

THE HISTORY OF AGRICULTURE IN NORTHEASTERN NIGERIA

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NOTES

Acronyms/Toponyms etc.

Throughout this work, 'Borno' and 'Adamawa' are taken to refer to geographical regions rather than current administrative boundaries.

Orthography

Since this work is not written for specialised linguists I have adopted some conventions to make the pronunciation of words in Nigerian languages more comprehensible to non-specialists. Spellings are in no way 'simplified', however. Spellings can be phonemic (where the language has been analysed in depth), phonetic (where the form given is the surface form recorded in fieldwork) or orthographic (taken from earlier sources with inexplicit rules of transcription). The following table gives the forms used here and their IPA equivalents;

This Work	IPA (1989)
y	j
c	tʃ
j	dʒ

Tone marks

The exact significance of tone-marks varies from one language to another and I have used the conventions of the authors in the case of published languages. The usual conventions are;

High	´
Mid	Unmarked
Low	`
Rising	ˊ
Falling	ˋ

A word prefaced by # represents a pseudo-reconstruction, in other words a probable form based on an inspection of available roots, but has not been rigorously derived through sound-correspondences.

1. Introduction

The original title of this paper, 'A History of Crops and Peoples..' was a deliberate *hommage* to a well-known paper by Nick David published in the mid-1970s (DAVID, 1976). That paper was a striking first attempt to combine evidence from archaeology, ethnography and crop repertoires to establish the historical pattern of adoption and change of crops in Northern Cameroon. The scope of this paper¹ has now expanded beyond crops and a title change reflects this, but the inspiration is still acknowledged.

This present study has much the same goal with respect to NE Nigeria -with some important methodological differences. These relate largely to the nature and sources of evidence. Apart from the work of CONNAH (1981 and other references therein) there has been little significant archaeological work in this area until the 1990's. The research of the Frankfurt-based West African savannah project has begun to appear (for example, BREUNIG, GARBA AND WAZIRI, 1991; BREUNIG, GARBA, GRONENBORN, VAN NEER & WENDT, 1993; BREUNIG et al., 1993).

Secondly, the secondary literature relating to crops and cultigen repertoires remains sparse. By comparison with Northern Cameroon, the general ethnographic literature is extremely impoverished and often relates more to material culture and traditional religion than economic topics. Early travellers are useful for tracking the spread of 'new' crops such as the cultigens of South American origin, but listing references to *gussub* in Denham and Clapperton adds relatively little to our knowledge of the history of sorghum in this region.

Inevitably, a study of cultigen repertoires has a side effect of illuminating minor crops. Studies of agriculture in Africa frequently suffer from a problematic emphasis on major crops -often those that are most visible or are favoured by the agricultural research network. Yet African farmers grow a wide range of crops and varieties as part of a coherent subsistence strategy; classifying certain cultigens as 'minor' can become an excuse for ignoring them.

Another aspect of this type of agrarian history is to integrate the recent past with prehistory. Because of the disciplinary boundaries that separate prehistorians from anthropologists and development specialists, history often takes on a bipartite appearance. Prehistory and the early colonial period are allotted the 'academic' slot, while recent change is the province of developers or professional agriculturalists. However, the development documents of the 1970s (such as the Land Resource Development Reports), are the historical material of today. If prehistorians were more aware of the processes of change that can be documented nearer to the present they might find more flexible ways of interpreting the past. Conversely, if developers read more history, they would be more sanguine about the likely defects in their optimistic schemes.

The paper also has an additional goal -to underwrite the often vague platitudes about the dynamism and flexibility in traditional farming systems with evidence. The historical dimension makes it possible to see that the common opposition between 'traditional' and 'modern' so beloved of developers and anthropologists is of limited value. Farmers are constantly adopting new crops, domestic animals and farming techniques and farming systems must change to accommodate these. Evidence from linguistics underlines the dynamism of these systems in the past as much as in the present.

¹This paper has been read and commented on by several people in various stages of its development. I am especially grateful to Christian Seignobos and the audience of the session where it was first given in September 1991. Some years of discussions with John Lavers† and his student Usman Geidam greatly enlarged my knowledge of the region. An expanded version was presented at the University of Maiduguri in April 1992, where it was chosen to inaugurate the Trans-Saharan studies Centre Lecture Series. I am grateful to Eldridge Mohammadou and other members of the audience for further comment. Although I have been collecting the material that forms the core of this paper sporadically since 1986, the bulk of the language data was collated in April 1992 with assistance of Jim Wade, whose energy in collecting speakers of different languages made the task of cross-comparison practical. I would like to thank Jim and Marta for their hospitality and help during the project. More recently, I would like to thank Kevin MacDonald for general discussion and drawing my attention to the conference paper of Katherine Neumann.

This paper has a companion, BLENCH (1995), which deals with the history of domestic animals in the region using much the same methodology and sources². In addition a more detailed study of maize and maize terminology has been prepared (BLENCH, WILLIAMSON AND CONNELL, in press). These papers should be taken together to round out the picture of the agricultural prehistory of NE Nigeria.

2. Methodology

This type of agrarian history essentially depends on four types of source material; archaeology, historical records, linguistic data and current ethnographic research. Linguistics and descriptive ethnography can be combined to illumine past history. Names of plants, tools and farming systems can help stratify agricultural innovation historically.

So little work has been published on crops and farming systems in this region that it is impossible to draw broad conclusions from the literature. However, compiling lists of names for cultivated plants and animals in a variety of languages provides a basis for constructing a historical stratification. Such studies have been undertaken in other parts of Nigeria. This technique was first explored by WILLIAMSON (1970) in a paper on the food-crops of the Niger Delta and more recently for selected plants in Southern Nigeria (WILLIAMSON, 1993). This showed a variety of reconstructible roots in the various language families and contrasted them with lexemes which cross linguistic boundaries, suggesting more recent diffusion of a species of plant. BLENCH (1986, 1989) are studies of the historical stratification of food plants among the Nupe peoples while more recently BLENCH (in press, a) has examined the evidence for cultivated plants among speakers of Bantoid and proto-Bantu.

An interesting problem in relation to the comparison of terms for food-plants in various languages is the problem of relexification, i.e. the replacement of an older term by a loan-word from a more prestigious language. For example, the rise of Hausa as a prestige language in Northern Nigeria in the twentieth century and the retreat of both Fulfulde and Kanuri has sometimes had the effect of replacing indigenous terms with Hausa borrowings. Sometimes this can be detected by using early vocabularies such as Barth's, but where sources are less complete only more detailed ethnobotanical research will uncover the history of individual crops.

One methodological concept that needs clarification is 'traditional crop'. Descriptions of agricultural systems usually list the crops farmers grow and treat a specific crop as a unitary species, either 'traditional' or 'modern'. However, the relationship between farmers and crops is more complex. The Jews' mallow, *Corchorus olitorius*, for example, was originally domesticated in West Africa and was carried to North Africa where more productive varieties were bred. These new varieties were then carried back across the desert, now with an Arabised name. In some places they have interbred with the local cultivars -elsewhere the two have remained separate. In this case farmers perceive an 'old' crop as a new introduction -by contrast, chili peppers are thought to be ancient, although they are a south American domesticate. Local perceptions are often in conflict with botanical reality; crops are better classified along a sliding historical scale than with a simple dichotomy.

² Attentive readers will notice that some of the introductory material is quite similar, although adapted for crops.

3. Source Materials

3.1 Archaeological Data

Until recently, the excavations of GRAHAM CONNAH (1981, 1984) represented the only archaeological research in Borno. The Daima sequence, a *firki* settlement mound, illustrates the transition from Stone Age to Iron Age in the Chad Basin. CONNAH AND JEMKUR (1982) mention a 3,000 B.P. barrier and this may reflect the much higher water levels of Palaeo-Chad in the past. Former lake levels are represented by today's *firki* plains which have effectively prevented settlement over a wide area, thereby eliminating potential archaeological sites. However, such relatively recent dates can only be described as disappointingly late in historical terms.

In 1990, work began on a more detailed archaeological survey of NE Nigeria, and preliminary reports have begun to appear (BREUNIG, GARBA AND WAZIRI, 1991; BREUNIG, GARBA, GRONENBORN, VAN NEER & WENDT, 1993; BREUNIG et al., 1993). Most recently, a remarkable ancient dugout canoe has been excavated with a radiocarbon date of some 76-7200 BP at the site of Dufuna (BREUNIG, NEUMANN & VAN NEER, 1995). The most significant find of pottery is associated with charcoal on the Bama ridge at a site near Konduga with a radiocarbon date of 6340 ± 250 BP. At the Gaji Gana site there are numerous volcanic flake tools, representing stone axes and also bifacial arrowheads.

BALLOUCHE AND NEUMANN (1995) and NEUMANN (1995) have recently made an important contribution to the Holocene vegetation history of the region; charcoal from three sites examined by them seem to indicate land clearance and thus the inception of agriculture ca. 3,000 B.P. a date which is also confirmed by the palynological record of Mare Oursi in Burkina Faso.

The adjacent regions of Cameroon and Chad have been the subject of much greater density of archaeological survey work. LEBEUF (1969) presented an archaeological map of the sites prospected around the shores of Lake Chad. Most of this material was not formally excavated, nor were radiocarbon dates obtained; as a result, much of it is difficult to use. Archaeological and historical work on both sides of the international frontier has been bedevilled by the legends of the So or Sao people, whose legendary size is locally held to be reflected in the giant pots they left behind. Acres of printers' ink have been expended to justify and dispute their identity and status without notable conclusions. It need only be said that little illumination is cast on the social and economic history of the region by the attempt to identify these mythological giants.

DELNEUF & OTTO (1995) have made one of the very few direct archaeological contributions to the history of crops in this region. The sites of Mowo 1 and Louggéréo 2A in the extreme north of Cameroun, dated to the 16th/17th centuries have yielded carbonised grains of *Sorghum bicolor* race caudatum and some cultivated Malvaceae along with a number of endocarps from gathered tree-fruits. While this is methodologically promising, since these crops are indigenous to the continent and were probably first domesticated several millennia ago, the actual historical contribution would appear to be slight.

3.2 Historical Sources

Historical sources are of a variety of types that partly mirror the evolution of the societies described. The earliest material for this region is from the medieval period, when Arab geographers first began to collate data about the 'Sudan'. More occasionally, other types of written source, such as correspondence archives, also exist. LEWICKI (1974) has combed the Arabic sources for references to food plants and his compilation is the most comprehensive study for the whole region.

Closer to the present, studies of this region inevitably start with DENHAM ET AL (1828). Far more valuable, however, is Heinrich Barth and there are few subjects on which he does not have some illuminating commentary. Apart from the materials in his Travels and Discoveries (BARTH, 1857-8), the footnotes to his linguistic data (BARTH, 1862) are full of additional observations. NACHTIGAL (in Borno in 1870 but here

quoted in the modern annotated English translation, NACHTIGAL, 1980) devoted a chapter of his travels to the food of Borno. ROHLFS (1874) and FLEGEL (1883) left summary accounts of their travels through Adamawa in the succeeding years. Materials on Borno were synthesised by SCHULTZE (1913) and PALMER (1929). Around the turn of the century, a series of travellers passed through this region and left records of varying value (e.g. ALIS, 1892; PASSARGE, 1895; ZINTGRAFF, 1895; MIZON, 1896; BAUER, 1904; LENFANT, 1905; STRÜMPELL, 1907; ALEXANDER, 1908; MACLEOD, 1912; NUGENT, 1913; MIGEOD, 1924).

