

Fried Plantain: Dodo - Alloco

Key Findings from RTBfoods in Period 2

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(.. and Team)



Countries of Activity Implementation

WP1-Act.3

Surveys

WP1-Act.4

Processing
Diagnosis

WP1-Act.5

Consumer
Testing

WP2/WP3 Lab.

WP4 Fields

WP5 On-Farm
/Advanced Trials



Institutes & Main Scientists Involved



- **IITA** – Nigeria (D. Amah, B. Teeken, E. Stuart)
- **CNRA** – Côte d'Ivoire (S. Traore, A. Kouaou, D. Pokou, C. Ebah, S. N'Nan Diby)
- **CARBAP** – Cameroon (G. Ngoh)

Activities for Period 2 - Nigeria



● WP1

Activity 1

- SoK (desk study, key informant interviews, report)

Activity 3

- Modified end user survey; sampling, survey, analysis and reporting



Context

- Focus is fried plantain (*dodo*) but adapted to also consider:
 - other predominant plantain products
 - role of bred plantain hybrids (improved plantain varieties) disseminated in Nigeria



WP1



SoK Findings

- Plantain uses; fried (*dodo*), boiled, roasted (*boli*), chips, flour (*amala ogede*), porridge/pottage



- Strong regional differences in preferences for plantain products - fried plantain more prominent in cities, plantain flour for '*amala ogede*' in Southwest, less in South South
- Increased awareness on health implications
 - *amala ogede* as healthy food for diabetics
 - non fried plantain products over fried products (health benefits)

SoK Findings

- Important quality characteristics
 - Bunch size
 - Finger size
 - Pulp colour & texture
 - Ripening stage (determines quality and processing)
 - Mostly ripe (fried) in South West and green/unripe (pounded, boiled or porridge) in South South
- No evidence of varietal preferences and their role in production, processing (*all plantain varieties can make all products*) and marketing



SoK Findings

- *Dodo* is best prepared at ripening stage 3-5 with ripe plantain which is still *firm when touching it, stays firm when upon frying and come out dry (not oily) when done*
- Limited information about prevailance/acceptability of hybrids, and possible use for specific plantain products
- Men and women play different roles in production; female domnated in South South and male dominated in South West
 - Women generally play a role in processing and marketing but revenue control is male dominated



Survey Itinerary



- July – August 2019, South West - Osun, South South - Delta and Rivers states

| Regions surveyed | List of Localities: Cities Small Towns Villages | Nb of Individual Interviews | | Nb of Focus groups |
|---------------------|--|-----------------------------|---|--------------------|
| | | M | F | |
| Osun State | Ago-Owu | 8 | 3 | 2 |
| | Patara | 2 | 8 | 2 |
| | Ogudu | 7 | 3 | 2 |
| | Akola Alaerebere | 6 | 4 | 2 |
| Delta State | Isele Uku | 1 | 9 | 2 |
| | Ossissa | 5 | 5 | 2 |
| | Agoloma | 5 | 5 | 2 |
| | Umeh | 5 | 5 | 2 |
| Rivers State | Choba | 4 | 7 | 2 |
| | Omoku | 6 | 5 | 2 |
| | Abua | 6 | 5 | 2 |
| | Etche | 6 | 5 | 2 |

Per state:

- 2 senatorial zones per state & 2 communities per senatorial zone
- 4 market interviews in a secondary town
- 4 market interviews in a big city

Per community:

- 1 key informant, 1 market interview

leaf sampling done to distinguish PITA hybrids from other varieties for an initial impression of adoption

Survey Highlights

Varieties grown in order of importance

| | Total | Women | Men |
|--------------------------------|-------|-------|-----|
| Osun | | | |
| <i>Agbagba (nla/gidi)</i> | 82 | 35 | 47 |
| <i>Koloko</i> | 42 | 16 | 26 |
| <i>Agbagba dudu</i> | 9 | 6 | 3 |
| Delta | | | |
| <i>Main plantain</i> | 29 | 14 | 15 |
| <i>Beribe(main plantain?)</i> | 17 | 11 | 6 |
| <i>Ogede une/Ogede-Jioko</i> | 15 | 12 | 3 |
| Rivers | | | |
| <i>Main plantain (Akirima)</i> | 48 | 24 | 24 |
| <i>Agric/improved variety</i> | 24 | 7 | 7 |
| <i>Mpiele</i> | 13 | 10 | 3 |



