
PROCESSING AND UTILIZATION OF GRAIN LEGUMES

A Recipe Book for Urban and Rural Households



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Processing and Utilization of Grain Legumes: A recipe book for urban and rural households

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Foreword

Grain legumes, such as beans, groundnuts, chickpea, cowpea, and soybean, among others, are recognized as good sources of proteins, starch, fiber, vitamins and minerals for human nutrition and for being an essential food crop for people worldwide. Grain legumes are also considered a key value chain crop because of their inclusiveness, providing for household income (60% of the produced volumes are commercialized) and soil fertility enhancement through nitrogen fixation. Additionally, cropping systems incorporating legumes are more resilient to climate change, and variability as the crops are known to thrive in various ecological conditions.

Grain legumes offer an excellent opportunity to improve the diets in small-scale rural and urban households. Poor diets do not balance the needs for energy, protein, vitamins, and minerals. Some diseases result from incomplete diets and seasonal malnutrition. For example, diseases associated with protein deficiency are prevalent in rural African populations. Poor food quality is further complicated by the so-called hungry harvests. Crop harvests may be rich in starch but contain insufficient amounts of protein, vitamins, and minerals that are required by the human body.

A key to dietary improvement is the combination of staple cereals and nitrogen-fixing legumes as intercrops or in rotation. This combination leads to nutritional complementarity of cereal and legume protein. Examples include rice and soybean in Asia, sorghum and cowpea in dryland Africa, and maize, groundnut, and beans in East Africa. Cereals and legumes should ideally be consumed in a ratio of 70:30 in order to achieve the desired balance of amino acids. Unfortunately, this goal is not met with households producing and consuming a more significant measure of cereal and other starches. Legume consumption in Africa is still low (about 15 kg per person per year) compared to the recommended intake of about 36 kg per person per year.

This book is prepared to promote and encourage the utilization of legume-enriched food baskets at the household level in more convenient and simple procedures. It was developed through a project designed to increase grain legume enterprise in Africa so that increased consumer and food industry demand for these legumes will increase the profitability of their production and, in turn, lead to a stronger rural economy and wellbeing. It provides information on the nutritional composition of these legumes and how to process them into foods and offers several easy-to-prepare, nutritious recipe.



Leena Tripathi

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Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
HIV	Human Immunodeficiency Virus
RDI	Recommended Daily Intake

1.0 Introduction

Legumes belong to the family *Leguminosae*. In the tropics, they are the next important food crop after cereals. They are a source of low-cost dietary vegetable proteins and minerals when compared with animal source. In the developing countries, research is paying attention to better utilization of legumes to address protein malnutrition and food insecurity.

Legumes can be classified as:

1. Pulses or grain legumes which are various peas and seeds that are low in fat content such as common beans and cowpea.
2. Oilseeds such as soybean and groundnut.
3. Forage leguminous crops such as *mucuna pruriens* and winged bean.
4. Swollen root or tuberous root consumed as vegetable or fresh salad such as yam bean.

Legume crops are often considered as “womens’ crop” in many societies because women traditionally play a larger role in their cultivation, processing and cooking. Cultivating legumes improves income and food and nutrition security and also addresses gender disparities. However, legumes like beans tend to have a poor image that stands in stark contrast to their nutritional value often referred to as “poor man’s meat.” Because beans are a cheaper source of protein when compared to animal source, they are often used in public feeding programs like in schools, colleges, prisons and hospitals.

Since women are the ones responsible for caring the family, empowering women with legume technologies has greater impact on increasing legume consumption and dietary diversity to the whole family. Unfortunately, men sometimes do take over women’s enterprises once they become profitable.

1.1 Nutritional, health and economic importance of legumes

Legumes are a staple food all over the world. They tend to be great sources of protein for non-meat eaters. They are low in fat (with the exception of soybean and groundnut), are a source of vitamins, minerals, antioxidant compounds and dietary fiber. Not only is legume a good source of carbohydrates but it is also rich in folic acid, copper, iron, and magnesium. Other legumes like soybeans, are a very good source of manganese, phosphorus, iron, omega-3 fatty acids, dietary fibre, vitamin B2, magnesium, vitamin K, calcium and potassium.

Since legumes are relatively cheap compared to meat, eating more legumes may be an alternative to meat for some. When legumes are served along with [grains](#) which are low in the essential amino acid, [lysine](#), they create a more [complete protein](#) than either the beans or grains on their own. Improved nutritional quality can therefore be achieved by combining legumes with cereals. Promotion of legume recipes has significant contribution to the improvement of nutritional status of the population.

Legumes	Protein	Fat	Carbohydrates	Fibre	Ash
Soybeans	37-41	18-21	30-40	4-6	4-5
Cowpea	22-26	1-2	60-65	4-5	3-4
Groundnuts	20-33	42-48	22-25	3-4	2-3
Common beans	20-27	1-2	60-65	4-5	4-5

Chemical composition of some legumes (g/100g)

Legumes have many health benefits including lowering of blood pressure and serum cholesterol, protecting against cardiovascular diseases, diabetes, obesity and colon cancer. Studies have shown that people who eat more legumes have a lower risk of heart disease.

