Scaling Sweetpotato Seed Systems in Uganda: an analysis of the accelerators and brakes

HarvestPlus
Better Crops • Better Nutrition

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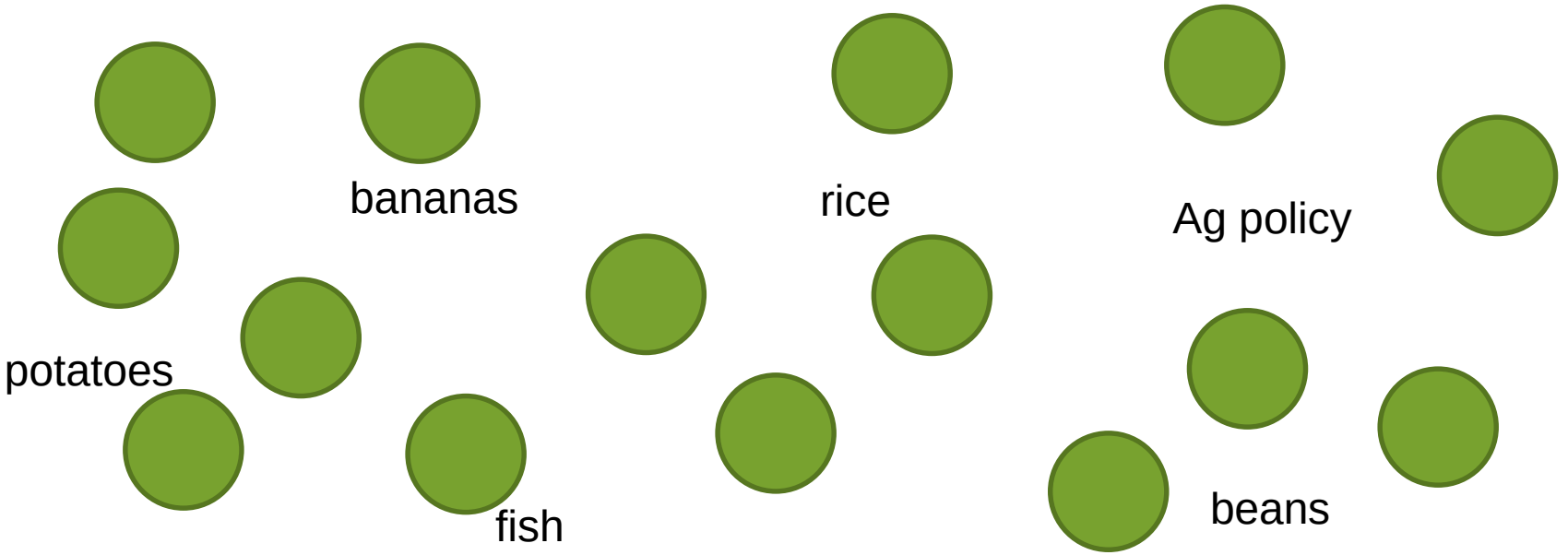
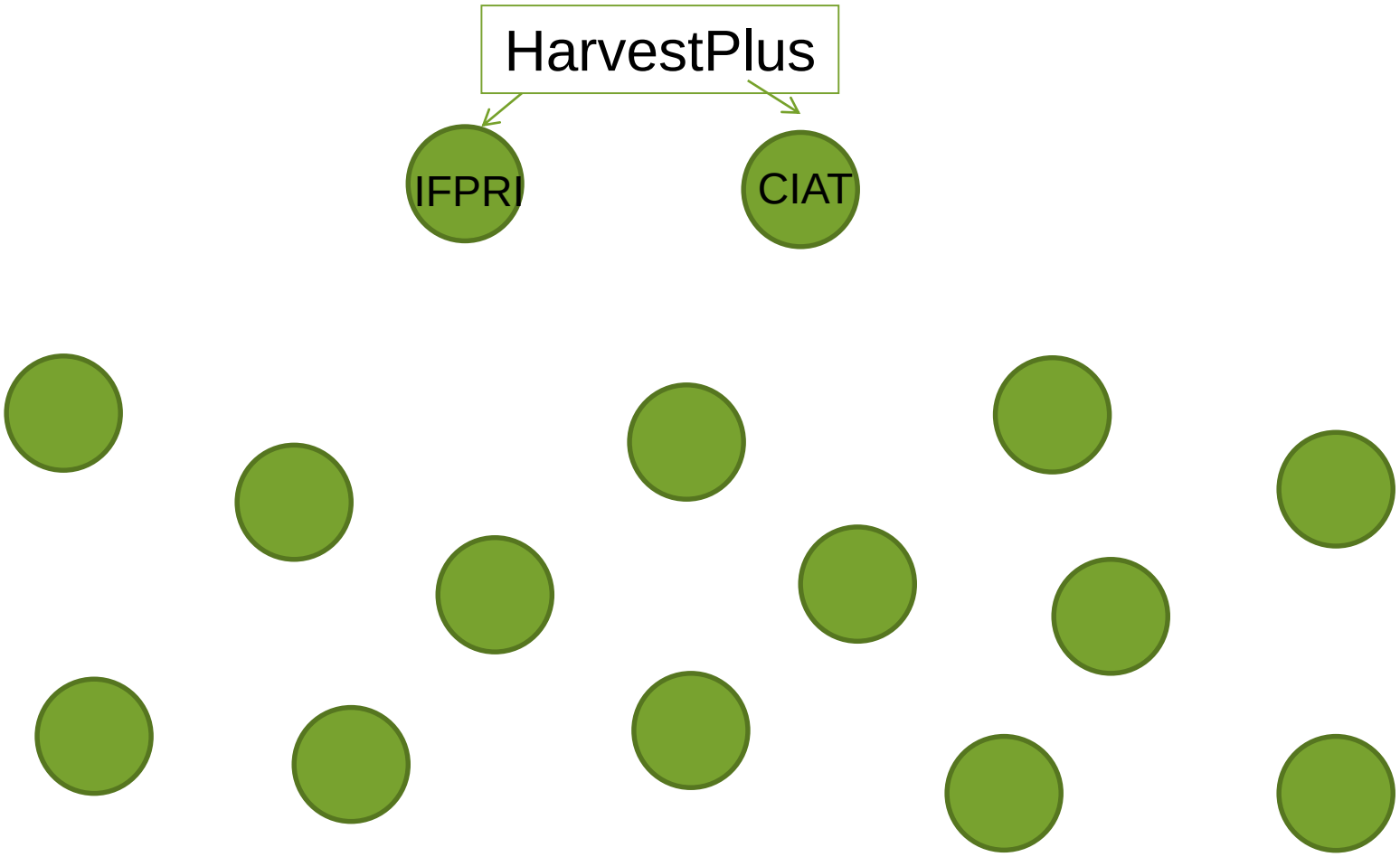
CGIAR

HarvestPlus

- 15 centers that do research on different aspects of agriculture



HarvestPlus – a program managed by 2 of the CG centres



What is Biofortification?

