ETHNO-BOTANY OF SOME CASSAVA GERMPLASM IN GHANA

By

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ABSTRACT

As a contribution to the data on the characteristics of local Ghanaian cassava germplasm, two hundred and twelve (212) local cassava varieties were selected from farmers' fields from Wenchi, Dormaa, Nkoranza and Asunafo Districts in the BrongAhafo Region of Ghana in 1998. Accession data including local names of the specimens were recorded. Stem cuttings of varieties were planted at the Regional Agricultural Station, Wenchi for characterization.

Out of the lot, thirty-six (36) accessions were selected for studies into their ethno-botanical information, and the following observations were made.

1. *Features that farmers consider in naming cultivars include: (i) vegetative characters such as the colour of the petiole and stem, and the stature i.e. height of the plant; (ii) the storage root characters: yield, size, shape, skin colour, smoothness and taste (raw or boiled), (iii) the economic value of the cultivar in terms of the income derived from the sale of the fresh or processed root; (iv) the aesthetic value of either the shoot or root tuber.*

2. *While revealing the selection criteria of the farmers, this ethno-botanic information can be an indicator to what characteristics a breeder might expect in a variety. It could therefore, assist in the preliminary identification of potentially useful traits that the cultivar may possess, even before subjecting it to scientific study.*

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INTRODUCTION

Cassava (*Manihotesculenta*Crantz) which belongs to the family Euphorbiaceae, is a perennial crop grown mainly for its storage roots. It is the most economically important species of the genus *Manihot* and forms an important part of the diet of over 800 million people in the tropical world (Bokanga, 1992). In 1996, the Food and Agriculture Organization (FAO) of the United Nations estimated that forty four percent (44%) of the world output of cassava came from Africa.

Cassava, yam, plantain and cocoyam occupy an important strategic niche in Ghanaian agriculture, accounting for about fifty-nine percentage (59%) of Ghana's agricultural Gross Domestic Product (GDP), with cassava alone contributing nineteen percent (19%) (Dapaah, 1991).

In the coastal regions of West Africa, from Cote d'Ivoire to Cameroon, cassava is as important as yam, and it is the most important staple after rice (Nweke*et al*; 1994). The leaves are widely consumed as a potherb. Cassava is easily adapted to relatively marginal soils and erratic rainfall conditions, and has a high productivity per unit land and labour. Cassava is a basic component of the farming system in many areas of Africa due to the fact that it produces and maintains a continuous supply of tuberous roots even under the most adverse conditions throughout the year. It therefore, has a high potential to bridge the dry season food gap in these parts of Africa (Nweke, 1996). Cassava also serves as a raw material for many industrial products. Its starch is used in the production of industrial alcohol, paper, cosmetics, pharmaceuticals, and in the textile industry (IITA, 1990). Its glue also finds massive application in the plywood industry. Cassava is also used as a livestock feed. Animals can be fed on cassava tuberous roots, foliage, peels and residues from cassava processing for *fufu*, *gari*, flour and starch. The foliage is rich in nitrogen, fibre, vitamins and minerals and so serves as a source of nitrogen and roughage for ruminants (Smith, 1998).

Genetic resources of a crop consist of landraces, improved varieties, elite breeding lines, mutants, obsolete varieties and related wild species. These resources must be assembled, and conserved to avoid the risk of genetic erosion, or be protected on-farm and in-situ. They become the source material from which genotypes with desirable characters or traits

can be identified and selected for breeding programmes. The next stage after germplasmcollection is characterization and evaluation for two reasons. Firstly, some accessions may interest gene bank curators to keep track of them and check their genetic integrity over the years. Secondly, some of them may be used in breeding programmes (Ramanatha and Riley, 1994).

In Ghana, cassava farmers are continuously adopting, into their cropping systems, new cultivars with desirable attributes. These characteristics are early bulking, high tuberous root yield, weed suppression, pest or disease tolerance, good processing quality, branching morphology, low HCN potential and good cooking qualities. In the past, local cassava germplasm has been collected from parts of Ashanti, Eastern, Volta, Greater Accra, Western and Central regions under the National Agricultural Research Project (NARP) Root and Tuber Crops Research Programme. These collections have been characterized at the Crop Research Institute Fumesua, Kumasi; the Plant Genetic Resources Research Institute, Bunso; and the Department of Crop Science, University of Cape Coast (AnnorFrimpong, 1991). There was therefore the need to collect and characterize local cassava germplasm from BrongAhafo Region. The objective of this study was to collect and elicit from farmers ethno-botanic information on local cassava germplasm from parts of the BrongAhafo Region of Ghana.

