

Building Nutritious Food Baskets: Maize in Tanzania



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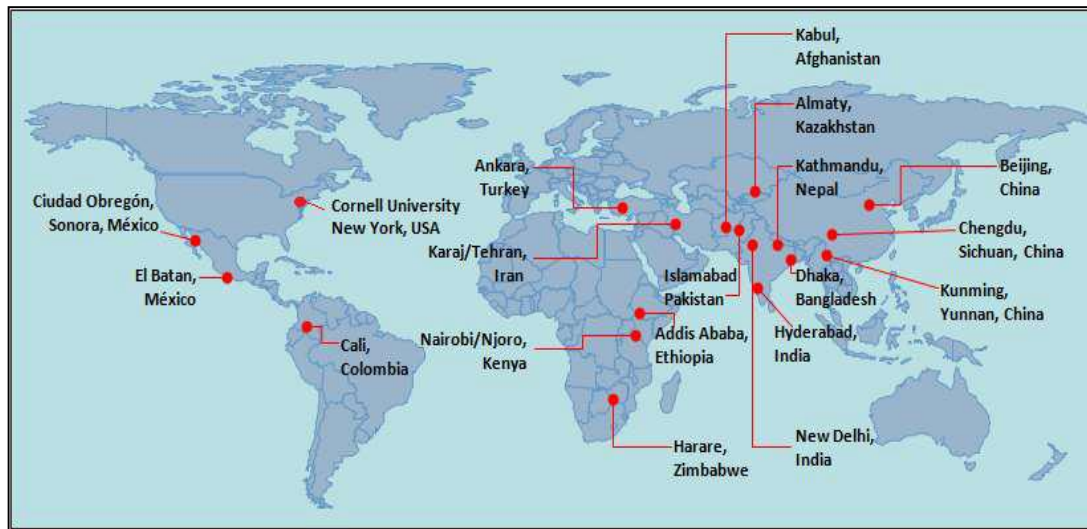
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Outline

- CIMMYT – Mission, MAIZE CRP, why biofortification
- Objectives/activities maize component-CIMMYT
- What have we done so far?
- Work-plan for year 1
- Ongoing activities that will complement BNFB efforts
- Support required from any of the BNFB partners (CIAT, CIP, HarvestPlus, FARA and IITA) to accomplish your goals.



CIMMYT



- 3 locations in the Americas
- 3 locations in Africa
- 12 locations in Asia

CIMMYT is a non-profit research and training center headquartered in Mexico. (The abbreviation "CIMMYT" derives from the Spanish version of our name: Centro Internacional de Mejoramiento de Maíz y Trigo.)

CIMMYTs mission: To sustainably increase the productivity of maize and wheat systems to ensure global food security and reduce poverty.

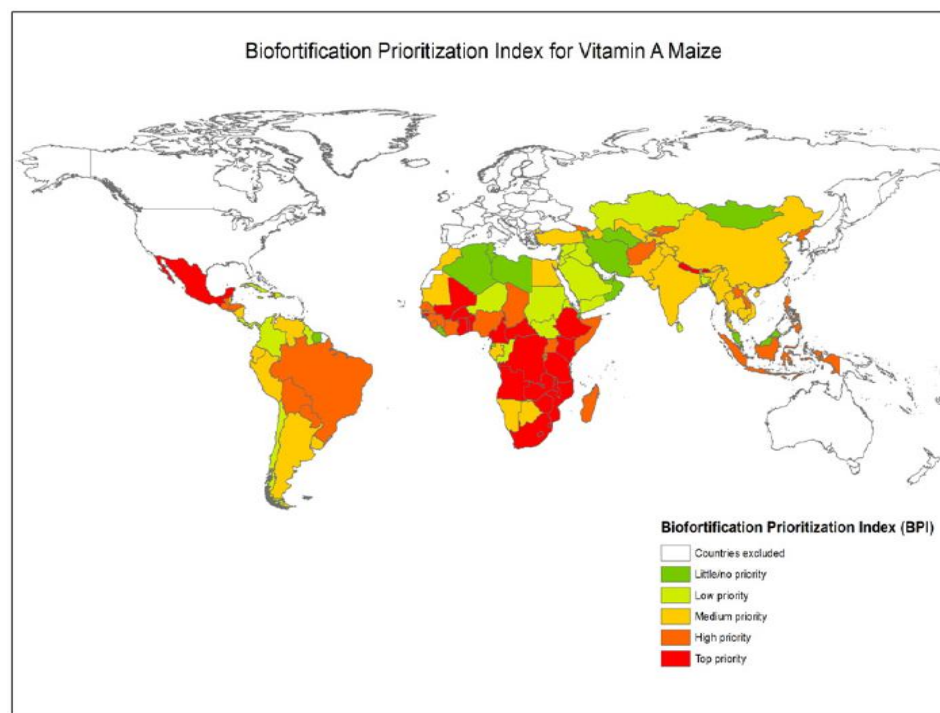
Maize CRP- Overall project that encompasses the maize research at CIMMYT. It is designed to ensure that maize research helps most effectively to double the productivity of maize-based farming systems:

- resilient and sustainable
- significantly increase farmers income and livelihood opportunities
- without using more resources

Why bio-fortification in maize?

