

Tables of Representative  
Values of foods commonly  
Used in Tropical countries.

PRIVY COUNCIL

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**TABLES OF REPRESENTATIVE  
VALUES OF FOODS COMMONLY  
USED IN TROPICAL COUNTRIES**

*by*

**B. S. PLATT**

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# TABLES OF REPRESENTATIVE VALUES OF FOODS COMMONLY USED IN TROPICAL COUNTRIES

## PREFACE

In the course of its work during the years 1936-9, the Committee on Nutrition in the Colonial Empire, which had been set up by the Economic Advisory Council, appointed a sub-committee on research, under the chairmanship of Sir Edward Mellanby.\* The sub-committee's main recommendation was that there should be an organisation for co-ordinating a series of field surveys in the Colonial Territories, and the Medical Research Council undertook to appoint a small staff to serve as a scientific nucleus for this purpose. The first survey was made accordingly in Nyasaland under the direction of Dr. B. S. Platt, to determine the relationship of economic, sociological and agricultural matters to nutrition, as well as the correlation of health with the nutritive value of the diet.

This survey took place in 1938-40 and the first draft of a report on its results was made, but the final stages of preparation for publication could not be undertaken at the conclusion of the survey (June, 1940). The diversion of personnel to work on wartime problems prevented more than the maintenance of part-time advisory assistance to the Colonial Office, and only recently has it been possible to resume active preparation for the work for which the organisation was intended. In setting up their Human Nutrition Research Unit in 1944, the Council had the needs of the Colonial Territories in mind.

One of the objects of the original survey was to establish a technique, and it at once became clear that the provision of data on the nutritive value of the foods consumed was a basic need. For the purpose of studies on groups of individuals, representative values can be applied in the evaluation of dietaries in different areas, and one of the first tasks undertaken was the compilation of a table of food values for use in Nyasaland and areas consuming similar foods. This was the foundation from which the present tables have been built up. The latter thus represent the first published results of the Nyasaland Survey.

An illustrated glossary of terms is in preparation, to meet a similar need in relation to the recognition, nomenclature and interpretation of signs of ill-health due to nutritional deficiencies. A handbook on the methods of conducting nutritional surveys in Colonial Territories is also being prepared, and it is hoped that this will be followed by a report on the data collected during the Nyasaland Survey.

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29th October, 1945.

# TABLES OF REPRESENTATIVE VALUES OF FOODS COMMONLY USED IN TROPICAL COUNTRIES

BY

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## 1. INTRODUCTION

A widespread demand exists for tables of food composition designed for use in tropical countries. In the tables given here, values have been selected after scrutiny of an extensive field of literature, including analyses done on samples collected by the Nyasaland Nutrition Survey (p.3), and other unpublished data.

An attempt has been made to assess the weight to be attached to the various analyses, and to arrive at representative values for a suitable range of foodstuffs. These values are considered to be sufficiently well founded for the purpose for which they have been compiled, namely, the evaluation of dietary data based on records of group intake. They are not suitable for surveys by the individual method, nor for precise nutritional investigations on individual human and animal subjects. Many of the values are at present only tentative or provisional, and revision will be undertaken from time to time as further data become available. Any communications or suggestions for new values will be welcomed by the Human Nutrition Research Unit.

## 2. Food Categories

In classifying the foodstuffs, two considerations have been kept in mind—firstly, the type of dietary commonly found in tropical countries and secondly, the nutritive value of the foods. They have been grouped as follows:—

1. Cereals and Starchy Roots, Fruits, etc.
  - (a) Cereals
  - (b) Starchy Roots, Fruits, etc.
2. Legumes
3. Oilseeds and Nuts
4. Vegetables
  - (a) Leafy, Green and Yellow
  - (b) Other

*Food Categories—contd.*

5. Fungi and Yeasts
6. Fruits
7. Stems
8. Fats and Oils
9. Animal Products (except Fats)
  - (a) Fish and Fish Products (including Molluscs and Crustacea)
  - (b) Insects
  - (c) Meat, Meat Products and Eggs
  - (d) Milk and Milk Products
10. Condiments and Spices
11. Syrups, Sugars and Preserves
12. Beverages.

**3. Explanations and Definitions**

(a) *Carbohydrate* values are conventionally expressed either as available carbohydrate by direct chemical analysis (AC) or as carbohydrate estimated arithmetically by difference (CD). For certain foodstuffs these values are similar and in some cases identical, but in others there are considerable differences. The values for carbohydrates (C) given here represent a compromise between the two, arrived at by assuming that, after deducting the fibre (F), one-half the carbohydrate, not allowed for in the chemical analysis but included in the total carbohydrates estimated by difference, is utilised in the body. This may be expressed in the formula  $C = \frac{1}{2}(AC + CD - F)$ . Where values for total carbohydrate only could be found, this figure (excluding fibre) has been given in italics and the calorie value is then shown in brackets.

(b) *Calories*—The factors 4, 9 and 4 Calories per gram of protein, fat and carbohydrate respectively have been employed in computing calorie values. The values obtained are therefore only approximations, but their order of accuracy is sufficient for the purpose described above.

(c) *Minerals*—The figures are for total mineral content and take no account of availability.

(d) *Vitamins*—Vitamin values of any given food may vary widely and are affected by such factors as variety, maturity, storage and processing, as well as locality and, in the case of certain animal products, the feeding of the animal. Where the range is so wide that the value given in the tables cannot be regarded as representative, fuller information is given in a footnote.

*Vitamin A* values are expressed as International Units (I.U.) of vitamin A, either as vitamin A itself or as the equivalent of  $\beta$ -carotene, denoted by the symbol “-c” (1 I.U. = 0.6 mcg.  $\beta$ -carotene). In computing requirements and intake, 1 I.U. of vitamin A may for the present be taken as the equivalent of 3 I.U. in the form of a precursor. It should be noted that the allowance of 5,000 I.U. recommended by the National Research Council (U.S.A.) is based on the assumption that 40 per cent. is derived from vitamin A and 60 per cent. from precursors. It is thus the equivalent of 3,000 I.U. in terms of vitamin A only. The ratio in biological value of vitamin A to its precursor, carotene, varies, and when knowledge permits, separate factors may have to be used for different foodstuffs.

*Vitamin B<sub>1</sub>* (aneurin, thiamine) is shown in mg., the relation to International Units being 1 I.U. = 3 mcg.

(e) *Abbreviations.*

- 0 = contains none
- ∅ = contains so small a quantity, if any, that it can be neglected in the dietary evaluation
- \* = average nutrient factors which should be used if there is no detailed information on the type of the commodity
- [ ]<sub>x</sub> = taken as Item No. x
- ( ) = tentative or provisional value
- c = I.U. vitamin A as carotene
- w = white varieties
- y = yellow varieties.

#### 4. "Edible Portion" and "As Purchased"

All values refer to the portion usually eaten (E.P.) and, where possible, a waste figure has been shown as a percentage of the food as purchased (A.P.). The proportion of waste may vary widely, e.g. in mangoes from 10 to 52 per cent. according to the size of seed, amount of fibre, etc.; or, in fish, according not only to size and species but to the consumer's method of handling it. In a survey it is therefore advisable to determine the waste values locally for at least the important foods. Where dietary records are kept on an A.P. basis, the nutrient values to be applied may be calculated from the E.P. figures as follows:—

$$\text{A.P. value} = \text{E.P. value} \times \frac{(100 - \text{Waste percentage})}{100}$$

#### 5. Importance of Water Content

Many tables of food composition omit values for water content. This varies considerably from one sample to another, affecting the values for all nutrients, and scrutiny of the literature reveals that many apparent divergencies are eliminated when allowance is made for differences in water content. The effect of this factor is, of course, most marked in foods of high water content, such as fruits and fresh vegetables. Where necessary, the nutrient values shown here should be adjusted to a value for water determined independently.

#### 6. Importance of Accurate Evaluation of Staple Foods

In the case of foods consumed in large quantities, and supplying a substantial proportion of the total diet, e.g. rice, maize, cassava (depending on the food habits of the community), quite small differences in composition may give rise to very large differences in the final results of a survey and its estimate of nutrient intake. If, therefore, there is any reason to doubt the values given for a community's staple foodstuff, special analyses should be done.

#### 7. Plant "Pot-ashes", Edible Earths and Drinking Water

In some localities, native "salt" made from the ashes of marsh or other plants is used. Such "pot-ashes" may contribute substantial amounts of minerals to the dietary, and so may edible earths and drinking water. No representative values can, however, be given for any of these items, because the range of variation is too great; special analyses would be required in each case.

### **8. Use of Common and Botanical Names**

Where several common names are given for one item, they are not necessarily strictly alternatives but may refer to several species taken as a group for the purpose of these tables, e.g. taro, eddoes, cocoyams, yautia. Only the most widely used common names are given, but with the help of the botanical names it is possible to consult H. C. Sampson's monograph, *Cultivated Crops of the British Empire and the Anglo-Egyptian Sudan* (Sampson, 1936), in which many additional local names will be found. He gives, for example, as many as twenty names for egg-plant.

Alternative botanical names given by Sampson are shown at the end of the tables (p. 35), followed by a list of the literature consulted.