The process of improving the nutritive value of staple foods through breeding

Content of the presentation

- High lights of Africa & Uganda's seed sectors; relevance to sweet potato seed systems
- Brief of scale of Harvest Plus Vine dissemination in Uganda
- Suggested accelerators and brakes for the sweetpotato seed systems in Uganda

Seed acquisition, Africa context

- Sample size (9660) in six countries
- A total of 90.2% ; informal access
- About 50% from local market and 55% paid cash , less for vegetative materials
- Key Influences: Specificity of variety, complexity of farming systems and policy environment,
- S.M Macguire, 2016.

Uganda's Seed Industry

The Informal Seed Sector

- Local/traditional or farmer seed system.

- Seed does not come from planned seed production. It represents a part of the grain crop.

- *Involves farm saved seed.*

- - Lower level organization,
  - Lower level institutional development,
  - Lack functional specialization.

- A wide variety of exchange mechanisms, and Traditional exchanges of information

Composition of the Seed Industry

Formal Seed Sector

- Comprises public organizations and private seed companies.
- Clear distinction between “seed” and “grain”.
- Activities are institutionalised,.
- Activities are specialized
- Seed trade is subjected to seed laws:
  - variety control, seed testing, identity of seed quality traded, Varieties from organized breeding

Transitional system

- Planting materials of both elite and improved varieties from research accessed through extension and farmer groups

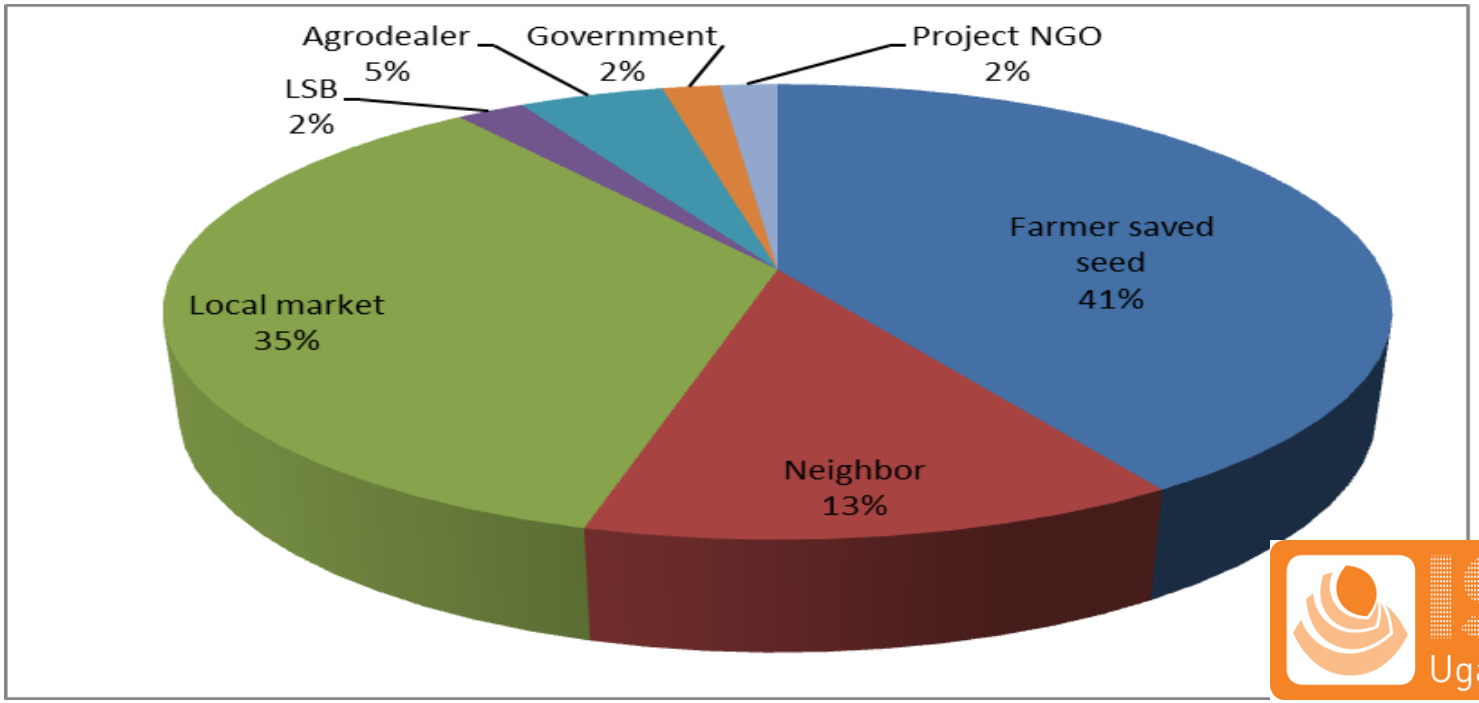
- Implication: Transformation is happening as the seed entrepreneurs are registered and the varieties they are producing are listed in the catalogue,

- Seed and plant act, 2006 and Seed policy 2015; aspects of quality declared seed integrated

Current trends in seed sector

- 13% of the planted area is planted with seed from commercial seed companies (formal system)

