CHAPTER 10

Were the first Bantu speakers south of the rainforest farmers?

A first assessment of the linguistic evidence

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Popular belief has it that the Bantu Expansion was a farming/language dispersal. However, there is neither conclusive archaeological nor linguistic evidence to substantiate this hypothesis, especially not for the initial spread in West-Central Africa. In this chapter we consider lexical reconstructions for both domesticated and wild plants in Proto-West-Coastal Bantu associated with the first Bantu speech communities south of the rainforest about 2500 years ago. The possibility to reconstruct terms for five different crops, i.e. pearl millet (*Pennisetum glaucum*), okra (*Hibiscus/Abelmoschus esculentus*), cowpea (*Vigna unguiculata*), Bambara groundnut (*Vigna subterranea*) and plantain (*Musa spp.*), indicates that by that time Bantu speakers did know how to cultivate plants. At the same time, they still strongly depended on the plant resources that could be collected in their natural environment, as is evidenced by a preliminary assessment of reconstructible names for wild plants. Agriculture in Central Africa was indeed "a slow revolution", as the late Jan Vansina once proposed, and certainly not the principal motor behind the early Bantu Expansion.

Keywords: Bantu Expansion, West-Coastal Bantu, agriculture, foraging, hunter-gatherers, lexical reconstruction, plant names

1. Introduction

The Bantu Expansion is no doubt the most important linguistic, cultural and demographic process in Late Holocene Africa. It has sparked intense debate across disciplines and far beyond Africanist circles. Several generations of linguists, archaeologists, anthropologists, geneticists and many more have debated on how the Bantu language family, which is not older than 5000 years, could spread over such disproportionally large parts of Central, Eastern and Southern Africa; see

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Figure 1. As it often happens with hotly debated issues, certain widely held beliefs threaten to become "factoids", because they are no longer critically questioned and start to lead a life of their own that bears little relation to any factual reality. One of the commonest conjectures about the Bantu Expansion certainly is that it would have been a farming/language dispersal with agriculture as the principal motor behind large-scale language spread (e.g. Bellwood & Renfrew 2002; Diamond & Bellwood 2003; Phillipson 2003). Both phenomena are so strongly tied up in the minds of certain scholars that they simply consider Bantu language phylogenies (e.g. Holden 2002) or archaeology-based phylogeographies (e.g. Russell et al. 2014) as mirroring the spread of farming without even discussing the slightest evidence for food production. The equation between Bantu and agriculture is also taken for granted by most geneticists who consistently adopt a dichotomy between "Bantu (speaking) farmers" and autochthonous foragers, i.e. the "Pygmies" in Central Africa and "(Khoi)San" in Southern Africa (e.g. Destro-Biso et al. 2004; Quintana-Murci et al. 2008; de Filippo et al. 2010; Barbieri et al. 2014; Patin et al. 2014). However, as we have extensively argued elsewhere (Kahlheber et al. 2009; Neumann et al. 2012a; Bostoen et al. 2013a; Bostoen 2014; Bostoen et al. 2015), both direct archaeological evidence and indirect linguistic evidence concur to question the plausibility of agriculture as the main driving force behind the Bantu Expansion, especially as far as its initial phases are concerned.

On the other hand, it is increasingly recognized that the Bantu Expansion was facilitated and even accelerated through climate-induced openings of the Central African rainforest block (Brncic et al. 2009; Ngomanda et al. 2009; Maley et al. 2012; Neumann et al. 2012b; Hubau et al. 2015), rather than that migrating Bantu speech communities themselves would have caused deforestation (Bayon et al. 2012). Schwartz (1992) was the first to link the dispersal of Bantu languages with climate change around 3000 BP. We have deepened and revised this hypothesis through an extensive review of evidence from biogeography, palynology, geology, historical linguistics, and archaeology that led to a new interdisciplinary reconstruction of the palaeoclimatic context in which the early Bantu Expansion took place (Bostoen et al. 2015). Palaeoenvironmental data indicate that a climate crisis affected the equatorial rainforest during the Holocene, first its periphery around 4000 BP and later its core around 2500 BP. Both phases had an impact on the Bantu Expansion, but in different ways. The climate-induced extension of savannas at the periphery of the rainforest, for instance in the Sanaga-Mbam confluence area in central Cameroon, around 4000–3500 BP probably facilitated the settlement of early Bantu-speech communities in the region of Yaoundé in present-day Cameroon and later along the coast of Equatorial Guinea and Gabon and inland along the Ogooué River, but did not lead to a large-scale geographic expansion of Bantu-speaking settlements in Central Africa. It was only when the core of the

Central African rainforest was affected around 2500 BP that such a rapid eastward and southward expansion occurred. The rapidness of this initial migration through the forest is also indicated by genetic data suggesting that most admixture between various groups of hunter-gatherers and neighboring communities took place within the past 1000 years (Patin et al. 2014). Contacts seem to have intensified only once Bantu speech communities were firmly settled in the rainforest. Metallurgy and domesticated plants from the savannah, such as pearl millet, also spread through Central Africa around 2500 BP (Kahlheber et al. 2009; Clist 2012; Neumann et al. 2012a; Kahlheber et al. 2014) to become part of the cultural package which Bantu speakers took further East and South.

Using a dated phylogeny of more than 400 Bantu languages calibrated through archaeological dates and combined with contemporary geographical information and appropriate statistical modelling, Grollemund et al. (2015) try to demonstrate that early Bantu-speaking populations did indeed not expand from their ancestral homeland in a "random walk" but, rather, that they followed emerging savannah corridors, with rainforest habitats repeatedly imposing temporal barriers to movement. The Sangha River Interval, in particular, may have been a crucial passageway for the start of the gradual colonization of the Inner Congo Basin by Bantu speakers as well as for their initial north-south migration across the Equator (Bostoen et al. 2015; Grollemund et al. 2015). It is precisely that last movement which would have led to the introduction of the Bantu language ancestral to the present-day "West-Western" clade (Grollemund et al. 2015), aka "West-Coastal" (Vansina 1995), into the area North of the Malebo Pool on the Congo River. The homeland of this major Bantu clade, on which the current chapter focuses, has been tentatively situated between the Bateke Plateau, a huge highland straddling three countries (Gabon and both Congo), and the Bandundu region (Democratic Republic of the Congo), i.e. around 3°S and between about 14°E and 17°E; see Figure 1. These ancestral "West-Western" or "West-Coastal" Bantu speakers were the first Bantu speakers south of the forest.