Agbagba



Akirima



Unknown agric



Ogede fufu








Ogede pupa

Survey Highlights



Characteristics of crop – good quality product

| Characteristic | Women N=62 | Men N=62 | Osun State N=41 | Delta State N=40 | Rivers State N=43 |
|--|---------------|-------------|--------------------|---------------------|----------------------|
| Big finger  | 34 | 33 | 20 | 21 | 26 |
| Deep green peel | 25 | 21 | 11 | 22 | 17 |
| Matured  | 20 | 20 | 6 | 16 | 18 |
| Big bunch  | 16 | 19 | 11 | 13 | 11 |
| Black/dry tip | 14 | 11 | 11 | 11 | 5 |
| Yellow pulp colour  | 13 | 15 | 8 | 11 | 9 |
| Strong/firm  | 10 | 2 | 3 | 7 | 3 |
| Split peel | 9 | 4 | 1 | 7 | 5 |
| Full pulp | 6 | 1 | 1 | 2 | 4 |
| Fresh | 4 | 6 | 1 | 3 | 2 |
| Shiny | 3 | 3 | 4 | 2 | |
| Male bud fallen off | 3 | 1 | | 4 | |
| No edges on the finger | 3 | 5 | 6 | | 2 |

Survey Highlights



Characteristics of crop - poor quality product

- Immaturity of plantain (71.4%)
 - light green peel (17.9%), white pulp (10.7%), white tip (3.6%), gummy taste (3.6%), sharp edges on plantain finger (3.6%)
- Small fingers (35.7%)
- Small or light (not heavy) bunches (17.9%)
 - spacing between the hands on the bunch (3.6%)
- Bruises on peel (10.7%), spots on the peel (3.6%), plantain with uneven colour (7.1%). Rot on either the peel or plantain tips (7.1%)
- Presence of pests and diseases (7.1%)



Survey Highlights

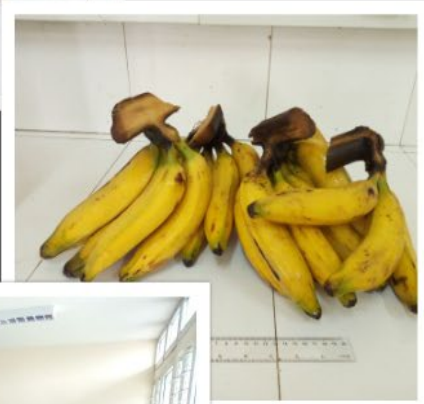


Variations of products

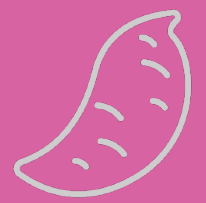
- Roasted plantain, fried plantain, boiled plantain and plantain chips popular across Nigeria
- Other products popular in specific regions e.g.
 - Osun State: plantain flour for *amala* (rural population)
 - Delta and Rivers State: plantain porridge and plantain pudding and for Rivers State - pepper soup
- Processing steps are generally similar and dependent on individual preferences

Varieties/types of crop demanded

- Post traders and customers do not differentiate plantain varieties '*plantain is plantain*'; differences small/big fingers, ripe/unripe
- In Rivers few traders differentiate local and improved varieties based on fruit size, water content, taste and storability



WP5



On-Farm Trials & Evaluation of Advanced Material



On-farm / Advanced Trials

- Trials carried out in 2018 at DOUGBA plantation in Azaguié
 - 4 varieties [2 traditional - Horn 1 (11 bunches) and Orishele (10 bunches) and 2 improved - PITA 3 (66 bunches) and FHIA 21 (42 bunches)]
 - agronomic traits measured
 - sensory evaluation
- New plots for 2020
 - 7 more varieties (French dark, 3 Vert, Big Ebanga, Saci, Banadyshie, BITA 3 and SH 3640) introduced in May 2019 and October 2019 for sampling in 2020

On-Farm Trials & Evaluation of Advanced Material



Participatory Evaluations of Pre-released Material

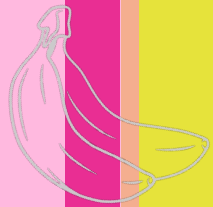
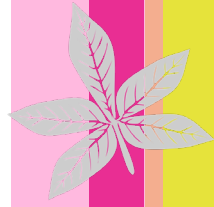
- 4 varieties planted in 2018 evaluated for sensory characteristics; calibrated regarding frying time, temperature, shape and width
 - At each level of calibration, the fried plantain was subjected to 30 untrained panelists (men and women) to appreciate the best *alloco*. Results showed that ideal time, temperature, width and shape of plantain were 15min, 150°C, 1cm and cubic shape respectively
 - Ripening stage was determined; best ripening stage for the improved varieties was yellow with green ends for PITA 3, and yellow for FHIA 21 similar to the 2 controls
- Consumer test was done by 308 panelists
- Test for descriptive profile of *alloco* is still in progress

Conclusion on Perspectives for all WPs



- WP1 – Nigeria
 - Survey report to be submitted and finalized for period 3
 - Activities (and funds) for plantain in Nigeria limited to WP1 activity 3 survey
 - Possible collaboration for development of spectral calibration for quality traits in plantain (WP3 / RTB Processing and Nutrition clusters)
- WP5 – Cote D'Ivoire
 - Continue trials and sensory evaluations to include 7 additional varieties
- IJFST Publication: to be discussed based on final survey report

***Thanks for
listening !***



RTB foods