(Sustainable Weed Management Technologies for Cassava Systems in Nigeria Project)

An Overview of Cassava Weed Management Project – Inception to Present

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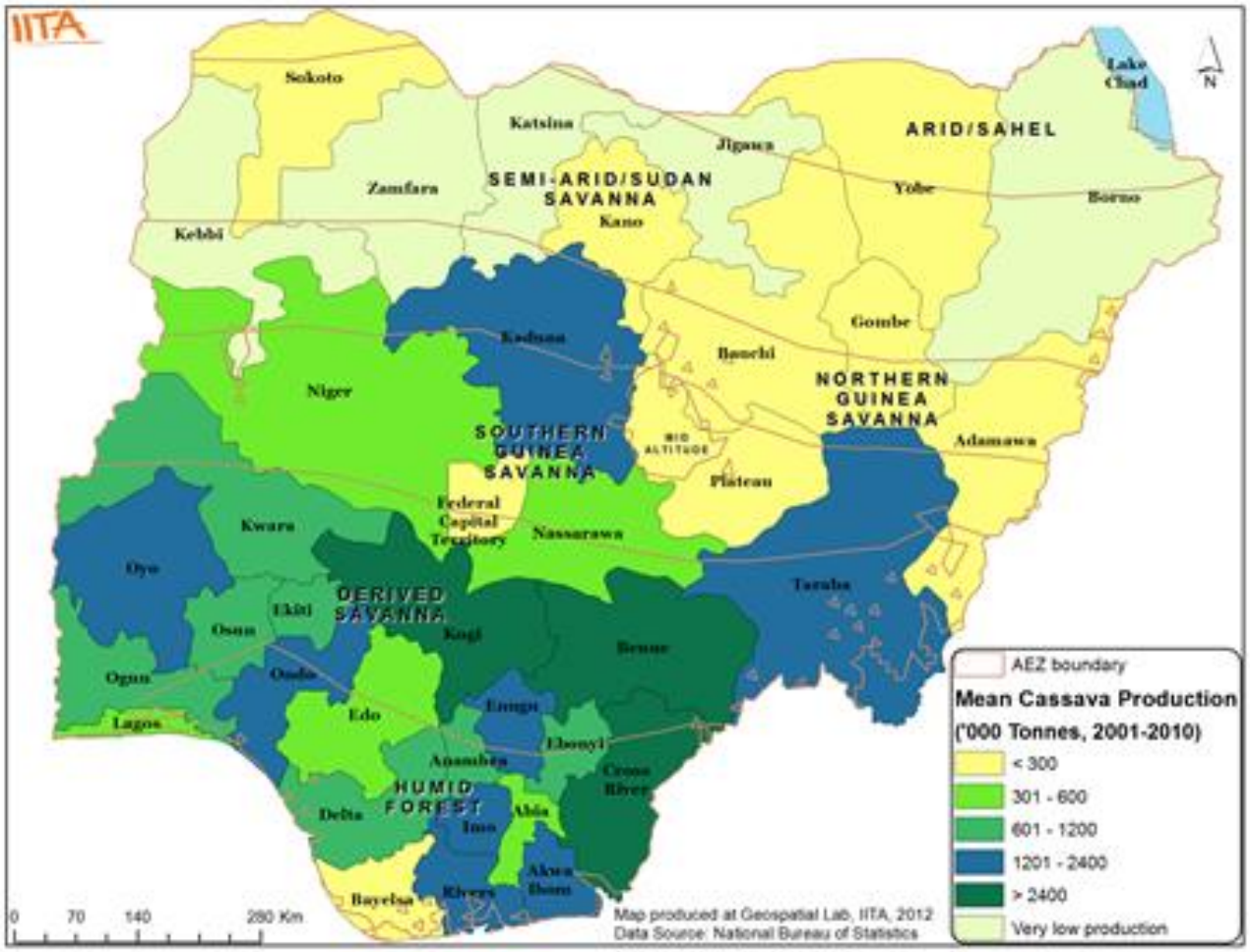
Outline

1. Why cassava, Nigeria and weed control.
2. Project Goal and Purpose.
3. Project components.
4. Implementation Strategy.
5. Major Project Outputs.
6. Key Beneficiaries.
7. Outscaling to Reach Millions.

Why cassava, Nigeria and weed control?