In this chapter, we review subsistence-related vocabulary that can be reconstructed in Proto-West-Coastal Bantu in order to get a better understanding of the subsistence economy of the first Bantu speakers south of the rainforest and to make a first assessment of whether they had become farmers by that time. We will exclusively focus here on plant vocabulary by relying mainly on the comparative word lists that were included in the PhD dissertation of the second author (Koni Muluwa 2010). The fieldwork data from the Nsong, Ngong, Mpiin, Mbuun and Hungan languages, all spoken in the Kwilu Province (Democratic Republic of the Congo), were subsequently published in Koni Muluwa (2014). More comparative cultural vocabulary from languages spoken in that area was included in Koni Muluwa and Bostoen (2015).

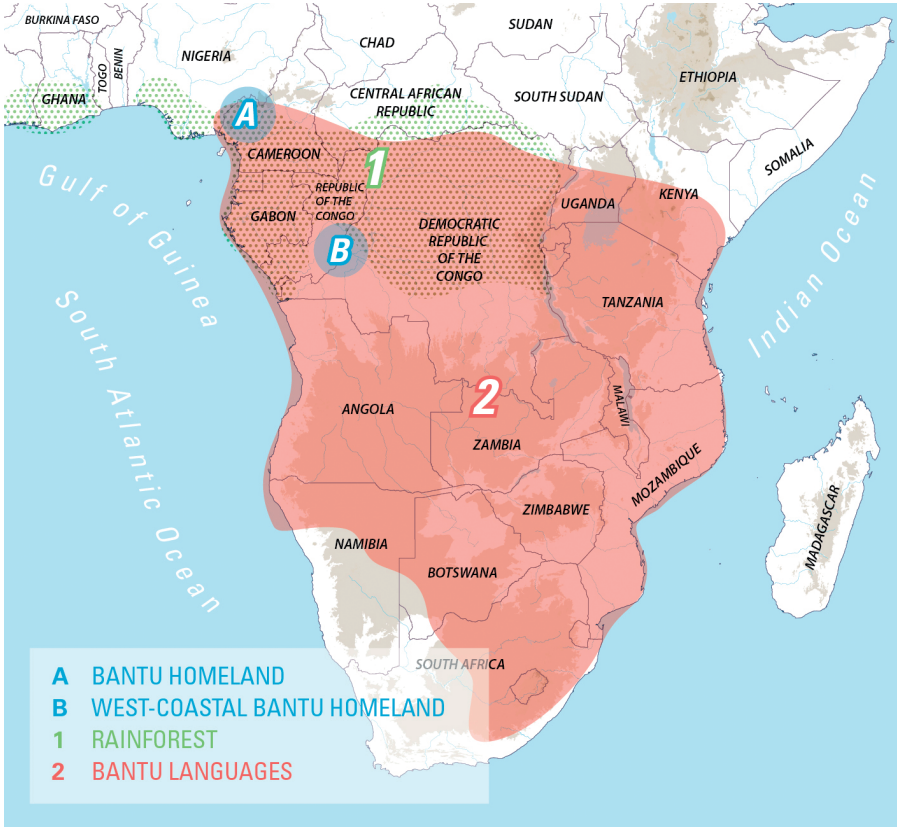

Figure 1. Approximate distribution of the Bantu languages and location of the Bantu and West-Coastal Bantu homelands

Of the five Kwilu Bantu languages mentioned above, Hungan is the only one to belong to the so-called "Kikongo Language Cluster" (KLC), which is the main sub-branch of West-Coastal Bantu in terms of the number of languages and their distribution. The Kikongo Language Cluster spread from the inland homeland south of the rainforest towards the Atlantic Coast and covers today major parts of southern Gabon, the southern Republic of the Congo, the southwestern Democratic Republic of the Congo and northern Angola including Cabinda. Within the Kikongo Language Cluster, Hungan belongs to the "Kikongoid" sub-clade, the first to split off from the common core (de Schryver et al. 2015). Nsong, Ngong, Mpiin and Mbuun, from their side, are part of the Yanzi group, a second sub-branch of West-Coastal Bantu, which springs from an ancestor language that moved east of the Congo River somewhere in between the Kwango and Kwilu Rivers in the Bandundu region of the Democratic Republic of the Congo. The third sub-branch

of West-Coastal Bantu consists of the Nzebi-Mbete-Teke languages, which are still spoken today in the vicinity of the Bateke plateau, close to the West-Coastal Bantu homeland. Plant vocabulary attested in each of these three sub-branches will be considered here for reconstruction in Proto-West-Coastal Bantu.

In Section 2, we review the evidence available for the assumption that the Bantu Expansion would have been a language/farming dispersal. In Section 3, we assess the crop plant vocabulary that can be reconstructed in Proto-West-Coastal Bantu. In Section 4 we consider Proto-West-Coastal Bantu wild plant vocabulary. Conclusions are presented in Section 5.

2. Reviewing the evidence for the Bantu Expansion as a language/farming dispersal

Direct archaeological evidence for food production and domestication in Central Africa is still very scarce, substantially younger than the assumed start of the Bantu Expansion, i.e. some 4000 to 5000 years ago (Vansina 1995; Blench 2006; Bostoen 2007), and discovered far from the Bantu homeland, which is situated in the Nigerian-Cameroonian borderland (Greenberg 1972); see Figure 1. Domesticated pearl millet (*Pennisetum glaucum*) was found in three sites from southern Cameroon, all dated between 2350–2200 BP, and in one site in the Democratic Republic of the Congo on the Lulonga River dated around 2200 BP (Eggert et al. 2006; Kahlheber et al. 2009; Kahlheber et al. 2014). In another South-Cameroonian site, remains of the pulse species Bambara groundnut (*Vigna subterranea*) dated around 1750 BP were found (Eggert et al. 2006). Both crop species originate from more northerly savannah regions and are adapted to drier environmental conditions. They do not belong to the crop inventory of current-day Central African rainforest agriculture which is mainly based on *Musa* species (plantain) and several tuber plants like cassava (*Manihot esculenta*), taro (*Colocasia esculenta*), tannia (*Xanthosoma sagittifolium, Xanthosoma poeppigii*), sweet potato (*Ipomoea batatas*) and yams (*Dioscorea spp*.) as the principal providers of carbohydrate, whereas the cultivation of maize (*Zea mays*) and Asian rice (*Oryza sativa*) is only occasional. Only certain yams are indigenous to Africa, but the role of these tubers in past subsistence economies is difficult to assess archaeologically, since yam starch does not leave easily detectable traces in Africa (Neumann 2005: 262). The only early evidence available for forest crops are banana phytoliths from Cameroon dated between 2750 and 2350 BP (Mbida Mindzié et al. 2000) and from Uganda dated to the 6th millennium BP (Lejju et al. 2005; Lejju et al. 2006). Such early dates for a domesticated plant of Southeast Asian origin has caused a great deal of controversy (Vansina 2003; Mbida Mindzié et al. 2005; Neumann & Hildebrand 2009). They call