### **9. Acknowledgments**

Acknowledgments for help in regard to the collection and presentation of these data are due to members of the Human Nutrition Research Unit (1944-5) and of the Nyasaland Nutrition Survey (1938-9); and to Mrs. G. M. Culwick and Miss M. W. Grant, B.Sc.



No.	PRODUCT	SCIENTIFIC NAME	REPRESENTATIVE			
			Water Content		Calories	Protein
			Range	Selected Value		
	<b>I.—CEREALS and STARCHY ROOTS, FRUITS, Etc.</b>		g.	g.		g.
	<b>A. Cereals</b>					
1	Buckwheat, flour .. ..	Fagopyrum esculentum Moench.	—	14	(337)	6
2	Job's tears (adlay), seed ..	Coix lachryma-jobi Linn.	—	23	(304)	11
3	Maize (Indian corn)	Zea mays Linn.				
4	Whole, white .. ..	.. .. .	6-12	12	349	10
5	Whole, yellow .. ..	.. .. .	6-12	12	349	10
6	Meal*, about 96 per cent. extraction	.. .. .	—	12	342	9.5
7	Meal*, highly refined, about 60 per cent. extraction	.. .. .	11-15	12	337	8
8	Hominy (samp) .. ..	.. .. .	—	11	(353)	8.5
9	Maize starch (cornflour), commercial	.. .. .	—	12	352	0.5
10	Germ meal—germ, some endosperm and fine bran	.. .. .	24-27	25 <sup>(b)</sup>	249	8
11	Immature (green mealies, sweetcorn), on cob including sheath	.. .. .	37-84	80 <sup>(e)</sup>	(79)	3
11	<b>Millet</b>					
12	Bulrush, seed .. ..	Pennisetum typhoides Stapf & Hubbard	9-14	12	(365)	11
13	Finger, seed .. ..	Eleusine coracana Gaertn.	10-14	12	(338)	6
14	Various (broomcorn, China, common, French, hog, Italian, little, proso)	{ Panicum spp. (cultivated) Setaria spp. (cultivated) }	8-16	12	(336)	10
14	Oatmeal, 65 per cent. extraction	Avena sativa Linn.	—	9	386	12
15	Paste—see under Wheat					
15	Rice	Oryza sativa Linn.				
16	Home pounded or lightly milled.	.. .. .	10-16	12	354	8
17	Milled, i.e. highly milled ..	.. .. .	11-13	12	349	7
18	Parboiled, milled .. ..	.. .. .	11-13	12	352	7.5
18	Rye, 85-90 per cent. extraction	Secale cereale Linn.	—	12	327	8
19	Sorghum (guineacorn, kaffir-corn)	Sorghum spp. (cultivated)				
20	Whole seed .. ..	.. .. .	8-14	12	(356)	10.4
21	"Straight run" meal .. ..	.. .. .	—	12	(352)	9.6
21	Table meal, bran removed	.. .. .	—	12	(356)	9.5

## VALUES PER 100 gm. EDIBLE PORTION

Fat	Carbo- hydrate	Calcium	Iron	Vitamins					WASTE per cent. of Food as purchased	No.
				A	Aneurin	Riboflavin	Nicotinic Acid	Ascorbic Acid		
g.	g.	mg.	mg.	I.U.	mg.	mg.	mg.	mg.		
1	76	10	1	s	0.13	0.11	(4)	0	0	1
4	56	200	10	—	0.14	—	—	—	0	2
4.5	67	12	5	s	0.33	0.13	1.5	0	— <sup>(a)</sup>	3
4.5	67	12	5	100-c	0.33	0.13	1.5	0	— <sup>(a)</sup>	4
4	67	12	5	{ w y w s y } 100-c	0.3	0.13	1.5	0	0	5
0.5	75	9	2	{ w y w s y } 100-c	0.05	0.03	0.6	0	0	6
0.6	78.5	11	4	s	0.05	0.02	0.2	0	0	7
0.2	87	15	1.4	0	0	0	0	0	0	8
5	43 <sup>(c)</sup>	15	6	{ w y w s y } 100-c	0.6	0.26	3.0	0	— <sup>(a)</sup>	9
0.8	15	9	0.5	{ w y w s y } 250-c	0.15	0.05	1.7	10	60 <sup>(e)</sup>	10
5	69	(25)	(6)	s	0.50	—	3.2	0	0	11
2	74	350	5	s	0.28	0.05	1.4	0	0	12
4	65	20	5	s	0.6	—	(0.3)	0	0	13
8.7	65	60	5	s	0.50	0.14	1.3	0	0	14
2	76	10	2	s	0.24	0.1	2	0	0	15
1	78	5	0.5	0	0.06	0.05	1	0	0	16
1.5	77	8	1	s	0.21	0.1	4	0	0	17
2.5	68	50	3.5	s	0.27	0.10	1.2	0	0	18
3.4	70.9	32	6.6	s	0.50 <sup>(f)</sup>	0.12	3.5	0	0	19
2.7	72.2	34	(6.6)	s	0.47 <sup>(f)</sup>	0.10	3.0	0	0	20
2.7	73.3	38	8.7	s	0.44 <sup>(f)</sup>	0.08	2.6	0	0	21

No.	PRODUCT	SCIENTIFIC NAME	REPRESENTATIVE			
			Water Content		Calories	Protein
			Range	Selected Value		
	<b>I.—CEREALS and STARCHY ROOTS, FRUITS, Etc.—<i>contd.</i></b>		g.	g.		g.
	<b>A. Cereals—<i>contd.</i></b>					
	Wheat	Triticum vulgare Host Cultigen.				
22	Whole* .. .. .	.. .. .	—	13	316	11.5(g)
23	Flour, 85 per cent. extrac- tion	.. .. .	—	13	346	11
24	Flour, 70 per cent. extrac- tion (white)	.. .. .	—	13	351	10
25	Bread .. .. .	.. .. .				
26	Paste (macaroni, noodles, spaghetti)	.. .. .	9-11			

*Additional Names*

Adlay, *see* Job's tears  
 Cornflour, *see* Maizestarch  
 Green mealies, *see* Maize, immature  
 Guineacorn, *see* Sorghum  
 Indian corn, *see* Maize  
 Kaffircorn, *see* Sorghum  
 Macaroni, *see* Paste  
 Millet, pearl, *see* Millet, bulrush  
 Noodles, *see* Paste  
 Samp, *see* Maize, hominy  
 Spaghetti, *see* Paste  
 Sweetcorn, *see* Maize, immature.

*For significance of asterisks and other abbreviations used throughout Tables, see p. 6.*

## VALUES PER 100 gm. EDIBLE PORTION

Fat	Carbo- hydrate	Calcium	Iron	Vitamins					WASTE per cent. of Food as purchased	No.
				A	Anurin	Riboflavin	Nicotinic Acid	Ascorbic Acid		
g.	g.	mg.	mg.	I.U.	mg.	mg.	mg.	mg.		
2.4	62	30	3.5	0	0.40	0.17	5	0	0	22
1.6	72	20	2.5	0	0.30 <sup>(h)</sup>	0.10	1.5 <sup>(i)</sup>	0	0	23
1	75.5	16	2	0	0.06	0.05	1	0	0	24
Take as 72 per cent. of corresponding flour										25
Take as corresponding flour corrected for water content										26

## Footnotes

- (a) For ripe maize on cob, with sheath, waste = 25 per cent.
- (b) Water content is relatively high because the grain is moistened to facilitate pounding and this fraction is usually eaten immediately without re-drying.
- (c) "Available" carbohydrate. The data are insufficient for the formula described in the Introduction to be applied.
- (d) This fraction represents approximately 5 per cent. of the original grain.
- (e) Water content and percentage of waste decrease with maturity.
- (f) Value given for aneurin in whole sorghum is from unpublished data, and the values for sorghum meals have been calculated from this on the basis of the loss shown by Fox & Golberg, *South African Food Tables*. Wide variation found.
- (g) Protein may vary from 8-15 per cent., but calorie value remains the same: U.K. 11.5, Manitoba 13.9, Australian 10-15, S. African 13.6.
- (h) Atta, various grades, 0.4-0.6 mg.
- (i) Atta, various grades, 4.0-6.5 mg.

No.	PRODUCT	SCIENTIFIC NAME	REPRESENTATIVE			
			Water Content		Calories	Protein
			Range	Selected Value		
	<b>I.—CEREALS and STARCHY ROOTS, FRUITS, Etc.—contd.</b>		g.	g.		g.
	<b>B. Starchy Roots, Fruits, etc.</b>					
27	Arrowroot .. .. .	Maranta arundinacea Linn.	11-17	15	(337)	0.2
28	Banana (a) .. .. .	Musa sapientum Linn.	61-84	70	103	1
29	Breadfruit, pulp (a) .. .. .	Artocarpus communis Forst.	66-74	70	(109)	1.5
	Cassava (manioc)	Manihot utilisima Pohl.				
30	Flour .. .. .	.. .. .	11-13	12	314	1.5
31	Fresh tuber .. .. .	.. .. .	49-74	60	131	0.7
32	Tapioca .. .. .	.. .. .	—	11	346	0.5
33	Jak fruit, pulp (a) .. .. .	Artocarpus integer (Thunb.) Merr.	—	86	47	2.5
34	Plantain, green (a) .. .. .	Musa paradisiaca Linn.	61-84	70	103	1
35	Potato Irish .. .. .	Solanum tuberosum Linn.	75-81	78	82	2
36	Potato Sweet .. .. .	Ipomoea batatas (Linn.) Lam.	58-79	70	121	2
37	Sago, flour .. .. .	Metroxylon sago Rottb.	—	12	(341)	0.3
38	Taro (coco, cocoyam, dasheen, eddo, tannia, yautia)	Colocasia, Alocasia & Xanthosoma spp.	56-83	75	88	2
39	Yam .. .. .	Dioscorea spp. ..	62-80	73	100	2

*Additional Names*

Coco, *see* Taro  
 Cocoyam, *see* Taro  
 Dasheen, *see* Taro  
 Eddo, *see* Taro  
 Manioc, *see* Cassava  
 Tannia, *see* Taro  
 Yautia, *see* Taro.

