

DLB Product Profile – Small white canning bean (Ethiopia)



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Design target

Higher yielding beans with larger seed size and improved canning quality for export markets in Pakistan, India, China and Europe.

Berhanu Amsalu leads Ethiopia's lowland pulse (common bean, mung bean, cowpea) research. He has worked as a breeder for the last 19 years and has released more than 25 lowland pulse varieties targeted at different markets and customers. These varieties are grown all over lowland areas of Ethiopia benefiting the growers and value chain actors. Ethiopia is generating more than USD 200 million per annum from the export of these pulses. Berhanu did his PhD studies at University of Pretoria, South Africa 2008-2012.

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Product Profile design team

Step 1

PP Design Team Lead/Champion	Berhanu Amsalu
	Ethiopian Institute of Agricultural Research (EIAR)

PP Design Team

Person	Area of Expertise	Name of organization
Berhanu Amsalu	Breeder	EIAR, Ethiopia
Dagmawit Tsgaye	Breeder	EIAR, Ethiopia
Abel Moges	Breeder	EIAR, Ethiopia
Fitsum Merkeb	Agronomist	EIAR, Ethiopia
Getachew Ayana	Pathologist	EIAR, Ethiopia
Mulatwa Wondimu	Entomologist	EIAR, Ethiopia
Fitsum Miruts	Agricultural extension	EIAR, Ethiopia
Mekonnen Sime	Agricultural economist	EIAR, Ethiopia
Mulate Zerihun	Food scientist	EIAR, Ethiopia
Mulugeta Teamir	Food technologist	MoA, Ethiopia
Tamirat Lema	Agricultural mechanization	EIAR, Ethiopia

Clients and markets

Step 2

Product profile descriptors	
Product profile name	Small white canning bean
Crop	Common bean (<i>Phaseolus vulgaris L.</i>)
Country	Ethiopia
Geographic regions	Central rift valley, Eastern and North Eastern Ethiopia
Market segment and positioning	Small white canning bean for established export markets in India, Pakistan, China, and Europe. Enhanced seed yield, canning quality, seed size, as well as acceptable consumers' sensory evaluation and seed appearance.
Name of target variety to be replaced	Awash-2 Strength: Good canning quality, erect plant architecture Weakness: Moderate yielding potential, small seed size
Date PP created	18.08.2020

Target client and use	
Value chain primary clients/customers	Farmers, traders, exporters, processors, farmer cooperative unions
Market scale	Local, regional and international markets
Use	Food as baked bean (canned bean)
Type of processing	Canning
Market class	Small white bean/Navy bean

Target crop producers and production system	
Number of farmers	900,000-1000,000
% ratio: male to female farmers	50-70% male; 30-50% female
Production system	Open field
Area of production system	90,000-120,000 ha
Growth habit	Bush (determinate/indeterminate)
Expected level of inputs	Medium fertilizer, low crop protection
Typical yield range of target system	1.0-1.6 tonnes dry seed/ha
Cropping system	Rotated with other crops, intercropped
Mechanization	Mainly hand threshing, suitable for machine threshing and planting
Agroecological zone(s)	Lowland to mid-altitude (1000-1900masl)
Total seed market	8000-10,000 tons

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	Dry seed yield	Stable dry seed weight after harvest kg/ha	Awash2	>
		Biotic stress resistance	All	1	Common bacterial blight	<3 (CIAT scale)	Awash2	≤
			All	1	Halo blight	<3 (CIAT scale)	Awash2	≤
			All	1	Rust	<3 (CIAT scale)	Awash2	≤
			All	1	Anthraco nose	<3 (CIAT scale)	Awash2	≤
			All	3	Bruchid resistance	No bored seed	RAZ42	≤
	Abiotic stress resistance	All	3	Drought tolerance	Terminal drought (after flowering)	Awash2	>	
	Crop management and harvesting	Plant architecture	All	1	Erect bush	Erect Type 1 or 2	Awash2	=
		Mechanical harvesting	All	2	Pod clearance	Higher pod clearance	Awash metene	≥
	Market value and price	Grain weight	All	3	Seed size/100 seed weight	Seed weight > 18g per 100 seed	Awash2	≥
Crop duration		All	3	Early maturing	Ready to harvest < 85 days from sowing	Awash2	≤	
Processor	Raw material quality specification	Canning quality	All	1	Hydration coefficient	Soaked beans (W2)/initial weight (W1) ≥ 1.8	Awash2	≥
			All	1	% washed drained weight	Washed drained weight (g)/mass of can content (g) target ≥60%	Awash2	≥
			All	1	Degree of splitting	Splitting target 6-7(1-7 scale: 7=fully intact)	Awash2	≥
			All	1	Degree of clumping	Clumping target 3 (1-3 scale: 3=no clumping)	Awash2	≥
			All	1	Brine clarity	Colour of brine target 6-7 (1-7 scale: 7=very clear brine)	Awash2	≥
			All	3	Colour retention	Keeping the original colour after canning	Awash2	≥
Consumer	Satisfaction	Sensory evaluation	All	1	Consumer acceptance	Acceptability colour and flavour test. Target 4-5 (1-5 scale: 5 =like very much)	Awash2	≥
		Appearance	All	1	Small seeded and white	Uniform white colour and size	Awash2	=
		Shelf-life	All	1	Long-shelf life	Dry bean appearance /colour. Target: original colour after 12 months storage	Awash2	≥
		Seed attractiveness	All	3	Brilliant seed colour	Equal or more shine than Awash2	Awash2	≥
		Nutrition	All	3	Dry seed mineral content (Fe, Zn)	≥ 81ppm Fe and ≥35ppm Zn	Awash metene	≥
		Food preparation	W	1	Fast cooking time	Target: < 30 minutes after soaking dry seed overnight	Awash metene	≤



Quality checking for export
Job opportunities for youth



Dried white beans



Canned white beans in tomato sauce

