

Promoting farmer participation in cassava breeding: Lessons from participatory breeding for superior varieties in Ghana

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Context

- Farmers were the prime actors in adapting cassava to African conditions after its introduction from South America.
- Farmer-selected landraces still dominate production in Africa.

[So farmers are doing lots of things right!]

BUT

- Most landraces are CMD-susceptible, some are low-yielding etc.

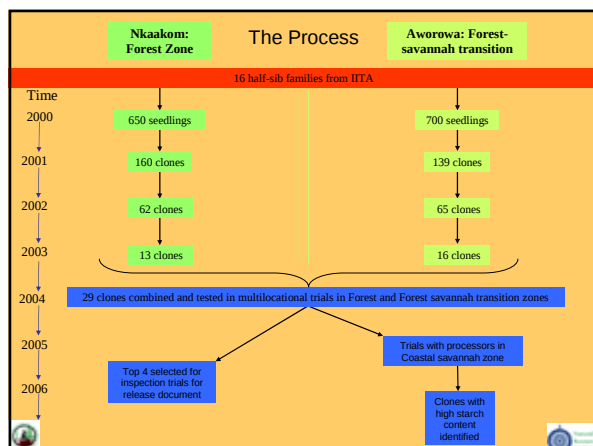
[So farmers could do with some help]

Our concept: a partnership of farmers, scientists and other stakeholders

- To build on indigenous farmer breeding.
- To use plant breeders' capacity to access diversity, generate large numbers of seedlings of good families and select promising genotypes.
- To involve other disciplines and other stakeholders [e.g., processors].

Key aspects of the process:

- Scientists provide farmers with knowledge of value of seedlings, large numbers of seedlings & diverse seedlings with resistance to cassava mosaic etc.
- Selection of superior seedlings done in farmers' fields, and farmers and scientists have equal rights in this.
- Farmers identified a need for new markets.



Some common selection criteria mentioned by farmers during evaluations at different harvests

High storage root yield
Poundability into fufu
Large [marketable] roots
Many branches
Thick stem
Suitable for intercropping
Ability to suppress weeds
Early maturity
Non-rotten storage roots
Healthy leaves
Disease free plants
A particular storage root skin colour
Average neck length of storage roots
Resistance to lodging

Farmers impressed at the yield of some seedlings



Even better yields achieved by selected clones



No 24: the one the farmers really like:

Good for fufu;
Pound all-year round;
Pinkish skin like popular local;
Tall, high-branching like their landraces



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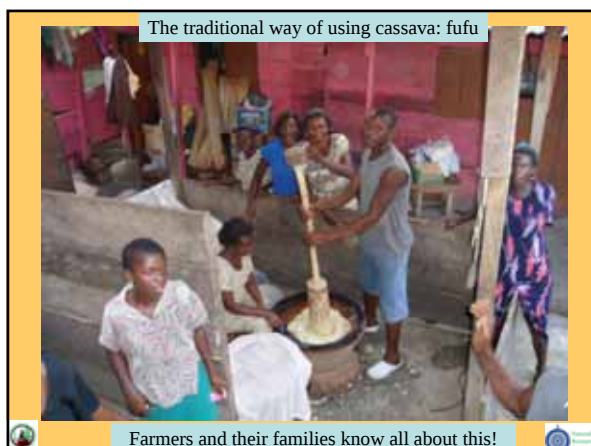
Dear Richard,

.....

With regards to the adoption of our materials, I will say that up to 215 farmers (45% women) in 9 communities took one or more of the accessions to their farms as at 2005 and since then there has been [more] farmer to farmer up-take which we are yet to follow-up.

.....

Joe Manu-Aduening



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"We had to include one very promising material (AW34) which came up as [having] the highest starch material (34% starch) amongst the materials tested throughout the country. This material plus the 3 accessions planted for inspection last year have been replanted and we hope to get them ready for release next year. It is also worth noting that 6 of our materials (all having starch contents >26%) have been selected amongst top 26 materials being evaluated for PSI* on starch and alcohol production.

Trials with processors have been harvested and their selections as far as the starch contents are concerned seemed to agree with what have been selected for wider testing for use by PSI. Eight of the accessions had yields ranging from 35-50 T/ha however, 4 had starch contents ranging between 26 and 34%. These are greater than Afisiati (23% starch)."

*PSI = President's Special Initiative for development of starch factories in Ghana

Some lessons learnt from participatory breeding activities as perceived by scientists

- **Fast:** simultaneous selection by farmers and scientists enabled the process to be rapid; just 6 yrs and superior, CMD-resistant clones were identified for farmers and processors
- **Adoption:** can be expected as farmers are already beginning to adopt them informally
- Scientists gained valuable insights into farmers' selection procedure and attributes selected for
- Processors and post-harvest scientists able to identify superior clones amongst those which farmers were already happy with
- It was confirmed that farmers are effective selectors for their needs and conditions
- Careful selection of crosses is a key role for the plant breeder

OVERALL, IT WAS A VERY POSITIVE EXPERIENCE

Some lessons learnt from participatory breeding activities as perceived by farmers

Activity	What farmers learnt (benefits)	% of farmers responding
Planting	Awareness that cassava seeds can be planted	77
	Spacing of cassava	23
Weeding	Timely weeding	86
	Line weeding	14
Assessment	Disease identification	82
	Identification of high yielding varieties	18
Harvesting and selection	Different types selected for different purposes	48
	High yielding cassava material	26
	Good tubers obtained from cassava seeds	16
	Selection of good planting materials	10
Overall	Benefits of interacting with scientists	61
	Scientific method of producing cassava	28
	Means of eradicating cassava diseases	11

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