

LIST I (Continued)

Food Category	No.	Zande Names	Other Names or Description	Botanical Name
Fruits	113	Ngbakasabamu	Shrub	<i>Ximenia americana</i> L.
	114	Ngorondima	Tree	<i>Zyzyphus mauritania</i> Lam.
	115	Nonga (258)	Wild cardamom	<i>Amomum korarima</i> Pereira.
	116	Oranji	Orange	<i>Citrus aurantium</i> L. var. <i>sinensis</i> Gall. Citr.
	117	Papai	Pawpaw	<i>Carica papaya</i> L.
	118	Puse (transferred to 39a)		
	119	Rindiseke (161, 206)	Shrub	<i>Phyllanthus floribundus</i> Muell. Arg.
	120	Sendembori	see No. 89	
	121	Sikisa (245)	Palm	<i>Phoenix reclinata</i> Jacq.
	122	Kingo	Wild fig	<i>Ficus</i> sp.
	123	Titaroko	Mulberry	
	124	Vundoro		
	125	Warawarakpa (270)	Wild rubber	<i>Landolphia owariensis</i> Beauv.
	Miscellaneous		<i>Fungi</i>	
126		Rute	Mushrooms	
127		Akpangi	Edible fungus	(Grows on rotting stumps of <i>Acacia campylacantha</i>).
		<i>Stems</i>		
128		Koko (1)	Sweet sorghum, Sweet dura.	<i>Sorghum</i> sp.
129		Ngongoli	Sugarcane	<i>Saccharum officinarum</i> L.
130		Mvuruma (110)	Wild fig	<i>Ficus vallis-Choudae</i> Del.
		<i>Broth Ingredients</i>		
131		Anzeri (85)	Tree	<i>Irvingia</i> sp.
132		Gbadangi	Wild climber	<i>Cissus populnea</i> G. & P.
132a		Kpoyo (105, 147, 268c, 281)	Tree	<i>Grewia mollis</i> Juss.
		<i>Young root Bark</i>		
133		Akua (82, 230)	Borassus, Doleib	<i>Borassus flabellifer</i> L.
		<i>Flavourings</i>		
134	Riaria (67b)	Red pepper, Shatta	<i>Capsicum frutescens</i> L.	
135	Nana	Mint	<i>Mentha viridis</i>	
Minerals ("Salt" Plants)	136	Abagambo (Y) (40, 163).	Blackjack	<i>Bidens pilosa</i> L.
	137	Anyakanyali (T)		
	138	Ahia	Reed	<i>Scleria racemosa</i> Poir
	138	Apaya	Reed	<i>Cyperus auricomus</i> Sieber ex Spreng.
	139	Bavurubate (Y) Tita ngbiringbiri (T)	Shrub	<i>Microglossa volubilis</i> DC.

LIST I (Continued)

Food Category	No.	Zande Names	Other Names or Description	Botanical Name
Minerals ("Salt" Plants)	140	Bingba (180, 248c)	Speargrass	<i>Imperata cylindrica</i> Beauv. L.
	141	Bodumo (235)	Papyrus	<i>Cyperus papyrus</i> L.
	142	Bu (14, 97, 236)	Banana, Plantain	<i>Musa</i> spp.
	143	Bubu	Swamp plant	<i>Kacmpferia</i> sp. cf. <i>K. macresiphon</i> Bak.
	144	Gengere (100, 188)	Wild climber	Prob. <i>Ampelocissus cinnamochroa</i> Planch.
	145	Kiriwa	Cult. fence shrub	<i>Jatropha curcas</i> L.
		Kpakpa (Y) (239, 264)	Tree	<i>Dombeya quinqueseta</i> (Del.) Exell.
	146	Matangbu (T)		
		Nganzirangbanguru		
		Nzawa		
	147	Kpoyo (105, 281)	Tree	<i>Grewia mollis</i> Juss.
	148	Mbiro (35)	Oil palm	<i>Elaeis guineensis</i> Jacq.
	149	Mongua (Y)	Shrub	<i>Gymnosporia senegalensis</i> Lam.
	150	Maua (T)		
	151	Morongbiti	Reed	<i>Vossia cuspidata</i> Griff.
	151	Moru (3)	Finger-millet	<i>Eleusine coracana</i> Gaertn.
152	Mukpo	Telebun		
152	Mukpo	Herb	Prob. <i>Asteracanthus longifolia</i> (L.) Nees.	
153	Ngaliyo	Swamp plant		
154	Ngbaya (4)	Maize	<i>Zea mays</i> L.	
155	Ngbiringbiri (199, 247)	Tree	<i>Ethulia coryzoides</i> L.	
156	Pangbadupo	Water lettuce	<i>Pistia stratiotes</i> L.	
157	Pangbangondi	Swamp shrub	<i>Mimosa pigra</i> L.	
158	Rangbe	Grass	Prob. <i>Setaria chevalieri</i> Stapf.	
159	Rekondo	Grass	<i>Commelina benghalensis</i> L.	
160	Rikpanda		<i>Sida rhombifolia</i> L.	
161	Rindiseke (119, 206)	Shrub	<i>Phyllanthus floribundus</i> Moell. Arg.	
162	Tande	Herb	<i>Justicia calcarata</i> Hochst.	

(a) Y = Yambio, T = Tambura.

(b) Bitter variety grown entirely for its seeds.

(c) Eaten only by Balanda.

(d) Eaten only by Balanda; Zande grow it only for fibre.

(e) Not to be confused with the commoner *tande* (*Justicia calcarata*) used for "salt."

(f) Only non-bitter varieties eaten.

(g) Obscene reference to unpleasant smell of leaves when crushed.

SOME ZANDE MEDICINE PLANTS

No.	Zande Name	Other Names or Description	Botanical Name
163	Abagambo (Y) (a) (40) Anyakanyali (T) (136)	Blackjack	<i>Bidens pilosa</i> L.
		164 Aduruko (226)	Shrub <i>Piper guineense</i> Schumach.
		165 Agundu	Herb <i>Ocimum americanum</i> L.
166	Anongba (67a, 84)	Cucurbitaceous plant <i>Ocimum americanum</i> L.	
167	Azuangi	Tree	
168	Bagara (86, 260)	Wild custard apple. Tree	<i>Annona senegalensis</i> Pers.
169	Bakaikpa (249)	Tree	<i>Terminalia splendida</i> Engl. and Diels.
170	Bakatura (214)	Woody herb	<i>Solanum incanum</i> L.
171			
172	Bakaya (261)	Shrub	
173	Bambiri	Tree	<i>Albizia zygia</i> Macbride.
174	Bangiribakike (252)	Shrub to tree	<i>Erythrina tomentosa</i> R. Br.
175	Bangirimvuru Biribasa	Shrub	<i>Clerodendron cordifolium</i> A. Rich.
176	Bangiringama	Herb	Prob. <i>Acanthaceae</i>
177	Batari	Shrub	<i>Rhus natalensis</i> Bernh.
178	Bavutire (248b)	Tree	<i>Daniellia oliveri</i> (Rolfe) Hutch. & Dalziel.
179	Bawirisango	Tree	<i>Stereospermum kunthianum</i> Cham.
180	Bingba (240, 248c)	Speargrass	<i>Imperata cylindrica</i> Beauv.
181	Dakadia	Tree	<i>Combretum</i> sp.
182	Dama (276)	Tree	<i>Nauclea latifolia</i> Sm.
183	Gasiambara	Tree	<i>Combretum gueinzii</i> Sond.
184	Gbangagbe (278)		<i>Gloriosa simplex</i> L.
185	Gbarakuri (99, 279)	Shrub	<i>Asparagus racemosus</i> Willd.
186	Gbugari (280)	Tree	<i>Crossopteryx febrifuga</i> Benth.
187	Gbunga	Castor oil plant	<i>Ricinus communis</i> L.
188	Gengere (100, 144)	Wild climber	Prob. <i>Ampelocissus cinnamochroa</i> Planch.
189	Gorokurungba	Tree	<i>Paullinia pinnata</i> L.
190	Humugbe	Herb	<i>Kosteletskya grantii</i> (Mast) Gurke
191	Kubokubo		<i>Kalanchoe modesta</i> Kotschy & Peyr.
192	Kuma (224)	Tree	<i>Caloncoba schweinfurthii</i> Gilg.

No.	Zande Name	Other Names or Description	Botanical Name
193	Makpama	Herb	<i>Ocimum americanum</i> L.
194	Mangayu (Zande) (50) Yango (Balanda)	Herb	<i>Gynandropsis gynandra</i> L. Briq.
195	Mataria	Wild climber	Prob. <i>Omphalogonus calyphyllus</i> Baillon.
196	Mbazia (51, 229)	Herb	<i>Acrocephalus lilacinus</i> Oliv.
197	Mvuowere	Lemon grass, Citronella.	<i>Cymbopogon nardus</i> .
198	Ngbege (257, 266)	Wild gardenia	<i>Gardenia erubescens</i> Stapf. & Hutch.
199	Ngbiringbiri (155, 247)	Tree	<i>Ethulia conyzoides</i> L.
200	Ngurunza	Tree	<i>Acacia campylacantha</i>
201	Nzemekingoro		
202	Nzere	Shrub to tree	<i>Phyllanthus discoideus</i> Muell. Arg.
203	Parabaso	Shrub	Prob. <i>Acalypha villicaulis</i> Hochst. ex A. Rich.
204	Ranga	Bulbs in general	
205	Rangburangbu	Sausage tree	<i>Kigelia aethiopica</i> Decne.
206	Rindiseke (119, 161)	Shrub	<i>Phyllanthus floribundus</i> Muell. Arg.
207	Tomedari	Tree	<i>Euphorbia</i> sp.
208	Tukuri	Wild climber	
209	Udipia	Shrub	<i>Securidaca longipedunculata</i> Fresen.
210	Wakayu		<i>Aspilia Kotschy</i> Benth. & Hook f.
211	Zambara	Tree	
212	Ziga	Creeping herb	<i>Portulaca</i> sp.
213	Zigagarawa (Y) Imasagarawa (T)	Shrub	<i>Acalypha villicaulis</i> Hochst. ex A. Rich.
<i>Addenda</i>			
213a	Gero	Tree	<i>Erythrophlaeum guineense</i> Don.
213b	Kitika	Herb	<i>Oxalis corniculata</i> L.

(a) Y = Yambio, T = Tambura.

