



Strengthening OFSP planting material systems in the Eastern Province of Zambia: implementation progress and achievements

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Africa RISING going to scale in the Eastern Province of Zambia Project
Review and End-of-Project Meeting
Lusaka, Zambia, 7 – 8 September 2017



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Africa RISING going to scale -OFSP (Nov 2015 to Sept 2017)

- The integration of agriculture, nutrition and marketing of OFSP to contribute to addressing Vitamin A Deficiency (VAD) in Eastern Province of Zambia.
- Through capacity strengthening among partners to contribute towards an overall goal of improving diet diversity, increasing vitamin A intakes, and reducing food insecurity in the province



Sweet potato production: by central statistical office, Zambia (2016)

Table 9.2: Crop Production, Area Planted, Yield Rate, Agriculture Season

Crop	Hectares Planted(MT)	Production (MT)	Yield Rate (MT/ha)
Maize	1,693,791	3,064,358	1.81
Sorghum	28,626	13,166	0.46
Rice	46,374	31,350	0.68
Millet	61,324	41,103	0.67
Sunflower	111,044	45,880	0.41
Groundnuts	273,687	123,366	0.45
Soya beans	142,865	208,478	1.46
Seed cotton	181,844	121,316	0.67
Irish potato	3,272	18,572	5.68
Virginia Tobacco	10,726	21,922	2.04
Burley tobacco	6,524	7,898	1.21
Mixed beans	112,806	52,352	0.46
Bambara nuts	8,525	6,455	0.76
Cowpeas	14,071	4,167	0.30
Velvet beans	491	230	0.47
Sweet potatoes	54,466	126,036	2.31
Paprika	34	7	0.21
Popcorn	7,868	5,311	0.68
Barley	1,143	8,413	7.36
Wheat	33,935	239,281	7.05

Source: CSO Post Harvest Survey



What's the buzz about OFSP?

- OFSP is among the most effective sources of vitamin A
- 125g of OFSP covers daily vitamin A need of children
- OFSP adoption is scalable through integrated agriculture-nutrition approaches
- 10 African countries are actively breeding OFSP; 42 locally adapted and productive OFSP varieties released since 2009
- Zambia is contributing 5 varieties



Table 1. Attributes of the varieties and year of release of OFSP

Variety	Plant Type	Maturity Months	Yield t/ha	Root Skin Colour	Root Flesh Colour	Year of release
Olympia	Erect	4 - 5	25.47	Cream	Orange	2014
Kokota	Erect	5 - 6	19.59	Cream	Pale Orange	2014
Chiwoko	Erect	4 - 5	20.01	Cream	Orange	2014
Chumfwa	Erect	4 - 5	19.86	Pink	Orange	2014
Zambezi	Spreading	5 - 6	15.1	Pink	Deep Orange	1993



Outline of AR-OFSP activities

- Technology dissemination: For increased OFSP productivity
 - Promotion of improved varieties
 - Demonstration of good production practices
 - Sustainable seed system
- Technology development: Varieties and production practices
- Nutritional knowledge transfer: To enhance improved dietary practices by including OFSP
- Commercializing vine and root production: For sustaining vine and root production within communities as source of income
- Project districts: Petauke, Lundazi, Katete, Sinda and Chipata



Approach: Working partners



GIZ
CARE in Katete
CRS in Petauke
Nutritional committees
of Katete and Petauke
Profit +
Mary's Meals





Technology dissemination - varieties

Mother Baby Trial (MBT)

66 mothers by 50 babies

Per mother

3 MBTs/camp officer; 1 camp in Sinda; 8 in Lundazi, 8 in Chipata, 6 in Katete



Chiwoko



Chumfwa



Olympia



...associated production technologies



Through demo plots

- Quality vines for planting
- Plant population
- Time of planting
- Weeding
- Pest and disease control and management
- Harvesting
- Post harvest handling and storage



