

**LINGUISTIC EVIDENCE FOR
CULTIVATED PLANTS
IN
THE BANTU BORDERLAND**

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ABSTRACT

Recent research into the languages of the Nigeria-Cameroun borderland has made possible the elaboration of a more concrete schema relating Bantu and Bantoid languages to the Benue-Congo group. At the same time, new data sources on the vernacular names and ethnobotany of cultivated plants suggest hypotheses on the gradual domestication of indigenous flora. The pattern that emerges suggests that this process occurred gradually in widely scattered locations but that some types of cultivation were established as far back as the period when Proto-Benue-Congo was spoken.

Abbreviations, conventions and sources

Acronyms:

CB	Common Bantu	Guthrie 1967-71
EB	Economic Botany	
FPA	Flora des Pharaonischen Agypten	Germer, 1985
FGO	Food: the gift of Osiris	Darby et al. 1977
JATBA	Journal de l'Agriculture Tropicale et Botanique Appliquée	
PAOA	Plantes Alimentaires Ouest-Africaines	Busson, F. et al. 1965
PBC	Proto-Benue-Congo	
PBC	Proto-East-Benue-Congo	
PI	Proto-Ijò	Williamson, in prep
PLC	Proto-Lower Cross	Connell 1991 & p.c.
PM	Proto-Manenguba	Hedinger, 1987
PUG	Plantes Utiles du Gabon	Raponda-Walker & Sillans 1961
PWS	Proto-West Sudanic	Westermann 1927
UPTWA	Useful Plants of West Tropical Africa	Dalziel 1937

In the Appendix, I have adopted the convention for reconstructions used in the Niger-Congo volume edited by Bendor-Samuel (1989), distinguishing those established by regular sound-correspondences from those derived by quick inspection of cognates. The former are marked with an asterisk '*' and the latter with a hache '#'.

Since the data are drawn from a variety of sources, some words are not tone-marked. Using the present conventions these are not distinct from words with only mid-tone. To clarify such words, a + is added to words with mid-tone.

1. Introduction

Anyone approaching the field of Bantu studies from an external perspective is likely to be rapidly impressed by the degree to which the field has been dominated by the work of Malcolm Guthrie (especially Guthrie, 1967-71). Although many of Guthrie's ideas have been discarded or rejected, the sheer monumentalism of 'Comparative Bantu' has had the effect of mesmerising many scholars who retain its subgroupings and notational conventions while decrying its methodology.

Traditions of the distinctiveness of the Bantu languages date back to Meinhof (1906) or even earlier. One of the specific effects of Guthrie's 'Comparative Bantu' was to underline for many scholars' minds that distinctiveness. Although Greenberg's assertion of the relationship with Niger-Congo has been generally accepted (Greenberg, 1963:32), Bantu was generally treated as a bounded group, whose limits were thought to be clearly defined and for which cultural reconstructions could be undertaken.

This permitted types of cultural reconstruction for a rather nebulous community of 'proto-Bantu' (Guthrie, 1970, Greenberg, 1972, Dalby, 1975, 1976, Obenga, 1985). This tradition has had the effect of keeping the Bantu↔Niger-Congo relationship distinct, since such discussions rarely consider more widespread cognates of the reconstructed terms proposed for proto-Bantu.

This point of view was easier to maintain when the most closely related languages, in the Nigeria-Cameroun borderland, remained almost unknown. Their morphological diversity, tangled relationships and the absence of significant bodies of lexical data meant that they could be effectively ignored. This situation only really changed with the initiation of the 'Benue-Congo Working Group' and its offspring, the 'Grassfields Working Group', begun in the 1960s, which undertook a detailed survey of the Cameroun Grassfields languages. Together with the ALCAM survey, undertaken for the preparation of the Linguistic Atlas of Cameroun in the 1980s, this situation has been partly remedied.

The publication of the proceedings of the 'Bantu Expansion Colloquium' in 1980 constituted a sort of manifesto for this group (Bouquiaux et al., 1980). The relationship with Bantu was brought into the open and a series of hypotheses about the exact nature of the relationship were aired, focusing above all on morphology, especially noun-class systems. This had the unfortunate effect of leaving the lexical data collected for these surveys unpublished. This remains the situation today¹.

This paper² has two goals; to clarify the results of recent research on the relationships between Bantu and Benue-Congo and to explore the reconstruction of crop names in the 'intermediate' languages with a view to generating hypotheses on the antiquity of agriculture in this region. The paper begins by discussing the proposed genetic 'tree' linking Bantu and the Bantoid languages. The second part deals with specific crops, beginning with a caveat on the use of reconstructions of crop names. The conclusion puts forward some very tentative hypotheses about early agriculture in the Nigeria-Cameroun borderlands. Data tables relating to vernacular crop names are given in Appendix 1.

The crops discussed are those that were probably domesticated in West-Central Africa and whose wild relatives form part of the indigenous flora. Protected and semi-cultivated trees, such as the oil-palm, are extremely numerous and only a few examples are given. The role of Asian imports, such as the plantain and the cocoyam, are not discussed here, although they may indeed have been present during the early period of Bantu expansion. However, both the lexical and historical problems associated with these crops are considerable and would divert the paper from its main argument.

¹I am glad to say that this situation is being remedied at Lyon under the auspices of the CNRS Laboratoire 'Dynamique des Langues' through the agency of Jean-Marie Hombert. I am grateful to Jean-Marie for access to some of the unpublished lexical data being processed.