Tip: Importance of salt in diet

Salt in moderation is actually very important to our health. It plays a role in water retention, and contains nutrients

that are vital to our stomach. The sodium in the salt not only helps maintain healthy fluid balance, it also contributes to proper muscle contraction and nerve impulse conduction. Still, the body needs far less sodium than the average person actually consumes and the benefits of sodium are negated when too much salt fills the bloodstream.

Note: 1.2g of salt (a pinch) covers the RDI of sodium for an adult while 6g of salt is the estimated safe daily dietary intake. Therefore, one should not use more than this amount per day.

1.2. Background to recipes

For each recipe, the ingredients used, their quantities in local and metric measurements and methods of procedure are given. The purpose of this book is to provide recipes which are acceptable and can be prepared by small holder farmer at any level. The recipes can be prepared without electric appliances. Thus, the recipes can be prepared and consumed by rural and urban households. The book aims at giving products that meet population needs in terms of reduced processing costs, improved nutrition (meeting RDI of population) and taste preferences.

1.3 Weight and measurements used

Quantities of the ingredients used in different recipes in this book are given in local measurements and metric units (see table 1). The utensils used for local measurements include standard tea and tablespoons and standard cup. Unless otherwise stated, all spoon measures for solid weights are level. In case of boiled and mashed products in the local measurements, the products should be pressed down to ensure that all space has been filled.

Table 1: Measurements of ingredients

Local measurements	Metric equivalent
1 level teaspoon baking powder	4g
1 level teaspoon salt	4g
1 level teaspoon yeast	4g
1 level teaspoon crushed garlic	5g
1 level teaspoon mixed spices	4g
1 level teaspoon sugar	10g
1 level tablespoon margarine	20g
1 heaped tablespoon margarine	20g
1 standard cup maize flour	200g
1 standard cup wheat flour	150g
1 standard cup sugar	250g
1 standard cup margarine	250g
1 standard cup soy flour	150g
1 standard cup cooked mashed soybean	300g
1 standard cup dry soybean	250g
1 tablespoon soy flour	5g
1 standard cup coconut dregs	250g
1 standard cup groundnut flour	200g
1 standard cup okara	250g
1 egg	60g
1 standard cup fresh pineapple	300g
1 onion, medium size	50g
1 tomato, medium size	60g
1 medium sweet potato	200g
Liquid (Volume)	
1 teaspoon	5 ml
1 tablespoon	10ml
1 standard cup cooking oil	250ml
1 standard cup milk	250ml

Nutrient value for some foods like carrot, ginger, and bean sprout are not given as they were not included in the NutrVal tool.

1.4 Nutrient value estimation

The Recipe's nutritional value is estimated by using Offline Nutritional Value Tool: NutVal 3.0 Food Aid Planning and Calculation Sheet. The estimated nutrients can vary depending on the cooking method, time of cooking and the level of heat and light. Nutrients can also be "washed out" of foods by fluids that are introduced during a cooking process.

2.0 Legume processing and utilization

2.1 Processing

One major way of utilizing legumes is through processing into various semi-finished and finished products. This book explains home-based legume processing.

The primary processing of legumes include: sun drying, husking, winnowing, separation and storage.

Secondary processing includes: sorting and cleaning before use; soaking, blanching, boiling/cooking, roasting, fermenting, germinating, milling, sieving, frying and canning.

Primary processing of soybean, common bean and cowpeas

Sort beans and clean with water, put beans in a saucepan, add water to immerse the beans then soak for 8-12 hour (overnight). Pour out the soaking water to reduce phytates. Phytates bind some nutrients and hinder their absorption. Soaking reduces cooking time and also increases absorption of minerals in legumes by 50-100%.

2.2 Utilization

Immature whole green legumes are consumed as a vegetable. However, mature and dry legumes are used as cooked legume. Regardless of the cooking method, do not add any seasonings that are salty or acidic until the beans have cooked since adding them earlier will make the beans tougher and also increase the cooking time.

RECIPES

3.1 SOYBEAN RECIPES

Soybeans protect against heart diseases, reduce blood cholesterol levels and blood pressure. They contain omega-3 fatty acids that promote heart health. Iron absorption from soybeans is very good. Soy protein helps people affected by diseases like HIV/AIDS to thrive. Soybeans are unique among the legumes because they are a concentrated source of isoflavones which are believed to prevent or treat certain cancers (may inhibit breast, prostate, stomach and colon cancer).