Yield results of OFSP demos and GM

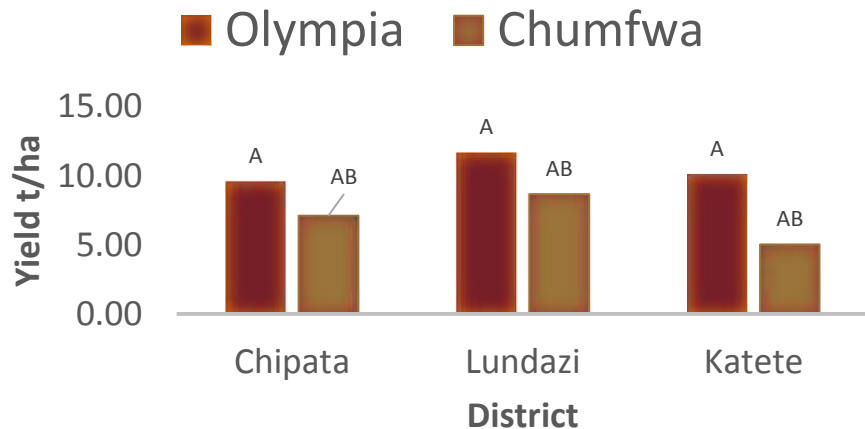
Chipata:

Olympia (4684.33), and
Chumfwa (2084.27)

Mean yield ranged= 10 to 12 t/ha for
Olympia and 4.5 to 8t for Chunfwa;
Lundazi had the highest root yields,

Lundazi: Olympia
(6864.30), and Chumfwa
(3723.60)

Katete: Olympia (5228.69),
and Chumfwa (-89.90)



Development and sustaining a viable seed system

In collaboration with ZARI, to ensure availability of pre-basic planting materials in tissue culture and screen houses-



680 bundles were disseminated to multipliers





Decentralized Vine Multipliers (DVMs)

To increase access to varieties and quality 'seed'

- Vine production is during dry season and under irrigation
- Vines are from the screen house
- 65 farmers were recruited & trained in 2017

ZARI and Extension workers

NGOs: Care, COMACO, TLC, Profit+, SAIOMA ,
CRS, RICH

Community leaders important





Vine dissemination- for root production

- Involved Mother Baby Trials/demos- 50 babies per mother
- Distributed through clinics
- Through school demos
- Decentralized multipliers by sale of vines or in exchange for labour within communities
- A total of 6032 hh received vines in 2017





Technology development- varieties

- 25 Participatory Variety Selection (PVS) trials in 5 districts
- 23 trials were harvested and field days were conducted at
 - Pondako village in Lundazi: 127 (63 males and 64 females)
 - Chimkombe village in Petauke 147(89 males and 58 female)
 - Chilingondi Schemes in Katete 41 (23 males and 18 females)
 - Nkhalikali shed in Chipata 105. (50 males and 55 females)
- Testing genotypes: ZAMBEZI/2; NC 09350 MUSG; EXCEL 8 and MUSG 0614-24/32
- Check- Olympia (and Chunfwa at Msekera)



Table 2: OFSP Mean Root (2015/16) Msekera

Germplasm - Ranked Order	Mean Yield (t/ha)	COMPARISON
(MUSG 0616-161/27)	25.89	A
(MUSG 0614-24/32)	24.33	AB
(OLYMPIA CHECK)	22.56	ABC
(MUSG 0614-24/15)	22.5	ABC
(NC 09-350MUSG)	21.78	ABC
(MUSG 0616-161/11)	20.72	ABCD
(EXEL 8)	18.94	BCD
(MANSA RED)	17.17	CDE
(ZAMBEZI/2)	17.11	CDE
(CHUMFWA CHECK)	16.11	CDE
(15/2)	14.28	DE
(L6 KANYASI)	11.11	E
(NC 09-359 MUSG)	10.61	E
LSD	6.77	
Grand Mean	18.70	
Coefficient of Variation	21.49%	