- Vitamin A deficiency is a global health problem affecting millions of people in Africa and other regions of the world.
- Bio-fortification of maize and other staple crops with provit-A, through breeding and/or biotechnology is considered a viable and sustainable approach to help alleviate the problem.
- Cultivated maize varieties contain very low levels of pro-vitamin A carotenoids (0.5 to $1.5 \mu\text{g g}^{-1}$)
- Maize grain level of $15 \mu\text{g g}^{-1}$ – required initial minimum level to effect favorable

Source: <http://maizebiofortificationafrica.org/>



Source: HarvestPlus Working Paper No. 11



Bio-fortified maize released in southern Africa

No.	Test code	Release name	Year released	Released by	Country	Target region	Average Yield (t ha ⁻¹)	Kernel type	Provit-A content (ppm)
1	HP1301	MH39A	2016	NARS	MW	Medium	7.00	F	+12 ppm
2	HP1311	MH40A	2016	NARS	MW	Medium	5.59	F	+9 ppm
3	HP1317	MH42A	2016	NARS	MW	Medium	5.87	F	+14 ppm
4	HP1322	MH43A	2016	NARS	MW	Medium	7.50	F	+8 ppm
5	HP1005	ZS242	2015	DR&SS	ZW	Medium	7.50	F	+8 ppm
6	HP1301	GV 671A	2015	ZARI	ZM	Medium	8.50	SF	+12 ppm
7	HP1302	GV 672A	2015	ZARI	ZM	Medium	7.50	SF	+9 ppm
8	HP1303	GV 673A	2015	ZARI	ZM	Medium	7.00	SF	+9 ppm
9	HP1002	GV662A	2012	ZARI	ZM	Medium?	3.86	SF	+7 ppm
10	HP1004	GV664A	2012	ZARI	ZM	Medium?	4.46	SF	+7 ppm
11	HP1005	GV665A	2012	ZARI	ZM	Medium?	3.85	F	+8 ppm



Maize Component: Objectives And Activities

Objective 1.

Strengthen the enabling environment for investments in bio fortified crops

Objective 2.

Strengthen institutional and community capabilities to produce and consume bio fortified crops

CIMMYT will contribute to Objective 2

- of strengthening institutional and community capabilities to produce and consume bio fortified crops
- developing cross collaboration on bio fortified crops.
- the technical activities on the PVA maize crop value chain and mobilize key stakeholders



Workplan for 3 years

Activity code	Activity	Year 1	Year 2	Year 3	Partners	Fund source
2.2.1.1.	Conduct a PVA maize value chain analysis	x				Consultant?
2.2.2.1.	Convene QPM and PVA maize forum (NARS, seed-companies, CIMMYT, MOA, H+, food processors) to testing, release, promote and commercialize along the value chain for PVA.	x	x	x	Extension, Agro-dealers, Seed companies, TOSCI	CIMMYT
2.2.3.1.	Work and incentivize, private sector and farmer/ women/youth groups for strategic large scale production of PVA maize in Tanzania.	x	x	x	Seed Companies	
2.2.3.2.	Participate in shows and promote bio fortified crops	x	x	x	Seed Companies, Govt. agencies	CIMMYT
2.2.4.1.	Work with food processor to processes maize related products in Tanzania-Advocacy		x	x	Food processors	CIP? CIMMYT?
2.2.5.1.	Conduct a study on effectiveness and sustainability of the three models of seed production systems: Government-led, Commercial/Private Sector-led and Community-led		x			CIP
2.3.1.1	Conduct advocacy, exposure and direct seed money payments to expedite release of new PVA maize varieties	x	x	x	Seed Companies, TOSCI	CIMMYT
2.3.1.2	Engage release committee of Tanzania to fast-track the release of PVA maize and include bio fortified element as a key criteria/element (special trait) for release maize in the country	x	x	x	Seed Companies, TOSCI	CIMMYT

What have we done so far?