for corroborating evidence from other Central African sites, which has not been found so far, among other things because fieldwork in Central Africa specifically targeting archaeobotanical remains is recent and not yet standard. The role of animal domestication in early Bantu-speaking societies is also difficult to assess due to the poor preservation of bones, particularly in open-air sites. The little evidence available suggests the presence of small livestock in Central Africa by the mid-third millennium BP, but at the same time the minor importance of domesticated animals in the earliest phases of the Bantu Expansion (Van Neer 2000). As things stand today, the Late Holocene archaeology of Central Africa provides no convincing evidence for farming as the principal driving force behind the Bantu Expansion.

Calling the earliest Bantu speakers "farmers" is also unjustifiable from a linguistic viewpoint. The only crops for which vocabulary can be reconstructed in Proto-Bantu are yams and possibly two *Vigna* species, i.e. the cowpea (*Vigna unguiculata*) and the Bambara groundnut (*Vigna subterranea*) (Philippson & Bahuchet 1994–1995; Bostoen 2014). The high number of lexical reconstructions for yams suggests that different *Dioscorea* species were indeed on the menu (Maniacky 2005). They were no doubt the main starch ingredient with which early Bantu speakers prepared their staple porridge as a mash (Ricquier & Bostoen 2011). Moreover, all Proto-Bantu yam terms were inherited from an older language stage, strongly suggesting that yams were already part of the diet before the ancestors of Bantu speakers reached the Bantu homeland in the Nigerian-Cameroonian borderland (Maniacky 2005; Blench 2006). However, since the wild ancestors of domesticated African yams also occur in the rainforest, these lexical reconstructions cannot be taken as evidence for plant cultivation, even not indirectly. The reconstruction of Proto-Bantu *Vigna* vocabulary could be in line with the archaeological evidence discussed above except for the chronology since the first and only archaeobotanical attestation of the Bambara groundnut (*Vigna subterranea*) is less than 2000 years old. An in-depth study is needed to corroborate whether the words reconstructed for these pulse species really referred from the very start to these domesticates exogenous to Central Africa and can indeed be seen as indirect evidence for food production. It should be excluded that they did not originally designate local wild plants and only became vernacular *Vigna* names through semantic shift as commonly happened for crops imported in Africa (Pasch 1979). Vocabulary for pearl millet and bananas cannot be regularly reconstructed to Proto-Bantu, but only appears in more recent ancestral language stages which suggests that Bantu speakers only integrated them in their culinary traditions in the course of their expansion (Bostoen 2006–2007; Blench 2009). However, they did already exploit fruit-bearing trees before leaving their homeland, and quite extensively to judge from the number of reconstructions, which would even increase provided that more dedicated historical linguistic research was done. Proto-Bantu vocabulary includes names

for several wild species, which have been widely protected and cultivated in equatorial Central Africa, but have never become domesticates, such as the oil palm (*Elaeis guineensis*), the bush-candle (*Canarium schweinfurthii*), the African plum (*Dacryodes edulis*), and the umbrella tree (*Musanga cecropioides*) (Bostoen et al. 2013a; Bostoen 2014).

The early economic importance of the oil palm and the bush-candle is well attested in the archaeological record of Western and Central Africa, where the remains of both oleaginous plants have often been found from ca. 5000 BP onwards in association with other indicators of plant food-processing, such as pounding/grinding equipment, polished stone tools and pottery (de Maret 1994–1995; D'Andrea et al. 2006). Other nuts have been found in archaeological deposits around 2000 BP in Cameroon, Equatorial Guinea and Gabon, like *Antrocaryon micraster*, *Chytranthus macrobotrys*, *Coula edulis* (African walnut), *Panda oleosa* (Clist 2005). Recently, scholars working in the Democratic Republic of the Congo succeeded for the first time to recover *Musanga cecropioides* diaspores (Kahlheber et al. 2014) and charred wood remains (Hubau et al. 2014) from archaeological deposits.

In sum, both the archaeological and linguistic evidence currently available urge us to seriously question the widely held belief that the Bantu Expansion is a textbook case of a farming/language dispersal. Both bodies of evidence rather suggest that the earliest Bantu speakers chiefly relied on non-domesticated foods and had a lifestyle that was situated towards the foragers' side of the "middle ground", i.e. "the large transitional zone in the continuum between hunter-gatherers on the one hand and agriculturalists largely depending on domesticated crops on the other (…)" (Neumann 2005: 249).

3. Crop vocabulary in Proto-West-Coastal Bantu

We tentatively propose five crop names for reconstruction in Proto-West-Coastal Bantu:

*-*cángó* 'pearl millet' (*Pennisetum glaucum*)
*-*kòndò* 'plantain' (*Musa spp.*)
*-*gómbo* 'okra' (*Hibiscus/Abelmoschus esculentus*)
*-*kúndè* 'cowpea' (*Vigna unguiculata*)
*-*jògó* 'Bambara groundnut' (*Vigna subterranea*)

As we have extensively demonstrated elsewhere (Bostoen 2006–2007; Kahlheber et al. 2009), the noun stem *-*cángó* can be reconstructed to Proto-Bantu, where it referred to grains of some kind, though not specifically to pearl millet (*Pennisetum glaucum*). It only became associated with this particular domesticate of West