LIST III

SOME OTHER USEFUL PLANTS

Use	No.	Zande Names	Other Names or Description	Botanical Name
<i>Poisons (a)</i>	214	Bakatura (170)	Woody herb	<i>Solanum incanum</i> L.
	(i) <i>Arrow</i>	215	Giango	Tree <i>Euphorbia venenifica</i> Trem.
(ii) <i>Fish</i>	216	Riga	Bulb	
	217	Baranga (b)	Aloe-like herb	<i>Sansevieria abyssinica</i> N.E. Brown
(iii) <i>Bees</i>	218	Gbururi (b)		
	219	Kundubaderi (b)	Bulb	
	220	Makiriga	Shrub	<i>Randia nilotica</i> Stapf.
	221	Makoko	Shrub	<i>Tephrosia vogelii</i> Hook. f.
	221	Nguru		
	222	Mirizigba	Herb	<i>Anthericum tryphyllum</i> Bak.
	223	Nge (b) (268e)	Tree	<i>Prosopis africana</i> (G. & P.) Taub.
	223	Nzengere		
	224	Kuma (192)	Tree	<i>Caloncoba schweinfurthii</i> Gilg.
	(iv) <i>Termites</i>	225	Seribasi	Shrub
<i>Perfumes</i>	226	Aduruko (164)	Shrub	<i>Piper guineense</i> Schumach.
	227	Agbagi	Reed	<i>Jardinea congoensis</i> Franch.
	228	Akuki	Reed	<i>Cyperus articulatus</i> L.
	229	Mbazia (51, 196)	Herb	<i>Acrocephalus lilacinus</i> Oliv.
<i>Fibres</i>	230	Akua (82, 133)	Borassus,	<i>Borassus flabellifer</i> L.
		Ambassa	Doleib	
	231	Bakakwe (88)	Wild climber	<i>Cissus populnea</i> G. & P.
	232	Batingbarama	Swamp plant	<i>Thalia geniculata</i> L.
	234	Bisima	Reed	
	235	Bodumo (141)	Papyrus plant	<i>Cyperus papyrus</i> L.
	236	Bu (14, 97, 142)	Banana, Plantain	Musa spp.
	237	Dakpa (262, 275)	Tree	<i>Pileostigma reticulata</i> (DC) Hochst.
<i>Fibres</i>	238	Gai (277)	Reed	<i>Costus afer</i> Ker-Gawl.
		Kpakpa (Y) (c)	Tree	<i>Dombeya quinqueseta</i> (Del) Exell.
	239	Matangbu (T)		
		Nganzirangbanguru		
		Nzawa		
	240	Mbiombio (108)	Wild climber	<i>Uvaria bukobensis</i> Engler.
	241	Mvue	Swamp plant	<i>Thalia geniculata</i> L.
242	Nzawa di	Swamp plant	<i>Clappertonia ficifolia</i> (Willd.) Decne.	
		Nzawa gbanda		

LIST III (Continued)

Use	No.	Zande Names	Other Names or Description	Botanical Name
<i>Fibres</i>	243	Nzawa pia		<i>Urena lobata</i> L.
	244	Nzibi (58)	Deccan hemp	<i>Hibiscus cannabinus</i> L.
	245	Sikisa (121)	Palm	<i>Phoenix reclinata</i> Jacq.
		Kingo		
			<i>Addenda</i>	
	245a	Kpudu	Rattan cane	<i>Calamus curcas</i>
	245b	Wida	Tree	<i>Odina barberi</i> Oliv.
<i>Building</i>	246	Kpazamangua (103)	Shrub	<i>Securinega virosa</i> (Roxb.) Baill.
	247	Ngbiringbiri (155, 199)	Tree	<i>Ethulia conyzoides</i> L.
	248	Nganzidupo (268d)	Swamp grass	<i>Phragmites communis</i> Trin.
			<i>Addenda</i>	
	248a	Banga	Tree	<i>Anogeissus leiocarpus</i> Guill. & Perr.
	248b	Bavutire (178)	Tree	<i>Daniellia oliveri</i> (Rolfe) Hutch. & Dalziel.
	248c	Bingba (140, 180)	Speargrass	<i>Imperata cylindrica</i> Beauv.
	<i>Drums</i>	249	Bakaikpa (169)	Tree
250		Bagu	Mahogany	<i>Khaya senegalensis</i> A. Juss. and K. grandifoliola C. DC.
<i>Personal wear and ornament</i>	251	Bagadi	Barkcloth tree	<i>Ficus glumosa</i> Del.
	252	Bangiribakike (174)	Shrub to tree	<i>Erythrina tomentosa</i> R. Br.
	253	Kato (d)	Wild cotton	<i>Gossypium barbadense</i> L. var. <i>brasiliense</i> .
	254	Pupuki	Grass	<i>Urelytrum giganteum</i> Pilger.
<i>Dyes</i>	255	Birikpo	Tree	<i>Randia mallifera</i> Benth. & Hook. f.
(i) <i>Bodily Decoration</i>	256	Mbiongo	Wild gardenia	<i>Gardenia vogelii</i> , Hook. f.
	257	Ngbege (198, 266)	Wild gardenia	<i>Gardenia erubescens</i> Stapf. & Hutch.
	258	Nonga (115)	Herb	<i>Amomum korarima</i> Pereira.
	259	Rimama		

LIST III (Continued)

Use	No.	Zande Names	Other Names or Description	Botanical Name
(ii) Other	Addendum			
	259a	Bagbodi (68, 271)	Tree	Hymenocardia acida Tul.
Various Domestic Purposes	260	Bagara (86, 168)	Wild custard apple.	Annona senegalensis Pers.
	261	Bakaya (172)	Shrub	
	262	Dakpa (237, 275)	Tree	Pileostigma reticulata (DC) Hochst.
	263	Kau		
	263	Inga (31, 47, 72)	Calabash	Lagenaria siceraria (Molina) Standl.
	264	Kpakpa (Y) (146, 239)	Tree	Dombeya quinqueseta (Pel.) Exell.
	264	Matangbu (T)		
	264	Ngazirangbanguru		
	264	Nzawa		
	265	Nagbanga (36, 55, 76)	Bottle gourd	Lagenaria siceraria (Molina) Standl.
	266	Ngbege (198, 257)	Wild gardenia	Gardenia erubescens Stapf. & Hutch.
	267	Sabuna pia		
	268	Vura (66)	Kapok	Ceiba pentandra Gaertn.
		Addenda		
	268a	Bakiwe	Tree	Morelia senegalensis A. Rich.
268b	Birikito (94)	Tree		Vitex cuneata Schum. & Thonn.
268b	Kanganonga			
268b	Ngunge			
268c	Kpoyo (105, 132a, 147, 281)	Tree		Grewia mollis Juss.
268d	Nganzidupo (248)	Swamp grass		Phragmites communis Trin.
268e	Nge (223)	Tree		Prosopis africana (G. & P.) Taub.
268e	Nzengere			
Miscellaneous Products	269	Gbakoro (e)	Tobacco	Nicotiana tabacum L.
	270	Warawarakpa (125)	Wild rubber	Landolphia owariensis Beauv.
	Addendum			
	270a	Bangi	Indian hemp, Hashish	Cannabis sativa L.
Magic	271	Bagbodi (68, 259a)	Tree	Hymenocardia acida Tul.
	272	Bamangana	Herb	Amomum polyanthum Schumann.

LIST III Continued

Use	No.	Zande Names	Other Names or Description	Botanical Name
Magic	273	Bamugu (91)	Herb	Acanthaceae
	274	Bawia	Sensitive plant	Biophytum petersianum Klotsch.
	275	Dakpa (237, 262)	Tree	Pileostigma reticulata (DC.) Hochst.
	275	Kau		
	276	Dama (182)	Tree	Nauclea latifolia Sm.
	277	Gai (238)	Reed	Costus afer Ker-Gawl.
	278	Gbangagbe (184)		Gloriosa simplex L.
	279	Gbarakuri (99, 185)	Shrub	Asparagus racemosus Willd.
	280	Gbugari (186)	Tree	Crossopteryx febrifuga Benth.
	281	Kpoyo (105, 132a, 147, 268c)	Tree	Grewia mollis Juss.
	282	Mere anya	Wild aerial yam	Dioscorea bulbifera L.
	283	Nzati	Herb	Pupalia lappacea Juss.
	284	Ranga	Bulbs in general	
	285	Sarawa	Herb	
286	Araka	Wild climber	Cissus sp.	

(a) (iii) and (iv) and at least some of those in (ii) stupefy rather than poison.

(b) Recorded among **Balaanda** only.

(c) Y = Yambio, T = Tambura.

(d) The lint = remu; the cloth = roko

(e) The dried tobacco = gundo.

APPENDIX II

NOTES ON PRODUCTION, STORAGE AND UTILISATION OF ZANDE FOODS⁽¹⁾

CEREALS

ELEUSINE (3)

General

Zande: Main grain crop but no longer staple food. Degree of replacement by cassava varies, being apparently less advanced in south than north. In survey groups, highest in Taba (intermediate between peasant and wage economy) and in wage-earning groups. Suffers through high labour-costs, both cultural and domestic, in comparison with cassava. It has also been pointed out that the first resettlement, for sleeping-sickness control, removed the population from sites along streams to higher land less suitable for this crop.

Balanda: Main grain crop, but acreage smaller and yields lower (to judge by appearances) than further south. Trend in relation to cassava unknown.

Varieties

Mixed in field and cooking-pot. No consumer preferences expressed.

Cultivation

Zande: Small plots may be sown very early, especially by families whose stocks are low. A very few people even clear some patches of low-lying land in the dry season for raising a small early supply, sown February-March, reaped June-July. Main crop sown June, July, August and first half September, though 31st August is regarded as latest safe date. Starting and finishing dates vary in different places. Actually recorded as late as 26th September at Taba, whereas at Madi reaping was beginning then on earliest plots. Other crops interplanted: cassava, sesame, hyptis, maize, sorghum. Proportion which followed groundnuts was 34% Ukua, 8.5% Momboi, 9% Taba. Main harvest from end September onwards according to sowing-dates. Most in November-December. May be grown three years in succession on same land.

Balanda: Sown June-August; none follows groundnuts. Crops interplanted: cassava, hyptis, deccan hemp, bulrush millet, sorghum, legumes. (Late maize not grown in this area.)

Storage

In head, in grainstore. Keeps well for several years.

Utilisation

Ground to flour for porridge, or malted for beer. Used as malt for any kind of beer. Chaff burnt for potash.

Treatment

(a) *Threshing*: Large quantities flailed with sticks and winnowed in shallow baskets. Small quantities pounded in mortar and similarly winnowed.

(b) *Flour*: Roasted, pounded to loosen husks, winnowed, ground.

(1) Numbers after crop names refer to plant list in Appendix I.

(c) *Porridge*: stiff or soft (pap). Latter rare. As for any flour.

(d) *Malt*: Grain put in water overnight, left in covered basket 2-3 days till well sprouted. Dried in sun. Stored till required.

(e) *Beer*: See Section IX.

(f) *Soured pap*: for children and nursing mothers. See under Cassava.

