DLB Product Profile – High-Yielding, Cream-Seeded Kersting's Groundnut For Benin

Eric Agoyi
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Design target
High yielding, cream-seeded kersting's groundnut with medium cooking time and palatability for the urban markets of Benin and neighboring countries.

Eric Agoyi leads the legume breeding programme at the Laboratory of Applied Ecology, University of Abomey-Calavi. His main interest is on three important legumes in Benin: Kersting's groundnut (*Macrotyloma geocarpum)* grain and vegetable soybean (*Glycine max*), and common bean (*Phaseolus vulgaris*).

He has over 7 years' experience as legume breeder. He has successfully selected pure elite lines of kersting's groundnut which have undergone extensive evaluation to enter the release process. He collaborates works with soybean breeders at the National Soybean Research Lab (NSRL) at the University of Illinois-Urbana-Champaign, USA. He holds a PhD in Plant Breeding & Biotechnology from Makerere University and is a graduate of the University of California-Davis, USA through the African Plant Breeding Academy.

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Product Profile design team

Step 1

PP Design Team Lead/Champion	Eric Etchikinto Agoyi
	University of Abomey-Calavi, Benin

PP Design Team		
Person	**Area of expertise**	**Name of organization**
Eric Etchikinto Agoyi	Breeder	Univ. of Abomey-Calavi
Médard Kafoutchonni	Associate breeder	Univ. of Abomey-Calavi
Samson Sossou	Seed system	National Agricultural Research Institute (INRAB)
Flora Josiane Chadare	Nutrition and food technology	National University of Agriculture, Benin
Falilath Baba Daouda	Agricultural economics, market analysis	University of Parakou, Benin
Martin Agboton	Agricultural economics, gender specialist	Sojagnon-NGO, Benin

Clients and markets

Step 2

Product profile descriptors	
Product profile name	High-yielding cream-seeded Kersting's groundnut
Crop	Kersting's groundnut (*Macrotyloma geocarpum* (Harms) Maréchal & Baudet)
Country	Benin
Geographic regions	Centre, North south and Southeast of Benin
Market segment and positioning	Consumers in urban areas of Benin
Name of target variety to be replaced	Doylwé **Strength:** Preferred seed colour **Weakness:** Low yield, susceptible to fungal diseases, bruchids and long cooking time
Date PP created	20.10.2020

Target client and use	
Value chain primary clients/customers	Farmers, traders, restaurant holders, consumers
Market scale	Local, regional, national and international markets
Use	Food
Type of processing	Cooked, canned, floured (cakes)
Market class	Cream bean

Target crop producers and production system	
Number of farmers	5000-10000
% ratio: male to female farmers	50-60% male and 40-50% female
Production system	Open field
Area of production system	300,000-500,000 ha
Growth habit	Bush (indeterminate)
Expected level of inputs	Low fertilizer and low protection chemicals
Typical yield range of target system	0.4-0,5 t/ha
Cropping system	Monocrop rotated with cereals, tubers and cotton
Mechanization	Mainly manual
Agroecological zone(s)	Guinean, Sudano-Guinean zones with low-medium altitudes
Total seed market	100-200 tonnes

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 > 0.8 t/ha	Doyiwé	>
		Biotic stress resistance	All	2	Pythium caused wilt disease	incidence and severity < 3 (1-5 scale)	Doyiwé	=
		Abiotic stress	All	2	Photoperiod response	Medium tolerance at flowering	Doyiwé	=
	Crop management and harvesting	Plant architecture	All	1	Bush spread	Area coverage diameter > 60 cm	Doyiwé	>
	Market value and price	Grain weight	All	1	Grain size	Average 100-seed weight > 15 grams	Doyiwé	>
		Crop duration	All	1	Time to maturity	Medium - before 100 days after sowing	Doyiwé	=
	Post-harvest and storage	Storage-life	All	3	Resistance to bruchids	Dobie susceptibility index < 8	Doyiwé)	=
Processor	Raw material quality specification	Cooking quality	All	3	Cooking time (firewood or charcoal)	< 2 hours to cook in household setting	Doyiwé	>
Consumer	Satisfaction	Taste	All	1	Taste	Palatability from sensory evaluation with key consumers	Doyiwé	=
		Appearance	All	1	Seed coat and hilum colour	Cream (without coloured hilum)	Doyiwé	=
		Digestibility	All	1	Flatulence, soft seed coat after cooking	Low gas production	Doyiwé	=
		Food preparation	All	3	Cooking time (firewood or charcoal)	< 2 hours to cook in household setting	Doyiwé	>
Seed producer	Scalability and cost	Seed genetic purity	All	1	Seed germination	> 95% viability >99% uniformity	Doyiwé	>

Kerstin groundnut with diverse seed coat colour

Target cream colour, cooked grains