- ❑ Most populous nation in SSA
- ❑ Global leader in cassava production
- ❑ Major constraint to cassava production/productivity

Production and Agroecological Zones of Cassava Production in Nigeria



- Global leader with over (54.8) million tons per annum (FAOSTATS 2014)
- About 4.5 million farmers in Nigeria are engaged in cassava farming.

Investment Benefits of Cassava in Nigeria

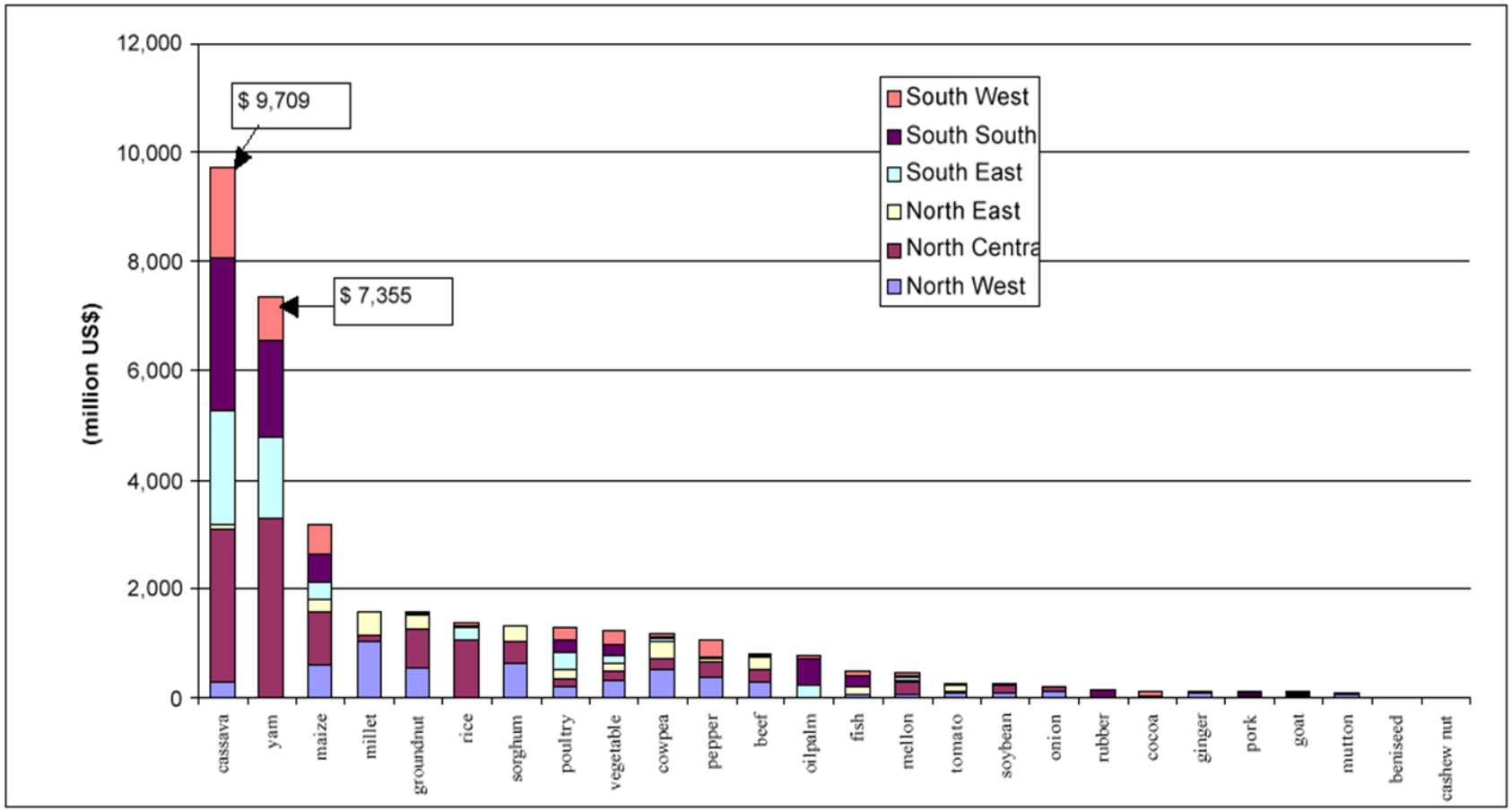
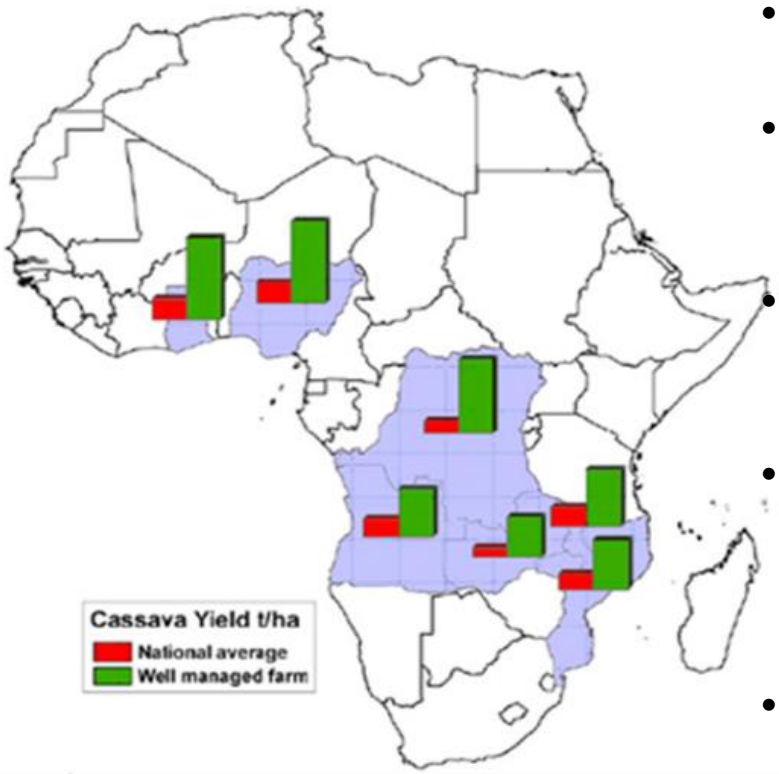