1. SOY MILK DRINK: MAKES 6 CUPS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Mortar and pestle or a blender
- Winnow
- A saucepan / 'sufuria' (should be fairly big to hold at least 11 cups)
- Multiple bowls
- A container for storing the soy milk (plastic container, flask, calabash, clay pot/ chungu)
- A muslin cloth (cheesecloth)/sieve
- A wooden spoon for stirring
- Cups, tablespoon and teaspoons

Ingredients

Dry soybeans	250g	1 cup
Cinnamon (or vanilla essence) for flavour	1 stick	-
Water (boiled)		8 cups
Sugar - optional	20g	2 tablespoon



	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		Kcal	G	g	mg	mg	µg	µg RE	Mg	mg	mg	mg
Recipe total	270	1,120	91	50	693	39	15	18	2	2	26	15
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		53	174	125	154	178	10	4	243	155	188	54

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE 1

1. Sort, clean and soak 1 cup of soybeans for 8-12 hour (overnight).
2. Drain and wash with cold water.
3. Blend or pound with a mortar and pestle to a fine consistency.
4. Pour the grounded soybeans into a saucepan and add 5 cups of water.
5. Strain the mixture through muslin cloth or a clean white cloth and squeeze to extract milk.
6. Add the remaining 3 cups of water and squeeze again.
7. Add cinnamon stick into the milk and boil for 30 minutes. Stir as needed.
8. Serve hot or cool and store refrigerated.

PROCEDURE 2

1. Sort and clean 1 cup of soybeans.
2. Wash and bring to boil for 15-30 minutes.
3. Drain and wash with cold water.
4. Blend or pound with a mortar and pestle to a fine consistency.
5. Pour the grounded soybeans into a saucepan and add 5 cups of water.
6. Strain the mixture through muslin cloth or clean white cloth and squeeze to extract milk.
7. Add the remaining 3 cups of water and squeeze again.
8. Add cinnamon stick into milk and boil for 30 minutes. Stir as needed.
9. Serve hot or cool and store refrigerated.

**The remaining fibrous contents are called okara and can be used in other recipes such as buns, visheti and maandazi.*

2. SOYBEAN YOGHURT: MAKES 6 CUPS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Mortar and pestle or a blender
- Winnowing
- Saucepan/ 'sufuria' (should be fairly big to hold at least 11 cups)
- Multiple bowls
- A container for holding the finished soy milk (plastic container, thermos, calabash, clay pot /chungu)
- Cups, tablespoon and teaspoons
- A muslin cloth (cheesecloth)/sieve
- A wooden spoon for stirring (mwiko)

Ingredients

Soy milk	500ml	2 cups
Plain dairy yoghurt culture	10ml	1 tablespoon
Sugar or honey	20ml	2 tablespoons



	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		Kcal	G	g	mg	mg	µg	µg RE	mg	Mg	mg	mg
Recipe total	83	340	23	13	173	10	4	5	1	1	7	4
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		16	43	31	38	45	3	1	61	39	47	13

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Prepare milk as above.
2. Add sugar into milk and stir.
3. Allow mixture to cool for about 1 hour to body temperature.
Tip: You can use your finger to test if it has cooled to the right temperature by dipping your finger in the milk. If your finger can stay in the milk for a short while then it is perfect but if you have to pull it out immediately it is not. (If you add culture when the milk is too hot, it will die). If you are using a thermometer, it needs to be between 38-45°C.
4. Add culture, blend well and pour into a plastic container or pan.
5. Cover and place in a warm place. Leave it for 8 to 12 hours until firm. It is now ready for consumption. You may cool to desired temperature, flavor to taste and serve.
6. If you have one, store it in a refrigerator in an air-tight container.

3. RICH SOY MILK: MAKES 8 CUPS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Mortar and pestle or a blender
- Winnowing
- Saucepans with different sizes
- Cups, tablespoon and teaspoons
- Multiple bowls
- A muslin cloth (cheesecloth)/sieve
- A wooden spoon for stirring (mwiko)
- A container for holding the finished soy milk (plastic container, thermos, calabash, clay pot /chungu)

Ingredients

Dry soybeans	750g	3 cups
Cinnamon stick for flavour	1 stick	
Water	2500ml	10 cups
Sugar (optional)		



	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	G	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	750	3,120	274	150	2,078	118	45	54	7	7	78	45
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		149	521	374	462	535	30	11	728	466	564	161

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Sort, clean and soak 3 cups of soybeans for 8-12 hour (overnight).
2. Drain and wash with cold water.
3. Blend or pound the 3 cups of soy bean with a mortar and pestle to a fine consistency, pour in another saucepan.
4. Bring 7 cups water to boiling point, add the grounded soybeans.
5. Simmer for 20 minutes. Stir as needed.
6. Strain the mixture through muslin cloth and squeeze to extract milk.
7. Add the remaining 1 cup of water and squeeze again. Repeat the process two times.
8. Place a weight on top to press all retained liquids through cloth into a large container.
9. Add cinnamon stick into milk and boil for 30 minutes. Stir as needed.
10. Serve hot or cool and store refrigerated.

*The remaining fibrous contents are called okara. The above milk can be used to make tofu.