*For significance of asterisks and other abbreviations used throughout Tables, see p. 6.*

## VALUES PER 100 gm. EDIBLE PORTION

Fat	Carbo- hydrate	Calcium	Iron	Vitamins					WASTE per cent. of Food as purchased	No.
				A	Ascorin	Riboflavin	Nicotinic Acid	Ascorbic Acid		
g.	g.	mg.	mg.	I.U.	mg.	mg.	mg.	mg.		
ø	84	7	1	0	0	(0)	(0)	0	0	27
0.3	24	7	0.5	350-c <sup>(b)</sup>	0.05	0.06	0.5	10	33	28
0.3	(25)	25	1	35-c	(0.2)	—	—	(15)	—	29
ø	77	55	4	0	ø	(0)	[(1.2)] <sub>33</sub>	0	—	30
ø	32	25	1	0	0.02	0.1	—	30	15 <sup>(c)</sup>	31
ø	86	10	1	0	0	(0)	(1.2)	0	0	32
0.3	8.5	20	0.5	400-c	[(0.2)] <sub>33</sub>	—	0.4	10	—	33
0.3	24	7	0.5	100-c	[0.05] <sub>33</sub>	[0.06] <sub>33</sub>	[0.5] <sub>33</sub>	[10] <sub>33</sub>	[33] <sub>33</sub>	34
ø	18.4	10	0.7	35-c	0.1	0.05	1	15	15	35
1	26	20	0.7	{ <sup>w</sup> y 4,000- 7,000-c}	0.1	0.06	0.7	20	15	36
ø	85	10	1	0	0	(0)	(0.2)	0	0	37
ø	20	25	1	40-c	(0.05)	[0.06] <sub>33</sub>	0.4	ø	20	38
ø	23	10	1.2	—	0.05	[0.06] <sub>33</sub>	[0.4] <sub>33</sub>	ø	[15] <sup>(d)</sup> <sub>31</sub>	39

## Footnotes

(a) Flours derived from breadfruit, bananas, etc., should be calculated from values for fresh foodstuff, bearing in mind that water-soluble factors may be washed out and accessory food factors like vitamin C may be lost.

(b) 30-700 I.U. (carotene) depending on variety.

(c) Thin outer peel only, removed after cooking, waste = 5 per cent.

(d) For large varieties, waste may be as low as 5 per cent.

No.	PRODUCT	SCIENTIFIC NAME	REPRESENTATIVE			
			Water Content		Calories	Protein
			Range	Selected Value		
	<b>II.—LEGUMES</b>		<i>g.</i>	<i>g.</i>		<i>g.</i>
40	Bambara groundnut (earth pea, juko bean)	Voandzeia subterranea Thou.	8-13	10	346	18
41	Bonavist bean (dolichos bean, field bean, hyacinth bean)	Dolichos lablab Linn.	7-10	8	325	24
42	Carob (locust bean), seed ..	Ceratonia siliqua Linn.	8-12	10	291	16
43	Chickpea (Bengal gram) ..	Cicer arietinum Linn.	8-10	9	353	22
44	Cowpea .. .. .	Vigna unguiculata (Linn.) Walp.	8-14	10	281	24
45	Goa bean (asparagus pea, winged bean), seed	Psophocarpus tetragonolobus DC.	—	14	396	33
	Groundnut (monkey nut, peanut)	Arachis hypogaea Linn.				
46	Dry.. (b) .. .. .	.. .. .	4-8	6	555	23
47	Fresh (b) .. .. .	.. .. .	38-46	45	(328)	(13)
48	Horse bean (broad bean) ..	Vicia faba Linn. ..	—	8	(338)	31
49	Horse gram .. .. .	Dolichos biflorus Linn.	9-12	10	293	22
50	Kidney bean (French, haricot, navy, pinto, snap)	Phaseolus vulgaris Linn.	8-15	10	306	24
51	Lentil (red dhall), split pea	Lens esculenta Moench.	6-12	10	305	24
52	Lima bean (butter bean, curry bean, Madagascar bean)	Phaseolus lunatus Linn.	8-14	12	305	20
53	Locust bean (not Carob), seed	Parkia spp. ..	9-14	12	243	15
54	Mung bean (black gram, woolly pyrol)	Phaseolus mungo Linn.	10-14	11	317	24
55	Mung bean (green gram) ..	Phaseolus aureus Roxb.	10-12	12	309	22
56	Pea, garden or field .. ..	Pisum sativum Linn.	7-22	10	309	22
57	Pigeon pea (Congo pea, red gram, yellow dhall)	Cajanus cajan Linn.	7-15	10	306	22
	Soya bean	Glycine max (Linn.) Merr.				
58	Curd .. .. .	.. .. .	—	84	81	7.5
59	Milk .. .. .	.. .. .	—	93	35	3.4
60	Sauce .. .. .	.. .. .	—	72	(55)	5.9
61	Seed, edible varieties ..	.. .. .	6-13	7	382	35
62	Sword bean (Jack bean), kernel	Canavalia ensiformis DC.	—	8	391	38

## VALUES PER 100 gm. EDIBLE PORTION

Fat	Carbo- hydrate	Calcium	Iron	Vitamins					WASTE per cent. of Food as purchased	No.
				A	Aneurin	Riboflavin	Nicotinic Acid	Ascorbic Acid		
g.	g.	mg.	mg.	I.U.	mg.	mg.	mg.	mg.		
6	55	90	4	—	0.30	—	—	0	0	40
1	55	60	2	—	0.18	—	1.8	0	0	41
3	50	—	—	—	—	—	—	—	—	42
5	55	200	9	300-c	(0.35)	(0.15)	(1.4)	12	0	43
1	44	90	4	50-c	0.89	0.14	1.3	0	0 <sup>(a)</sup>	44
16	30	—	—	—	0.03	—	—	0	—	45
47 (28)	10 (6)	50 (29)	2 (1)	∅	0.9 (0.5)	0.14 (0.08)	17.4 (10.2)	0 10	30 35	46 47
1.5	50	95	6	—	—	—	—	—	—	48
0.5	50	280	8	100-c	—	—	—	0	—	49
2	48	110	8	0	0.45	0.34	2.3	0	0 <sub>a</sub>	50
1	50	40	7	200-c	0.65	0.18	2.8	0	0	51
1	54	70	6	∅	0.53	0.14	1.4	0	0	52
7	30	—	—	—	—	—	—	—	—	53
1	53	200	9	[0] <sub>100</sub>	0.42	[0.34] <sub>100</sub>	[2.3] <sub>100</sub>	0	0	54
1	53	140	8	[0] <sub>100</sub>	0.46	[0.34] <sub>100</sub>	[2.3] <sub>100</sub>	0	0	55
1	53	60	4	200-c	0.45	0.18	2.8	0	0	56
2	50	140	4	[0] <sub>100</sub>	0.45	[0.34] <sub>100</sub>	[2.3] <sub>100</sub>	0	0	57
4.2	3.4	34 <sup>(c)</sup>	1.8	—	—	—	—	—	—	58
1.5	2.0	12	—	—	—	—	—	—	—	59
1.2	5.2	59	4.9	—	—	—	—	0	0	60
18	20	220	7	∅ <sup>(d)</sup>	1.12	0.32	2.1	∅	0	61
3	53	100	—	—	0.15	—	—	0	(10) <sup>(e)</sup>	62



No.	PRODUCT	SCIENTIFIC NAME	REPRESENTATIVE			
			Water Content		Calories	Protein
			Range	Selected Value		
			g.	g.		g.
	<b>II.—LEGUMES—contd.</b>					
63	Tepary bean .. .. .	Phaseolus acutifolius A.	—	10	341	24
64	Velvet bean .. .. .	Mucuna utilis hort.	9-15	10	231	24

**Additional Names**

Asparagus pea, *see* Goa bean  
 Bengal gram, *see* Chickpea  
 Broad bean, *see* Horse bean  
 Butter bean, *see* Lima bean  
 Congo pea, *see* Pigeon pea  
 Curry bean, *see* Lima bean  
 Dolichos bean, *see* Bonavist bean  
 Dhall, red, *see* Lentil  
 Dhall, yellow, *see* Pigeon pea  
 Earth pea, *see* Bambara groundnut  
 Field bean, *see* Bonavist bean  
 French bean, *see* Kidney bean  
 Gram, red, *see* Pigeon pea  
 Gram, black, *see* Mung bean  
 Gram, green, *see* Mung bean  
 Haricot bean, *see* Kidney bean  
 Hyacinth bean, *see* Bonavist bean  
 Jack bean, *see* Sword bean  
 Jugo bean, *see* Bambara groundnut  
 Locust bean, *see* Carob, *also* Item 53  
 Madagascar bean, *see* Lima bean  
 Monkey nut, *see* Groundnut  
 Navy bean, *see* Kidney bean  
 Peanut, *see* Groundnut  
 Pinto bean, *see* Kidney bean  
 Snap bean, *see* Kidney bean  
 Winged bean, *see* Goa bean  
 Woolly pyrol, *see* Mung bean.

