

# Understanding how our ancestors agricultural practices can help improve food security



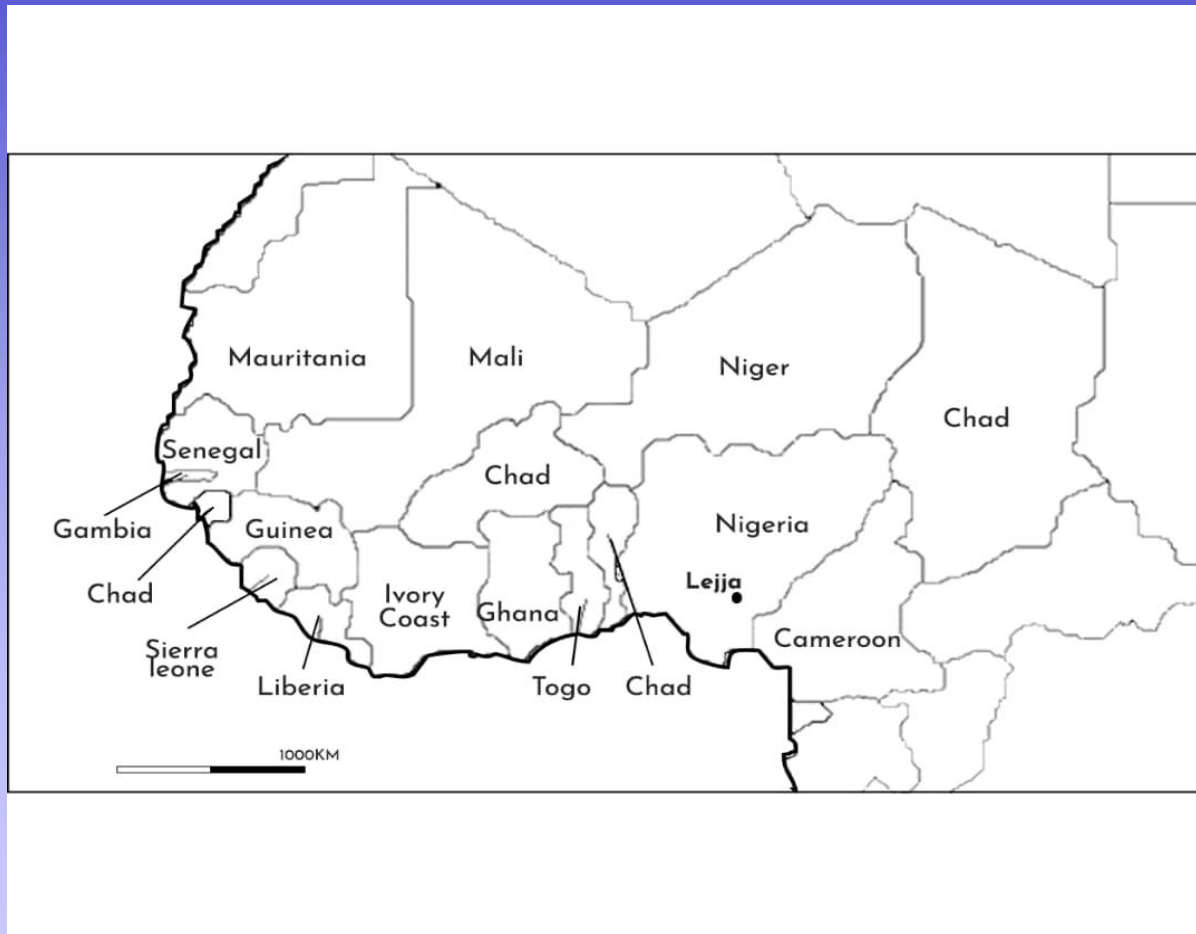
Chioma Vivian Ngonadi

# **Background Information**

**In the rough and hilly town of Lejja, Southeastern, iron smelting was an indigenous craft specialization that flourished from around 2,000 B.C.**

**Evidence in the form of relic furnace walls, extensive cylindrical slag blocks, tuyere fragments are visible on the landscape.**