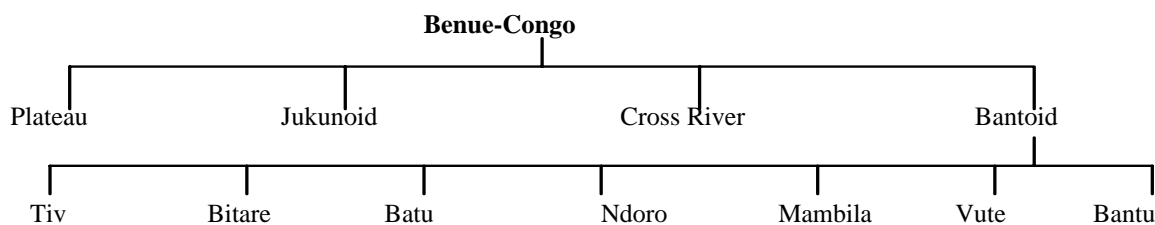
²I am grateful to Kay Williamson, Philip Allsworth-Jones and David Phillipson for their comments on the paper subsequent to presentation at the Conference.

2. Recent Studies of the External Relationships of Bantu

African linguists have an undistinguished record in separating typology from genetic affiliation and this is certainly true of early writings on Bantu. It was pointed out as early as the 1880s that a wide range of West African languages exhibited noun-class features analogous to those classified as 'Bantu' (Johnston, 1886). Johnston later went on to produce an extensive study of Bantu and 'Semi-Bantu' pointing out these connections without clarifying the implications for genetic relationships or otherwise (Johnston, 1919,1922). Westermann (1927) mentioned but did not explore the links between 'Western Sudanic' [Niger-Congo] and Bantu. Guthrie, similarly, considered the problem briefly in his excursus 'Bantuisms in non-Bantu languages' (Guthrie, 1971,4:107-111) but concluded that the links with languages such as Efik were so reduced as to be of little importance historically.

The work of Greenberg first appeared in the early 1950s, with its most recent synthesis in book form in Greenberg (1963). In this work, Greenberg regarded Bantu as merely a branch of Benue-Congo, i.e. the group of languages of southern and eastern Nigeria. He says 'the Bantu languages are simply a subgroup of an already established genetic subfamily of Western Sudanic' [i.e. Niger-Congo, broadly speaking] (Greenberg, 1963:32). His classification can be represented graphically as follows;

