male), Moderately wealthy (30%) (10% female, 20% male), Poor farmers (50%) (30% female, 20%male)                                                                                                                                                                                     |

Farming was the major livelihood activity for people in all the communities in the sample (refer to the table below). They specialised in the production of mainly food crops like cassava, plantain, maize, yam, vegetables and oil palm that provides food for the family and serves as source of income. However, men in Umundugba and IhitteUbomacommunities also reported fishery and livestock activities like poultry, sheep and goat production as an additional means of livelihoods. A women's group in Umundugba reported that cassava and other food crops are majorly produced by women while men specialise in yam production. The four communities studied also process their cassava into gari and sell to meet the needs of the household. Very few people in Uzoagba are involved in trading.

In all the communities, young people are involved in farming to help their household if there is a labour deficit. As the quote below demonstrates, young people are also involved in farming to keep fit. Other livelihood activities, particularly for youngmen are into motor bike transportation business.

Young people (men and women) also plant to help their family people that do not have enough land. When we farm in large quantities, we get money to pay school fees of our children. Farming also keeps our youth busy and not wait until government give them white collar jobs" (*Women's FGD, Akwakuma*).

"We used to plant cocoyam a lot, but now we don't because it always dies off"; Cocoyam blight disease is the major problem (*Women's FGD, Umundugba*).

**Table 3: Livelihood activities**

| Male/female FGD + Community name                    | Livelihood activities and people the activities are important for                                                                                                                                                                                                               |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Women's FGD, Uzoagba, Umuloboagwu                   | The majority of community members are farmers, and a few people are tailors and hairdressers (women). They produce palm oil, trade, sell plantain and bananas, and they grow mainly food crops. Only few people trade. Young men engage in transporting people with motor bike. |
| Men's FGD, Uzoagba, Ikeduru                         | The main livelihood activities are farming and some livestock (poultry). People produce palm fruit, cassava, and vegetables. Some people engage in labour work as a means of livelihood. Men are involved in masonry and providing motor bike transportation.                   |
| Women's FGD, Akwakuma, Owerri                       | People plant food crops like maize, cassava, yam, cucumber, plantain, pumpkins, pineapple etc. They also process cassava into gari; they make it for them to have food in their homes. Trading is also done among men and women.                                                |
| Men's FGD, Akwakuma, Owerri                         | People plant lots of crops, like cassava, yam, plantain, vegetables, maize, okra, melon. Also trading and teaching is also important livelihood activities.                                                                                                                     |
| Women's FGD, Umundugbalsu                           | Production of cassava, yam, plantain, banana, cocoyam akidi, cucumber, watermelon, and garden egg. Men specialise in yam, while women focus more on cassava and the rest.                                                                                                       |
| Men's FGD, Umundugba Isu                            | Farming-cassava, cocoyam, yam, plantain, palm, livestock etc. We also engage in fishery production. Young men engage in transporting people with motor bike.                                                                                                                    |
| Women's FGD, Isinwekeihitteuboma                    | Planting crops (foods crops), processing and selling these products in the market to make money which we will use to buy other things we need. Young men engage in transporting people with motor bike.                                                                         |
| Men's FGD, Isinweke Amakohia Nkwumeato Ihitte Uboma | People produce cassava, plantain, oil palm, plantation, yam, maize, and rice, and process palm fruit into red oil. People rear livestock such as poultry, sheep and goats.                                                                                                      |

Focus group discussions (FGDs) revealed different terminologies used by different communities to categorize wealth. Some communities refer to different wealth categories as 'classes', and others name it wealthy farmers and poor farmers, commercial and subsistence farmers, rich and poor farmers and others refer to it as rich, moderate and poor farmers.

Overall, land was a significant factor in determining what wealth category one belonged to, and this mainly referred to the quantity of land under ownership – not the quality of land. People who were considered rich owned larger land sizes and farmed commercially, and these were men. People who were poor would have smaller land sizes and may need to rent. They also lacked fertilisers and the ability to pay for labourers. In addition; the majority of poorer people were women. This means that agronomic characteristics such as quick maturity, minimal labour requirements, and the ability of the crop to thrive in intercropping conditions without fertiliser, will be important for people who are poor.

The men's FGD in Uzoagba community reported that wealthy farmers are only adult men; no youth or women are found in that category. The poor farmers are usually made up of 60% women and 40% men. The same finding is applicable to men's FGD in IhitteUboma: they reported that the majority of the commercial farmers are male, between 40-50 years of age, and who are mostly indigenes.

The key informant interviews revealed striking similarities in how they defined wealth categories in the community, with all citing very rich, rich, very poor, poor, middle class. However, the IhitteUboma community reported that there are no rich farmers in their community, that everyone is trying to be rich by engaging in other livelihood activities other than farming.

“(A) wealthy farmer helps the community by giving out free chicken, employ people in his farm, gives agricultural information to the people, repairs roads for free and easy transportation of harvested crops” (Men’s FGD, Uzoagba, Ikeduru )

**Table 4: Wealth categories**

| Male/female FGD + Community name  | Wealth categories mentioned in FGDs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Women’s FGD, Uzoagba, Umuloboagwu | We classify farmer class 1 as those who have significant land, cash and shops. They can use cash to buy fertilizers and other things needed to cultivate a good farm. In first class, there are no women, only men.<br>Another category was those that struggle on their own to acquire land, they have land but not as much as those that are in class 1.<br>Another class are those that do not have much and must struggle to get a small piece of land to farm.                                                                                                                                                                                                                                                                                                                                                                                        |
| Men’s FGD, Uzoagba, Ikeduru       | (1) Wealthy Farmers - These farmers have large expanses of land and engage in other livelihood activities such as fish farm, poultry, palm plantation and also hire large group of labourers in his farm.<br>(2) Poor Farmers - These are farmers that have little land area, produce minimal crops, hire few labourers and sometimes do the labour themselves and their households. They have no access to agricultural information, live in a middle range building (just ordinary 2-4bedroom houses) unlike the wealthy ones.<br>The wealthy farmers are only adult men; there are no young people or women who are wealthy farmers. The poor farmers are usually made of 60% women and 40% men. In the women category, the adult women cover 80%, while the young women are 20%. In the male category, adult men are 50%, while the young men are 50%. |
| Women’s FGD, Akwakuma, Owerri     | (1) Commercial farmers (mechanized): people that farm in large quantities, mainly to generate income. They are rich farmers that can hire labourers to work in their farms and also own a significant amount of land. (2) Those who farm only for family use.<br>We also have foreigners in our locality from other towns who are commercial farmers. These types of people are wealthy and have interest in farming.                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Men’s FGD, Akwakuma, Owerri       | We are in township, not necessarily a village. For most households, you might not know how much they have in terms of capacity or level of a farmer. For example, outside the community, we also have farms majority because of scarcity of land around us. Sometimes, we might also acquire land for structural development but we can plant up with cassava until we are ready to develop the place. We actually have farmers, some who also acquire small plots on lease because of the scarcity of land. Most farmers here are not predominantly full-time farmers.                                                                                                                                                                                                                                                                                    |
| Women’s FGD, Umundugbalsu         | There are two levels of farmers: (i) those who cultivate for home/family consumption and (ii) those who cultivate for home use and for commercial purpose. There are rich and poor farmers. The poor farmers are those in the second level that are people who farm and sell to the market, they are not rich but they have enough to pay for their children’s school fees and solve other problems like buying of rice and beans to eat. They will not have enough to build house.<br>The rich farmers on the other hand, can afford to buy enough, at least a bag of fertilizer, farm on a large expanse of land. They also have enough money to take care of their family and also help others. Some get their money from their farm to solve their problem while some loan money to people too.                                                        |

| Male/female FGD + Community name                  | Wealth categories mentioned in FGDs                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Men's FGD, Umundugbalsu                           | We have subsistence farmers and commercial farmers. However, most of our people are constrained by land. You see some of our people going to lease land for farming. Land is a major factor with which to categorize a rich farmer. Some other farmers who also have the money to lease for farming can also be described as rich.                                                                                                                      |
| Women's FGD, Isinwekeihitteuboma                  | Yes, there are different levels of farmers: the rich, the moderate and the poor. The rich ones have larger quantity of lands, so we go to them to get land. We do not have lands here. We have 20% men into farming who are rich farmers, while the rest 80% are women. The moderate (wealth category) farm and sell their produce.                                                                                                                     |
| Men's FGD, Isinweke Amakohia Nkwumeatoihitteuboma | We have subsistence farmers and commercial farmers. The commercial farmers each market day bring lots of products to the market for sell. They also have access to inputs for farming.<br>Subsistence farmers bring small quantities of produce to the market for sale because majority of what is being produced is consumed at home.<br>The majority of the commercial farmers are men, who are between 40-50 years of age, and are mainly indigenes. |

**Table 5: Wealth categories**

| Community name       | Wealth category in KII (%)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Uzoagba Umulougbagwa | We have very rich farmers. They have vast land; a few have more than one wife and many children. They have good houses built from the proceeds of the farm. They have educated children which are trained to university level from the proceeds of the farm. They have oil palm estate, plantain plantation and pineapple plantation. The very poor ones produce sometimes less than what they need. Only few produce enough to feed their family. They depend on other people for the sustenance of their family. Some have few pigs, few goats, poultry not beyond 100 chickens per time. Rich farmers are 60% men and 40% women, while among poor farmers; women are 80% and men 20%. |
| UmuibeAkwakuma       | We have rich people, middle class people, low class people and the poor. Rich people usually have good houses, cars, etc. Middle class people are those that can feed themselves and eat well while the low class and the poor people are those that can hardly feed a complete meal.                                                                                                                                                                                                                                                                                                                                                                                                    |
| Umundugba, Isu       | We have rich and poor farmers. Rich farmers have enough money to finance their enterprises, proven technology, and large expanse of land and also have more money to hire labour in their farms and also cars. These rich farmers have facilities that helps ease the activities such as stores and houses. Poor farmers do not have much capital, are ignorant of proven technology, lack of mobility and their results are usually in subsistence level.                                                                                                                                                                                                                               |
| Isinwekeihitteuboma  | Large scale farmers who are perceived as rich people do not exist in this community but there are people like that. To the best of my knowledge, there is no rich farmer in IhitteUboma, even though we all are struggling to be rich. Both males and females are struggling to make it. People have slacked in farming because they may be making it from other sources. We are just beginning to recognize the importance of farming and the benefits thereof.                                                                                                                                                                                                                         |

Table 6 shows that both men and women farmers in various communities plant their crops on mounds and ridges because it yields more crops and eases weeding, unlike planting on flat land. Some people still plant on flatland because they do not have enough money to hire labourers to make mounds or ridges. It was reported in women's FGD in Umundugba that some people plant on flat land and not on mounds or ridges because there are some areas where the land is very soft, and therefore cannot have any form of land preparation. In addition, most communities have people practicing intercropping, particularly people with small land size, such as female farmers in IhitteUboma. It was also discovered that some crops like cassava, rice and yam are planted alone (not in combination with any other crop) by Men FGD in IhitteUboma.



Even though men and women perform most activities in the farm together, men are mostly involved in land preparation activities like bush clearing, ploughing, harrowing and ridging / mound making while women are mostly involved in planting, maintenance of the farm like fertilizer application and harvesting.

“Men do the strenuous work and slash the farmland.”( *Women’s FGD, Akwakuma, Owerri*)

“In our community, there are areas that are soft. If you step on it, your leg will sink. Due to this, you can put your stems on the flat ground without making ridges or heaps.” ( *Women’s FGD, Umundugbalsu*)

“In our community here, no job is allocated to men or women. But mainly, women are into farming work. Age does not stop us from farming as long as you are strong. Some people even carry chairs and sit to work on the farm.” ( *Women’s FGD, Umundugba Isu*)

“Before, most women did not plant in ridges but in mounds. Currently, the women have started planting in ridges. Most men plant in ridges. The ridges done by women mostly are very short at about 2m long – this might be as a result of stumps and its labourous to remove stumps from the farm by women ( *Men’s FGD, Umundugbalsu*).

“Because of the way things are now, women do the clearing; making mounds etc., most of our men are very lazy. We (women) do all these (work) by ourselves except the men that are exclusively into agriculture. They do not like joining us to do the work. Out of 19 men, only 5 men will assist their wives to do the job in the farm. Some men also plant cassava in the farm.” ( *Women’s FGD Isinwekeihitteuboma*)

**Table 6: Farm practices**

| Male/female FGD + Community name | Farming practice (Q4.1)                                                                                                                                                                                                                                                                                                                                                                                                                               | People who practice (Q4.2)                                                                                                                      |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Women’s FGD, Uzoagba (Umuloagwu) | Some do mounds, some ridges; some open the soil and plant. But generally in this community we do mounds. Farmers that plant yams do so on mounds because yam is a deep feeder. To us we do in ridges and mound because it yields more than those that just open the soil and plant. When you do mound, you have less weeds and easy to weed while the flat ones are always weedy. People go for flat one because it is less expensive.(move to quote) | Women, Men, Men do the clearing of bushes                                                                                                       |
| Men’s FGD, Uzoagba,Ikeduru       | Some cultivate by making ridges while some cultivate by mounds and some also plant on flat soils. Some also plant just a single cassava stem, while others plant up to three cassava stems on a hole on the ridges, mounds or flat surfaces.                                                                                                                                                                                                          | Women, Men, Youth and Migrant farmers. But women do more farming than men.                                                                      |
| Women’s FGD, Akwakuma, Owerri    | The farming practices differ based on social segmentation. Peasant farmers practice intercropping to conserve land while commercial farmer practice mono-cropping and use tractor in the cultivation of land. They cultivate large expanse of land.                                                                                                                                                                                                   | Men plant yam, they cut the wood, make the mounds and stake yam. The women weed the farm, plant the cassava and also uproot the cassava mainly. |
| Men’s FGD, Akwakuma, Owerri      | Making of ridges, mounds, and alsocassava is planted on flats and covered with soil to ease work and conserve land.                                                                                                                                                                                                                                                                                                                                   | Both the men women perform the task.                                                                                                            |

| Male/female FGD + Community name | Farming practice (Q4.1)                                                                                                                                                                                                                                                                                    | People who practice (Q4.2)                                                                                                                                                                                             |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Women's FGD, Umundugbalsu        | Some farmers make ridges, some plant on heaps while some plant on flat ground (ikowa ala). The reason why some people plant on flat ground is due to the soil fertility.                                                                                                                                   | Men slash the farm and harrow it, make mounds or heaps. But, ordinarily, we do not separate our farm activities. Some women also slash, remove bamboo trees too.                                                       |
| Men's FGD, Umundugbalsu          | We plant on ridges, heaps, small mounds and on flats, but majorly on ridges and heaps.                                                                                                                                                                                                                     | Some men plant on ridges, women plant on mounds and ridges                                                                                                                                                             |
| Women's FGD, Isinwekeihitteuboma | We use mounds to plant. We do crop rotation here, but some who have no land do not practice it. Generally, we lack land.                                                                                                                                                                                   | The men do the clearing of the bushes, make mounds while women plant.                                                                                                                                                  |
| Men's FGD, Isinwekeihitteuboma   | We plant on ridges, mounds, flat, depending on the type of soil. The topography (slopes or flat) of the land will depend on the type of farming practiced in such land. We also intercrop several crops together. We also plant sole, especially cassava, yam and rice. Family members also farm together. | The men do land preparation, plant yams while the women do the weeding. Men and women do land clearing but especially the men. Men and women do the harvesting but mainly done by the women who also apply fertilizer. |

In most of the communities studied, men and women plant on the same plot except in some cases where women have small plot at the back of their house to plant vegetables (table 7). Land preparation activities are observed to be specific to men while planting, weeding, and harvesting and post harvest activities are done by women. In recent times, women have started doing most activities in land preparations that were formerly regarded as men's work, some of the cool-headed men can now help their wives in weeding and other post harvest activities of the farm.