- The harvesting of samples for Zn and Fe determination
 - MAMS and Aminata for [MAMSH913](#) and [NATA K6Q](#).
 - For newly released Meru Agro CZH132003Q and CZH132019Q
- Production of materials for demos, promotions and further EGS production
 - 3 hybrids ([MAMSH913](#), [Meru Lishe 511](#) and [Meru Lishe 503](#)). We anticipate 10-15kg of seed for these hybrids
 - Production of Sx crosses for the hybrids planted to generate initial basic seed of the parents (18 rows of each planted)
 - 9 inbred line parents of the QPM hybrids in Tanzania (10 rows planted. We expect about 5-8kg)
 - For NATA K6Q, we will liaise with the company for both breeder and basic seed production



Photo courtesy: Peter Mutisya

MAMSH913 cobs in Arusha
for Zn and Fe



What have we done so far?...

- Evaluation of new materials for registration in the country
 - 10 PVA hybrids
 - 10 QPM hybrids that will form a similar set for the three companies identified.
 - Internally search for Fe and Zn enhanced germplasm for testing initially in Zimbabwe for identifying hybrids suitable for the tropics and subsequently Tanzania.
- Packed trials ready for dispatch when funds are available for project implementation

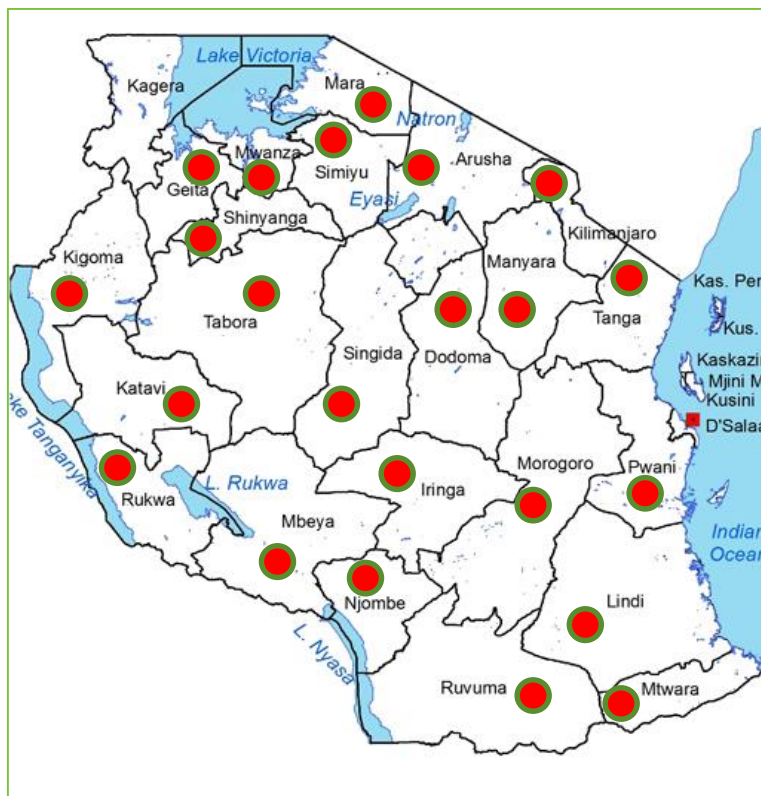


Photo courtesy: Tanseed International

On going activities that compliment BNFB in Tanzania

- DTMASS project**

Variety scale up activities



79 districts in the mainland

Partners in maize seed scale up activities

Company	Districts operating	Head Offices
Suba	68	Arusha
Meru-Agro	57	Arusha
MAMS	8	Arusha
IFFA	42	Arusha
Aminata	23	Tanga
Agriseed Technologies	4	Morogoro
East Africa Seed	8	Arusha
TOSCI	Country wide	Morogoro

Other CIMMYT projects operating in Tanzania

- WEMA for Africa-Focus on drought tolerant Maize for Africa
 - Can provide facilities for EGS production for BNFB varieties (Kilosa, Selian, Dodoma)
- Stress Tolerant Maize for Africa
 - Provide varieties that will be released under the BNFB projects



Support required

- HarvestPlus
 - Continued supply of germplasm for testing
 - Analysis of materials for elevated levels of Provit-A
 - Amino acid profiles for QPM varieties
 - Analysis for Zn and Fe levels in target Varieties
- CIP/BNFB
 - Coordination and financial support for training
 - Financing for Maize Seed Systems work in Tanzania
 - Finance qualitative analysis of identified materials





**Thank you
for your
interest!**