Figure 7.1: From DREAM analysis: identifying for investments in research and development in Nigeria – based on streams of benefits to producers and consumers by 2015 as a result of existing portfolio of technologies.

Yield Gap in Cassava Production in Major Producing Countries



- National average yield is 9.1 t/ha
- Less than half of those of leading countries in Asia
- Less than half of those typical from researcher-run trials in Nigeria
- Diverse factors are responsible for low productivity on the about 4.5 million cassava farms
- Poor weed management is generally among the principal factors (untimely and ineffective weed control).

Source: IITA, computed from FAOStat and IITA data

Weed Infestation of Cassava Fields

Cassava Weed Management Project

- Weeding takes 50-80 of the total labor budget of cassava farmers (500 hrs is needed to keep an ha of cassava weed-free per annum)

- Women contribute more than 90% of the hand weeding labor

- About 60% of farm children between the ages 0f 5-14 are forced to leave school and engage in weeding

- Weed control in cassava systems is much more demanding because the crop is in the field for a long time (12 to 18 months) and sown at wide spacing.

Implementing partners

Project Goal

- Help smallholder cassava growers achieve sustainable increases in their productivity and incomes through the development and adoption of improved weed control methods.

Project Purpose

- To develop improved and integrated approaches to weed management that reduce labour requirements and enhance the productivity of smallholders' cassava farms in Nigeria:

Cassava Weed Management Project

Project Components (5)

- Agronomy (crop density and weeding frequency trials including improved mechanical weeding options).
- Herbicide screening for efficacy and economic merit
- Integrated weed management that is effective and sustainable.
- Extension (including training on safe use of herbicides).
- Project Management, including communications and scaling up, monitoring and evaluation.

