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Citation

Hoorweg, J. C., & Niemeijer, R. (1978). *Classification of foods among the Kikuyu. Nutrition Intervention Research Project*. Leiden [etc.]: African Studies Centre [etc.]. Retrieved from <https://hdl.handle.net/1887/8937>

Version: Not Applicable (or Unknown)

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Note: To cite this publication please use the final published version (if applicable).

Bureau of Educational Research, University of Nairobi,
and African Studies Centre, Leiden, Netherlands

Nutrition Intervention Research Project
Report No. 7

CLASSIFICATION OF FOODS AMONG THE KIKUYU

Jan Hoorweg & Rudo Niemeyer

1978
N. 3

SUMMARY

Kikuyu women with young children were presented with a short list of foods and requested to cite one similar food for each food in the list. The sixty-four foods that are most commonly used in the Kikuyu kitchen were included in the study and for each food 30 responses were collected. Analysis of these responses revealed that six main food groups are distinguished, by and large, identical to the common botanical ones : cereals legumes, fruits, vegetables, meats and animal products, and roots and tubers. There is also weaker evidence for a seventh group, seasonings. A few foods do not clearly belong to any one group in particular and their positions are discussed in relation to nutrition education.

1. INTRODUCTION

In dealing with child nutrition in developing countries food groups are usually distinguished identical to the common botanical ones i.e. fruits, legumes etc. Nutrition teachers usually assume that mothers classify foods in these categories and that they will substitute foods from the same food groups for each other.

The Kikuyu, however have no names for certain botanical groups. Fruits and green leaves are known as matunda and nyeni. The word mboga means cabbage but may occasionally indicate vegetables in general (including green leaves). Meat is called nyama and different kinds of meat are identified by the particular animal i.e. nyama cia mburi (goat meat). There are, however, no words for food groups such as legumes, roots and tubers, cereals⁽¹⁾ or spices.

This leaves the possibility that the Kikuyu classify their foods differently and that they may tend to substitute foods for each other in ways quite different from those expected by the nutrition teachers. This is one reason for the present study on food classification among the Kikuyu. It is also the first step in a series of studies on food preferences for which it was necessary to establish which food groups they distinguish (see report no. 8¹).

Various approaches exist to study the ways in which people classify the objects in their daily world. The first, most evident, method is to let respondents sort objects in as many different categories as they see fit. This procedure is rather difficult to use with foods because of their bulkiness, putrefaction and seasonal availability. In rural Africa, photographs of foods cannot be used because respondents will differ in their ability to recognize pictures of objects. Another method to investigate the perceived similarity between objects is to ask respondents to choose from among three objects -in this case foods- the two that are most similar

to each other. Or, respondents may be asked to choose from several foods the ones most similar to a particular food. The actual foods or their pictures are again virtually required when using these methods. In addition the number of presentations tends to be large.

In another method, here employed, respondents have to cite a food similar to each food named on a list. This method reveals quite directly the way that people classify foods because they will usually cite a food that they consider to be in the same group as the food that was presented to them⁽²⁾. A disadvantage of this method is that it requires that all or most of the common foods are presented in turn. The method is also more restricted than the others but it provides a quick delineation of the main food groups. It also leaves respondents free in their answers unlike the other methods where they often have to choose between unlikely alternatives.

2. METHOD AND ANALYSIS

After visiting several markets and consulting the existing literature a list of foods was drawn up with the help of Kikuyu assistants. This list can be found in the short dictionary published as report no. 3 in this series. The most common foods from this list, 64 in all, were included in this study. They are listed in Table 1, where they are arranged according to the groups used in the food tables by Platt (1962).

The foods were divided as evenly as possible into six smaller lists each consisting of 10 or 11 foods, with some foods from each group. Each list was presented to 30 respondents, and each respondent replied to one list only. They were interviewed in Kikuyu and instructed to name a food similar to the one mentioned by the interviewer.