MATERIALS AND METHODS

A total of two hundred and twelve (212) local cassava germplasm were collected, out of which thirty-six (36) were studied for ethno-botanic information. The collection was carried out in June/July, 1998, from four districts in the BrongAhafo Region: i) Wenchi District, is located in the northern part of the region and within the forest – savannah transitional ecological zone; ii) Asunafo District, is in the south-western part of the region, shares common boundary with Cote d'Ivoire and has a forest vegetation; iii) Nkoranza District is located in the eastern part of the region and has a forest-savannah transitional vegetation; while iv) Dormaa District is to the south and has a humid semi-deciduous forest ecology.

The selection of the districts was based on their geographical spread ~~zone~~. [See map of Ghana showing BrongAhafo Region (Fig 1). Collections were made in the four shaded districts]. The collections were made in collaboration with Ministry of Food and Agriculture's staff in the selected districts. Collections were made in the field by Agricultural Extension Agents (AEAs) and collated by District Development Officers (DDOs), who were supervised by District Directors of Agriculture (DDAs). Each district was divided into sub-districts based on their size, the distribution of the crop, and the level of utilization of cassava roots either as a source of food or for processing into gari, kokonte or cassava chips.

The collections were made from towns and villages which were considered to berepresentative of cassava cultivation in the district. Stem cuttings were made from farmers' fields and home gardens, and kept in perforated polythene bags after labeling. Passport data with the following information were prepared for each collection made:

1. Collection number
2. Crop species
3. Collection date
4. Name of collector
5. Name of region
6. Name of district
7. Name of village or town
8. Precise location of farm
9. Local name of cultivar and its meaning
10. Donor's name
11. Ethnic group of donor

Collections were made in June/July, 1998 and assembled at the Regional Agricultural Station at Wenchi in the BrongAhafo region, registered and given Accession Numbers as described below, and planted in labeled plots.

(i) Dormaa district's collections were designated as DMA-001 etc.

(ii) Wenchi district's collections were designated as WCH-001 etc.

(iii) Asunafo district's collections were designated as ASF-001 etc.

(iv) Nkoranza district's collections were designated as NKZ-001 etc.

RESULTS AND DISCUSSION

In Ghana, exchange of cultivars among cassava farmers is a very common practice. A good cultivar identified by one farmer may soon end up on a different farm and given a different name at the new location. These names often indicate the special or unique features of the new cultivar in its new location. Such features may refer to:

(a) morphological characteristics;
(b) yield potential of the cultivar;
(c) tuber characteristics;
(d) use to which the root tuber is put.

This study tabulates information on the local names of some common cassava varieties and ethno-botanic information on them.

CONCLUSION

1. It is deduced from the foregoing that the main features that farmers consider in naming cultivars include:
   (a) vegetative characters such as the colour of the petiole and stem and the structure (height) of the plant;
   (b) the storage root characters, namely the yield, tuber shape, size, smoothness or otherwise of the tubers and the colour of the outer surface of the root cortex, as well as the taste of the raw or boiled root tubers;
   (c) the economic value of the cultivar in terms of the income derived from the sale of the fresh or processed root;
   (d) the aesthetic value of either the shoot or root tuber.

2. The importance of this ethno-botanic information is that it can give a breeder an insight into what to expect in local germplasm collection. It also assists in the identification of some useful traits that some of the cultivars posses even before subjecting the germplasm to a scientific study. It also reveals the selection criteria of the farmers.