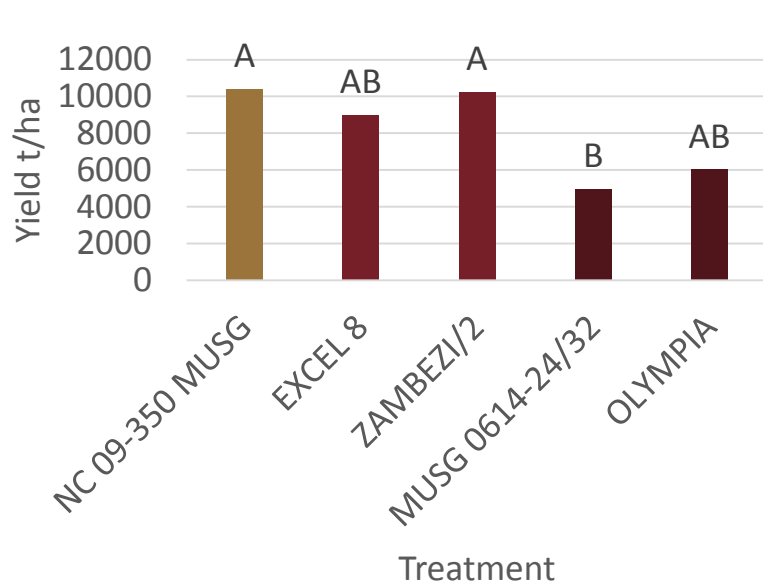


Table 3: OFSP Mean Root (2016/17) Msekera

Sr/No	Variety/genotype	Mean yield
1	OLYMPIA	44.25
2	EXCEL 8	42.67
3	MUSG 0616-161/27	40.39
4	NC 09-350 MUSG	39.89
5	MUSG 0616-24/32	38.53
6	MUSG 0616-161/11	37.51
7	ZAMBEZI/2	33.42
8	CHUMFWA	29.75
9	MUSG 0614-24/15	28.67
10	Coefficient of Variation	9.71%
11	I.s.d at 0.05 alpha level	6.29
12	Grand Mean	37.22