The respondents were selected from women with young children attending a MCH clinic at Kiambu, a small town 15 km from Nairobi, and from women with young children

CEREALS	MEATS AND ANIMAL PRODUCTS	VEGETABLES
Maize flour	Beef	Amaranth
Maize, whole grain	Chicken	Bean leaves
Millet flr (bullrush)	Eggs	Bonaviste bean lvs
Millet, finger	Fish	Cabbage
Rice	Goat	Cabbage leaves
Sorghum flour	Milk	Carrots
Wheat flour	Mutton	Cowpea leaves
7 STARCHY ROOTS, TUBERS AND FRUITS	Pork	Cauliflower
Cassava	9 Rabbit	Kale
Plantain	FRUITS	Onions
Potato, Irish	Avocado	Peppers
Potato, Sweet	Banana, sweet	Potato leaves
Taro	Custard apple	Pumpkin
6 Yam	Grape fruit	Pumpkin leaves
LEGUMES	Guava	Spinach
Beans	Lemon	Taro leaves
Beans, Bonaviste	Mango	17 Tomato
Beans, Lima	Orange	CONDIMENTS AND SPICES
Beans, Mung	Passion fruit	Coriander leaves
Groundnuts	Paw-paw	Curry powder
Peas	Pear	Ginger powder
Peas, Cow	12 Pineapple	Salt
8 Peas, Pigeon		5 Sugar

attending a dispensary at Kambaa, a village 50 km from Nairobi. Each list was presented to 30 women, 20 in Kiambu and 10 in Kambaa. The interviews, including the introduction usually took less than 10 minutes.

The categories used in table 1 also served as a starting point for the analysis. For each food, we counted the number of times that the food which was cited as being similar to it, belonged to the same group and the number of times that the food cited as being similar belonged to some other group⁽³⁾. If we take cassava, the first food in appendix 2, as an example we must look at the figures on the horizontal line next to this food. The 30 respondents cited the following roots and tubers as similar to it : plantain (1x), Irish potato (3x), sweet potato (13x), taro (4x), yam (5x). In addition 3 respondents replied with some kind of cereal, while 1 respondent mentioned a legume. Therefore 26 of the 30 responses, given to cassava, that is 87%, fall within the same group.

A food was retained in its original group when more of the cited foods fell within this group than in any other group and when this total consisted of at least one-third of the 30 possible replies. When these two conditions were not

satisfied the food was removed from the original group. It was only then reassigned to another group when one-third or more of the responses fell in another group. Whenever a food was removed from its original group or relocated to another group, all calculations were repeated until, finally, stable groups remained which required no further changes⁽⁴⁾. Cassava clearly passes both criteria and was retained in the group of roots and tubers.

This method of analysis was used to arrive at the division in main food groups. It analyzes foods in terms of the other foods that are cited as similar to it. However, we can also examine how often a particular food is mentioned in reply to the other foods. In this case we calculated how often a food was mentioned in response to other foods from the same group. This percentage, however, is only meaningful for foods that are cited often enough and the required minimum was fixed at ten. If we take cassava as an example again: Cassava is mentioned 11 times, of which eight times in response to other roots and tubers (73%). It was cited in response to plantain (1x), sweet potato (2x), taro (1x) and yam (4x). These are the figures in appendix 2 in the column under cassava.

3. RESULTS

3.1. Major food groups

Kikuyu women, by and large, distinguish the same food groups as the common botanical ones. Fifty-five of the 64 foods remained in their original groups: cereals (7 foods), legumes (8), vegetables (12), fruits (12), meats and animal products (9) and roots and tubers (7). There is no indication that some of these groups are less clearly identified than others or that some groups are closer to each other than others. Tentative analysis among the vegetables and the legumes failed to reveal any further subdivisions that might exist between dark and light green leaves, between large and small leaves or between beans and peas. The five condiments and spices, however, fail to constitute a group.

*It is only 54,
because pumpkin
moves to fruit 55.*

the taste of other foods. In one form or another they all are used as seasonings. The majority of foods mentioned in response to seven of them fall among these other 'seasonings' but for only three of them does this constitute more than one third of the responses. For the group as a whole, 34 per cent of the responses refer to one of the other 'seasonings'. This is less than the 70-80 per cent obtained for the six main groups, but it is still higher than could be expected by chance

Analysis of the replies in which these nine 'seasonings' are mentioned also suggests that such a group exists. Altogether the nine foods were mentioned 121 times and this was 91 times (75%) in response to the other seasonings. For the six main food groups this percentage varies from 60 to 100 per cent and it seems warranted to distinguish a seventh group, seasonings, which is, however, less clearly defined than the other groups.