African origin after Bantu speakers had started to emigrate southwards from their homeland and their ancestral language had started to diverge into distinct sub-branches. Regular reflexes designating this cereal are attested in present-day Bantu languages belonging to the South-Western Bantu, Central-Western Bantu and West-Coastal Bantu branches, which all split off after the Bantu languages started their rapid dispersal through the rainforest. The late semantic shift or narrowing towards 'pearl millet' is well in line with the currently available archaeobotanical evidence indicating that this cereal only appeared in Central Africa after 2500 BP once the core of the rainforest underwent a climate-induced crisis associated with a more accentuated seasonality, which is needed for the cultivation of pearl millet. With current-day reflexes in all three West-Coastal sub-branches, *-*cángó* 'pearl millet' can safely be reconstructed into Proto-West-Coastal Bantu. Today, however, reflexes of *-*cángó* more commonly refer to maize (*Zea mays*), which West-Coastal Bantu speech communities acquired as part of the Columbian exchange and whose cultivation is nowadays more widespread than that of pearl millet. The lexical reconstructions *-*kʊ* 'millet; eleusine' and *-*pòndó* 'millet', proposed by Bastin et al. (2002), reflect other innovations in the cereal cultivating traditions of West-Coastal Bantu speakers. The two terms seem innovations that are posterior to Proto-West-Coastal Bantu, but more dedicated study is needed to establish both the time depth of their introduction and the specific cereal species to which they initially referred.

Apart from recent archaeobotanical finds of pearl millet (Eggert et al. 2006; Kahlheber et al. 2014), other evidence for early plant cultivation in western Central Africa comes from the identification of banana phytoliths by Mbida Mindzié et al. (2000). According to Blench (2009: 363), plantains arrived in West Africa earlier than 3000 BP along with taro and water yam and the cultivation of these crops made possible the effective exploitation of the dense equatorial rainforest. He identifies one widespread term for plantain, which also occurs across the zone where the greatest degree of somatic variation is found, i.e. the northeastern Democratic Republic of the Congo (DRC). However, the "most prominent reconstructible" form *-*ko[n]do* which he proposes is not a true reconstruction. It rather reflects the phonological irregularity, which this term manifests across languages, suggesting that its initial diffusion was contact-induced and not the consequence of language spread and divergence. This is well in line with the conclusion of Philippson and Bahuchet (1994–1995) that reconstructing a regularly inherited term for plantain or banana to Proto-Bantu is not possible. On the other hand, West-Coastal Bantu languages do share a cognate term that seems to be regularly inherited from their most recent common ancestor and corresponds to the reconstruction *-*kòndò* 'banana: Musaceae' (Bastin et al. 2002). It is widely attested in languages of all three West-Coastal Bantu sub-branches and respects regular sound correspondences between them, as some examples in Table 1 illustrate. The final nasal-consonant

cluster reduction and the apocope of the final syllable observed in the West-Coastal Bantu languages not belonging to the Kikongo Language Cluster is a sound shift regularly shared amongst them (Daeleman 1977; Hombert 1986; Koni Muluwa 2010). A systematic comparison of all available attestations is needed to establish a firm Proto-West-Coastal Bantu reconstruction, but the lexical evidence in Table 1 suggests that by the time the first Bantu speakers reached south of the rainforest, bananas of some kind had become regular part of their diet. Along with their languages, West-Coastal Bantu speakers further spread them towards the Atlantic Coast in the west and the Bandundu in the east.

Table 1. Reflexes of **-kòndò* 'banana' in present-day West-Coastal Bantu languages

Sub-branch	Language	Country	Term	Source
KLC	Ntandu	DRC	*dinkŏndo*	(Daeleman & Pauwels 1983: 203)
	Suku	DRC	*dinkondu*	(Bunkheti 1997: 114)
Yanzi	Nsong	DRC	*ékɔ́ːn*	(Koni Muluwa 2014: 70)
	Nzadi	DRC	*ikwɔ*	(Crane et al. 2011: 283)
Nzebi-Mbete-Teke	Nzebi	Gabon	*ləkɔ*	(Blanchon & de Nadaillac 1987: 65)
	Teke	Gabon	*kô*	(Fontaney 1984: 57)

Blench (2006: 121) rightfully observes that no Proto-Bantu reconstructions are available for ancient African domesticates, such as okra (*Hibiscus/Abelmoschus esculentus*), roselle (*Hibiscus sabdariffa*) and amaranth (*Amaranthus sp.*). Such does not seem to be entirely the case for Proto-West-Coastal Bantu.

As for okra, a crop whose center of domestication is still uncertain but definitely outside the Bantu area (Hamon & Charrier 1997: 322–323), a cognate term reconstructible as **-gómbo* is widespread in two sub-branches of West-Coastal Bantu, i.e. the Kikongo Language Cluster and the Yanzi subgroup (see Table 2). The tone pattern of the reflex in Ntandu, whose correspondences with tone in Bantu lexical reconstructions are best known (Daeleman 1983), does not allow to discriminate between *HH and *HL. For the time being, no reflex could be identified in the Nzebi-Mbete-Teke sub-branch. Boma, for instance, has *lɔnalɔ́ːn* (Koni Muluwa and Bostoen 2015: 102), which seems to have several cognates among languages of the Yanzi sub-group, e.g. Nzadi *dɔ̌ŋdɔ̌n* (Crane et al. 2011: 292). See also Koni Muluwa and Bostoen (2015: 102) for Yans, Mpur, Lwel and Ngwi. Outside West-Coastal Bantu, it occurs in Lingala, for instance: *dɔngɔ́dɔngɔ́* (van Everbroecke 1985). The **-gómbo* term for 'okra' is also attested outside West-Coastal Bantu, i.e. mainly in South-Western Bantu languages, e.g. Kimbundu *kingombo* (Gossweiler 1953: 39) and Lucazi *cingombo* (Storrs 1995). This makes it a likely candidate for reconstruction in Proto-West-Coastal Bantu. It is also this specific term which made it to the other side of the Atlantic as part of the Columbian exchange. In Creole culinary

culture, *gumbo* has become a signature dish consisting of stew made of okra and bits of meat and poultry or shellfish, served as a soup or with rice (McCann 2009: 171). It is important to stress that the * *gómbo* reconstruction for okra has nothing to do with the *tukuru* form, which Blench (1994–1995) proposes as going back as far as Proto-Benue-Congo, the proto-language ancestral to Proto-Bantu itself. This great time depth is likely to be exaggerated and in need of serious reconsideration.

