

# Fast-Cooking Cream-Seeded Kersting's Groundnut for Benin



**Dr Eric Agoyi**

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## Design target

Fast-cooking and palatable cream-seeded kersting's groundnut for the urban markets of Benin and neighboring countries

Dr Eric Agoyi leads the Legume breeding programme at the Laboratory of Applied Ecology, University of Abomey-Calavi. Eric's main interest is on three important legumes: kersting's groundnut (*Macrotyloma geocarpum* (Harms) Maréchal & Baudet), grain and vegetable soybean (*Glycine max*) and common bean (*Phaseolus vulgaris*). He has over 8 years' experience as legume Breeder. He extensively works with soybean Breeders at the National Soybean Research Lab (NSRL) from the University of Illinois-Urbana-Champaign, USA, and the Common bean Breeders at the Alliance Bioversity-CIAT. He holds a PhD in Plant Breeding & Biotechnology from Makerere University and he is a graduate of the University of California-Davis, USA through the African Plant Breeding Academy. He was also honored to implement and train for Gender Responsive Plant Breeding (GREAT). He has successfully selected pure elite lines of kersting's groundnut which have undergone extensive evaluation for variety release.

## Contact

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## Product Profile design team

### Step 1

<b>PP Design Team Lead/Champion</b>	Eric Etchikinto Agoyi	
	University of Abomey-Calavi (Benin)	
<b>PP Design Team</b>		
<b>Person</b>	<b>Area of Expertise</b>	<b>Name of organization</b>
Eric Etchikinto Agoyi	Breeder	University of Abomey-Calavi (Benin)
Médard Kafoutchonni	Associate Breeder	University of Abomey-Calavi (Benin)
Samson Sossou	Seed system	National Agricultural Research Institute of Benin (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)
Key processors (from public and private)	Food processor	Department of Research and Specialist Services

### Step 2

<b>Product profile descriptors</b>	
<b>Product profile name</b>	Fast cooking high-yielding cream-seeded Kersting's groundnut
<b>Crop</b>	Kersting's groundnut ( <i>Macrotyloma geocarpum</i> (Harms) Maréchal & Baudet)
<b>Country</b>	Benin
<b>Geographic regions</b>	West & Central Africa
<b>Market segment and positioning</b>	Urban consumers in Benin & neighbouring countries
<b>Name of target variety to be replaced</b>	Doyiwé <b>Strength:</b> Cream-seeded <b>Weakness:</b> Long cooking time, low yield, susceptible to major diseases, sensitive to bruchids
<b>Date PP created</b>	30. 06.2021

<b>Target client and use</b>	
<b>Value chain primary clients/customers</b>	Farmers, traders, restaurant holders, urban consumers
<b>Market scale</b>	Local, regional, national and international markets
<b>Use</b>	Food
<b>Type of processing</b>	Cooked, canned, matched, processed into cakes
<b>Market class</b>	Cream bean

<b>Target crop producers and production system</b>	
<b>Number of farmers</b>	5000-10000
<b>% ratio: male to female farmers</b>	50-60% male and 40-50% female
<b>Production system</b>	Open field
<b>Area of production system</b>	1500-4000 ha
<b>Growth habit</b>	Bush (indeterminate)
<b>Expected level of inputs</b>	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	Land preparation, sowing, weeding, harvesting and threshing are mainly manual
Agroecological zone(s)	Guinean, Sudano-Guinean zones with low-medium altitudes
Total vegetative propagation material market	100-200 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	Grain yield	Dry grain weight > 0.7 t/ha	Doyiwé	>
		Biotic stress resistance	All	2	Wilt disease	Disease score for incidence and severity < 3	Doyiwé	=
		Abiotic stress tolerance	All	2	Photoperiod response	Medium tolerance during flowering (10-13 hours)	Doyiwé	=
	Crop management and harvesting	Plant architecture	All	1	Spread bushy	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	Medium	Maturity occurs before 100 days after sowing	Doyiwé	=
	Post-harvest storage	Storage-life	All	3	Resistance to bruchids	Dobie susceptibility index < 8	Doyiwé)	=
Processor	Raw material quality specification	Cooking	All	2	Short cooking time	Takes less than < 3.5 hours to cook in normal household settings (firewood or charcoal)	Doyiwé	<
Consumer	Satisfaction	Taste	All	1	Taste	Palatability as a result of sensory evaluation with 100-200 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	M & W	2	Short cooking time	Takes less than < 3.5 hours to cook in normal household settings (firewood or charcoal)	Doyiwé	<
Seed/vegetative material producer	Scalability and cost	Seed genetic purity &	All	1	Seed germination	> 95% viability and >99% uniformity	Doyiwé	>

Kersting's groundnut seeds with diverse coat color including cream seeds



Palatable soup made out of Kersting's groundnut seed



*“Consumers’ market is getting very selective in the African food system, with high requirement for climate friendly traits. Accurate-defined and developed short cooking time products is key to fulfil these market’s needs, credit to Demand-Led Breeding”*