Resistance of Maize hybrid to Herbicide For Greater Accra, Ashanti, Cape Coast and Volta Regions, Ghana

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Design target
Resistance of Maize hybrid to Herbicide in Ghana

Theophilus Adu-Gyamfi is a Research Assistant at WACCI under an ongoing Bambara groundnut project. His research interest is in Plant Sciences using molecular and biotechnology tools to develop food systems and climate-smart agricultural crop plants to transform African agricultural systems. He holds a BSc-agriculture and MPhil-Seed Science and Technology degrees from the University of Ghana, where He was named "Overall Best Graduating Student" of the School of Agriculture for the 2019/2020 academic year. He won several scholarship awards including the German Academic Exchange Service (DAAD) Scholarship, the Barclays Tertiary Education Scholarship, and the University of Ghana Sponsorship Award.

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Product Profile design team

Step 1

PP Design Team Lead/Champion	Theophilus Adu-Gyamfi
	University of Ghana, Department of Crop Science

PP Design Team		
Person	**Area of Expertise**	**Name of organization**
Prof. Tongoona	Plant breeder	WACCI
Dr. Beatrice Ifie	Plant breeder	WACCI
Mrs. Mawulawoe Anato-Dumelo	Agronomist	WACCI
Yaw Owusu Ababio	Market research expert	WACCI
Francis Appiah	Climate change specialist	WACCI
Abigail Komedza	Food scientist	Crop Science, University of Ghana

Step 2

Product profile descriptors	
Product profile name	Resistance of maize hybrid to herbicide
Crop	Maize *(Zea maize)*
Country	Ghana
Geographic regions	Greater Accra, Ashanti, Cape Coast, volta
Market segment and positioning	High adaptable, high resistance to herbicide, high yielding, cheaper
Name of target variety to be replaced	Semanhyia **Strength**: readily available seeds, early maturing **Weakness**: low yielding, susceptible to herbicide
Date PP created	28.02.20222

Target client and use	
Value chain primary clients/customers	Smallholder farmers, Researchers, seed industry, market queens
Market scale	Household, local, regional, national
Use	Food, animal feed, research studies
Type of processing	Cooked, milled
Market class	Medium size, grain quality, grain taste

Target crop producers and production system	
Number of farmers	70-120
% ratio: male to female farmers	65-82% male : 35-38% female
Production system	Open field (+/- irrigation)
Area of production system	50-60 Ha
Growth habit	Determnate
Expected level of inputs	Medium- fertilizer, crop protection chemicals
Typical yield range of target system	10-15 t/Ha
Cropping system	Continuous monocrop
Mechanization	None- Manual planting, maintenance and harvesting
Agroecological zone(s)	Forest, transitional and coastal savannah
Total vegetative propagation material market	15-20 kg

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	Economic yield	Medium size weight >10-15- t/Ha	Semanhyia	>
		Abiotic stress tolerance	All	4	Heat stress tolerance	Hybrids set at temperature (>30º)	Semanhyia	>
	Crop management and harvesting	Plant architecture	All	1	Growth habit	Determinate	Semanhyia	>=
	Market value and price	Grain weight	All	1	Dry grain weight	Grain weight-eight jute bags	Aflao	>
		Crop duration	All	4	Early maturing	<95 days	Semanhyia	<
Consumer	Satisfaction	Taste	All	1	Taste	Palatability	Semanhyia	>
		Appearance	All	4	Yellow colour	Attractive	Semanhyia	>
		Nutrition	All	1	High grain nutrient content (folic acid, vitamin A, vitamin C)	Very High content of vitamin A and C	Aflao	>
		Food preparation	All	1	Cooking time	Less than one hour	Semanhyia	<
Seed producer	Scalability and cost	Seed purity and viability	All	1	Seed germination	95% germination and uniformity	Semanhyia	>

Maize genotypes being assessed for tolerance to herbicide

"Demand-Led Breeding has brought a significant increase in maize production on farmers' fields in Ghana as smallholder farmers can now grow more improved herbicide-resistant varieties on more hectares of land with little or no mechanical weeding, thus avoiding physical damage to crops"