(g) *Potash*: See under Minerals.

SORGHUM (8)

General

A very minor crop among the Zande. As important as eleusine among the Balanda.

Varieties

No data on culinary qualities, except that *mangbagu* is said to be no good for beer.

Cultivation

Zande: (a) Sown among early maize in April for harvest in December. (b) *Mangbagu* sown in July among first-sown eleusine to give small crop in December, when it is cut down to throw up ratoons in first rains and give its best crop in July, after which it is uprooted.

Balanda: Sown in April-May, close round homesteads to facilitate bird-scaring. Interplanted with cassava, sweet potatoes and miscellaneous food plants. Said to be grown for 5-6 years or more on same land, the trash being burnt on it shortly before planting. A little sown among eleusine. Harvest December.

Storage

Zande: In head; often mixed up with eleusine in the store. Complaints of speedy insect attack unless threshed and stored in smoky place.

Balanda: In head in grainstore. No complaints of insect attack; will keep round the year.

Utilisation

Zande: Ground to flour for porridge, usually mixed with eleusine. *Kisra* very occasionally made in more sophisticated homes.

Treatment

(a) *Threshing*: As eleusine.

(b) *Flour*: Dry method as eleusine. Wet method: pounded to loosen husks, winnowed, put in water overnight, ground wet, set aside for another night, sun-dried. It dries in small lumps which are easily ground down to flour. This method, preferred as being easier grinding, gives a slightly sour taste to the flour which is liked.

(c) *Porridge or pap*: As for any flour.

(d) *Kisra*: Made of a pouring batter of flour and water, left to soak anything from a few hours to 2-3 days, undergoing acid fermentation. Spread thinly on very hot iron sheet well greased, left for about half a minute, peeled off as thin soft wafer. Served as main dish with stew or sauce. May be sun-dried for taking on a journey.

MAIZE (4)

General

An important secondary cereal among the Zande, declining to a minor food northwards from Tambura.

Varieties

No consumer preferences expressed.

Cultivation

Zande: Main crop sown March-April, mostly interplanted with early groundnut crop, but a little in pure stand on particularly good patches of ground such as mounds of old house-sites. Small amounts, usually the first to be planted, are grown in the homesteads on ridges thrown up round the compound. A very few people plant little patches on low-lying damp land as early as February, for eating from May onwards. Main harvest, July. A late crop of varying importance is planted serially among the eleusine and harvested from October onwards.

Balanda: One crop only, planted April, ripens August.

Storage

Cobs in sheath hung up in bundles on trees or racks in compounds. Left till rain starts again in earnest, when what remains after sowing is taken in and eaten. Heavily weevilled by that time. Cobs set aside for seed may be strung up round the apex of the roof of hut or store until thoroughly dry, and then hung inside where smoke will reach them. Where no reason to fear depredations, cobs may be left on plants as long as 2 months after ripening, till a convenient time to bring them in.

Utilisation

Zande: For food: on cob, green or ripe, or as flour (rare). For beer, malted with eleusine. Bulk of crop reserved for beer. Cobs and waste burnt for potash.

Balanda: Mostly eaten as it ripens; rarely used for beer.

Treatment

- (a) *On cob*: Roasted or, less commonly, boiled while green or newly ripe.
- (b) *Whole grain*: When too dry for eating on cob, grain may be removed and boiled whole, especially for making a dish of cowpeas and maize cooked together.
- (c) *Flour*: Dry method reported among Congo Zande not seen. Grain soaked 12-24 hours, and ground or pounded wet. Two more sophisticated methods in Appendix III.
- (d) *Porridge or pap*: As for any flour. Pap, slightly sour-tasting, is eaten alone as a rather special treat. Stiff porridge eaten with usual side dishes. Both are rare.
- (e) "*Bread*" (*kpakuta*): Stiff dough of flour and water shaped into long rolls, tied up in banana leaves, put into warm water and covered with more banana leaves, boiled one hour. Eaten hot or cold, alone or with paste of groundnuts or sesame. Honey or mashed ripe bananas may be mixed in the dough. Special purpose, for a journey.
- (f) *Kisra*: As sorghum, q.v. Found in sophisticated homes only, when no sorghum available.
- (g) *Beer*: See Section IX.
- (h) *Potash*: See under Minerals.

RICE (2)

General

A very minor food. A few tiny patches of dry rice were seen in Ukua and Momboi, and fewer still in Madi and Taba; none further north. Introduced from Congo only in last few years, but rapidly finding favour among cultivators on the richer soils south of Yambio.

Cultivation

Sown in June in plots of 100-200 sq. yds. only, in the miscellany round the houses. Favourite sites, ant-hills. Harvested October-November.

Storage

In husk. Hulled as required for use.

Utilisation

As a very occasional replacement for the usual porridges.

Treatment

Put into cold water, brought to boil and cooked till soft. Amount of water judged so as to be all absorbed. May be served with honey or, in sophisticated homes, sugar; or be cooked with salt for serving with meat or fish stew.

BULRUSH MILLET (5)

Zande: An occasional interplant in eleusine fields. Stored and used along with eleusine.

Balanda: Small amounts interplanted in eleusine. All mature heads seen 1947 heavily infected with a black mould. Some informants claimed it as main staple in their childhood, abandoned for cultural reasons after appearance of certain weeds. Stored and used with eleusine and sorghum.

SWEET SORGHUM (1, 128)

General

A sweet-stemmed sorghum grown as part of the miscellany round the houses. *Balanda* grow larger amounts than *Zande*.

Cultivation

Zande: Sown in April with early maize. Cut green for chewing from July onwards, a small secondary growth springing up from those plants cut early while rain still plentiful. A little allowed to mature for seed, harvested December. Another variety, reported common in south and east, ratoons like *mangbagu* (see under Sorghum) and give its best crop in the following June and July.

Balanda: As main sorghum crop.

Storage

Mature heads stored as other sorghums.

Utilisation

Zande: Cut green during latter half of rains particularly September-October, and the stem chewed for its sweet juice.

Balanda: As *Zande*, but some also allowed to mature and the grain mixed with other sorghum for beer.

PENZI (6), TUDU (7)

General

Wild grasses found only in hills about forty miles north of Tambura. Produce edible seeds, not unlike rice. Said to be cooked like rice.

Season, July. The Balanda of the immediate neighbourhood collect and eat both during a short season. Relished as a change from porridge, a certain amount being sent in to the Chief in Tambura.

STARCHY ROOTS AND FRUITS

CASSAVA (15)

General

Zande: Main staple of diet. Increasingly replacing eleusine, most extensively in Tambura area and in certain groups affected by wage-earning. Has overstepped its valuable and legitimate function in the food economy, viz. a reserve against bad harvests and a stand-by for the pre-harvest period.

Balanda: Firmly established here also, figuring more prominently in homestead and diet than had been expected. Tides over marked scarcity period before grain harvest, but position needs watching here too for signs of decline in grain acreage, i.e. replacement instead of supplementation.

Varieties

Bitter, requiring preparation to remove toxic element. Sweet, which can be eaten fresh. Preferences relate to speed of maturing and resistance to mosaic, not to differences in cooking qualities or taste. *Gbazamangi* (27 months) in south, *karangba* (15 months) in north, are commonest bitter varieties. *Mava ende* or *mope* (9 months) is commonest sweet variety everywhere.

Cultivation

Zande: Planted widely spaced through any other crops, and in second year may be underplanted with eleusine. Sweet varieties usually concentrated near houses, to be readily at hand when needed, and because most liable to depredations by wild pigs. Long-standing varieties left to fend for themselves in long grass in later stages. Planting throughout rainy season, harvest any time. No steps taken to protect from bush fires.

Balanda: Similar cultivation but, except for *karangba* which is exceptionally bitter and said to be poisonous to wild pigs, not much planted in fields at any considerable district from homesteads. Plant growth less luxuriant than further south, with none of the abundant volunteer growth from old cultivations often seen among the *Zande*.

Utilisation

Bitter or sweet kinds dried for flour, and often mixed with eleusine. Sweet kinds roasted or boiled, as the chief stand-by or extra food for satisfying hunger. Cassava fibres used as make-weight in inferior beer, and may be combined with malted eleusine to make fermented pap for children and nursing mothers. Leaves (*gadia*) eaten in dry season or very early rains when more popular kinds not well available.

Treatment

- (a) *Flour*: Tubers soaked for several days, pounded to wet pulp (*bamukandi*), set aside for 24 hours, sun-dried into small lumps which are ground to flour as required, or may be sold.
- (b) *Porridge, or pap*: As for any flour.
- (c) "Bread" (*kpakuta*): Wet cassava pulp may be prepared like maize bread, q.v.

- (d) *Fresh tubers*: Roasted or boiled, with or without their skins. Eaten alone or dipped into a paste or sauce.
- (e) *Leaves*: See under Leafy Vegetables.
- (f) *Beer*: See Section IX.
- (g) *Soured pap*: Cassava fibres made into a sort of porridge, cooled, mixed with cold water and malted eleusine, and allowed to stand overnight.

SWEET POTATOES (9)

General

Important secondary staple during half the year. Regarded as a woman's crop.

Varieties

Mostly white or with red skins only. Varietal names confused; many people could not name the varieties they were growing. Preferences apparently based on sweetness.

Cultivation

Zande: Patches interplanted in the garden miscellany, any time during the rains. Once established, they carry on by volunteer growth from year to year. Harvest September to March or April. Usually planted on flat and allowed to creep where it will but the more energetic throw up heaps or ridges and get a greater yield. When rains set in, remaining crop must be lifted quickly to prevent rotting in the ground.

Balanda: Similar, but little if any carry-over by volunteer growth, and cultivation tends to be in rather better defined plots than among the *Zande*.

Storage

Lifted as required, will not store except as *akpakarakpi* = dried slices.

Utilisation

Tubers eaten alone or dipped in a paste or sauce, in place of porridge or as an extra food for satisfying hunger, like fresh cassava. Leaves eaten chiefly in dry season and very early rains when more popular kinds not available.

Treatment

- (a) *Fresh tubers*: Most commonly boiled unseasoned, before or after peeling. Also roasted in ashes.
- (b) *Akpakarakpi*: Tubers peeled, cut in thin slices and sun-dried. When required, put in water and boiled.
- (c) *Leaves*: As other leafy vegetables, q.v.

YAMS (13, 16, 18, 18a)

General

A subsidiary food used irregularly and seasonally in place of porridge. Not to be compared in importance with sweet potatoes. Regarded as a woman's crop.

Varieties

Wild and cultivated. Cultivated yams mostly seen as single plants growing over a tree in the compound, but occasionally in greater

numbers grown as fence or on the ridge surrounding the compound. Certain wild yams seldom used except in time of hunger. Preferences in cultivated yams said to relate to yields and not to flavour or cooking qualities.