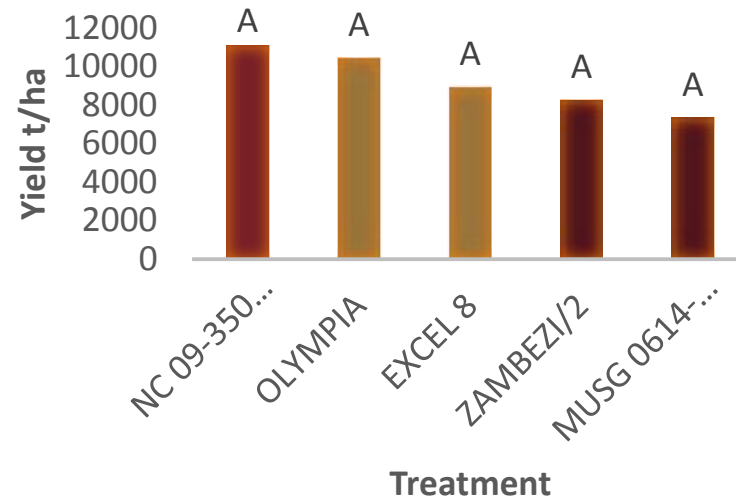


On farm performance of genotypes by district



PETAUKE

Grand Mean= 8.12 t/ha, Coefficient of Variation= 36.97%

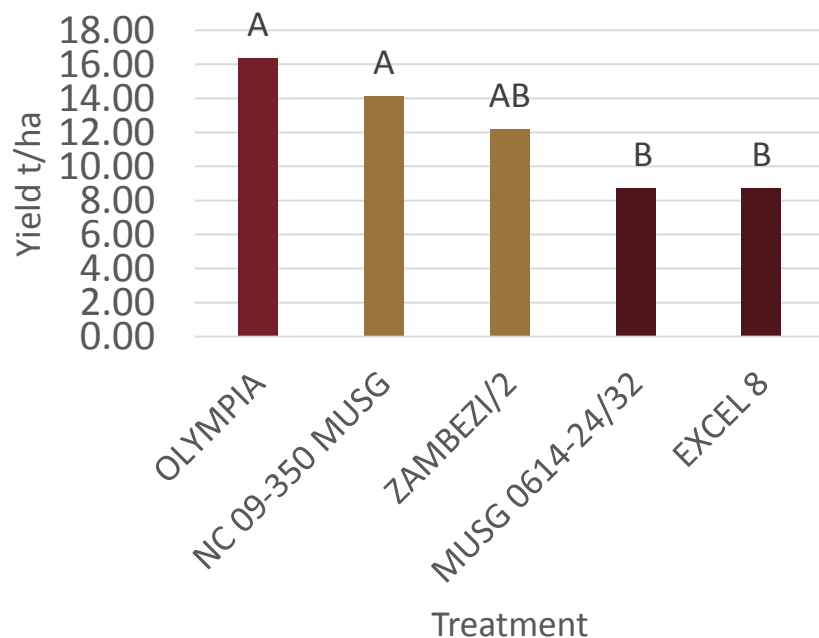


SINDA

Grand Mean= 9.2 t/ha, Coefficient of Variation= 30.44%

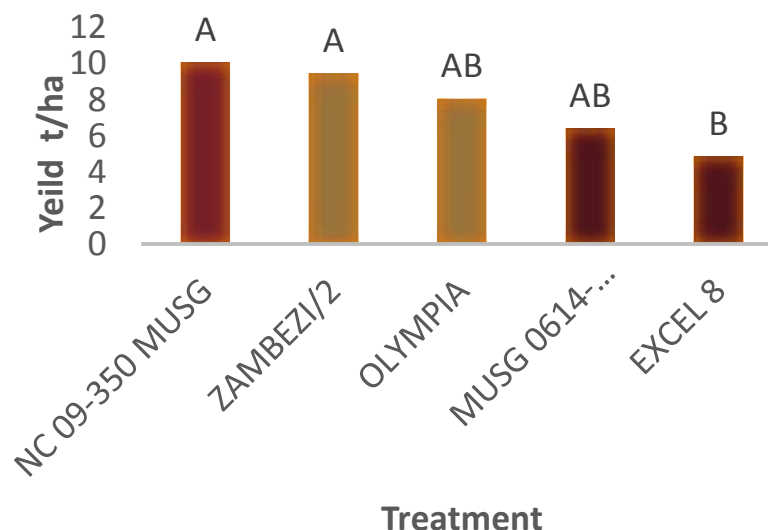


On farm performance of genotypes in Lundazi and Chipata



LUNDAZI

Grand Mean= 12 t/ha, CV= 31.49%.

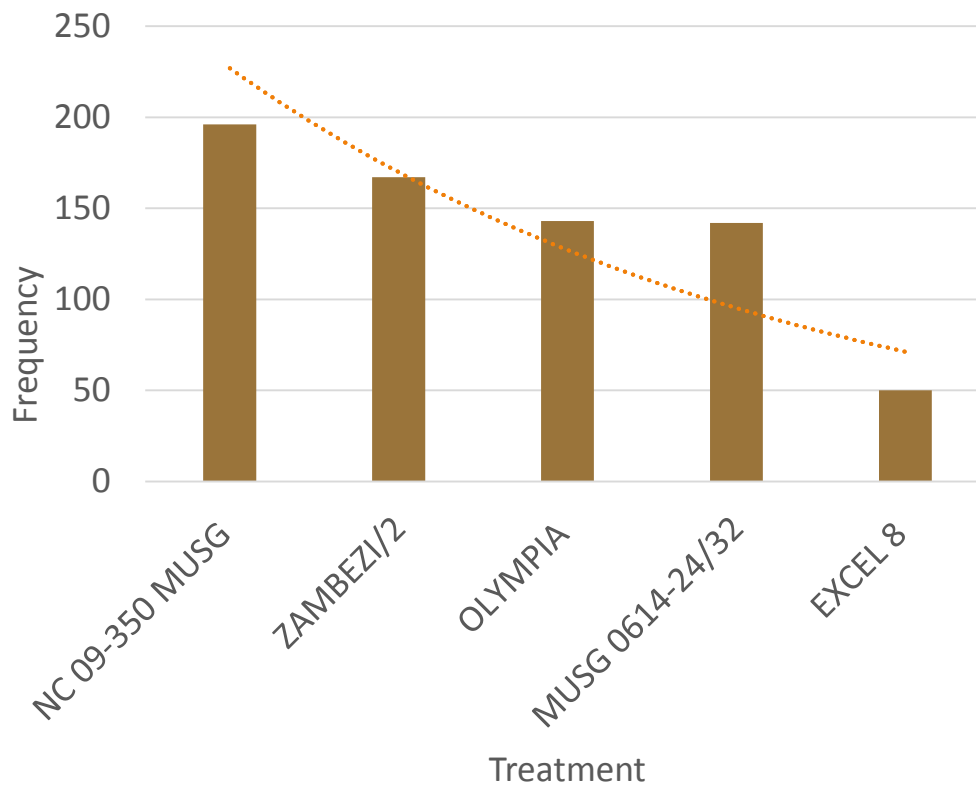


CHIPATA

Grand Mean= 7.75 t/ha, CV= 32.97%



Preference taste results



- A total of 874 farmers participated in the taste evaluation
- The most preferred varieties were NC 09-350 MUSG and ZAMBEZI/2.