"Women do the other activities. The most laborious tasks on the farm are done by women" (*Men's FGD, Akwakuma, Owerri*)

"Planting is mostly done by women as well as weeding – the majority of who are female youths. The middle-aged women (35-50 years of age) mostly dominate in these activities. Women dominate in harvesting and decision on what to sell and what to do with the proceeds" (*Men's FGD, Umundugbalsu*)

"..they (the women) also do the clearing, making mounds and do other work in the farm now because. Most of our men are very lazy, we do all these by ourselves except the men that are exclusively into agriculture" (*Women's FGD, Isinwekeihitteuboma*)

**Table 7: Differences between men and women's plots (FGD)**

| Male/female FGD + Community name * | Women's plots                                                                                                                                                                              | Men's plots                                                                                                                                                                   |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Women's FGD, Uzoagba (Umuloboagwu) | Men and women farm together<br>Women weed and assist in bush clearing                                                                                                                      | Men do the land clearing and also assist in weeding                                                                                                                           |
| Men's FGD, Uzoagba, Ikeduru        | About 90% of families farm together, while just 10% farm separate plots. Women do the planting, weeding and harvesting (although some men do help out too even in weeding and harvesting). | Men do the land clearing, make ridges and mounds. There are no other visible differences, except in some cases where a man may decide to plant only yam on a particular plot. |

| Male/female FGD + Community name * | Women's plots                                                                                                                                                       | Men's plots                                                                               |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Women's FGD, Akwakuma, Owerri      | Plant cassava. Women have farm or garden near their house, where they plant vegetables like garden egg, water leaf, ugu(fluted pumpkin), okra and other vegetables. | Women and men plant together in a farm and plant cassava.                                 |
| Men's FGD, Akwakuma, Owerri        | Both men and women weed, but it is mainly women. Women also engage in the processing into gari or fufu.                                                             | Land preparation and cleaning are majorly done by men. Men also weed.                     |
| Women's FGD, Umundugbalsu          | We do not farm separately. Both men and women farm on the same land. Women cultivate cassava and other crops on the same piece of land.                             | Only men cultivate yams. Men decide how to share the land between himself and the wife.   |
| Men's FGD, Umundugbalsu            | Mostly men and women farm the same plot because of scarcity of land. The women usually have separate plots only for vegetables.                                     | Land clearing and land preparation is mostly done by men.                                 |
| Women's FGD, Isinwekeihitteuboma   | Women plant on the same land with the men. Women plant, clear, make mounds and do other work in the farm.                                                           | Women and men plant in the same place. Men do the clearing of the bushes and make mounds. |
| Men's FGD, Isinwekeihitteuboma     | No response                                                                                                                                                         | No response                                                                               |

Men and women's FGDs were asked to rank their most important crops (table 8). Overall, cassava was ranked as the most important crop among both men and women's FGDs. The crops importance is related to the diverse uses of cassava. The fact that it is the major staple food in the region, which people eat in different forms. Even cassava stems have increased in value in recent years. Aggregated rankings among women's FGDs resulted in all other crops coming in second in importance compared to cassava: maize, yam, vegetable, cocoyam. For men, yam was rated second in importance, followed by maize, vegetable and cocoyam. Both cocoyam and vegetables are seen as female crops, and yam for men. The men ranked cassava first because yam is a seasonal crop, while cassava is profitable, its not seasonal. The way men value their yam is the same way that women attach value to their cocoyam and vegetables. This result also shows that yam is indeed a male crop because the four male FGD of different communities indicated that is very important to them. This might be because in Igbo land, yam is seen as the king of all crops and it is always celebrated between August and September of every year (new yam festival). In the olden days, man with a big yam barn is regarded as a rich man.

**Table 8: Important crops in rural communities**

| Crop importance      | Women's FGD                    | Men's FGD |
|----------------------|--------------------------------|-----------|
| 1st (most important) | Cassava                        | Cassava   |
| 2nd                  | Maize, yam, vegetable, cocoyam | Yam       |
| 3rd                  |                                | Maize     |
| 4th                  |                                | Vegetable |
| 5th                  |                                | Cocoyam   |

The table below (table 9) shows the reasons why crops were important and for what groups. Cassava was found to be particularly important for women, and for a number of reasons, including nutritional benefit, income (e.g. women's bank), food, its weather tolerance, and its versatility in consumption. Income was an important criteria for a number of crops, including oil palm, vegetables, yam, plantain and banana and garden egg. Another important criteria was that the crop could be consumed. Agronomic considerations that were mentioned as important were weather tolerance, in-ground storability, and short maturity time.

"Cassava is life, they called it *ozo Igbo ndu* (saver of life) for the *Igbo ethnic group*" (women FGD Akwakuma)

“We can use our cassava farm to obtain loan from bank” (*Women’s FGD, Umundugba Isu*)

**Table 9: Reasons why the crop is important and for who**

| Crop                | Reasons why the crop is important                                                                                                                                         | People for who the crop is important                                                |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Cassava             | 1.nutritional benefit<br>2. income generation<br>3. cassava gives us regular food<br>4. it can tolerate all weather conditions<br>5. consume daily and in different forms | Women (women and men FGDs UzoagbaAkwakuma, Umundugba, IhitteUboma)                  |
| Oil palm            | Money, nothing in the palm tree is wasted                                                                                                                                 | Women (women’s FGD Uzoagba, men FGD in IhitteUboma)                                 |
| Leafy Vegetable     | Money, nutritious and increased appetite                                                                                                                                  | (Women’s FGD Uzoagba, Akwakuma)                                                     |
| Maize               | It matures early<br>It is eaten in different forms                                                                                                                        | Men, women and children (men and women FGD Uzoagba, Akwakuma, women in IhitteUboma) |
| Yam                 | Important for festivals and ceremonies<br>Income generation                                                                                                               | Men (all men’s FGDs)                                                                |
| Plantain and banana | Income generation                                                                                                                                                         | (Umundugbaisu women FGD)                                                            |
| Garden Egg          | Income generation, short maturity period, serves as food and it is nutritious, used to replenish blood                                                                    | (Umundugba Men and women FGD)                                                       |
| Cocoyam             | In ground storability, food                                                                                                                                               | (women and children) FGD IhitteUboma                                                |

#### FGD: Focus Group Discussion

It is clear from the table that cassava is usually intercropped with other arable crops like maize, okra, vegetable, melon in the four communities studied, this is because of scarcity of land and also most of these crops are early maturing crops which can be harvested after 3 months to give way to cassava to continue growing. Uzoagba and IhitteUboma communities also plants cassava sole or monocropping but in distant farms, they also do rotation of crops in different land. It was established that sole planting of cassava yields better this might be because the cassava is not competing with other crops for nutrient. Cassava is usually harvested after one year in IhitteUboma and Akwakuma, for Uzoagba community, they usually start harvesting from 8 months some even plant early maturing varieties that can be harvested after 6 months, this is also practiced in Akwakuma. Across the four communities studied, every member of the community both men and women grow cassava except for IhitteUboma community where 70% of the population grow cassava. This is so because cassava is the major staple food crop in south eastern region of Nigeria. Majority (70%) of the cassava produced from these communities are used in making gari, smaller portion (30%) for fufu and tapioca. Most of the products are for home consumption while about 30% of the products are for sale across the four communities studied.

“Cassava has no season for any real farmer. It can be planted at any time even during dry season”(Kii Uboma).

**Table 10: Differences in men and women's plots (KII)**

| Community                | Description of how the crop is grown                                                                                                                                                                                                                                                                                                                                                                                                           | Proportion (%) of people in the community who grow the crop                                                                                                                                                                 | Proportion (%) of the crop that the average household uses for making the product                                                                                                                                                                                               |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Uzoagba<br>Umulougba-gwa | We do intercropping around the homestead because the (land) fertility is high. (Ala Okwu) monocropping is done in a distant farm (far away farms). Farms are rotated every 4 years unless people can afford fertilizer to continuously farm. Cassava is mainly planted during the rainy season from March to May. Some plant any time of the year. The method of propagation is stem cutting and it is harvested from 8 months after planting. | 95% of the indigenes grow cassava. Women constitute 70% that grow cassava while the men are 30%. Migrants also grow cassava. The majority of growers range from 45 -70 years of age (70%) while less than 45 years are 30%. | Gari uses 70% of cassava produce, while fufu takes less than 30%. This budgeting is applicable to every other home (it is a common practice. This includes foreigners and indigene.                                                                                             |
| Umuibe<br>Akwakuma       | We cultivate our crops including cassava from February. We normally intercrop with different crops on a piece of land. We usually harvest our cassava after 1 year from planting, some also harvest from 6months - this is for those who planted the new varieties from the government.                                                                                                                                                        | Everybody in my community who are indigenes plant and cultivate cassava, both men and women, as farming is the main occupation of most of my people due to our fertile land.                                                | The majority of farmers who cultivate cassava here cultivate for home consumption more than for selling. About 70% of the cassava planted by the farmers are for consumption. Both gari and fufu are usually produced for consumption more than for selling, sales is about 30% |
| Umundugba,<br>Isu        | We practice mixed cropping where cassava is planted along side other crops such as maize, okra, vegetables, palm fruit etc. There are those who cultivate cassava for commercial purposes and some at subsistence level. Majority of cassava planting in my community is done on flat surfaces and both men and women plant on the same plots.                                                                                                 | Almost every farmer (about 99.9%) grows cassava because it is the major staple food in our community.                                                                                                                       | 40% of cassava is used for consumption, and 60% for selling gari and fufu.                                                                                                                                                                                                      |
| Isinwekeihit-teuboma     | Cassava is intercropped in this community. Sole cropping of cassava is done sparingly. Generally, planting of cassava is done in rotation because they farm in different portions for every year before returning back to the crop. Harvesting time is usually after 1 year to get what you want (like good yield, bigger than my hand, one heap of cassava can full one basin). Usually, sole cropped cassava yields more than intercropped.  | 70% of the people cultivate cassava.                                                                                                                                                                                        | 70% is used for home consumption 30% for sale (20% sold in fresh form, 3% gari, 6% fufu and 1% tapioca).                                                                                                                                                                        |

The table below (table 11) shows that only female respondents were knowledgeable of the names of cassava varieties in Akwakuma and Umundugba communities. Daberechi is a local variety that is most prominent in Uzoagba community and it ranked first by both men and women FGDs, and was

ranked third in Akwakuma community. This is followed by Nwageri that ranked second for men and fourth for women and Nwanyiocha that came third in a women's FGD and fourth in a men's FGD. Nwanyiocha is ranked first in Akwakuma community. Imobest is an released variety that is very prominent in Umundugba community, and was ranked as first by Umundugba women group , and it is equally planted in Uzoagbaas cited by the women's FGD, where it took second position there. This is followed by yellow cassava a new variety, and it was also planted by female farmers in Akwakuma but in a small quantity. Finally, Durungwo, a local variety that is prominent in IhitteUboma, took the first position in importance by the women and men's FGDs. It is also cultivated by female respondents in Umundugba and Akwakuma communities. This is followed by Agric for female respondents in IhitteUboma and nwanyi Umuahia by male respondents in IhitteUboma community.

## 4.2 Varieties of the crop

**Table 11: Varieties grown in order of importance**

| Ranking | Uzoagba, Southeast    |                  | Akwakuma, Southeast  | Umundugba, Southeast     | Ihite-Uboma, Southeast               |                        |
|---------|-----------------------|------------------|----------------------|--------------------------|--------------------------------------|------------------------|
|         | Women                 | Men              | Women                | Women                    | Women                                | Men                    |
| 1       | Daberechi (L)-45%     | Daberechi(L)-14% | Nwanyiocha (L)-77%   | Imo-best (I)-65%         | Durungwo (L)-25%                     | Durungwo (L)-13%       |
| 2       | Imo best (N)-73%      | Nwageri (I)-60%  | Aguegbunam (L)56%    | Yellow cassava(N)-40%    | Agric(I)-35%                         | Nwanyi umuahia (L)-15% |
| 3       | Nwanyiocha (L)-78%    | TME 419(N)-85%   | Daberechi (L)-55%    | Durungwo (L)-14%         | Nwanyi oji (L)-10%                   |                        |
| 4       | Nwageri (N) + TME 419 | Nwanyiocha-75%   | Durungwo (L)-40%     | 98/0505 (I) + Adaoma (L) | Nwanyi umuahia (L) + Nwanyi ocha (L) |                        |
| 5       |                       |                  | Yelow cassava (N)35% |                          |                                      |                        |

The table clearly showed communities and varieties of cassava planted in order of preference. Among both men and women groups in Umundugba community, they ranked Imo best as first while in IhitteUboma both men and women groups ranked Durungwo as the best. In Uzoagba community, men's group ranked Isadap as the best variety while Try and see was ranked best for the female groups. In Akwakuma community, men's group ranked Ojuruala first and yellow cassava last while for women respondents, Daberechi was ranked first and Nwajenny last.

**Table 12: Varieties grown in the community and ranking in order of preference**

| Community  | Importance | Men's FGD      | Women's FGD   |
|------------|------------|----------------|---------------|
| Uzoagba    | 1          | Isadap         | Try and see   |
|            | 2          | Daberechi      | Nwageri       |
|            | 3          | Ojuruala       | Daberechi     |
|            | 4          | Agrie          | Nwoji         |
|            | 5          | Imo best       | Nwaocha       |
| Akwakuma   | 1          | Oburuorie      | Nwajenny      |
|            | 2          | Yellow cassava |               |
|            | 3          |                |               |
|            | 4          |                |               |
|            | 5          |                |               |
| Community  | Importance | Men's FGD      | Women's FGD   |
| Umundugba  | 1          | Imo best       | Imobest       |
|            | 2          | 98/0505        | Ndukanala     |
|            | 3          | TME 419        | Akpooji       |
|            | 4          | Yellow Cassava | Durungwo      |
|            | 5          |                |               |
| IhiteUboma | 1          | Durungwo       | Durungwo      |
|            | 2          | Nwanyiohuru    | Nwanyiumuahia |
|            | 3          | Duruji         | Ewa           |
|            | 4          |                | Nwanyioji     |
|            | 5          |                |               |



## Why do you grow this variety? II Q 15.2 a + b

In the text, summarise why these varieties were grown and/or preferred, and add detail from FGD Q6.2: Why do people plant this variety? (Open response) FGD Q6.2 and - is this variety good for this purpose? If yes, why? FGD Q6.3

The reasons why varieties were considered 'good' by farmers were related to a number of factors. Yield was an important factor, early maturity, storeability, and good product quality (gari, eba). Reasons for good product quality were related to texture, product yield and colour. There were some varieties that had many positive characteristics (e.g. high yield), but also bad characteristics (e.g. long maturity time), which meant that there were trade offs with certain varieties. From the responses, most of the valued characteristics for the varieties were similar across communities like early maturing, good gari/eba products.

**Table 13: Reasons why the variety is grown: Men (6), Women (33)**

| Variety      | Reasons why preferred                                                                                                                                                                                                                                                                                                                               |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Imo best (I) | Good yield, numerous root, does well in all soils, early maturing and makes good gari                                                                                                                                                                                                                                                               |
| Dabere       | It does not thrive in any type of soil, it stores long in the soil and it starts maturing from 9 months. It has high root yield (if you uproot one stand, you will see plenty roots from just one or two mounds).                                                                                                                                   |
| Nwa Oji      | It yields as much as Dabere. Eba, from nwaaji does not more than 48 hours without going bad, if it stays this long, the eba will do 'petepete'(soggy). It has a good vegetative yield. This one is good for gari, but it is best for drinking because the granules do not become too soft and mashy before you finish the portion you are drinking. |
| Nwaocha      | Best for gari. Gari and eba yield is high and gives the best colour appearance. The eba rises very well that you will keep adding water. In fact, it behaves like baking powder. Best for gari because of the colour(white).                                                                                                                        |
| Nwa Jenny    | It dries up after one year, gives good gari colour like Nwaocha. The gari from this one has same quality like Nwaocha. This particular variety does not stay more than 1 year in the ground.                                                                                                                                                        |
| Durungwo     | It yields much but it must stay up to 2yrs in the soil before it matures. Because of this people don't have patience in cultivating this variety, especially when you have small children requiring to be fed. Otherwisethey will die of hunger because of the time it takes to mature.                                                             |
| Nwageri      | (The first original cassava before the try and see)-It has many roots when harvested but has small roots when compared to try and see (Plenty of roots).                                                                                                                                                                                            |
| Imo Best     | It saves hungry people (it matures after 6 months). The stem and the roots branches very well. It does not select soil as it grows very well in any type of soil. If we are to say, it is because of this 'imo best' that made gari price to fall in the market. The stems are costly because it matures fast (6months) and it yields very much.    |
| Ndukanala    | It gives food and even after one year it does not rot. It grows tall each stand yields very much. The size of the root is not too big. This variety has small root but the yield is much. It stays long on the ground up to 3yrs                                                                                                                    |
| Akpu Oji     | it yields well. it can last up to 3yrs and will not rot. The root doesn't go deep into the ground so it is easy to harvest.                                                                                                                                                                                                                         |

## What varieties does your spouse grow? What varieties does your spouse prefer? (II Q 15.4)

The response from individual interview conducted shows that majority of the respondents cultivate the same variety with their spouses. All the males in the study area (n=6, note the small sample size) plant the same variety with their wives, and 31 out of 33 women plant the same varieties as their husband. One woman grew different varieties, and three women reported that their husbands were not interested in farming.