Cultivation

Perennial. Planted at time of lifting in dry season. Harvest: cultivated yams, dry season; wild yams, October to December and March to May.

Storage

None.

Utilisation

Tubers for food.

Treatment

(a) *General*: Boiled or roasted; eaten alone or, rarely, dipped in a paste or sauce.

(b) *Bayungumba*: Toxic unless specially treated. Boiled, peeled, sliced finely, and put in basket in flowing water for 3 days to wash out bitterness. May then be eaten as it is, or dried and stored. To cook after drying, boiling water poured on and allowed to stand a few minutes. May then be eaten alone or mixed with sesame or groundnut paste or honey. Alternative method of treatment—boiled first, then soaked in cold water one day and water thrown away, after which ready for eating.

OTHER STARCHY ROOTS (10, 11, 12, 17)

Akpongodi, bagbuza, baime, manzi

General

Foods of very occasional use, once or twice in a year probably. *Cocoyams (manzi)* seen in many homesteads, but seldom more than a single clump and all *Xanthosoma*. *Colocasia* not seen anywhere except Yubu Station. Regarded as a woman's crop.

Utilisation

Tubers boiled and eaten alone.

BANANAS (14)

General

Universally grown by southern Zande, less extensively in the Tambura Sub-District and very little in the northern area. A subsidiary food in infrequent and irregular use in peasant homes. Particularly a travellers' food, also readily bought by wage-earners.

Varieties

Many. Preferences based on flavour. Some men still believe that eating the dwarf *tingitingi* will make them impotent, but the idea appears to be losing ground.

Cultivation

Grown round homesteads, planted first half of rains. Garden rubbish may be piled up round the base but only erratically, although the value of this practice is recognised. The bottom of an old borrow-pit or other depression is regarded as a good site. Harvested intermittently throughout year, chiefly during dry season and on into April. Yields seem extremely poor with bunches of very few hands, due to lack of mulching.

Storage

None.

Utilisation

Fruit for food. Leaves and waste burnt for potash. Fibres used for string. Leaves sometimes made into fringed skirts for women.

Treatment

(a) *Ripe fruit*: Eaten raw, or occasionally mashed in maize or cassava "bread," q.v.

(b) *Cooked*: *Bagbagawa, Bangerekuari, Ridingondi* and possibly others may be boiled and eaten in place of porridge. If unripe, boiled in skins; ripe, peeled first.

(c) *Potash*: See under Minerals.

PULSES

PEAS AND BEANS (19-24)

Mung beans, cowpeas, earthnuts, pigeon peas (very rare), lima beans.

General

Very small amounts grown, for eating during a short season at harvest and sporadically thereafter. More found among Balanda, but still a minor food. Pigeon peas a recent introduction by Agricultural Department.

Varieties

Several of cowpeas. Individual preferences for different pulses vary.

Cultivation

Zande: Tiny plots of 100-200 sq. yds. grown near homesteads or in main fields, and scattered interplanting among other crops. If sown in large plots fungus diseases apt to wipe out whole plots of cowpeas and mung beans in few days. Plots may occasionally be mixed, e.g. mung beans and cowpeas, or mung beans and hyptis (see under Oilseeds). Earthnuts most commonly planted as edging to patches of groundnuts; believed to discourage ground squirrels in search of groundnuts. Climbing legumes grown over trees in homesteads or fields. Single bushes of pigeon peas very occasionally seen in homesteads. Planted June and July, harvest September to November; picking starts while still green. Earlier planting causes spoilage by excessive grain in later stages of crop.

Balanda: Cultivation similar to Zande but more sizable patches seen in main fields, even up to half acre in big families.

Storage

In pod or shell. All get heavily weevilled in a month or two, except mung beans which store well. Seed reserve sometimes seen stored in bottle gourds securely stoppered, or wrapped in grass or leaves and hung in a smoky place, but these precautions not universal and many people short of seed through storage losses. Storage in ashes unknown.

Utilisation

Seeds, half or fully ripe, used for food.

Treatment

(a) *Half ripe*: Cowpeas—boiled in pod, shelled and eaten alone. Or may be shelled first. Lima beans—shelled, boiled, skin removed, boiled again and combined with a sauce, for eating with porridge.

- (b) *Ripe*: All kinds—shelled and boiled in plenty of water, salt added if liked. Cowpeas and mung beans may be cooked together, or cowpeas and whole maize. Water drained off, surplus water from peas and beans often drunk because it is "sweet." Peas and beans make a soft mash, earthnuts remain harder and more distinct. Eaten alone.
- (c) *Sauce (apirinda)*: Dry cowpeas or lima beans roasted, pounded and skins winnowed off, mixed in cold water, brought to boil, sesame or groundnut paste and seasoning added, boiled again till well cooked. Served as sauce to eat with porridge.

OILSEEDS

GROUNDNUTS (26)

General

Zande: Principal oilseed. Frequency of use rivals cassava and nutritional importance in the diet cannot be over-estimated, especially with such a poor quality staple as cassava. Production for home consumption needs considerably increasing to level up supplies through year before any should be regarded as surplus to local requirements. The new cotton rotation encourages this, because every old cotton plot is land ready cleared for groundnuts at start of new season. Only women weed groundnuts; this, and possibly similar restriction on harvesting, limits area.

Balanda: Secondary to sesame, also a valuable food-stuff.

Varieties

At least four. *Mangirima*, giving four red nuts, a fairly recent introduction from Congo, are very popular because they mature more quickly and are said to contain more oil than ordinary *Zande* nuts (2 seeds, small). *Mangirima* therefore specially sought after for planting on land intended for eleusine afterwards.

Cultivation

Zande: Fields of nuts and maize planted as soon as rains begin from March onwards, near houses and in more distant fields; plots also interspersed in the miscellany round houses. Planting continues till early June in Yambio Sub-District and end June or just into July in Tambura Sub-District. Later planting results in virus disease. Harvest August to November, the first-lifted nuts being followed by eleusine and some of the later-lifted by cucurbits.

Balanda: Generally similar but planting starts later owing to later onset of rains and none harvested in time to be followed by eleusine, even if soil conditions in this area would permit double-cropping. *Mangirima* not yet spread into this area to any extent.

Storage

In shell, in baskets in store. Not much attacked by insects.

Utilisation

Seeds for food. Some oil extracted for external application; very rarely used for cooking.

Treatment

- (a) *Newly lifted*: Shelled and boiled whole, eaten alone.
- (b) *Fresh or dry*: Shelled, roasted and eaten alone.

- (c) *Paste*: Shelled, roasted, inner skins removed, ground (up to 4 times) to smooth oily paste. Chillies may be ground with them and sometimes salt. Eaten with starchy foods, or mixed with some other cooked food e.g. mashed cowpeas, *bayungumba*, solanum leaves. Or diluted with water to form a sauce for vegetables or meat or fish.

SESAME (38)

General

Secondary oilseed among *Zande*, principal one among *Balanda*.

Varieties

Several. No consumer preferences expressed.

Cultivation

Zande: In small plots or intersown in eleusine, proportions of the two varying greatly. In Yambio Sub-District often sown in patches in third or fourth year before abandoning a field. Planted June to August, harvest October to December. Heads stacked, head upwards, on vertical racks to dry. Small amounts required for immediate use shelled by hand; larger amounts for storage shelled by holding bunch in one hand over mat or big basket and beating with stick. Threshing completed by January.

Balanda: Some in big fields (up to several acres), some in the mixed cultivation round homesteads. Planted May-June, harvest September-October. None sown with eleusine.

Storage

As seed, in calabash or baskets in grainstore. Keeps well.

Utilisation

For food, and as a vehicle for a number of medicines. Makes sauce of choice for meat and fish. Oil extracted for external application, rarely used for cooking except in sophisticated homes.

Treatment

- (a) *For Food*: Steeped in water a few minutes, lightly pounded to loosen out coat; thoroughly dried in potsherd over fire, stirring constantly; husks sieved or winnowed out; seeds returned to fire for further roasting, then ground to paste for use as any other paste.
- (b) *For Oil*: Steeped and pounded as above, sun dried and winnowed, ground without preliminary roasting, and boiled to bring oil to surface. Or the paste may be put in a wooden dish, a very little boiling water poured over and then kneaded by hand to express the oil.

CUCURBIT SEEDS

See cucurbits under Leafy Vegetables.

HYPTIS (25)

General

A minor oilseed, chiefly among the *Balanda*. Less popular with *Zande*, but a large proportion grow a little of it. Very low-yielding, with aromatic seeds. Eaten sporadically through the year.

Varieties

Distinct black and white varieties.

Cultivation

Broadcast with eleusine. Harvested with eleusine, any heads not ready then being left uncollected.

Utilisation

Roasted and ground to paste for making sauce.

OIL-BEARING TREES

Oil palm (35), Shea nut (34), Meni oil (39), other trees (37 and 39(a)).

General

All play a very minor part in the diet, particularly the last two.

Oil palm

Bearing in Government stations, where oil is prepared and used for institutional feeding. Trees growing in missions and here and there among the people. Oil not found in use by peasants in any area visited, but much liked where given in institutions and its use may reasonably be hoped to spread in the course of time as trees mature. Used in meat stews and with green leaves or cooked fresh cassava dipped into hot red palm oil. Reported to be also liked added to groundnut sauce.

Shea nut

Tree found mostly in northern areas. Fruits collected April. Fruits eaten. Oil extracted from nuts by roasting till black, grinding to paste, and boiling to bring oil to surface. Oil used for cooking meat, fish or any vegetable. Also applied externally by Balanda, but not popular among Zande on account of its smell. Supplies small and soon exhausted.

Meni Oil

Found in northern areas and more rarely elsewhere. Fruits collected February. Oil extracted as shea nut, and uses similar, but supplies said to be much smaller. Better liked than shea nut because no smell.

Nzungu (37)

Oil extracted from seeds and used for food or externally. Extraction as above. (Leaves when very young cooked as a herb with meat or mixed with mashed cowpeas.)

African breadfruit (See Appendix I, item No. 39a).

Seeds roasted, cracked, and kernel ground to a paste for sauce. May also be eaten without grinding. March-April.

ANIMAL PRODUCTS

MEAT

General

A highly prized subsidiary food. Most is obtained by hunting, therefore supplies are usually dried. Northernmost areas, where population sparsest, get most. Despite restrictions on use of nets during dry season, this still remains the recognised hunting season and meat consumption rises then. Cattle brought in on the hoof by traders for killing off before they die of "fly," and small dairy herds maintained with some difficulty in Government and Mission stations.

Salted meat dried in strips in a neighbouring district being introduced at cotton markets and in institutional feeding.