3.3 Language materials

Many of the languages of this region remain virtually unknown and no systematic linguistic survey has ever been undertaken. MEEK'S (1931) wordlists are still a significant resource, as are the Chadic wordlists in KRAFT (1981). WOLFF (1971) has contributed some further survey material. The major languages have useful lexicographical sources and I have used ABRAHAM (1962) for Hausa and CYFFER (1994) for Kanuri. TAYLOR'S (1932) Fulfulde dictionary is the principal source for Nigerian Adamawa but NOYE (1989), although concerned with Fulfulde of Northern Cameroon, cites many of the same forms found in Nigerian Adamawa. The maps and language classification of the Linguistic Atlas of Cameroon (BRETON & DIEU, 1983) provide an important cross-border perspective for the Nigerian linguistic and ethnographic data.

All the other linguistic, ethnographic and botanical data in this paper come from my own fieldwork, 1981-1992, unless otherwise specifically referenced. In addition, whatever botanically related material exists in herbarium material has been synthesised for the new edition of the Useful Plants of West Tropical Africa (cf. BURKILL, 1985, 1994, 1995). BOKHARI and AHMED (1983) have studied some of the cultivated plants of Borno from a horticultural point of view.

3.4 Ethnographic Sources

For the non-Muslim peoples south of Borno, the most significant early ethnography from the Nigerian side is the work of MEEK (1931) whose valuable studies of individual groups and their languages have in many cases not been replaced. FROBENIUS (1913) covered some of the same peoples although the ethnography is much less reliable. KIRK-GREENE (1958) includes some scattered ethnography for Adamawa, but the only recent synthesis of the ethnography of this region is the study of WENTE-LUKAS (1977) on the non-Islamic groups south of Lake Chad. Although valuable as a guide to the scattered literature, it is not based on new fieldwork in Nigeria. BERNS (1986) surveyed the Adamawa and Chadic-speaking groups in the central region, in particular the Ga'anda and Yungur, and gives a number of valuable maps showing local migrations as well as a mass of detail on material culture. CAPRO (1992) is a recent survey of Nigerian Adamawa, concentrating particularly on traditional religion and also providing a recension of hard-to-find local publications.

There are a number of ethnographic studies of individual groups although there are few full-length monographs. BOYLE (1910) provides the first historical account of the Fulbe of Adamawa and his work was followed up by STRÜMPELL (1912), LACROIX (1953) and SA'AD (1977). DUISBURG (1927) was the first to study the Wandala kingdom in detail followed by VOSSART (1952) and BARKINDO (1989). The Kanuri have been studied by COHEN (1967 and references therein). BAKER & YOLA (1955) wrote of the Higi of the Bazza region and VAUGHAN (1964, 1970) has studied various aspects of Margi society. The somewhat rare 'Biu book' compiled by DAVIES (1956) gives considerable ethnographic detail for Bura society.

4. The Region under Study

4.1 Administrative

Until 1991, the study region of northeastern Nigeria covered Borno and the north of Gongola State. However, in September, 1991 both States were divided into two parts by Government decree. The two 'new'

states thus created were Yobe State, based on Damaturu, west of Maiduguri, and Taraba State, with a capital at Jalingo but including southern Gongola State. The northern part of the former Gongola State was then renamed Adamawa. The area studied thus takes in the present-day Borno State, the east of Yobe State and northern Adamawa State, above the Benue River (Figure 1). I have given less attention to the extreme west of Borno State -the old Fika Emirate and the flood-plains of the Hadejia-Jama'are up towards Nguru-Gashua. These represent different systems and have recently been dealt with in some detail from an ecological point of view (MORTIMORE, 1988, HOLLIS, ADAMS & AMINU-KANO, 1993).

4.2 Physical Environment

The climate, ecology and vegetation of Northeastern Nigeria is most comprehensively studied in the Land Resource Division Study of North-Eastern Nigeria (DE LEEUW et al, 1972). THAMBYAPILLAY (1983) has reviewed the palaeo-hydroclimatology of Lake Chad. Rainfall can be as low as 300 mm annually on the Nigeria/Niger border, rising to 700 mm near Yola. Most of Borno is semi-arid savannah or sub-desert, with flooded pastures towards Lake Chad and montane regions in the extreme south-east. The soils in the north-central part of Borno are largely aeolian sands, formed by wind-drift from the desert.

Lake Chad, by virtue of its situation in the centre of the continent, has become an almost symbolic reference point for geographers. There is a voluminous technical literature describing its geomorphology, hydrology, fauna and flora, summarised in SIKES (1972), CARMOUZE et al. (1983) and GROVE (1985). Lake Chad has been the subject of a substantial number of schemes to improve agricultural productivity through water management, most notably the Chad Basin Development Authority (CBDA) and the South Chad Irrigation Project (SCIP) described in BLENCH (in press,b). Lake Chad no longer exists as a body of open water in Nigeria, and it has been replaced by open plains of swampy grassland or even dry savannah (BLENCH, 1991a). The former lakeshore is still marked by notable changes in vegetation. The prehistoric extent of Lake Chad can be seen from the distribution of *firki*, a distinctive clay plain of black cotton soil. The *firki* plains are broad flat expanses of heavy clay, virtually without trees. In the wet season, their grass cover consists of annuals such as *Sorghum aethiopicum*. There are relatively few trees, but occasional stands of acacias and desert-date interrupt the plain.

The Gwoza hills, along the Cameroon border, are part of the larger granite chain of the Mandara mountains and, in the south-west, the Biu Plateau, a basalt plain, rises to nearly 1,000 m. These mountains are covered in scattered rock pieces with some regions of flat soil between them.

The Hadejia-Nguru wetlands has been described in some detail by HOLLIS et al. (1993). This system, which used to feed the Komadugu and make possible substantial irrigation along the Nigeria/Niger border, as well as possibly contributing water to Lake Chad has been massively reduced following a series of dam construction projects intended to supply irrigation water to the Kano area.

4.3 The Ethnographic and Linguistic Pattern

4.3.1 Overview

Three of Africa's four language phyla converge in Northeastern Nigeria and their interactions over a long period have provided the characteristic cultural complexity of the region. Languages and populations cannot be unambiguously identified (CROZIER & BLENCH, 1992) and to classify the languages is not to establish cultural identities. In a striking example, the 'Fali' people are distributed in a number of villages, most of whose languages are closely related. However, the Fali of Mijilu and Kiria speak a quite different language (a dialect of Kamwe) despite being accepted as part of the Fali cultural complex. Both these groups (who speak Chadic languages) are apparently unrelated linguistically and culturally to the Fali of Northern Cameroon, who speak an Adamawa language. Overviews of the peoples of this region can be found in MEEK (1931), BLENCH (1984) and CAPRO (1992).

Nonetheless, the patterns of language and the ethnic groups can be used to give a broad-brush picture of the peopling of this region. Figure 2 shows the main ethnic groups in northeastern Nigeria with their linguistic affiliations and the distribution of languages represents a useful index of the ethnohistory of the region. Table 1 sets out the language phyla, families and representative groups. A full breakdown of all the languages with their classification is given in Appendix 1.

Table 1.

Language Phyla and Families Represented in Northeastern Nigeria

Language Phyla	Main Groups	Comments
Nilo-Saharan	Kanuri Kanembu Teda	Kanuri were confined to further north until the nineteenth and early twentieth centuries and much of the Maiduguri region was inhabited by Gamergu and Margi.
Niger-Congo		
1. Adamawa	Yungur group Longuda	
2. Bantu	Jarawan: Mbula-Bwazza	A single group represented more fully further West
3. Atlantic	Fulbe	The Fulbe entered the region as nomadic pastoralists
Afroasiatic		
1. Chadic	West Chadic: Dera, Hausa Central Chadic: Bura, Margi, Fali, Laamang, Bata, Sukur, Yedina etc.	The Hausa are either traders or farmers specialising in dry-season cultivation.
2. Semitic	Shuwa Arabs Uled Suliman	The Shuwa reached this region in the medieval period The Uled Suliman are recent migrants to the region (1980s)

4.3.2 Ethnographic Summaries

Nilo-Saharan

Kanuri Group

The Kanuri proper were originally one people with the Kanembu, the people of Kanem, the region north-east of Lake Chad. However, the two groups separated at unknown time and now speak different, but closely related, languages. Standard Kanuri (the Yerwa dialect) is generally understood throughout Borno although individual groups have their own speech-forms. They are often known as 'Beriberi' outside Borno and the Middle Belt of Nigeria has many 'Beriberi' communities, most of which now speak Hausa.

Kanuri are principally cultivators, but may have substantial herds of both cattle and small ruminants. Where the environment permits, they manage these animals directly; however, where pasture is inadequate or there are water shortages, they have developed entrustment arrangements with the Shuwa and the Fulbe. The Kanuri are well-known for their elaborate and ancient kingship systems, and their complex hierarchical social structure (Cohen, 1967). The administrative hierarchy of bulamas was imposed on many of the peoples in southern Borno and Kanuri became an effective *lingua franca* for the region.

The Kanuri live interleaved with more pastoral groups, speaking related languages. In the north, these are represented by the Mober, Manga and Jetko and in the central region by the Badawai and Koyam. The Koyam fall into two main groups; one which migrates east-west between Damboa and Biu, south of the main Bauchi-Maiduguri road, the other between Gajiram and Gudumbali. They are opportunistic cultivators

who sow upland millet when the rains are adequate. The dry years in the 1980s have compelled many to become exclusive pastoralists.

Teda

Teda pastoralists live principally in the desertic regions of Chad and are specialised in camel pastoralism. However, some communities appear to have reached northern Borno in the nineteenth century, perhaps as mercenaries. They settled among the Kanuri and some communities still retain their language although they have exchanged camel pastoralism for trade and agriculture.

Niger-Congo

Adamawa

The main group of Adamawa languages in northeast Nigeria are the Yungur languages. The Yungur were described by MEEK (1931) and BERNIS (1986) although much of the distributional and ethnonymic information they give is inaccurate. In addition, there are the little-known Longuda languages in the south-west of the region. All these peoples are dispersed subsistence cultivators depending generally on rain-fed agriculture.

Bantu

The Bantu languages are represented by a single group, the Mbula-Bwazza, who speak a Jarawan Bantu language. Jarawan Bantu languages are spread across both Nigeria and Cameroun in remnant pockets and presumably represent the relicts of a past migration. Despite linguistic demonstrations of the unity of the group, the historical process that led to the Jarawan Bantu being distributed across Central Nigeria remains unknown.

Atlantic: Fulfulde

Atlantic languages are represented by a single group, the Fulbe. The Fulbe in northeastern Nigeria are sharply divided into the urban and pastoral groups; the establishment of the Lamiibe of Fombina in Yola (BOYLE, 1910, SA'AD, 1977) and the adjacent lamidates in present-day Northern Cameroon have a history that is only tenuously connected with the gradual infiltration of pastoral Fulbe into the region.

The Fulbe first entered Borno during the sixteenth century. The most important pastoral groups in Borno are the Anagamba, Bokooloji, Uda'en, and Wodaabe, who come from the Republic of Niger, whence they return in the wet season to tend their farms. The main agro-pastoral group in this region is the Fulbe Maare, who live among the Kanuri and the Shuwa and have often adopted their farming systems. Further south, a scatter of different clans originally from the Bauchi area, such as the Rahaji, live among the cultivators. Broadly speaking, all the pastoral Fulbe also cultivate, usually only small areas of cereals.

Afro-Asiatic

Semitic

Shuwa Arabs

Shuwa Arabs are mobile pastoralists whose links are with the related Arabic-speaking groups in northern Cameroon and Chad. They appear to have first penetrated this region in the fourteenth century (ZELTNER,

1970). Although they are essentially pastoralists, they adopted systems for cropping the *firki* from the Kanuri and these are now highly developed. The Shuwa have permanent settlements where they practise both rainfed and flood-retreat agriculture, but at least part of the family is semi-permanently on the move with its herds. WHITE (1941a) describes the farming systems of the Shuwa. Material on the Shuwa Arabs in Nigeria has recently been summarised by BRAUKÄMPER (1991) and RIM (1992).