*"My husband does not grow Cassava. He is not interested in farming" ....Uzoagba*

**Are there [crop] varieties that are less preferred in the community? Why? FGD 6.b.**

**NOTE: this was added to the questionnaire and may not be included on all versions.**

The female and male focus group discussion held at Uzoagba community in Imo state identified Nwanyibekee and Durungwo respectively as the less preferred variety. The female farmers at Isinweke said the Agric is a less preferred variety in their locality. The rest of the communities under study did not identify any variety that is less preferred and according to them, "We do not cultivate any variety that is not good in our farms." There are no varieties that are less preferred in our community here"

## 4.3 Planting material

**From what source did you receive this planting material? (specify if they received it, from who directly, and if third party) II Q 15.3**

The sources that farmers used to source planting material was the ADP, NRCRI, Agriculture Department, neighbours and family. However, the proportion of men and women citing the sources different. For example, 100% of women accessed planting material from neighbours, with lower proportions for other, more formal ways of accessing material. In contrast, the most significant source for men was the ADP. It was observed from the responses that the use of released varieties is common among men than women; this reason is that men has more access to input and information than women (Monica and Lambrecht, 2017). The result also shows that the main sources of planting materials for women are from their relatives.

**Table 14: Source of planting material**

| Source of planting material                           | women citing<br>N=6 | men citing<br>N=33 |
|-------------------------------------------------------|---------------------|--------------------|
| Imo ADP                                               | 11.10               | 88.90              |
| NRCRI                                                 | 50.0                | 50.0               |
| Agric Depts                                           | 16.60               | 83.30              |
| Neighbours                                            | 100.0               | 0                  |
| Sister                                                | 50.0                | 50.0               |
| Purchase                                              | 100.0               | 0                  |
| Co- wife(women married from the same extended family) | 100.0               | 0                  |
| Colleagues                                            | 100.0               | 0                  |
| Mother                                                | 100.0               | 0                  |
| Friend                                                | 100.0               | 0                  |
| Mother- in –law                                       | 100.0               | 0                  |
| Sister – in – law                                     | 100.0               | 0                  |
| Previous planting material                            | 100.0               | 0                  |

\* Multiple responses

**Which factors/challenges could be limiting use of improved crop varieties in this community? And, how have these been addressed? KII Q7**

**Table 15: Factors/challenges that could limit use of improved crop varieties in these community**

|                      |                                                                                                                                                     |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Uzoagba</b>       | The fear of unknown, wrong cultural practice and apathy to change. "They are sceptical about new changes and holds on to their cultural practices." |
| <b>Umundugba</b>     | Lack of awareness and unavailability of the improved varieties.                                                                                     |
| <b>Akwakuma</b>      | Ignorance and lack of awareness of the improved varieties                                                                                           |
| <b>Isinweke/hite</b> | Lack of information. "The challenge is that we are not connected to agric department or people who could bring them to us."                         |

The women's FGD described the variations in gari processing method in the peeling and fermenting stages. Some processors do not peel the cassava immediately after it is harvested, and some also ferment the roots for more than 2 days (3 – 7 days). Other people peel, grate and toast the gari on

the same day, the reason is the time it is harvested and the quantity harvested. There was no difference in the processing methods across the communities.

The men's FGD were not so knowledgeable about the variations in gari processing methods. They were only aware of the standard method and thus kept referring back to the women as they are more knowledgeable about processing. This reflects the differences in the gari processing knowledge between the men and women.

**Who typically is involved in conducting this step? Probe: social segments and hired or household labour etc. e.g. female hired labourers; women and girls in the household FGD Q12.2**

Women and the children are mainly involved in the peeling but men help out sometimes if they so desire. While the women, children, youths (male and female) are involved in washing the cassava roots, sieving and toasting, they also take their peeled cassava to the engine to be grated and dewatered which is usually done by the adult men or male youth because they own the grating engine.

*"The women generally do the harvesting-peeling-washing-bagging-sieving-toasting with their children while the men grate the cassava because they own the engine".*

These women pay for the services rendered by the men. However, both the men and women FGD said they also hire labours who are mainly youth (male or female) and women to assist in toasting the gari. These practices were found across the different communities.

Table 25 shows the most important processing steps considered by processors as necessary to obtain a high quality gari/eba product. The most important cited by women and men was dewatering, followed by toasting.

**Table 16: The most important processing steps to obtain a higher quality Gari/Eba product cited by sex and gender**

| Most important processing steps | % of women citing N=34 | % of men citing N=6 |
|---------------------------------|------------------------|---------------------|
| PEELING                         | 32                     | 17                  |
| WASHING                         | 24                     | 33                  |
| GRATING                         | 32                     | 22                  |
| DEWATERING                      | 56                     | 83                  |
| FERMENTING                      | 3                      | 0                   |
| SEIVING                         | 15                     | 50                  |
| TOASTING                        | 44                     | 50                  |
| COOLING                         | 0                      | 0                   |

## 4.4 Processing Resources and Access

**\*What are the resources required for processing the [product]?(e.g. gari fryer, mixing bowls, note if they are community or household based) FGD Q12.3**

The resources required for processing gari/eba are: a large pot for cooking, mortar and pestle, kitchen knife, basin for washing, big bowls for retting (bowls/paint bukets), bags for pressing (feed/rice bag), white calico (better for pressing because the water goes out well), presser (big stones), and a stirrer.

The table below shows that overall, women owned the majority of the equipment required for processing gari/eba outright. Out of ten items of equipment or utensils, women owned seven outright. The grating machine was rented, and the wheelbarrow and toasting pot were also rented.

**Table 17: Mean score of access (1-4\*) to equipment or utensils required for processing the crop into the product by sex, region and ethnicity**

| Equipment or utensils required for processing | Mean score of access 1-4<br>1-own outright, 2-use but wouldn't take in a divorce, 3-rent, 4-borrow from husband, 5-borrow from co-wives, sister-in-law and neighbours. |        |                    |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------------|
|                                               | Women(33)                                                                                                                                                              | Men(6) | Region (Southeast) |
| Knives                                        | 1                                                                                                                                                                      | 1      | 1                  |
| Toasting pot(agwada)                          | 5                                                                                                                                                                      | 1      | 3                  |
| Stirrer (oba)                                 | 1                                                                                                                                                                      | 1      |                    |
| Local oven(ekwuigwe)                          | 1                                                                                                                                                                      | 1      | 1                  |
| Firewood                                      | 1                                                                                                                                                                      | 1      | 1                  |
| Frying stick                                  | 1                                                                                                                                                                      | 1      | 1                  |
| Basin                                         | 1                                                                                                                                                                      | 1      | 1                  |
| Wheelbarrow                                   | 5                                                                                                                                                                      | 1      | 3                  |
| Grating machine                               | 3                                                                                                                                                                      | 3      | 3                  |
| Dewatering machine                            | 1                                                                                                                                                                      | 1      | 1                  |

#### **Do you experience any constraints in accessing these resources, please describe IIQ32.1**

Women experienced several challenges with regards to processing. The most significant constraint was the high cost of hiring labour, followed by the long distance of [from house to the market]. Other issues were related to the grating machine: its breakdown or unavailability, which halted their activities. As the grating machine is owned by another person (usually male), processors may not often have a choice or influence in issues regarding the machine. Other barriers were the lack of means of transportation to take the product to the grater or market and the high cost of processing (e.g. purchasing roots, hiring labours, transporters etc.).

Women from Umundugbain pariculture had to travel a far distance to grate their cassava. One of the existing machinesbreaksdown regularly or cannot grind properly. One woman said she needed the help of her husband to take the peeled cassava to the grating centre due to its long distance as she shewouldn't be able to take care of her children otherwise.

The men interviewed (only 6) did not experience any challenges with processing, likely related to the minimal role in processing as they regard it as women' s responsibility.

## **4.5 Consumption of the product**

#### **How is the [product] prepared? (Immediately prior to consumption) (Cooked into paste, added with water, with ingredients, boiled, steamed...) FGD Q16.1**

Eba is prepared, immediately prior to consumption, by boiling water and pour it into a bowl, sprinkle gari on top of the water until soaked by the water, and stirring until smooth. Men and women FGDs explained the preparation process slightly differently in one community. Responses from the Men's FGD showed that they do not stir after preparation rather the eba is allowed to soak up the water on its own while the women stir the product after preparation. When gari is sprinkled in water to soak without stirring, it tends to increase in volume and hardens. For the men, they believe that this hardeningwill help save hunger rather than the softer one that cannot hold their stomach if it is stirred. This assertion needs to be further investigated.

**Table 18: Steps in preparation of Eba**

|                   |                                                                                                                                                               |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>FEMALE FGD</b> | -                                                                                                                                                             |
| <b>MALE FGD</b>   | -Boil water<br>-Bring it down<br>-Pour the hot water into a bowl<br>-Sprinkle the gari and continue sprinkling gari until all the water is soaked by the gari |

\*All the focus group are basically saying the same thing.

There are no differences in the responds of both the men's and women's FGD in the ingredients consumed with gari, however there existed a level of ranking in the responds of men to the women's FGD in Uzoagba, Umulobagwu, Akwakuma, Umundugba and Isinweke communities respectively. The first ingredient mentioned by all the men's FGD is soup (different types of well-prepared soup) followed by the less costly and readily available ingredients while the women mentioned the other ingredients first and soup last without much references to the quality of the soup. This shows the economic importance of gari to women in families as most of the ingredients mentioned by the women are not costly and readily available for her to use and feed her children.

**Table 19: Summary of ingredients consumed with gari**

|                   |                                                                                                                                                         |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>FEMALE FGD</b> | <b>Consumed by soaking in water and drank with coconut, salt, sugar, milk, milo meat, fish, crayfish, maggi, pepper. It is also consumed with soup.</b> |
| <b>MALE FGD</b>   | It consumed with soups of different types, cold water, sugar, coconut, groundnut, palm kernel, milk, honey. It is used as soup thickener.               |

\*This summary is from all the Focus Group Discussions in Imo state

**. \*When a person (you or a member of your family) says that the quality of the [product under study] is not good when they eat it, what are the general reasons for this? II Q29.**

They are many sensory characteristics used by the responds to describe poor quality products and they include:

- poor binding-ability, inability to be moulded together and lacks draw ability (which implies no starch (related to the crop variety)
- dull or dark colour (during processing)
- sticky to the hands, too strong and presence of big grain sizes (processing skill)
- offensive odour as a result of storage method

There are no difference by gender, region, ethnicity or product variation

**Thinking of people in your community, how often is the product consumed. Is this the same for everyone in the community? Probe on social segmentation. How has this changed in the last five years? KII Q9.**

All key informants described gari as a common staple food in their communities as it is consumed daily irrespective of the time, in that some people use it as breakfast, lunch and dinner irrespective of the gender, age and ethnicity or social segment. The only categories of people that do not consume gari always are some individuals that have certain illnesses that may not allow them to consume much starch and sugars. Although the children prefer rice and indomie and other foods to gari in general, the key informant said they are often attracted to eat gari when they see meat in the soup.

“Even the rich people eat this gari because that was what was used to train us - except for those who that have certain illnesses. The adults consume more of these food products. Children of this time do not eat gari like the adults. They eat it at least once in a day. They prefer rice, indomie and other foods. However, if a child that doesn't want to eat gari, if he or she sees the kind of the meat in the food he or she will be attracted to eat it irrespective of the number of time” (Umundugba community).

The only difference between a wealthy individual and other consumers of gari, is that a wealthy person will not consume it as often because they have enough, and assorted types, of food. This is unlike most of community members who do not have other options than gari.

“It is consumed regularly and daily. A lot of people use it as their breakfast, lunch and dinner in different product level (regardless of gender, age, and ethnicity). It is applicable to everybody in the community. Apart from the few elites that have more than enough to eat”. (Akwakuma community).

**Do you think people are buying more or less compared to five years ago? Why? Probe on social segmentation. How has this changed in the last five years? KII Q10.**

The key informants of the various community affirmed that people are buying more gari now than the previous years because there has been population growth in and around the communities. People, especially women and children, migrate from urban to rural areas in search of these products because they are more affordable in the rural areas. Due to the growth in the population, especially in Amandugba community, many of the traditional farmlands are now being used to build residential homes. This means that the few people with remaining farmlands need to sell more food. In addition, the availability of released varieties that have increased yield, provide the potential for increasing profit. This has encouraged farmers to produce more.

**Are there any taboos or restrictions of people in growing, processing or consuming the crop or its products? Probe differences in social segments. KII Q11.**

There are no taboos or restriction of people in growing, processing or consuming cassava or gari in any of the communities. except in Umundugba community. In this community no one is expected to harvest cassava on an EKE market day, however the reason for this was not known as it was handed down to them by their forefathers. “Yes, every market they called ‘Eke day’ and people do not go to the farm. The reason for it, I don’t know”.

## 4.6 Product characteristics

This section is priority and should be completed with the product profile already – and copy and pasted in this section with text to support.

Summary table of product profile (See Appendix)

## 4.7 Raw Material (Crop for the product)

**Varities that give the best quality gari/eba**

Some of the best varieties noted by a small sample of women that were best for gari/eba were: Imobest (6 women), Aguogbulem (5 women), Daberechi (2 women), Try And See (1), Torokwem (1), Nwabekee (1), Akwatarakwa (1), GbayuommaMbunyogi (1), Yellow Root( 3), Nwanyi Umuahia (2), Durungwo (2), 0505 (2), 8082 (1), Nr 224 (1), Give Me Chance(1), Iwa (1), 419 (1), Vitamin C (1), Agric(1), Nwanyi Oji (1) , these varieties were mentioned by all the communities. A list of the reasons why these varieties were good for gari/eba are provided below.



**Table 20: Reasons why it makes a good garri/eba for women**

| Name of variety      | Reasons why it makes a good garri/eba for women                                                                                                                                                   |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Imo best             | Imo best does not have watery root. It gives good and high root yield. The garri yield and quality are also good, it thrives well in every soil, it matures early from 6 months upwards.          |
| Aguoegbulem          | This variety thrives well on every soil. The stem gives good income; It swells when it is turned to eba, the eba does not stick to the hand, it gives the highest product (garri).                |
| Dabere               | Gives a very good quality garri. It is high yielding. It matures early, the stem gives many branches and thrives well on every soil.                                                              |
| Try and see          | the eba is soft and draws well                                                                                                                                                                    |
| Torokwem             | It gives good quality garri and the eba swells                                                                                                                                                    |
| Nwabekee             | the garri quality is crispy, bright                                                                                                                                                               |
| Akwatarakwa          | it rises very well when you use them to process either garri                                                                                                                                      |
| Gbayuommambunyogi    | The body is smooth and easy to peel gives the highest product quality because it is high in yielding, it can give about 20 roots per stand. The eba draws well.                                   |
| Yellowroot varieties | gives the highest quality garri, it has no starch, and it gives vitamin.                                                                                                                          |
| 419                  | It is not watery (does not contain water)                                                                                                                                                         |
| 0505                 | Yields high. The eba draws well, best for garri, has high starch so I use it with imo best that have low starch to balance the equation. It gives me a gummy garri that I need (like gum)         |
| Durungwo             | It's the best, high yielding, garri yield. The garri colour is bright, The water content is low when compared with 'Nwanyi Umuahia' it has good garri yield, It also has good branches, it draws. |
| Give me chance       | it matures early (6month)                                                                                                                                                                         |
| NR 224               | Gives the highest quality of garri because it gives much quantity of the products (onaazauzara (swells well)) when prepared into eba.                                                             |
| 8082                 | High yielding/gives a very good dough                                                                                                                                                             |
| Iwa                  | Gives highest garri quality, it branches very well, has good root yield and has little water in it                                                                                                |
| Nwanyi Umuahia (2)   | The root yield is high, it can survive almost in any soil, the garri yield from it is high. It has high germination rate and survival, it has good root yield.                                    |
| Vitamin C            | Is the best for garri because you do not need to add oil to it because it has yellow colour already                                                                                               |
| Agric                | give me good quality Garri. The garri is drawy and easy to swallow.                                                                                                                               |
| Nwanyioji            | it is strong and dry for garri production.                                                                                                                                                        |

In contrast, the men interviewed (n=6) mentioned three varieties. The number of varieties is lower compared to women is likely related to the different sample sizes. The men respondents gave these varieties as the best varieties:

- 419 (1) It doesn't have hard middle (woody core in roots) which gives a whole lot of chaff when made it garri or fufu.
- Daberechi (3) it gives neat garri that draws, gives the highest quality in garri, as it gives high yield when processed
- Durungwo (3) It has good root for producing garri and fufu (the taste is good, draws better), it has good branches, the water content is not much, it has high garri yield and the root yield is good too and gives me hope for the next planting season.