Table 2. Reflexes of **-gómbo* 'okra' in present-day West-Coastal Bantu languages

Sub-branch	Language	Country	Term	Source
KLC	Ntandu	DRC	*góombo*	(Daeleman & Pauwels 1983: 196)
	Samba	DRC	*kingômbu*	(Koni Muluwa & Bostoen 2015: 102)
Yanzi	Ngong	DRC	*kéngɔ̂mb*	(Koni Muluwa 2014: 37)
	Mbuun	DRC	*íngɔmb*	(Koni Muluwa 2014: 37)

As for roselle (*Hibiscus sabdariffa*) and amaranth (*Amaranthus sp.*), West-Coastal Bantu languages do share some terms that seem to have a certain time-depth, but for the time being none of them is eligible for a solid reconstruction in Proto-West-Coastal Bantu.

The term referring to amaranth which several languages spoken in the Kwilu Province (Democratic Republic of the Congo) share is reminiscent of the regional reconstruction * *dèngàdèngà* proposed by Bastin et al. (2002) on the basis of data from eastern Bantu languages: Mpiin *mʊlíŋ*, Nsong *ɲlɛŋ*, Mbuun *ɔlɛŋ*, Ngong *mɔlɛ́*, Hungan *mulɛ̌ŋ* (Koni Muluwa 2010: 479; 2014: 39). Similar words occur in South-Western Bantu languages, such as Cokwe and Kanyok, i.e. respectively *mulenje* (Gossweiler 1953: 392) and *múlé:ŋ* (Kabinda 1988). However, for now, no other attestations were found elsewhere in West-Coastal Bantu, among other things because the vocabulary concerned is not well documented. It is therefore hard to say whether the amaranth terms attested in Mpiin, Nsong, Mbuun, Ngong and Hungan are retentions from Proto-West-Coastal Bantu or rather the outcome of contact with South-Western Bantu languages spoken in the neighborhood. More dedicated data collection and language comparison is needed here.

With regard to roselle, the Yanzi languages from the Kikwit area also share a term that seems to be attested outside West-Coastal Bantu but nowhere else inside. Nsong and Ngong have *bɔkwɛs*, Mpiin *bukwés* and Mbuun *ɔkwɛs* (Koni Muluwa 2010: 487; 2014: 62). Possible cognates are attested in the South-Western Bantu languages Kimbundu and Cokwe, i.e. respectively *use* and *kise* (Gossweiler 1953: 156). However, West-Coastal Bantu languages of the Kikongo Language Cluster and the Nzebi-Mbete-Teke subgroup have a *-kulu* stem for this plant, e.g. Bembe *kínkulú* (Kouarata 2016: 81), Punu *àbukûlu* (Blanchon 1991: 57), Vili

búkʰúlù (Ndinga-Koumba-Binza 2000), Lategе *lànkùlú* (Linton 2016: 21), Iyaa *íkùlú* (Mouandza 1991: 103). More research is needed to establish whether this stem is eligible for reconstruction in Proto-West-Coastal Bantu or whether it is a later innovation excluding the Yanzi languages from the Bandundu.

Finally, it is worth noting that the reflexes of the lexical reconstructions proposed for the pulses *Vigna unguiculata* (cowpea) and *Vigna subterranea* (Bambara groundnut), i.e. **-kóndè* and **-jògó* respectively (Philippson & Bahuchet 1994–1995), occur only marginally in West-Coastal Bantu. Koni Muluwa (2010: 313; 2014: 85) reports *ékúːnd* in Nsong, where it designates both *Vigna unguiculata* and *Phaseolus vulgaris* or common bean, the latter being imported through the Columbian exchange. Several other languages of the Yanzi subgroup designate the common bean with a cognate form (Koni Muluwa & Bostoen 2015: 106). However, in the Yanzi subgroup and the Kikongo Language Cluster, cognate forms of Ntandu *nkása* (Daeleman & Pauwels 1983: 212) are prevalent for both *Vigna unguiculata* and *Phaseolus vulgaris* (Koni Muluwa & Bostoen 2015: 106). This *-kasa* stem appears to be an innovation posterior to Proto-West-Coastal Bantu, along with *-deeso*, which also refers to *Phaseolus vulgaris* and is especially pervasive within the Kikongo Language Cluster, but equally occurs elsewhere inside and outside West-Coastal Bantu (Koni Muluwa & Bostoen 2015: 106; Ricquier 2016: 118). A similar widespread innovation, i.e. *-guba*, exists for both *Vigna subterranea* (Bambara groundnut) and *Arachis hypogaea* (peanut), the latter also being an import of American origin. It is particularly prevalent within the Kikongo Language Cluster (Ricquier 2016: 138), while the more archaic stem **-jògó* has been maintained in the other West-Coastal Bantu branches (Koni Muluwa & Bostoen 2015: 55). Although it mainly refers to the peanut in present-day languages, it is also still associated in some of them with the Bambara groundnut, which is nowadays less commonly cultivated. The Ngong people from the Kwilu area, for example, call it *lodzú la ngóːr*, because they consider it to be their signature crop (Koni Muluwa 2014: 86). That is why we would tentatively propose – in anticipation of more in-depth analysis – **-jògó* as a Proto-West-Coastal Bantu reconstruction for *Vigna subterranea* along with **-kóndè* for *Vigna unguiculata*.

In sum, the comparative lexical data considered above allow for the tentative reconstruction of Proto-West-Coastal Bantu terms for at least five crops, i.e. pearl millet (*Pennisetum glaucum*), okra (*Hibiscus/Abelmoschus esculentus*), cowpea (*Vigna unguiculata*), Bambara groundnut (*Vigna subterranea*) and plantain (*Musa spp.*). All are crops whose center of domestication is situated beyond the Bantu distribution area. In other words, if the first Bantu speakers south of the rainforest had vocabulary for these crops, they probably knew how to cultivate plants in their West-Coastal Bantu homeland. In this regard, the lexical evidence available for the reliance on domesticated crops is definitely more conclusive at the stage

of Proto-West-Coastal Bantu than at the earlier stage of Proto-Bantu, even if the number of such crops in their diet was still fairly limited. Moreover, given that most of these crop names do not seem to be West-Coastal Bantu innovations, but terms also attested in other major Bantu branches, especially in South-Western and Central-Western Bantu, it is quite likely that ancestral West-Coastal Bantu speakers had integrated the cultivation of these crops in their subsistence strategies before they arrived in their homeland south of the rainforest.