Uled Suliman

The Uled Suliman are Libyan Arabs who have only begun to come into Nigeria since about 1980. Originally from the Fezzan, they migrated first into Chad in the 1930s, and thence into the Republic of Niger in the wake of the Chadian Civil War. Their earlier history is narrated by LE ROUVREUR (1989:436-441). They are camel pastoralists who sell *cuku*, dried camel-cheese, or occasionally the camels themselves, to buy grain.

Other Arab groups

The abundance of pasture on newly dried-up bed of Lake Chad has also attracted other Arab pastoralists in the early 1990s. Camel nomads of various clans from Chad and Niger have been reported from northern Borno, although their affiliations and permanence are unknown (Braukämper, p.c.).

Berber

Tamachek/Buzu

There are fragments of historical evidence for the presence of Tamachek and Buzu (former slaves of the Tamachek) in Borno. The Gudu people know maize as *gau buzə*, the 'sorghum of the Buzu'. Although east of the usual orbit of these peoples, ecological conditions in the Sahel appear to have driven the Buzu into Borno and they were present in the Maiduguri region in 1992.

Chadic

The region is by and large the domain of Central Chadic languages. Of the West Chadic group, only Dera [Kanakuru], between the Yungur cluster and Wiyaa [Waja], falls 'naturally' within the region. However, Hausa, although spoken only by recent migrants and as a second language, has exercised a powerful influence on the region, witnessed by the extensive loan-words found in all the languages of the region. Like the Adamawa-speakers, most of the Chadic groups are dispersed with no central authority. Since the late 1960s, the peoples of the Gwoza hills (the foothills of the Mandara proper) have been subjected to substantial political pressure to move to the plains through the Gwoza Resettlement Scheme.

West of this region, the kingdoms of the Pabir and Bole at Fika represent the growth of larger political units. In the northeast, the Wandala kingdom represented an important influence on the region in the period preceding the Kanuri expansion (DUISBURG, 1927; VOSSART, 1952; MADZIGA, 1976; BARKINDO, 1989). The political influence of the Wandala throughout this region in the period immediately before the Fulbe incursions is manifest in many references to them in oral traditions. For example, the origin myth of the Ga'anda people refers to a rolling pot that came from Wandala (BERNS, 1986).

4.3.3 Regional Synthesis

History based on present-day language and population distributions must be regarded as speculative at best; nonetheless, the striking interweaving of language phyla demands explanation. Entering appropriate caveats about the dangers of this type of reconstruction, this section presents a schematic version of prehistory to account for the known distribution of people and subsistence systems.

The region may have been inhabited for a very long period by low-density hunting-gathering populations, but the affiliation of the languages they spoke may be unrecoverable. Putting together the regional evidence with broader studies of African languages (e.g. BLENCH, 1993, 1995) it seems likely that the first identifiable inhabitants of the area were Nilo-Saharan speakers. They may have been hunters, fishermen and possibly pastoralists and almost certainly constructed the ancient dugout canoe (BREUNIG, 1995). The marginal potential of the region for agriculture, compared with other subsistence strategies when population densities were low, may explain the relatively late appearance of agriculture (BALLOUCHE AND NEUMANN, 1995).

Paradoxically, although the ancestors of the present-day Saharan speakers, the Kanuri-Kanembu, may well have been in the region of the Lake for a long time, they only comparatively recently moved into south-central Borno. The Kanuri-Kanembu have presumably been pastoralists since the introduction of cattle into this region and would have engaged in small-scale opportunistic cereal cropping combined with a more extensive gathering regime.

The first major irruption of cultivators into the region would then have been the movement across the semi-arid savannahs of Gur-Adamawa speakers³ from further west. BENNETT (1983) has argued that GREENBERG'S (1966) distinction between the Gur languages (spoken primarily in present-day Burkina Faso) and Adamawa-Ubangian, cannot be made systematically and that these language families are better regarded as a continuum. This certainly matches the distributional evidence -with the implication that most of present-day Northern Nigeria was formerly inhabited by Gur-Adamawa speakers. These may have begun to expand through the region by 5,000 B.P.

Whether the Gur-Adamawa speakers were cultivators when they first moved eastward is debatable. No entirely convincing isogloss that would provide evidence for agriculture has yet been proposed, although this may reflect as much the state of research in these languages as a true absence. At any rate, rainfed agriculture evolved soon after their spread, as a number of crops can be reconstructed in various branches of the Adamawa family.

The second major event in the peopling of the region was undoubtedly the coming of Chadic speakers. The evidence from Afroasiatic suggests that speakers of proto-Chadic were pastoralists, perhaps specialised in cattle, sheep and goats. The closest relations of Chadic within Afroasiatic are debated. BLENCH (ined) has recently argued that Chadic and Cushitic should be aligned and that Chadic-speakers reached this region moving westward across the Sahel from the Nile. Whatever their origin, after arriving in the Lake Chad region, they dispersed in all directions from the Lake, forming the principal branches of present-day Chadic, West, Central, East and Masa-Zime. They would have adopted agriculture soon after their arrival in West Africa from their Gur-Adamawa-speaking neighbours. Expanding southwards from Lake Chad, they would have come into contact with Adamawa and perhaps also Benue-Congo speakers. Certain groups spread into the territory of the Adamawa-speakers, who may also have been assimilated in some cases.

At an unknown period, but presumably in the medieval period, Shuwa Arab pastoralists began to intrude into the region from further east. Archival material shows that the rulers of Kanem were distressed by the intensity of their raids (ZELTNER, 1970). It is likely that they arrived as exclusive pastoralists, cultivating little except catch-crops of sorghum. Most of their pastoral and agricultural strategies were adopted from

³ Strictly speaking, there are no proto-Gur reconstructions so we cannot assume that the proto-Gur were cultivators. However, Manessy has reconstructed cultivated plants for several major Gur subgroups and it seems reasonable to assume that the westward migration of Gur speakers was accompanied by at least some knowledge of agriculture.

Kanuri and perhaps Fulbe groups already resident. Somewhat later, the Kanuri-Kanembu underwent a period of aggressive militaristic expansion and waged war against their southern, Chadic-speaking neighbours, pushing them further south. States such as the Wandala may have formed under the impetus of this expansion, for the spread of Islam provided a structure to underpin the evolution of larger-scale polities.

The Fulbe began to press into this part of the world from the sixteenth century onwards although during the first period of expansion they remained pastoral nomads. The development of the Jihad in Sokoto in the early nineteenth century created another type of intrusion, the militaristic Islamic conquest state, most notably represented by Yola and the Lamidates of Northern Cameroon. These Fulbe seem to have developed a distinctive farming culture in addition to their more well-known pastoralism, as many crops have spread through this region with Fulfulde names. As Kanuri spread southwards, pastoral and urban Fulbe pressed northwards from Yola, further fragmenting the farming populations caught between them.

Finally, the British military conquest of Northern Nigeria from 1902 provided an important impetus for the opening up of new trade routes, as well as bringing a variety of new domesticates to the region. Missionaries and agricultural officers brought new crops and livestock, such as the pig, rabbit and guinea-pig. However, the construction of roads and railways meant that traders, especially from Hausaland, could range much further and Hausa began to reach regions previously dominated by Kanuri and Fulfulde.

Northeastern Nigeria provides a testing ground for theories of the material correlates of political systems. A variety of highly structured hierarchical polities have arisen in this region, most notably the Kanuri kingdoms, but prior to that the less well-documented kingdoms of Wandala and Sukur and later the Lamidate of Yola. To the south and west they confronted a large region of more diverse and less numerous peoples with whom their relationship was (and is) ambiguous -on the one hand, initial contacts were almost invariably through warfare and raiding -but those who came to raid stayed to trade and the gradual exploitation of the produce of this region and the evolution of caravan routes is a narrative whose elicitation is hardly begun.

5. Farming Systems

Northeastern Nigeria exhibits a wide range of subsistence systems generally incorporating both pastoral and agricultural elements. The Land Resources Report on Land Use in Northeastern Nigeria (LRD, 1972) includes a map of farming systems (Map 7) and a rather less useful map of 'major crops' (map 11), essentially showing cotton and groundnut sales points. These maps are of historical interest because they were created before the drying up of the Komadugu Yobe, the retreat of Lake Chad and the development of the major irrigation schemes on the *firki*. As KOLAWOLE (1988) has shown, the dessication of Lake Chad has led to an expansion of opportunistic cultivation of the floor of the lake.

Dry-season farming is practised in the valley of the Komadugu Yobe along the Republic of Niger border and on the swampy areas of Lake Chad. The Komadugu was originally the basis for an elaborate irrigation scheme established in the late 1950s to produce wheat and residues for livestock feed. The swampy grasslands between Hadejia and Gashua have traditionally been a significant resource for fadama cropping, fishing and livestock feed (HOLLIS et al, 1993). However, the construction of the Tiga Dam in the mid-1980s has drawn off water into the Hadejia-Jama'are River Basin in Kano State, reducing the flooded area west of Gashua and leaving the Komadugu Yobe virtually dry in its upper reaches for most of the year. With the commissioning of the Challawa Gorge Dam in 1992, the flow of water has almost ended.

The traditional farming systems have not, by and large, undergone the transformation to the intensive systems common in other parts of northern Nigeria. Bush- or forest-fallow cultivation is still predominant in the southern parts of the region. Irrigation is only in scattered patches along the main river systems, although rice is cultivated in seasonally flooded swamps west of Lau. Along the Benue River near Yola, some flood-retreat cultivation is practised, both to supply the town with vegetables and to grow *masakwa* sorghum.

Shaduf systems were once common on the dry-zone garden plots at the edge of Lake Chad and along the Yobe valley (HOLLIS et al, 1993). On the Nigerian side these have been almost entirely replaced from the mid-1970s onwards by small motor-pumps, although the shaduf is still in use on the opposite side of the Lake (Bouquet, 1990).

Table 2 summarises the farming systems of NE Nigeria;

Table 2.

Farming Systems and their Distribution in Northeastern Nigeria

System	Features	Main Ethnic Groups	Distribution
Firki/ flood retreat	Residual moisture	Shuwa, Kanuri	West and south of Lake Chad
Montane	Terraces, continuous cultivation	Chadic speakers esp. Laamang, Sukur	Mandara/Gwoza
Agro-pastoral Savannah	Opportunistic cereal-cropping, large cattle herds Rain-fed agriculture	Koyam, Shuwa, Fulbe All groups	Central Borno Adamawa, southern Borno
Swamp	Riverine, based on natural flooding	Hausa, Fulbe, Chadic and Adamawa speakers	Adamawa
Dry-season gardens	Riverine, using irrigation and shaduf/pumps	Hausa, Fulbe, Jukun and sporadic among other groups	Adamawa

To this should be added the systems of the Yedina on Lake Chad, which combine fishing, pastoralism and opportunistic flood-retreat cultivation.

In the *firki*, a distinctive early dry season cropping pattern has emerged based on the cultivation of dwarf sorghum, *masakwa*. The seeds are planted on the flat in early October and depend on moisture retained at the edges of fields by mud bunds (WHITE, 1941a). As LRD (1972:13) points out, heavy soils were not traditionally cultivated in the rainy season but the lure of profits from cotton has increased the incidence of farming.

In the Mandara mountains, elaborate terracing systems prevent soil erosion, and complex rotations of crops inhibit soil exhaustion. Terraces in the montane regions vary from simple lines of stones ('check-bunds') to extremely elaborate stone-walls. HALLAIRE (1988, 1991) has begun the mapping of the terrace systems of the Mandara mountains with a view to creating a chronology of agrarian systems for the upland areas. The river valleys are intensively cropped but the upland regions are usually only planted with cereals, and the sites of fields are changed regularly.