3.3 Central and marginal foods

In the previous section we were concerned with the division between food groups. In this section we discuss the position of foods within the groups as perceived by Kikuyu women. Central and marginal foods can be distinguished by, firstly, examining the percentage of responses given to each food that fall in the same group. This is the figure in the first column of table 3 and it reflects the degree to which a food is perceived as belonging to its group, the higher this percentage the fewer outside connections. Another indicator is the total number of times that a food was cited in response to the other foods from the same group. This figure, in the second column of table 3, is a measure of familiarity and shows how easily the food comes to mind in connection with its group (The detailed results for the individual foods are presented in appendices 1 to 7, each food group separately)

The marginal foods are of particular interest to the nutrition teacher because of their connections with food groups other than their own. Because they see them as belonging to some other group, many respondents- and the many women like them-are likely to make incorrect assumptions about the nutritional characteristics of these foods. It is also likely that many respondents will substitute these foods for or substitute them by foods from other groups than the ones to which they belong nutritionally.

Cereals. The percentage of 'in group' responses varies between 80 and 100% for the various flours and finger millet which is also mainly available as a flour. These foods clearly compose the core of the group of cereals. Often ^{cited} mentioned is maize flour - not surprising given the importance of maize porridge in the Kikuyu diet. Millet flour is mentioned even more. The positions of whole grain maize and rice are marginal. Rice is connected with the cereals through maize but it also has ties with the roots and tubers (27 per cent of the responses fall in the latter group). Whole grain maize is also connected with roots and tubers (17 per cent of the responses) and with legumes, particularly with beans (27% of the responses) probably because the most common dish among the Kikuyu is a mixture of maize and beans.

Table 3. RESULTS FOR INDIVIDUAL FOODS

	Responses Number in same of times group (a) cited (b)	Responses Number in same of times group cited	
CEREALS		FRUITS	
Maize flour	80% 32	Avocado	67% 3
Maize, wh.gr.	37% 14	Banana, sweet	70% 8
Millet flour	93% 8	Custard apple	71% 4
Millet, finger	83% 36	Grape fruit	72% 4
Rice	53% 13	Guava	79% 6
Sorghum flour	100% 27	Lemon	93% 23
Wheat flour	87% 10	Mango	86% 27
STARCHY ROOTS, TUBERS AND FRUITS		Orange	77% 101
Cassava	87% 8	Passion fruit	53% 4
Plantain	38% 12	Paw-paw	62% 8
Potato, Irish	70% 48	Pear	72% 6
Potato, Sweet	93% 53	Pineapple	83% 15
Pumpkin	43% 1		
Taro	90% 18		
Yam	73% 8		

(a)Percentage of the responses to each food falling within the same group
(b)Number of times cited in response to foods from the same group

Starchy roots, tubers and fruits. The core foods in this group are sweet potato, taro, cassava, yam and Irish potato. Most often cited, and in that sense most familiar, are the two varieties of potato which clearly take the most central position in this group. Plantain and pumpkin belong only marginally to the group ; these foods also have ties with the group of fruits (21% and 24% of the responses to each consist of fruits and they are also frequently cited in response to fruits). Respondents appear particularly undecided about the position of plantain: 27 per cent were unable to name any similar food.

Fruits. The twelve fruits form a homogeneous group without borderline cases in which oranges take a particularly central position. Oranges are cited 101 times which is far more often than any other fruit. The lowest percentages of responses within the group are given with passion fruit (53 per cent) and paw-paw (62 per cent).