4. Wild plant vocabulary in Proto-West-Coastal Bantu

The possibility to reconstruct at least five crop names in Proto-West-Coastal Bantu is an important progress with regard to Proto-Bantu. However, this number is still fairly low, especially if compared with the number of wild plant names reconstructible in Proto-West-Coastal Bantu. On the basis of our preliminary comparative research, we could propose not less than 42 tentative Proto-West-Coastal Bantu reconstructions referring to different kinds of wild trees, shrubs and other plants occurring in different types of habitats. This number does not include those for (wild) yams and for wild trees, such as oil palm (*Elaeis guineensis*), bush-candle (*Canarium schweinfurthii*), African plum *(Dacryodes edulis*), umbrella tree (*Musanga cecropioides*) and cola nut tree (*Cola sp.*), which were reconstructed earlier on for Proto-Bantu (Maniacky 2005; Bostoen et al. 2013a; Bostoen 2014) and several of which were retained in Proto-West-Coastal Bantu. It would go beyond the scope and the page constraints of this chapter to present all 42 new lexical reconstructions. We refrain ourselves to some case studies which are illustrative of the natural environment in which Proto-West-Coastal Bantu speakers lived, of the different purposes for which they relied on wild plants and of the different ancestral stages in which these plant names were acquired.

Firstly, a series of Proto-West-Coastal Bantu plant names are actually retentions from Proto-Bantu. It concerns series of cognate terms that are attested in those Bantu branches which split off first, such as Mbam-Bubi and/or North-Western Bantu (Grollemund et al. 2015), as well as in several later major branches, such as Central-Western Bantu, West-Coastal Bantu, South-Western Bantu and/or East Bantu. Some of these lexical reconstructions already figure in Bastin et al. (2002), but were not yet solidly reconstructed into Proto-Bantu; others were never proposed before. One of the latter kind is a term referring to the kapok tree or *Ceiba pentandra* (Malvaceae). This tree is, just like *Elaeis guineensis*, *Canarium schweinfurthii* and *Musanga cecropioides* (Bostoen et al. 2013a), a pioneer species that naturally colonizes clearings in the tropical forest zone. In Central African societies, this tree traditionally is multifunctional: the wood is used for carvings, coffins and

dugout canoes, the fibres for bedding and life preservers, the oil in the seeds for soap, the bark as a purgative and to cause vomiting in the event of poisoning and the leaves for different kinds of medical treatment, such as for haemorrhoids, asthenia, heartburn, etc. (Raponda-Walker & Sillans 1995; Latham 2004; Koni Muluwa 2014). As shown in Table 3, cognate forms for this tree occur in languages belonging to North-Western, Central-Western, South-Western and West-Coastal Bantu. We tentatively propose the reconstruction **-kùmà* for this comparative series. The reconstructed LL tone pattern is based on the tones of the Mongo reflex, which should be morphologically analysed as *b(o)-uma*. It is well known that Proto-Bantu **k* has become Ø in Mongo and the language directly reflects Proto-Bantu tones (Hulstaert 1941; de Rop 1953, 1958). Being represented in all three West-Coastal Bantu sub-branches, this term can also be reconstructed to their most recent common ancestor as a retention from Proto-Bantu.

Table 3. Reflexes of **-kúmà* 'kapok tree' in Bantu languages belonging to distinct major branches

Branch	Language	Country	Term	Source
NW	Mpiemo	Cameroun	*dumɔ*	(Thornell 2004: 66)
	Tsogo	Gabon	*ogumâ*	(Raponda-Walker & Sillans 1995: 106)
CW	Mongo	DRC	*buma*	(Hulstaert 1957: 455)
	Turumbu	DRC	*lihuma*	(SPIAF 1988: 8)
SW	Kimbundu	Angola	*mufuma*	(Gossweiler 1953: 154)
	Cokwe	Angola	*kafuma-fuma*	(Gossweiler 1953: 154)
WCB	Mbede	Gabon	*okuma*	(Raponda-Walker & Sillans 1995: 106)
	Nsong	DRC	*ǫ́pfum*	(Koni Muluwa 2014: 47)
	Hungan	DRC	*múpfum*	(Koni Muluwa 2014: 47)

Secondly, a series of Proto-West-Coastal Bantu plant names seem to be retentions from an ancestral stage posterior to Proto-Bantu. They are attested in several Bantu branches other than West-Coastal Bantu, but are not sufficiently widespread to be reconstructed into Proto-Bantu, especially because they are absent from the branches that split off first, i.e. Mbam-Bubi and North-Western Bantu. Several names of useful plants are shared between East-Bantu and all western Bantu branches except Mbam-Bubi and North-Western Bantu. This is in line with the claim that East-Bantu is a late offshoot that emerged from western Bantu (Grollemund et al. 2015). Two reconstructions already proposed by Bastin et al. (2002) on the basis of reflexes from these four branches fit into this category, i.e. **-dódò* '*Annona senegalensis*' and **-pòmí* '*Erythrophleum suaveolens*'.

The first one, also known as "African custard-apple" is a common savannah species whose fruits are edible. The young leaves and roots are used to treat, among

other things, constipation, gastritis, diabetes, painful joints, anaemia and epilepsy, and the gum is applied to cuts and wounds to seal them. It also hosts edible caterpillars (Latham 2004; Koni Muluwa 2014). Table 4 presents reflexes of **-dódò* in a series of Bantu languages belonging to different major branches. It should be noted that it does not always refer to *Annona senegalensis* itself in present-day West-Coastal and other Bantu languages, but sometimes to closely related species, such as the *Annona stenophylla* and the *Annona arenaria*. As a consequence, it is safer to associate the value '*Annona sp.*' with the Proto-West-Coastal Bantu reconstruction **-dódò*. Moreover, in several northern languages of the Kikongo Language Cluster, the term was also adopted to designate the papaya, a fruit of American origin, at the time of its introduction as part of the Columbian exchange (Ricquier 2016: 130).