4. TOFU

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Mortar and pestle or a blender
- Winnowing
- Saucepans
- Multiple bowls
- A container for holding the finished soy milk (plastic container, thermos, calabash, clay pot /chungu)
- A muslin cloth (cheesecloth)/sieve
- A wooden spoon for stirring (mwiko)
- Sieve
- Cups, tablespoon and teaspoons

Ingredients

Unflavoured soymilk	2000ml	8 cups
Lemon juice OR	125ml	½ cup
White vinegar	60ml	6 tablespoon



	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	G	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	375	1,114	92	51	805	40	18	37	2	2	26	94
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		53	175	128	179	180	12	7	246	158	190	335

*This is for fresh lemon juice (Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Heat soy milk to 80°C over a low heat. Keep stirring gently. Switch off the stove but do not remove soy milk from heat. If using a gas stove use the lowest heat. For charcoal remove the charcoal and for firewood, reduce the firewood.
2. Add coagulant (lemon juice or white vinegar) gradually to milk. Mix very gently until curdling process is initiated.
3. Put lid on, leave undisturbed for 10 minutes on stove.
4. Stir gently to separate large white curds floating in the clear golden yellow liquid.
5. Line sieve with cheesecloth. Sieve the coagulant mixture. Let the whey drain through and discard.
6. Fold cheesecloth; place some firm weight on top to press down and distribute the weight evenly. *Weight applied and time of pressing will determine the firmness of tofu. E.g. pressing 15 minutes with 1 kg delivers a softer, moister result; while pressing 45 minutes with 5kg provides a very firm and dry curd.*
7. Cool thoroughly. Remove tofu carefully, place in a suitable container, cover with cold fresh water.
8. Replace water after 20 minutes, seal container tightly. Thereafter, change water daily. Keep for 2 days at moderate temperature. With refrigeration keep for 7-10 days.

**Tofu can be used immediately and can be served in various ways, e.g. plain with salt, sliced and fried, or as part of a dish, loose curds can be scrambled with onion, tomatoes and salt.*

5. BAKING WITH SOYBEANS

Basic PROCEDURE of soy flour or grits

Get the quantity of soybeans you desire.

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Mortar and pestle or a blender
- Winnower
- Saucepans
- Frying pan
- Multiple bowls
- A wooden spoon for stirring (mwiko)
- Cups, tablespoon and teaspoons

a. Dry heat method

Ingredients

Mature soybeans

Water

PROCEDURE

1. Sort, clean and soak soybeans.
2. Drain the beans.
3. Roast the soybeans (put the soybeans in a cooking saucepan, put on heat and stir occasionally until they are dry).
4. Remove the coat (dehull).
5. Hand crush to grind the beans coarsely into grits or more finely into flour.

b. Wet heat method

Ingredients

Mature soybeans

Water

PROCEDURE

1. Clean soy bean by removing foreign materials from it.
2. Wash beans in clean water.
3. Bring 6 cups of water to a boil for each cup of soybeans. Simmer for 20 to 25 minutes. Do not cover it.
4. Drain, wash, remove the coat and separate beans from the hull in cold water.
5. Roast the soybeans: Put the soybeans in a cooking saucepan, put on the heat and stir until they are dry.
6. The beans may also be placed in the sun to dry for 2 or 3 days. Be sure the beans are clean before proceeding with the recipe.
7. Hand crush to grind the beans into grits or more finely into flour.

**Shelf life of soy flour: Store soy flour in a dry airtight container for not more than one month.*

5.1 SOYBEAN CAKE: MAKES 8 TO 10 PORTIONS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Saucepans and lid
- Bowls
- Mixer
- Wooden spoon ('mwiko')
- Baking pan
- Fine coarse sand or oven
- Cups, tablespoon and teaspoons
- Knife, toothpick

Ingredients

Soybean flour	75 g	½ cup
Baking wheat flour	225 g	1 ½ cup
Soy milk or dairy milk	250 ml	1 cup
Eggs	120 g	2 eggs
Baking powder	6 g	1 ½ tablespoons
Sugar	62.5 g	¼ cup
Margarine	120 g	1 cup
Vanilla	10 g	½ teaspoon
Salt		



	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	G	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	766	3,456	80	238	462	21	70	2,922	1	2	22	7
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		165	152	595	103	96	47	584	144	123	158	25

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Mix the dry ingredients: wheat flour, soy flour, baking powder and salt.
2. In a separate bowl, cream sugar and margarine till light and fluffy. Whip the eggs with flavours to a stiff froth (when mixing in a machine, eggs can be added directly without whipping).
3. Add the dry ingredients into the cream and stir thoroughly then add milk to loosen the batter. You can use a mixer.
4. Place the batter into a greased baking pan and sprinkle some (½) additional baking powder on top of the batter.
5. Bake for 30 minutes in an oven at 190°C.
6. If using charcoal or firewood, prepare clean sand and put in a big saucepan.
7. Allow sand to heat for 10 minutes.
8. Place batter in a clean, greased saucepan; sprinkle some (½) additional baking powder on top of the batter.
9. Cover and insert the saucepan into the bigger saucepan contain sand. Transfer some coals and put on top of the lid of the big saucepan.
10. Check the interior of the cake with a knife to ensure that the dough is thoroughly cooked.
11. Bake for 30 minutes and allow the cake to cool for 1 hour before serving.