# Lejja in the context of Nigeria



# Evidence of Iron Smelting Activities

## Cylindrical Slag Blocks



## Slag mound



# Otobo Dunuoka Village square Lejja



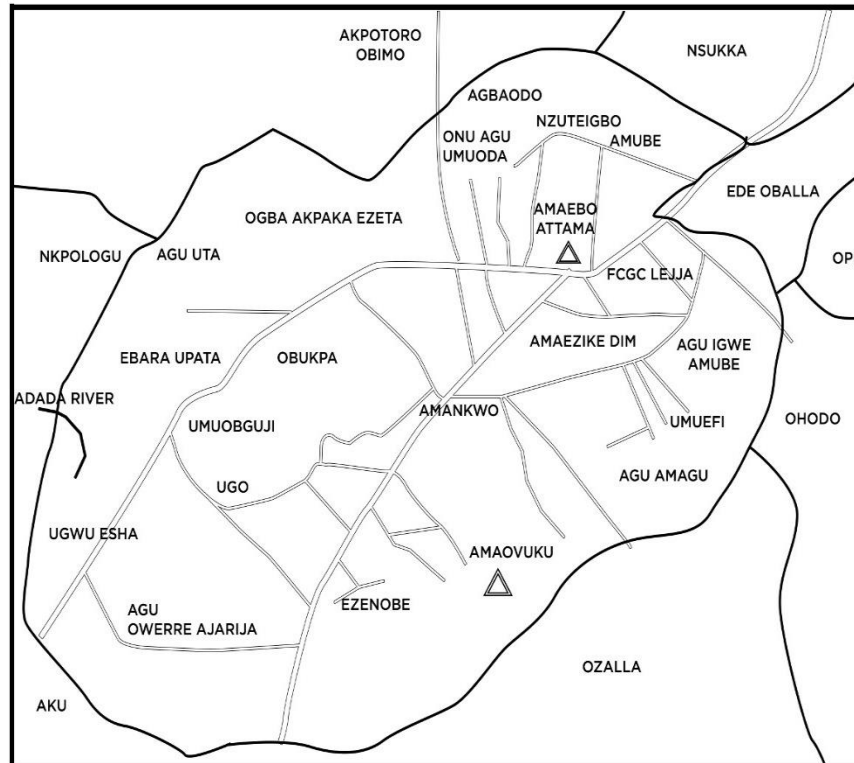
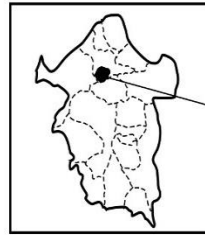
# Ceramics



## Research Aims

- This research seeks to examine the various plant food resources that were exploited in Lejja, SE Nigeria.
- Its primary aim is to understand how the West African iron smelters in SE Nigeria fed themselves and integrated with the quest for food in the past.
- This study takes a two-fold strategy by sampling known/ existing iron smelting sites and conducted limited survey and excavation of newly identified sites