**LEGUMES, FRESH**

*See under* Vegetables, leafy,  
 green and yellow, *also* Item  
 47 above.

VALUES PER 100 gm. EDIBLE PORTION										WASTE per cent. of Food as purchased	No.
Fat	Carbo- hydrate	Calcium	Iron	Vitamins							
				A	Aneurin	Riboflavin	Nicotinic Acid	Ascorbic Acid			
g.	g.	mg.	mg.	I.U.	mg.	mg.	mg.	mg.			
1	59	—	—	—	—	—	—	0	—	63	
3	27	130	—	50-c	0.3	—	—	0	—	64	

*Footnotes*

(a) Seed coat is sometimes removed, averaging 10 per cent.

(b) Nutrient values (except for vitamin C) are provisional only, calculated from values for dry nuts.

(c) Depends on agent used for curdling the soya milk and may be as high as 270 mg.

(d) 0-400 I.U. (carotene), depending on variety.

(e) Taken as seed coat of kidney bean.

*For significance of asterisks and other abbreviations used throughout Tables, see p. 6.*

No.	PRODUCT	SCIENTIFIC NAME	REPRESENTATIVE			
			Water Content		Calories	Protein
			Range	Selected Value		
	<b>III.—OIL SEEDS and NUTS</b>		g.	g.		g.
65	Areca nut .. .. .	Areca catechu Linn.	—	31	(248)	4.9
66	Avocado pear, flesh .. ..	Persea americana Mill.	67-82	72	(208)	2
67	Cashew nut .. .. .	Anacardium occidentale Linn.	4-6	5	571	20
	Coconut	Cocos nucifera Linn.				
68	Kernel, ripe fresh .. ..	.. .. .	20-52	43	404	4
69	Milk, ripe nut .. .. .	.. .. .	—	92	22	0.5
70	Dika nut, kernel, sun-dried ..	Irvingia gabonensis Baill.	—	—	—	—
71	Goa bean (asparagus pea, winged bean), seed	Psophocarpus tetragonolobus DC.	—	14	396	33
72	Groundnut (monkey nut, peanut), dry	Arachis hypogaea Linn.	4-8	6	555	23
73	Kola nut .. .. .	Cola acuminata Schott & Endl.	—	12	(309)	9
74	Oilbean, kernel .. .. .	Pentaclethra macrophylla Bth.	—	10	(561)	22
75	Olive, flesh .. .. .	Olea europea Linn.	—	30	(528)	5
76	Oyster nut, kernel .. ..	Telfairia spp. ..	—	—	—	—
77	Pumpkin, seed, kernel .. ..	Cucurbita spp. ..	—	3	(594)	26
78	Sesame (beniseed, gingelly, simsim), seed	Sesamum indicum Linn.	4-8	5	570	20
79	Shea nut, kernel .. .. .	Butyrospermum parkii Kotschy	—	(7)	(545)	(9)
80	Soya bean, seed, edible varieties	Glycine max (Linn.) Merr.	6-13	7	382	35
81	Sunflower, seed, kernel ..	Helianthus annuus Linn.	4-8	6	(569)	27

*Additional Names*

Asparagus pea, *see* Goa bean  
 Beniseed, *see* Sesame  
 Fluted pumpkin, *see* Oyster nut  
 Gingelly, *see* Sesame  
 Monkey nut, *see* Groundnut  
 Peanut, *see* Groundnut  
 Simsim, *see* Sesame  
 Winged bean, *see* Goa bean.

## VALUES PER 100 gm. EDIBLE PORTION

Fat	Carbo- hydrate	Calcium	Iron	Vitamins					WASTE per cent. of Food as purchased	No.
				A	Ascorbin	Riboflavin	Nicotinic Acid	Ascorbic Acid		
g.	g.	mg.	mg.	I.U.	mg.	mg.	mg.	mg.		
4.4	47	50	1.5	ø	—	—	—	—	—	65
20	5	10	1	200-c <sup>(a)</sup>	0.1	0.15	1.0	20 <sup>(b)</sup>	30	66
45	21.5	50	5	ø	—	—	—	0	—	67
40	7	10	2	0	0.11	—	(0.4)	1	35 <sup>(c)</sup>	68
ø	5.	30	ø	0	0	—	—	2	— <sup>(c)</sup>	69
54	—	—	—	—	—	—	—	—	—	70
16	30	—	—	—	0.03	—	—	0	—	71
47	10	50	2	ø	0.9	0.14	17.4	0	30	72
1	66	—	—	—	—	—	—	—	—	73
45	17	90	—	—	—	—	—	—	—	74
52	(10)	100	10	(500-c)	—	—	—	—	25	75
48	—	—	—	—	—	—	—	—	—	76
50	10	60	4	—	—	—	—	—	25	77
50	10	1,500	15	ø	0.42	—	—	0	—	78
45	(26)	—	—	—	—	—	—	—	—	79
18	20	220	7	ø <sup>(d)</sup>	1.12	0.32	2.1	ø	0	80
45	14	100	7	—	—	—	—	—	50	81

## Footnotes

(a) 100-850 I.U. (carotene) depending on variety.

(b) 7-37 mg. depending on variety.

(c) For kernel and milk together, waste = about 20 per cent., i.e. kernel averages 65 per cent. and milk 15 per cent. of ripe nut as purchased; by "milk" is meant fluid in coconut, and not a preparation made from grated coconut flesh.

(d) 0-400 I.U. (carotene) depending on variety.

For significance of asterisks and other abbreviations used throughout Tables, see p. 6.

No.	PRODUCT	SCIENTIFIC NAME	REPRESENTATIVE			
			Water Content		Calories	Protein
			Range	Selected Value		
	<b>IV.—VEGETABLES</b>		g.	g.		g.
	<b>A. Leafy, Green and Yellow</b>					
82	Beans, all, eaten green in pod	.. .. .	78-94	90	30	2
83	Beans and peas, all, eaten green, shelled	.. .. .	70-80	76	73	6.5
84	Betel leaves .. .. .	Piper betle Linn. ..	—	85	(36)	3
85	Carrots, without tops, med. maturity	Daucus carota Linn.	86-95	90	30	0.9
86	Leaves, fresh High carotene—dark green, e.g. leaves of amaranths, beet, cassava, cowpea, kale, mustard, pumpkin, spinach, sweet potato, turnip, watercress	.. .. .	65-95	85	44	4
87	Low carotene—pale green, e.g. brussels sprout, cabbage	.. .. .	65-95	90	26	3
88	Lettuce, mainly green ..	.. .. .	—	94	14	1.4
89	Leaves, sun-dried, high carotene (c)	.. .. .	7-10	10	(264)	(24)
90	Leek .. .. .	Allium porrum Linn. and A. ampeloprasum Linn.	85-92	88	25	1.0
91	Okra (Ladies' finger) ..	Hibiscus esculentus Linn.	80-94	90	29	1.8
92	Onion, spring .. ..	Allium fistulosum Linn.	—	88	33	1.8
	Pepper, sweet (sweet chilli, paprika), fresh	Capsicum annum Linn.				
93	Green .. .. .	.. .. .	82-93	88	37	2
94	Red .. .. .	.. .. .	82-93	88	37	2
	Pepper, sweet, sun-dried (h)					
95	Green .. .. .	.. .. .	10-14	12	(268)	(15)
96	Red .. .. .	.. .. .	10-14	12	(268)	(15)
97	Persimmon leaves Fresh .. .. .	Diospyros kaki Linn. .. .. .	—	—	—	—
98	Dried .. .. .	.. .. .	—	—	—	—
99	Pumpkin (squash), yellow ..	Cucurbita spp. ..	79-95	90	28	1

**Additional Names**

Chilli, sweet, *see* Pepper, sweet  
Ladies' finger, *see* Okra  
Paprika, *see* Pepper, sweet  
Squash, *see* Pumpkin.