Figure 1. Greenberg's model of the Classification of Bantu

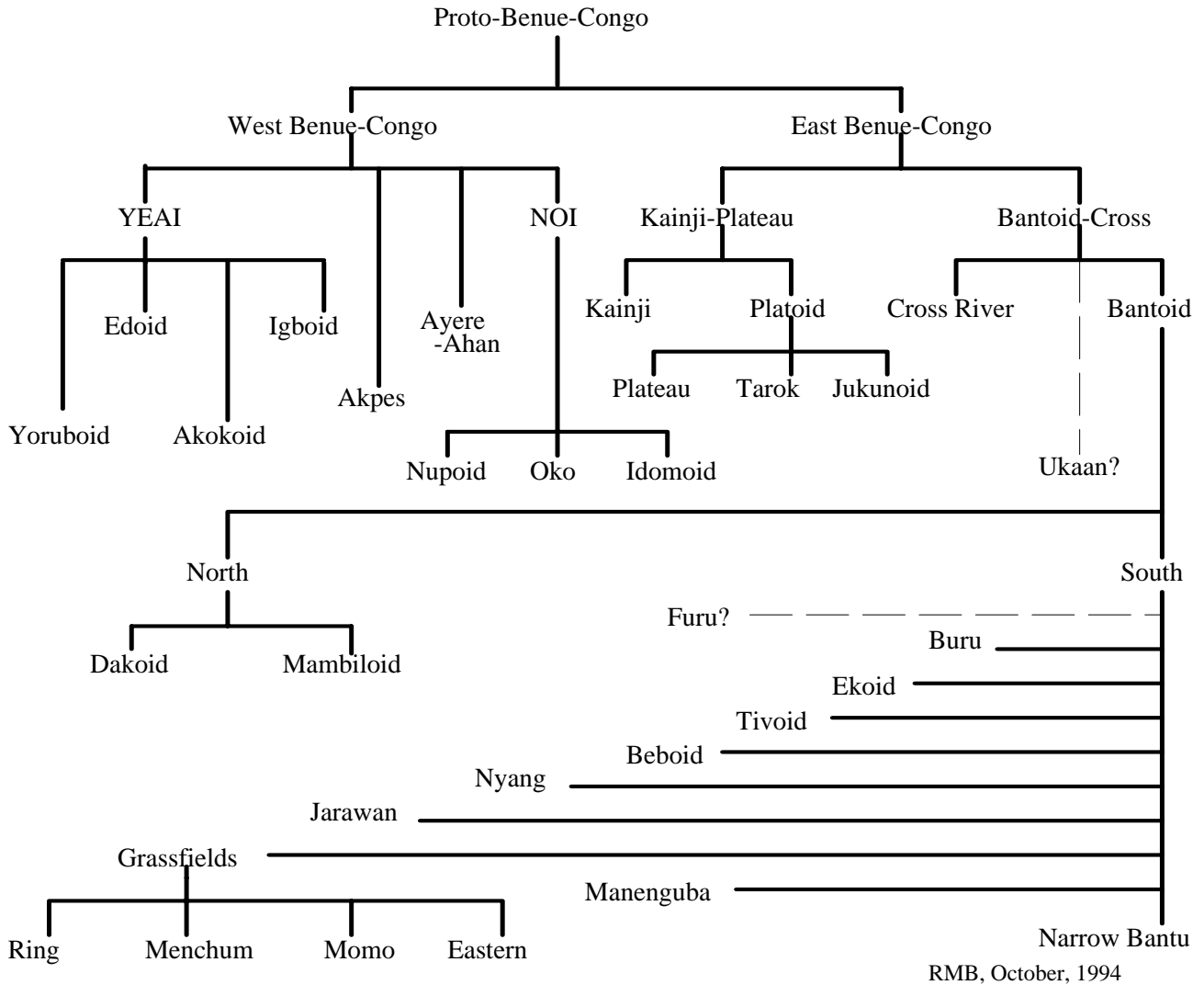


The period between the 1960s and 1980s saw a major expansion of research in this region, summarised first in the Benue-Congo Comparative Wordlist (Williamson & Shimizu, 1968 & Williamson, 1972) and then in the proceedings of the 'Bantu Expansion Colloquium' (Bouquiaux et al., 1980). Williamson (1971) proposed a 2-way split within Bantoid, of Bantu and non-Bantu languages, a division which Greenberg (1974) later accepted. In this article, he linked the newly christened Mambiloid and Tivoid and showed a two-way split within Bantoid with Bane and Bantu as the other co-ordinate branch. Meeussen (1974), replying to Greenberg, wished to treat Bane and Bantu as co-ordinate subdivisions of Bantu but did not question the Tivoid/Mambiloid grouping.

Bennett & Sterk's proposal for a South-Central Niger-Congo (SCNC) represented a major departure from orthodoxy. SCNC was composed of 'Western Kwa', Ijò and East South-Central Niger-Congo (ESCNC), now called New Benue-Congo (with the boundaries redrawn) (Bennett & Sterk, 1977). New Benue-Congo proposed to unite Greenberg's Benue-Congo with Eastern Kwa. This would unite such languages as Yoruba, Nupe, Igbo with Plateau, Jukunoid, Cross River and Bantoid languages. Although this idea had been prefigured in occasional comments (see, for example, Hoffmann in Hansford et al., 1976:169) there had been no published argument to this effect.

A later proposal to make sense of this situation was put forward in Blench & Williamson (1987) with additional discussion in Blench (1989, 1992, 1993a, 1993b). This was taken up in a review of 'Bantoid' (Watters, 1989 & Watters & Leroy, 1989). Breton (1993) reports on a newly recorded 'Furu' group (Beezen, Bishuo and Busuu) on the Nigeria-Cameroun borderland; the exact position of these languages awaits the publication of the data. Developing a suggestion by Ohiri-Aniche (ined), a recent paper by Blench (1994) has re-assigned Ukaan to East Benue-Congo. The most recent version of this tree is as follows;

Figure 2. Revised Subclassification of Benue-Congo Languages



A number of Camerounian languages remain to be fitted into this diagram, most notably Akum, Cung, Mungong, Ndemli and Tikar (Grimes & Grimes, 1993). This will only be possible when data on these languages is made widely available.

In this perspective, the debate about the definition of Bantu becomes somewhat spurious; drawing a line between Bantu and non-Bantu is merely a matter of predilection. Stallcup (1978) has a useful discussion on the difficulty of assigning unambiguous criteria. The criteria for distinguishing the Bantoid languages from Bantu proper are usually morphological grounds; but this would of course exclude such aberrant languages as Ilwana (N.E. Bantu). The point is that Bantu-like languages gradually developed from one branch of Benue-Congo and the sequence of this development can be recovered. The same type of reconstruction of lexical items that is possible in Bantu is also possible in these related languages.

3. Reconstruction and the problems of semantic shifting: the example of plant names

One of the most vexing problems in the reconstruction of plant names in African languages is the degree of semantic shift between wild and cultivated plants. Failure to recognise this has led to somewhat exaggerated claims about the reconstructibility of both cultigens and by extension, agriculture.

To illustrate this point, consider the Niger-Congo terms for 'yam' and 'sorghum'. Yams, i.e. the Dioscoraceae, are present throughout all of sub-Saharan Africa. The probable wild ancestors of the present-day cultivated

yams such as *Dioscorea guineensis* would have been exploited from an early period, as indeed are many species of yam today, especially in periods of famine. At an unknown period, the cultivated yam was developed from the wild *Dioscorea* through a gradual process of protecting, transplanting and then selection. Although a reconstruction of something like #-ji is possible at least as far as Proto-Benue-Congo this is no guarantee that speakers of PBC were yam cultivators, as opposed to exploiters of wild yams. Therefore, no amount of work on reconstructing the basic lexeme for 'yam' can clarify its relative antiquity in cultivation.

There is a possible way around this; the reconstruction of lexical items associated with yams (Williamson, 1993). There could, for example, be a specific word for a tool to uproot yams, or a word for seed yam or yam-heap. If these could be shown to reconstruct to the same depth as yam itself, this would be a good indication of the antiquity of cultivation. Although semantic shift remains a possibility, for example a general word for mound becoming 'yam-heap' it is unlikely that the same shift would take place in all groups simultaneously. In the case of yam, it does not seem as if lexical item associated with its cultivation is reconstructible to anything like the same depth as the plant itself.

In the case of sorghum, the situation is slightly different, since the wild ancestors of sorghum are found, not in West Africa, but in northeast Africa. However, terms for sorghum in many languages retain the secondary meaning 'wild grain'. In other words, when the cultivation of sorghum replaced gathering of grains as a major source of subsistence, the terms for the grains were shifted to sorghum. Again the stage at which this occurred cannot be pinpointed purely linguistically.

This does not mean that reconstruction is a hopeless task. It is most useful where the reconstructed lexeme has no obvious link with a wild plant. In this case, the word may either have arisen through unknown processes or been shifted semantically from something quite different. This appears to be the case for cowpeas, for example, and probably for okra. This paper considers plants which may be reconstructible, regardless of these semantic problems, to provide evidence for future discussions.

4. Discussion of individual plants

Guthrie's index to comparative Bantu provides starred forms for millet, pepper, pumpkin and yam. Of these, pepper is almost certainly to be discarded as a New World introduction. 'Millet' is really a generic term, since through most of the Bantu area of origin, bulrush millet is an unsuitable crop. Despite this, it is likely that the precursors of Bantu had a considerable range of crops at their disposal. This section considers the evidence for individual plants, classified by the simple categories of tuber, cereal, pulse, vegetable, oil-plant and tree-crops.