Broadly speaking the first four systems can be regarded as 'ancient' while both swamp and irrigation systems seem only to have begun to spread recently. MIGEOD (1924:73) discusses the movement of urban Fulbe north from Yola to settle new towns and start the cultivation of dry season gardens growing onions.

6. Individual Crops

The history of individual crops is evidently speculative and without more detailed ethnography of particular groups it is impractical to sketch more than the broadest outlines. Information concerning the original locale of domestication of the plants discussed below is in general drawn from ZEVEN and DE WET (1982). Beyond the identification of wild progenitors provided by botanists, linguistics offers the most productive means of establishing the direction and epoch of the spread of individual plants. The following section summarises the evidence for the major cultivated food-plants and other common crops in northeastern Nigeria.

6.1 Tubers

Dioscorea bulbifera Aerial Yam

The aerial yam, *Dioscorea bulbifera*, is an ancient food-crop in many parts of West Africa and known to most of the farming populations south of Maiduguri. In some cases it is a true domesticate, but often it is simply transplanted from areas where it grows wild. Although it has generally assumed to be part of the natural flora, the similarity with Indian varieties make it possible that it was an ancient introduction. Further west, aerial yams are cultivated throughout the whole Central Nigerian region. BLENCH (in press, c) proposed a reconstruction for Proto-Benue-Congo, #-dun, which implies a considerable antiquity for the crop.

Dioscorea rotundata Guinea yam

The true guinea yam, *Dioscorea rotundata*, seems not have been known in this region until comparatively recently. Most people see it only as a trade item, although it is extensively cultivated by the Mumuye near Jalingo, and seed yams have dispersed northwards from this area.

Dioscorea praehensilis and *D. abyssinica* Bush yam

The taxonomy of cultivated yams is sufficiently complex for the identification of this yam to be uncertain. The main cultivated yam in north-western Adamawa was traditionally a thorny bush yam, presumably *Dioscorea praehensilis*, that was transplanted into the compound and allowed to twine up a stick. This practice has also been reported among the Masa (DAVID, 1976:251) although the transplanted yams in Cameroon are identified as *Dioscorea abyssinica*. Among the Yungur, *D. rotundata* is often known as the 'Mumuye yam' as opposed to *D. praehensilis*, which is called the 'compound' or 'Yungur' yam. The common Chadic root **bulum* that occurs on both sides of the Nigeria/Cameroon border seems to refer indiscriminately to almost any type of yam and has been borrowed into Fulfulde *bulumji*.

Colocasia esculenta Taro, old cocoyam and *Xanthosoma mafaffa* New cocoyam

The taro or 'old' cocoyam is a South East Asian domesticate that arrived in Africa at an unknown but presumably early period. It appears to form part of a root-crop complex with plantains and water-yam, *Dioscorea esculenta* (BLENCH, 1992). Some writers (e.g. PLUCKNETT, 1976) have argued for a Nile Valley introduction although there is no historical or genetic evidence to support this. Indeed, linguistic arguments based on crop names from southern Nigeria make it rather unlikely (WILLIAMSON, 1993).

In the montane regions of both Nigeria and Cameroon, the evidence points to ancient cultivation of taro or old cocoyams. These varieties are rather low-yielding and high in tannins, leading to the effect of 'scratching the throat'. A similar ancient stratum of cocoyam cultivation is also present in Southern Zaria. The movement to the plains has made it possible to introduce newer cocoyam varieties that respond better to higher moisture regimes. SEIGNOBOS (1988) has described the spread of a new cultivar of *C. esculenta* in Chad and Cameroun which is effectively acting to displace the former low-yielding 'archaic' taros. As a result, the Hausa term *gwaza* is applied to the 'new' varieties of taro that have been brought from further west in recent years.

Kanuri has borrowed Hausa *gwaza* rather than the Shuwa Arabic *kolokas* (Arabic *-qulqas*), constituting further evidence against a Nile valley introduction. Among the peoples south of the Kanuri, the term in Chadic languages is #*tandapwa* or something similar. Cocoyams are most commonly known by their Fulfulde names, *tandawje* and *bontoje*, which in principle apply to the 'old' and 'new' types. However, in

some languages, terms related to *makabo*, a widespread term for *Xanthosoma*, are recorded, suggesting a secondary spread of the new cocoyam from southern Cameroon.

Ipomoea batatas Sweet potato

The sweet potato seems to have been introduced on the coast by the Portuguese some time in the seventeenth century (BLENCH, in press, c). DAVID (1976:251), in comparing BARTH and NACHTIGAL, argues that it must have been brought to Borno between 1850 and 1880. There are two key lexemes, *kudaku* (Fulfulde) and *dàànkáliì* (Hausa) that track the introduction of the sweet potato. Broadly speaking, the Fulfulde names are found in languages along the border with Cameroon and in the Yola area. Versions of both terms are found in Kanuri (*kúnduwú* and *dangáli*). However, the Yungur and many other groups use the Hausa term, suggesting that Hausa traders were the main agent of its spread, perhaps as late as the early twentieth century. WHITE (1941b) refers to the cultivation of sweet potatoes in the Gwoza hills.

Manihot esculenta Cassava, manioc

Cassava is of South American origin and was introduced into West Africa by the Portuguese as a cheap food to feed slaves on the Atlantic crossing. In Northern Nigeria, it is known as much as a starch plant as for food. Both the sweet and toxic varieties are cultivated throughout the north. The spread of cassava in Nigeria has been dealt with in greater detail in BLENCH (in press, c). BARTH (1857, 2:505) records the Fulbe growing cassava in Yola in the 1850s and it was on sale in the market in Kukawa in 1903 (LENFANT, 1905:190). North-western Adamawa represents an interface between the Hausa and Fulbe diffusion of crops. Most Adamawa and Chadic speakers west of the region use a form of the Hausa *róógòdò*, but loanwords from Fulfulde *mbay* are common in the border area. The etymology of the Kanuri *galísa* is unclear but may be borrowed from Yoruba/Hausa 'gari' for the processed form. The sweet cassavas which can be eaten without preparation are known as *ngadalá* in Kanuri. The absence of this name as a loan-word in other languages suggests that the Kanuri did not disseminate cassava.

Solenostemon rotundifolius Hausa potato

Although an ancient West African cultigen, *Solenostemon* is rare in this region. It is cultivated by some of the Yungur-speaking peoples near Song and by the Fali. The Fulfulde term *bulumji* has been adapted from the common Chadic term for yam #*bulum*.

Solanum tuberosum Irish potato

Although the Irish potato is an Andean domesticate, it was carried to Europe in the sixteenth century and only introduced into Nigeria in the colonial period. It is still unknown in many parts of northeastern Nigeria except as a trade item. Where cultivated it is generally perceived as a variety of the sweet potato. In Kanuri, the Irish potato is the 'European's sweet potato', borrowing 'sweet potato' from Hausa. The potato must also have spread from Cameroon, because in some border languages it is called *kompete*, evidently borrowing from French *pomme-de-terre*.

6.2 Cereals

Digitaria exilis Fonio

Examples of the cultivation of fonio in northeastern Nigeria are conspicuous by their absence, although PORTÈRES (1976) shows the region of *D. exilis* spreading as far as Lake Chad. The Kanuri term, *kashâ*, is suspiciously similar to the Hausa *accaa*, and the loss of a k- prefix is attested in other loan-words,

suggesting that Hausa borrowed it from Kanuri. However, DENHAM et al (1828, I:198, II:159) refer to a grass with edible seeds that is surely cram-cram, *Cenchrus biflorus*, called *kashcia* or *kasheia* and from this name a confusion may have arisen with the true fonio. Although DAVID (1976:246) records three apparent cases of fonio cultivation in northern Cameroon these are now known to be erroneous identifications (SEIGNOBOS, p.c.). In the early colonial literature 'fonio' may be used to refer to small gathered grains such *Panicum laetum*, also known as 'fonio sauvage'. Reports exist of the cultivation of fonio by the Shuwa Arabs in the Dikwa area, but this could be a confusion with the gathered *kreb* (*Cenchrus*, *Echinochloa* spp.).

Eleusine corocana Finger-millet

The precise origin of finger-millet remains disputed as experts presently disagree on an African or Indian wild progenitor (PORTÈRES, 1976:417 and editorial footnote). Whatever the case, it is likely that it spread westwards across Central Africa at some unknown time in the past. Central Nigeria is approximately its western limit, and many languages there borrow the Hausa *támbà*, suggesting that the Hausa have acted as secondary dispersal agents. Finger-millet is not a common crop in this region, but WHITE (1941b) noted that it played a part in the crop rotations in the Mandara terrace agriculture, sown together with beans. Finger-millet takes on greater importance in Central Nigeria, especially on the Jos Plateau and in the southern Zaria region. The Fulfulde term, *cargari*, is likely to have been borrowed from the Kanuri *sarga*. DAVID (1976:249) refers to the importance of finger-millet among a number of Cameroonian and Chadian peoples, such as the Mukhtele and the Masa.

Hordeum vulgare Barley

Leo Africanus mentions the cultivation of barley in Katsina in the sixteenth century and it is a well-established crop among the Teda in the Tibesti (CHAPELLE, 1957:69). It was presumably brought to Borno in the medieval period, although there is no direct evidence for this. Barley seems to have been cultivated in small quantities as a luxury crop in Borno, but never to have spread further south. DENHAM ET AL (1828, I:216) were sent presents of barley paste in Kuka and NACHTIGAL (1980:190) mentions barley as a luxury food in Kuka. It was presumably introduced from North Africa in the Middle Ages. The Kanuri, Fulfulde and Hausa names are all borrowed from Arabic.

Barley is more salt-resistant than wheat and can be cultivated with success on halomorphic soils. LRD (1972:16) mentions that in the Yo irrigation scheme, wheat plots were surrounded by a ring of barley to make more effective use of the salt accumulations along the edges of feeder canals.

Oryza glaberrima African Rice

Strabo the Geographer (ca A.D. 12) mentions the cultivation of rice at Aujila in Cyrenaica and it is now assumed that this must have been *Oryza glaberrima* (LEWICKI, 1974:34). Indigenous African rice may not have been cultivated in historic times in this region, although the wild rice of Lake Chad (*Oryza barthii*) was regularly gathered in the nineteenth century. Al Omari (mid-14th c.) says that (gathered?) rice was an important staple in Kanem (LEWICKI, 1974:22). The origin of the rice mentioned in many places by DENHAM ET AL (1828, II:159) is said to be 'Soudan' though he mentions the cultivation of rice in Muffatai (Mafatai on his map but perhaps modern Makari south of Lake Chad). DAVID (1976:249) mentions African rice cultivated by the Afadè [Kotoko] and the Dii [Duru] (both in Cameroon). Domesticated floating rices seem to have been unknown in this region but as LRD (1972:17) notes, they have been brought in by Hausa migrants from the Sokoto region.

Oryza sativa Asian rice

Asiatic rice was first introduced on the coast by the Portuguese but today it is presently widely cultivated throughout this region, both by Hausa migrants and by indigenous farmers. The development of rice research in Nigeria has led to the distribution of research station varieties which may be carried to farmers directly through projects or indirectly through migrant cultivators. LRD (1972:17) mentions the variety BG.79, widespread in Borno in the 1960s.

There is a strong association with the Hausa, and many groups first learnt rice cultivation from Hausa dry-season farmers. As a result, rice is known as *shinkafa* or some variant in many languages even in Cameroon. Languages closer to the centre of Fulbe concentration in Yola have *maroori*, indicating suggesting a second centre of diffusion in the south.