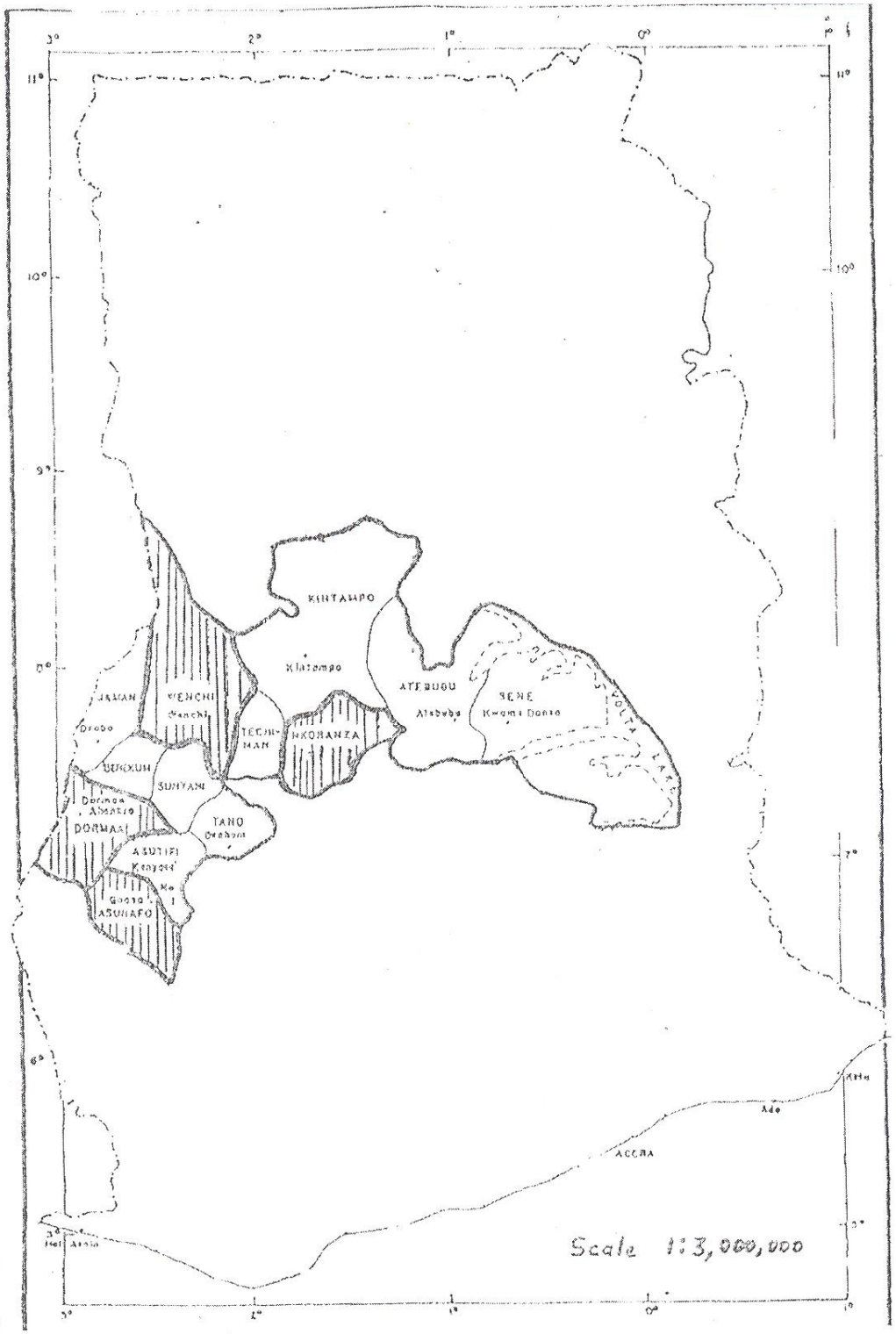

Fig 1 Map of Ghana showing Brong-Ahafo Region. Collections were made in the 4 shaded districts

ACCESSION NO	LOCAL NAME	TRANSLATION	IMPLICATIONS
(1) DMA-001	*Bankye-Broni*	Cassava which is like a 'white man'.	This refers to the stem and petiole colour.
(2) DMA-003	*Tu-gyabi-tuntum*	'Harvest and leave some tubers', with black tuber skin and stems are BLACK.	High continuous yielding, so harvesting by periodic removal of tubers is recommended. It also indicates that the outer surface root cortex or the stem is black.
(3) DMA-007	*Tu-gyabi-kokoo*	'Harvest and leave some tubers', with RED outer surface of the tubers/stem.	Has the same morphological and agronomic traits as DMA-003 above, except for the colour of the outer surface root cortex or the stem which is pink instead of black.
(4) DMA-015	*Bokentema*	Tuber yield of one plant fills a basket to the brim.	Very high yielding.
(5) DMA-016	*Nfiemienu-bankye*	Two years cassava	Matures in two years i.e. a late maturing type.
(6) DMA-019	*Kowoka*	Settle your debt	High yielding which translates into high income for settling debt.
(7) DMA-020	*Bankye-fitaa*	White-cassava	Possesses white