**If you were to purchase the crop on the market to make the product, how do you recognise and perceive a good crop variety for making a high-quality [product]? By looking at it, by touching, smelling or by tasting it? Rank in order of importance 1=most important. Note for use for pairwise ranking exercise. II Q20. AND FGD Q10**

The female processors interviewed cited a number of traits that they look for when trying to find a good variety to make garri/eba. Some of the traits with the highest number of citations were "big roots" (9 women), "moisture on the peel" (9), "very fresh" (8). The list below indicates the list of characteristics and number of citations from the individual interview, and if it was confirmed during FGDs.

1. Maturity Big roots-(9) (\*confirmed by FGD)
2. It will have some level of moisture on the peel-(9)
3. The peel should be clean and light in colour (nwaocha variety)
4. Taste (it should be sour)
5. Very fresh- (8) (\*also confirmed in women's FGD -harvested that day).
6. No rot present on the skin-(6)
7. It's inside is white-(4)
8. Brings out whitish fluid on its head-(4) (\*confirmed in FGD Will Have Gummy Whitish Sap And The Head Will Be White When Viewed)
9. The skin will be dry like – not so wet-(4)
10. Root that is not stiff (stiff like firewood)-(4)
11. Roots that have weight-(5) (weight like wet wood)
12. The crop will not be foamy in texture when touched(5)
13. at one year-(5)
14. White roots-(3) (\*confirmed by FGD)
15. (weighty like yam the cassava will have weight like eva bottle water (\*confirmed by FGD) (3)
16. Strong in hand when pierced with my nail-(3)
17. Moderate root size-(3) (\*confirmed by FGD)
18. The peel should be black in colour-(2)
19. Tuber that has heavy weight-(2)
20. Roots that has weight-(2)
21. Matured roots (stays for two years in the farm) (1)
22. Tubers with less water-(1) (\*confirmed by FGD)
23. Have long roots that-(1)
24. The tubers are (o na asusu) stout or stud in shape-(1)

The men respondents (n=6) gave these traits:

1. no brown colour on the peeled tubers and no traces of diseases on the skin
2. mature roots
3. presence of fresh sap on the root,
4. The colour of the peel should be dark brown,
5. The peel should be strong and hard,
6. No odour should be perceived from the root,
7. It must be big and matured
8. The cassava must be numerous in number,
9. Strong when pierced with my nails
10. Have weight when weighed with hand
11. The cassava will have a whitish colour inside when broken into two.
12. Good smell of the root (the root has to be fresh).
13. the cassava has to be very big (big like yam)
14. it will look fresh and healthy without any rot.
15. it will not be stiff like stick.
16. it has to be easily broken.
17. When cut into two, the inner membrane must be very white
18. When pierced, much water should not be seen coming out from it
19. The root should not be sticky or stiff when peeled

**What are characteristics of a variety of the crop that give a poor quality [product under study] so that you would not use or buy it? II Q21. and FGD 11**

**The characteristics of a crop variety that was considered by women to give a poor quality gari/eba were:**

1. Cassava that has stayed for more than two years
2. Cassava with brown discolourations on the head
3. Rotten cassava
4. Cassava with black lines
5. Light weight cassava
6. Cassava with foamy texture

7. Presence of woody texture
8. Too much water-looks wet while peeling
9. Cassava from burnt field
10. Skinny tubers
11. Cassava tubers that are not freshly harvested

In the women's FGDs, the following characteristics were also mentioned:

1. The One That Looks Like Foam In Weight-(2). ( A Weed (Strangler) WhichCurlsAround The Stems In The Farm Affects The Root, Making It Have Light Weight Like Foam)
2. VarietiesWith High VegetativeGrowthWith Low Yield.
3. Very Big Roots-Doesn't Give High Yield Because Of Much Water.
4. Nwanyi Mbano- Grows Very Tall But Doesn't Yield Well And Have Many Sticks Inside, No Fleshy Part
5. Has A High Vegetative Growth With No Root Yield

Amandugba's FGD'S Men and FGD'S Women said they do not have any bad variety in their community, so none exists.

The men (6) gave the following characteristics as indicators of giving a poor quality gari/eba:

1. Rootssmall in size (Like Eve Water Bottles)
2. `Cassava With Too Much Water (\*confirmed in FGD)
3. Stiff Tubers
4. Rotten Tubers
5. Tubers With No Good Colour
6. Roots That Have A Lot Of Fibre (2)

**Thinking about when you process the [crop], what would be the characteristics that show it has good processing-ability into [product]? Rank in order of importance 1=most important. Note for use for pairwise ranking exercise. II Q23.**

1. Peeling- The crop with less liquid during peeling (dry although not too dry) will be good for garri
2. Grating- The quantity of water duringgrating and dewateringreleased, will tell you. too much water will give you less garri
3. Toasting- Temp affects the frying. High temp will cause it to burnwhilelow temp will give a dusty garri. The temperature must bemoderate.
4. Peeling should be easy
5. Grating and dewatering – no much water willbeseenduringgrating
6. Strong to peel.
7. Toas/ting-toasted with moderate heat
8. Grating- little chaff after grating

**\*When buying or selling the product (after processing the product), what are the essential and most important characteristics required for a high quality product? By looking at it, by touching, smelling or by tasting it? Rank in order of importance 1=most important. Note for use for pairwise ranking exercise. II Q24.**

**Table 21: Important characteristics after processing the product**

| Men | When you look at it                                               | When you feel it                                                 | When you taste it                   | When you smell it                 |
|-----|-------------------------------------------------------------------|------------------------------------------------------------------|-------------------------------------|-----------------------------------|
| 1   | Attractive yellow colour                                          | Crispy and doesn't clog or clump together                        | Must have a sour taste              |                                   |
| 2   | White and not dull                                                | Sharp to touch, crisp                                            | Sour                                |                                   |
| 3   | Good yellow for garri                                             | Weighty when felt with hands, very dry when touched              |                                     |                                   |
| 4   | Good and attractive colour                                        | Well dried in the hand, coarse when folded with hands            | Sour taste                          | Smells good without mouldyflavour |
| 5   | Very attractive yellow or white colour                            | Moderate sized grain seeds (guava seed),very dried when touched. | Little Sour taste (unripen orange)  |                                   |
| 6   | Good light yellow colour, a bit dull white colour for white garri | Moderate sized seeds, disperse from the hand when folded         |                                     |                                   |
| 1   | Good yellow or white colour                                       |                                                                  |                                     |                                   |
| 2   |                                                                   | Dried when touched, weight of the garri when raised up with palm | sour garri                          |                                   |
| 3   | Neat and free from dirt                                           | Dry to touch                                                     | Sour taste                          |                                   |
| 4   | Not burnt or dirty                                                | Dry and spreads when squeezed with hands                         |                                     |                                   |
|     | White and sparkling                                               | Dry and crispy                                                   |                                     |                                   |
| 5   | White colour                                                      | Dried with coarse grains, not powdery                            | Gummy when in the mouth when chewed | Has good garri smell              |
| 6   | Good yellow colour                                                | Well dried in hand                                               |                                     | Smells good                       |
| 7   | Neat and clean                                                    | Dried when touched                                               |                                     |                                   |
| 8   | Neat garri                                                        | Well dried                                                       | sour in the mouth                   | Garri with good smell             |
| 9   | Clean and neat                                                    | Dry in the palm when touched                                     | Sour taste                          |                                   |
| 10  |                                                                   |                                                                  | Garri that slaps                    |                                   |
| 11  |                                                                   | Well dried                                                       | Garri that slaps                    |                                   |
| 12  | Attractive to the eyes                                            | Crispy with finr texture like okro seeds                         |                                     |                                   |
| 13  | Neat and clean                                                    | Crispy when touched                                              | Sour taste                          |                                   |
| 14  |                                                                   | Seeds like sand but not dusty                                    | Sour taste                          |                                   |
| 15  | Light yellow colour                                               | Well dried, good sized seeds                                     | Sour taste                          |                                   |
| 16  | Light oily colour                                                 | Dried and strong in the hand, not powdery                        | Sour like guava                     | Good garri smell                  |
| 17  | Very neat and bright                                              | Dry when touched                                                 | Sour like unripe orange             | Very neat and bright              |
| 18  | White to cream colour                                             |                                                                  |                                     |                                   |
| 19  | Yellow, clean and neat                                            | Scatters(dry)                                                    | sour like lemon                     | No odour                          |
| 20  | Milk in colour(white), yellow(yellow roots), not dusty            | Not clummy, grain size like mustard seeds                        |                                     |                                   |
| 21  | Clear white, yellow after processing                              | Size like fine sand                                              | Fresh taste                         | no odour                          |
| 22  | Bright yellow, white                                              | Have weight                                                      | Sour like vit C                     |                                   |
| 23  |                                                                   | Dried like rice grain                                            | Draws when eaten                    |                                   |

| Men | When you look at it     | When you feel it                                               | When you taste it             | When you smell it |
|-----|-------------------------|----------------------------------------------------------------|-------------------------------|-------------------|
| 24  | Bright                  | Well dried with seeds like guava seeds                         |                               | good smell        |
| 25  | Bright and not dull     | Not powdery                                                    | Sour                          |                   |
| 26  | Attractive              | Grain size; like guava seed, dry                               | No sour taste                 |                   |
| 27  | Bright yellow in colour | Very dried, disperse when folded with palm, size of guava seed | Sour taste like unripe orange |                   |
| 28  | Very neat colour        | Weighty when carried with palm                                 | Sour like soured palm wine    |                   |
| 29  | Light oil (yellow)      | Strong, dried, heavy to feel                                   | Sour (udara)                  |                   |
|     |                         | Dried when carried with palm, not dusty                        | Sour taste                    |                   |

**What are the quality characteristics that would influence, your decision or a customer's decision, not to buy or use the [product under study]? Why? II Q24.1**

There are a several characteristics that mentioned by men (n=6) that would influence their decision to buy or use cassava to make into gari/eba. These were:

- Colour-dull in colour or dark, not bright, burnt colour, too much oil
- Storage-stored for long period
- Texture-not dried, powdry big granulesize

**FGD questions:**

**\*What is a high quality final [product]? What are the characteristics? Rank in order of importance. Note for use for pairwise ranking exercise. FGD Q17.**

- It will be drawy, smooth, not sticky

## 5 Findings: market study

### 5.1 Sample information

**Table 21: Background information on sample**

Eba/ gari Market interview report for WP1 Step 2

**Table 22: Socio economic characteristics of respondents**

|                                                                |                |                |                        |          |        |              |
|----------------------------------------------------------------|----------------|----------------|------------------------|----------|--------|--------------|
| Interview                                                      | 001            | 002            | 003                    | 004      | 005    | 006          |
| Gender                                                         | F              | F              | F                      | F        | M      | F            |
| Age                                                            | 42             | 32             | 55                     | 58       | 25     | 45           |
| Ethnicity                                                      | Ibo            | Ibo            | Ibo                    | Ibo      | Ibo    | Ibo          |
| Household size                                                 | 6              | 12             | 8                      | 10       |        | 5            |
| Level of education                                             | Secondary      | OND            | Primary                | tertiary |        | secondary    |
| Ownership of means of transportation                           | No             | No             | No                     | No       |        | yes          |
| Ownership of means of communication                            | Yes            | Yes            | Yes                    | yes      |        | yes          |
| Road to nearest town is good                                   | No             | No             | Yes                    | No       |        | No           |
| Distance to market from the home (in km)                       | 2              | 2              | 1                      |          |        | 2            |
| Marketing experience(years)                                    | 8              | 1              | 13                     | 28       | 10     | 2            |
| Main occupation                                                | Trading – gari | Lab technician | Fufu trader (retailer) | trading  | trader | Fufu trading |
| Crops person is dealing with( indicate main crops or products) |                |                |                        |          |        |              |

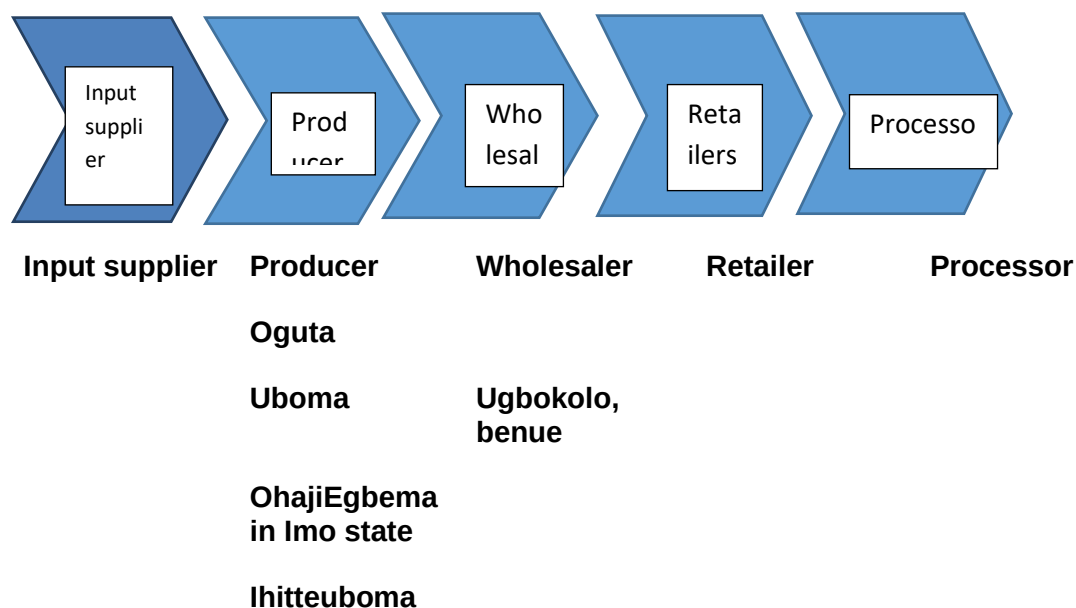
## 5.2 The value chain

**Table 23: Value Chain Map for Cassava and Gari for the South Eastern Nigeria**

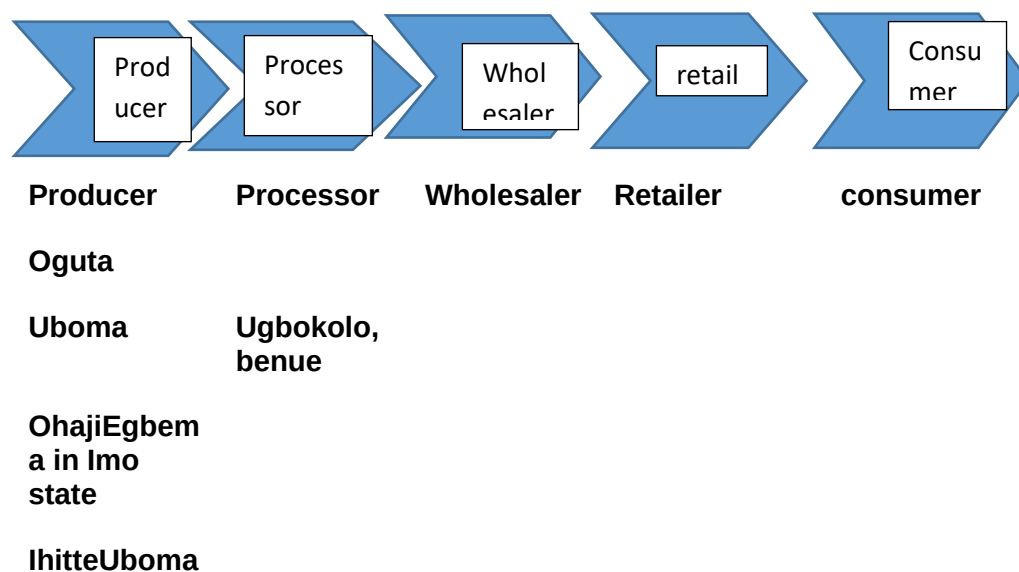
| Producer                 | Non Processor | Processor | Wholesaler      | Retailer | Consumer |
|--------------------------|---------------|-----------|-----------------|----------|----------|
| Oguta                    |               |           |                 |          |          |
| Uboma                    |               |           | Ugbokolo, benue |          |          |
| OhajiEgbema in Imo state |               |           |                 |          |          |
| Ihitteuboma              |               |           |                 |          |          |



### Value Chain Map for Cassava in South Eastern Nigeria



### Value Chain Map for Garri in South Eastern Nigeria



**Figure 3: Value Chain Map for Cassava in South Eastern Nigeria**

The response from individuals interviewed shows that cassava is produced mainly in Oguta, and IhitteUboma in Imo state. Also Ugbokolo in Benue produce and market Gari in large quantity.