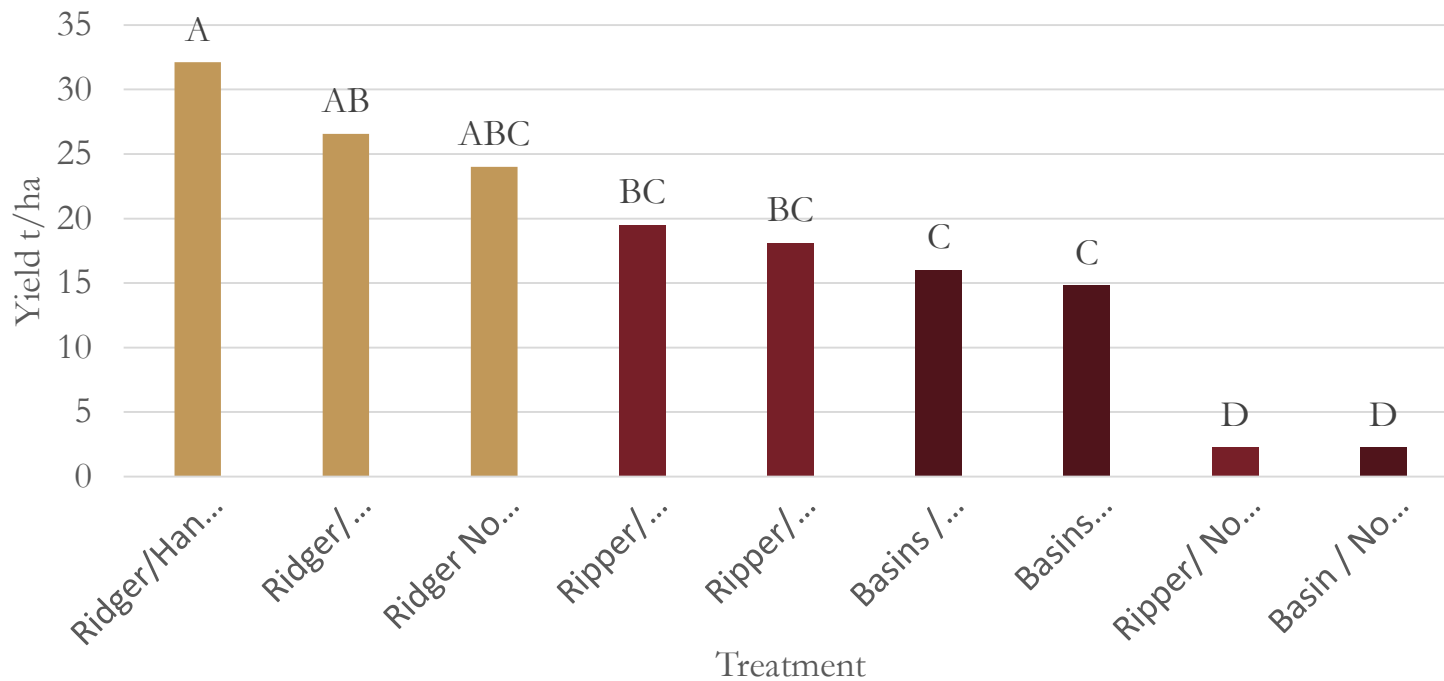
Elite genotypes



The two varieties, NC 09-350 MUSG and ZAMBEZI/2 are recommended for submission to initiate technology release process



Agronomic studies-preliminary CA results





Nutritional knowledge dissemination

- Demo plots and field days
- 17 school demos, of which 8 were Mary's Meals in Chipata through school demos; a total of 3610 pupils (1874 boys, 1736 girls) were reached with nutritional messages of OFSP from 8 Mary's Meals schools
- Nutritional lessons at clinics during vine dissemination
- Use of drama, Flyers and sign boards
- 19 radio programs and adverts-Radio Breeze>1 million listeners

Nutritional knowledge dissemination



Nutritional messages through
clinics and school children





Nutritional knowledge dissemination ...



**ORANGE-FLESHED
SWEETPOTATO (OFSP)
A NUTRITIOUS FOOD FOR
YOU AND YOUR FAMILY**

**Transforming African agriculture
through sustainable intensification**



**NUTRIC-AID
Trust**



Africa RISING



africa-rising.net





OFSP commercialization- roots and vines



Linking producers for marketing to vendors and other farmers

Rebranded sign 42 boards of active vine multipliers





Vine and root marketing promotion



BUY AND EAT ORANGE-FLESHED SWEETPOTATO EVERY DAY TO REPLENISH YOUR VITAMIN A

Transforming African agriculture through sustainable intensification



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Linking of farmers to markets



Worked with SAIOMA to train vine multipliers and link them to agro-dealers



Summary of activities and Feed the Future targets

Year of implementation	2015/16		206/17	
Activity	Target	Achieved	Target	Achieved
2.1a Support for production of breeder/foundation seeds (vine bundles)	1000	887	600	680
2.1b Recruit and train vine multipliers and partners	220	214	50	65
2.1c Support the multiplication of vines by vine multipliers	12500	8795	7000	15000
2.1d OFSP vine dissemination to beneficiaries	8000	8795	6000	6032