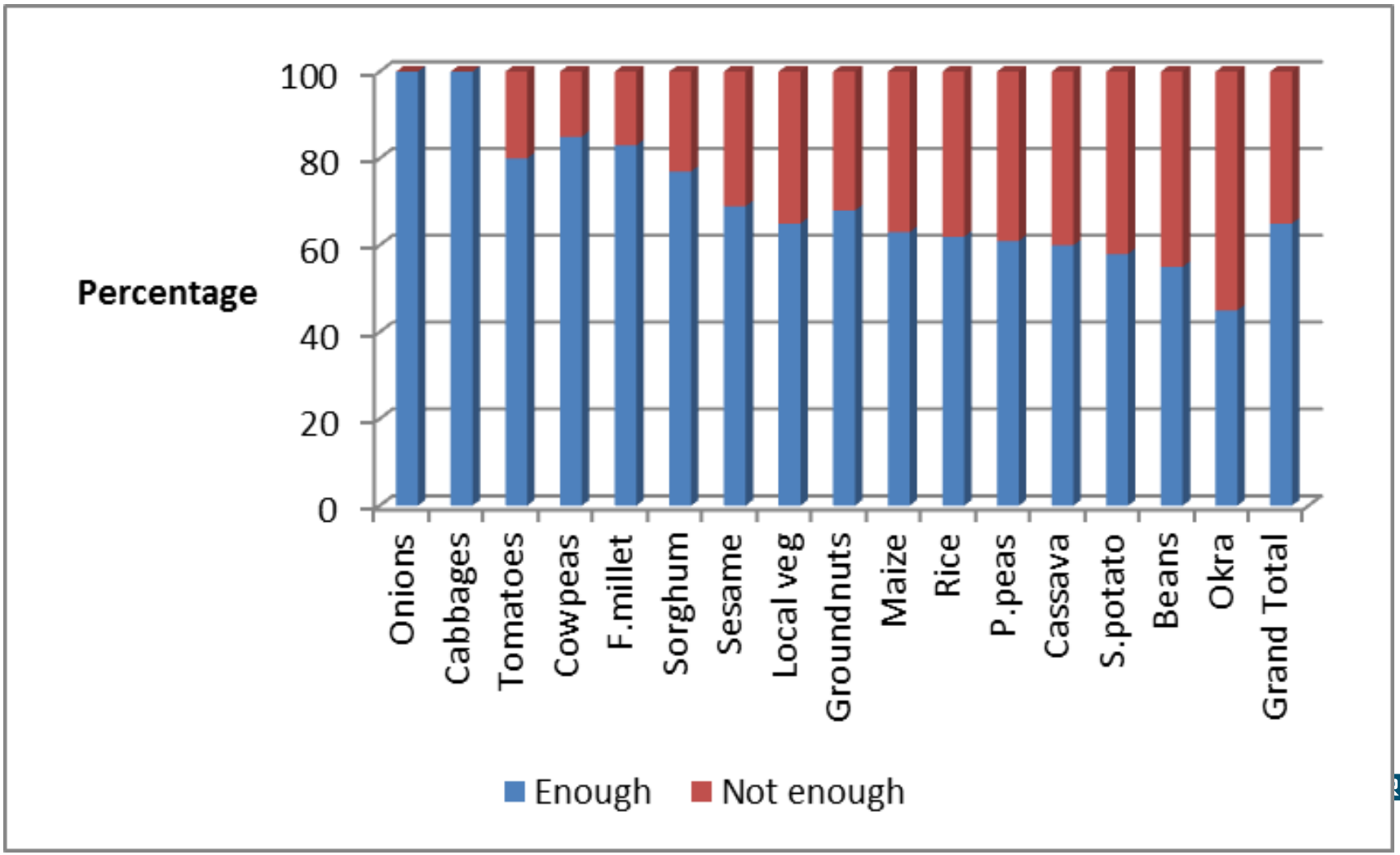
- ISSD baseline shows that 89% of the farmers obtain seed from the informal seed system