*For significance of asterisks and other abbreviations used throughout Tables, see p. 6.*

## VALUES PER 100 gm. EDIBLE PORTION

Fat	Carbo- hydrate	Calcium	Iron	Vitamins					WASTE per cent. of Food as purchased	No.
				A	Aneurin	Riboflavin	Nicotinic Acid	Ascorbic Acid		
g.	g.	mg.	mg.	I.U.	mg.	mg.	mg.	mg.		
ø	5.5	64	1.4	600-c	0.08	0.12	0.5	20	10	82
ø	11.8	40	2	400-c	0.20	0.15	0.5	25	55	83
ø	6	150 <sup>(a)</sup>	5.7	9,500-c	—	—	0.70	5	—	84
ø	6.7	40	0.7	13,000-c	0.07	0.06	0.56	6	10	85
0.4	6	210	3	13,000-c	0.15	0.25	0.85	100	20 <sup>(e)</sup>	86
0.2	3	85	1	500-c <sup>(b)</sup>	0.10	0.10	0.35	50	— <sup>(e)</sup>	87
ø (2.4)	2 (36)	35 (1,260)	0.7 (18)	2,000-c. (7,800-c) <sup>(d)</sup>	0.05 —	0.04 —	0.18 —	7 (42)	— —	88 89
ø	5.3	50	1	700-c	0.03	(0.1)	(0.1)	20	48	90
ø	5.5	70	1	1,000-c	0.1	0.1	0.7	25	12	91
ø	6.5	40	0.9	3,000-c	0.05	(0.12)	(0.11)	20	48	92
0.5 0.5	6 6	20 20	1 1	1,000-c <sup>(f)</sup> 18,000-c <sup>(i)</sup>	0.06 [0.06] <sub>ss</sub>	0.04 [0.04] <sub>ss</sub>	0.40 [0.40] <sub>ss</sub>	200 <sup>(g)</sup> 350 <sup>(j)</sup>	16 <sup>(h)</sup> 20 <sup>(h)</sup>	93 94
(3.5) (3.5)	(44) (44)	(150) (150)	(7) (7)	730-c <sup>(j)</sup> 13,000-c <sup>(l)</sup>	— —	— —	— —	100 <sup>(j)</sup> 180 <sup>(j)</sup>	— —	95 96
—	—	—	—	—	—	—	—	2,728	—	97
—	—	—	—	—	—	—	—	3,585 <sup>(m)</sup>	—	98
ø	6	20	0.8	1,100-c	0.04	0.05	0.7	5	25	99

## Footnotes

(a) Chewed with lime. Amount and utilisation of calcium ingested with 6 betel leaves similar to 10 oz. cow's milk.

(b) For white cabbage, take vitamin A = 50 I.U. (carotene).

(c) Nutrient values are provisional only, calculated from values for fresh leaves, and assuming vitamin losses as for sweet peppers, see note (i).

(d) On this basis, value for low-carotene group would be 450 I.U. and for white cabbage 45 I.U.

(e) For 16 kinds of leaves used in Nyasaland, waste varied from 0-60 per cent.

(f) 200-5,200 I.U. (carotene), depending on variety.

(g) 100-300 mg., depending on variety.

(h) This figure includes seeds and cores as well as stem ends.

(i) 5,700-41,000 I.U. (carotene), depending on variety.

(j) 250-560 mg., depending on variety.

(k) Values for protein, fat, carbohydrate and minerals are provisional only, calculated from values for fresh peppers.

(l) Allows for 90 per cent. loss of vitamin A and 93 per cent. loss of vitamin C during drying. Further losses would be sustained during storage. See Adams & Smith, *The vitamin content and the preservation of foods*, p. 50.

(m) Even the tea made from dried persimmon leaves is stated to be a potent source of vitamin C.

No.	PRODUCT	SCIENTIFIC NAME	REPRESENTATIVE			
			Water Content		Calories	Protein
			Range	Selected Value		
	<b>IV.—VEGETABLES—contd.</b> <b>B. Other</b>		g.	g.		g.
100	Beetroot, without tops ..	Beta vulgaris Linn.	82-94	87	41	1.8
101	Cucumber, various .. ..	Cucumis sativus Linn.	91-97	96	10	0.6
102	Egg plant (aubergine, brinjal, garden egg) .. ..	Solanum melongena Linn.	89-94	93	20	1
103	Gourd .. ..	Lagenaria vulgaris Ser.	86-96	90	26	0.5
104	Leek .. ..	Allium porrum Linn. and A. ampeloprasum Linn.	85-92	88	25	1.0
105	Lotus root .. ..	Nelumbium nucifera Gaerth.	83-96	96	(12)	0.4
106	Maize, immature (green mealies, sweetcorn), on cob including sheath .. ..	Zea mays Linn. ..	37-84	80 <sup>(a)</sup>	(79)	3
107	Onion and shallot .. ..	Allium cepa Linn. & A. ascalonicum Linn.	70-95	87	37	1
108	Onion, spring .. ..	Allium fistulosum Linn.	—	88	33	1.8
109	Radish .. ..	Raphanus sativus Linn.	—	94	16	1.2
110	Tomato, with skin .. ..	Lycopersicum esculentum Mill.	90-96	92	18	1
111	Turnip and swede .. ..	Brassica spp. ..	—	87	36	1.2
	Water calthrop	Trapa natans L.				
112	Large .. ..	.. ..	—	45	(214)	5
113	Red (Jesuits' nut) .. ..	.. ..	—	81	(68)	3
114	Water chestnut .. ..	Scirpus tuberosus Roxb.	79-85	85	(54)	0.8

**Additional Names**

Aubergine, *see* Egg plant  
 Brinjal, *see* Egg plant  
 Garden egg, *see* Egg plant  
 Jesuits' nut, *see* Water calthrop, red  
 Mealies, green, *see* Maize, immature.

<b>V.—FUNGI and YEASTS</b>					
	Fungi, mixed				
115	Fresh .. ..	.. ..	76-93	90	7
116	Dried .. ..	.. ..	9-15	10	73
	Mushrooms*	Agaricus and Morchella spp.			
117	Fresh .. ..	.. ..	—	91	—
118	Dried .. ..	.. ..	—	12	—
	Yeast				
119	Bakers' .. ..	Saccharomyces cerevisiae	—	5	—
120	Brewers' .. ..	.. ..	—	5	—
121	Food .. ..	Torula utilis ..	—	8	206

*For significance of asterisks and other abbreviations used throughout Tables, see p. 6.*

## VALUES PER 100 gm. EDIBLE PORTION

Fat	Carbo- hydrate	Calcium	Iron	Vitamins					WASTE per cent. of Food as purchased	No.
				A	Aneurin	Riboflavin	Nicotinic Acid	Ascorbic Acid		
g.	g.	mg.	mg.	I.U.	mg.	mg.	mg.	mg.		
ø	8.5	30	1	ø	0.03	0.04	0.4	10	25	100
ø	1.8	10	0.3	200-c	0.04	0.05	0.18	10	30	101
ø	4	15	1	ø	0.05	0.03	0.79	5	13	102
ø	6	20	0.8	ø	[0.04] <sub>99</sub>	[0.05] <sub>99</sub>	[0.7] <sub>99</sub>	[5] <sub>99</sub>	[25] <sub>99</sub>	103
ø	5.3	50	1	700-c	0.03	(0.1)	(0.1)	20	48	104
ø	2.6	35	1.4	—	—	—	—	—	6	105
0.8	15	9	0.5	{ w ø y 250-c }	0.15	0.05	1.7	10	60 <sup>(a)</sup>	106
ø	8.2	30	0.4	250-c	0.03	0.1	0.1	15	5	107
ø	6.5	40	0.9	3,000-c	0.05	(0.12)	(0.11)	20	48	108
ø	2.8	38	1.6	ø	0.05	0.03	0.15	25	39	109
ø	3.5	9	0.4	1,200-c	0.05	0.04	0.7	25	2	110
ø	7.8	57	0.5	ø	0.03	0.06	0.7	34	15	111
0.7	47	36	1.6	—	—	—	—	—	57	112
ø	14	20	—	—	—	—	—	—	55	113
ø	12.7	4	0.8	—	—	—	0.6	—	28	114

## Footnote

(a) Water content and percentage of waste decrease with maturity.

0.3	0	5	1.2	0	[0.12] <sub>117</sub>	[0.52] <sub>117</sub>	[5.8] <sub>117</sub>	[9] <sub>117</sub>	[9] <sub>117</sub>	115
3.7	0	45	13	0	[(1.2)] <sub>118</sub>	ø	—	ø	—	116
0.3	ø	14	0.7	0	0.12	0.52	5.8	9	9	117
3.0	ø	—	—	0	(1.2)	ø	—	ø	—	118
2	— <sup>(a)</sup>	40	25	0	3	7	30-40	0	0	119
1	— <sup>(a)</sup>	80	20	0	16	4	30-40	0	0	120
2.4	3.0 <sup>(b)</sup>	127	20	0	2	6	30-40	0	0	121

## Footnote

(a) The only figures available are for total carbohydrate, including cellulose.

(b) "Available" carbohydrate in terms of starch.