Table 4. Reflexes of **-dódò* '*Annona sp.*' in Bantu languages belonging to distinct major branches

Branch	Language	Country	Term	Source
E	Shona	Zimbabwe	*muroro*	(Hannan 1974: 936)
	Fwe	Zambia	*muroro*	(Bingham 2005)
CW	Tetela	DRC	*ɔlɔlɔ́*	(Hagendorens 1975: 328)
SW	Kimbundu	Angola	*dilolo*	(Gossweiler 1953: 137)
	Cokwe	Angola	*mulolo*	(Gossweiler 1953: 137)
	Kwamashi	Zambia	*diróró*	(Bostoen fieldwork 2007)
WCB	Ntandu	DRC	*kilólo; ǹlólo*	(Daeleman & Pauwels 1983: 168)
	Mpiin	DRC	*múlɔl*	(Koni Muluwa 2014: 40)

The second one (*Erythrophleum guineense*) is also known as the "ordeal tree", because it produces a poison that is used for ordeals throughout Central Africa. This is a widespread and ancient ritual tradition among western Bantu speech communities (Vansina 1990: 300; MacGaffey 1991: 9). As Vansina (1990: 300) notes, apart from **-pòmí*, of which he observed reflexes in West-Coastal, Central-Western, South-Western and Eastern Bantu languages, a second term tentatively reconstructed as **-kaca* is widespread among western Bantu languages, especially in West-Coastal and Central-Western Bantu languages. Table 5 presents reflexes of both roots in West-Coastal Bantu languages. The **-pòmí* stem seems to prevail in the Yanzi subgroup, while the **-kaca* stem is predominant in the two other West-Coastal Bantu sub-branches. Relying on their attestations outside West-Coastal Bantu, both stems appear to be reconstructible to the most recent common ancestor of the Kikongo Language Cluster, Nzebi-Mbete-Teke and Yanzi subgroups. Remarkably, several other species, such as *Elaeis guineensis*, *Canarium schweinfurthii* and *Musanga cecropioides*, similarly have two widespread stems with a partially complementary distribution within western Bantu (Bostoen et al. 2013a). In certain present-day

languages, such as Ntandu and Yombe in Table 5 below, the term actually refers to the closely related species *Erythrophleum suaveolens*, which is used for the same purposes. Hence, in this case, rather than being true synonyms, the two terms possibly used to be near-synonyms, which subsequently started to designate the same species.

Table 5. Reflexes of **-pòmí/*-kaca* '*Erythrophleum guineense/suaveolens*' in West-Coastal Bantu

Sub-branch	Language	Country	Term	Source
Yanzi	Nsong	DRC	*épwɪm*	(Koni Muluwa 2014: 58)
	Mpiin	DRC	*kípwɪm*	(Koni Muluwa 2014: 58)
	Yans	DRC	*nkay; ipœm*	(Koni Muluwa & Bostoen 2015: 145)
KLC	Ntandu	DRC	*nkăsa*	(Daeleman & Pauwels 1983: 176)
	Yombe	DRC	*nkaása*	(De Grauwe 2009: 83)
Nzebi-Mbete-Teke	Duma	Gabon	*mukasa*	(Raponda-Walker & Sillans 1995: 227)
	Nzebi	Gabon	*mukasa*	(Raponda-Walker & Sillans 1995: 227)
	Ndumu	Gabon	*okasa*	(Raponda-Walker & Sillans 1995: 227)

Finally, a certain number of names for useful wild plants seem to be Proto-West-Coastal Bantu innovations in the sense that they occur in West-Coastal Bantu sub-branches, but are not attested outside West-Coastal Bantu. One such case is the common name for the oil bean tree (*Pentaclethra macrophylla*), which is a fast-growing tree to 25 m high that is multifunctional among West-Coastal Bantu speech communities. The timber is used for construction works, for the fabrication of utensils, such as mortars, and for the production of charcoal. The seed pods can be used for fuel and also yield lye used for soap. The leaves host edible caterpillars and are used to produce a decoction for treating diarrhea or headache, while the bark serves in infertility treatments (Raponda-Walker & Sillans 1995; Latham 2004; Koni Muluwa 2014). As shown in Table 6, a cognate term for this tree is recurrent in West-Coastal Bantu. We tentatively propose the reconstruction **-pánjɪ* for this comparative series. The reflexes from the Kikongo Language Cluster clearly indicate an initial consonant **p* (cf. Bostoen et al. 2013b: 64), which was retained as such in the Ntandu term *mpáansa*, which actually refers to the seed pods and not to the tree itself which is called *ǹgáansi*. The difference in stem-initial consonant can be accounted for by the fact that the name for the pods takes a noun prefix of classes 9/10 (singular/plural), which is a non-syllabic nasal having a conservative effect on the following consonant, while the tree name takes a noun prefix of classes 3/4 (singular/plural), which is a syllabic nasal not having this conservative effect, because it originally had a vowel following the nasal, i.e. **-mʊ* (3), **-mɪ* (4) (cf. Bostoen & de Schryver 2015). As for the alternation in final vowel observed between the two

Ntandu terms, this seems to be a variation that is recurrent across West-Coastal Bantu. However, the umlaut of the initial vowel observed in several languages of the Yanzi and Nzebi-Mbete-Teke subgroups calls for the reconstruction of an initial low vowel **a* and a final front vowel **ɪ*, as this is a regular sound shift among these languages (Bostoen & Koni Muluwa 2014). The final vowel *a* is mainly observed within the Kikongo Language Cluster and is probably a later innovation. As for the tones, the Ntandu reflexes manifest the same tone pattern as the **-gómbo* reflex. As it is impossible to discriminate between *HL and *HH, we only reconstruct a high tone for the first syllable for the time being.

Table 6. Reflexes of **-pánjɪ* '*Pentaclethra macrophylla*' in West-Coastal Bantu

Sub-branch	Language	Country	Term	Source
Yanzi	Nsong	DRC	*mɔ́wɛndz*	(Koni Muluwa 2014: 73)
	Mpiin	DRC	*múwɛndz*	(Koni Muluwa 2014: 73)
	Ngong	DRC	*mɔ́wándz*	(Koni Muluwa 2014: 73)
KLC	Hungan	DRC	*múwândz*	(Koni Muluwa 2014: 73)
	Yombe	DRC	*mváanza*	(De Grauwe 2009: 75)
	Ntandu	DRC	*ngáansi; mpáansa*	(Daeleman & Pauwels 1983: 201)
	Laadi	Congo	*kihanzi*	(Adjanohoun 1998)
	Punu	Gabon	*muvandji*	(Raponda-Walker & Sillans 1995: 244)
Nzebi-Mbete-Teke	Duma	Gabon	*mupandji*	(Raponda-Walker & Sillans 1995: 244)
	Nzebi	Gabon	*muwendji*	(Raponda-Walker & Sillans 1995: 244)
	Laali	Congo	*muwaï*	(Adjanohoun 1998)