Duration: ***60 months (*****5 years)**

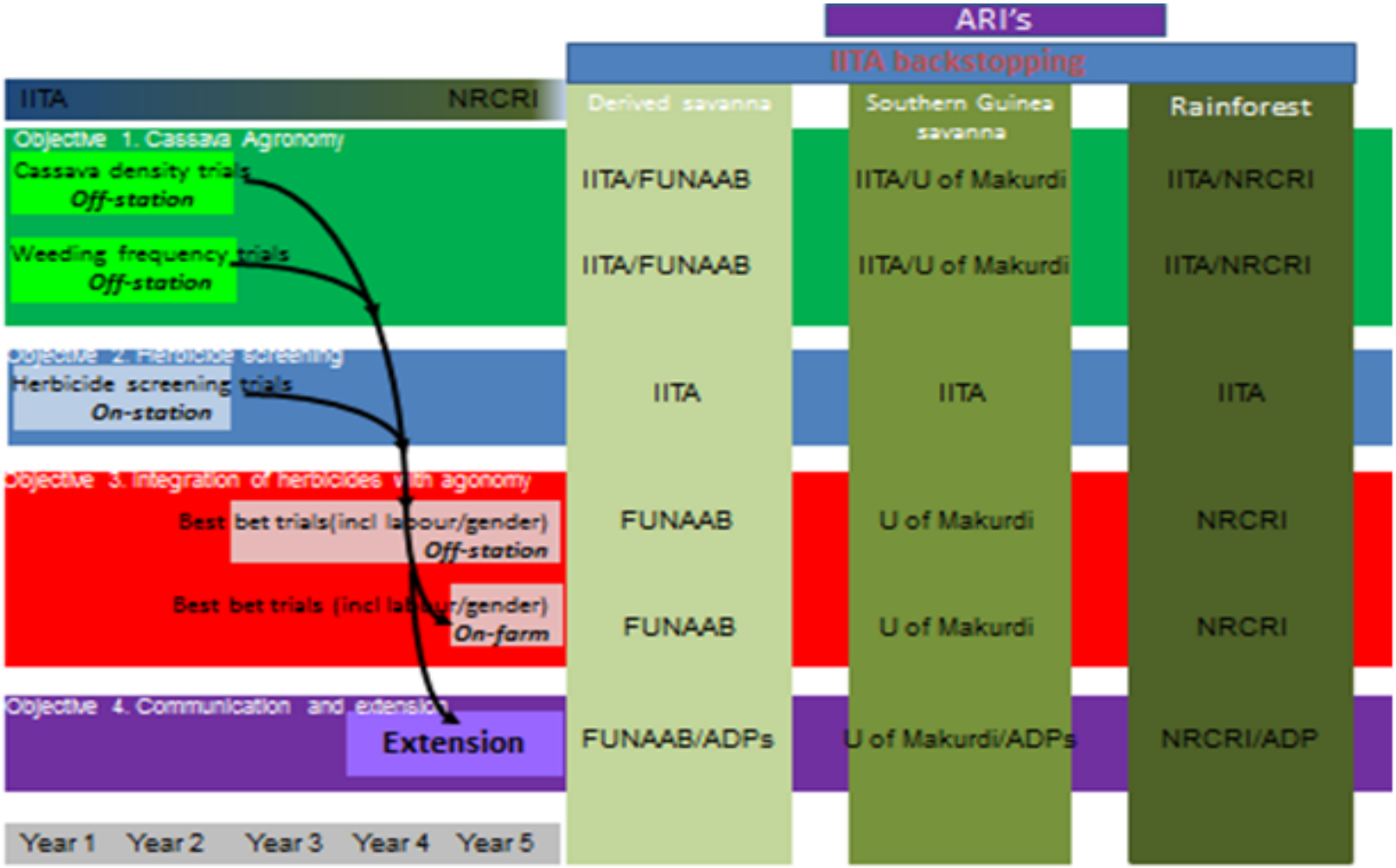
Amount: US$ ***7,656,326.00***

Implementing partners

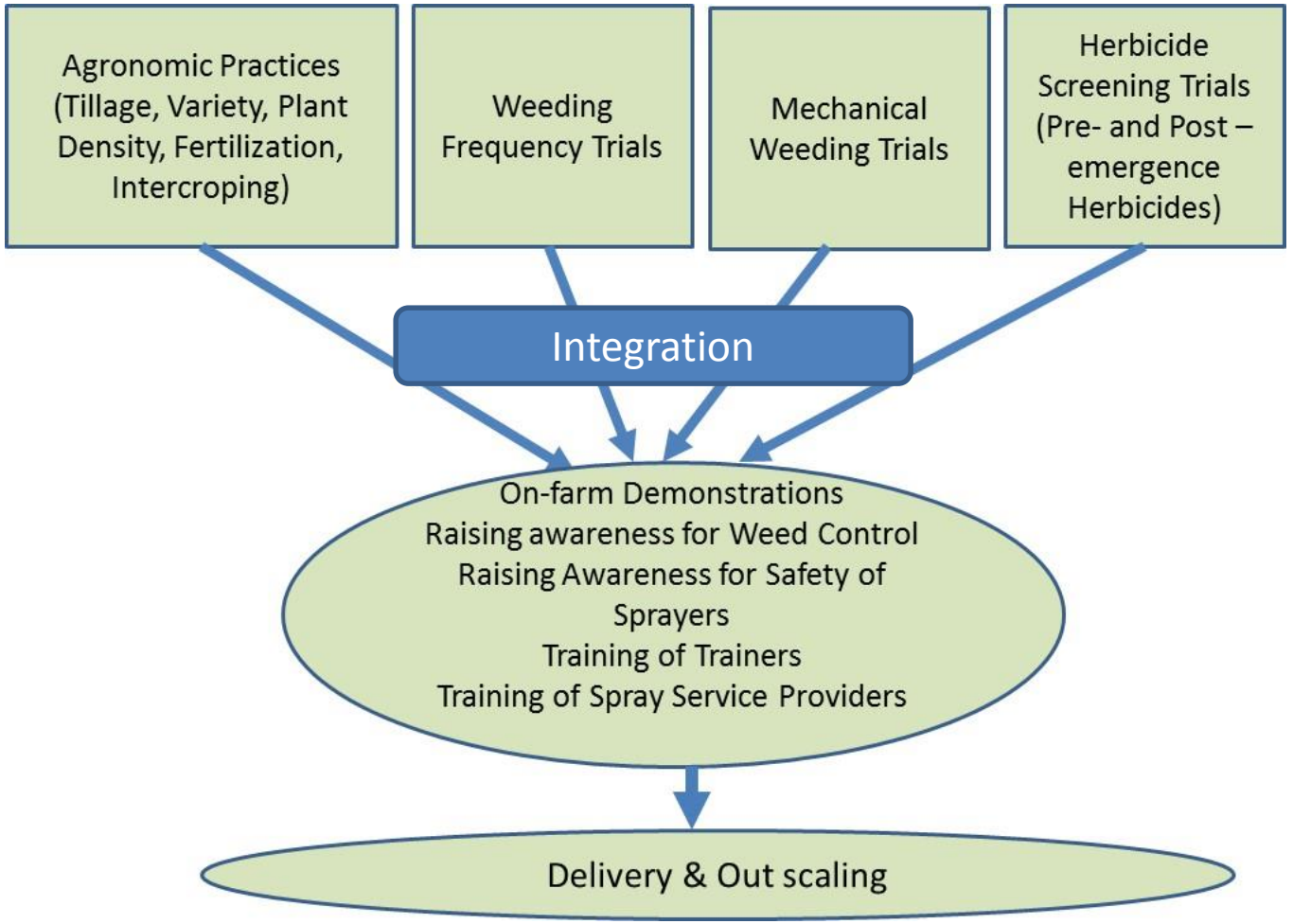
Where We Want to Get To

- New innovations in agronomy and herbicides that meet the needs of smallholder farmers.
- Relevant information generated for sharing with farmers to allow them to make their own decisions about which weed management options are best for their families.
- Formulation and negotiation of a full-scale 'investment project' for scaling-up across at least 20 states
- Ultimate aim is to minimize the drudgery of hand weeding by women and children and increase cassava productivity

Implementation Strategy



Sequencing of Activities



Cassava Weed Management Project

Executing Agenciy

IITA Transforming African Agriculture 50 1967 - 2017

Implementing Partners:

- NATIONAL ROOT CROPS RESEARCH INSTITUTE
- FEDERAL UNIVERSITY OF AGRICULTURE ABEOKUTA
- UNIVERSITY OF AGRICULTURE MAKURDI

State ADPs: Abia ADP, BNARDA, OGADEP, OYSADEP
NGOs: JDPM Oyo, JDPM Abeokuta, KOLPING
Regulatory Agencies: NAFDAC, NESREA, SON, FMARD
Chemical Companies: Bayer AG, Valent, Syngenta, Monsanto, Saro AgroSciences, CropLife Nigeria

Funds from:

BILL & MELINDA GATES foundation

Implementing partners

Major Project Outputs

- New best bet innovative weed management practices including improved mechanical weeding options, combining improved varieties, proper planting dates, plant populations, and plant nutrition, all coupled to intercropping and tillage options developed through well-focused trials in the three agro-ecologies where cassava dominates in Nigeria.