4.1 Tubers

Dioscoraceae

Dioscorea rotundata Common Names: Guinea yam,

The taxonomic relationship between this yam, and the red yam, *D. cayenensis*, has never been fully elucidated; many texts treat them as subspecies of a single type. It is generally accepted that the wild ancestor of both is *Dioscorea praehensilis*, and that domestication took place in West Africa. However, they are true domesticates and no longer closely resemble their assumed wild progenitor.

Although the Bantu expansion clearly began with the Guinea yam in hand, it was soon dropped as the various groups pushed deeper into the equatorial forest. A minor cultigen in Gabon, it is virtually unknown further east and south, and is replaced by an array of other minor edible tubers (see, for example, Hladik et al., 1984). It is likely that the work involved in clearing the forest and staking the yams to get acceptable yields was a major deterrent to its cultivation.

Linguistic evidence for the antiquity of yam cultivation is uncertain, not for a lack of terms to analyse, but because the same root is applied indifferently to wild and cultivated species. Thus, there are distinctive roots applied to yams throughout the Benue-Congo area but these only tell us that wild yams were early important in the diet of PBC-speaking communities. Williamson (1988, 1993) in a discussion of the terms for 'yam' points out that the Benue-Congo forms correspond well the Westermann's Proto-Western Sudanic, taking back the exploitation of the yam to the remote past.

Williamson (1993:152) also points out that at least two roots associated with yam cultivation appear to reconstruct in a sub-group of West Benue-Congo, *PIYE or Proto-Yoruboid-Edoid-Igboid. These are #-gb-N 'to plant tubers' and an apparently similar form meaning 'seed yam'. If it is true that yam cultivation, as opposed to exploitation, comes in significantly later, then these low-level reconstructions would be appropriate.

To date the appearance of yam cultivation, another type of evidence has been used by Alexander & Coursey (1969). This is the prohibition of the use of iron tools in the uprooting of yams in certain regions, which is suggestive but not conclusive. Coursey takes this to indicate that yams were domesticated before iron reached these regions. However, although this might well be the case, this is unlikely to indicate more than more than 2,000 B.P. not a very valuable *terminus post quem*.

References: PUG (151); Alexander & Coursey (1969); Burkill (1985:667-8)

Dioscorea bulbifera Common Names: Aerial yam, turkey-liver yam, 'up' yam

The aerial yam is so named because the main portion eaten is not the tuber, as in most other yams, but the bulbils that grow at the leaf axils. The aerial yam is usually set to climb stakes or trees, and the bulbils, with their characteristic square shape, are plucked from the vine. Wild forms are still common in savannah areas - most of these are poisonous. Aerial yams are cultivated widely through West and Central Africa; they have also been reported (Westphal, 1975:161) from Kefa in S.W. Ethiopia.

In many parts of West Africa, the vine is allowed to climb a tree at the edge of fields where other crops are planted. When the bulbils are ready, they can be picked like fruit. The tree acts as a natural stake, and the dead leaves at its base trap sufficient moisture to permit fallen bulbils to germinate. As the aerial bulbil is exposed to animal predators, it has evolved defences, toxicity and a fibrous skin. Underground tubers of the aerial yam can be extremely toxic, and the bulbils may be as well.

The literature on the aerial yam has been reviewed by Martin (1974) and Burkill (1985:657 ff.), but the paucity of material permits few firm conclusions about its ethnobotany. There appear to be wild forms in both Africa and India, and both Burkill (1911) and Chevalier (1936) argued that it was taken into domestication independently in both continents. The variety of cultivars, and the major morphological distinction between the quadrangular African forms and the ovoidal Indian types combine to strongly suggest this. As the aerial yam flowers freely selection for the numerous cultivars may have occurred early in the history of its domestication (Martin, 1974:11).

The African distribution of the aerial yam has never been adequately mapped. Chevalier (1936:524-9) classified six of the principal types as separate species, and although this is now considered taxonomically unsound, the differences between clones that this underlines are undoubtedly important. Chevalier claimed that the Indian types, *D. bulbifera* var. *birmanica* were brought to the East coast by the Arabs and to the West coast by the Portuguese. These are distinct from *D. latifolia* Chev., the African aerial yam. This is found all across the continent in the forest belt, but the greatest number of clones is in 'Haut-Oubangui' -the region North of the Ubangi-Shari region in Central Africa.

Apart from a large number of edible types, there is a remarkable toxic cultivar, named by Chevalier var. *contralatrone* because it is planted around the edge of fields to deter thieves. Wildeman (1938) reports on a mass poisoning of an army contingent brought about by the accidental consumption of poisonous varieties of aerial yam.

A term for the aerial yam reconstructs to Proto-Benue-Congo (Williamson, 1993 and Appendix, Table A1). Although there is clearly a related form in Ijò (Proto-Ijò *ótómú*) this may be a loan as it is not otherwise attested in Niger-Congo. Aerial yams are cultivated all through the Bantu heartland so it is likely that the aerial yam is one of the earliest cultigens known to Niger-Congo speakers and was carried from Central Nigeria to the forest. The #-duN root has certainly been carried as far as Aka (C. 10) and may well have been generalised to other forest yams, as a #-tumba root is widespread for various species of *Dioscorea* unknown in W. Africa, for example *Dioscorea baya* and *D. mangenotiana*. (See Table A1.)

