

# DLB Product Profile – Yellow dry bean (Tanzania)



**Teshale Mamo**

Alliance of Bioversity-CIAT, Tanzania

## Design target

Earlier maturing, attractive dry yellow beans for the growing market in Tanzania and Eastern Africa region.

Teshale Mamo is a senior bean breeder working at the Alliance of Bioversity-CIAT in Arusha, Tanzania. He is also the East and Central Africa Bean Research Coordinator for PABRA and has more than 12 years' experience in breeding and genetics of both common bean and soybean. Previously, he worked at the Ethiopian Institute of Agricultural Research (EIAR), as the national bean research coordinator and as a bean breeder. He has released Ethiopian bean varieties for drought tolerance and disease and insect resistance. He also has international bean breeding experience from the USA at USDA-ARS, Iowa State University, and received his PhD in 2014 from South Dakota State University.

## Contact

teshale.mamo@cgiar.org

## Product Profile design team

Step 1		
<b>PP Design Team Lead/Champion</b>		Teshale Mamo Alliance of Bioversity-CIAT, Tanzania
PP Design Team		
Person	Area of Expertise	Name of organization
Teshale Mamo	Breeder	Alliance of Bioversity-CIAT, Tanzania
Jean Claude Rubyogo	Seed systems	Alliance of Bioversity-CIAT, Kenya
Shida Nestory	Bean breeder	Tanzania Agricultural Research Institute (TARI-Selian)
Edith Kadege	Seed systems	TARI-Selian
Upendo Titi	Socio-economist	TARI-Selian
Mary Mdachi	Nutritionist	TARI-Selian
Bayda	Domestic trader/exporter	BAYMAC company
Esther Mushi	Bean processor	JAGEF group

## Clients and markets

Step 2	
Product profile descriptors	
<b>Product profile name</b>	Yellow dry bean
<b>Crop</b>	Common bean ( <i>Phaseolus vulgaris</i> L.)
<b>Country</b>	Tanzania
<b>Geographic regions</b>	Northern, Western and Southern highlands
<b>Market segment</b>	New emerging market for yellow bean grain, with good taste and medium cooking time, grown at an altitude of 900–1800 m
<b>Name of target variety to be replaced</b>	Selian 13 <b>Strength:</b> Early maturing, medium cooking time, palatable with good taste <b>Weakness:</b> Low yielding, susceptible to anthracnose, angular leaf spot and bruchids
<b>Date PP created</b>	07.07.2020
Target client and use	
<b>Value chain primary clients/customers</b>	Farmers, traders, consumers (women and children)
<b>Market scale</b>	Local, regional, national and international export markets
<b>Use</b>	Grain and flour for food, haulms for animal feed
<b>Type of processing</b>	Dried grain, pre-cooked beans
<b>Market class</b>	Yellow bean
Target crop producers and production system	
<b>Number of farmers</b>	800,000–1,050,000
<b>% ratio: male to female farmers</b>	50–60% male; 40–50% female
<b>Production system</b>	Open field
<b>Area of production system</b>	200,000–338,000 ha
<b>Growth habit</b>	Bush (determinate)
<b>Expected level of inputs</b>	Low – fertilizer, crop protection chemicals
<b>Typical yield range of target system</b>	0.5–0.8 t/ha (grain yield under farmer conditions)
<b>Cropping system</b>	Monocropping and intercropping with maize
<b>Mechanisation</b>	Some mechanical threshing
<b>Agroecological zone</b>	Altitude 900–1800 m
<b>Total seed market</b>	12,000–20,000 tonnes

Alliance



## Variety technical specification

### Step 3

Client/customer	Driver	Trait category	Preference group: Women (W) Men (M) Youth (Y) W+M+Y (All)	Trait demand classification: 1. Essential/"must have" 2. Niche opportunity 3. Added-value 4. Winning trait	Target traits	Trait description (Quantitative measures)	Name of benchmark variety	Performance required compared to benchmark variety <,=> etc.
Farmer	Productivity	Yield	All	1	Grain yield	Dry grain weight > 2 t/ha	Selian 13	>
		Biotic stress resistance	All	1	Angular leaf spot (ALS)	<3 (CIAT scale)	Jesca	>
			All	1	Anthraxnose	<3 (CIAT scale)	Selian 10	>
		Abiotic stress tolerance	All	1	Drought	Medium tolerance – at flowering stage (terminal and intermittent drought)	Selian 12	>
	Biomass	All	3	Biomass	Dry pods and stem	Jesca	>	
	Crop management and harvesting	Plant architecture	All	3	Uniform flowering time	Terminal inflorescences flower at same time	Selian 13	>
	Market value and price	Grain weight	All	1	Dry grain weight	Grain weight - bag of six buckets (approx 18 kg each)	Lyamungo 90	>
Crop duration		All	4	Early maturing	< 67 days	Selian 13	<	
Consumer	Satisfaction	Taste	All	1	Taste	Palatability	Selian 13	>
		Appearance	All	4	Yellow colour	Uniform and attractive	Selian 13	>
		Nutrition	W	1	High grain micronutrient content (Zn, Fe)	Iron > 50 ppm, Zinc > 25 ppm	RWR-21-54	>
		Digestibility	W	1	Flatulence, soft seed coat after cooking	Low gas production	Selian 13	<
		Food preparation	W	1	Cooking time	Less than 60 min in consumer conditions	Selian 13	<
Seed producer	Scalability and cost	Seed genetic purity	All	1	Seed germination	> 97% viability and 99% uniformity	Selian 13	>



*"We breeders can make a big difference to everybody who grows, sells, processes, cooks or eats beans. But we can also waste so much effort doing science that just sticks on the shelf. To avoid that, we must first ask farmers, buyers and communities what they really want. Demand-led breeding gives us a new starting point: the right questions to the right people."*