No.	PRODUCT	SCIENTIFIC NAME	REPRESENTATIVE			
			Water Content		Calories	Protein
			Range	Selected Value		
			g.	g.		g.
<b>VI.—FRUITS</b>						
122	Avocado pear, flesh .. ..	<i>Persea americana</i> Mill.	67-82	72	(208)	2
123	Banana .. ..	<i>Musa sapientum</i> Linn.	61-84	70	103	1
124	Breadfruit, pulp .. ..	<i>Artocarpus com-</i> <i>munis</i> Forst.	66-74	70	(109)	1.5
125	Cape gooseberry (ground cherry)	<i>Physalis peruviana</i> Linn.	—	83	55	2
126	Citrus Lime .. ..	<i>Citrus aurantiifolia</i> (Christm.) Swingle	89-91	90	31	0.8
127	Orange and tangerine (man- darin orange, naartje)	<i>Citrus sinensis</i> Osbeck and C. <i>nobilis</i> Lour.	83-90	86	43	0.8
128	Other .. ..	<i>Citrus</i> spp. .. ..	86-94	89	30	0.5
129	Custard apple .. ..	<i>Annona reticulata</i> Linn.	—	74	(81)	2
130	Dates, dried .. ..	<i>Phoenix dactylifera</i> Linn.	15-23	20	284	2
131	Fig Fresh .. ..	<i>Ficus carica</i> Linn.	50-88	78	76	1.4
132	Dried .. ..	.. ..	17-24	20	269	4
133	Grape .. ..	<i>Vitis vinifera</i> Linn.	72-88	82	64	1
134	Grenadilla (passion fruit) ..	<i>Passiflora edulis</i> Sims.	—	72	(94)	2.3
135	Guava .. ..	<i>Psidium guajava</i> Linn.	75-85	80	36	1
136	Indian gooseberry .. ..	<i>Phyllanthus emblica</i> Linn.	—	—	—	—
137	Jak fruit, pulp .. ..	<i>Artocarpus integer</i> (Thunb.) Merr.	—	86	47	2.5
138	Mango, ripe .. ..	<i>Mangifera indica</i> Linn.	74-90	83	59	0.7
139	Melon Sweet (cantaloupe, honey- dew, muskmelon).	<i>Cucumis melo</i> Linn.	—	96	(10)	0.5
140	Water .. ..	<i>Citrullus vulgaris</i> Schrad.	—	93	26	0.5
141	Orange— <i>see under</i> Citrus					
142	Papaya (pawpaw) .. ..	<i>Carica papaya</i> Linn.	85-94	89	38	0.6
	Peach, flesh .. ..	<i>Prunus persica</i> Stokes	82-90	87	42	0.5

## VALUES PER 100 gm. EDIBLE PORTION

Fat	Carbo- hydrate	Calcium	Iron	Vitamins					WASTE per cent. of Food as purchased	No.
				A	Aneurin	Riboflavin	Nicotinic Acid	Ascorbic Acid		
g.	g.	mg.	mg.	I.U.	mg.	mg.	mg.	mg.		
20	5	10	1	200-c <sup>(a)</sup>	0.1	0.15	1.0	20 <sup>(b)</sup>	30	122
0.3	24	7	0.5	350-c <sup>(c)</sup>	0.05	0.06	0.5	10	33	123
0.3	(25)	25	1	35-c	(0.2)	—	—	(15)	—	124
0.8	10	10	1.8	5,000-c	0.01	—	—	30	6	125
ø	7	22	0.6	ø	(0.02)	ø	0.2	25	23	126
ø	10	30	0.3	250-c	0.08	0.03	0.2	45	25	127
ø	7	20	0.5	ø	0.04	ø	0.2	40	35	128
1	16	26	1	—	—	—	—	15	26	129
ø	69	70	2	100-c	0.07	0.03	2.2	0	13	130
ø	17.5	50	1	80-c	0.05	(0.05)	0.6	ø	0	131
1	61	200	4	100-c	0.2	—	1.7	ø	0	132
ø	15	20	0.3	50-c	0.03	0.01	0.3	ø	5	133
3.3	13.7	14	1.7	200-c	—	—	—	20	43 <sup>(d)</sup>	134
ø	8	15	1	200-c	0.06	0.03	0.5	200 <sup>(e)</sup>	20 <sup>(f)</sup>	135
—	—	—	—	—	—	—	—	600	—	136
0.3	8.5	20	0.5	400-c	[(0.2)] <sub>12A</sub>	—	0.4	10	—	137
ø	14	10	0.5	1,000-c <sup>(g)</sup>	0.06	0.05	0.2	30 <sup>(h)</sup>	34	138
ø	2	6	0.3	{ w ø y 2,400-c <sup>(i)</sup> }	0.05	0.05	0.05	35 <sup>(j)</sup>	20	139
ø	6	6	0.2	500-c	0.05	0.07	0.05	ø	50	140
ø	9	10	0.5	2,500-c	0.02	0.02	0.1	60 <sup>(k)</sup>	30	141
ø	10	8	0.4	{ w ø y 1,200 }	0.02	0.04	0.5	8	12	142

No.	PRODUCT	SCIENTIFIC NAME	REPRESENTATIVE			
			Water Content		Calories	Protein
			Range	Selected Value		
	<b>VI.—FRUITS—contd.</b>		g.	g.		g.
143	Persimmon .. .. .	Diospyros kaki Linn.	78-80	79	72	1
144	Pineapple .. .. .	Ananas comosus Linn.	81-90	85	54	0.4
145	Plantain, green .. ..	Musa paradisiaca Linn.	61-84	70	103	1
146	Pomegranate, pulp .. ..	Punica granatum Linn.	76-84	81	68	1
147	Prickly pear .. .. .	Opuntia spp. ..	—	81	(56)	1
148	Small fruit (based on blackberry, raspberry, strawberry)	.. .. .	—	85	26	1
149	Stone fruit (based on peach, apricot, plum)— <i>see also</i> Item 142	Prunus spp. ..	—	90	35	0.7
150	Tamarind .. .. .	Tamarindus indica Linn.	20-26	21	277	3.5
151	Tomato, with skin .. ..	Lycopersicum esculentum Mill.	90-96	92	18	1

*Additional Names*

Cantaloupe, *see* Melon, sweet  
 Ground cherry, *see* Cape gooseberry  
 Honeydew melon, *see* Melon, sweet  
 Mandarin orange, *see* Tangerine  
 Musk melon, *see* Melon, sweet  
 Naartje, *see* Tangerine  
 Passion fruit, *see* Grenadilla  
 Pawpaw, *see* Papaya.

VII.—STEMS						
152	Maize .. .. .	Zea mays Linn. ..	73-78	75	58	0.5
153	Sorghum .. .. .	Sorghum spp. ..	[73-78] <sup>153</sup>	[75] <sup>153</sup>	[58] <sup>153</sup>	[0.5] <sup>153</sup>
154	Sugar cane .. .. .	Saccharum officinarum Linn.	70-87	82	58	0.4

*For significance of asterisks and other abbreviations used throughout Tables, see p. 6.*

## VALUES PER 100 gm. EDIBLE PORTION

Fat	Carbo- hydrate	Calcium	Iron	Vitamins					WASTE per cent. of Food as purchased	No.
				A	Aneurin	Riboflavin	Nicotinic Acid	Ascorbic Acid		
g.	g.	mg.	mg.	I.U.	mg.	mg.	mg.	mg.		
ø	17	15	1	2,000-c	—	—	—	4 <sup>(l)</sup>	—	143
ø	13	20	1	200-c	0.09	0.02	0.1	30 <sup>(m)</sup>	40	144
0.3	24	7	0.5	100-c	[0.05] <sub>155</sub>	[0.06] <sub>155</sub>	[0.5] <sub>155</sub>	[10] <sub>155</sub>	[33] <sub>155</sub>	145
ø	16	10	0.7	—	—	0.01	—	10	44	146
ø	13	26	0.3	—	—	—	—	(15)	54	147
ø	5.6	40	1	100-c	0.02	0.02	0.16	30 <sup>(n)</sup>	1	148
ø	8	33	0.3	670-c <sup>(o)</sup>	0.02	0.04	0.55	9	9	149
1	63.5	170	11	100-c	—	—	0.10	10	—	150
ø	3.5	9	0.4	1,200-c	0.05	0.04	0.70	25	2	151

## Footnotes

- (a) 100-850 I.U. (carotene), depending on variety.  
 (b) 7-37 mg., depending on variety.  
 (c) 30-700 I.U. (carotene), depending on variety.  
 (d) Rind only.  
 (e) 10-450 mg., depending on variety and ripeness.  
 (f) Skins and seeds.  
 (g) May contain as much as 2,500-5,000 I.U. (carotene), depending on variety and ripeness.  
 (h) May contain as much as 100 mg.  
 (i) May contain as much as 32,000 I.U. (carotene), depending on variety.  
 (j) May contain as much as 100 mg.  
 (k) 30-120 mg., depending on variety.  
 (l) Native American varieties (D. Virginiana), 100 mg.  
 (m) May contain as much as 60 mg.  
 (n) Strawberries may contain two or three times this amount.  
 (o) For apricots take vitamin A = 2,500 I.U. (carotene), and for yellow peaches 1,200 I.U. (carotene).

ø	14 <sup>(a)</sup>	25	1	0	ø	—	—	ø	— <sup>(b)</sup>	152
[ø] <sub>155</sub>	[14] <sub>155</sub>	[25] <sub>155</sub>	[1] <sub>155</sub>	[0] <sub>155</sub>	[ø] <sub>155</sub>	—	—	[ø] <sub>155</sub>	— <sup>(b)</sup>	153
ø	14	10	1	0	ø	—	—	ø	— <sup>(b)</sup>	154

## Footnote

- (a) The sugars present as such may be as high as 10 per cent. in one sample and as low as 5 per cent. or even less in another.  
 (b) Commonly chewed to extract the juice; the material ejected after chewing includes saliva and therefore cannot be used as a basis for calculating the edible portion. Fibre in cane, by analysis = 10-15 per cent.