References: Chevalier (1936), Martin (1974), PUG:151, Westphal (1975:161),

Dioscorea dumetorum Common Names: bitter yam, cluster yam, three-leaved yam,

The three-leaved or cluster yam is found throughout Africa between 15° N. and 15° S. (Coursey, 1967:50). The trifoliate leaves are highly distinctive, but the methods of cultivation are similar to other African yams. In its wild form, *D. dumetorum* is highly toxic, due to its dihydrodioscorine content, and is used in some areas to make arrow poison. In times of famine it can be used for food, if soaked for some days in water, and well cooked. According to Chevalier (1936:529-31), cultivated forms are not known west of the Benin republic. The most important area of their cultivation appears to be South-East Nigeria (Okigbo, 1980), Cameroun (Ardenner, 1956) and Gabon (PUG:151-2). It seems also to be deeply embedded in the culture of certain areas. Ardenner (1956), discussing Kpe-speakers of coastal Cameroun, remarks that the three-leaved yam is the most ritually embedded cultigen, and cocoyam and water-yam, by contrast seem to be late-comers. It is extremely widespread in Nigeria, cultivated throughout the Delta and eastwards, as well as in the Middle Belt. See Table A2 for a possible reconstruction in Benue-Congo.

References: PUG:151-2, Burkill (1985:661-2)

Labiatae

Two other cultivated tubers are not Dioscoreaceae but are members of the Labiatae known colloquially as the 'Hausa potato' and the 'Livingstone potato'. Toponymic designations of this type are of dubious value as their geographic adjectives change from area to area. Thus, in Ghana, the Hausa potato becomes the Salaga potato. Even more confusing is the plethora of Latin names. Due to the separation of herbaria in the colonial period a dichotomy in the taxonomy of cultivated species arose. In French sources, these plants are normally all regarded as *Coleus* spp. while in English sources the terms *Coleus*, *Plectranthus* and *Solenostemon* co-exist. *Coleus sensu stricto* is not found in West Africa.

Botanically, these are erect or decumbent herbs up to 60 cm. tall, with rare yellow flowers and lumpy edible tubers. Both spontaneous and cultivated, they are found from Senegambia to Natal. Chemical composition is reported in Chevalier & Perrot (1905:140-1) and PAOA and yields for the various cultivated species in the same source (op. cit. 145-7). The taste resembles the Irish potato, and most sources report that these tubers can be simply boiled. There are a number of edible *Coleus* spp. reported from Ethiopia (Lemordant, 1971:223) but taxonomic work has yet to clarify the relation between these species and other cultivated Labiatae in Africa.

Both of these plants are found throughout the savannah regions of Africa. Blench (ined) has proposed that they were carried eastwards by expanding Adamawa-Ubangian speakers. In this case, they would have been

known to Bantu speakers moving along the northern edge of the Central African rain-forest. In neither case is there sufficient lexical material to make proposals for reconstructions.

Solenostemon rotundifolius (Poir.) J.K.Morton.

Synonyms; *Coleus dysentericus*, *C. rotundifolius*, *Plectranthus Coppini*, *P. ternatus*.

Common names; Hausa potato, Salaga or Fra-Fra potato, Sudan potato, Madagascar potato.

The most widespread of the cultivated Labiatae, found throughout Africa, on Madagascar and in Java and Sri Lanka. A specimen collected in the Transvaal in 1884 was successfully grown in Paris and then redistributed by Thollon to western Equatorial Africa in the 1880s. This seems to have led to some confusion about the 'real' distribution of the various races. Like the aerial yam, the Hausa potato can be cultivated with very little attention. Once it has begun to yield, if a few pieces of the tuber are left in the ground when it is cropped each year, it will regrow without further attention. Although cultivated all along the northern edge of the forest and on the Mambila Plateau, it seems to have been dropped once the expanding Bantu entered the forest proper.

Plectranthus esculentus

Synonyms; *Coleus dazo*, *C. esculentus*, *C. floribundus* var. *longipes*, *Plectranthus floribundus*, *Englerastrum floribundus*.

Common names; Livingstone potato, umbondive, dazo.

Described first by Amman (1904) and in more detail in Chevalier & Perrot (1905), this is found throughout West-Central Africa as well in parts of Southern and Eastern Africa. Its cultivation is more exacting than *Solenostemon* but yields are correspondingly larger. It is normally cultivated in small mounds like yam-hills. The tubers are sliced into pieces for planting, rather than relying on chance fragments remaining in the ground.

4.2 Cereals

It is an open question whether the proto-Bantu really cultivated any cereals. Although there is an extremely widespread root in eastern and southern Bantu languages, something like *masangu* (for forms see Obenga, 1985:46), it is most commonly now applied to maize, but presumably originally millet or sorghum. However, this is not attested in any north-western language, either Narrow Bantu or Bantoid, and may therefore be a widespread loan or an innovation.

4.3 Pulses

Vigna subterranea Common Names: Bambara groundnut

The Bambara nut is said to have been domesticated in the region of the Benue near the present-day Nigeria/Cameroon border (Harlan: 1971:471). It is cultivated across most of sub-Saharan Africa, and on Madagascar, whence the French term *voandzou*. In south-eastern Africa, the first record of cultivated Bambara groundnuts is at Inyanga, in modern-day Zimbabwe where carbonised seeds have been recorded in a late Iron Age context (Summers, 1958).

The linguistic evidence is somewhat inadequate, since the Bambara groundnut is rarely recorded on wordlists. Vernacular names are mapped in Pasquet & Fotso (1991) but the terms are not assigned to specific languages. However, it is clear from Table A3 that it reconstructs adequately for West Benue-Congo. In addition, there is a less certain reconstruction for East Benue-Congo.

References: PAOA (250-1), PUG (263)

Vigna unguiculata Common Names: black-eyed bean, cowpea

Cowpeas are indigenous to West Africa, although their long-established presence in India was once considered as evidence for an Asian domestication. They are also found along the Nile, although it is unclear whether these are spontaneous. An important variety is sometimes known as the 'spiral cowpea'; the pod grows into a spiral and is eaten as a green vegetable, rather like mangetout peas.