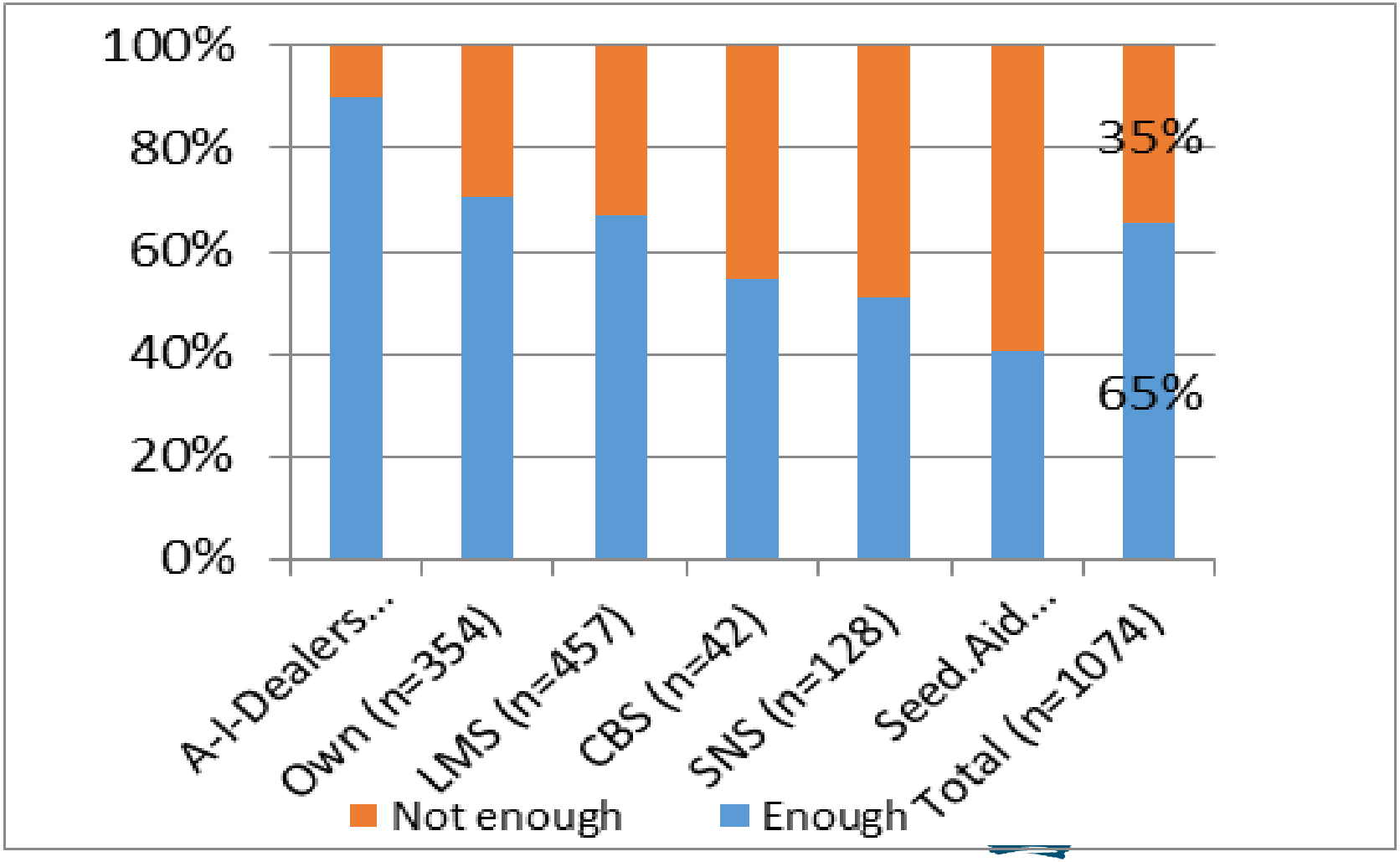
ISSD Uganda

1. Availability of seed

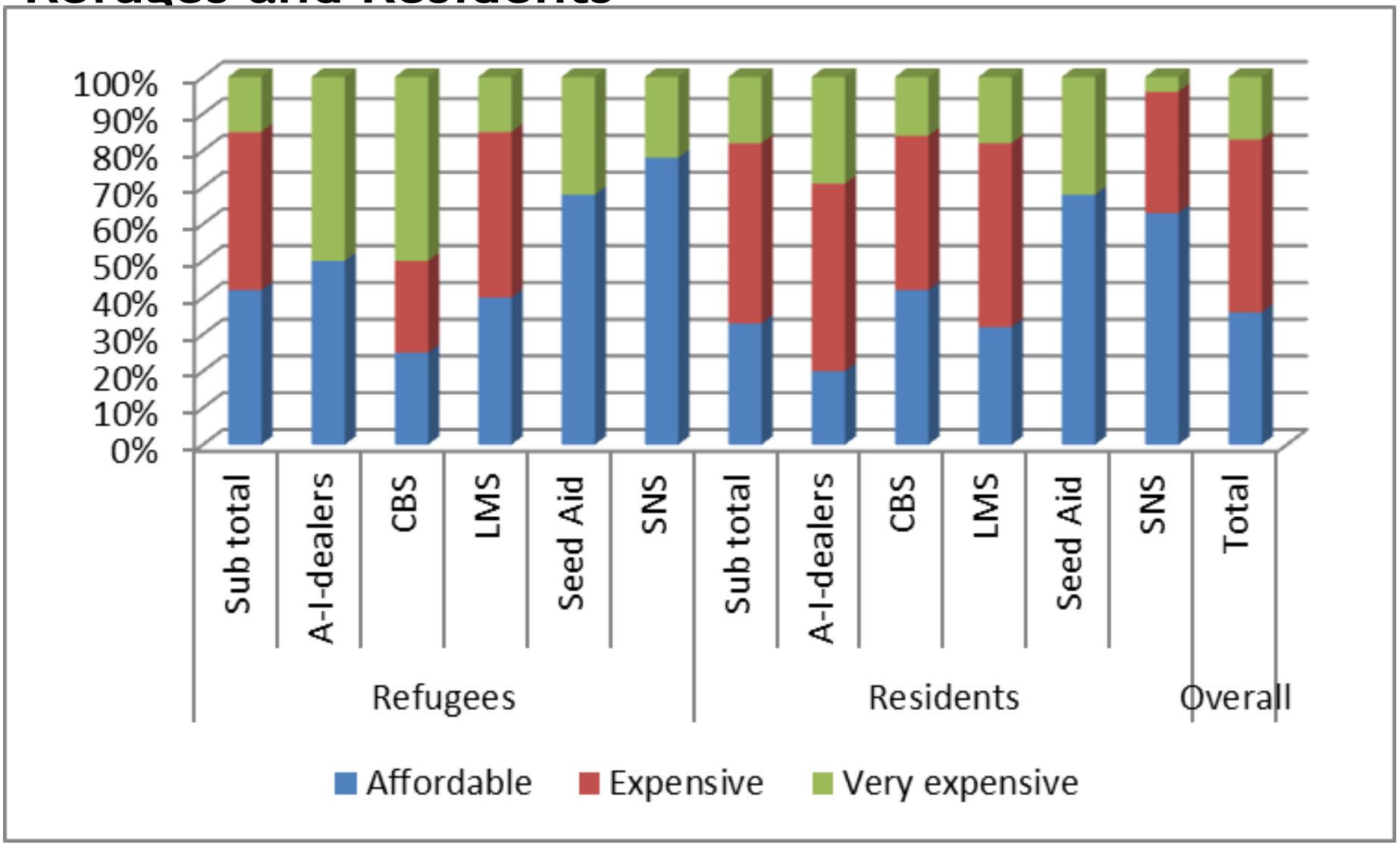
1.1 Seed availability status by crop



1.2 Seed Availability by Source



2.2 Costs of Seed by Source as Perceived by the Refuges and Residents



Variety suitability

- Farmers grow both improved and local varieties.

Varieties of the major crops

- have done well in their agro-ecologies and coped with the prolonged dry spells.

- A number of new varieties introduced and adopted by the community such as cassava (TME14 and Nase series), and Naspot 1, naspot 11 and Naspot 8, hence need to promote both !

Sweetpotato Seed Systems diagnostic report: HarvestPlus 2014

- **Acquisition:**

Own, fellow farmers, Institution and Buy (10%).

- **Source of vine** Sprouts, Previous crop, Under shade, offseason crop (swamp)

- Majority of farmers in eastern and Northern are unable to conserve

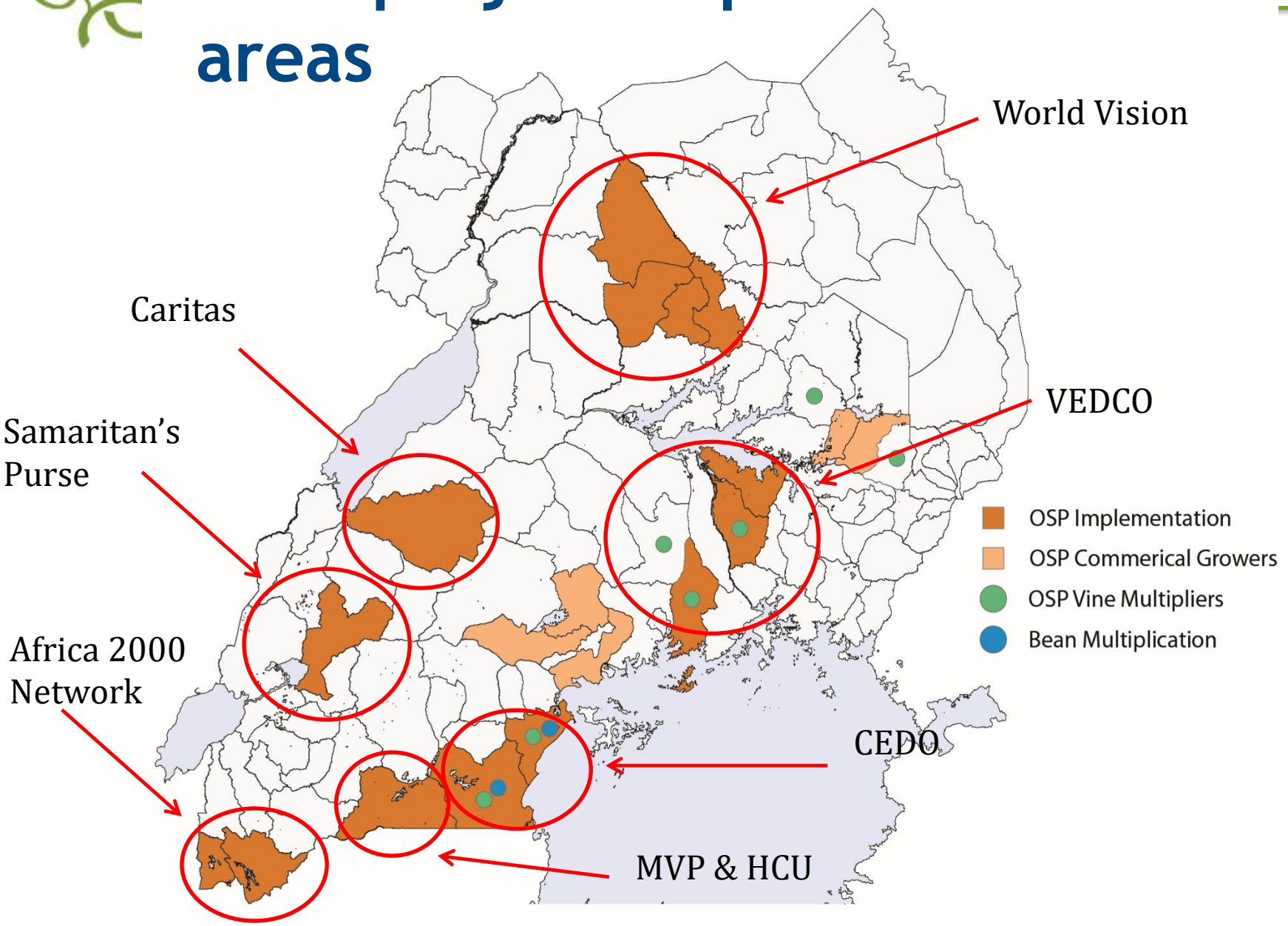
- Those who did Eastern 41%,Central 69%, mid Western 86% and North 37%