5.2 SOY UGALI: MAKES 4 TO 6 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Saucepans and lid
- Bowls
- Wooden spoon ('mwiko')
- Cups, tablespoon and teaspoons

Ingredients

Soybean flour	187.5g	1½ cup
Maize flour	200g	1 cup
Water	1250ml	5 cups

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	G	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	750	3,042	182	104	945	36	0	162	4	6	63	0
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		145	347	259	210	163	0	32	419	416	455	0

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Boil water in a cooking pan.
2. Dissolve ½ cup of maize flour into the water and stir to get a thick paste.
3. Mix the maize flour and soy flour to get a homogeneous mixture.
4. Add the paste to the boiling water slowly while stirring to avoid clumps.
5. Let the porridge cook for 2 minutes.
6. Add mixed flour to the boiling porridge while mixing till it thickens and becomes hard in small portions.
7. Turn the mixture throughout the whole process while leaving it to cook for 3 minutes, covered with a lid, per interval.
8. After every 3 minutes open the lid and continue to cook for 2 minutes.
9. Cook for 10 minutes and remove from fire. It can be served with any vegetable sauce or relish.

5.3 SOY CHAPATI: MAKES 10 CHAPATIS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Flat surface and a roll for rolling chapatti
- Saucepans
- Frying pan
- Cups, tablespoon and teaspoons

Ingredients

Soy flour	300g	2 cups
Wheat flour	450g	3 cups
Cooking oil	20ml	2 tablespoons
Water	750ml	3 cups
Salt	2g	½ teaspoon



	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	G	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	772	3,061	155	89	686	24	0	108	2	4	53	0
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		146	296	222	152	111	0	22	254	261	384	0

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Mix wheat and soy flour, add salt and mix.
2. Add a teaspoon of cooking oil in the mixture.
3. Add the water to the bowl of flour, a little at a time, kneading as you go, until you have soft, elastic dough. The longer you knead the dough, the softer the chapatis will be.
4. Sprinkle a little of the reserved flour onto a flat surface or board.
5. Divide the dough into small balls.
6. Roll the ball out into a flat disc, flouring the board when necessary.
7. Smear it with oil and fold in a rope shape.
8. Put aside for 20 minutes.
9. Roll the balls again and flatten to get a round shape.
10. Grease the frying pan. Lay the chapatti on the pan and cook for about 20-30 seconds or until the surface is bubbling.
11. Turn it over with tongs and cook the other side for 10-15 seconds. As soon as brown spots appear on the underside, the chapatti is done.
12. Repeat for the other balls.

5.4 SOY MANDAZI: MAKES 12 MAANDAZI

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Flat surface and a roll for rolling maandazi
- Saucepan
- Frying pan
- Bowl
- Cups, tablespoons and teaspoons

Ingredients

Soybean flour	300g	2 cups
Wheat flour	300g	2 cups
Cooking oil	500ml	2 cups
Water	250ml	1 cup
Baking powder	8g	2 tablespoons
Yeast	4g	1 tablespoon
Sugar	30g	3 tablespoons
Salt	2g	½ teaspoon



	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	G	g	mg	mg	µg	µg RE	mg	mg	mg	Mg
Recipe total	1,136	6,935	139	567	666	23	0	108	2	4	49	0
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		330	266	1417	148	106	0	22	244	269	352	0

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Mix wheat and soy flour, add salt and mix.
2. Heat oil in a pan and add to the flour while hot and mix using hands.
3. Add the mixture of yeast and baking powder to the flour and mix.
4. Add lukewarm water or milk and knead thoroughly to make consistent dough.
5. You can use a kneader if you have one. Leave the dough to rise for 15 to 30 minutes until it doubles its size.
6. Roll the dough into flat surface and cut into desired shapes and sizes.
7. Place cooking oil in pan and heat.
8. Deep fry 6 balls at a time in the hot oil, turning frequently for 2 minutes and remove after they turn golden brown.
9. Place maandazis into a covered bowl to keep warm until serving.

5.5 SOY FRUIT PANCAKE: MAKES 12 PANCAKES

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Saucepans
- Baking pan
- Bowl
- Cups, tablespoons and teaspoons

Ingredients

Soy flour	100g	1/3 cup
Wheat flour	300g	3 cups
Milk or soymilk	250ml	1 cup
Eggs	120g	2
Fresh pineapple or grapes or any other fruit of your choice	300g	1 cup
Vegetable oil	30g	3 tablespoons
Sugar	20g	2 tablespoons
Baking powder	4g	1 tablespoon
Salt	2g	½ tablespoon

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	G	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	903	2,817	138	111	663	24	2	497	2	4	39	104
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		134	264	277	147	110	1	99	181	249	285	371

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Mix the wheat flour, soy flour, sugar, baking powder, and salt. Set aside.
2. Beat the milk, eggs, and oil together in a mixing bowl.
3. Add the dry ingredients and mix to combine.
4. Pour ¼ cup of batter on a baking pan.
5. When small bubbles appear on the surface of the pancake, top with pineapple, then turn and finish cooking until golden on both sides.
6. Repeat with remaining batter.