# Research Areas



0 1 2KM

△ - STUDY AREA



# Methods

Survey



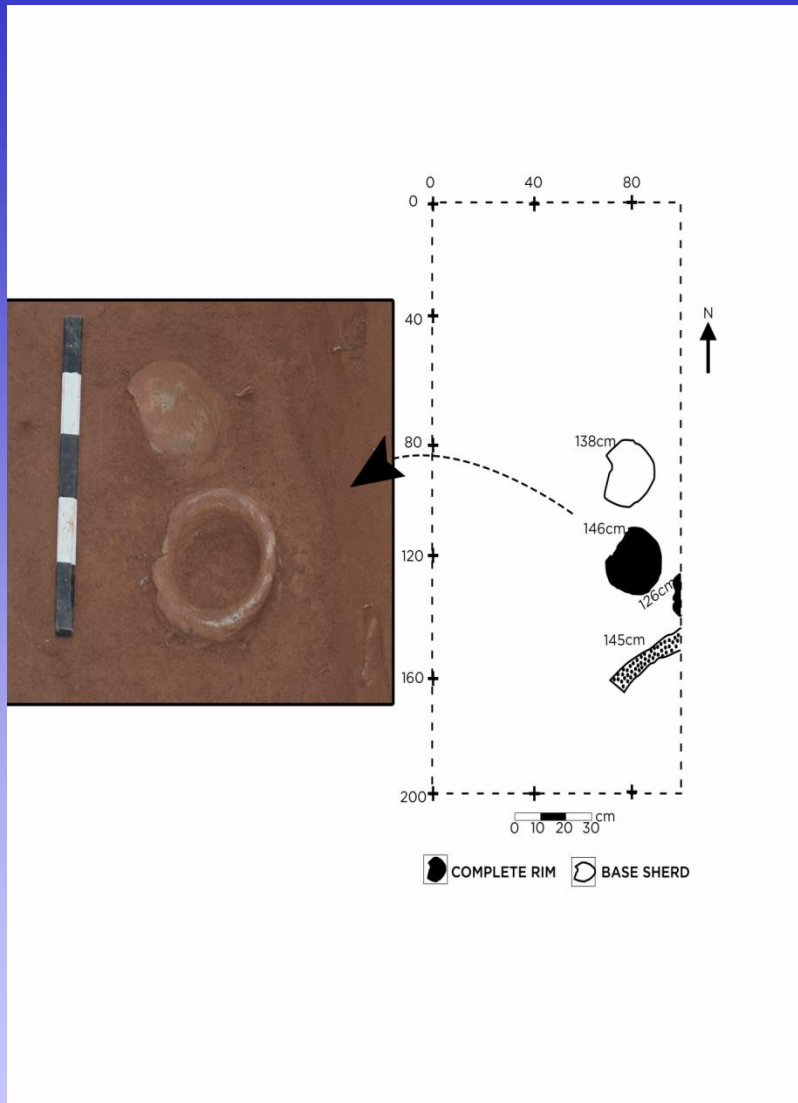
Excavation



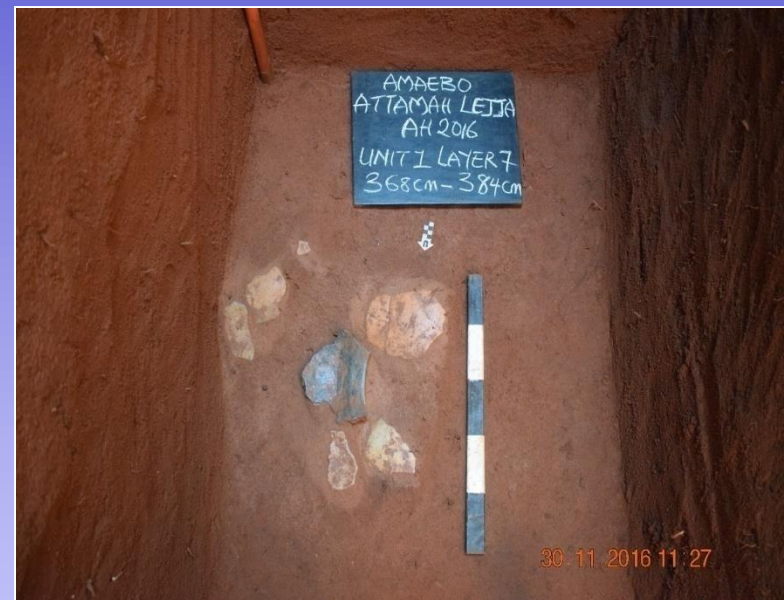
Flotation

# Excavation: Amaebo-Attamah

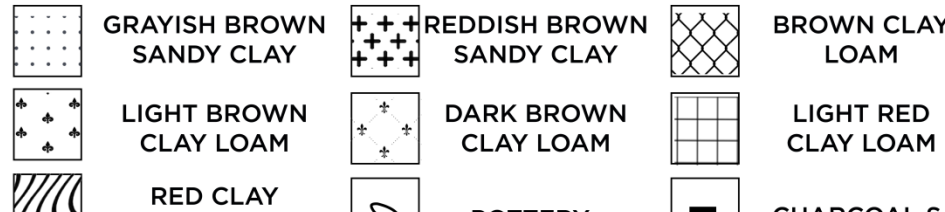
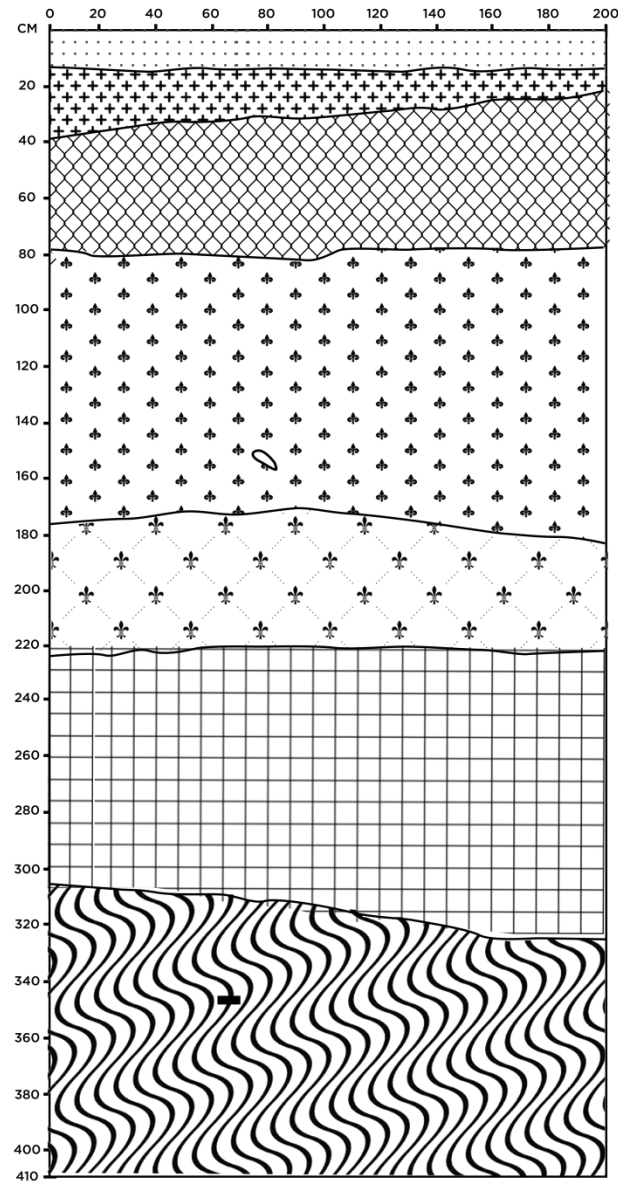




A complete pot rim and base



Clusters of potsherds at the depth of 375 cm



- **Excavation at this trench consists of 3 successive but distinct phases of use and 2 hiatus. Context 1,2,3 consists of the first phase with very low amount of slag, tuyere fragments and potsherds of incised and impressed decorated techniques.**
- **The second phase consists of context 4 and 5 and saw a gradual build up of occupation including numerous plants remains, potsherds perhaps reflect a transition phase however the single date from the site does not allow us to explore the speed of this transition in any detail. A hiatus occurred in context 5 with c. 48 cm of sterile.**
- **The final phase occurred in context 6 and 7 with a radiocarbon date of 1520± BP and involved a decrease in the number of iron working remains and potsherds. Most of the potsherds from this phase are undecorated . A second shallow hiatus of about 26cm occurred at this phase from the depth of 315 to 343.**