The cowpea must have been transmitted to Egypt from Sub-Saharan Africa early, for specimens were identified by Schweinfurth among offerings in Fifth Dynasty tombs, and Keimer noted small faenza models of the plant (FGO:692, FPA 87-8). Finds of cowpeas reported at Kintampo remain debatable (Stahl, 1985). In south-central Africa, the first record of cultivated cowpeas is in Central Zambia where seeds have been recorded from the second century A.D. (Phillipson, 1993:192).

Linguistic data for early cultivation of pulses is always confounded by confusion in European language terminology. However, it does seem as if the evidence supports a domestication of the cowpea in the Nigeria-Cameroun borderland. Vernacular names are assembled in Appendix Table A4.

References: Chevalier (1932:115), FGO (692), FPA (87-8), PAOA 249-250), PUG (263)

4.4 Vegetables

Abelmoschus esculentus L. Moench. Formerly: *Hibiscus esculentus*
Common Names: gumbo, ladies' fingers, okra

The okra plant is still found wild in West Africa, and most authors³ accept that it was domesticated there; okra only occurs in North Africa in a cultivated state. The 'wild' okra in India is generally thought to be spontaneous. There is no incontrovertible evidence for its presence in Ancient Egypt (FGO:695, FPA:122) and the first reference to it in Cairo is in 1216 (Mauny, 1953:702). The linguistic evidence that it was known to speakers of PBC is incontrovertible (Table A5); more problematic is to determine at what point it was first cultivated, as these terms may well apply to the wild plant.

References: FGO (695), FPA (122), Franke (1976:232), Mauny (1953:702), PAOA (294-8), PUG (273-4)

Amaranthus lividus Common Names: green amaranth, wild amaranth

A polymorphic annual herb, found both in Africa and tropical America, and formerly cultivated in southern Europe. A weed in most regions, it is occasionally cultivated in Africa. Found in both West and Central Africa, it was presumably carried by the Bantu during their expansion, although it is so little documented that this must remain supposition.

References: Burkill (1985:50-1), PUG (48; as *Amaranthus oleraceus*)

Citrullus lanatus (Thunb.) Mansf. Common Names: egusi melon, watermelon

The ancestor of the water-melon is a small spheroidal cucurbit that today grows on the southern margins of the Sahara. It is grown principally for its oily seeds which are cooked in soups. Schweinfurth (1873) was one of the first to point out that it must have been transmitted northwards across the Sahara. Botanically speaking, the water-melon is the same as the egusi melon, cultivated for its seeds in West Africa. In south-eastern

³See Franke (1976:232) for an alternative view

Africa, there is a possible record of cultivated melons at Inyanga, in modern-day Zimbabwe in a late Iron Age context. Vernacular terms are not very illuminating, since they are usually confounded with those for *Cucumeropsis manni*, another cucurbit producing similar oily seeds (*vide infra*).

References: FGO (717-8), FPA (127-8), PUG (140), UPTWA (54-5), Watson (1983:58-61)

Cucumeropsis manni Also as: *Cucumeropsis edulis*

This small melon is cultivated throughout most of sub-Saharan Africa for its oily seeds, which are used in soups. It is part of the indigenous flora, like *Citrullus lanatus*, with which it shares most vernacular terminology. Records of its cultivation exist for Gabon and Angola, arguing that it must have been carried by the Bantu into the forest, but the lexical data are too sparse to draw any conclusions.

References: PUG (140-1), Burkill (1985),

Gnetum Bucholzianum Common Names: Koko

This plant is generally gathered wild in the bush; it is one of the rare gymnosperms still found widely in the humid forest zone. Chevalier (1953) in a study of this plant concluded that it was spread from its present centre of diversity in S.E. Nigeria by the Bantu tribes during their eastward expansion.

References: Busson (1965), Chevalier (1953), PUG (184), Lowe (1984).

Telfairia occidentalis Fluted pumpkin

The fluted pumpkin is a large cucurbit with deep longitudinal ridges, cultivated for its oily seeds which are used in soups. The interior is a fibrous spongy mass, often used for bathing. The distribution of the fluted pumpkin, from Sierra Leone to Angola, strongly suggests that it was carried by Bantu-speakers southwards from West Africa. Interestingly, although a fluted pumpkin may be represented in the Nok sculptures from Central Nigeria (Fagg, 1977:33), the plant itself is not cultivated north of the forest at present. Analysis of the linguistic data presents many problems, because many lexical sources confuse the name with those of other cucurbits, some of which are New World introductions.

References: Busson (1965:416-7), Burkill (1985:603-4)

4.5 Oil-plants

Ricinus communis Common Names: castor bean, castor-oil plant

The original region of domestication of the castor bean appears to have been West-Central Africa but it must have spread early to Egypt, for seeds are found in pre-dynastic sites (FPA:104). Castor is both wild and cultivated in Egypt today, and the seeds of the earliest finds are so reduced in size that they may well be spontaneous. The earliest reference to castor oil in Egypt is by Herodotus, in the fifth century B.C., who noted that it was used for lighting. In south-eastern Africa, the first record of castor beans is at Inyanga, where carbonised seeds have been recorded in a late Iron Age context.

Guthrie (1967-71,II:56) proposes a Common Bantu form for the castor-oil plant, *-*bónò*. Although the attestations are somewhat scattered and in the A group it applies only to 'oil', this plant does seem a likely candidate for early domestication. It is widely cultivated in Central Nigeria, although the vernacular names are usually epithets, giving no clue to its reconstructibility (Burkill, 1994:133-136).