5.6 HONEY PANCAKES: MAKES 8 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Saucepans
- Baking pan
- Bowl
- Cups, tablespoons and teaspoons

Ingredients

Soy flour	150g	1 cup
Wheat flour	450g	3 cups
Milk or soy milk	750ml	3 cups
Cooking oil	60g	6 tablespoons
Honey or sugar	30g	3 teaspoons
Baking powder	12g	3 teaspoons
Blue band	125g	½ cup
Salt	2g	½ teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	G	g	mg	mg	µg	µg RE	mg	mg	mg	Mg
Recipe total	911	4,172	138	217	674	30	6	1,403	2	3	44	6
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		199	262	543	150	134	4	281	249	199	317	21

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Mix all the ingredients starting with the dry ones.
2. Preheat oiled cooking pan.
3. Place ½ cup of batter into the hot pan.
4. Cook both sides until brown.

5.7 DINNER ROLLS: MAKE 36 ROLLS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Saucepans
- Baking pan
- Bowl
- Cups, tablespoons and teaspoons

Ingredients

Soy flour	112.5g	¾ cups
Wheat flour	825	5 ¼ cups
Sugar	62.5g	¼ cup
Margarine	500g	2 cups
Yeast	20g	5 tablespoons
Salt	10g	2 ½ teaspoons



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	G	g	mg	mg	µg	µg RE	mg	mg	mg	Mg
		Recipe total	1,510	7,223	134	438	506	17	0	5,411	2	2
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		344	255	1095	112	76	0	1082	188	130	304	4

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Put warm water in a bowl and sprinkle with the yeast.
2. Stir to dissolve the yeast then set aside.
3. Mix wheat flour, soy flour, granulated sugar, salt, and margarine in a large bowl.
4. Gradually add the yeast mixture to the flour mixture, mixing with a wooden spoon.
5. Knead the dough well. Add water or flour as needed. Dough should be soft and smooth, but not sticky.
6. Place the dough onto a floured board and knead 6-8 minutes until the dough is smooth and elastic.
7. Place dough into a lightly oiled bowl. Cover and allow dough to rise in a warm place.
8. When dough has doubled (about 45-60 minutes), divide dough to make 36 rolls.
9. Shape dough into balls and place 1 apart on prepared platter ('sinia').
10. Let dough rise in a warm place until doubled in size (about 20 minutes).
11. While dough rises, grease the pans and preheat the oven.
12. Preheat the baking pan and bake for 60 minutes.
13. If using, preheat oven to 350 °F. Bake 18-20 minutes (you can use local method of baking as above). If the rolls begin to brown too quickly, cover them loosely with aluminum foil during the last 5 minutes of baking.
14. Remove immediately from pan or sheet. Leave to cool.

5.8 SOY BREAD

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Saucepans
- Baking pan
- Bowl
- Cups, tablespoons and teaspoons
- Mixer (kneader)
- Sieve
- Knife, tooth pick

Ingredients

Soy flour	150g	1 cup
Wheat flour	225g	1 ½ cup
Eggs	120g	2
Margarine	125g	½ cup
Finely grated lemon peel		1 tablespoon
Baking powder	8g	2teaspoon
Ground garlic powder	1.25g	¼ teaspoon
Ground cinnamon	5g	1 teaspoon
Sugar	250g	1 cup
Yeast	8g	2 tablespoons
Salt	2g	½ teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	Mg
Recipe total	881	3,534	95.5	147	446	16	184	1,625	1	3	31	0
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		168	182	368	99	71	122	325	157	201	224	1

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Mix well margarine and sugar.
2. Beat eggs into margarine mixture.
3. Add milk into the egg mixture.
4. Mix all dry ingredients together, sieve.
5. Add the dry ingredients into wet mixture slowly while stirring, until you finish the dry ingredients and knead.
6. Grease the baking pan put your dough in a baking pan. Bake for 60-70 minutes until brown (you can bake with local method, see method of baking above).
7. Insert toothpick in the center when comes out clean, cake is ready. Rest in pan to firm, turn out to cool.

5.9 SOY CORNBREAD: MAKES 9 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Saucepans
- Baking pan
- Bowl
- Cups, tablespoons and teaspoons
- Mixer (kneader)
- Sieve
- Knife, tooth pick

Ingredients

Soy flour	75g	½ cup
Maize flour	100g	½ cup
Wheat flour	150g	1 cup
Eggs	60g	1
Soymilk or dairy milk	250ml	1 cup
Melted butter or oil	250ml	1 cup
Baking powder	4g	1 tablespoon
Sugar	20g	2 tablespoons
Yeast	8g	2 tablespoons
Salt	2g	½ teaspoon s



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	Mg
		Recipe total	686	3,309	71	235	374	15	34	2,829	1	2
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		158	135	587	83	67	22	566	148	129	155	8

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Preheat the cooking pan.
2. Sieve together the wheat flour, maize flour, soy flour, sugar, baking powder, and salt in a large mixing bowl. Set aside.
3. Stir together the soymilk, melted butter, and egg in a small bowl.
4. Add the liquid ingredients to the dry ingredients and stir just until moistened.
5. Pour the batter into the prepared pan. Bake for 50 to 60 minutes, until lightly browned.
6. To check if the bread is ready, a tooth pick inserted in the center comes out clean.