# Amaovoko





**Dense concentration of slag**





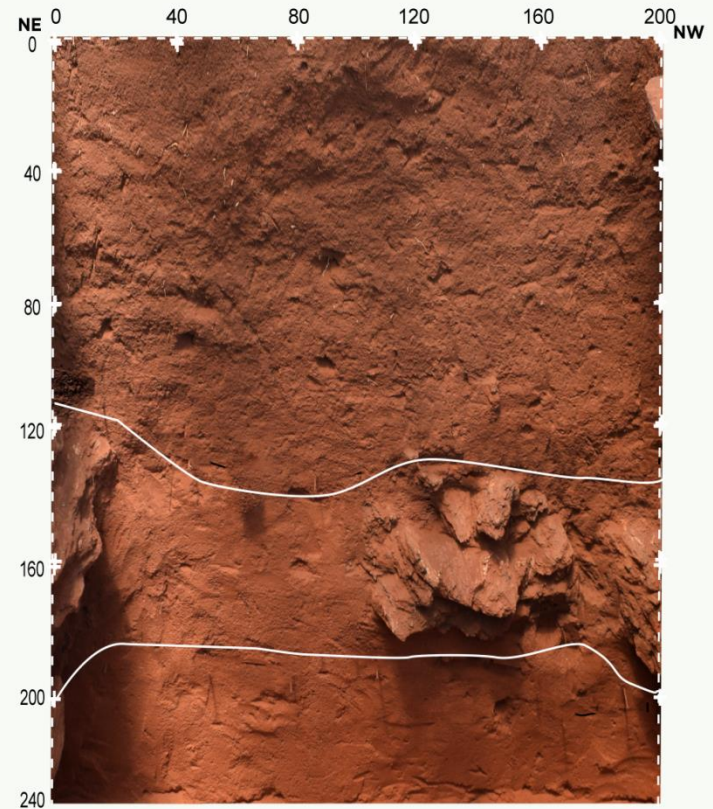
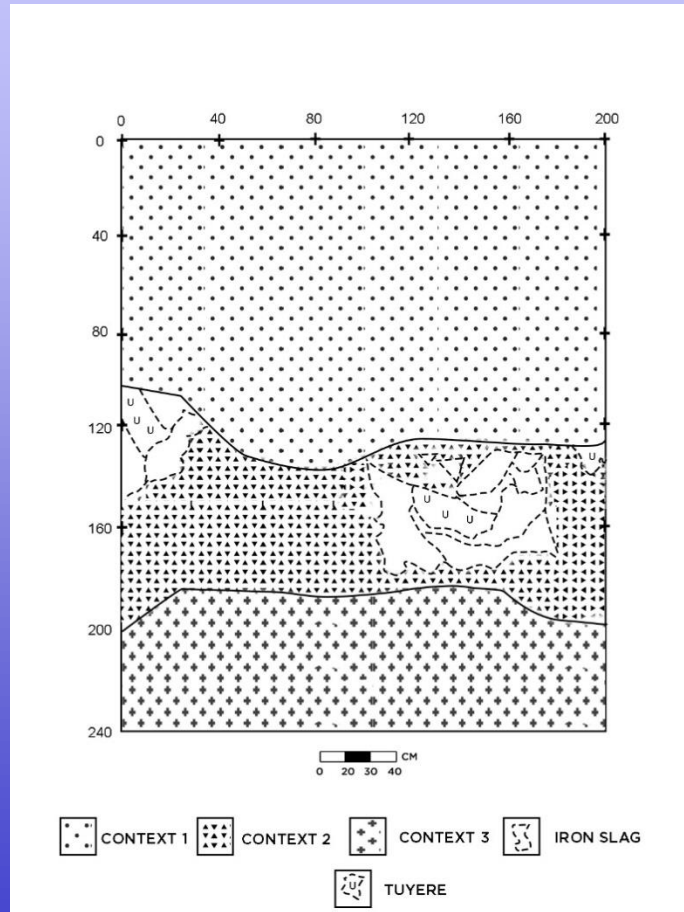
Cylindrical slag block



Cylindrical slag blocks at the village square



# Stratigraphy



➤ **This unit consists of three contexts and was dominated by iron working remains of slag, tuyere fragments, iron ores, furnace walls signifying that this might have been an iron smelting site.**

➤ **The summary of the excavated finds shows a single perhaps phase of occupation which is distributed throughout the stratigraphic sequence.**

➤ **A single radiocarbon date of  $2110 \pm 30$  BP was recovered from context 2 in association with a charred Fabaceae**

# Flotation



## Findings: Archaeobotanical

- At both sites, we have evidence of *Elaeis guineensis* (oil palm), *Syzigium aromaticum* (clove), *Celtis* sp., parenchyma fragments (tubers) among others
- Both sites were dominated by oil palm. *Celtis* sp., parenchyma and *Syzigium aromaticum*. Of interest is the recovery of a charred perianth and Fabaceae which was recovered from Amaovoko.
- The parenchyma fragments notable at both sites were identified on the basis of their microscopic structure. Some of the parenchyma have distinct cell structures with simple perforations.

# Plant remains



Myrtaceae (*Syzygium aromaticum*)