HARVESTPLUS EFFORTS IN UGANDA

The goal of the project is to **reduce micronutrient malnutrition** and improve dietary intakes of vitamin A and iron in twenty five districts in Uganda

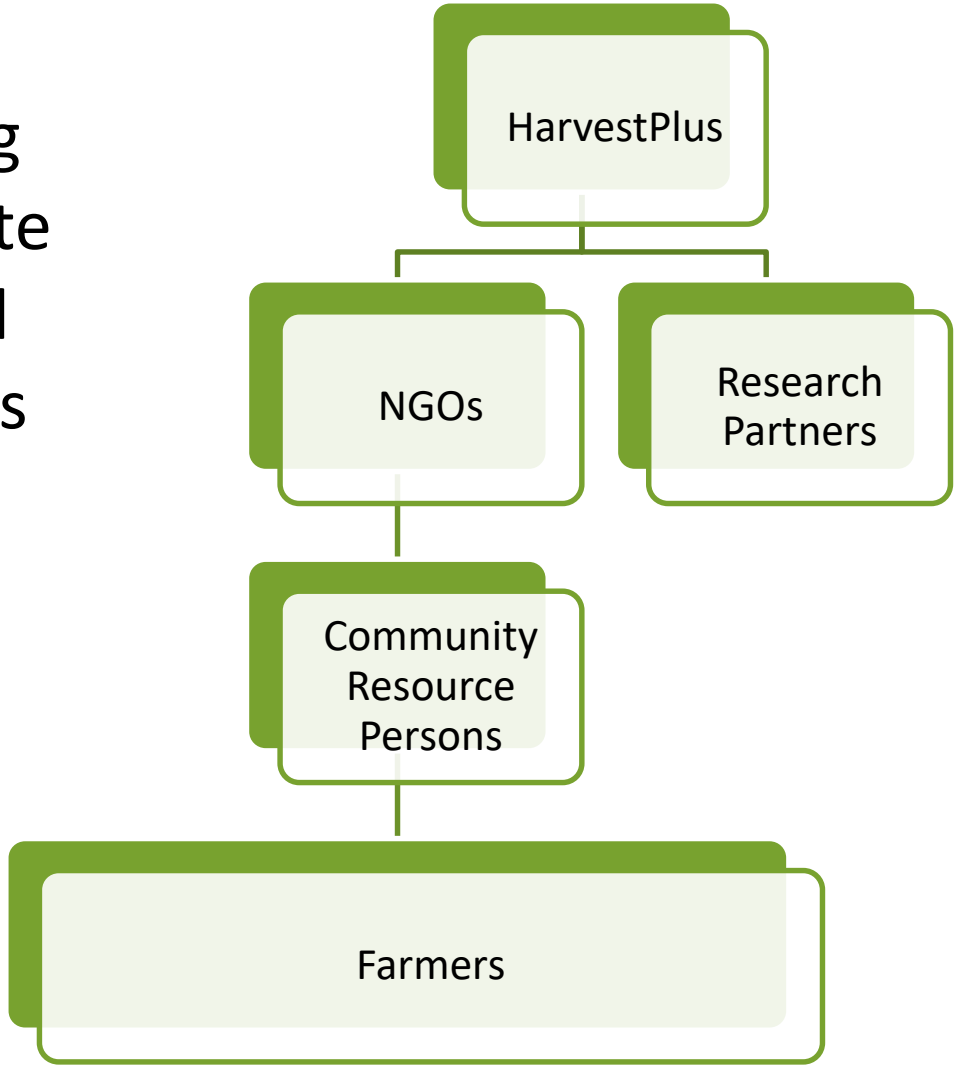
The purpose is to increase the **production and consumption** of orange sweet potato (OSP)and high iron beans in fourteen districts of Uganda

Core project implementation areas



Operational framework

HarvestPlus is partnering with NGOs to disseminate the crops to farmers and several research partners to do different pieces of research



Current Estimated Reach of OSP

- 1,346,155 households growing sweet potato of the 7.3 mill total hhs in the country (UBOS 2014)

- Approximately 616,954 grow OSP directly impacting 3,084,770people(h/h size is 5)
-
- Target: to increase production of OSP to a further 80,000 hhs influencing at least 400,000 people

Cumulative end of DDBC	2016	Up to 2016	Vines (bags)	Hectares	
Subsistence		547,960	273,980	14,270	
Commercial Farmers		945	7,560	394	
Total number of farmers		**548,905**	**281,540**	**14,664**	
Area planted (Ha)		**114,552**	**Subsistence 0.5 acres, semi commerical 1**		
2017-2021 Menu Project		**2017**	**2018**	**2019**	**2020**
Direct Households(seed loan)	501003	581,003	661,003	741,003	821,003
Multiplier sales(bags to non harvestPlus)	46012	66,012	88,012	110,012	135,012
Commercial Farming households	945	2,945	9,945	16,945	23,945
Total Households	**547960**	**616,954**	**758,960**	**867,960**	**979,960**
Vines (Bags) subsistance		614,009.0	705,009.0	796,009.0	888,509.0
Semi commercial(bags)		23,560.0	79,560.0	135,560.0	191,560.0
Total bags		637,569.0	784,569.0	931,569.0	1,080,069.0
Hectares		33,206.72	40,862.97	48,519.22	56,253.59
Seed rate 8 bags per acre or 19.2/ Hectare; 114,552/440,000 is less than 1/3 of sweetpotato, adoption = dis adoption according to studies by Dan G, 2016					