Legumes. The legumes also compose a close-knit group as is shown by the high percentages of 'in-group' responses. Most often cited are beans, pigeon peas and peas, in that order,

Table 3. RESULTS FOR INDIVIDUAL FOODS, CONTINUED

	Responses in same group	Number of times cited		Responses in same group	Number of times cited
LEGUMES			VEGETABLES		
Beans	72%	65	Amaranth	97%	14
Beans, Bonaviste	87%	17	Bean lvs	67%	21
Beans, Lima	97%	4	Bon. bean lvs	73%	3
Beans, Hung	69%	2	Cabbage	68%	45
Groundnuts	48%	1	Cabbage lvs	90%	13
Peas	80%	31	Cowpea lvs	80%	15
Peas, Cow	86%	7	Cauliflower	52%	-
Peas, Pigeon	80%	54	Kale	87%	66
MEATS AND ANIMAL PRODUCTS			Potato lvs	70%	2
Beef	67%	64	Pumpkin lvs	77%	18
Chicken	93%	35	Spinach	90%	11
Eggs	67%	12	Taro lvs	53%	8
Fish	67%	3			
Goat	80%	41			
Milk	65%	6			
Mutton	97%	2			
Pork	93%	9			
Rabbit	93%	-			

which fairly well reflects the preference for each of these legumes among the Kikuyu. The possible exception is groundnuts which are rather uncommon in this part of Kenya, although 48 per cent of the responses given to this food still fall within the group.

Vegetables. Vegetables are a homogeneous group and the lowest percentages for responses within the group are obtained by cauliflower and taro leaves both of which are infrequently used by ^{the} Kikuyu. The two vegetables that are cited most frequently, cabbage and kale (locally known as sukuma) are also the two vegetables that are most commonly used among both urban and rural Kikuyu.

Meats and animal products. This group is equally homogeneous as the previous ones, given the high percentages of responses falling within the group. Beef, goat meat and chicken are most often cited and these are also the kinds of meat that are most often consumed. Although eggs and milk are both animal products, and are also perceived as belonging to this group, eggs are closer to the meats than milk. In all, 63 per cent of the responses to eggs mention a ^{particular} meat or meat in general ⁽⁶⁾, while for milk this is only 42 per cent.

4. CONCLUSION

The Kikuyu women participating in this study distinguished six major food groups : cereals, legumes, fruits, vegetables, meats and animal products, and roots and tubers. They seem to make no further division within these groups. There is also evidence that they distinguish - although less clearly - a group of seasonings.

Within these major food groups some foods take central positions while others are marginal. For example, maize and rice, although mostly perceived as belonging to the group of cereals take only marginal positions within this

group. Many respondents see them as connected with roots and tubers. An important ingredient of children's diets, plantain, also lacks a clear position falling, as it does, between the fruits and the roots and tubers. Furthermore, carrots and tomatoes are not perceived as belonging to the vegetables but are rather seen as belonging to the minor group of seasonings.

Nutrition teachers have to emphasize the connection of maize and rice with other cereals because like other cereals they are high calorie foods with a moderate protein content. On the other hand nutrition teachers should emphasize the connection between plantain and other roots and tubers because they are all low in both calories and proteins.

Two other important items in the child's diet are milk and eggs. The connections of both these foods with the meats are not strong, particularly not in the case of milk. Despite the near absence of meat in the daily diet of rural Kikuyu, nutrition education tends to stress meat as a necessary component of the child's diet. However, it cannot be assumed that Kikuyu mothers will spontaneously replace meat by eggs or milk as is often assumed in the teaching. It is necessary to discuss the nutritional qualities of these two foods individually.

Another finding is that oranges are very often cited, suggesting that they are an important fruit despite the fact that they are only seasonally available and often have to be bought. We have no explanation why the more readily available passion fruits or mangoes are not mentioned more often. Perhaps nutrition education has overstressed oranges and neglected to mention other more readily available fruits.

In summary, we find that the classification of foods by Kikuyu women, by and large, converges with the common botanical classification which is employed in most nutrition education.

Notes

(1) The word hindi includes grains but more accurately refers to all kinds of small seeds.

(2) In a common sequel to this method respondents can be asked what the similarity is between the food mentioned by the interviewer and the food cited by the respondent. In this way, respondents themselves provide the criteria by which they group the objects. We found this procedure to be of little help and it was not used.

(3) References to foods other than the ones included in the study were listed as rest categories e.g. other vegetables, other fruits etc.