No.	PRODUCT	SCIENTIFIC NAME	REPRESENTATIVE			
			Water Content		Calories	Protein
			Range	Selected Value		
	<b>VIII.—FATS and OILS</b>		g.	g.		g.
155	Butter .. .. .	.. .. .	—	15	745	0.5
156	Ghee (clarified butter) ..	.. .. .	—	8	828	0
157	Lard and other animal fats and oils. (b)	.. .. .	—	1	891	0
158	Margarine .. .. .	.. .. .	—	14	768	0
159	Red palm oil .. .. .	<i>Elaeisguineensis</i> Jacq.	—	0	900	0
160	Vegetable oils, other, taken as free from water.	.. .. .	—	0	900	0

*Additional Names*Clarified butter, *see* Ghee.

	<b>IX.—ANIMAL PRODUCTS (except FATS)</b>					
	<b>A. Fish and Fish Products (including Molluscs and Crustacea)</b>					
	<b>Fish</b>					
161	Dressed, fresh* .. .. .	.. .. .	—	78	98	19
162	Lake, mixed, fresh. (a) ..	.. .. .	63-82	75	95	17
163	Lake, mixed, dried. (b) ..	.. .. .	10-55	30	272	50
164	Freshwater, lean, fresh fillet	.. .. .	—	77	94	18
165	White, sea, fresh fillet ..	.. .. .	—	80	73	16
166	Fat, fresh .. .. .	.. .. .	—	69	168	16
167	Cod, salt wet .. .. .	.. .. .	—	55	93	22
168	Salt, hard dry .. .. .	.. .. .	—	40	182	42
169	Shell, fresh .. .. .	.. .. .	—	74	93	18
170	Canned sardines, in oil ..	.. .. .	—	50	305	20
171	Canned salmon, not in oil..	.. .. .	—	67	170	20
172	Sea slug ( <i>bêche de mer</i> ), soaked	<i>Stichopus japonicus</i> <i>Selenka</i>	—	76	94	22
173	Snail, river .. .. .	<i>Vivipara quadrata</i> <i>Benson</i>	—	78	77	12
174	Turtle .. .. .	<i>Trionyx chinensis</i> T. et S.	—	80	79	16

*Additional Names**Bêche de mer*, *see* Sea slug.*Footnotes*(a) Values for protein, fat, carbohydrate and minerals are provisional only, calculated from those for dried fish, *q.v.*

(b) Unpublished data on samples from Lake Nyasa.

(c) Large hard bones only, fins, scales and sometimes guts.

	<b>B. Insects</b>					
175	Larval—Caterpillars, fresh ..	.. .. .	75-85	80	83	14
	Mature	.. .. .				
176	Termites (white ants), winged, fresh	.. .. .	—	75	148	10
177	Various, including locusts	.. .. .	60-78	70	134	20

*Additional Names*White ants, *see* Termites.

## VALUES PER 100 gm. EDIBLE PORTION

Fat	Carbo- hydrate	Calcium	Iron	Vitamins					WASTE per cent. of Food as purchased	No.
				A	Ancurin	Riboflavin	Nicotinic Acid	Ascorbic Acid		
g.	g.	mg.	mg.	I.U.	mg.	mg.	mg.	mg.		
82.5	0	15	0.2	2,700	0	0	0	0	0	155
92	0	0	0	2,500 <sup>(a)</sup>	0	0	0	0	0	156
99	0	0	0.1	0 <sup>(b)</sup>	0	0	0	0	0	157
85.3	0	4	0	— <sup>(c)</sup>	∅	∅	∅	0	0	158
100	0	0	0	40,000-80,000-c	0	0	0	0	0	159
100	0	0	0	0	0	0	0	0	0	160

## Footnotes

- (a) May be much lower, depending on the method of processing.  
 (b) Fish liver oils contain variable amounts of vitamins A and D.  
 (c) No vitamin A unless artificially added.

2.5	∅	20	1.0	∅	0.06	0.15	3	∅	33 <sup>(c)</sup>	161
3 <sup>(d)</sup>	∅	700 <sup>(e)</sup>	3 <sup>(f)</sup>	—	[0.05] <sub>100</sub>	[0.13] <sub>100</sub>	[3] <sub>100</sub>	[∅] <sub>100</sub>	25 <sup>(g)</sup>	162
8 <sup>(d)</sup>	∅	2,000 <sup>(e)</sup>	8 <sup>(f)</sup>	∅	[0.06] <sub>100</sub>	[0.31] <sub>100</sub>	[4.6] <sub>100</sub>	[∅] <sub>100</sub>	15 <sup>(g)</sup>	163
2.5	∅	20	0.7	∅	0.05	0.13	3	∅	—	164
1	∅	20	0.7	∅	0.05	0.13	3	∅	—	165
11	∅	20	0.7	150	0.05	0.13	3	∅	—	166
0.5	∅	35	1.5	∅	0.05	0.36	5	∅	45	167
1.5	∅	65	2.5	∅	0.06	0.31	4.6	∅	35	168
1.5	2	100	5	200	0.05	0.10	4	∅	—	169
25	∅	400	3	250	0.02	0.20	4	0	∅	170
10	∅	100	1.0	100	0.02	0.20	6	0	∅	171
∅	1.4	120	1.4	—	—	—	—	—	0	172
1.4	4	1,360	20	—	—	—	—	—	53	173
1	1.5	110	1.4	—	—	—	—	—	70	174

(d) Variable, depending on species. Whole dried fish of 4 species, range 2-13 per cent., average 9 per cent.; flesh and skin only, 16 samples cured by various methods, range 0.8-9 per cent., average 5 per cent.

(e) In view of local cooking methods, allows for a proportion of the bones in the edible portion. Whole dried fish, 4 species, range 2,000-4,400 mg., average 3,000 mg.; flesh and skin only, 16 samples, range 120-1,100 mg., average 500 mg.

(f) Allows for some bone marrow for same reason as above. Whole dried fish, 4 species, range 7-24 mg., average 13 mg.

(g) Large hard bones only, fins and scales. Range found 0-15 per cent.

3	∅	20	0.5	—	—	—	—	—	—	175
12	∅	25	1	—	—	—	—	—	—	176
6	∅	30	1	—	—	—	—	—	—	177

For significance of asterisks and other abbreviations used throughout Tables, see p. 6.

No.	PRODUCT	SCIENTIFIC NAME	REPRESENTATIVE			
			Water Content		Calories	Protein
			Range	Selected Value		
			g.	g.		g.
<b>IX.—ANIMAL PRODUCTS</b>						
— <i>contd.</i>						
<b>C. Meat, Meat Products and Eggs</b>						
	Bacon					
178	Fat back .. .. .	.. .. .	—	7	817	4
179	Whole side .. .. .	.. .. .	—	—	449	11
	Beef					
180	Whole carcass, lean .. .. .	.. .. .	—	66	189	18
181	Whole carcass, mod. fat .. .. .	.. .. .	—	61	253	16
182	Canned, corned .. .. .	.. .. .	—	53	244	25
183	Eggs .. .. .	.. .. .	—	74	153	13
184	Goat, carcass .. .. .	.. .. .	—	73	145	16
	Mutton					
185	Average carcass .. .. .	.. .. .	—	63	241	13
186	Lean carcass .. .. .	.. .. .	—	73	145	16
	Offal					
187	Heart .. .. .	.. .. .	—	71	163	16
188	Kidney .. .. .	.. .. .	—	75	127	16
189	Liver .. .. .	.. .. .	—	70	142	17
	Pork					
190	Fresh, fat .. .. .	.. .. .	—	28	599	8
191	Fresh, lean .. .. .	.. .. .	—	35	526	10
192	Salt, fat .. .. .	.. .. .	—	—	781	4
193	Poultry, plucked and drawn .. .. .	.. .. .	—	73	139	19
194	Rabbit, skinned and gutted .. .. .	.. .. .	—	67	134	20
<b>D. Milk and Milk Products</b>						
	Cheese					
195	Cow, whole milk, hard .. .. .	.. .. .	—	37	415	25
196	Cow, skimmed milk, soft .. .. .	.. .. .	—	73	108	20
197	Curds, including whey .. .. .	.. .. .				
	Milk, fresh					
198	Whole, cow, 2.5 per cent. fat .. .. .	.. .. .	—	89	53	3
199	Whole, cow, 3.5 per cent. fat .. .. .	.. .. .	—	88	62	3.1
200	Whole, goat .. .. .	.. .. .	—	86	71	4.4
201	Whole, sheep .. .. .	.. .. .	—	81	104	6.5
202	Skimmed, cow .. .. .	.. .. .	—	91	34	3.2
	Milk, processed					
203	Whole, condensed unsweetened (evaporated) .. .. .	.. .. .	—	74	140	7
204	Whole, condensed sweetened .. .. .	.. .. .	—	28	314	8.2
205	Whole, powder .. .. .	.. .. .	—	5	485	25.6
206	Skimmed, condensed sweetened .. .. .	.. .. .	—	29	266	9.5
207	Skimmed, powder .. .. .	.. .. .	—	5	360	35.6

For significance of asterisks and other abbreviations used throughout Tables, see p. 6.