Initial Seed systems Component Interventions

- Primary Multiplication Center (NARO for initial stock after release)

↓

- Secondary Multiplication Centers (commercially oriented Previous experience Luwero, soroti and latter in project areas)

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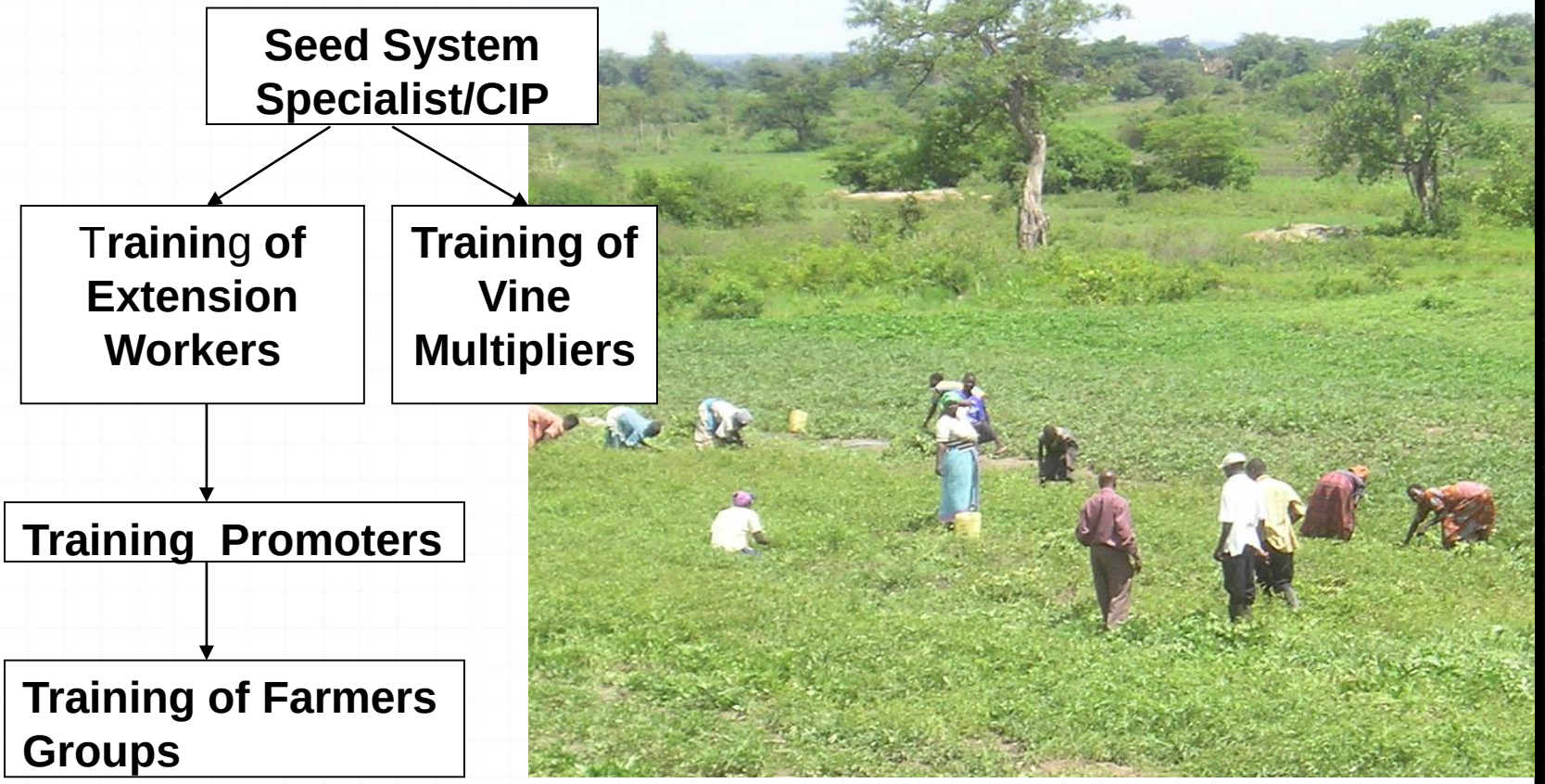
- Tertiary Multiplication Centers in target communities(Early adaptors with access to land, water and willing to undergo intensive training)

Farmer adoption pillar

B. Extension program



Training with emphasis on making available a continuous supply of good quality planting materials of Vitamin A rich varieties of sweet potato

INTERGRATING QUALITY ASPECTS

Invitro culture virus elimination and multiplication(kephis)

Mother stock multiplication (Makerere and private Labs)

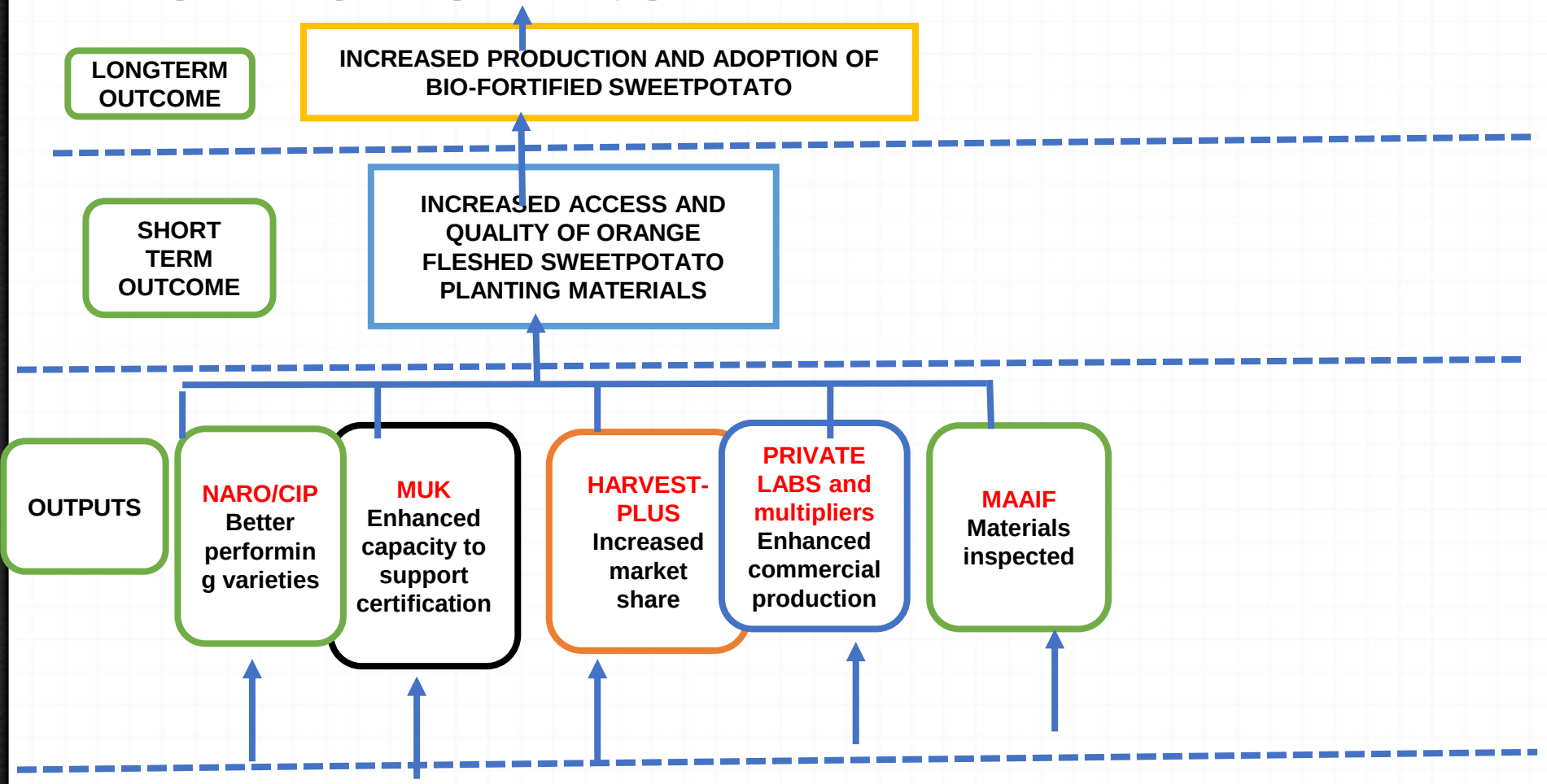
Secondary Multiplication sites in shade nets and isolated fields in districts