**What is the proportion (percentage) of the crop kept by the farmer for home consumption and what is sold by farmers, and to which markets in (MI Q9 (first), Q16 (Nigeria) MI Q10 (first), Q17 (Nigeria) What is the proportion (percentage) of the crop consumed in urban areas around the market you are situated; in: Fresh form, Processed form: [what product], Processed form: alternative products from the crop.**

**Table 24: Proportion (%) of crop used in fresh and processed forms**

|       |                                | 10-20 | 30-40 | 50-60 | 70-80 | 90-100 |
|-------|--------------------------------|-------|-------|-------|-------|--------|
| Rural | Home consumption               |       |       |       |       |        |
|       | Sold in fresh form             | 1     |       |       |       |        |
|       | Sold in processed form (Garri) |       |       |       | 11    | 1      |
|       | Sold in processed form (fufu)  |       |       |       |       |        |

**\*What are the major locations where the Gari/Ebais processed and marketed? MI Q11 (first questionnaire), Q18 (revised Nigeria)**

It was reported that gari is processed in Ugbokolo Benue state, Ohaji Egbema in Imo State and Ibilo in Benin. "More youths are involved, they have more of male about 85% while female are like 15%. They do not go to the processing centres'

**\*What are the demand segments<sup>1</sup> associated with the [Gari/Eba? (at the applicable level, i.e. community, processing site, city)? MI Q12 (first questionnaire), Q19 (revised Nigeria)**

The report shows that individual consumer participates actively at each level. Food vendors do buy to sale hotels and boarding school.

**\*What are the demographics of the customer groups / buyers of [product]? e.g. female customers, male customers, youth, high-end restaurants, wealth categories) MI Q22 (first questionnaire), Q30 (revised Nigeria)**

It was observed that production of cassava is done by women and adult females and youths also dominate the processing aspect except grating which is usually operated by the male youths. Men and women participate in frying and selling of gari. The transportation, off loading and loading are mostly done by male. The youths consume more fufu.

**\*What are these customers demanding (e.g. what crop characteristics are they interested in?) MI Q23 (first), Q31 (Nigeria)**

**Table 25: Customer groups buying the Gari/Eba**

| Level and/or demand segment | Demographics of the customer groups/buyers of Gari/Eba      | Description of what are these customers are demanding                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Community level:            | Adult male<br>Adult female<br>male youths and female youths | Neatness without impurities is also very important. It has to have good aroma, dry/friable with no big grains/lumps. it should not be powdery either.<br>yellow garri<br>white garri<br>drawability, swelling ability and free from odour (eba) even after the following day<br><br>Dry gari, appearance is sharp, drawability is also important<br><br>the garri has weight, sour (slaps), has starch |
| Processing site             | Male and female                                             |                                                                                                                                                                                                                                                                                                                                                                                                        |

The response shows that dryness, non-powdery, swelling ability and free from odour (eba) even after the following day are the preferred attributes for garri consumers. 'The male (adult) prefer the

yellow and adult female the white and male youths and female youths respectively. The most preferred factor drawability, swelling ability and free from odour (eba) even after the following day.

## 5.3 Characteristics for a high-quality crop

**Ranking of characteristics for a high-quality gari/ebaper demand segment (MI Q24 original questionnaire, Q32 revised Nigeria)**

**\*Proportion of the crop consumed by farmers and sold to different customer groups (in percentages) (MI Q13 original questionnaire, Q20 revised Nigeria)**

**Table 26: Proportion (%) of the crop consumed and sold by farmers**

| Customer groups                                                | Region X<br>Percentage (%) |      | Region Y<br>Percentage (%) |      |
|----------------------------------------------------------------|----------------------------|------|----------------------------|------|
|                                                                | Consumed                   | Sold | Consumed                   | Sold |
| Rural consumers – farmerskeeping the crop for home consumption |                            |      |                            |      |
| Rural consumers – purchasing the crop for home consumption     |                            |      |                            |      |
| Household consumers in urban areas / cities                    | 80                         |      |                            |      |
| Institutions such as hospitals or schools                      |                            |      |                            |      |
| Restaurants                                                    | 20                         |      |                            |      |
| Food vendors                                                   |                            |      |                            |      |
| Others (specify)                                               |                            |      |                            |      |

The report shows that individuals are the largest consumer segment, followed by hoteliers and restaurants. About 80% of demand comes from the consumers while 20% comes from the restaurants.

**What are the different varieties of gari demanded? (this may not in each questionnaire)**

It was observed that the product gari has different types which include the yellow, white and sour gari. Consumers prefer sour gari because it has very little starch.

**Quantities of the crop and product traded (during a year ; specify from when to when) (MI Q15 original questionnaire, Q23 revised Nigeria)**

Summarise the responses from the respondents in the table below. There may be different responses

The information on quantity traded on processed cassava shows that 90% are sold in each week, according to this quote 'I sell about 90% of gari bought, and consume only about 10% in a week.

**What is the daily throughput/amount traded daily in market of the product (in kg or tonnes), taking seasonality into account? This can only be done for market where the trader(s) are based. (MI Q16 original questionnaire, Q24 revised Nigeria)**

**Table 27: Daily throughput/amount traded daily (kg or tonnes) in Isinweke Market**

| Part of the year    | Quantities of crop (tonnes) | Quantities of product (tonnes) |
|---------------------|-----------------------------|--------------------------------|
| Wet season          | 0.1                         |                                |
| Dry season          | 0.6                         |                                |
| Planting time       |                             |                                |
| Festive periods     |                             |                                |
| Time of school fees |                             |                                |
| Other (specify)     |                             |                                |

**Transport, storage, and means of selling the crop (MI Q17 original questionnaire, Q25 revised Nigeria)**

**\*What are the important characteristics of the crop associated with product transportation, storage and sale? (MI Q18 original questionnaire), OR During crop/product transportation, storage and sale, what are important characteristics that might affect the product? (Q26 revised Nigeria)**

**Table 28: Means of transportation and important characteristics in Isinweke Market**

|                          | Means                                                 | Important characteristics of the crop associated with product transportation, storage and sale<br>OR<br>Important characteristics that may affect the product                                                                                                                                                                                                                                                                                     |
|--------------------------|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Transportation           | e.g. truck<br>e.g. bicycle                            | Rainfall, vehicle mishaps can make the product determinate faster. Transportation might affect especially when the vehicle trips on the road. It can also get heated up in storage and it turns black- the colour can change<br><br>During transportation, the rains might affect it if not properly covered. Due to bad roads, there may be vehicle mishaps or the motrocyle trips because of bad road and gari falls and mixup with sand/stone. |
| Storage                  | e.g. in hut<br>under tarp<br>e.g. in sealed container | Storage: If not sold on time, it may be affected by heat.                                                                                                                                                                                                                                                                                                                                                                                         |
| Means and forms of sales |                                                       | Sale:- Rainfall, may also spill off and get contaminated with sand and other impurities<br>During sale, if it is not covered well, it may get wet, and spoilage sets in.                                                                                                                                                                                                                                                                          |

It was reported that poor road network and inclement weather can cause havoc during transportation thereby after the quality of the product.

## 5.4 Drivers of change

**Drivers of change in terms of demand for crop and final product (MI Q20 original questionnaire, Q28 revised Nigeria)**

This should be based on discussions with the traders. Summarise the responses in a table, such as the one below. Indicate frequency of replies and provide indication of where information was obtained from a large-scale wholesale trader, or a smaller-scale aggregator, or retailer.

Add additional qualitative information after the table as far as available. Distinguish whether replies have been provided by female or male traders, and whether different consumer groups are affected differently.

**Table 29: Drivers of change in terms of demand for crop and final product**

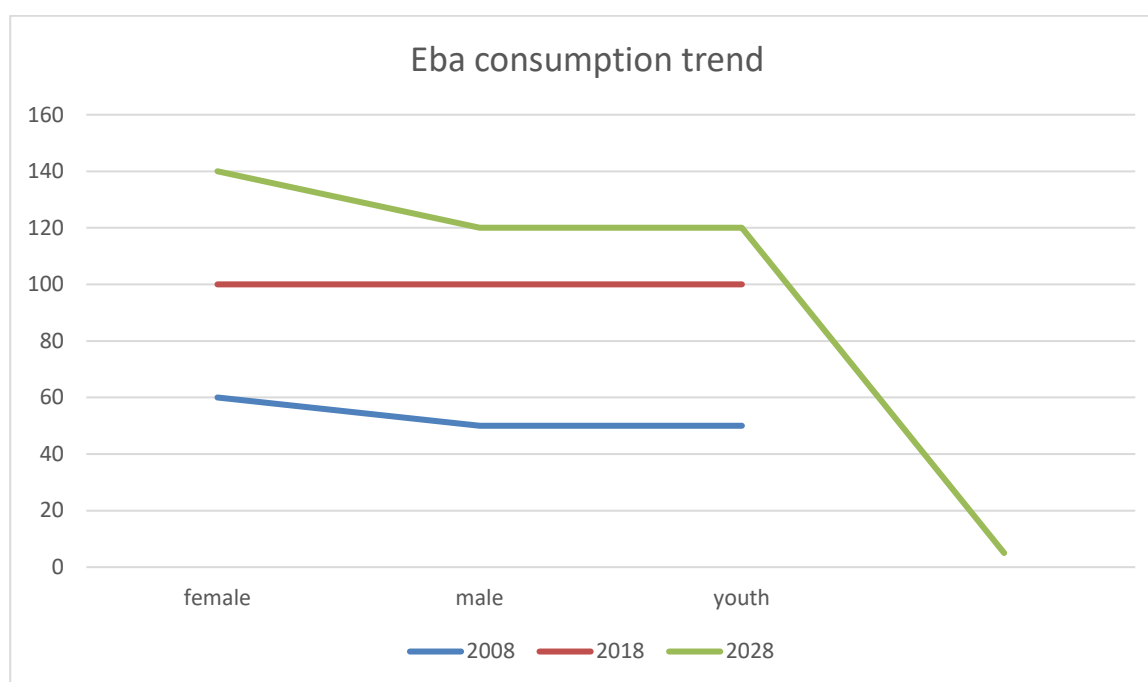
|                                                                                  | Crop                                                         | End-product                                                                   |
|----------------------------------------------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------------------------------|
| Demand in general                                                                | Improved varieties are more and in high demand at the moment | <b>Seasonality, Household size; Colour type-More yellow gari is demanded;</b> |
| Changes as far as major characteristics of the crop or end-product are concerned |                                                              |                                                                               |

Drivers of change are cassava and garri in the study area include seasonality, crop variety and they garri type. This supported by this quote 'Seasonality-more gari is sold in the dry season; Improved varieties are more and in high demand at the moment'

## 5.5 Trend lines for consumption

**Trend lines for consumption trends per main demand/customer segment (MI Q21 original questionnaire, Q19 revised Nigeria)**

This should be based on discussions with the traders (e.g. wholesalers, or market managers) for last 10 years, and for coming 10 year. Use the year of 2018 as point of reference (e.g. 100%). Prepare trend lines for different customer segments, for example rural and urban consumers and within these groups for female, male, and youth customers.



**Figure 4: Eba Consumption trend**

## 5.6 Economics of the product

**Table 30: Additional information**

| Cost items              | Cost in naira |
|-------------------------|---------------|
| Transport               |               |
| Loading Off loading and | 100           |
| Stallage rent           | 500           |
| 50kg bag of cassava     | 5500          |
| total                   | 6100          |
| <b>Revenue</b>          |               |
| Selling price of bag    | 8000          |
| profit                  | 1900          |

## 5.7 Conclusion

- There is variation in preference among garri demand segment.
- Preferred characteristics in garri are dryness, non powdery, swelling ability and drawability.
- Seasonality influences the demand for garri in the study location.



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## 7 Appendices

### 7.1 Key informant interview {KII Q1 (list of participants)}:

| Group: Male |                           |     |              |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------|---------------------------|-----|--------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| S/N         | Name of Participants      | Age | Ethnic Group | Community                        | Role in the Community                                                                                                                                                                                                                                                                                                                                                                                          |
| 1           | Chief Eugene OsonduNgerem | 60  | Igbo         | UzoagbaUmulougbagwa              | one of the community leaders                                                                                                                                                                                                                                                                                                                                                                                   |
| 2           | Nwoke Cajetan             | 62  | Igbo         | umundugba                        | A member of Eze in council                                                                                                                                                                                                                                                                                                                                                                                     |
| 3           | Sir Kenneth Offurum       | 44  | Igbo         | UmuibeAkwaku ma Owerri North LGA | 1.1 I am the President General of the community. My roles are:<br>(i) I am in charge of security in the community<br>(ii) I am in charge of political awareness in my community<br>(iii) Primary healthcare, I am in charge of it also<br>(iv) Sensitization on agricultural programmes<br>(v) Educational advancement of the community<br>(vi) Promotion of the youth growth and development in the community |
| 4           | Chief C.N. Anaele         | 53  | Igbo         | Umundugba, Isu LGA               | The Palace secretary. My roles are: (i) ensuring that there is settlement of disputes in the community, (ii) making sure that there is peace and harmony among members of thye community, (iii) protect the lives and property of the community members, (iv) protecting the norms and values of the community.                                                                                                |
| 5           | Anyanwu Kenneth           | 50  | Igbo         | Isinwekeihitteuboma              | I do not have any position in the community except that I am the head of my household. I am also the P.R.O. of Ugwuichie Cooperative, IhitteUboma.                                                                                                                                                                                                                                                             |