Year of implementation	2015/16		206/17	
Activity	Target	Achieved	Target	Achieved
2.1e Identify and support agro dealers to become linking points between multipliers and buyers of vines	11	21	20	16
2.2b Conduct studies on good agronomic practices	3	3	3	3
2.3 Nutritional messages- radio adverts	24000	24000	12	39
Nutritional demos (field days)			6	5
Number of flyers			750	750
2.4 Support new variety release	3	3	3	2
2.5a Linking OFSP growers markets	9	7	7	6



Challenges

- Most wells dried up during the last vine multiplication season- vines were drying
- Need for concerted efforts in technology dissemination- training and strengthen partnerships
- Need for concerted efforts in marketing of roots and vines
- Need for value addition to be off takers of the produce to trigger production
- Perishability of OFSP

Opportunities for OFSP- processing



- Managing challenges:
 - Perishability
 - Seasonality
 - Food safety
- Capitalizing on opportunities:
 - A wider spectrum of consumers (including urban, institutional)
 - New consumer preferences (convenience, lifestyle, healthy choices)
 - OFSP as an ingredient in a wider range of products

How will the farmer benefit?

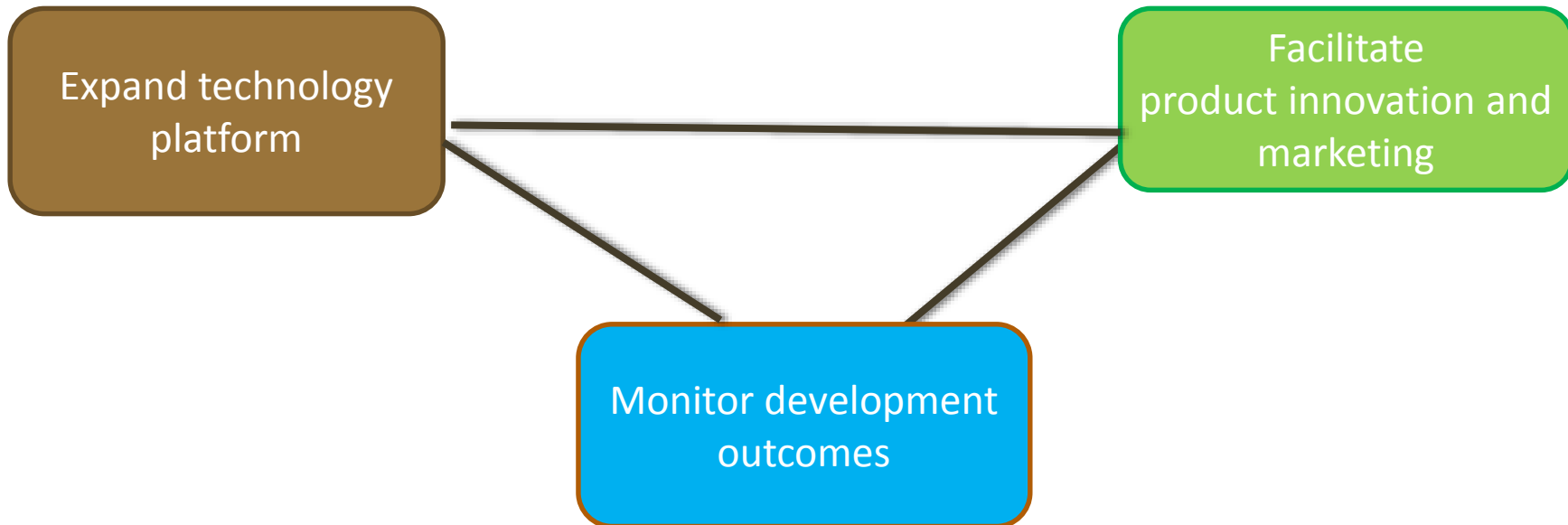


- Improved markets from OFSP roots provide incentives for OFSP adoption and production among smallholders
 - Nutrition + Income
- Increased public and private investments at sector level
 - National breeding programs
 - Investments in seed system
 - Sector associations for advocacy
 - Availability of quality planting material for smallholders
 - Increased smallholder productivity from improved varieties and planting material



Partnerships for the future

- OFSP is at a turning point
- New partnerships required
- We can make a huge difference in Africa





Thank You

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