Tertiary multipliers affiliated to secondary sites fields in fields

Clean sweetpotato vines in farmers fields

Clean sweetpotato vines in farmers fields

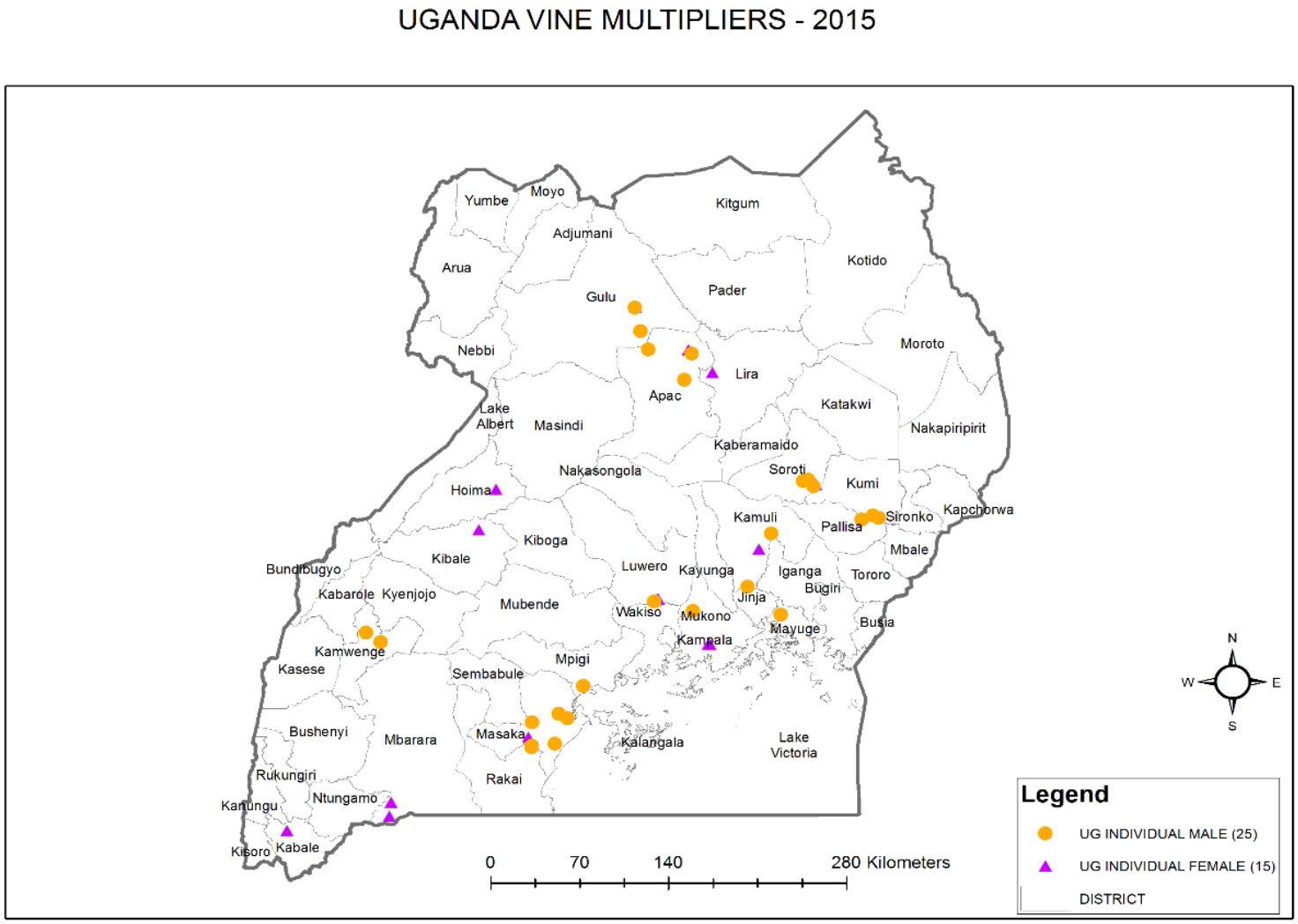
THEORY OF CHANGE



WORKPLAN FOR NUSEMA 2017

NO.	ACTIVITY	MILESTONE	J	F	M	A	M	J	J	A	S	O	N	D	INCHARGE
1	Procuring clean planting materials	1404 bags													Executive Secondary multipliers Bio crop lab
2	Expanding and maintaining Acreage	117 acres													Tertially Multipliers.
3	Inspection and monitoring of sweet potato field	Internal 3 times													Quality committee Region inspector
		External 2 times													Secretary for production. Govenernment Inspector.
4	Developing individual work plans.	37 work plans													Secondary multipliers Tertially multipliers
7	Preparing records and reports														Executive secretary
8	Holding review Quartery meetings	3meetings													Executive committee

Secondary vine multipliers(GPS)



Vine Multipliers established by HarvestPlus with support from USAID

Source: Global Administrative Areas Database, 2015

Accelerators and brakes in the systems

accelerators :Going to scale with focus on clean materials.