## 7.2 Focus Group Discussion {FGD Q1 (list of participants)}:

| Group: Male                                                    |                                                                                                                                                                                                     |           |              |                                         |                           |
|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------|-----------------------------------------|---------------------------|
| S/N                                                            | Name of Participants                                                                                                                                                                                | Age Range | Ethnic Group | Community                               | Crop Producers/Processors |
| 1<br>2<br>3<br>4<br>5<br>6<br>7                                | Uche Sabinus, Silva Opara, OparaUdu, Lawrence Paul Igwe, AlbaOgu, Onu Reginald, Kenneth Ngerem, Opara Nnamdi, Bona Uche                                                                             | 29-70     | Igbo         | Uzoagba, Ikeduru, Imo state             | Yes                       |
| 1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9                      | Uche Sabinus<br>Silva Opara<br>Lawrence OparaUdu<br>Paul Igwe<br>Albert Ogu<br>Onu Raymond<br>Kenneth Ngerem<br>Opera Nnamdi<br>Bona Uche                                                           | 29-50     | Igbo         | Umulobagwu, Ikeduru                     | Yes                       |
| 9<br>11<br>12<br>13<br>14<br>15<br>16<br>17<br>18<br>19<br>20  | Njoku Ejikeme<br>Gift Ewenike<br>Ugo Chikodi<br>Reginald<br>Elechi Simon<br>UgwoEchendu<br>Ekeh Stanley<br>Anyanwu Vincent<br>Offurum Kenneth<br>Tasie Samuel<br>Denna Jonathan                     | 29-50     | Igbo         | Akwakuma Owerri North                   | Yes                       |
| 21<br>22<br>23<br>24<br>25<br>26<br>27<br>28<br>29<br>30<br>31 | Aloysius Ononiwu<br>NwokeAthanathus<br>Nwike Thaddeus<br>Alexius Agba<br>OnyenzeOnyedikachi<br>Nwaru Alex Chuks<br>Akahielem Martin<br>Ntiwunka Marcel<br>Obika Obioma<br>Amaraegbu Kenneth Ifeanyi | 32-63     | Igbo         | Umundugbals u,                          | Yes                       |
| 33<br>34<br>35<br>36<br>37<br>38<br>39<br>40                   | Osuji Edwin Chukwuemeka<br>Bede Chegbu<br>Eze Jude<br>Samuel Okpara<br>Chukwunenye Ogbonna<br>Obi Ikechukwu<br>Okafor Collins<br>Charles Nwachukwu                                                  | 42-58     | Igbo         | IsinwekeAmak ohiaNkwumea tolhitte-Uboma | Yes                       |

| Group: Female                                           |                                                                                                                                                                                         |            |              |                        |                           |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------|------------------------|---------------------------|
| S/N                                                     | Name of Participants                                                                                                                                                                    | Age Range  | Ethnic Group | Community              | Crop Producers/Processors |
| 1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10         | Ugonna .F. Ajuruchi, Osinachi Jacinta Ewurum, Chinwendu Denna, OnuegwuNwoke Julia U, Jacinta Nze, Virginia Nze, Nkechi Lilian Anyanwu, Onyinyechi .M. Nzeh, Gift .O. Ewenike Onyinyechi | 30 - 60yrs | Igbo         | Akwakuma, owerri L.G.A | Yes                       |
| 9<br>11<br>12<br>13<br>14<br>15<br>16<br>17<br>18<br>19 | Victoria Mbah, Jacinta Nwoke, Ijeoma Anaba, NkeirukaAmagwula, Caroline Mbah, Ngozi Uzoma, DorathyOnyenze, Kelechi Agba, RophinaAchusim, Happiness Ozoemena                              | 40-70yrs   | Igbo         | Amadugbalsu            | Yes                       |
| 21<br>22<br>23<br>24<br>25<br>26<br>27<br>28<br>29      | .Otuonye Veronica Angela Kenine Celine Ekenachi Nwachukwu Chika Eunice Egeonu Chinonyerem Ama Goodness Echendu Juliana Kalakeya Christiana Njoku                                        | 36-60yrs   | Igbo         | Isinwekeihitteu boma   | Yes                       |

## 7.3 Individual interview {II Q1-13 (demographic data)}:

| Group: Male |                      |     |              |                          |                            |                            |           |                     |
|-------------|----------------------|-----|--------------|--------------------------|----------------------------|----------------------------|-----------|---------------------|
| S/N         | Name of Participants | Age | Ethnic Group | Community                | Crop Producers /Processors | Relation to household head | Religion  | main profession     |
| 1           | Nosike Christopher   | 62  | Igbo         | Uzoagbalkeduru           | Yes                        | Head                       | Christian | Farming             |
| 2           | Okparaodo Lawrence   | 62  | Igbo         | Uzoagbalkeduru           | Yes                        | Head                       | Christian | Farming             |
| 3           | Opara Henry          | 66  | Igbo         | Umulobo, Umuagwu-Uzoagba | Yes                        | Head                       | Christian | Electrical Engineer |
| 4           | Jude Oguamanam       | 58  | Igbo         | Umulobo, Umuagwu-Uzoagba | Yes                        | Head                       | Christian | Farming             |
| 5           | Jude Emezuo          | 45  | Igbo         | Isinwekeihitteuboma      | Yes                        | Head                       | Christian | Farming             |
| 6           | Anowi Calistus       | 60  | Igbo         | Amakohia, IhitteUboma    | Yes                        | Head                       | Christian | Electrician/farmer  |

| Group: Female |                      |     |              |                           |                            |                            |           |                        |
|---------------|----------------------|-----|--------------|---------------------------|----------------------------|----------------------------|-----------|------------------------|
| S/N           | Name of Participants | Age | Ethnic Group | Community                 | Crop Producers /Processors | Relation to household head | Religion  | main profession        |
| 1             | Victoria Oguamanam   | 48  | Igbo         | Umuagwuumulobobikoro      | Yes                        | Wife                       | Christian | Farming                |
| 2             | Mrs Ann Ngerem O.    | 45  | Igbo         | Umulobo, Umuagwu-Uzoagba  | Yes                        | Wife                       | Christian | Teacher                |
| 3             | Lady IheomaNgerem    | 46  | Igbo         | Uzoagbalkeduru            | Yes                        | Wife                       | Christian | Farming                |
| 4             | ClarateNgere         | 42  | Igbo         | Umulobo, Umuagwu-Uzoagba  | Yes                        | Wife                       | Christian | Farming                |
| 5             | Constance Ogwuamanam | 50  | Igbo         | Umuloboagwulkeduru        | Yes                        | Widowed                    | Christian | Teaching               |
| 6             | EZINNE CELINA NGEREM | 75  | Igbo         | Umuloboagwulkeduru        | Yes                        | Wife                       | Christian | Farming                |
| 7             | Hope Ugochilhema     | 40  | Igbo         | Akwakuma Owerri North LGA | Yes                        | Wife                       | Christian | Farming                |
| 8             | Amuzie Josephine     | 68  | Igbo         | Akwakuma Owerri North LGA | Yes                        | Wife                       | Christian | Retired Civil Servant  |
| 9             | Amadi Justina        | 56  | Igbo         | Akwakuma Owerri North LGA | Yes                        | Wife                       | Christian | Farming                |
| 10            | Okonkwo Rosemary     | 36  | Igbo         | Akwakuma Owerri North LGA | Yes                        | Wife                       | Christian | Farming/ Civil servant |
| 11            | Ijeoma Anyanwu       | 48  | Igbo         | Akwakuma Owerri North LGA | Yes                        | Wife                       | Christian | Farming                |
| 12            | Akim Priscilla       | 40  | Igbo         | Akwakuma Owerri North LGA | Yes                        | Wife                       | Christian | Farming                |
| Group: Female |                      |     |              |                           |                            |                            |           |                        |
| S/N           | Name of Participants | Age | Ethnic Group | Community                 | Crop Producers             | Relation to                | Religion  | main profession        |

|    |                         |    | Group |                           | /Processors | household head |           |                 |
|----|-------------------------|----|-------|---------------------------|-------------|----------------|-----------|-----------------|
| 13 | Opara Lilian.           | 41 | Igbo  | Akwakuma Owerri North LGA | Yes         | Wife           | Christian | Farming         |
| 14 | Mrs Caroline Okoro      | 47 | Igbo  | Akwakuma Owerri North LGA | Yes         | Wife           | Christian | Farming         |
| 15 | Nwosu Jacintha          | 54 | Igbo  | Akwakuma Owerri North LGA | Yes         | Wife           | Christian | Civil Servant   |
| 16 | Anyanwu Ngozi           | 35 | Igbo  | Akwakuma Owerri North LGA | Yes         | daughter       | Christian | Farming         |
| 17 | Nwanaga Ngozi .A.       | 45 | Igbo  | Amadugba, Isu LGA         | Yes         | Wife           | Christian | Teaching        |
| 18 | Ononiwu Juliana         | 50 | Igbo  | Amadugba, Isu LGA         | Yes         | Wife           | Christian | Teaching        |
| 19 | Egwuekwe Nkiru.         | 37 | Igbo  | Umundugba, Isu LGA        | Yes         | Wife           | Christian | Farming         |
| 20 | Ojiako Ifeoma           | 53 | Igbo  | Amadugba, Isu LGA         | Yes         | Wife           | Christian | Farming         |
| 21 | Nwoke Doris.            | 49 | Igbo  | Amadugba, Isu LGA         | Yes         | Wife           | Christian | Farming         |
| 22 | Uzegbu Edith Ogechi     | 40 | Igbo  | Umundugba, Isu LGA        | Yes         | Wife           | Christian | Civil Servant   |
| 23 | Nwoke Rachael           | 50 | Igbo  | Amadugba, Isu LGA         | Yes         | Wife           | Christian | Civil Servant   |
| 24 | Martha C. Madueke       | 43 | Igbo  | Amadugba, Isu LGA         | Yes         | Wife           | Christian | Civil Servant   |
| 25 | Elozie Ugochi Anderline | 45 | Igbo  | Umundugba, Isu LGA        | Yes         | Wife           | Christian | Teaching        |
| 26 | Mrs Okoroafor Susan     | 39 | Igbo  | Amadugba, Isu LGA         | Yes         | Wife           | Christian | Trading         |
| 27 | Angela Obilikpa.        | 39 | Igbo  | Nkumetolhiteuboma         | Yes         | Wife           | Christian | Farming         |
| 28 | Augustina Anyanwu       | 40 | Igbo  | Nkumetolhiteuboma         | Yes         | Wife           | Christian | Farming         |
| 29 | Augustina Nwachukwu     | 50 | Igbo  | Isinweke, ihitteUboma     | Yes         | Wife           | Christian | Farming         |
| 30 | Priscillia Anowe        | 68 | Igbo  | Isinweke, ihitteUboma     | Yes         | Wife           | Christian | Farming         |
| 31 | Ogbonna Julieth         | 60 | Igbo  | Amakohia, IhitteUboma     | Yes         | Wife           | Christian | Trader/ Farming |
| 32 | Gift Okonkwo            | 40 | Igbo  | Nkwumeato, IhitteUboma    | Yes         | Wife           | Christian | Trading         |
| 33 | Josephine Nwoke         | 43 | Igbo  | Nkwumeato, IhitteUboma    | Yes         | Wife           | Christian | Farming         |

## 7.4 Market interview

| Group: Male |                        |     |              |                                           |                |                                    |                                               |                                              |
|-------------|------------------------|-----|--------------|-------------------------------------------|----------------|------------------------------------|-----------------------------------------------|----------------------------------------------|
| S/N         | Name of town/community | Age | Ethnic Group | Name(s) if group of people or association | Household size | Level of education (of respondent) | Ownership of means of transportation (yes/no) | Ownership of means of communication (yes/no) |
| 1           | AmainyiNtalhit eUboma  | 25  | Igbo         | Okoroafor Franklin                        |                |                                    |                                               |                                              |

| Group: Male |                                           |                                           |                            |                                                                                                                                              |
|-------------|-------------------------------------------|-------------------------------------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| S/N         | Road to the nearest town is good (yes/No) | Distance to the market from the home (km) | Marketing experience (yrs) | a) Main occupation (e.g. traders; specify in which products they are dealing?) b) level of marketing respondent (wholesaler, retailer, both) |
| 1           |                                           |                                           |                            | Trader (garri) and rice                                                                                                                      |

| Group: Female |                                      |     |              |                                           |                |                                    |                                               |                                              |
|---------------|--------------------------------------|-----|--------------|-------------------------------------------|----------------|------------------------------------|-----------------------------------------------|----------------------------------------------|
| S/N           | Name of town/community               | Age | Ethnic Group | Name(s) if group of people or association | Household size | Level of education (of respondent) | Ownership of means of transportation (yes/no) | Ownership of means of communication (yes/no) |
| 1             | AFO UZOAGBA, IKEDURU, IMO STATE      | 42  | Igbo         | MRS IJEOMA ACHONYE                        | 6              | SECONDARY                          | No                                            | Yes                                          |
| 2             | EGBEADA                              | 32  | Igbo         | UgwumbaSilvaline C                        | 6              | OND                                | No                                            | Yes                                          |
| 3             | Amandugba, IsuLgalmoState            | 55  | Igbo         | Matilda Okorom                            | 6              | PRIMARY                            | No                                            | Yes                                          |
| 4             | EKE AMANDUGBA ISU LGA, IMO STATE     | 38  | Igbo         | Mrs Mercy Echefu                          | 6              | TERTIARY                           | No                                            | Yes                                          |
| 5             | EKEPKA MARKET, AMAINYI, IHITTE UBOMA | 45  | Igbo         | GLORIA OYONGWO                            | 5              | SECONDARY                          | Yes                                           | Yes                                          |

| Group: Female |                                           |                                           |                            |                                                                                                                                              |
|---------------|-------------------------------------------|-------------------------------------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| S/N           | Road to the nearest town is good (yes/No) | Distance to the market from the home (km) | Marketing experience (yrs) | a) Main occupation (e.g. traders; specify in which products they are dealing?) b) level of marketing respondent (wholesaler, retailer, both) |
| 1             | No                                        | 2                                         | 8                          | TRADING-GARI                                                                                                                                 |
| 2             | No                                        | 2                                         | 1                          | LAB TECHNICIAN                                                                                                                               |
| 3             | Yes                                       | 1                                         | 13                         | Fufu Trader (Retailer)                                                                                                                       |
| 4             | No                                        | Very close                                | 28                         | TRADING (FOOD STUFFS, RICE, BEANS, , GARI, SALT, GROUNDNUT, SPICES AND PPOULTRY FEED                                                         |
| 5             | No                                        | 2                                         | 2                          | FUFU TRADING                                                                                                                                 |



## 7.5 RTBfoods gari table

| A                                                                                  | B                                                                                                      | C                                                                                                              | D                                                                                                        | E                                                                                             | F                                                                                                                  | G                                                                                                                                                     | H                                                                                                                                                  |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Group:<br>Men                                                                      | <i>High quality characteristics :</i><br>Characteristics that give a good, high quality product (fufu) | <i>Indicator of high quality characteristic</i> Where data available, describe characteristics (e.g. how sour) | <i>Priority of high quality characteristic</i> Indicate the rank, and note if simple or pairwise ranking | <i>Poor quality characteristics:</i><br>Characteristicsth at give a bad, poor quality product | <i>Indicator of poor quality characteristic :</i><br>Where data available, describe characteristics (e.g how sour) | <i>Varieties- GOOD :</i><br>Include scientific names and indicate (L)-Local, (I) Improved older released variety or (N) new variety recently released | <i>Varieties- BAD</i><br>Include scientific names and indicate (L)-local, (I) improved older released variety or (N) new variety recently released |
| <i>Raw material characteristics: for product quality (agronomic, post-harvest)</i> | II Q20                                                                                                 | II Q20                                                                                                         | II Q20                                                                                                   | II Q21                                                                                        | II Q21                                                                                                             | II Q15, Q19                                                                                                                                           |                                                                                                                                                    |
|                                                                                    | Big root Cassava                                                                                       | The Cassava root that is as big as yam                                                                         | 1                                                                                                        | High moisture Content                                                                         | The ones that have very high moisture (it looks wet) when peeling)                                                 | TME 419(N), Daberechi (L), Nwaonulhe(L), try and see (I), Durungwo (L)                                                                                | opuwuruwuru, stainless                                                                                                                             |
|                                                                                    | Dark Brown Coloured root                                                                               | The outer peel will be dar brown in colour to show its matured                                                 | 2                                                                                                        | Rotten root                                                                                   | The rot that is rotten will not be good for gari                                                                   |                                                                                                                                                       |                                                                                                                                                    |
|                                                                                    | Numerous roots                                                                                         | Numerous big root, healthy roots, maturity, long like arm length or like big eva water bottle                  | 2                                                                                                        |                                                                                               |                                                                                                                    |                                                                                                                                                       |                                                                                                                                                    |
|                                                                                    | White coloured root                                                                                    | Big, long, whitish saps (freshly harvested must have it), when you peel a little, it will be whitish in colour | 2                                                                                                        |                                                                                               |                                                                                                                    |                                                                                                                                                       |                                                                                                                                                    |