5. Conclusions

The comparative lexical data considered in this article suggest that the first Bantu speakers who emerged south of the rainforest about 2500 years ago knew how to cultivate plants. The circumstantial evidence supporting this conclusion is the reconstruction of names for five distinct crops into Proto-West-Coastal Bantu, i.e. pearl millet (*Pennisetum glaucum*), okra (*Hibiscus/Abelmoschus esculentus*), cowpea (*Vigna unguiculata*), Bambara groundnut (*Vigna subterranea*) and plantain (*Musa spp.*). Since none of these crops were domesticated in Bantu-speaking Central Africa, the possibility to reconstruct names for them in an ancestral Bantu language is a strong indication of the fact that by that time Bantu speakers not only consumed crops, but also cultivated plants. This conclusion founded on lexical data is in line with the appearance of pearl millet and plantain in the archaeological record of Central Africa around the same period, i.e. 3000 to 2500 years ago. The

presence of domesticated plants in the archaeological record is conclusive evidence for cultivation. While cultivation refers to "any human activity that increases the yield of harvested or exploited plants" and "can be practiced with wild or domesticated plants", domestication is a process which "only occurs under cultivation" and leads to "genetic, morphological and physiological changes of plants" (Neumann 2005: 250). Such conclusive evidence – both direct archaeological and indirect linguistic – is missing for the era corresponding to the assumed start of the Bantu Expansion, i.e. around 5000 years ago. The fact that the crop names reconstructible to Proto-West-Coastal Bantu do not date back to Proto-Bantu but are still shared with certain other Bantu branches fits in rather well with the hypothesis that Bantu speech communities acquired them in the course of their rapid migration through the Central rainforest block, which was facilited thanks to the climate-induced opening of the forest around 2500 years ago. This climate change also induced the increased seasonality as well as savannah environment that was needed for the cultivation of crops such as pearl millet.

The considerable lapse of time between the beginning of the Bantu Expansion and the first conclusive evidence for plant cultivation and domestication, i.e. at least two millennia, suggests that the emergence of agriculture in Central Africa was indeed "a slow revolution" (Vansina 1994–1995). Its contribution to the subsistence of early Bantu speech communities grew only very steadily. Farming can therefore not have been the principal driving force behind the initial phases of the Bantu Expansion. Before Bantu speakers started to cultivate domesticated crops, as they certainly did as soon as they arrived south of the rainforest, they no doubt protected and increased the yield of wild plants available in their natural habitat, such as yams and several tree species for which vocabulary can be reconstructed in Proto-Bantu. The recurrent finds of oil palm (*Elaeis guineensis*) and bush-candle (*Canarium schweinfurthii*) remains in archaeological sites associated with early Bantu-speaking village communities may indeed point towards early arboriculture, even if it is hard to tell from the archaeobotanical record whether people just harvested from wild stands or already managed their forests, as present-day rainforest dwellers commonly do (Kahlheber et al. 2009: 261).

Moreover, the possibility to reconstruct crop names in Proto-West-Coastal Bantu, along with the archaeobotanical evidence for some of these crops from roughly the same period, should not be taken yet as evidence for agricultural intensification and surplus creation, often seen as pathways to societal complexity (McIntosh 1999: 4). As Neumann (2005: 250) puts it, "a single grain of domesticated sorghum does not justify calling the corresponding human population 'farmers'". Such is true for a single grain of pearl millet and for a single banana phytolith and even more for the reconstruction of some crop names. Although the first Bantu speakers south of the rainforest knew how to cultivate certain crops, they still

exploited intensively the different ecosystems to which they had access as part of their subsistence economy and their wider culture. Even if they had slightly moved towards the agriculturalists' side of the large continuum between hunter-gatherers and farmers in comparison with their ancestors, they still largely depended on the plant resources that they could collect in their natural environment, as is evidenced by a preliminary assessment of wild plant names that can be reconstructed to Proto-West-Coastal Bantu. While the reconstructible crop vocabulary is fairly limited, inherited names for wild plants shared between West-Coastal Bantu languages are numerous and would still increase if better ethnobotanical data were available. Wild or semi-domesticated plants were not only used for nutritional purposes, but also had various material-cultural, medicinal and ritual applications, many of which have persisted until today.

The fact that the vocabulary for different crops, such as cowpea, Bambara groundnut, okra, amaranth and roselle, still underwent considerable innovation in distinct branches of West-Coastal Bantu suggests that plant cultivation systems were still subject to important changes after West-Coastal Bantu speech communities had left their ancestral homeland south of the forest. Farming only became a more predominant subsistence strategy once they had started to migrate towards the Atlantic coast in the West and the Bandundu region in the East and it was definitely further boosted at the time of the first contacts with Europeans, i.e. from the late 15th century onwards. Many present-day crops, such as maize, cassava, sweet potato, peanut, common bean, etc., where introduced in Central Africa as part of the Columbian exchange and were often designated by inherited Bantu names which underwent semantic shift, e.g. 'pearl millet' > 'maize'; 'yam' > 'sweet potato'; 'Bambara groundnut' > 'peanut'; 'cowpea' > 'common bean', etc.

As Katharina Neumann has recently put it in a comment on Bostoen et al. (2015: 374), "basic questions on diet and subsistence of the 'Bantu' immigrants are still completely open". In order to answer these basic questions not only more dedicated historical linguistic research, but also – and first and foremost – more dedicated archaeobotanical research in Central Africa is needed, for instance to establish whether the plants for which we could reconstruct vocabulary in Proto-West-Coastal Bantu can also be retrieved in the archaeological record. It is only through such a joint cross-disciplinary approach that we will succeed in transforming our understanding of how the "middle ground" looked like in early Bantu speech communities and how it evolved through time. While archaeologists will focus on the means of subsistence that have left retrievable remains in Central African soils, historical linguists will additionally – but not exclusively – reconstruct the vocabulary for those plants (and animals) that are now archaeologically invisible. Such thinking across the disciplines will prove indispensable in order to conceive language dispersals beyond farming.

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Abbreviations

CW	Central-Western Bantu
E	Eastern Bantu
KLC	Kikongo language cluster
NW	North-Western Bantu
SW	South-Western Bantu
WCB	West-Coastal Bantu

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