References: FGO (782-3), FPA (103-4), PUG (176)

Sesamum spp. Common Names: beniseed, simsim, sesame

The principal species of *Sesamum* cultivated in Africa are *Sesamum alatum*, *S. indicum* and *S. radiatum* of which the most widespread is *S. indicum*. Despite its scientific name, this plant, like the other sesames, is a native of West Africa. Although sesame is known principally in Eurasia for its seeds, both processed and crushed for oil, there is little evidence that this was important in Sub-Saharan Africa until recently. Sesame leaves make a mucilaginous soup, widely appreciated in West Africa, and this seems to have been the original motivation for domestication.

The earliest positive record of sesame in Egypt is 3rd. century B.C. (FGO:497), but its occurrence in India and Iran at earlier dates suggests that it must have been known far earlier. Pliny mentions 'wild sesame' although it is not known whether this a record of the former plant populations of the Nile valley, or merely an adventive.

As Table A6 shows, there is a widespread root in Benue-Congo languages of the approximate form #-*suwa*. Sesame is generally a plant of the savanna and would have been rapidly dropped by farmers entering the forest, which explains why there are only rare attestations in Bantu proper.

References: FGO (497-8, 785-6), FPA (171-2), PUG (347)

4.6 Tree-crops

The boundary between 'wild' and 'cultivated' becomes even more attenuated in the case of tree-crops. Many important economic trees were not fully cultivated until the colonial period. The oil-palm, for example, was only ever protected; but by preventing burning or extraction the it came rapidly to dominate various types of forest cover.

Canarium schweinfurthii Bush-candle

A widespread and important tree in many parts of Africa, it is sometimes known as the 'African olive' for its black, oily fruits. The oil extracted from its seeds is highly prestigious and the fruits themselves are presently traded long distances. It is a protected tree and grows up easily around communities from the discarded seeds. The systematic exploitation of trees is common in the region of the Jos Plateau and the Shebshi mountains in eastern Nigerian. Although it is known throughout the forest region, fruits seem to be collected more opportunistically from wild trees. The hard pericarps give it a high archaeological visibility and seeds have been recovered from a number of forest sites in West-Central Africa (e.g. Stahl, 1985, Eggert, 1993:324 for further references).

References: Burkill (1985:301-303)

Cola spp. Common Names: cola, kola

The cola nut is widely chewed throughout West-Central Africa for its caffeine content and is the subject of a considerable trade. Although it is found wild, it is cultivated and protected in many areas. Particular cultivars

are highly appreciated and may sometimes be moved long distances. The principal cultivated or exploited colas of West-Central Africa are;

Cola acuminata (P. Beauv.) Schott & Endl.
Cola anomala K. Schum.
Cola ballayi Cornu ex Heckel
Cola nitida (Vent.) Schott & Endl.
Cola verticillata (Thonn.) Stapf ex A. Chev.

The most important descriptive works on cola are Chevalier & Perrot (1911) and Eijnatten (1969). Brenan (1979) provides an up-to-date summary of the taxonomic problems associated with the genus. According to Germain (1963), *Cola ballayi* is found in Cameroun, Gabon, Cabinda, Zaire and Central African Republic.

Williamson (1993) has considered the linguistic data for cola in some detail. The linguistic data on cola (Table A7) shows that cola is reconstructible at least to PBC and perhaps further, as there are possible attestations in Kwa, for example in the Guang languages.

References: Brenan (1979), Chevalier & Perrot (1911), Eijnatten (1969), Mauny (1953:705-6), Williamson (1993)

5. Summary and Conclusion

Recent studies have gone some way towards clarifying the relationship between Benue-Congo and Bantu. Many of the intermediate linguistic groups have now been characterised, although the exact sequence of their divergence still remains to be elucidated. In a region of intense interaction such as the Bantu borderland, a complex pattern of loans and inter-group influence is likely to emerge once more representative descriptive data is available. Amendments to the genetic tree necessitated by new data that have become available since the conference presentation dramatises the fluid situation. The tree presented is a best guess in a situation of very problematic lacunae in the data. Detailed historical interpretation of specific nodes is tempting but should be resisted in the light of this fluidity.

These caveats entered, the patterns of vernacular terms for cultigens makes it possible, at least in theory, to establish the sequence of development of agriculture in the pre-Bantu period. However, because relatively few sources have recorded with precision what are often perceived as 'minor' crops this source of evidence has been barely exploited. There are many uncertainties in the lexical data, some of which can be remedied over time while others may prove intractable. The following table summarises the results to date.

A strong impression from the still fragmentary linguistic evidence is the gradual entry of domesticates into subsistence strategies. The complex pattern of vernacular terms for crops in the 'Bantu borderland' suggests that the development of agriculture was a far from sudden process. Different crops that are domesticates today are not all adopted simultaneously in a package. It is likely that the range of such crops was still broader than is represented by the table, especially among the potherbs and tubers. The pattern is rather of a wide range of minor and perhaps low-yielding crops moving through the stages of protection, transplanting and semi-domestication and finally intentionally selected over a long period of time. It also suggests that the question of the principal staple of the rain-forest Bantu may be misconceived. Only further detailed ethnobotanical research can elucidate these problems.

Table 1. Cultigens already domesticated at the period of Bantu expansion.

Common Name	Species	Lexical data exists	Minimum Level of Reconstruction
Guinea yam	<i>Dioscorea rotundata</i>	+	PBC
Aerial yam	<i>Dioscorea bulbifera</i>	+	PBC
Three-leaved yam	<i>Dioscorea dumetorum</i>	some	?
Sudan potato	<i>Solenostemon rotundifolius</i>	-	?
Livingstone potato	<i>Plectranthus esculentus</i>	-	?
Finger-millet	<i>Eleusine coracana</i>	+	?
Bambara groundnut	<i>Vigna subterranea</i>	+	PEBC
Cowpea	<i>Vigna unguiculata</i>	+	PEBC
Okra	<i>Abelmoschus esculentus</i>	+	PBC
Green amaranth	<i>Amaranthus lividus</i>	-	?
Egusi melon	<i>Citrullus lanatus</i>	-	?
-	<i>Cucumeropsis manni</i>	-	?
Fluted pumpkin	<i>Telfairia occidentalis</i>	+	PEBC
Koko	<i>Gnetum Bucholizianum</i>	-	?
Castor bean	<i>Ricinus communis</i>	+	?
Sesame	<i>Sesamum spp</i>	+	PBC
Cola	<i>Cola spp.</i>	+	PBC
Bush candle	<i>Canarium schweinfurthii</i>	-	?