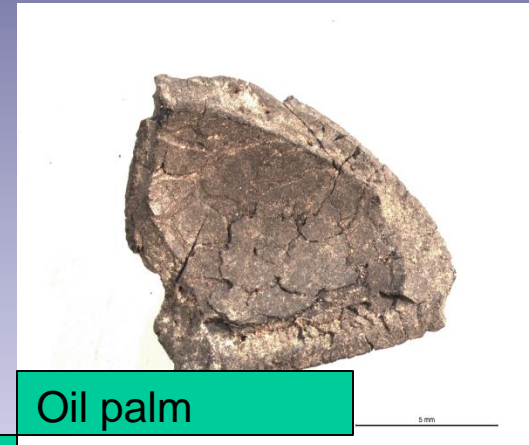
Charred perianth



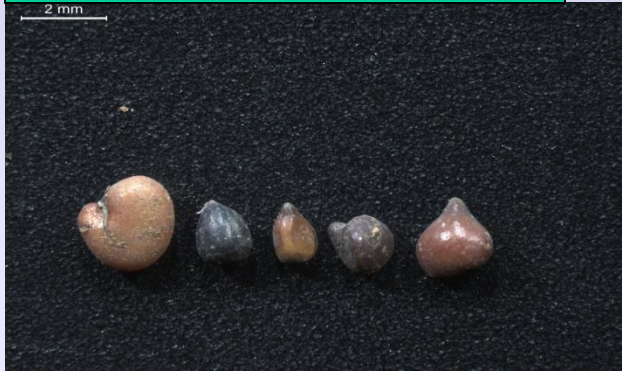
Cannabaceae (*Celtis sp*)



Fabaceae (Legume)

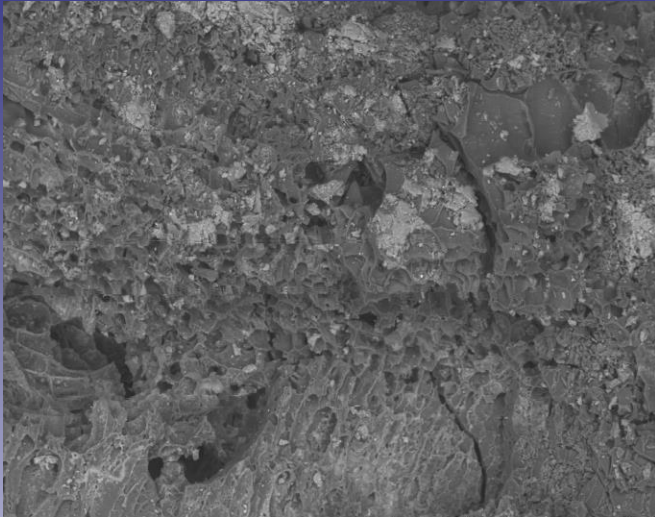


Oil palm



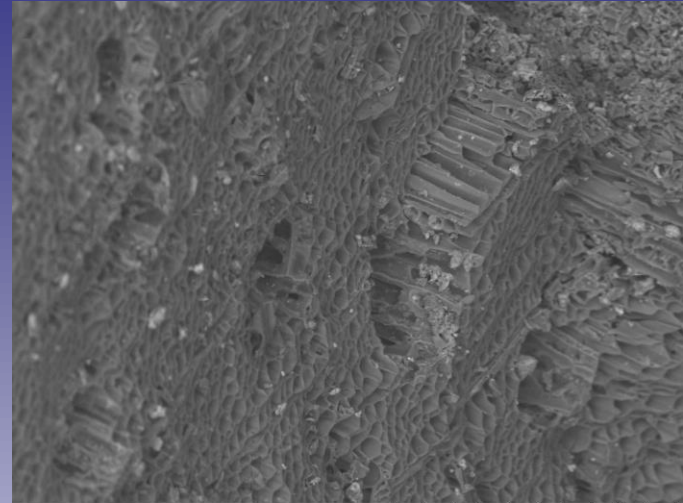
Asparagaceae (*Dracaena Draco*)