| A                                                                                                    | B                                                                                                      | C                                                                                                                     | D                                                                                                               | E                                                                                                    | F                                                                                                                         | G                                                                                                                                                             | H                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Group:<br>Men                                                                                        | <b>High quality characteristics :</b><br>Characteristics that give a good, high quality product (fufu) | <b><u>Indicator of high quality characteristic</u></b> Where data available, describe characteristics (e.g. how sour) | <b><u>Priority of high quality characteristic</u></b> Indicate the rank, and note if simple or pairwise ranking | <b>Poor quality characteristics:</b><br><i>Characteristicsth at give a bad, poor quality product</i> | <b><u>Indicator of poor quality characteristic :</u></b><br>Where data available, describe characteristics (e.g how sour) | <b><u>Varieties- GOOD :</u></b><br>Include scientific names and indicate (L)- Local, (I) Improved older released variety or (N) new variety recently released | <b><u>Varieties- BAD</u></b><br><i>Include scientific names and indicate (L)-local, (I) improved older released variety or (N) new variety recently released</i> |
| <b>Processing characteristics</b>                                                                    | II Q23                                                                                                 | II Q23, Q25                                                                                                           | IIQ23, IIQ25                                                                                                    |                                                                                                      |                                                                                                                           |                                                                                                                                                               |                                                                                                                                                                  |
| <b>of raw material for the product quality during processing (Step 3 will add more details here)</b> | strong root                                                                                            | A root that is strong when pierced with nails                                                                         | 1                                                                                                               | not binding                                                                                          |                                                                                                                           | 419, Daberechi, Nwaonulhe, try and see, Durungwo,                                                                                                             | opuwuruwuru, stainless                                                                                                                                           |
|                                                                                                      | ease to peel                                                                                           | The Cassava peel will be easy to peel                                                                                 | 2                                                                                                               | Stiffy root                                                                                          | The root will be stiffy during peeling                                                                                    |                                                                                                                                                               |                                                                                                                                                                  |
|                                                                                                      | Less moisture content                                                                                  | The root will be less moisture content                                                                                | 3                                                                                                               | too hard root                                                                                        |                                                                                                                           |                                                                                                                                                               |                                                                                                                                                                  |
|                                                                                                      | hard peel                                                                                              | A cassava that is a bit strong to peel will give good garri yield as this shows that the water content is low.        | 4                                                                                                               | too soft root                                                                                        |                                                                                                                           |                                                                                                                                                               |                                                                                                                                                                  |
|                                                                                                      |                                                                                                        |                                                                                                                       | Simple ranking                                                                                                  |                                                                                                      |                                                                                                                           |                                                                                                                                                               |                                                                                                                                                                  |

| A                                           | B                                                                                                      | C                                                                                                                     | D                                                                                                               | E                                                                                                    | F                                                                                                                         | G                                                                                                                                                             | H                                                                                                                                                                |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Group:<br>Men                               | <b>High quality characteristics :</b><br>Characteristics that give a good, high quality product (fufu) | <b><u>Indicator of high quality characteristic</u></b> Where data available, describe characteristics (e.g. how sour) | <b><u>Priority of high quality characteristic</u></b> Indicate the rank, and note if simple or pairwise ranking | <b>Poor quality characteristics:</b><br><i>Characteristicsth at give a bad, poor quality product</i> | <b><u>Indicator of poor quality characteristic :</u></b><br>Where data available, describe characteristics (e.g how sour) | <b><u>Varieties- GOOD :</u></b><br>Include scientific names and indicate (L)- Local, (I) Improved older released variety or (N) new variety recently released | <b><u>Varieties- BAD</u></b><br><i>Include scientific names and indicate (L)-local, (I) improved older released variety or (N) new variety recently released</i> |
| <b>Characteristics of raw final product</b> | II Q24, II Q27                                                                                         | II Q24, Q25                                                                                                           |                                                                                                                 |                                                                                                      |                                                                                                                           |                                                                                                                                                               |                                                                                                                                                                  |
| <b>To look at</b>                           | clear and attractive colour, not floating                                                              | as clear and attractive as yellow and white colour, should not float on top while sprinkling on top of water          | 2,1                                                                                                             | floating on water, no clear colour                                                                   | floating on water like ash                                                                                                |                                                                                                                                                               |                                                                                                                                                                  |
| <b>To touch</b>                             | heaviness, drawy                                                                                       | it should not break when moulding, it should not stick to hand, should be drawy and smooth while eating               | 3                                                                                                               | sticky to the hand                                                                                   | The eba will be sticking to the hand                                                                                      |                                                                                                                                                               |                                                                                                                                                                  |
| <b>To smell</b>                             |                                                                                                        |                                                                                                                       | 0                                                                                                               |                                                                                                      |                                                                                                                           |                                                                                                                                                               |                                                                                                                                                                  |
| <b>To taste</b>                             | sour taste                                                                                             | sour taste like an unripe orange, easy to swallow, sour in mouth,                                                     | 0                                                                                                               |                                                                                                      |                                                                                                                           |                                                                                                                                                               |                                                                                                                                                                  |
| <b>Texture in mouth</b>                     |                                                                                                        |                                                                                                                       | Simple ranking                                                                                                  |                                                                                                      |                                                                                                                           |                                                                                                                                                               |                                                                                                                                                                  |

| A                                                                                              | B                                                                                                   | C                                                                                                              | D                                                                                                        | E                                                                                          | F                                                                                                               | G                                                                                                                                                   | H                                                                                                                                               |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Group:<br>Men                                                                                  | <i>High quality characteristics : Characteristics that give a good, high quality product (fufu)</i> | <i>Indicator of high quality characteristic Where data available, describe characteristics (e.g. how sour)</i> | <i>Priority of high quality characteristic Indicate the rank, and note if simple or pairwise ranking</i> | <i>Poor quality characteristics: Characteristicsth at give a bad, poor quality product</i> | <i>Indicator of poor quality characteristic : Where data available, describe characteristics (e.g how sour)</i> | <i>Varieties- GOOD : Include scientific names and indicate (L)- Local, (I) Improved older released variety or (N) new variety recently released</i> | <i>Varieties- BAD Include scientific names and indicate (L)-local, (I) improved older released variety or (N) new variety recently released</i> |
| <i>Characteristics of cooked/ready to eat final product (Step 4 will add more detail here)</i> | IIQ28                                                                                               | IIQ28, IIQ30                                                                                                   | IIQ29                                                                                                    |                                                                                            |                                                                                                                 |                                                                                                                                                     |                                                                                                                                                 |
| To look at                                                                                     | Clear colour                                                                                        | The colour of the gari must be clear and smell nice                                                            | 2                                                                                                        |                                                                                            |                                                                                                                 |                                                                                                                                                     |                                                                                                                                                 |
| To touch                                                                                       | No seed/lump                                                                                        | It should not contain any seed/Lump                                                                            | 3                                                                                                        |                                                                                            |                                                                                                                 |                                                                                                                                                     |                                                                                                                                                 |
| To smell                                                                                       | Not floating                                                                                        | it will not be floating on top of the water as you make the eba.                                               | 1                                                                                                        |                                                                                            |                                                                                                                 |                                                                                                                                                     |                                                                                                                                                 |
| To touch                                                                                       | Not soft eba                                                                                        | should not be soft in the mouth                                                                                | 1                                                                                                        |                                                                                            |                                                                                                                 |                                                                                                                                                     |                                                                                                                                                 |
|                                                                                                | Not too Hard eba                                                                                    | It should be hard a bit (not too strong or too soft)                                                           | 1                                                                                                        |                                                                                            |                                                                                                                 |                                                                                                                                                     |                                                                                                                                                 |
| To touch                                                                                       | Not hard                                                                                            | soft on the hand, not hard, has to do with how you pour the water.                                             | 1                                                                                                        |                                                                                            |                                                                                                                 |                                                                                                                                                     |                                                                                                                                                 |

| <b>Group: Women</b>                                  | <b>High quality characteristics</b> C characteristics that give a good, high quality product | <b>Indicator of high quality characteristic</b> W here data available, describe characteristics (e.g . how sour) | <b>Priority of high quality characteristic</b> Ind icate the rank, and note if simple or pairwise ranking | <b>Poor quality characteristics</b> C characteristics that give a bad, poor quality product | <b>Indicator of poor quality characteristic</b> W here data available, describe characteristics (e.g . how sour) | <b>Varieties-<br/>GOOD</b> Include scientific names and indicate (L)-local, (I) improved older released variety or (N) new variety recently released | <b>Varieties-<br/>BAD</b> Include scientific names and indicate (L)-local, (I) improved older released variety or (N) new variety recently released |
|------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Raw material characteristics</b>                  | II Q20                                                                                       | II Q20                                                                                                           | II Q20                                                                                                    | II Q21                                                                                      | II Q21                                                                                                           | II Q15, Q19                                                                                                                                          |                                                                                                                                                     |
| <b>for product quality (agronomic, post-harvest)</b> | Big roots                                                                                    | as big as an arm, yam or bigger than yam                                                                         | 1                                                                                                         | Black lines                                                                                 | Roots that have black lines are not good for garri                                                               | Dabere(L), Nwageri(L), try and see(I), TME 419(I), TMS98/0505 (I), Imo best(I), Torokwem(L) nwabekee (L),                                            | opuwuruwuru, stainless                                                                                                                              |
|                                                      | Bright peel                                                                                  | The peel colour will be bright                                                                                   | 6                                                                                                         |                                                                                             |                                                                                                                  | Durungwo (L), nwanyiocha (L), akpuoji (L), Aguoegbulam(L), 8082 (I), yellow root(I), akwatakwa(L), nwajeni(L)                                        |                                                                                                                                                     |
|                                                      |                                                                                              |                                                                                                                  | 5                                                                                                         | foamy roots                                                                                 | Cassava that has overstayed will have or will form foam inside. It will be like foam inside like bread           | nwanyiocha(L), agric.(I), gbanum ma mbunyogi(L), santana (I), ahunna(L), give me chance (I), 501 (I),                                                |                                                                                                                                                     |

| <b>Group: Women</b>                                  | <b>High quality characteristics</b> C characteristics that give a good, high quality product | <b>Indicator of high quality characteristic</b> W here data available, describe characteristics (e.g . how sour) | <b>Priority of high quality characteristic</b> Ind icate the rank, and note if simple or pairwise ranking | <b>Poor quality characteristics</b> C haracteristics that give a bad, poor quality product | <b>Indicator of poor quality characteristic</b> W here data available, describe characteristics (e.g . how sour)                                                                          | <b>Varieties-<br/>GOOD</b> Include scientific names and indicate (L)- local, (I) improved older released variety or (N) new variety recently released                       | <b>Varieties-<br/>BAD</b> Include scientific names and indicate (L)- local, (I) improved older released variety or (N) new variety recently released |
|------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Raw material characteristics</b>                  | II Q20                                                                                       | II Q20                                                                                                           | II Q20                                                                                                    | II Q21                                                                                     | II Q21                                                                                                                                                                                    | II Q15, Q19                                                                                                                                                                 |                                                                                                                                                      |
| <b>for product quality (agronomic, post-harvest)</b> | dry roots                                                                                    | must not have excess moisture in it. Hard to break                                                               | 6                                                                                                         | Late maturity                                                                              | Cassava that has overstayd in the soil for over 24 months will give bad gari                                                                                                              | nwanyiumuahia (lady from Umuahia)(I), okporoonuoji (black stem) (L), Iwa (L), canopy (it branches well)(I), Yellow root (vit. C) (I), nwanyiumuocham( L), nwanyiumukara (L) |                                                                                                                                                      |
|                                                      | fresh skin                                                                                   | fresh skin and not rotten skin                                                                                   | 5                                                                                                         | light                                                                                      | The cassava that does not have weight, the one that is black, when processed into garri, it will be very light and it is not a good cassava. tubers that too big and are light in weight. |                                                                                                                                                                             |                                                                                                                                                      |
|                                                      | healthy roots                                                                                | Not rotten root                                                                                                  | 6                                                                                                         | low yield                                                                                  |                                                                                                                                                                                           |                                                                                                                                                                             |                                                                                                                                                      |
|                                                      | heaviness                                                                                    | stiff like wood                                                                                                  | 5                                                                                                         | not matured                                                                                |                                                                                                                                                                                           |                                                                                                                                                                             |                                                                                                                                                      |

| <b>Group: Women</b>                 | <b>High quality characteristics</b> C characteristics that give a good, high quality product | <b>Indicator of high quality characteristic</b> W here data available, describe characteristics (e.g . how sour) | <b>Priority of high quality characteristic</b> Ind icate the rank, and note if simple or pairwise ranking | <b>Poor quality characteristics</b> C characteristics that give a bad, poor quality product | <b>Indicator of poor quality characteristic</b> W here data available, describe characteristics (e.g . how sour)                                                                                                                                                | <b>Varieties-<br/>GOOD</b> Include scientific names and indicate (L)-local, (I) improved older released variety or (N) new variety recently released | <b>Varieties-<br/>BAD</b> Include scientific names and indicate (L)-local, (I) improved older released variety or (N) new variety recently released |
|-------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Raw material characteristics</b> | <b>II Q20</b>                                                                                | <b>II Q20</b>                                                                                                    | <b>II Q20</b>                                                                                             | <b>II Q21</b>                                                                               | <b>II Q21</b>                                                                                                                                                                                                                                                   | <b>II Q15, Q19</b>                                                                                                                                   |                                                                                                                                                     |
|                                     | long roots                                                                                   | weight like eva bottle water.                                                                                    |                                                                                                           | rot                                                                                         | Cassava roots that have stayed for more than 2 days after harvest, rotten cassava roots, If the crop does not have good colour, is rotten or is stiff and strong. Cassava that the inside is rotten when cut, it is not good and cannot be used for any product |                                                                                                                                                      |                                                                                                                                                     |
|                                     | maturity                                                                                     |                                                                                                                  | 5                                                                                                         | shelf life                                                                                  |                                                                                                                                                                                                                                                                 |                                                                                                                                                      |                                                                                                                                                     |
|                                     | not watery                                                                                   |                                                                                                                  | 3                                                                                                         | skinny                                                                                      | The cassava roots will be shrink, and skinny.                                                                                                                                                                                                                   |                                                                                                                                                      |                                                                                                                                                     |
|                                     | not w                                                                                        |                                                                                                                  |                                                                                                           | small roots                                                                                 |                                                                                                                                                                                                                                                                 |                                                                                                                                                      |                                                                                                                                                     |
|                                     | root size                                                                                    | The root size will be like yam or bigger than yam                                                                | 7                                                                                                         | stiff root                                                                                  | If is stiff or rotten, then the cassava won't be good for anything.                                                                                                                                                                                             |                                                                                                                                                      |                                                                                                                                                     |
|                                     | sour taste                                                                                   |                                                                                                                  | 5                                                                                                         | woody                                                                                       | varieties that have foam or woody texture inside, presence of woody texture                                                                                                                                                                                     |                                                                                                                                                      |                                                                                                                                                     |



| <b>Group: Women</b>                 | <b>High quality characteristics</b> C characteristics that give a good, high quality product | <b>Indicator of high quality characteristic</b> W here data available, describe characteristics (e.g . how sour) | <b>Priority of high quality characteristic</b> Ind icate the rank, and note if simple or pairwise ranking | <b>Poor quality characteristics</b> C characteristics that give a bad, poor quality product | <b>Indicator of poor quality characteristic</b> W here data available, describe characteristics (e.g . how sour) | <b>Varieties-<u>GOOD</u></b> Include scientific names and indicate (L)-local, (I) improved older released variety or (N) new variety recently released | <b>Varieties-<u>BAD</u></b> Include scientific names and indicate (L)-local, (I) improved older released variety or (N) new variety recently released |
|-------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Raw material characteristics</b> | <b>II Q20</b>                                                                                | <b>II Q20</b>                                                                                                    | <b>II Q20</b>                                                                                             | <b>II Q21</b>                                                                               | <b>II Q21</b>                                                                                                    | <b>II Q15, Q19</b>                                                                                                                                     |                                                                                                                                                       |
|                                     | weight                                                                                       | weight and heavy like yam                                                                                        | 4                                                                                                         | wet                                                                                         | If the mash didn't dry properly and sticks to hand when touched.                                                 |                                                                                                                                                        |                                                                                                                                                       |
|                                     | wet peel                                                                                     |                                                                                                                  | 7                                                                                                         | watery roots                                                                                | cassava that has too much water, the ones that have very high moisture (it looks wet when peeling)               |                                                                                                                                                        |                                                                                                                                                       |
|                                     | Yield                                                                                        |                                                                                                                  | 5                                                                                                         | very big tubers                                                                             |                                                                                                                  |                                                                                                                                                        |                                                                                                                                                       |
|                                     | The Cassava will contain starch                                                              |                                                                                                                  |                                                                                                           |                                                                                             |                                                                                                                  |                                                                                                                                                        |                                                                                                                                                       |
|                                     | The root head is strong                                                                      | The root head will be strong and not watery                                                                      |                                                                                                           |                                                                                             |                                                                                                                  |                                                                                                                                                        |                                                                                                                                                       |
|                                     | white root                                                                                   | The root colour will be white                                                                                    | 4                                                                                                         |                                                                                             |                                                                                                                  | 4                                                                                                                                                      |                                                                                                                                                       |
|                                     | white sap                                                                                    | should have whitish fluid during peeling to show it is fresh                                                     | 2                                                                                                         |                                                                                             |                                                                                                                  | 2                                                                                                                                                      |                                                                                                                                                       |
|                                     |                                                                                              |                                                                                                                  | Simple ranking                                                                                            |                                                                                             |                                                                                                                  | Simple ranking                                                                                                                                         |                                                                                                                                                       |