Scale: Seed to move faster and widely

- Presence of catalysts which is precipitating events; Nutrition, processing, projects
- Recurrent stresses e.g virulent pests and diseases plus climate change and land degradation
- Existence of an on going process of replenishing materials lab, training, decentralized multipliers
- The idea of clean materials clear to all participants

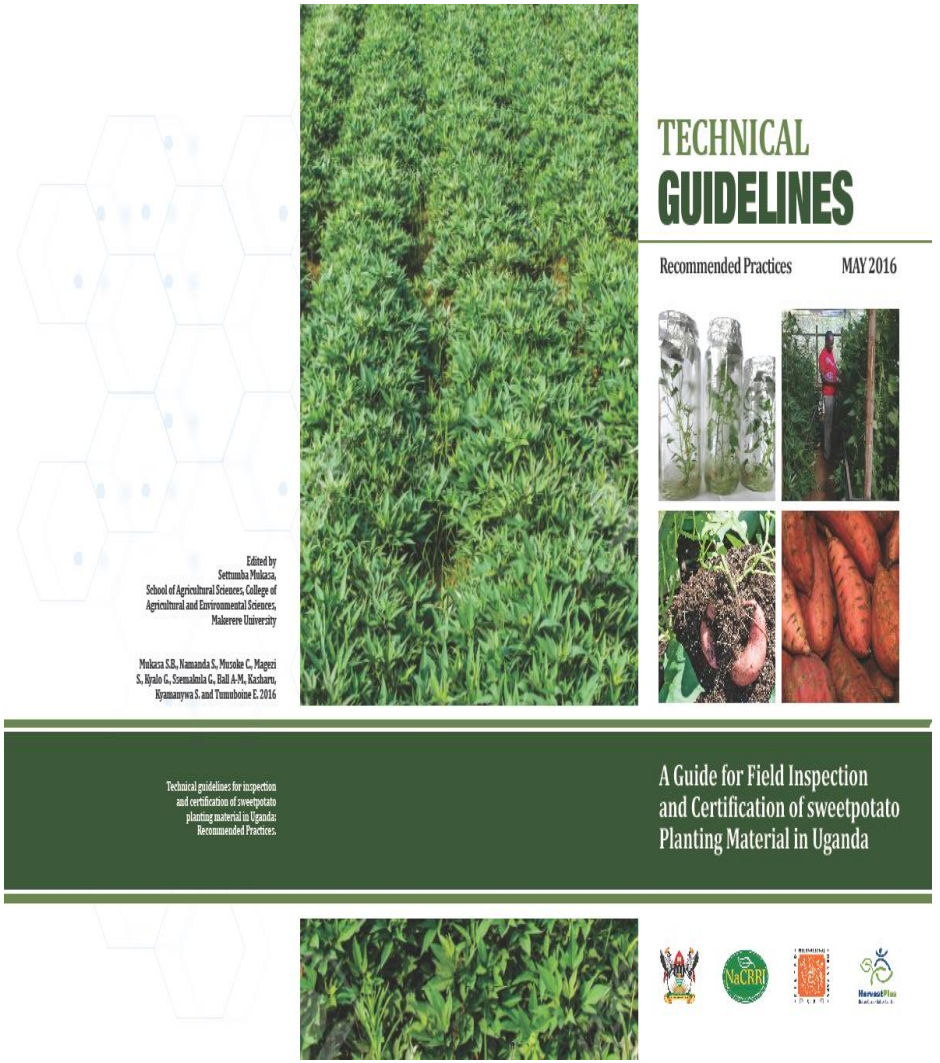
Accelarator

Proof that clean material works

# of cycles planted	Ejumula	Kabode
1	14.9	11.3
2	13.4	12.3
3	9.7	8.6
4	3.1	6.1
> 15 (Farmer)	2.7	4.8
$Lsd_{0.05}$ = 3.2 for cycle level x variety		

Accelerators

- Bringing on board seed certification and quality control
- Guidelines ready, agreed upon by all parties



Accelarators

- Multiple use of roots implying commercialization of the crop

Increasing urbanization, feeding animals, value added products like puree

This aspect is one of the key drivers for seed!

Accelerators

Proof of product opportunity

- Customer feed back; Average yield increase on farm is 30%(cycle 1, multiplier reports, Uganda)
- Filling a gap in shortage of vines, even non clean as shown in introduction
- Cleaning and indexing doable and complete (MAAIF,KEPHIS and MUK)

Market search

- Variety preferences coming into play, **available** visa vie **preferred**
- Potential customers known, institutions and farmers
- Business model options suggested
- Risk aversion options emerging

Accelerators

Market partially validated

- Target market
- Pricing model based market forces
- Market penetration strategies in few locations kick-started
- Influencers mapped out

Market in transition

- Dominant production objective is NOT profit but utility maximization and risk avoidance
- Other non market attributes as well as income
- Integration in farming systems is key

Key brakes in the system

- Key actors tend to confuse commercialization with sales: project manager researchers, and donors(R&D)
- Technology commercialization is the process of converting ideas into business and consequently jobs

- Commercialization of any product is a Process and with actors commercializing at varying rates
- Each step with different milestones and targets

decentralize small enterprise visa vie labs, Seed cost, certification,

Brakes; Understanding of sustainable scale

Estimating real demand is difficulty

- information and foundation seed & customer dynamics market size
- Start up and maintenance costs incurred in the process of catalyzing and strengthening networks
- Need to piggy back to create more demand
- Strategic brokering of linkages with developed markets
- Sustainable scale is when an enterprise is successful and exists for several years even if with support

Brakes; Responding to markets

Project biased decisions

- Variety use by farmers is dynamic: additions and **substitutions(only OSP in screen houses)**
- Miss match of varieties Preferred both elite(descriptors) and improved

Not Responding to ladder of technology development

- smallest only agronomy
- Incremental yield; Chemical and fertilizer
- With both, then improved seed
- Small Quantities required & different marketing strategies at each stage

Brakes, in efficiency and pricing issues

- Competitive advantage, example cost of seed per acre
- Economies of scale
- Brake even points

Crop	Qty / Acre	price	Cost
Beans	30kgs	3,000	90,000
Maize	10kgs	7,000	70,000
Cassava	8 bags	20,000	160,000
Sweet potato	12 bags	15,000	180,000

Implication of accelerators and brakes

- Catalytic options which show that seed channel both formal and informal are

  integrated are going to be key to scaling

- There is need for coordinated action between formal and informal sectors, some medium to long term support to some chain actors e.g labs, inspection, indexing

- Specific level targeting/efforts rather than system at some point

Thanks

Risk is the best way to figure out where you are going

learn from failures; Failure is the first step to success

Give chance to failure; hang around the barber shop you may end up getting an hair cut