"Meat" includes a variety of creatures such as tortoise, snake (cobra, python and at least two others), crocodile, frog, large snail, crab, bushrat (a delicacy to some Europeans as well as Azande), field-mice, and in fact anything which can be caught and cooked.

Utilisation

Cut in pieces, boiled with or without vegetables and potash, sauce materials (occasionally oil) and seasoning added, and all boiled again. Sesame and groundnuts are the sauce of choice with meat.

Hunting

Traps, nets, spears, arrows, a very few firearms.

BIRDS

General

Very little eaten. Chickens only occasionally killed, usually for a guest or in connexion with poison oracle (*benge*) which does not render them unfit for food. Taboo to some women, and to many (? most) during pregnancy and lactation; women seldom get any anyway, because not enough to go round for them after the husband and his guest(s) have been fed. Many families have no chickens, few have more than two or three apart from young ones, among whom the survival rate is very low. Chicken population fluctuates, with epidemics and generally harsh conditions.

Guinea fowl very occasionally recorded. Small birds constantly hunted by boys with catapults, occasionally with success, and snared with various forms of springs.

Utilisation

Treated like meat.

EGGS

General

Very rarely eaten, too scarce, needed for hatching. Addled eggs eaten after rest of clutch hatched out. Some (? many) women fear them, but real strength of this taboo impossible to judge when opportunities for eating them are so rare, and it may well be really more a manifestation of the usual dislike of the unfamiliar. Considered by some to be a good food for young children.

Utilisation

Hard boiled, shelled and cooked whole with usual sauces (preferably sesame) for eating with porridge.

FISH

General

A minor food of varying popularity, available in dry season when streams low and pools can be dammed. Many families relish it, but sufficient are unaccustomed to it (whether by choice or lack of easy opportunity for fishing) to cause protest at first over its introduction in communal feeding.

Fishing

By women chiefly. Zande mostly with small nets, occasionally aided by poisons; Balanda almost exclusively by poison, collecting the

dead or stupefied fish by hand or in baskets. Both tribes fish by damming up shallow pools during dry season, making expeditions of several days at a time to their more distant fishing places and drying the catch to bring home. Family rights are recognised over the bigger pools. Fish caught are small. A little dried fish, including bigger kinds of fish, comes in from other districts.

Utilisation

Cooked like meat. Dried fish may be pounded to a powder first. Sesame again the sauce of choice.

MILK

Available only in small quantities in Government and Mission stations, where a few senior wage-earners purchase a little.

TERMITES

General

The most highly prized delicacy known to the Zande. When the white ants are swarming, their capture takes precedence over all but the most essential occupations. Individual rights over ant-hills are recognised, at least in the case of *akiodo* and *abio*, and disputes arise over priority of claims. General name, *age*.

Varieties

Four main divisions (themselves sub-divided), of which the fourth is of small account:—

1. *Akiodo* (*Macrotermes natalensis* Hav.), from which alone oil is extracted. Swarms at night after the first rainstorms, i.e. February-March for most of the district, but later in the northernmost area, where none had yet flown by late March. One main swarming from each hill. Large.
2. *Abio* (*Macrotermes bellicosus* Smeath.) swarms at night in May-June, intermittently. Large.
3. *Asuwa* swarms in mid-afternoon in September-October, intermittently, but in alternate years only. None flew in Sudanese Zandeland in 1947, though they were reported to be flying on the other side of the divide in French territory. Small.
4. *Ali* flies in late afternoon in September-October, in small dribbles. Of minor importance, many people do not bother about them. Small.

Other kinds recorded are:—

5. *Abamilikondo* (*Termes destructor* Smeath.): Small swarms about 3 p.m. in first rains. Eaten on the spot, mostly by children.
6. *Amatindi* (*Microtermes thoracalis* Sjost.): Small swarms about 8 a.m. in early rains. Eaten as 5.

Methods of Capture

- (a) Night-flying ants, by means of grass flares to whose light they are attracted, the ground round the hill having been previously cleaned and holes dug into which the ants are swept as they fall to the ground. Bright moonlight interferes with the proceedings because many of the ants fly up towards the light and are dispersed.

- (b) Day-flying varieties, by covering the exit-holes with specially designed baskets or some improvised covering.
- (c) When signs are observed indicating the death of the queen in an *akiodo* hill, the whole hill may be excavated to get out the ants for food. Not done with *abio*, which build much harder hills and live deeper below the surface.

Storage

Roasted and sun-dried (except *akiodo*, for which the roasting is omitted), the wings being winnowed out. Stored in calabashes in the grainstore. Supplies are usually exhausted within a few weeks of the end of the swarming season. Oil is stored in gourds, bottles, etc., and sparingly used. Some was seen which had been hoarded right round to the next season, but this is exceptional. In general, supply is small and soon exhausted.

Utilisation

For food, either eaten alone with salt without further cooking, or made into a paste or sauce. Oil used as any other cooking oil, and for external application for which it is the oil of choice.

Treatment

- (a) *Extraction of oil*: Sun-dried ants are heated with a little water, put into some form of bag and pressed by hand on a small platform of sticks so arranged that the liquid is collected in a pot. Details of arrangements vary, heavy stones sometimes being used. The mixed oil and water is then boiled to remove the water. The residual ants are sun-dried and stored for eating. Oil extracted—about 25% by weight of the original sun-dried ants.
- (b) *Paste*: Dried ants pounded, salt added. Oil may be added, either ant oil or meni oil (39) irrespective of whether the ants used for the paste have had their oil extracted or not.
- (c) *Sauce*: Dried ants ground (twice) to smooth black paste, stirred into water, seasoned, boiled for a few minutes. The water may be the liquid in which green leaves are already cooking, particularly Jew's mallow (53). They may also be ground raw, perhaps with leaves of sweet potato or rosella to "make them sour," and then lumps of the paste may be boiled with salt or potash or both.

INSECTS (except Termites)

General

Very minor foods sporadically eaten, with considerable local differences. One kind of caterpillar has quite a marked season in some places in November, and another in January. With sophistication contempt and disgust for these foods develops, and many peasant families are now shy of admitting their consumption, saying, "Only our old people eat them." In their season, caterpillars were to be seen drying in many homes and in January bundles were observed going to market.

Varieties

- (a) *Caterpillars*: At least five kinds, known by the trees they feed on. Could not be identified without adult forms.
Zande names:—
abakiwe, akpatakunya, akpoyo, anangiriga, andiri.
- (b) *Grasshoppers*: Short-horned (*Acanthacris ruficornis*, Sjost.) and long-horned (*Homorocoryphus* sp.). Former described as having no special season, and as "hard like locusts" and not oily. Latter "very oily," season November, "better than locusts." Zande names:—*bakirigba* and *nzede.*
- (c) *Locusts* when they come.
- (d) *Crickets* (*Brachytypes membranaceus*, Dru.): Best season, June-July. Taboo to children for fear "they will not be able to hear for the singing in their ears." Zande name, *kperende.*
- (e) *Ants*: (i) *Abandakulanzeme* (*Carebara colossus* Gerst.). Said to be caught a few at a time about midday in March. "Very oily." (ii) *Anzike.* Tree ants. Red. Said to be little eaten now except by old people.

Utilisation

- (a) *Caterpillars*: Hair singed off by roasting in potsherd. Sun-dried and used for stew with usual sauces.
- (b), (c), (d) *Grasshoppers, locusts, crickets*: Roasted and eaten with salt.
- (e) *Tree ants*: Ground and mixed with hyptis for a sauce. Or salted, tied up in a leaf and cooked in hot embers. Others roasted and eaten.

VEGETABLES

LEAFY VEGETABLES (40-67c)

General

Out of 29 leafy vegetables listed, only the following are of importance:—

- Amaranths (48); Various. Includes *A. patulus* Bertol. and *A. caudatus* L.
Jew's mallow (53): Several varieties.
Solanum (60): Several varieties.
Pumpkin (43, 44):
Cassava (46): Of sweet or bitter varieties.
Sweet potato (41):
Rosella (56): Balanda chiefly.
Deccan hemp (58): Balanda only.

Preferences

Preferences expressed varied, ranging among the following:—

<i>Zande</i>	<i>Balanda</i>
Jew's mallow (53)	Rosella (56)
Solanum (60)	Deccan hemp (58)
Amaranths (48)	
Pumpkin leaves (43, 44)	

(Okras were everywhere generally liked by most people above all leafy vegetables.) Occasionally a favourable comment on cassava leaves was received, but usually these and sweet potato leaves were only tolerated. Zande regarded Deccan hemp as inedible. Balanda

praised it highly. Zande liked rosella only with fish (some said also meat), Balanda rated it highest among leafy vegetables. Cocoyam leaves (17) not eaten because of burning sensation caused in mouth by their minute crystals. This can usually be overcome by discarding cooking-water, but attempts to do so with colocasia growing in Yubu station were unsuccessful.

Cultivation

Amaranths, Jew's mallow, solanum and rosella are cultivated in the sense that seed is scattered round the homesteads. Apart from that, they fend for themselves with only rare instances of more deliberate cultivation. Deccan hemp was found planted in patches among the other crops by the Balanda. For pumpkins, cassava, sweet potatoes and okras see under appropriate headings. Other leafy vegetables are found as occasional plants round the houses (45, 49, 50, 62, 65, 67 (b)), others wild. Except for cassava and sweet potato leaves, which are available all or a large part of the year, the leafy vegetables come on between April and December in a series of flushes.

Storage

A few people dry small amounts in November. Solanum (60) and Jew's mallow (53) were seen; some informants said amaranths are also so treated, but others denied it. Rosella (tender shoots, calyx and young fruits) dried by Balanda, and sometimes by Zande. Dried leaves stored in any suitable container in house or grainstore.

Utilisation

For food, usually in small quantities as part of the side-dish accompanying porridge. Sometimes eaten in greater quantity as a main dish, by women. Nursing mothers eat them to improve their milk supply.

Seldom eaten without a sauce made of ground oil-seeds or sometimes okras (75). Potash used to break down fibres and shorten cooking-time. Specially necessary with cassava, sweet potato, Jew's mallow (53) and fibrous wild leaves; less so with amaranths (48) and solanum (60) and not at all with pumpkin leaves.

Several kinds may be combined in one dish and leaves may be added to meat or fish stew, except amaranths and pumpkin leaves which are kept for dishes in which leafy vegetables are the main feature. Leaves which go slimy like Jew's mallow (53) are liked for the consistency they give to the dish.