## VALUES PER 100 gm. EDIBLE PORTION

Fat	Carbo- hydrate	Calcium	Iron	Vitamins					WASTE per cent. of Food as purchased	No.
				A	Aneurin	Riboflavin	Nicotinic Acid	Ascorbic Acid		
g.	g.	mg.	mg.	I.U.	mg.	mg.	mg.	mg.		
89	ø	5	1	—	0.21	0.10	(0.6)	0	4	178
45	ø	11	2	—	0.57	0.26	(1.8)	0	12	179
13	ø	12	4	(40)	0.09	0.25	5	ø	23	180
21	ø	11	4	(40)	0.09	0.25	5	ø	20	181
16	ø	18	(4)	(30)	0.01	0.20	2.5	0	0	182
11	0.9	55	2.8	1,000	0.14	0.34	ø	ø	12	183
9	ø	11	2.7	ø	0.20	0.27	5	ø	26	184
21	ø	10	2.4	ø	0.19	0.24	5	ø	16	185
9	ø	11	2.7	ø	0.20	0.27	5	ø	26	186
11	0	10	8	200	0.6	0.9	(7)	0	—	187
7	0	3	10	1,000	0.30	2	7	—	—	188
6	5	11	10	27,000	0.30	2.50	15	30	—	189
63 <sup>(a)</sup>	ø	10	1.7	ø	0.98	0.26	5	ø	13	190
54 <sup>(b)</sup>	ø	11	1.8	ø	1.04	0.28	5	ø	18	191
85	0	2	0.6	—	(0.18)	0.04	0.9	0	4	192
7	ø	15	3	ø	0.15	0.15	6	ø	33	193
6	ø	10	2.4	ø	0.04	0.12	5	0	18	194
35	ø	850	1.0	1,400	0.04	0.50	0.03	0	0	195
2	2.5	350	(0.2)	(20)	ø	(0.10)	ø	0	0	196
		Take	as corresponding	milk.						197
2.5	4.6	120	0.1	100 <sup>(c)</sup>	0.04	0.15	0.1	1	0	198
3.5	4.6	120	0.1	140 <sup>(c)</sup>	0.04	0.15	0.1	1	0	199
4.1	4.2	140	0.7	80	0.05	0.10	4	1	0	200
6.7	4.5	140	0.7	80	0.05	0.10	4	1	0	201
0.2	4.9	124	0.1	ø	0.05	0.21	0.1	1	0	202
8	10	240	0.2	400	0.10	0.36	0.20	1	0	203
9.2	49.6	290	0.2	400	0.10	0.36	0.20	1	0	204
26.7	35.6	900	0.8	1,400	0.30	1.15	0.70	6	0	205
0.5	55.8	320	0.3	20	0.10	0.36	0.20	1	0	206
1	52	1,240	1.0	60	0.39	1.60	1.10	7	0	207

## Footnotes

- (a) 58 per cent. when kidney and visceral fat removed.  
 (b) 50 per cent. when kidney and visceral fat removed.  
 (c) For stall-fed cattle take 70 I.U.



No.	PRODUCT	SCIENTIFIC NAME	REPRESENTATIVE			
			Water Content		Calories	Protein
			Range	Selected Value		
	<b>X.—CONDIMENTS AND SPICES</b>		g.	g.		g.
208	Asafoetida. . . . .	<i>Ferula narthea</i> . .	—	16	(297)	4
209	Cardamom . . . . .	<i>Elettaria cardamomum</i> Maton.	—	20	(226)	10
	Chillies					
	Sweet, <i>see under</i> Vegetables, leafy, green and yellow					
210	Very hot, fresh . . . .	<i>Capsicum frutescens</i> Linn.	—	69	85	4
211	Cloves . . . . .	<i>Eugenia aromatica</i> Linn.	—	23	(293)	5
212	Coriander . . . . .	<i>Coriandrum sativum</i> Linn.	—	11	(288)	14
213	Cumin . . . . .	<i>Cuminum cyminum</i> Linn.	—	12	(359)	19
214	Fenugreek, seed . . . .	<i>Trigonella foenum-graecum</i> Linn.	—	14	(334)	26
215	Garlic . . . . .	<i>Allium sativum</i> Linn.	—	63	(140)	6
216	Ginger, root, fresh . . .	<i>Zingiber officinalis</i> Rosc.	—	81	(85)	2
217	Mace . . . . .	<i>Myristica fragrans</i> Houtt.	—	16	(432)	6
218	Mustard, seed. . . . .	<i>Brassica nigra</i> (Linn.) Koch.	—	8	(544)	22
219	Nutmeg . . . . .	<i>Myristica fragrans</i> Houtt.	—	14	(468)	8
220	Omum . . . . .	<i>Carum copticum</i> . .	—	9	(378)	15
221	Pepper, dry . . . . .	<i>Piper nigrum</i> Linn.	—	13	(311)	12
222	Tamarind . . . . .	<i>Tamarindus indica</i> Linn.	20-26	21	277	3.5
223	Turmeric, root, dry . . .	<i>Curcuma longa</i> Linn.	—	14	(341)	4

<b>XI.—SYRUPS, SUGAR and PRESERVES</b>						
224	Honey . . . . .	. . . . .	—	23	306	0.4
225	Jam* . . . . .	. . . . .	—	29	248	g
226	Molasses, cane, medium	. . . . .	—	—	(240)	—
	Sugar					
227	Brown . . . . .	. . . . .	—	g	400	0
228	White . . . . .	. . . . .	—	0	400	0

For significance of asterisks and other abbreviations used throughout Tables, see p. 6.



No.	PRODUCT	SCIENTIFIC NAME	REPRESENTATIVE			
			Water Content	Calories	Alcohol	Protein
	<b>XII.—BEVERAGES</b>		g.		g.	g.
	<b>Fermented (a)</b>					
229	Beer, African maize (b) ..	.. .. .	—	23-65	1-7	1
230	European (b) ..	.. .. .	—	45-58	4.5-6.0	0.3
	<b>Unfermented</b>					
231	Cocoa powder .. ..	Theobroma cacao Linn.	3	429	—	20
232	Coffee, ground (d) .. ..	Coffea spp. .. ..	—	42	—	4.5
233	Tea leaves (d) .. ..	Thea sinensis .. ..	—	40	—	10

*For significance of asterisks and other abbreviations used throughout Tables, see p. 6.*

## VALUES PER 100 gm. EDIBLE PORTION

Fat	Carbo- hydrate	Calcium	Iron	Vitamins					WASTE Per cent. of Food as purchased	No
				A	Ancurin	Riboflavin	Nicotinic Acid	Ascorbic Acid		
g.	g.	mg.	mg.	I.U.	mg.	mg.	mg.	mg.		
ø	3 <sup>(c)</sup>	4	0.2	ø	0.03	0.03	0.58	1	—	229
ø	3.3	12	0.1	—	—	0.05-0.17	—	—	—	230
25	31	51	14	150-c	0.12	0.27	1	—	—	231
ø	6	58	ø	—	—	0.1	13.2	—	—	232
—	—	30	—	—	—	1	6.1	—	—	233

## Footnotes

(a) Other fermented beverages are consumed, e.g. other cereal beers, palm wine and coconut toddy; the alcoholic content ranges from 1-7 per cent., depending on length of time of fermentation.

(b) g. per 100 c.c.

(c) "Available" carbohydrate in terms of starch.

(d) Diffusible material per 100 g., extracted by hot water in 5-10 minutes.

## ALTERNATIVE BOTANICAL NAMES

Name in Tables	Alternative Name(s)
Ananas comosus (Linn.) Merr. .. ..	Ananas sativus Schult. f.
Artocarpus communis Forst. .. ..	Artocarpus incisus Linn. f.
Artocarpus integer (Thunb.) Merr. .. ..	Artocarpus integrifolius Linn. f.
Cajanus cajan (Linn.) Millsp. .. ..	Cajanus indicus Spreng.
Citrus aurantiifolia (Christm.) Swingle .. ..	Citrus medica Linn. var. acida hort.
Citrus sinensis Osbeck .. ..	Citrus aurantium Linn. var. sinensis Linn.
Cola acuminata Schott. & Endl. .. ..	Sterculia acuminata Beauv.
Fagopyrum esculentum Moench .. ..	Fagopyrum sagittatum Gilib. ; Polygonum fagopyrum Linn.
Glycine max. (Linn.) Merr. .. ..	Glycine soya Sieb. & Zucc. ; Soja hispida Maxim.
Manihot utilisima Pohl .. ..	Includes the doubtful species M. palmata Muell.-Arg.
Mucuna utilis hort. .. ..	Mucuna deeringiana (Bort) Holland ; Stizolobium deeringianum Bort.
Pennisetum typhoides Stapf & Hubbard .. ..	Pennisetum spicatum Koern. ; Pennisetum typhoideum L. C. Rich.
Persea americana Mill. .. ..	Persea gratissima Gaertn. ; Persea drymifolia Schlecht. & Cham.
Phaseolus aureus Roxb. .. ..	Phaseolus radiatus Linn.
Phaseolus lunatus Linn. .. ..	Phaseolus inamoenus Blanco.
Physalis peruviana Linn. .. ..	Physalis edulis Sims.
Pisum sativum Linn. .. ..	Pisum arvense Linn.
Prunus persica Stokes .. ..	Amygdalus persica Linn.
Sesamum indicum Linn. .. ..	Sesamum orientale Linn.
Triticum vulgare Host Cultigen. .. ..	Triticum sativum Lam. ; Triticum aestivum Linn. ; Triticum hybernum Linn. ; Triticum pilosum Dalz. & Gibs.
Vigna unguiculata (Linn.) Walp. .. ..	Vigna sinensis Endl. ; Vigna catjang Walp.

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