- Herbicides, meeting globally accepted conventions and safety thresholds appropriate for smallholders tested for efficacy and economic merit to help make weed control in cassava more efficient and effective.

- Any herbicide program developed integrated with good agronomic practices, i.e. integrated weed management, that is effective and sustainable.

Production of Cassava under Different Agronomic Systems in Nigeria

Multi-location factorial trials to identify best agronomic practices to suppress weeds

Factors:

- **Site** – minimum – 2 – contrasting conditions (soil, weeds)
- **Cassava variety** – 2 – one old well accepted, branching versus a new erect (non branching)
- **Tillage** – 2 – single disk harrow soil flat versus ploughing, harrowing and ridging
- **Intercropping** – 2 – cassava monocrop versus intercropping with maize at approx. 40,000 - 50,000 ha^{-1}
- **Fertilizer** – 2 – Nil versus 60 N, 16 P, 75 K kg ha^{-1}
- **Cassava plant density** – 6 – 10000, 11111, 12500, 14286, 16667 and 20000



Agronomy Trials.

- **Tillage [MT, Ridge].**
- **Variety [TMS 30572 {branching}, TME 419 {erect}].**
- **Cassava density [10, 000 to 25, 000 plants/ha].**
- **Cropping System [Sole, Cassava/Maize].**
- **Fertilizer [-Fertilizer, +Fertilizer].**

✓ **8 sites [in Abia, Ogun, Oyo, Benue States]**

✓ **2 seasons & 2 years**

Mechanical Weeding of Cassava

- On-farm demonstration started in 2016:

8 sites on ridged and flat soil with gender included.

Four treatments:

- ✓ Large mantis
- ✓ Small mantis
- ✓ Long handle hoe
- ✓ Short handle hoe (farmer practice)

Herbicide Screening Trials

- Chemicals
- Chemical companies
- CropLife Nigeria
- National Partners
- NAFDAC
- NESREA
- FMARD
- Purdue University

Due diligence

49 Pre-emergence herbicides
33 Post-emergence herbicides)

4 locations, 2 seasons (Ibadan)
49 Pre-emergence herbicides (3 reps)
33 Post-emergence herbicides (3 reps)

2014	2015
22 Pre	12 Pre
19 PostE	6 PostE

Fierce (0.32kg/ha) at 10WAT without post emergence treatment

Implementing partners

Cassava Weed Management Project

On-farm demonstrations (2016) = 50 sites

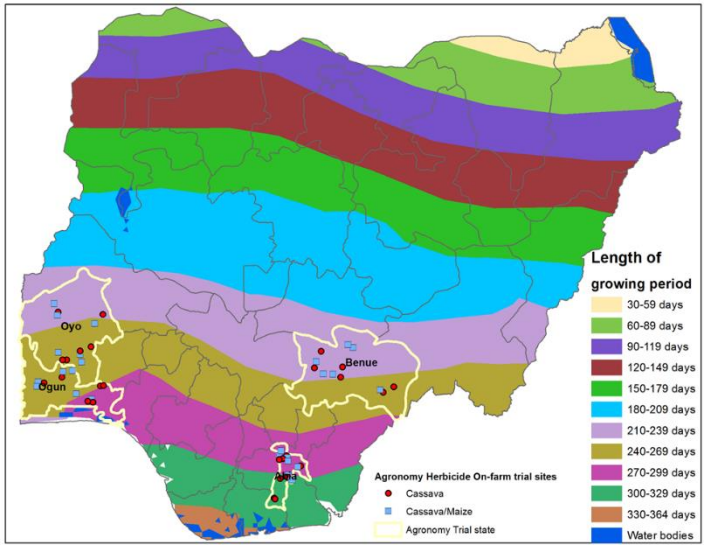
25 cassava/Maize sites
(Abia = 6; Benue = 6, Ogun=6, Oyo=7)

25 Cassava mono crop sites
(Abia = 6; Benue = 6, Ogun=6, Oyo=7)

On-farm demonstrations (2017) = 139 sites (34 each in Abia, Benue and Ogun States and 37 in Oyo State

67 cassava/Maize sites

72 Cassava mono crop sites



Map showing sites for on-farm demonstrations (cassava monocrop and cassava/maize intercrop).