Treatment

- (a) *Side-dish.* Put into boiling water, potash added if required, cooked fast or slowly (uncovered) till soft, sauce materials and/or seasoning stirred in, all boiled for several minutes. Covered and set aside till wanted, which may be anything from a few minutes to several hours. Eaten hot tepid or cold; may be re-heated if quite cold. No water discarded unless amount has been misjudged, when a little may be removed before adding sauce materials.
- (b) For eating alone. As above, but less water, to give a drier mixture which can be handled without the help of a lump of porridge.
- (c) *Cassava leaves*: Must be pounded to remove toxic element. Then treated as above. Occasionally mixed with sesame or

groundnut paste, wrapped in leaves and boiled; in particular, for taking on a journey. A fungus (*akpangi*) may be included in this dish.

- (d) *Solanum leaves* (60): In addition to ordinary uses, may be mixed with groundnut paste, wrapped in leaves, and boiled; particularly for taking on a journey or as a gift to a neighbour.
- (e) *Drying*: Stalks and coarse leaves removed, leaves roughly cut up, spread in sun to dry. No blanching.

CUCURBITS (27, 28, 29, 30, 31, 32, 33, 36)

Pumpkins, gourds, calabashes, inedible melons, cucumbers.

General

Minor foods, in various food categories—fruits as vegetables, seeds as oilseeds, leaves. Hard shells also serve as domestic utensils. Widely grown in small quantities.

Varieties

- (a) *Pumpkins*: Main divisions—*boko* (plain leaf, plain-coloured fruit of various shapes, orange-yellow to off-white, soft skin), and *besende* (flecked leaves, flecked fruit of various shapes, green and white or smooth-skinned and yellow, hard skin). *Besende* very much preferred. Both kinds sub-divided, and valued according to differences in flavour and texture.
- (b) *Inedible fruits*: *Lagenaria*, *citrullus*, *luffa*, bitter cucumber. Grown for their seeds. *Lagenaria* (*kpagu*) is highly prized, found chiefly in Yambio Sub-District, none seen north of Tambura. *Citrullus* (*datiro*) also less common northwards though some seen in all areas. Some elderly Balanda claim for it, as for bulrush millet, a much greater importance in the past until, with the appearance of certain weed grasses, it began to fail. *Luffa* (*bangombe*) seen in all areas except extreme north. Seemed to be commonest round Tambura, though so little grown that a sample was difficult to get. Bitter cucumbers also grown in very small quantities. Distinguished from edible kind by plain colour.
- (c) *Bottle gourds, calabashes*: Grown everywhere in varying amounts, primarily for domestic purposes and only incidentally as food.
- (d) *Cucumbers*: edible, striped green and yellow, grown in small amounts in all areas.

Cultivation

- (a) *Pumpkins*: Planted early rains, fruiting latter half of rains. Length of season varies with local conditions of soil and water, being shortest in the extreme north where sowing is impossible before April and plants have dried up by end October. Under more favourable conditions, season extends to end November.
- (b) *Inedible fruits*: Conflicting information. In southern areas, early plots of *lagenaria* (*kpagu*) said by some to be planted with maize, and *citrullus* (*datiro*) in July, but practically none seen in Tambura Sub-District until the late planting. In both sub-districts these crops and bitter cucumbers are planted in small plots on land from which groundnuts are harvested in

September and October. Harvest according to planting. Late-planted *lagenaria* appeared in Yambio market in January, while late *citrullus* was not ready for sale, *i.e.* cleaned, till March. *Luffa* planted in early rains to climb over trees in eleusine fields, ripens December.

- (c) *Bottle gourds, Calabashes*: Planted early rains to ripen end of October onwards.

Storage

Seeds stored in bottle-gourds or calabashes, in grainstore. Store well. Fruits and leaves eaten fresh only.

Utilisation

For food in various forms, and domestic utensils.

Treatment

- (a) *Pumpkins*: Boiled in segments with skin on, or whole, and eaten alone. Or may be mashed after cooking and sesame or groundnut paste stirred in; this also eaten alone. Young fruits and flowers included in vegetable stews.
- (b) *Seeds*: Kernels of seeds of all the cucurbits, not only those specially grown for their seeds, are eaten. Shelled, roasted, ground and used like other pastes. Seeds of boiled pumpkins may be broken open and the kernel eaten.
- (c) *Bottle gourds and Calabashes*: Whole fruit of bottle gourds may be boiled and eaten when very young and tender. Balanda also sometimes eat them mature when not too bitter. For domestic utensils, when fruit is ripe and shell has hardened, hole is cut in it and it is immersed in water until pulp has rotted. Shell then cleaned, and seeds stored for food.
- (d) *Edible Cucumber*: Eaten raw.
- (e) *Leaves*: Of pumpkin and bottle gourd, the latter chiefly by Balanda. See under Leafy Vegetables. Pumpkin leaves extremely popular.

OKRA (78)

General

The most widely and regularly eaten of all vegetables. Prized for giving the sauce a good consistency, but some people dislike its sliminess.

Varieties

Several. *Bazeringe* liked for being specially slimy, *mboyo baramu* for its quick growth.

Cultivation

Sown among other crops round houses and in fields throughout planting season, with a few dry-season plants where conditions permit. First supplies eagerly awaited to replace dwindling dried stocks. Harvested serially according to planting.

Storage

Sliced and sun-dried for use throughout dry season. Stored in any suitable container in house or grainstore.

Utilisation

Fruits and leaves eaten, the latter rarely.

Treatment
 (a) *Fruit*: Fresh-cut in pieces and cooked in any of the usual side-dishes to eat with porridge. Dried-pounded or ground to powder and used as a sauce ingredient.
 (b) *Leaves*: As other leafy vegetables, q.v.

FUNGI (126)

General
 A minor food of the rainy season, eaten as and when they happen to be found.

Varieties
 All varieties liked, but particularly *akisi*, *degbe* and *ngede*.

Storage
 Sometimes sun-dried, especially *ngede* which will keep for some little time.

Utilisation
 As stew ingredients.

Treatment
 As any vegetable. *Akpangi* used specially with cassava leaves and sesame, see under Leafy Vegetables.

OTHER Vegetables (68, 69, 77, 78)

Bagbodi (tree), spring onions, rosella, tomatoes

General
 Young fruits of *bagbodi* very occasionally used in side-dishes. Spring onions and tomatoes rarely grown, and then in small amounts for occasional use. Young fruits of rosella, fresh or dried, used with leafy vegetables, q.v.

Treatment
 Cooked along with other stew ingredients.

JUICY FRUITS AND STEMS

FRUITS (79-125)

General
 A long list, but none save mangoes eaten in any large quantity. A long way second, come bananas (see under Starchy Roots and Fruits), then pineapples. Other cultivated fruits (guavas, citrus, pawpaws, mulberry, Cape gooseberry) practically non-existent except in or near Government and Mission stations, except limes which are found sporadically, especially at bush-shops which make a lime and honey drink for travellers. Very little use made of wild fruits, which can often be seen left untouched close by the homesteads. No systematic collection, barring occasional expeditions by children. Many are very acid, some give only a fibrous pulp to be chewed and spat out, e.g. *borassus* palm. Mangoes universally eaten in large quantities from March to June. Starting and finishing dates vary noticeably in different localities.

Utilisation
 Eaten as they are, except limes, whose juice is squeezed and mixed with either honey or chillies. Sophisticated homes may use sugar with it, and the most sophisticated will occasionally squeeze lime juice on to a "salad" of raw onions and other recently introduced vegetables.

STEMS (128-130)

General
 Stems of sweet sorghum, cut green, and (in Yambio area) sugar-cane are chewed for their juices. Stem of a wild fig (130) said to yield a refreshing juice.

MISCELLANEOUS

STEW INGREDIENTS (131-133)

General
 Rarely used.
Anzeri: a riverine tree whose fruits yield a kernel which may either be eaten as it is, or ground to a paste for sauce when ordinary ingredients are scarce.
Gbadangi: a creeper whose crushed stem yields a slimy liquid; used with groundnut paste to make a sauce. Juice may also be drunk alone.
Kpoyo: a green stick may be pounded and cooked in a termite sauce to which it gives a slimy consistency.
Borassus palm roots: young root bark may be used as a stew ingredient in dry season.

FLAVOURINGS (134, 135)

Chillies: Widely used as a condiment all year round, fruits being dried and used as a powder for the short season during early rains when not available fresh. Growing wild, or volunteer plants in homesteads. (One of principal exports of district.) Ground with sauce materials or, in sophisticated homes, served separately as a powder.
Mint: Very rare. Used as flavouring for sauce.

HONEY

Collected for export market and occasionally mixed in pap, rice, or "bread" of maize or cassava flour. Makes an unfermented drink with lime juice and a fermented one (*duma*) with a starter of bulrush millet.

SUGAR

Not seen outside more or less sophisticated homes.

BEVERAGES

Tea and Coffee: only in homes of a few wage-earners.
Honey: See above.
Beer: Universal; see special section of report.
Cooking-water of sweet potatoes and cowpeas is often drunk.

MINERALS

POTASH—Native "Salt" (136-162)

General
 Made from ashes of plants listed in Appendix I.
Method of Production
 Water allowed to filter slowly through ashes. In small-scale production for immediate use, this liquid added to cooking water of stews. In large-scale production, ashes put into conical filter with water seeping through into pot below. Liquid then concentrated by

boiling, and resulting "salt" set aside as a lump or ball, in a broken pot. Covered with ashes and left four to five days to dry out. Sets in two fractions:—

- (a) Soft inner part, powdery, not much savour, sells at approx. 6 m/m. per 100 g.
- (b) Outer shell, hard, crystalline, good sharp flavour, sells at approx. 10 m/m. per 100 g.

About 2 kg. may be made at a time.

Utilisation

In cooking, used in quantities similar to ordinary salt, to soften food and cook it quickly. Particularly with the more fibrous leafy vegetables, hyptis and okras; also termites.

SOME ZANDE MEDICINES (163-213b)

INTERNAL USE

- Bagara* (168): For pneumonia.
- Bangiribakiki* (174): Infusion of roots taken for gonorrhoea.
- Bangirimvuru* (175): Infusion taken for pain in chest. See also external use.
- Bangiringama* (176): Antidote for snake-bite.
- Bingba* (180): Infusion taken for pain in chest.
- Dakadia* (181): Infusion of leaves taken for stomach-ache.
- Dama* (182): Infusion of roots taken for gonorrhoea. See also external use.
- Gbangagbe* (184): Antidote for snake-bite.
- Gengere* (188): Infusion of roots taken for sore throat. Also for gonorrhoea.
- Gorokuringba* (189): Antidote for snake-bite.
- Humugbe* (190): Cough medicine.
- Ngurumza* (200): For pneumonia.
- Nzere* (202): Cough medicine.
- Parabaso* (203): For dysentery. Also antidote for poisoning said to be caused by administering "hair of the ant-eater" in someone's beer. Effect of poison said to be swelling of the throat ending in suffocation.
- Ranga ziga* (204): Three kinds; informants vague on purposes for which used.
- Ranga ngurumba* (204): Given to sick children "when bodies go pale." Roots cooked with sesame for child to eat. Also applied externally.
- Ranga Bakiti* (204): Infusion of leaves used as an emetic in cases of poisoning. Root also eaten cooked in sesame, as antidote to poison.
- Rindiseke* (206): For gonorrhoea.
- Tukuri* (208): Infusion of pounded roots in hot water taken for stomach-ache.
- Udipia* (209): Infusion of roots taken for gonorrhoea.
- Ziga* (211): Cooked with sesame and taken as antidote for poison.