# Parenchyma



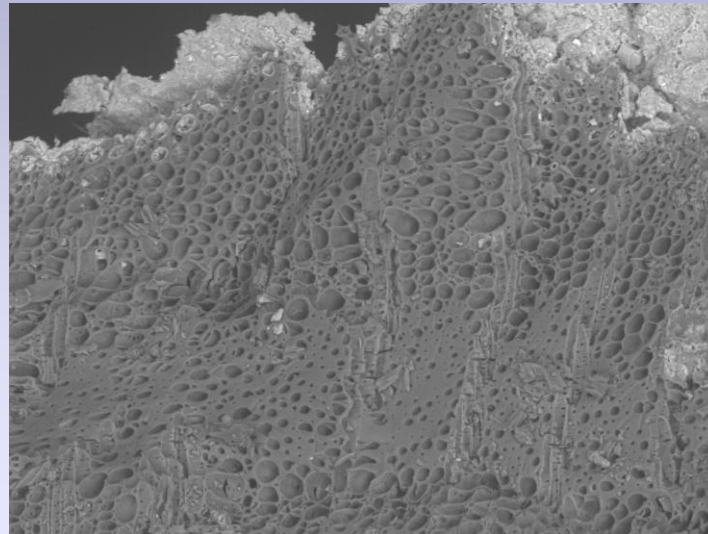
2019/06/12 AL x250 300 um

Fragment 3



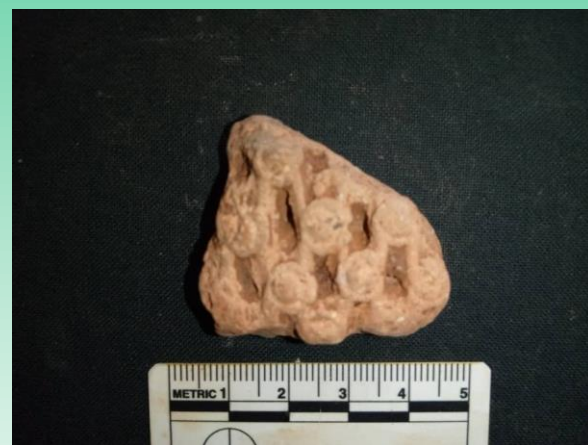
2019/06/12 AL x400 200 um

Fragment 7



AL x400 200 um

# Amaebo- Attamah Site - Pottery

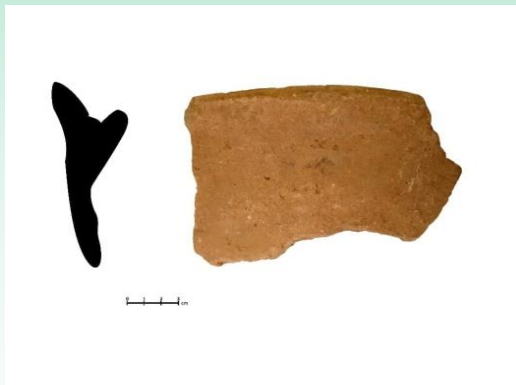


# Amaovoko Site - Pottery





# Pottery vessel forms from both sites



# Iron working remains



Tuyere



Iron slag

## **Tracing Food Security in Lejja c.2,000- 1500 BP**

**The data presented here is derived from six months of archaeological survey, excavations and analysis of plant remains carried out at Laboratories in Cambridge and Germany.**

**The result of the analysis yielded a relatively small samples of plant remains which include Fabaceae , Celtis sp., oil palm and parenchyma among other plant remains. Oil palm (*Elaeis guineensis*)and parenchyma (tubers) which will be the focus of the discussion.**

**These two crops are the main crops recovered archaeological via flotation from both sites in Lejja over time. Both of these crops are also indigenous West African crops which can tell us about food security, food availability and surplus among other factors from an archaeological contexts.**

**.**

## **Tracing Food Security in Lejja c.2,000- 1500 BP**

### **Oil palm (*Elaeis guineensis*)**

**Contemporary and ancient population in West Africa use oil palm in varieties of ways for food, fuel, cooking, medicinal and cosmetic purposes. The occurrence of oil palm in archaeological deposit indicates its importance in the subsistence economy of the people of Lejja.**

**The analysis of these plant remains especially oil palm shows that oil palm may have formed the mainstay of the subsistence practices in Lejja as shown from the number of endocarps that were recovered from the first context to the last context.**

**Oil palm has a very short reproductive cycle and as such, it creates an important crop species that can be harvested all year. They are not seasonal when compared to other crops like maize.**

## **Tracing Food Security in Lejja c.2,000- 1500 BP**

**As a result, , Lejja farmers may have chosen to focus more on risk reducing crops that is drought resistant like oil palm and as the same time yields more. Other crops yield less crop, are seasonally present and more time consuming**

**Like oil palm, tubers (yam, cassava ) are harvested all year round in southeastern Nigeria. Due to the short growing cycle of yam, it could have produce double the yield of indigenious grains like pearl millet, finger millet e.t.c.**

**Given the importance of yam in the contemporary Nigerian society, it is expected that in times in crisis, food shortage, people would rely much more on yam. As it will produce more food in shorter amount of time and mature quickly during the time of food scarcity than other crops.**

**The evidence of oil palm, tubers confirms the continuity of use of these crops in SE Nigeria and both crops must have contributed greatly to issues of food security in the past.**

# Appreciation

**Gates Cambridge Scholarship**

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**Andrew Sherrat Fund**

**Cambridge Philosophical Society**

**My supervisors- Professor Martin Jones and Dr. Matthew Davies**

**Thank you for listening**