Pennisetum typhoides Bulrush millet

The pennisetum millets are indigenous to West Africa and are generally thought to have been domesticated on the southern margins of the desert. There are two principal types of millet in the region, often known by their Hausa names, *gééróó* and *máiwáá*. *Gééróó* is a short-season millet, maturing in 4 and a half months, while *máiwáá* may take as long as six months. Although both are cultivated in Borno and given separate names in Kanuri [*nzáimó* for short-season millet], in the south millet usually only has a single name. There is some evidence that further south it is *gééróó* that is more widely known and that the *máiwáá* types have recently been distributed by the Fulbe.

Sorghum spp. Sorghum

The most detailed study of the history and evolution of the African sorghums is HARLAN and STEMLER (1976). DOGGETT (1988) represents an alternative opinion on some issues, specifically the first region of domestication. BURKILL (1994:348 ff.) represents a summary of present botanical classification. The history of the sorghums in this region is complex and can only be treated in summary. Sorghums can be divided into long and short season types and also those that are grown in residual moisture or in irrigated dry season gardens. The long-season sorghums, known by the generic *dáwá* in Hausa, are the base staple throughout the area and there is a corresponding elaboration of terminology. The short-season sorghums, known as *jigaari* in Fulfulde, seem to be well established in the region and have a series of quite distinct roots in Adamawa languages. Apart from durra, the sorghums have traditionally been tall-stemmed and the stems play an important role in both animal feed and house construction. However, the research station sorghums with short stems and markedly higher yields have made some progress through the region since the 1950s.

Summary of locally-recognised features

Feature	Short	Long	
Time to maturity	Short	Long	
Season	Wet	Dry	
Two-seeded	Yes	No	
Sweet-stemmed	Yes	No	
Seeds Eaten Fresh	Yes	No	
Red-barked	Yes	No	
Colour	White	Red	Yellow

General Terms for Sorghum

The terminology developed for sorghum and the remarkable variety of cultivars is in considerable contrast to the millets.

There are two common Chadic roots in this region for sorghum, *#xia* and *#jikun*. A third root *#kom* (e.g. Pero) has been borrowed from nearby Adamawa languages. *#xia* may well also be a borrowing, since it is strikingly similar to a common Benue-Congo root for sorghum *#xi*. There is no direct interface between Benue-Congo and Chadic in present-day northeastern Nigeria, but further west, the presence of residual East Kainji languages in the Ningi area would provide a convincing source for the Chadic form. There is no definite source for the *#jikun* form, although it is not impossible that it is actually a composite of *#xia* and *#kom*. Existing evidence points to Chadic-speakers adopting sorghum cultivation from their southern neighbours. None of these terms have any apparent links with Kanuri *ngawúli*.

The individual sections below consider the different races of sorghum as defined by Harlan and Stemler (1976).

Sorghum Bicolor (Linn.) Moench

There are now considered to be five main races of sorghum in Africa, *bicolor*, *caudatum*, *durra*, *guinea* and *kafir* (HARLAN ET AL, 1976; DE WET, 1978; DOGGETT, 1988). Sorghums cultivated for the sweet stem in a form similar to sugar-cane appear to be well established throughout this region. Sweet sorghum, *Sorghum mellitiferum*, is no longer considered to be a recognised subspecies, but varieties of *bicolor* and *guinea*.

Sorghum bicolor race bicolor

The *bicolor* race sorghums are the most primitive type of domesticated sorghum and they are regarded by HARLAN AND STEMLER (1976:472) as having evolved in the region between northeast Nigeria and Uganda, although DOGGETT (1988:34 ff) has made a case for Southwest Ethiopia.

Sorghum bicolor race caudatum

The *caudatum* sorghums are regarded by HARLAN AND STEMLER (1976:475) as having evolved in the region between northeast Nigeria and Southwest Ethiopia and they are a 'relatively new' race. Nonetheless their evolution is still in prehistoric times. A rather spurious correlation between 'Chari-Nile' [a now discarded language grouping] and *caudatum* sorghums was advanced by Stemler et al (1975) but this is not now recognised by most scholars. Carbonised *caudatum* sorghum grains were recorded at Daima III which is assigned a date of 800 A.D. (CONNAH, 1981:188), but Connah speculates that the inhabitants of Daima I (550 B.C. onwards) already had a mixed economy including sorghum. DELNEUF & OTTO (1995) have also recorded *caudatum* sorghum in northern Cameroun in the protohistoric period. The grain sorghum was apparently new to Fulfulde-speakers as there is no distinct term in Fulfulde.

A subset of the *caudatum* sorghums widely recognised in the region is the two-seeded cultivars. Known in Kanuri as *masogó*, unrelated names are given in a number of other Chadic languages.

Dye cultivars

The red-barked sorghums known as *karan dafi* in Hausa and cultivated for the red dye that can be extracted from the culm sheath are usually a variety of *caudatum* (though see also under *guinea* below). As Hausa and Kanuri have distinct terms which are separate both from each other and from the ordinary *caudatum* sorghums it is likely that this cultivar is as ancient as the grain sorghum.

Language	Dye Sorghum	Grain Sorghum
Arabic (Shuwa)	kuludu	himeyrun
Hausa	káráń dáfiì	*
Kanuri	məjí	ngawúli
Fulfulde	yambe, garbidinohi	ndammungeri

*Burkill (1994:352) lists a large number of epithets given to caudatum sorghum

Sorghum bicolor race durra

The origin of the durra sorghums, *muskwari* or *masakwa*, is disputed. (HARLAN AND STEMLER, 1976:475) argue that they were developed in India and have spread back into Nigeria via the Nile valley. DOGGETT (1988:49) claims that they evolved in Southwest Ethiopia and were carried to India from the Horn of Africa. However, the linguistic and cultural evidence suggests that Harlan and his colleagues are correct in respect of the West African durras -that they were brought into North Africa from India via the Middle East and were carried to the Lake Chad region. Today, the durra sorghums are distributed all along the southern fringes of the Sahara (Harlan and Stemler, Map 3) and are correlated with the presence of flood-retreat cultivation. They have essentially the same name in Kanuri (*mosuwá*), Fulfulde and Hausa, although this is not a loanword from Arabic *berbere*. It appears they must have been carried to the region in the medieval period. They were rarely cultivated by other groups until recently and even now are known to most peoples via the market rather than as a cultivated crop. They are cultivated extensively as a cash-crop to sell in urban centres in Adamawa, especially along the Benue near Yola. The spread of dry-season cultivation has recently given them a boost in many areas.

Sorghum bicolor race guinea

According to HARLAN AND STEMLER (1976) race guinea was the second race to evolve from the primitive bicolor. Race guinea is found principally across Sahelian West Africa, although some cultivars seem to have crossed to eastern and southern Africa at an unknown period in the past, whence it was carried to India. Some races of guinea are cultivated for the sweet stems and in NE Nigeria the culm sheaths are used to produce a red dye like race caudatum.

Sorghum bicolor race kafir

HARLAN AND STEMLER (1976) state that the kafir sorghums are restricted to eastern and southern Africa. Despite this, BURKILL (1994:355) gives quite an extensive terminology for northern Nigeria. Either this is some type of error linking past herbarium data with present classifications or race kafir was introduced into Nigeria in the colonial period.

Triticum aestivum Common wheat

Wheat is an ancient crop in Borno and may have crossed the desert in the medieval period, although Barth believed its appearance was as late as 1750. Vernacular names in northeastern Nigeria are all derived from the Arabic *qamḥ*. LEWICKI (1974:40) has collected various medieval references to its cultivation under irrigation on a small-scale as a luxury crop across Sahelian West Africa. These sources suggest that wheat may have reached the environs of Lake Chad from Ouargla in modern-day Algeria as early as the twelfth century. However, it made little impact in the region until the colonial period, when its cultivation was encouraged in irrigation schemes. The undesirable effects of creating a taste for wheat in a situation where farmers depend on a high level of inputs to grow what is essentially an unsuitable crop have been well described by ANDRAE & BECKMANN (1985). The extent to which research station varieties have replaced the traditional Saharan wheats is unknown.

The irrigation channels along the Komadugu Yobe, on the Nigeria/Niger border, were intended to grow wheat. Wheat production was part of the scheme for the large-scale irrigation projects begun in the 1970s to draw off water from Lake Chad, such as the Lake Chad Development Authority Scheme at New Marte and the South Chad Irrigation Project, south of Dikwa. In 1987, the Nigerian Government banned wheat imports and the domestic producer price increased dramatically. Combined with subsidised prices for pumps, seed and agro-chemicals, this made wheat production very attractive. As a result, farmers were reported to be uprooting sorghum and replacing it with wheat. In the years that followed, large-scale entrepreneurs began to buy up land and clear it for wheat production. However, the price rise also made smuggling from the Francophone countries (where white flour is imported from Europe at subsidised rates) more attractive. At the same time the slow winding down of the Agricultural Development Project system and the gradually inflating Naira made wheat production less alluring as the price of inputs correspondingly rose. The collapse of organised distribution of seed and chemicals may have led to some of the older varieties regaining ground.

Zea mays Maize

Maize is a South American domesticate that reached Europe in post-Columbian times. There are two important types of maize in West Africa, the hard, white, flint maizes most suitable for meal, and softer races that can be roasted or boiled and are generally deeper yellow. Its introduction, diffusion and spread in Nigeria has recently been studied (BLENCH, WILLIAMSON & CONNELL, in press). These authors conclude that the conventional wisdom of a Portuguese introduction in Nigeria is hard to substantiate and is more likely to have spread southwards from the north, presumably after being brought across the Sahara from Tripoli to Borno. This situation contrasts with other regions of West Africa, such as Senegambia.

DENHAM ET AL (1828,II:159) refer to maize in his summary of Borno but does not make clear where it was sold and in what quantities. NACHTIGAL (1879-89, II:374) noted that it was the second most important crop after sorghum grown on the islands of Lake Chad. It had certainly reached Kukawa market by 1903 (LENFANT, 1905:190). It is present throughout the region but is nowhere a staple; it is generally known by the Hausa name, *másàráá* [=‘Egypt’], which may have come from Kanuri *másar*. Other forms compare it directly to guinea-corn; among the B̄na, for example, it is known as ‘Hausa sorghum’. These forms suggest that the crop spread indirectly, i.e. from farmer to farmer.

6.3 Pulses

The history of pulses in Northeastern Nigeria is complicated by the lack of specificity in most sources; for many writers, ‘beans’ is description enough. DENHAM ET AL (1828,II:59) refer to four types of beans; *mussaqua*, *marya*, *kleeny* and *kimmay*. *Mussaqua* is surely an error for *masakwa*, the flood--retreat sorghum. The general Kanuri term for beans is *ngálo* but the white beans called *ngalongudí* remain unidentified.

Arachis hypogaea Groundnut, peanut

The groundnut was introduced from South America by the Portuguese in the seventeenth century. In most parts of Nigeria, groundnuts seem to have spread rapidly from farmer to farmer and they were generally perceived as a relative of the Bambara nut. As a result, the same term was applied, and the Bambara nut was qualified as 'local' or 'indigenous'. Thus among the Yungur, the former name for Bambara nut, **shnara* is now applied to *Arachis*, while the term for Bambara nut is *shⁿara bənara*, i.e. 'Yungur groundnut'.

The groundnut is apparently one of the few crops that were diffused by the Kanuri. The Kanuri name, *kólji*, has been borrowed into many languages in southern Borno and Adamawa, such as Kamwe *kulace* and Sukur *kolakochi*. There is no clear etymology for the Kanuri term, although it may have been borrowed from the term for Bambara nut in some Chadic languages of northern Cameroon. Denham refers to 'ground nuts' in the market at Kukawa (DENHAM ET AL, I:217). BARTH (1857-8,5:334) notes that groundnuts had reached Bagirmi by the 1850s and LENFANT (1905:190) recorded them in the market in Kukawa in 1903.