EXTERNAL USE

- Abagambo* (163): Leaves pounded and applied to fresh wound.
- Aduruko* (164): Leaves and stems ground and mixed in warm water for application for scabies, headache, fever.

Agundu (165), *Makpama* (193): Two very similar aromatic herbs. Crushed in water for smelling to relieve headache, or for external application for headache or fever.

- Anongbo* (166): Leaves pounded and applied to skin diseases.
- Azuangi* (167): Root used for eye inflammations.
- Bakaikpa* (169): Applied to wounds and syphilitic lesions.
- Bakatura* (170): Fruit juice dropped into wounds or applied to scabies.
- Bakaya* (171): Applied to leprous patches.
- Bambiri* (173): Applied to scabies.
- Bangirimvuru* (175): Applied to leprous patches.
- Batari* (177): Crushed for smelling to relieve headache; "it makes you sneeze." Also for fever.
- Bavutire* (178): Applied to abscess, to draw it.
- Bawirisangu* (179): Bark crushed and applied to wounds.
- Dama* (182): Dried fruit pounded, heated in sun and applied to relieve headache. See also internal use.
- Gasiambara* (183): For toothache.
- Gbarakuri* (185): For toothache.
- Gbugari* (186): Applied to chickenpox and scabies.
- Gbunga* (187): Castor oil, applied to scabies.
- Kubokubo* (191): Pounded leaves, or ashes, applied to sores. Leaves prepared in some way not clear for cupping (by means of a horn) to relieve headache.
- Kuma* (192): For toothache. (Note that its other use is for stupefying bees.)
- Mangayu* (194): Pounded leaves inserted in ear as counter-irritant in ear-ache. Said to cause blistering if left in too long.
- Mataria* (195): Ashes mixed with an oil and applied to head for killing lice.
- Mbazia* (196): Aromatic. Pounded leaves used for sponging down a person with high fever.
- Mvuowere* (197): Citronella. Pounded with water and applied to relieve headache.
- Ngbiringbiri* (199): Applied to tinea.
- Nzemekingoro* (201): Roots pounded in water and rubbed on to relieve headache.
- Ranga*, unspecified (204): Leaves pounded with water and applied to swellings on limbs "got from working in the long grass."
- Rangburangbu* (205): Sausage-tree. Ashes of fruit applied to wounds.
- Tomedari* (207): Juice put in eye when filaria worm passes through it.
- Wakayu* (210): For scabies.
- Zambara* (211): Ashes applied to scabies.
- Gero* (213a): For scabies.
- Kitika* (213b): For reducing inflamed swellings.

NO DATA ON MANNER OF USE

Ngbege (198): Unspecified "medicine for children." Probably should have been in list of magic plants.

POISONS

Arrow Poisons

Bakatura and *giango* : juice. (214-216)

Riga : Ashes mixed in oil and applied.

Fish Poisons

(217-223)

General

Used for stupefying fish by scattering on surface of dammed-up pools; smaller fish are killed by them.

Particular

Baranga, kundubaderi. Both act quickly. Pounded roots used raw. *Gbururi, Makoko, Mirizigba, Nzengere* : All require several hours to take effect. *Gbururi*—roots pounded and boiled. *Makoko*—pounded leaves; some say, also bark. *Mirizigba*—raw pounded root. *Nzengere*—ripe pods coarsely pounded and boiled.

Other Poisons

(224-225)

Kuma : root-bark burnt to produce a smoke which stupefies bees.

Seribasi : infusion of pounded roots poured into holes of ant-hills.

Perfumes

(226-229)

Appropriate part of plant dried, ground and mixed in oil for use by women. *Aduruko*—fruits. *Akuki, agbagi*—roots. *Mbazial*—leaves

Personal Wear

(251-254)

Bagadi. Inner bark beaten out into large sheets, used for loincloths, shorts, wrapping babies, etc. Unfortunately cannot be washed.

Bangiribakike : Seeds for beads.

Kato : Cotton spun by hand, rolling on thigh. Hand-woven into tiny pieces of cloth.

Pupuki : Grass skirts for girls.

Miscellaneous Domestic Purposes

(260-268)

Bagara : Leaves for mattresses. Wood makes fire-sticks for kindling.

Bakaya : Leaves used like sandpaper for smoothing wooden handles.

Dakpa : Leaves used in serving food.

Inga : Calabashes.

Kpakpa : Leaves used for washing face.

Nagbanga : Bottle gourds.

Ngbege : Handles of implements.

Sabuna pia : Roots make water "soapy" for washing clothes.

Vura : Kapok, For stuffing pillows (sophisticated homes only).

Bakiwe : Spearshafts.

Birikito : Stools and wooden bowls.

Kpoyo : Arrow-shafts.

Nganzidupo : Pipe-stems.

Nge : Charcoal.

Magic

(171-286)

Hunting magic : 272, 274, 278, 282, 283.

Crop magic : 280, 286.

Oracles : 275, 276, 281.

Protection against witchcraft or other harmful influence: 279, 284 (*fukofuko* and two other kinds).

"Medicines" : 271, 273, 277, 285.

APPENDIX III

TWO MORE SOPHISTICATED METHODS OF PREPARING MAIZE FLOUR

Method 1

After thorough drying, the grain is removed from the cob—time about three hours per 10 kg. of grain. Water should be heated to about 40°C., but this refinement is often omitted; the grain is put to soak overnight. It is then pounded and rubbed through a sieve; time 6.75 hours per 10 kg. original grain. The unsieved residue is ground, taking about one hour. Both fractions are thoroughly dried in the sun for a couple of days, this requiring the constant presence of someone in the homestead, though hardly ranking as work. The final weights recorded were:—

Pounded fraction : 47% of original grain

Ground fraction : 22% of original grain

Loss : 31% of original grain

The 47% is fine flour for use for food; the 22% dried out into small lumps for grinding for white beer. The working time is nearly 12 hours to 10 kg. original grain.

Method 2 (for kisra)

Dry maize is put into a mortar with a little water and pounded, the water preventing it from jumping about too much; time, 1 hour per 10 kg. grain. After a few minutes in the sun a fraction amounting to 20% of its wet weight is winnowed off; time 45 minutes. It is then left in water overnight, by which time the grain has swollen up, and is ready for grinding and sieving, a process which takes 6.25 woman-hours, including pauses and chatting. 22% by weight (weight taken after soaking) is lost, the coarse waste being thrown to the chickens. Cold water (25°C. on the occasion recorded) is stirred in, and after one hour the dough is ground again; time 1.25 hours with only such waste as is unavoidable after careful scraping of the stone. The result is a batter of the consistency of thick cream. This is allowed to stand for a day to sour slightly. Next day about 1.5 litres of water are brought to the boil, a lump of dough about the size of a hen's egg is mixed with cold water and stirred briskly into the boiling water by twirling a wooden whisk. After a minute or two, the liquid is poured onto the main mass of dough and left to stand without stirring for a few moments before being thoroughly mixed in. Sufficient cold water is then added to give a pouring batter, ready for use. A supply for two to three days may be made at once.

As near as could be gauged, the flour from which the batter is made is about 60% of the original grain, while x cc. of the pouring batter represents x/2 g. of the refined flour. Its preparation requires roughly 9.5 woman-hours per 10 kg. of original grain. The women not unnaturally dislike *kisra* for the amount of work involved, unless they can obtain flour ready ground, and it is usually only the master of the house and his friends who get it, the women and children sticking to the old-fashioned porridge.

APPENDIX IV

ANALYTICAL VALUES USED IN EVALUATING DIETARY DATA

Analytical values used in the dietary calculations have been selected after careful consideration of such factors as treatment, maturity, and any other circumstances bearing on the condition of the food, in order to arrive, as nearly as possible, at an estimate of actual intake. Wherever appropriate data are available on Sudan foodstuffs, these have of course been used. For the rest, values have been taken mainly from Tables of Representative Values (xvi) with a few from other sources as listed below and with any necessary adjustments for moisture content and other factors. The carbohydrate values are "by difference," items from (xvi) being adjusted accordingly. Calorie values have been calculated throughout by the factors 4:9:4.

Intakes reported here should not be compared *directly* with findings arrived at by some other technique of evaluation, *e.g.* entirely on a raw-food basis. Nor should these values be applied to other dietaries without due consideration of differences in circumstances and practices which will affect the condition of the food.

TABLE 27

Sources

(i), (ii), (iii), (v), (vi), (ix), (x), (xiii), (xiv), (xvi), (xx), (xxi), (xxii) and information supplied by Miss M. W. Grant, Nutrition Department, London School of Hygiene and Tropical Medicine.

TABLE 1

METEOROLOGICAL DATA FOR YAMBIO DISTRICT

MONTH	TEMPERATURE (Cent.)				REL. HUM. %		RAINFALL (mm.)	
	Maximum		Minimum		Yambio	Yubu	Yambio	Yubu
	Yambio	Yubu	Yambio	Yubu				
January	35.6	32.9	18.9	18.5	76	57	16.0	7.2
February	35.0	33.2	19.6	19.6	78	65	29.2	20.7
March	35.2	32.6	19.9	19.8	80	71	93.4	61.5
April	32.1	30.8	20.2	19.5	87	82	147.5	103.2
May	30.4	30.0	19.1	19.2	92	86	177.0	213.7
June	29.4	28.6	19.1	18.6	95	87	165.0	210.8
July	28.6	27.6	18.7	18.5	97	88	200.5	161.1
August	28.5	28.0	18.7	18.5	98	89	161.0	201.0
September	29.8	29.0	18.7	18.6	95	86	169.4	215.3
October	no record	29.8	no record	18.7	no record	85	173.3	162.1
November	30.6	31.2	18.6	19.0	91	76	76.5	53.5
December	32.4	32.3	16.7	18.5	95	66	20.3	14.0
Year, average total	(31.6)	30.5	(18.9)	18.9	(89)	78	1,429.1	1,424.1

Yambio : Rainfall 1921-1946 : other figures, 1946 only.
 Meteorological Dept. consider relative humidity figures doubtful.
 Yubu : All figures, 1928-1946.