(4) This method is more suitable for data of this kind than other more sophisticated methods of cluster analysis. A threshold of one third of all valid responses was used to ensure that the groups decided upon would really reflect commonly used distinctions.

(5) Tomatoes elicited few vegetables in response, 13 per cent of the replies, while 37 per cent of the replies consisted of fruits and 30 per cent responses referred to one of the eight foods, as yet not placed in any group. Although tomatoes could therefore have been reallocated among the fruits this was not done because it is better placed with the remaining eight foods, that form a minor group of seasonings (see section 3.2). This is particularly so since tomatoes were cited 33 times in response to other foods, and this was 18 times (=55 per cent) in response to one of these eight remaining foods.

(6) That the response 'meat' was accepted without further specification is, in fact, one of the two errors in the collection of data. A similar instance occurred with the responses to milk where on 11 occasions 'ucuru' (porridge which often contains milk) was erroneously accepted. These 11 responses were discarded which is the main reason why only 17 valid responses are listed for this food.

REFERENCES

Nutrition Intervention Research Project (1977). A short dictionary of Kikuyu names of foods, meals and drinks
University of Nairobi, Bureau of Educational Research.

Platt B S (196~~3~~²) Tables of representative values of foods commonly used in tropical countries (4th ed.)
London : HMSO .

Appendix 1 CEREALS
 Number of times that each food or food group was
 mentioned in response to different foods.

FOODS PRESENTED	R E S P O N S E S													Total			
	Maize flour	Maize whole grain	Millet flour (bullrush)	Millet, finger	Rice	Sorghum flour	Wheat flour	Other cereals	Subtotal	Roots	Legumes	Vegetables	Fruits		Meats	Miscellaneous	No response
Maize flour	-	4		1	5	2	7	5	24	2	1			1		2	30
Maize, whole grain	3	-		1	5	1		1	11	5	8			1	1	4	30
Millet flour (bullrush)	3	1	-	15		8	1		28		1			1		1	30
Millet, finger	3		6	-		15			25		1	1		1	1	1	30
Rice	2	6			-				16	8	1			1	1	3	30
Sorghum flour	7		2	18		-			30								30
Wheat flour	14	3		1	3	1	-	2	26	2						2	30
Total	32	14	8	36	13	27	10	20	160	17	12	1	-	5	3	12	210

Appendix 2 STARCHY ROOTS, TUBERS AND FRUITS
 Number of times that each food or food group was
 mentioned in response to different foods.

FOODS PRESENTED	R E S P O N S E S										Total					
	Cassava	Plantain	Potato, Irish	Potato, Sweet	Pumpkin	Taro	Yam	Subtotal	Cereals	Legumes		Vegetables	Fruits	Meats	Miscellaneous	No response
Cassava	-	1	3	13		4	5	26	3	1						30
Plantain	1	-	7	2		1		11	1	1		6	1	1	8	29
Potato, Irish		6	-	10	1	2	2	21	1	2	3			1	2	30
Potato, sweet	2		17	-		9		28	1						1	30
Pumpkin		2	10	1	-			13	1	1	1	7	1	5	1	30
Taro	1		9	16		-	1	27			2				1	30
Yam	4	3	2	11		2	-	22	6	1					1	30
Total	18	12	48	53	1	18	8	148	13	6	6	13	2	7	14	209

Appendix 3 LEGUMES

Number of times that each food or food group was mentioned in response to different foods.

FOODS PRESENTED	R E S P O N S E S																
	Beans	Bonavist beans	Lima beans	Mung beans	Groundnuts	Peas	Cowpeas	Pigeon peas	Subtotal	Cereals	Roots	Vegetables	Fruits	Meats	Mis-cellaneous	No response	Total
Beans	-	4	2			2		13	21	2	1		1	3		1	29
Bonavist beans	6	-				1		19	26					2		2	30
Lima beans	23	4	-			1		1	29		1						30
Mung beans	5	1		-	1	5	4	2	18	2		3			3	26	
Groundnuts	6	1			-	3	1	3	14	1	1			1	1	11	29
Peas	13	2				-		9	24			3			2	1	30
Cowpeas	5	3		2		8	-	7	25	1		2			1	29	
Pigeon peas	7	2	2			11	2	-	24		2	1			3	30	
Total	65	17	4	2	1	31	7	54	181	6	5	9	1	6	3	22	233

Appendix 4 VEGETABLES

Number of times that each food or food group was mentioned in response to different foods.