Groundnuts were promoted by colonial governments as cash-crops in both Nigeria and Cameroon. HOGENDORN (1978) describes the origins and growth of the commercial groundnut operations for which Northern Nigeria later became famous. In northeastern Nigeria, Maiduguri was a major collecting point and the location of oil-mills for both oil and cake for export. The Cameroon Government began to encourage groundnut production from 1939 onwards in conjunction with cotton. Research station varieties have replaced local types in many areas.

Cajanus cajan Pigeon pea

There are no records of the cultivation of the pigeon-pea in the region, although both the Hausa and Kanuri know it by the same name, *aduwa*, borrowed from the name for the desert date.

Macrotyloma geocarpa Kersting's groundnut

Kersting's groundnut is apparently subsponaneous in Northeastern Nigeria and Northern Cameroon but there is no direct evidence for its cultivation. The nearest cultivation records come from Central Nigeria.

Sphenostylis stenocarpa Winged bean

The winged bean is known from the Atlantika mountains and may also be cultivated in the Gwoza region (PASQUET, 1994). Although an ancient cultigen, its distribution is little known.

Vigna subterranea 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 throughout the region, and NACHTIGAL (1980:192) noted that it plays a significant role in the cuisine of Borno. Nonetheless, its varietal diversification and cultural significance is relatively minor compared with further down the Benue, for example among the Idoma. PASQUET AND FOTSO (1991:353) include a useful map of lexical roots for Bambara nut in Cameroon. The Kanuri name *ngángála* does not seem to be related to other nearby forms. Because wild forms of the Bambara nut still exist in the region the linguistic picture is somewhat difficult to interpret.

Vigna unguiculata Cowpea

The cowpea⁴ is now generally agreed to have been domesticated in West Africa, although it has undergone significant varietal diversification in India. Some of the varieties developed outside Africa have been re-introduced, thus further complicating the picture. STEELE (1972) has discussed some of the types of cowpea collected in Nigeria and PASQUET AND FOTSO (1994) have published a detailed analysis of the cultivated types in Cameroon. Within Nigeria, there is a wide diversity of terms, although it seems possible to reconstruct cowpea back to Proto-Benue-Congo (BLENCH, in press, a).

PASQUET AND FOTSO (op. cit.) distinguish five major races;

Indigenous	Introduced
<i>textilis</i>	<i>unguiculata</i>
<i>biflora</i>	<i>sesquipedalis</i>
<i>melanophthalma</i>	

Of these, var. *textilis* is usually considered the oldest and is still cultivated for its fibres rather than the beans in some remote areas. *Biflora* is the most widespread of the 'traditional' races with some types in the Mandara showing forms extremely close to wild types. *Melanophthalma* is not an introduced race, but nonetheless appears to be regarded as more recent than *biflora* or *textilis* in the region. It was only grown on the plains until recently, but new cultivars, such as Ife Brown, coming from Nigerian research stations, have begun to stimulate its adoption in the hill regions. *Unguiculata* and *sesquipedalis* (the 'yard-long bean') were only introduced in or immediately prior to the colonial period and seem to have spread from Southern Cameroon. The spiral cowpea, *kànánnáǎ* in Hausa, is common in this region.

A strange footnote to the history of cowpeas in this region are the reputedly aphrodisiac races of the *unguiculata* group. These are described by PASQUET AND FOTSO (1994:123) as '*d'origine certainement asiatique*' and are reserved for chiefs and sorcerers. These appear to have spread to this region in the pre-colonial era, although the mechanism remains uncertain.

6.4 Vegetables and Oil-seeds

Abelmoschus esculentus Okra

Okra is an ancient West African domesticate although it was apparently taken early to Asia. DELNEUF & OTTO (1995) have also recorded okra in northern Cameroon in the protohistoric period. There are numerous terms for okra in south-central Nigeria, and a root **kuCV* appears to reconstruct to Proto-Benue-Congo (BLENCH, in press, a). The Hausa (*kúǎ̀èwáá*), Fulfulde (*baskoje*) and Kanuri (*guwalto*) names appear to be unrelated.

Allium cepa Onion

The onion was apparently brought across the Sahara from north Africa by trade caravans in the Middle ages and almost all languages have some form of the Arabic name, The Kanuri name, *luwásar*, looks like a direct Arabic loanword, not filtered through Hausa, which has borrowed the article *al* with the stem. The Fulfulde name, *tiyyeere*, is borrowed from the name for the 'wild' onion, i.e. the roots of lilies, highly valued throughout this region for their medical virtues. Yungur has also applied the term for lily-root to the cultivated onion, disguising its recent introduction.

⁴ This section has been corrected following the recommendations of Dr. Rémy Pasquet, who kindly sent me a xerox of the relevant section of his thesis (Pasquet, 1994) for which I am most grateful.

WHITE (1941b) refers to the cultivation of onions in stream-side plots in the 1930s in the Mandara, but generally, onions were hardly known south of there except as trade-items until the spread of Hausa dry-season cultivation.

Allium sativum Garlic

Garlic is an Asian domesticate of unknown antiquity that presumably spread across the Sahara at an unknown period, although the absence of references in medieval sources makes this hard to verify. It is used as much in magical recipes as in food flavouring and is generally sold in the displays of Islamic medicine traders. It does not seem to be much cultivated in non-Muslim regions. Its history may be very different from the onion, however, as it has a wide variety of names in Chadic languages, which do not refer to a Hausa, Kanuri or Arabic original. The Kanuri name for garlic, *kaalmu*, resembles neither Arabic nor Hausa. Hausa probably borrowed its word, *tafarnuwa*, from Twareg *takhfar* 'onion'.

Amaranthus spp. Edible amaranths, 'bush greens'.

The taxonomy of the cultivated amaranths remains disputed, and it is clear that escaped forms recross with those in domestication to produce a diversity of phenotypes. The two principal cultivated forms are *Amaranthus hybridus* ssp. *incurvatus* and *A. viridis* (BURKILL, 1985). A number of other species that have been dispersed by human intervention, however, are regularly eaten, such as *A. spinosus*, as weeds or plants of disturbed land. The edible amaranths were almost certainly introduced from Asia, although whether they all spread up from the coast is unclear. Although Hausa and Fulfulde have quite separate terms, Kanuri has *aléfo*, apparently borrowed from Hausa. The Hausa people have clearly been the major agent of secondary dispersal, since variants of *allayaho* are found in most of the minority languages of northeastern Nigeria. Many people in the 1980s can remember the introduction of *Amaranthus* in their own lifetimes, and some still regard it as a market crop, rather than as a staple.

Capsicum annum Birdseye Chili and *Capsicum frutescens* Pepper

The chili peppers were introduced from South America by the Portuguese and seem to have spread northwards from the coast. DENHAM ET AL (1828, I: 268, 276) mention 'red peppers' in Borno by the 1820s. By 1870, NACHTIGAL (1980:193) says they are 'cultivated in large quantities everywhere'. This suggests the possibility that, like maize, they were brought across the desert from North Africa at the same period as they spread northwards from the coast (BLENCH, in press, c).

The two *Capsicum* species are generally known in minority languages by a misapplied Hausa name, *kímbáá*, which correctly applies to the pepper-tree, *Xylopi aethiopica*. The term *cítá*, derived from the generic Arabic term for spices, *shitta*, was formerly applied to malagueta (*Aframomum* sp.), a usage also recorded in ABRAHAM (1962). However, *cítá* seems now to have shifted to apply to *Capsicum* spp. and the Arabic loanword mentioned by Abraham, *filfil*, to have dropped out of use. This has then been borrowed into Kanuri to apply to *Capsicum*. The large, hot varieties, known as *tàttààsai* or *bàrkòdnóó* in Hausa, seem to have spread subsequently to Fulfulde and Kanuri as both languages use these terms almost unchanged.

Ceratotheca sesamoides False Sesame

This herb grows like a weed in sesame fields. Its cultivation is almost coterminous with sesame and the leaves are used in soup in the same way. The Kanuri name is *kawulubúl*.

Citrullus lanatus Egusi melon/water melon

Citrullus lanatus is indigenous to the West African region. Although it is the progenitor of the water-melon it was domesticated only for its seeds in West Africa and the breeding of sweet melons with edible flesh appears to have taken place in North Africa. The water-melon has been brought back in twentieth century and is now widely cultivated under irrigation in Northern Nigeria. It is cultivated throughout this region and the diversity of terms with very little cross-language loaning attest to its antiquity. In the post-colonial period, the large-seeded 'egusi' types from the south have been brought to the north to supply southern residents. The Kanuri name *bambúsə* appears to be connected with the Shuwa Arab names. Another cultivar, *gunogunó*, grown in the Lake Chad region has apparently given its name to the Hausa *guna*. Kanuri has a separate name for the true watermelon, *fálí*.

Corchorus olitorius Jew's mallow, jute with other *Corchorus* spp

LEWICKI (1974) states that *C. olitorius* was domesticated in Asia, but it is now considered more likely that the wild progenitors of this plant came from sub-Saharan Africa and were carried to Asia, where an ennobled type developed. In Africa, *Corchorus* is generally cultivated as a potherb and its leaves used to make a mucilaginous soup. A variety of other *Corchorus* spp, such as *C. acutangulus*, *C. tridens* and *C. trilocularis*, are cultivated in West Africa and generally have the same vernacular names as *C. olitorius*.

The Hausa call the wild type *tungurnuwa*, and the cultivated form *láálò*, borrowed into Fulfulde as *lalo*. Another Hausa name, *malafiya*, is likely to be a borrowing from the Arabic *mulukhiya*. The Kanuri names, *gamzáino* and *daraba*, do not seem to show any links with these. It is likely, therefore, that there was an ancient cultivation of *Corchorus* in the sub-Saharan region but that North African cultivars were re-introduced into West Africa by Arab traders.

Cucumis melo Sweet melon

The sweet melon has a complex history both in botanical and linguistic terms. The original wild progenitor of *Cucumis melo*, a ground trailer, can still be seen at the edge of the desert and some of the non-sweet cultivated forms were probably domesticated directly from this form. However, the melon was also carried across the desert and developed into the more well-known sweet Mediterranean forms.

Non-Sweet forms

The cultivation of non-sweet melons is apparently ancient along the edge of the desert and there are varieties cultivated for the flesh and some where only the seeds are extracted. Although some vernacular names are recorded in the subhumid regions (BURKILL, 1985) it is quite likely that these are misidentifications and that *Citrullus lanatus* is intended.

Sweet forms

Sweet melons resembling those in the Mediterranean region have the same name in Arabic and Hausa, *shammam*, and are likely to be a relatively recent introduction. It was carried back across the desert from North Africa and has become re-established in Northern Nigeria, although its cultivation is still very small-scale.

Cucumis sativus Cucumber

Although the cucumber is an ancient cultivated plant in some parts of Africa it is likely to be recent in Borno. The Kanuri name, *ngurli*, seems to closely resemble some of the names for other *Cucumis* species, such as *gurji*, and it is most likely that cucumbers were brought across the desert with the trans-Saharan trade. They have never become a major plant in dry-season gardens.

Cucurbita maxima Squash

The squash is a native of Peru and must have been carried at an early period to the West African coast, as it is cultivated throughout the region. Although commonly held to be a Portuguese introduction, this finds no support from the linguistic evidence. Squash and pumpkin are known by a wide variety of names, none of which are evident loan-words or analysable local constructions. Squash reconstructs neatly to proto-Yungur and apparently to proto-Benue-Congo [!]. There are two possible explanations; either the plant came to West Africa in the pre-Portuguese era, perhaps through the drift of seeds on the ocean currents, or the name has shifted from another plant giving a misleading reconstruction. The origin of the Kanuri name *saádə* is unclear.