			petioles, stems and 'skin' colour.
(8) DMA-023	*Bankye-Nkanfoo*	Cassava that is like*Dioscoroeadumentorum* yam	The root tuber flesh is yellowish and tastes like yam.
(9) DMA-033	*BosomeNsia*	Six months cassava	Early maturing.
(10) DMA-040	*Mma-eduasa*	Thirty children	High yielder. Produces many tubers.
(11) DMA-044	*Kronfoommpe*	The thief does not like it	Does not attract pilfering. This is attributed to its bitterness (high cyanide content), poor cooking quality and low yield potential.
(12) DMA-057	*Bankyepanpro*	Cassava is like the bamboo	Tall like a bamboo tree.
(13) DMA-067	*Bankye flowers*	Cassava that looks like flower	This variety flowers profusely and is beautiful.
(14) WCH-004	*Baatia*	Short lady	It is short in stature but beautiful to behold.
(15) WCH-005	*Bankye-borodee*	Cassava-plantain	The tuber flesh is yellowish, resembling plantain in colour and can be pounded into fufu by itself without mixing with plantain
(16) WCH-007	*Tua-kentema*	Fills a basket when harvested	Very high yielding cultivar
(17) WCH-021	*Tete-bankye*	Olden days cassava	The cultivar was

			introduced into the traditional farming system long ago
(18) WCH-023	*Kumkom*	Kills hunger	Very high yielding and as such prevents famine.
(19) WCH-027	*Hani-bankye*	Hunter's cassava	This refers to the sweetness of the tuber such that it can be eaten fresh by the hunter who has no place or time to cook.
(20) WCH-037	*Alata-bankye*	Cassava from Nigeria	Meaning it was introduced from Nigeria.
(21) WCH-038	*Bankye-soja*	Cassava resembling a soldier	The plant is erect and non-branching.
(22) WCH-039	*Bankye-nkyim-kyim*	Contorted cassava	The stem has a contorted appearance and the root tuber is knotted at many points.
(23) NKZ-005	*Ampenkyene*	Does not like salt	It is sweet and therefore does not require salting.
(24) NKZ-007	*Asitrodoo*	Very erect cassava	The plant is erect and firm. It is therefore not prone to lodging.
(25) NKZ-010	*Awesewa*	Dwarfish	Smallish and beautiful. This refers to the morphology of the

			plant structure and the small tuberous roots.
(26) NKZ-018	*Yemmawo*	We won't give you	Because the tubers possess excellent cooking qualities, its planting materials are guarded jealously.
(27) NKZ-020	*Mensuhia*	Don't complain of poverty	High yielding.
(28) NKZ-042	*Ahenewa*	The Prince or Princess	Beautiful and stately like a queen.
(29) ASF-002	*Bogyimi*	Yields like a fool	The yield is overwhelming.
(30) ASF-007	*Dabo-dabokote*	Like a drake's sex organ	Produces knotted tuberous roots.
(31) ASF-008	*Bankye-nanka*	Snake-like cassava resembling the viper	The tuberous roots are very long and large.
(32) ASF-010	*Bankye-Ababaawa*	Cassava which is like a beautiful young lady	The stem and tuber are very beautiful
(33) ASF-014	*Bankye-Abrodwomaa*	Cassava which is similar to sweet potato	The tubers taste like sweet potato
(34) ASF-023	*Edabowo*?*	Still wearing the old scarf?	An old variety.
(35) ASF-030	*Edasobowo*?*	Still wearing the old scarf?	Another old variety.
(36) ASF-031	*Bankye-Hemaa*	Cassava with queenly beauty.	It is as beautiful as a queen.

* This refers to changes in fashion. Many decades ago, women wore a rather thick rayon scarf as headgear. Later this was changed to a more colourful and lighter nylon scarf which was handier. Thereafter, friends teasingly pose this question to those who still wear the old rayon scarf.

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