6. SOYBEAN CHICKEN: MAKES 4 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Saucepans
- Bowl
- Cups, tablespoons and teaspoons
- Knife

Ingredients

Cooked soybeans	300g	1 cup
Chicken	500g	
Carrots, thinly sliced	200g	3 medium
Cabbage	300g	1 small
Onion, chopped	100g	1 medium
Tomatoes, grated	240g	4 medium
Garlic clove, pounded well	5g	5 garlic cloves
Cooking oil	80ml	5 ½ tablespoons
Chicken masala	5g	1 tablespoon
Salt	4g	1 teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	1,224	3,116	218	211	945	56	265	622	3	3	84	55
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		148	415	526	210	252	177	124	350	248	608	196

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Cut chicken into small pieces, wash and put in a cooking pan, add salt.
2. Cook until tender.
3. Heat cooking oil in a large cooking pan, add onion, garlic and chicken masala and fry until brown.
4. Add carrots and cabbage to onion mixture.
5. Fry for 10 minutes.
6. Add the boiled chicken, tomatoes, and soybean to the mixture, simmer until well cooked.
7. For taste, you can add pepper.
8. Serve with ugali or rice.

**You can garnish with vegetable salad.*

7. CRUMPETS: MAKES 12-20 CRUMPETS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl and saucepans
- Frying pan
- Cups, tablespoons and teaspoons
- Knife
- Sieve

Ingredients

Cooked and mashed soybeans	300g	1 cup
Wheat flour	300g	2 cups
Soymilk/dairy milk	375ml	1½ cup
Eggs	120g	2
Cooking oil	520ml	2 cups and 20mls
Sugar	30g	3 tablespoons
Salt	2g	½ teaspoon
Baking powder	8g	2 tablespoons



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	G	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	1,145	3,022	171	111	1,366	53	138	458	3	4	48	22
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		144	326	277	304	239	92	92	352	284	343	78

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Mix well wheat flour, baking powder and salt and sieve.
2. Mix together sugar and cooked mashed soybeans, add to sieved ingredients, stir thoroughly until well mixed up.
3. Beat together eggs, soymilk or milk and cooking oil.
4. Mix gently into the flour mixture. Do not over-mix. Leave to rest for 20 minutes.
5. Grease frying pan, heat to medium temperature.
6. Drop spoonfuls of the batter in the pan.
7. Turn over when bubbly and firm. Allow to brown lightly on both sides.
8. Continue until all batter has been used.
9. It is ready to serve.

8. SOYBEAN STEW: MAKES 6 TO 8 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans and lid
- Cups, tablespoons and teaspoons
- Wooden spoon ('mwiko')
- Knife

Ingredients

Boiled soybean	500g	2 cups
Onion, chopped	150g	1 big
Coconut oil	125g	1 medium coconut
Tomatoes	120g	2 medium
Garlic, crushed	30g	1 big bulb
Tomatoes, chopped	120g	2 medium
Water	4L	16 cups
Salt	4g	1 teaspoon



N:B instead of using coconut oil, ghee can be used

Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	G	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	899	3,264	185	225	1,427	79	275	2,586	5	44	53	55
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		155	353	563	317	360	184	517	497	314	382	196

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

Put fat in saucepan, pre-heat for 2 minutes, add onions, garlic and fry until transparent, then add tomatoes, salt and mix while cooking.

1. Add the boiled and drained soybeans. Save the water to for use as stock .
2. Mix well and cover with the lid, leave for 5 minutes.
3. Stir again, add the soybeans stock. If there was no water left after boiling, add two cups of water.
4. Simmer for 10 minutes and remove from heat.
5. Serve with rice, matoke or ugali.

Note: For a spicier option, add green and red chilli powder and green pepper. You can also add vegetables such as carrots and bell pepper.

9. SOY SWEET POTATO PINEAPPLE SALAD: MAKES 10 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans and lid
- Cups, tablespoons and teaspoons
- Wooden spoon ('mwiko')
- Knife

Ingredients

Cooked Soybeans (without salt)	300g	1 cup
Sweet potato (preferably orange-fleshed sweet potatoes)	400g	2 medium
Pineapple	500g	
Cabbage, thinly sliced	200g	2 cups
Cooking oil	20ml	2 tablespoons
Onion	50g	1 small
Sugar	10g	1 tablespoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	1,280	2,068	117	82	1,017	52	27	2,867	4	3	37	283
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		98	223	204	226	236	18	573	403	198	269	1011

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Wash sweet potatoes and pineapple and peel and cut them into cube shapes.
2. Put in a cooking pan add ½ cup of water and simmer together until cooked and dry but still retaining the shape.
3. Sprinkle sugar over sweet potato pineapple mixture. Let them cool.
4. Take the cooked soybeans and drained off the water.
5. Cut onion into cube shapes put aside.
6. Heat oil in a pan, add onion and sauté for 1 minute, add soybeans stir for 5 minutes.
7. Wash cabbage in water with salt to kill any germs.
8. Mix all the prepared ingredients and serve.