Implementing partners

Cassava Weed Management Project

- Farmers' Field Days

- Formation and training of Spray Service Providers in 50 sites at community level

Project Management

- ARWPM and SC Meetings
- Joint Quarterly Review Meetings
- Baseline Study
- Monitoring and Evaluation
- Project Management Trainings of Project Partners
- Web Portal is Operational

Cassava Weed Management Project

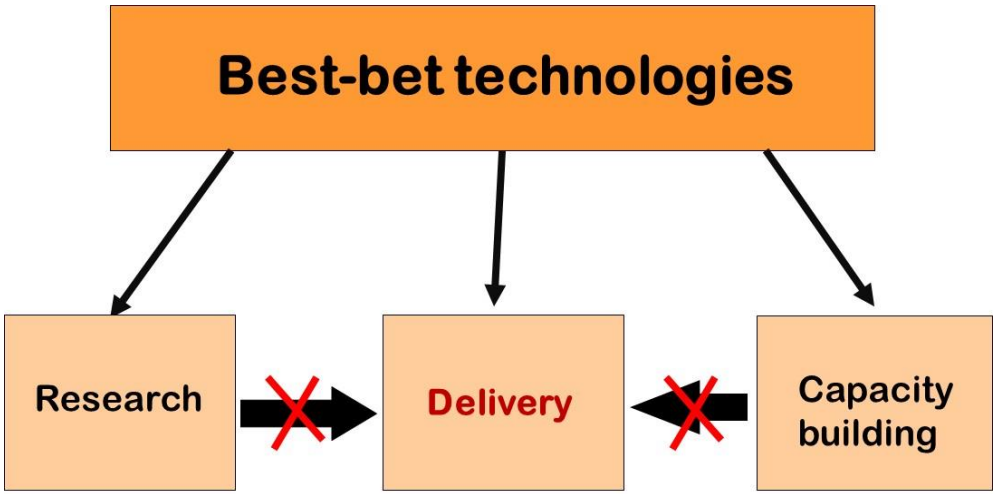
Key Beneficiaries

- Over a five-year period, project provides knowledge to about 125,000 Nigerian cassava farm families with better crop and weed management know-how that will minimize the drudgery of hand weeding by women and children and increase cassava productivity.

The last mile

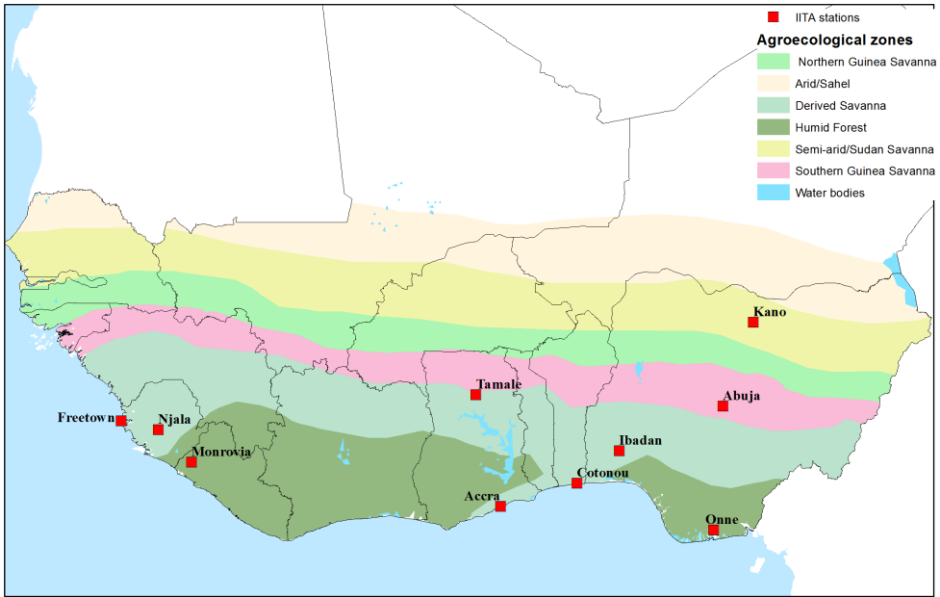
- Develop an investment project to scale-up across all of Nigeria the extension component using modalities and lessons learned from the project (working with Partners).

Reaching the millions farmers in Africa?



Scaling up, out, down? Missing links?

Similarities of Agroecological (Impact) Zones in W. Africa



Thanks for your Attention