Cucurbita pepo Pumpkin

The true pumpkin, *Cucurbita pepo*, was originally domesticated in Mexico and is widespread in West Africa. Because of its highly polymorphic nature it is easily confused with *C. maxima* and in every case the vernacular names are identical. The same observations as for *C. maxima* thus apply.

Daucus carota Carrot

Carrots were introduced during the colonial period and they have been widely adopted as a dry-season garden crop. DE LEEUW ET AL (1972:19) noted that carrots were a feature of the gardens around Fika but they are certainly grown on the periphery of all the major urban centres, mostly by Hausa market-gardeners.

Hibiscus sabdariffa Roselle, sorrel

Roselle is indigenous to the West African region. There are two major types of cultivated sorrel in Nigeria -the green types, cultivated for the edible calyxes that are put in soup and those with red calyxes that are boiled to make a drink. The 'green' type is the common cultivated type and can probably be reconstructed back to proto-Benue-Congo. The 'red' types, known as *karkade* in Arabic were probably brought across the desert to Borno in the medieval period. The green sorrels are called *karasə* and their seeds *mashá* in Kanuri. DELNEUF & OTTO (1995) have recorded sorrel in northern Cameroun in the protohistoric period.

Lepidium sativum Cress

Cress is apparently a trans-Saharan introduction since it is known by variants of the Arabic name *lafsur*.

Lycopersicon esculentum Tomato and
L. esculentum var. *cerasiforme* Cherry tomato

Tomatoes in Nigeria can be divided into the small cherry tomatoes which seem to be relatively old in the region and may have come across the desert from North Africa and modern 'commercial' varieties introduced in the 1940s and 1950s. DENHAM ET AL (1828,I:217) remark on the 'bastard tomatoes' in the

market at Kukawa, by which they may mean the 'native' tomato, i.e. one of the eggplants, or cherry tomatoes. In Nigeria, the word for tomato is universally a form of *tomatur* from English via Hausa. Most languages do not distinguish the cherry tomatoes from modern varieties, or else qualify them as 'birds' tomatoes'. The history of the tomato in Nigeria is discussed at greater length in Blench (in press, c).

Sesamum indicum Sesame and
Sesamum radiatum Black sesame

The origin of sesame or beniseed remains disputed; although long thought to be of West African origin, this has been called into question because of the presence of very early archaeological material in India. Both types of sesame are cultivated throughout the region for their seeds and leaves and these typically have distinct names, as in Hausa *ríídíí* and *karkashii*. The Fulfulde term, *malasiri*, and the Yedina *mareshi* appear to be borrowed from the Kanuri *marashi*. These may be connected rather indirectly with Hausa *karkashii*. The Arabic, *semsem*, that gives English 'sesame', has no currency in the region although it is not impossible that North African cultivars were brought across the desert.

Solanum macrocarpon African eggplant

The indigenous eggplant is cultivated throughout the region and is presumably ancient. The main type is a small oval fruit which is often eaten fresh. It can be light green but striped and multi-coloured cultivars are also known. The Hausa, Fulfulde, Kanuri (*gorwo*) and Arabic terms appear to be unrelated.

A more recent development is the large spherical cultivar with a cream-coloured skin called in Hausa as *yáálóó* (perhaps from English 'yellow'?). This appears to have only been spreading recently, as it is usually known by a name reflecting the Hausa term, or else simply as 'large garden-egg'.

Vernonia amygdalina (with *V. colorata*) Bitterleaf

Although indigenous to the West African region, and generally cultivated by the Hausa, bitterleaf has only spread in parts of the northeast recently. It is used both for the edible leaves and as a source of chewsticks. Where it is found in cultivation it is generally known by the Hausa name, *shìwáákáá*, and the Fulfulde *siwakeeje* is directly derived from this. Along the Nigeria-Cameroon border the Chadic languages have a quite different term, suggesting that it may be well-established in that region.

6.5 Fruits etc.

Anacardium occidentale Cashew

The cashew is known throughout this region, although the largest fruits are brought in from further South. DENHAM ET AL (1828,II:213) refer to cashew nuts in Borno which is surprisingly early and may be a misidentification. It is known in every language by versions of the English 'cashew' and its diffusion probably dates only from the colonial period.

Carica papaya Papaya

The pawpaw is a South American domesticate that was introduced on the West African coast by the Portuguese. It had begun to spread inland from the coast by the nineteenth century. It may also have been introduced into Borno from North Africa in the nineteenth century as Barth records the Kanuri name *bambus Massarbe*, i.e. the melon of Egypt, and a now disused Hausa term *gonda Masr*, 'custard-apple of Egypt'. The

analogy with the wild custard-apple, *Annona senegalensis*, is made in many languages, and the name for the custard-apple applied to the pawpaw. Thus in Hausa, pawpaw is *gwanda* and the custard-apple, *gwandan daji*, the 'pawpaw of the bush'. A similar process in Fulfulde makes the pawpaw *dukku* and the custard apple *dukkuhi ladde*. In modern Kanuri, the custard apple is *ngónówu* and the term *kawúsa* is adapted from the Arabic term for pumpkin or *gonda* from Hausa *gwanda*. These local constructions make it difficult to establish either the route or epoch of the introduction of the pawpaw. Benton says 'Pawpaws have been introduced into some of the larger towns in British Bornu, but do not flourish' (SCHULTZE, 1913:77). However, pawpaw has become widespread in southern Borno and is usually known by a variant of the name *kabusa*, suggesting that it was borrowed from the Kanuri. In minority languages further south, such as Yungur, the pawpaw is associated with Europeans, suggesting that its spread is largely a twentieth century phenomenon.

Citrus aurantifolia Lime and
Citrus sinensis Orange

The citrus fruits were brought to the West African coast in the eighteenth century by the Portuguese but may have been carried simultaneously across the desert to Borno by the Arab caravans. DENHAM ET AL (1828, I:217) mention being sent a present of limes by the Shehu in Kukawa. They appear to have been spread by the Hausa, as the Hausa name, *leemu*, is universally used throughout the region. However, MIGEOD (1924:118) notes that the garden planted by Rabeh at Dikwa contained lime trees, so citrus may also have spread from further east via the Arabs. Nonetheless, their cultivation in this region has probably only become economically significant since the colonial period, when seedlings were distributed via the forestry departments.

Cyperus esculentus Tiger-nut

Tiger-nuts are indigenous to the Mediterranean but are widely and anciently cultivated throughout the West African region. Local names show no particular relation to each other, although they reconstruct within linguistic subgroups. In Borno, tiger-nuts are commonly perceived as a women's crop. They presumably crossed the desert at an early period and have become naturalised in the agriculture of the region.

Mangifera indica Mango

The mango, domesticated in India, was brought to the coast by the Portuguese. DENHAM ET AL (1828, I:299,309) talk about mangoes in the Mandara valleys in the 1820s -although whether this is correct is doubtful. It is given the Kanuri name *comonah* in the text which is not present-day common Kanuri term for mango. Today the form *mángulo* is used, suggesting a loan from the Hausa *mangoro*. Throughout Borno, the word appears to be a loan from Hausa as it almost invariably incorporates the additional *-ro* suffix. The major dispersal inland of the mango in Nigeria was in the colonial era through the policy of planting rows of mangoes along roads and within institutional compounds. The large non-fibrous hybrid mangoes seem to have been introduced in the post-colonial period. In Kanuri they are known as *aúré*, a term borrowed directly from Hausa.

Musa paradisiacum Plantain and
Musa sapientium Banana

All the domesticated Musaceae in Africa are originally from either India or Southeast Asia. The period and route by which they reached Africa remains disputed but while they have become central to the agricultural systems in the forest zone, they remained little-known in the semi-arid region until recently. Bananas and plantains are still shipped to the north from southern Nigeria, but increasing numbers are grown locally using irrigation. In Hausa, Kanuri and Fulfulde, plantain and banana are not generally distinguished. Kanuri *ayawa* is almost certainly a loanword from Hausa *àyàbà*. The Fulfulde term, *kondong*, is found throughout north-western Adamawa, and along the Nigeria-Cameroon border in Borno. West of this region, *àyàbà* is the almost universal term.

Punica granatum Pomegranate

One of the more well-known fruits associated with North African Islamic culture it is surprising that the pomegranate never became widespread as a result of the trans-Saharan trade. ROHLFS (1874, I:374) remarks on the cultivation of pomegranates in Kukawa before the sack of the town and MIGEOD (1924:118) mentions the cultivation of pomegranates in Rabeh's garden at Dikwa. However, in the 1990s they are very uncommon in markets.

Phoenix dactylifera Date palm

Date-palms are only found in small numbers in Borno and Adamawa. Bauchi town is a notable centre for the small-scale cultivation of date-palms although the fruits are locally regarded as inferior to dates from the desert. Fika is also noted for its date-palms which, however, barely produce edible fruit. SCHULTZE (1913:85) says 'The date-palm..is to be found dispersed in single examples all over Bornu, and specimens transplanted by man may even be seen in the middle of Adamawa'. The cultivation of the date seems to have been taken over from the Arabs and the terms in Hausa and Fulfulde (*dábínò*), and Kanuri *difúno* are loanwords from Arabic.

Saccharum officinarum Sugar-cane

Sugar-cane is of Southeast Asian origin but it has certainly been diffused about the world via Islamic trade-routes. The evidence for northeastern Nigeria is equivocal; most peoples distinguish between 'traditional' and 'modern' sugar-cane. The traditional canes are commonly known as *lamarudu*, presumably derived from the place-name, Lamurde, and probably predate the colonial era. However, new varieties of high-yielding canes introduced into this region during the colonial period have largely displaced the older types. Sugar-cane is frequently known by the Hausa name, *rake*, borrowed into Kanuri as *reké*. One of Nigeria's two major industrial sugar-cane plantations, Savannah Sugar, is located just west of Numan.

6.6 Spices

Coriandrum sativum Coriander

Coriander has not featured in most texts on the transmission of crops along the trans-Saharan route. Nonetheless, it plays an integral part in Kanuri cooking and is known by the same name in Kanuri and Hausa, *kusubara*. It is likely to have been brought to the Lake Chad region in the medieval period -although it has never spread widely in West Africa.

Nigella sativa Black cumin

Black cumin is cultivated in Borno under the name *kamun selem* and was presumably spread across the desert in the medieval period. It does not seem to have spread further south.

Piper guineense West African Black pepper

Although West African black pepper is indigenous to the region, it seems to have only recently spread to northeastern Nigeria, and is still today only a trade item in many markets. Both Kanuri (*mosóró*) and Fulfulde have presumably borrowed from Hausa the term *màsóóróó*.

Zingiber officinale Ginger

Ginger is originally from Asia, but it seems to have been cultivated in Africa for a long period. PURSEGLOVE (1975:534) regarded it as a Portuguese introduction although there is no support for this in the linguistic evidence from names in Central Nigeria. It seems more likely that it spread independently down the Nile corridor and was also cultivated on the coast after the Portuguese arrived. The Hausa know it as *cittar àhò*, referring to it as the pepper of the Eloyi people, who live near the Benue river in Plateau State. At present, the most extensive and elaborate cultivation of ginger is found in Central Nigeria, especially in Southern Zaria. Ginger is known to the Shuwa Arabs by the Arabic name, *zinzabil*. The Kanuri name is *taajiwâr* or *kaajiwâr*.

?*Guizotia* spp

DE LEEUW ET AL (1972:19) refer to '*gwonkhi*' a crop 'widely found in small plots' which is identified as *Guizotia* spp?. This is not confirmed by any other text but a cultivated *Guizotia*, *G. scabra*, has been reported from the Jos Plateau and southern Zaria (BURKILL, 1985:474).