| Group: Women                                                                                  | High quality characteristics C<br>characteristics that give a good, high quality product | Indicator of high quality characteristic W<br>here data available, describe characteristics (e.g . how sour)     | Priority of high quality characteristic Ind<br>icate the rank, and note if simple or pairwise ranking | Poor quality characteristics C<br>characteristics that give a bad, poor quality product | Indicator of poor quality characteristic W<br>here data available, describe characteristics (e.g . how sour)                                    | Varieties-<br><u>GOOD</u> Include scientific names and indicate (L)-local, (I) improved older released variety or (N) new variety recently released | Varieties-<br><u>BAD</u> Include scientific names and indicate (L)-local, (I) improved older released variety or (N) new variety recently released |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Processing characteristics                                                                    | IIQ23                                                                                    | II Q23, Q25                                                                                                      |                                                                                                       |                                                                                         |                                                                                                                                                 |                                                                                                                                                     |                                                                                                                                                    |
| of raw material for the product quality during processing (Step 3 will add more details here) | Ease of peel                                                                             | The cassava should be matured 6 months and above,The peeling must be easy (peels with little moisture)           | 1                                                                                                     | cooked                                                                                  | akpuanaraana(cas sava that has been cooked inside the soil as a result of bush fire) wont be good for either garri                              | Dabere, Nwageri, try and see,TME 419, TMS98/0505, Imo best, Torokwemnwabek ee,                                                                      | opuwuruwuru, stainless                                                                                                                             |
|                                                                                               | Fresh root                                                                               | It must be fresh and no discolouration                                                                           | 3                                                                                                     | mash (watery and Spongy)                                                                | So much chaff materials during sieving and watery mash will give low gari yield                                                                 | Durungwo, nwanyiocha, akpuoji, Aguoegbulam, 8082, yellow root, akwatakwa, nwajeni                                                                   |                                                                                                                                                    |
|                                                                                               | Garri mash                                                                               | when you look at the mash, the powder will look good or not. If it was ground well, the mash powder will be fine | 5                                                                                                     | Peeled root colour                                                                      | If not washed and grated the same day after peeling, the cassava will change colour and this colour change will continue throughout the process | nwanyiocha, agric., gbanum ma mbunyogi, santana, ahunna, give me chance, 501,                                                                       |                                                                                                                                                    |

| <b>Group: Women</b>                                                                                  | <b>High quality characteristics</b> C characteristics that give a good, high quality product | <b>Indicator of high quality characteristic</b> W here data available, describe characteristics (e.g . how sour)                                                                          | <b>Priority of high quality characteristic</b> Ind icate the rank, and note if simple or pairwise ranking | <b>Poor quality characteristics</b> C characteristics that give a bad, poor quality product | <b>Indicator of poor quality characteristic</b> W here data available, describe characteristics (e.g . how sour) | <b>Varieties-<br/>GOOD</b>                                                                                                            | <b>Varieties-<br/>BAD</b> |
|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <b>Processing characteristics</b>                                                                    | <b>IIQ23</b>                                                                                 | <b>II Q23, Q25</b>                                                                                                                                                                        |                                                                                                           |                                                                                             |                                                                                                                  |                                                                                                                                       |                           |
| <b>of raw material for the product quality during processing (Step 3 will add more details here)</b> | hard peel                                                                                    | But when the peel is hard with less moisture                                                                                                                                              | 2                                                                                                         | wet peels                                                                                   | When peeling, you notice that the peels are so wet, it might affect garri yield.                                 | nwanyiumuahia (lady from Umuahia), okporoonuojii (black stem), Iwa, canopy (it branches well), vit. c, nwanyiumuocham, nwanyiumukara. |                           |
|                                                                                                      | Easy to peel                                                                                 | The root will be easy to peel                                                                                                                                                             | 3                                                                                                         |                                                                                             |                                                                                                                  |                                                                                                                                       |                           |
|                                                                                                      | less water                                                                                   | Pressing is the most important crucial processing step because if it not well pressed to remove all the water, it will not even be possible to sieve it not to talk of toasting the garri | 4                                                                                                         |                                                                                             |                                                                                                                  |                                                                                                                                       |                           |
|                                                                                                      | Good Gari colour                                                                             | the cassava has to be properly peeled so that the peel's brown colour will not affect the colour for garri                                                                                | 5                                                                                                         |                                                                                             |                                                                                                                  |                                                                                                                                       |                           |

| <b>Group: Women</b>                                                                                                             | <b>High quality characteristics</b> C<br>characteristics that give a good, high quality product | <b>Indicator of high quality characteristic</b> W<br>here data available, describe characteristics (e.g . how sour) | <b>Priority of high quality characteristic</b> Ind<br>icate the rank, and note if simple or pairwise ranking | <b>Poor quality characteristics</b> C<br>characteristics that give a bad, poor quality product | <b>Indicator of poor quality characteristic</b> W<br>here data available, describe characteristics (e.g . how sour) | <b>Varieties-<br/>GOOD</b> Include scientific names and indicate (L)-local, (I) improved older released variety or (N) new variety recently released | <b>Varieties-<br/>BAD</b> Include scientific names and indicate (L)-local, (I) improved older released variety or (N) new variety recently released |
|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Processing characteristics of raw material for the product quality during processing (Step 3 will add more details here)</b> | <b>IIQ23</b>                                                                                    | <b>II Q23, Q25</b>                                                                                                  |                                                                                                              |                                                                                                |                                                                                                                     |                                                                                                                                                      |                                                                                                                                                     |
|                                                                                                                                 | Well grated mash                                                                                | small chaff materials during sieving will give high gari yield                                                      | 5                                                                                                            |                                                                                                |                                                                                                                     |                                                                                                                                                      |                                                                                                                                                     |
|                                                                                                                                 | smooth                                                                                          |                                                                                                                     | 4                                                                                                            |                                                                                                |                                                                                                                     |                                                                                                                                                      |                                                                                                                                                     |
|                                                                                                                                 | wet peels                                                                                       | When peeling, you notice that the peels are so wet, it might affect garri yield.                                    | Simple ranking                                                                                               |                                                                                                |                                                                                                                     |                                                                                                                                                      |                                                                                                                                                     |
|                                                                                                                                 | Gari colour                                                                                     | white or yellow colour indicates good quality                                                                       |                                                                                                              |                                                                                                |                                                                                                                     |                                                                                                                                                      |                                                                                                                                                     |
|                                                                                                                                 | High Cassava mash                                                                               | The Cassava mash will be high when grated                                                                           |                                                                                                              |                                                                                                |                                                                                                                     |                                                                                                                                                      |                                                                                                                                                     |
|                                                                                                                                 | less water                                                                                      | The cassava will not be too watery so that the gari will rise when fried                                            |                                                                                                              |                                                                                                |                                                                                                                     |                                                                                                                                                      |                                                                                                                                                     |

| <b>Group: Women</b>                         | <b>High quality characteristics</b> C characteristics that give a good, high quality product | <b>Indicator of high quality characteristic</b> W here data available, describe characteristics (e.g . how sour) | <b>Priority of high quality characteristic</b> I ndicate the rank, and note if simple or pairwise ranking | <b>Poor quality characteristics</b> C haracteristics that give a bad, poor quality product | <b>Indicator of poor quality characteristic</b> W here data available, describe characteristics (e.g . how sour) | <b>Varieties- GOOD</b> Include scientific names and indicate (L)-local, (I) improved older released variety or (N) new variety recently released | <b>Varieties- BAD</b> Include scientific names and indicate (L)-local, (I) improved older released variety or (N) new variety recently released |
|---------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Characteristics of raw final product</b> | <b>II Q24, IIQ27</b>                                                                         | <b>II Q24, Q25</b>                                                                                               |                                                                                                           |                                                                                            |                                                                                                                  |                                                                                                                                                  |                                                                                                                                                 |
| <b>To look at</b>                           | attractive colour, dough, good, not floating, settling down in water, no seed whitecolour,   | attractive colour like bright milk colour or yellow like egg yolk                                                | 1                                                                                                         | dull colour                                                                                | unattractive (discoloured), colour mixed with dirt( particles)                                                   | Dabere, Nwageri, try and see,TME 419, TMS98/0505, Imo best, Torokwemnwabekee                                                                     | opuwuruwuru, stainless                                                                                                                          |
| <b>To touch</b>                             | drawy, not sticky, floppy garri, no seed, smooth                                             | Coarse in hand when folded. It should not stick to the hand                                                      | 2                                                                                                         | sticks to hand                                                                             | sticks to hand while moulding, not dry when touched                                                              | Durungwo, nwanyiocha, akpuoji, Aguoegbulam, 8082, yellow root, akwatakwa, nwajeni                                                                |                                                                                                                                                 |
| <b>To smell</b>                             | good smell, no bad odour                                                                     | Good garri smell, nice smell like burnt clay ("oñoño")                                                           | 1                                                                                                         | offensive odour                                                                            |                                                                                                                  | nwanyiocha, agric., gbanum ma mbunyogi, santana, ahunna, give me chance, 501,                                                                    |                                                                                                                                                 |
| <b>To taste</b>                             | sour taste, fresh taste                                                                      | Sour in taste (sour like unripe orange).                                                                         | 1                                                                                                         | Light                                                                                      | light like wood ash when garri is scooped during toasting, garri is not crispy,                                  | nwanyiumuahia (lady from Umuahia), okporoonuojii (black stem), lwa, canopy (it branches well), vit. c, nwanyiumuocham, nwanyiumukara.            |                                                                                                                                                 |
| <b>Texture in mouth</b>                     | No lumps, dry                                                                                | Well dried in hand after toasting                                                                                | 1                                                                                                         | not well toasted                                                                           | Burnt,powdery like ash, agri with seed                                                                           |                                                                                                                                                  |                                                                                                                                                 |
|                                             |                                                                                              |                                                                                                                  |                                                                                                           | Dark colour                                                                                |                                                                                                                  |                                                                                                                                                  |                                                                                                                                                 |
|                                             |                                                                                              |                                                                                                                  |                                                                                                           | Too watery                                                                                 |                                                                                                                  |                                                                                                                                                  |                                                                                                                                                 |
|                                             |                                                                                              |                                                                                                                  | Simple ranking                                                                                            |                                                                                            |                                                                                                                  |                                                                                                                                                  |                                                                                                                                                 |

| <b>Group: Women</b>                                                                            | <b>High quality characteristics C</b><br>characteristics that give a good, high quality product | <b>Indicator of high quality characteristic W</b><br>here data available, describe characteristics (e.g . how sour) | <b>Priority of high quality characteristic I</b><br>ndicate the rank, and note if simple or pairwise ranking | <b>Poor quality characteristics C</b><br>characteristics that give a bad, poor quality product | <b>Indicator of poor quality characteristic W</b><br>here data available, describe characteristics (e.g . how sour) | <b>Varieties- GOOD</b> Include scientific names and indicate (L)-local, (I) improved older released variety or (N) new variety recently released | <b>Varieties- BAD</b> Include scientific names and indicate (L)-local, (I) improved older released variety or (N) new variety recently released |
|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Characteristics of cooked/ready to eat final product (Step 4 will add more detail here)</b> | <b>IIQ28</b>                                                                                    | <b>IIQ28, IIQ30</b>                                                                                                 | <b>IIQ29</b>                                                                                                 |                                                                                                |                                                                                                                     |                                                                                                                                                  |                                                                                                                                                 |
| <b>To look at</b>                                                                              | Attractive                                                                                      | The gari colour should be attractive to the eye not black in colour                                                 | 4                                                                                                            |                                                                                                |                                                                                                                     |                                                                                                                                                  |                                                                                                                                                 |
| <b>To touch</b>                                                                                | Drawy                                                                                           | It will draw very well while moulding it                                                                            | 1                                                                                                            |                                                                                                |                                                                                                                     |                                                                                                                                                  |                                                                                                                                                 |
| <b>To smell</b>                                                                                | Hard                                                                                            | It will be hard to touch and be able to be moulded into eba but not too hard                                        | 8                                                                                                            |                                                                                                |                                                                                                                     |                                                                                                                                                  |                                                                                                                                                 |
| <b>To touch</b>                                                                                | Mouldable                                                                                       | It will be hard to touch and be able to be moulded into eba                                                         | 9                                                                                                            |                                                                                                |                                                                                                                     |                                                                                                                                                  |                                                                                                                                                 |
|                                                                                                | Neatness                                                                                        | it should be neat                                                                                                   | 9                                                                                                            |                                                                                                |                                                                                                                     |                                                                                                                                                  |                                                                                                                                                 |
| <b>To touch</b>                                                                                | No big grain                                                                                    | There will be no big grain size.                                                                                    | 9                                                                                                            |                                                                                                |                                                                                                                     |                                                                                                                                                  |                                                                                                                                                 |
|                                                                                                | No smell(no bad odour)                                                                          |                                                                                                                     | 9                                                                                                            |                                                                                                |                                                                                                                     |                                                                                                                                                  |                                                                                                                                                 |
|                                                                                                | Not soft                                                                                        | should not be soft in the mouth                                                                                     | 6                                                                                                            |                                                                                                |                                                                                                                     |                                                                                                                                                  |                                                                                                                                                 |
| <b>To touch</b>                                                                                | Not sticky                                                                                      | should not stick to the hands                                                                                       | 2                                                                                                            |                                                                                                |                                                                                                                     |                                                                                                                                                  |                                                                                                                                                 |
| <b>To touch</b>                                                                                | Not hard                                                                                        |                                                                                                                     | 7                                                                                                            |                                                                                                |                                                                                                                     |                                                                                                                                                  |                                                                                                                                                 |

| <b>Group: Women</b>                                                                            | <b>High quality characteristics C</b><br><i>characteristics that give a good, high quality product</i> | <b>Indicator of high quality characteristic W</b><br><i>here data available, describe characteristics (e.g . how sour)</i> | <b>Priority of high quality characteristic I</b><br><i>ndicate the rank, and note if simple or pairwise ranking</i> | <b>Poor quality characteristics C</b><br><i>characteristics that give a bad, poor quality product</i> | <b>Indicator of poor quality characteristic W</b><br><i>here data available, describe characteristics (e.g . how sour)</i> | <b>Varieties- GOOD</b> Include scientific names and indicate (L)-local, (I) improved older released variety or (N) new variety recently released | <b>Varieties- BAD</b> Include scientific names and indicate (L)-local, (I) improved older released variety or (N) new variety recently released |
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| <b>Characteristics of cooked/ready to eat final product (Step 4 will add more detail here)</b> | <b>IIQ28</b>                                                                                           | <b>IIQ28, IIQ30</b>                                                                                                        | <b>IIQ29</b>                                                                                                        |                                                                                                       |                                                                                                                            |                                                                                                                                                  |                                                                                                                                                 |
| <b>To touch</b>                                                                                | smooth                                                                                                 | It must be very smooth and appreciable                                                                                     | 3                                                                                                                   |                                                                                                       |                                                                                                                            |                                                                                                                                                  |                                                                                                                                                 |
| <b>To touch</b>                                                                                | Soft                                                                                                   | Soft on the hand, not hard, has to do with how you pour the water.                                                         | 5                                                                                                                   |                                                                                                       |                                                                                                                            |                                                                                                                                                  |                                                                                                                                                 |
| <b>To touch</b>                                                                                | Sticky                                                                                                 | When pounding and it sticks together without scattering/spreading                                                          | 10                                                                                                                  |                                                                                                       |                                                                                                                            |                                                                                                                                                  |                                                                                                                                                 |
| <b>To touch</b>                                                                                | Strong eba                                                                                             | The eba should be a bit strong because I don't add much water,                                                             | 10                                                                                                                  |                                                                                                       |                                                                                                                            |                                                                                                                                                  |                                                                                                                                                 |
| <b>To taste</b>                                                                                | smooth to swallow                                                                                      |                                                                                                                            | 10                                                                                                                  |                                                                                                       |                                                                                                                            |                                                                                                                                                  |                                                                                                                                                 |
| <b>To look at</b>                                                                              | White colour                                                                                           | The one that is pure white                                                                                                 |                                                                                                                     |                                                                                                       |                                                                                                                            |                                                                                                                                                  |                                                                                                                                                 |





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