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Appendix: Data tables.

Table A1. Aerial yam. #-duN.

Edoid	Bini	udin
Nupoid	Dibo	adũ
Igboid	Igbo	ádù
Platoid	Aten	tom
Cross River	Efik	édòmò
Mambiloid	Mambila	tuwar
Bantu	Aka (C. 10)	tombo

Also compare in Bantu;

Dioscorea Baya & D. mangenotiana Efe, Mbuti, Bira tumba

Commentary: Discussed by Williamson (1993). However, if Proto-Ijo ótúmú is a genuine historical cognate and not a borrowing, the root is older still. The Gabonese Bantu names (PUG:151) suggest that this root was wholly lost in parts of the equatorial forest.

Table A2. Three-leaved yam. #-namba

Igboid	Owere	òná	
Cross River	Ibibio	ánêm	
Tivoid	Tiv	ínímbe	
Bantu	Duala	mbá	?cognate
	Boyela	moma	?cognate

Commentary: These words almost certainly form a set, but without more lexical evidence it is impossible to make more than a speculation on the original form of the word. If the Igboid forms are genuine cognates and not simply borrowings, then cultivation of the 3-leaved yam goes back to PBC. The common Gabonese names such as *-kamba* (PUG:152), could be

related if the word has somehow acquired a *k-* prefix which has fused to the stem. Bantu names further into the forest do not appear to show any distinctive roots unless the Boyela name is cognate (Terashima et al, 1991). Distinctive forms for ‘yam’ in WBC languages such as Emai *émà* and Gbari *shnamá* probably contain the same root, although these are presently applied to the Guinea yam.

Table A3. Bambara groundnut

#-kpa			
W. Benue-Congo	Defoid	Yoruba	ekpa
	Edoid	Isoko	upapa
	Igboid	Igbo	òkpa
	Nupoid	Gbagyi	opwa
	Idomoid	Idoma	ikpeyi
#-gunu			
E. Benue Congo	Kainji	tHun	ù-gwè̀nè̀
	Dakoid	Nnakenyare	guum
	Mambiloid	Vute	ɲgóm

Commentary: The #-kpa root appears, intriguingly, in Mbembe, an Upper Cross language, referring to American groundnuts.

Table A4. Cowpeas. #n-ko(n)di-

Igboid	Ikwere	à-kíḍì	?Cognate
Kainji	Reshe	hí-kò̀ǹǹ	
Jukunoid	Kuteb	à-cikùn	
Cross River	PLC	ḡ-kó̀tì	
Grassfields			
Momo	Mundani	mèkũ	
Eastern	PEG	*kóǹ`	
Manenguba	PM	*kón	
Bantu	CB	*-kóndè	

Commentary: The Cross River forms show that the nasal was probably copied from the prefix to the stem somewhere in the Bantoid area. Nasal prefixes are still found in Manenguba, e.g. the Mbo form ḡ-kwón. Jukunoid forms probably show metathesis in the stem elements.

Table A5. Okra. #-tukuru

					Comment
Defoid	Işekiri	i	ka	ra	bo
	Isoko	o	k	ru	
Edoid	Degema	o	k	ru	mo
	Egene	i	ku	ro	
Igboid	Igbo	ɔ	k ^w u	r ^u	neetee
	Igbo	tu	kwu	ru	
	Ukwuani	o	ka		
Idomoid	Idoma	i	kpo		ho
Kainji	Duka	tu	ku		mek
	Lela	tu	kw	e	nebe
	Ura	un	gu		na
Plateau	Aten		ku		sat
	Gusu	tu	ku		ku
Cross River	Abuan	ú	kù	rù	?Loan
	Ogbia	ò	kù	rù	?Loan
Bendi	Bokyi	o	tu		
Tivoid	Tiv	a	tu	ul	
	Esimbi	ɔ	kò	rò	
Mambiloid	Mambila		gà		ŋ
Nyang	Kenyang	n	ga	ra	k

Commentary: Okra is probably the plant which shows the clearest evidence of reconstruction back to the Proto-Benue-Congo level. Kay Williamson (p.c.) notes that there is a region of very similar forms in different language groups across south-central Nigeria and that some of these, at least, may be loans.

Table A6. Sesame. #-shuwa

Nupoid	Nupe	e	so		
Idomoid	Idoma	o	ca		
Kainji	Kamberi	i	s	ua	
	Kamuku (Uregi)	bi	sa	wa	
	Pongu	ki	se		re
	Duka	gi	sha		k
Plateau	Mala	i	s	wa	
	Aten	n	c	we	le
	Ninzam	a	shi		shi
Jukunoid	Kpan	i	she		n
Tivoid	Tiv	i	sh	wa	

Table A7. Cola nut. #e(N?)bi.

Defoid	Yoruba	obi
Akpes	Ikaramu	mbu
Edoid	Bini	evbe
Nupoid	Nupe	ebi
Idomoid	Yala Ikom	léŋmgbé
Cross River	Abuan	egbe
Ring	Aghem	é-biá
Bantu	PM	*-bèé

(5/6)

Commentary: The cola is indigenous to West Africa, and there is no reason to suppose this is an ancient loan word. There are possible Kwa reflexes, for example, Abure 'bese'. Discussed in Williamson (1993).