6.7 Others

Nicotiana tabacum and *N. rustica* Tobacco

Tobacco is a South American domesticate whose importation to Europe is surrounded by a variety of fables. Its introduction into Africa is barely documented, but it seems to have rapidly spread into the interior as it was well-established by the time the first European travellers reached Borno. It was cultivated as much as a cosmetic as for smoking. Apart from smoking pipes it is also dried and turned either into chewing-tobacco or into snuff. The custom of using the flower of the tobacco plant to stain the teeth seems to have spread from Hausa as the general word for 'flower' in Hausa, *fure*, is commonly applied to tobacco and this is loaned into Kanuri as *fǎré*.

DALZIEL (1937:430) speculates that the *tumbak* forms found in Shuwa Arabic refer to Virginia tobacco and that American tobacco entered Borno from further east. MIGEOD (1924:97) refers to two types of tobacco - Bornu, 'brown and rolled up in sticks' and Mandara, 'green and has more flavour'. Currently the Kanuri import chewing tobacco from the Mandara and call it by that name *mandǎrá*. Ordinary tobacco is *tafâ* in Kanuri. Variants of this form are dominant through the other languages of the region.

In the twentieth century, tobacco has become an important commercial cash-crop in many parts of Nigeria. Tobacco seed is distributed by the major companies to smallholder outgrowers and an efficient buying system has made it into a significant cash-crop even in a period of recession. 'Local' varieties of tobacco are disappearing in many places.

Ricinus communis Castor-oil plant

The castor-oil-plant is cultivated on a small-scale throughout this region. It is generally believed to originate somewhere between Uganda and Nigeria and to have been carried to Egypt in prehistoric times (BLENCH, 1991b). Hausa *zùrmâŋ* and Kanuri *kwálakwála* appear to be unrelated and there are no other records for this area.

Hibiscus cannabinus Kenaf

Hibiscus cannabinus is grown mainly for the hemp stripped from the outer bark, but the leaves are also widely used for sauces rather like sorrel. It appears to be indigenous to semi-arid Africa but its domestication and cultivation for fibre may be quite recent. The Hausa name, *rámà*, is widely spread through Central Nigeria, arguing that the Hausa have acted as secondary dispersal agents. However, the Kanuri term *ngawái* is apparently related to Fulfulde *ngabay*. This appears as a loanword in most of the minority languages of the region suggesting that the Fulbe also carried it to rural areas.

7. Historical Stratification of Food-Crops in Northeastern Nigeria

This section makes some very tentative proposals for a chronological stratification of the introduction of crops into northeastern Nigeria. Except within the most recent period when direct historical evidence is available, the assignment of crops to particular strata is based on evidence from wild progenitors and loan-words or their absence.

Table 3 shows crops either indigenous to the West African region or which have apparently been anciently cultivated;

Table 3. 'Ancient' Food-Crops

Scientific Name	English	Scientific Name	English
<i>Solenostemon rotundifolius</i>	Hausa potato	<i>Abelmoschus esculentus</i>	Okra
<i>Dioscorea bulbifera</i>	Aerial Yam	<i>Cucumis melo</i>	Melon (non-sweet)
<i>Dioscorea praehensilis</i>	Bush yam	<i>Citrullus lanatus</i>	Egusi melon
<i>Pennisetum typhoides</i>	Bulrush millet	<i>Hibiscus sabdariffa</i>	Roselle, sorrel
<i>Sorghum bicolor</i> *	Sorghum	<i>Solanum macrocarpon</i>	African eggplant
<i>Vigna subterranea</i>	Bambara groundnut	<i>Corchorus olitorius</i>	Jew's mallow, jute
<i>Macrotyloma geocarpa</i>	Kersting's groundnut	<i>Cucurbita maxima</i> *	Squash
<i>Vigna CG Textilis</i>	Cowpea	<i>Cucurbita pepo</i> *	Pumpkin
<i>Vigna CG Biflora</i>	Cowpea	<i>Cyperus esculentus</i> *	Tiger-nut
<i>Vigna CG Melanophthalma</i>	Cowpea	<i>Sesamum indicum</i>	Sesame
<i>Sphenostylis stenocarpa</i>	Winged bean	<i>Sesamum radiatum</i>	Black sesame

*Controversial -see text

If the yam-bean and *Guizotia* sp. have been correctly identified then they should also form part of this ancient layer.

The status of finger-millet is in doubt -although an ancient African cultigen, linguistic evidence points to its recent introduction in many parts of Nigeria. However, in the Mandara itself, most of the names do not appear to be loan-words and it likely that it diffused to this region from further east at quite an early period.

Table 4 shows some of the plants that were transmitted across the desert in the medieval period and have been cultivated for a long time in Borno.

Table 4. Crops introduced in the medieval period

Scientific Name	English	Scientific Name	English
<i>Sorghum durra</i>	Durra Sorghum	<i>Hibiscus sabdariffa</i>	Roselle -red type
<i>Pennisetum typhoides cv.</i>	Bulrush millet	<i>Lepidium sativum</i>	Cress
<i>Triticum vulgare</i>	Common wheat	<i>Punica gratum</i>	Pomegranate
<i>Hordeum vulgare</i>	Barley	<i>Nigella sativa</i>	Black cumin
<i>Allium cepa</i>	Onion	<i>Coriandrum sativum</i>	Coriander
<i>Allium sativum</i>	Garlic	<i>Curcuma domestica</i>	Turmeric
<i>Cucumis melo</i>	Melon (sweet)	<i>Zingiber officinale</i>	Ginger
<i>Cucumis sativus</i>	Cucumber		

A striking aspect of most of these plants is that the Kanuri did not transmit them southwards. Some of the spices, such as cumin and coriander, remain unknown among the non-Islamic groups. A complex, hierarchical group such as the Kanuri value spices and diverse plant foods in a way that attributes value to exotic tastes. It is likely that these found no echo among the acephalous groups south of Borno. Others, however, such as the onion, have Fulfulde names, suggesting that they were spread from Yola, rather than southwards from Borno.

Table 5 shows the crops that were spread by the Fulbe, as is evidenced by the adoption of Fulfulde terms into the languages of the region. There is a certain amount of overlap with Table 7 showing those disseminated by the Hausa, as it seems there were two competing streams in the late nineteenth and early twentieth centuries; characteristic Fulfulde loan-words in the east become Hausa further west.

Table 5. Crops spread by the Fulbe

Scientific	English	Fulfulde
<i>Sorghum bicolor cv.</i>	Short-season sorghum	jigaari
<i>Allium cepa</i>	Onion	tingyeere
<i>Allium sativum</i>	Garlic	arngalare
<i>Musa paradisiacum</i>	Plantain	kondong
<i>Musa sapientium</i>	Banana	kondong
<i>Ipomoea batatas</i>	Sweet potato	kudaku
<i>Manihot esculenta</i>	Cassava, manioc	mbay
<i>Colocasia esculenta</i>	Taro, old cocoyam	tandawje

Table 6 shows crops that were only brought across the desert in the eighteenth and nineteenth centuries; generally those from the Americas.

Table 6. Crops brought across the desert in the 18th/19th centuries

Scientific Name	English
<i>Oryza sativa</i>	Asian rice
? <i>Capsicum</i> spp	Chili peppers
<i>Lycopersicon esculentum</i>	Tomato (cherry type)
<i>Zea mays</i>	Maize
<i>Citrus aurantifolia</i>	Lime

Table 7 shows the crops that have been spread by the Hausa, following the evidence of loan-words. The Hausa began to spread crops in the nineteenth century but the major period of expansion opened up with the development of long-distance trade-routes in the colonial period. Some crops, such as the edible amaranths, have only penetrated the region since 1960, through the opening up of trucking routes and then migration of dry-season cultivators.

The cowpea species are noted below the table. Following the detailed research of PASQUET & FOTSO (1994) these cultivars appear to have spread into Northern Cameroun from the Benue Valley. However, in the absence of more detailed ethnoagronomy in Nigeria it is difficult to even speculate about the pattern and vectors of their diffusion.

Table 7. Crops spread by the Hausa

Scientific Name	English	Scientific Name	English
<i>Oryza sativa</i>	Asian rice	<i>Capsicum frutescens</i>	Pepper
<i>Arachis hypogaea</i>	Groundnut, peanut	<i>Amaranthus</i> spp	Edible amaranths
<i>Lycopersicon esculentum</i>	Tomato (plum type)	<i>Vernonia amygdalina</i>	Bitterleaf
<i>Saccharum officinarum</i>	Sugar-cane	<i>Citrullus lanatus</i>	Egusi melon/water melon
<i>Zea mays</i>	Maize	<i>Piper guineense</i>	West African pepper
<i>Capsicum annum</i>	Chili	<i>Musa sapientium</i>	Banana
<i>Vigna unguiculata</i>	Cowpea cvs <i>Unguiculata</i> <i>Sesquipedalis</i>		

Table 8 shows the crops that diffused to northeastern Nigeria during the colonial period. Many of these were introduced on the coast long before the colonial period, but had not reached this region 'naturally' by 1900.

Table 8. Crops spread in the colonial era

Scientific Name	English	Scientific Name	English
<i>Dioscorea rotundata</i>	Guinea yam	<i>Carica papaya</i>	Papaya
<i>Xanthosoma mafaffa</i>	New cocoyam	<i>Citrus aurantifolia</i>	Lime
<i>Solanum tuberosum</i>	Irish potato	<i>Citrus sinensis</i>	Orange
<i>Mangifera indica</i>	Mango	<i>Anacardium occidentale</i>	Cashew

An aspect of this stratification which is most striking is the failure of major political entities such as the Wandala and Kanuri kingdoms to have a significant impact on crop repertoires. Although the political influence of these groups is still evident their relations with their political clients seem to have included little interchange of crops either in the pre-Fulbe era or even with 'new' crops, such as cassava or sweet potato. The one crop whose name widely reflects Kanuri influence is the groundnut -forms of *kolaji* are widespread in southern Borno. BARTH (1862,II:175) observes that the Kanuri word for cotton is probably a borrowing from Wandala.

The process of change and development in crop repertoires has continued. Since Nigerian Independence in 1960 two important factors have emerged; the breeding of new varieties on research stations and the extension of new technologies. These often go hand in hand with increased population mobility. For example, Hausa farmers have been most active in adopting small pumps for dry-season horticulture; they are frequently seen along river beds traditionally avoided by local populations. This in turn has led to an increased emphasis on market crops that can be brought to maturity within a single growing season. So tomatoes, peppers, pumpkins, onions and various potherbs are preferred to traditional staples.

Research station varieties, especially of cassava and cowpeas, have spread all through this region in the 1970s and 1980s. Even cereals such as wheat and rice which can be grown with irrigation have been replaced. However, these varieties usually require high levels of inputs; these were heavily subsidised during this period. With the declining economy of the 1990s, farmers are returning to older varieties that require less fertiliser and pesticide.

8. Conclusion

Northeastern Nigeria and adjacent parts of Cameroon represent a complex interface between pastoral and arable subsistence systems and between large political structures and highly nucleated village groupings. This is partly reflected in the considerable variety of domesticated food plants and livestock produced in the region. A diverse ecology has also encouraged a complex pattern of interlocking cropping systems.

Linguistic evidence, especially the tracking of loan-words, can help to partly unravel the history of agriculture in the region, although defective material on many minor crops makes this a patchy exercise. Descriptions of the agronomy and botany of the domestic plants and animals in Northeastern Nigeria has hardly begun and this makes it difficult to relate farmers' accounts to scientific and technical data.

It should be emphasised that most of the hypotheses put forward in this work cannot presently be cross-checked against other types of evidence; archaeological, botanical and oral historical materials are lacking and even accounts of crop repertoires are at best incomplete. Studies comparable to the detailed work of PASQUET AND FOTSO (1994) on domesticated legumes in Cameroon, combining linguistic and botanical evidence, have yet to begin within Nigeria.

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