TABLE 2

RAINFALL IN YUBU DURING SURVEY PERIOD

MONTH	mm.
July 1947	339.5
August	192.4
September	201.9
October	78.4
November	53.9
December	5.0
January 1948	3.0
February	3.0
March	70.5
April	78.2
May	121.0
June	101.5
Total	1,248.3

TABLE 5 (Contd.)
FREQUENCY OF OCCURRENCE OF VARIOUS CROPS
(as percentage of agricultural units)

CROP (Number refers to Plant List, Appendix I)	ZANDE NAME	PEASANT GROUPS						WAGE- EARN- ERS	REMARKS	
		ZANDE								
		Ukua	Momboi	Madi	Taba	Mupoi	Bakiri			Bo Road
Oilseeds: Groundnuts (26) Sesame (38) Hyptis (25) Citrus (30) Lagenaria (33) Luffa (27) Oil palm (35)	awande	100	100	87	98	(67)	(62)	89	68	
	serc	77	84	39	45	(43)	(58)	81	21	
	andeko	41	79	63	66	(19)	(30)	93	15	
	dairo	(36)	(46)	63	26	(5)	(4)	26	N.R.	
	kpagu	(68)	(25)	(6)	30	(15)	(3)	—	N.R.	
	bangombe	55	84	45	68	(5)	(3)	—	4	
	mbiro	9	21	9	6	—	1	—	13	
	Leafy Vegetables: Amaranthis (48) Jew's mallow (53) Solanum (60) Rosella (56) Deccan hemp (58) Miscellaneous	kpedekepede, mbadabu	Widespread, both in and out of gardens, during the rainy season.							
		morombida	100	96	63	70	48	51	55	91
		nzuu	91	79	24	53	(43)	(30)	93	61
namba		(45)	[42]	—	[23]	(15)	(16)	81	—	
nzibi		19	16	3	12	5	9	4	2	
Cucurbits (except as under Oilseeds): Pumpkin (70, 71) Cucumber (73) Bottle gourd (76) Calabash (72)		boko, besende	95	100	100	93	80	78	96	
		koforo, mbuguru	36	42	15	9	15	2	15	
		nagbanga	59	50	27	30	43	27	37	
		inga	64	50	39	15	—	—	70	
										Not primarily for food.

TABLE 5 (Contd.)
FREQUENCY OF OCCURRENCE OF VARIOUS CROPS
(as percentage of agricultural units)

CROP (Number refers to Plant List, Appendix I)	ZANDE NAME	PEASANT GROUPS						WAGE- EARN- ERS	REMARKS	
		ZANDE								
		Ukua	Momboi	Madi	Taba	Mupoi	Bakiri			Bo Road
Other Vegetables: Okra (75) Tomato (78) Eggplant Spring Onions (69) Chillies (134)	mboyo	100	96	78	98	76	60	85	N.R.	
	tamatim	5	—	18	17	—	9	—	—	
	bedingani	5	—	3	—	—	—	—	—	
	basala	18	29	27	9	—	3	—	—	
	riaria	81	67	57	98	(43)	(32)	89	—	
	Juicy Fruits: Mango (107) Citrus Pineapple (83) Pawpaw (117) Other	manga	73	75	57	57	(19)	(25)	52	—
		ananas	5	6	6	6	—	5	4	—
		papai	23	4	45	32	5	3	—	—
			—	—	18	36	5	4	—	—
			—	—	—	13	—	1	4	—
Some Useful Plants: Tobacco (269) Tephrosia (221) Cotton Wild Cotton (253) Asteracanthus ? (152)	gbakaro	[81]	[96]	[69]	[63]	[52]	[48]	[81]	Fish poison. In new settle- ments.	
	makoko	[100]	[100]	[3]	—	N.R.	N.R.	[48]		
	kato	—	—	[15]	[13]	[33]	[16]	[48]		
		23	58	36	40	29	15	7		
									For " salt "	

TABLE 6
FOOD CROP AREAS FOR 1947
(in acres)

GROUP	DESCRIPTION	CROP AREA CULTIVATED 1947				MATURE CASSAVA (in abandoned fields)	
		Active Adults		Whole Group		Per Active Adult	Per Head
		No.	Per Adult	No.	Per Head		
Ukua (a)	2nd-year settlement.	47.5	0.93(b)	71	0.60(b)	In old homes, not seen	
Momboi (a)	1st-year settlement	72	0.73(c)	107	0.49(c)	In old homes, not seen	
Taba	Not resettled	90	0.63(d)	134	0.42(d)	0.13	0.09
Bo Road	Not resettled	43	1.39(e)	96	0.60(e)	0.13	0.05

- (a) Figures refer to food crops only and exclude the cotton plots.
 (b) Acreage of land 0.72 and 0.48 per active adult and per head respectively, of which 25% was double-cropped.
 (c) Acreage of land 0.68 and 0.46 respectively, of which 7.5% was double-cropped.
 (d) Acreage of land 0.60 and 0.40 respectively, of which 5% was double-cropped.
 (e) No double-cropping.

TABLE 7
AREAS OF VARIOUS CROPS WHERE MEASURABLE, 1947(a)
(in acres)

CROP	GROUP (b)	ACREAGE		ADDITIONAL PLANTINGS (in other crops)
		Per Active Adult	Per Head	
Eleusine	Ukua . .	0.60	0.40	+
	Momboi .	0.58	0.39	
	Taba . . .	0.33	0.22	
	Bo Road	0.47	0.21	
Maize	Ukua . .	No record(c)	0.09(d)	+++
	Momboi .	No record(c)		
	Taba . . .	0.14(d)		
	Bo Road	No record(e)		
Sorghum	Ukua . .	0	0	+
	Momboi .	0	0	
	Taba . . .	†	†	
	Bo Road	0.26	0.12	
Rice	Ukua . .	†	†	
	Momboi .	†	†	
	Taba . . .	†	†	
	Bo Road	0	0	

TABLE 7 (Contd.)
AREAS OF VARIOUS CROPS WHERE MEASURABLE, 1947 (a)
(in acres)

CROP	GROUP (b)	ACREAGE		ADDITIONAL PLANTINGS (in other crops)
		Per Active Adult	Per Head	
Cassava	Impossible to estimate: planted in varying densities among most other crops.			
Sweet potatoes	Ukua	†	†	++
	Momboi . . .	†	†	
	Taba	0.02	0.01	
	Bo Road . .	0.04	0.02	
Pulses (cowpeas, mung beans earthnuts)	Ukua	0.02	0.01	+
	Momboi . . .	0.02	0.01	
	Taba	0.01	†	
	Bo Road . .	0.05	0.02	
Groundnuts . .	Ukua	0.18	0.12	
	Momboi . . .	0.08	0.05	
	Taba	0.18	0.13	
	Bo Road . .	0.13	0.06	
Sesame	Ukua	0.08	0.05	+
	Momboi . . .	0.03	0.02	
	Taba	0.01	†	
	Bo Road . .	0.38	0.17	

† = Some measurable plots, but average under 0.01.

- (a) Most plots interplanted in varying degrees, therefore acreages are overlapping figures.
 (b) Descriptions as in Table 6.
 (c) All grew main July crop and then planted scattered maize through eleusine.
 (d) Figures refer to July crop plus a few small pure-stand later plots.
 (e) A small July crop; no second planting through eleusine.

TABLE 8
ESTIMATED PRODUCTION OF CERTAIN FOODSTUFFS (a)

FOODSTUFF	PER HEAD PER ANNUM		PER HEAD PER DAY	
	Lbs.	Kgs.	Calories	Protein, g.
	Ukua (b)			
Eleusine, grain	200	91	814	11.0
Maize, grain	(121) (c)	(55) (c)	(554)	(15.7)
Sorghum, grain	8	4	36	1.2
Sweet potatoes, gross	60	27	65	1.0
Pulses, shelled	4	2	17	1.1
Groundnuts in shell	120	54	626	25.8
Sesame, seed	15	7	109	5.5
Total	524	240	2,221	61.3

TABLE 8 (Contd.)
ESTIMATED PRODUCTION OF CERTAIN FOODSTUFFS (a)

FOODSTUFF	PER HEAD PER ANNUM		PER HEAD PER DAY	
	Lbs.	Kgs.	Calories	Protein, g.
Mom bol				
Eleusine	195	89	795	10.8
Maize	(121) (c)	(55) (c)	(554)	(15.7)
Sorghum	8	4	36	1.2
Rice, hulled	2	1	7	0.2
Sweet potatoes	30	14	32	0.5
Pulses	4	2	17	1.1
Groundnuts	50	23	262	10.8
Sesame	6	3	46	2.3
Total	446	204	1,751	42.6
Taba				
Eleusine	110	50	451	6.1
Maize	121	55	554	15.7
Sorghum	4	2	18	0.6
Sweet potatoes	120	54	129	2.0
Pulses	2	1	7	0.4
Groundnuts	130	59	716	28.4
Sesame	4	2	29	1.5
Total	491	223	1,904	54.7
Bo Road				
Eleusine	90	41	365	4.9
Maize	(40) (d)	(18) (d)	(184)	(5.2)
Sorghum	96	44	427	15.5
Sweet potatoes	90	41	97	1.5
Pulses	8	4	34	2.2
Groundnuts (e)	48	22	252	10.4
Sesame	34	15	242	12.5
Total	436	199	1,601	52.2

(a) Reasonable expectation from the acreages in Table 7. No allowance made for the bad harvest of 1947.

(b) Groups as described in Table 6.

(c) Taken as Taba.

(d) Taken as Taba x 1/3.

(e) Incompatible with other evidence which shows sesame to be much more important than groundnuts in the Bo Road.

TABLE 9
OCCUPATIONS (a)
(other than routine domestic tasks)

GROUP	MONTH	HOUSE-DAYS RECORDED	PERCENTAGE OF DAYS ON WHICH FAMILY CLAIMED TO GIVE TIME TO:	
			Agriculture	Special Tasks (b)
Zande				
Taba	July	1,078	43	11
	August	468	71	1
	September	1,014	24	3
	October	675	15	6
	November	857	42	25
	December	743	27 (c)	18
	January	707	4	10
	February	857	7	55
	March	978	12	53
	April	725	38	6
	May	799	37	1
	June	751	56	10
Madi	October	854	43	15
Momboi	October	801	24	48
Ukua	November	765	61 (d)	7
Momboi	March	584	39	21
Ukua	March	660	30	10
Balanda				
Bo Road	Sept./Oct.	605	38	25
Bo Road	Feb./Mar.	926	†	42

† = under 1%

(a) Incomplete because on a proportion of days on which families were not seen they were absent working (e.g. distant fields, fishing); but this gives an idea of the shape of the year's work curve.

(b) Building, fishing, hunting, various crafts.

(c) An abnormal year with failure of the late harvest.

(d) 1-2 hours gentle cotton-picking made up a large proportion of these days.