FOODS PRESENTED	R E S P O N S E S													Total									
	Amaranth	Bean leaves	Bonavist bean leaves	Cabbage	Cabbage leaves	Cowpea leaves	Cauliflower	Kale	Potato leaves	Pumpkin leaves	Spinach	Taro leaves	Other Vegetables		Subtotal	Cereals	Roots	Legumes	Fruits	Meats	Miscellaneous	No response	
Amaranth	-	-	-	1	1	6	-	13	1	1	-	1	12	29									30
Bean leaves	2	-	-	-	2	6	-	5	1	1	-	-	3	20	2	1	1		3	2	1	30	
Bonavist bean lv.	1	4	-	2	-	3	-	4	2	1	-	-	5	22			5		1	1	2	30	
Cabbage	-	-	-	-	2	2	-	11	-	2	-	-	4	19	1	2			3	1	2	28	
Cabbage leaves	3	-	-	7	-	2	-	6	5	-	-	-	4	27					1	2	2	30	
Cowpea leaves	1	6	3	-	1	-	8	-	-	-	1	4	4	24			3				3	30	
Cauliflower	-	-	-	10	-	-	-	-	-	1	-	1	1	12	2	1		1	1		6	23	
Kale	4	1	-	10	1	1	-	-	1	5	3	3	3	26	1			2			1	30	
Potato leaves	1	8	-	1	4	-	2	-	-	2	2	2	2	21	2	5	1				1	30	
Pumpkin leaves	-	2	-	3	-	-	7	-	1	-	5	6	6	23	1	2	1				3	30	
Spinach	1	-	-	10	1	1	10	-	-	-	1	1	3	27	1	1			1			30	
Taro leaves	1	-	-	1	1	2	-	1	7	-	-	1	3	16		7	1		1		5	30	
Total	14	21	3	45	13	15	-	66	2	18	11	8	50	266	10	19	13	1	13	3	26	351	

APPENDIX 7 SEASONINGS
 Number of times that each food or food group was mentioned in response to different foods.

FOODS PRESENTED	R E S P O N S E S													Total						
	Carrots	Curry powder	Ginger powder	Onions	Coriander leaves	Peppers	Salt	Sugar	Tomato	Other seasonings	Subtotal	Cereals	Roots		Legumes	Vegetables	Fruits	Meats	Miscellaneous (remainder)	No response
Carrots	-				1				6		7		9	1	3				8	30
Curry powder	2	-				7	5		6		20	1	1			1			7	30
Ginger powder		2	-			3				7	12				1			2	12	27
Onions	3			-	1				2		6	2	1						16	29
Coriander leaves	2	3		3	-						8	1		1					12	30
Peppers		10		1	1	-		4			16	1		3				9	29	
Salt		1					-				13	3						4	8	29
Sugar							7	-		2	9	3			3	1		10	4	30
Tomato	7			1		1			-		9		2		11	2		1	1	30
Total	14	16	0	5	3	13	12	12	18	9	100	11	13	2	22	18	4	17	77	264

This report is one of a series by the Nutrition Intervention Research Project; studies of child nutrition programmes in Kenya, particularly in Central Province. The aim of these reports is to make some results of these studies quickly available; the data are only partially analyzed and the reports therefore preliminary.

This project is financed by the African Studies Centre, Leiden, Netherlands and is based at the Bureau of Educational Research, University of Nairobi.

Other reports:

1. Progress report, April 1977
2. Progress report, November 1977
3. A short dictionary of Kikuyu names of foods, meals and drinks, 1977
4. Report on the Family Life Training Centres, Bungoma, Busia, Kisumu, Kiambu and Murang'a; 1977
5. Revised Research Plan, February 1978
6. Progress report, July 1978
7. Classification of foods among the Kikuyu, 1978
8. Preferences of Kikuyu mothers for children's foods, 1978