10. SOY MAYONNAISE

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans and lid
- Cups, tablespoons and teaspoons
- Wooden spoon ('mwiko')
- Knife

Ingredients

Soy milk	100ml	
Half-and half olive oil and sunflower	250	1 cup
Crushed garlic	100g	2 big bulbs
Lemon juice		½ piece
Salt	2g	½ teaspoon



NB: If you don't have olive oil use only sunflower

Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	275	2,283	5	253	44	2	121	2	0.1	0.1	1	7
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		109	9	631	10	9	81	0	12	8	10	25

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Put garlic and salt in a mortar "Kinu" and pound the mixture till soft.
2. Put the mixture of garlic and salt into a bowl add oil slowly while stirring the mixture.
3. When it is well mixed add soy milk slowly while stirring the mixture till the mixture is homogeneous again.
4. Add lemon juice in the same manner, mix again till the mixture is homogeneous.
5. If you have a blender, put the ingredients in the blender in the listed order and blend on slow speed until the ingredients mix together to form the consistency of mayonnaise.

11. SOY FORTIFIED SOUP

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans and lid
- Wooden spoon ('mwiko')

Ingredients

Any soup	250ml	1 cup
Soy flour	10g	2 tablespoons



PROCEDURE

1. Prepare any soup of your choice.
2. While the soup is on fire, mix soy flour with water and pour into the soup.
3. Allow the soup to boil for about fifteen minutes before serving.

**This can be used with salad or bread.*

12. SOY HAMBURGERS: 4 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans and lid
- Baking tray
- Knife

Ingredients

Texture (de-fatted)	63g	¼ cup
Bread crumb (1 slice of bread)	10g	1 tablespoon
Maize flour	10g	1 tablespoon
Amaranth		1 cup
Carrot		1 small
Egg	60g	1
Onion, chopped	100g	1 big
Garlic, crushed	10g	1 bulb
Salt	6g	1 ½ teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	G	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	193	440	33	19	216	11	37	119	1	1	9	7
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		21	63	48	48	51	24	24	73	63	64	25

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Sort and wash amaranths and cut them into small pieces, put the mixture into a saucepan, add ½ water.
2. Parboil amaranths mixed with onion and carrot. Put water (broth) aside.
3. Dry one slice of bread on a frying pan on both sides. When it is well dry, put it in mortar and pound to get bread crumb.
4. Soak the textured soybean in the 500ml vegetable broth for 10 minutes.
5. Beat the egg, add onion and garlic.
6. Combine all the ingredients. Knead and divide up into portions to the shape as hamburgers.
7. Put your hamburgers in baking tray and bake at 220°C until they are golden on both sides. Turn once. and bake till golden.
8. Serve hot.

*They can be garnished with fresh tomatoes and potatoes.

* If you don't have an oven, preheat sand on a big saucepan. Put your tray on the sand in the saucepan, cover the big saucepan and bake till golden on both sides.

13. SOY CROQUETTES: MAKES 4 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans and lid
- Baking tray
- Mortar and pestle or blender
- Knife

Ingredients

White boiled soybeans	300 g	1 cup
Whole wheat flour	50g	5 tablespoons
Soymilk	250ml	1 cup
Bread crumbs (5 slice of bread)	30 g	2/3 cup
Tomato	60g	1 medium
Onion	50g	1 medium
Egg	60g	1
Sunflower oil	20ml	2 tablespoons
Salt	4g	1 teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	575	1,850	135	93	970	54	294	288	3	3	38	31
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		88	258	233	216	244	196	58	337	231	275	110

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Dry the 5 slices of bread on a frying pan on both sides.
2. Pound to get bread crumbs. Measure 2/3 cup of bread crumbs.
3. Peel, wash and chop the onion and the tomato.
4. Mash the soybean to form a thick puree.
5. Heat the oil in a flying pan, and sauté the onion until it turns transparent.
6. Add the flour and stir for 2 minutes.
7. Add the soymilk (cold), tomato, and salt. Stir until it becomes thick.
8. Remove from heat and add the soybean puree mix it well. Let cool.
9. When the mixture is thoroughly cool, take portions with a tablespoon and shape into croquettes.
10. Beat the egg.
11. Roll each croquette in egg and then in bread crumbs.
12. Preheat sand on a big saucepan then put your tray or another small saucepan in saucepan, cover the big saucepan and bake till are golden.

**If you have an oven: Bake at 220°C until golden throughout. Serve hot.*

14. SOYBEAN DRINK

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Mortar and pestle or blender

Ingredients

Dry soybeans	250 g	1 cup
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Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	250	1,040	91.2	50	693	39	15	18	2	2	26	15
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		50	174	125	154	178	10	4	243	155	188	54

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Sort, wash and soybeans in a heated saucepan for 30 to 45 minutes, stirring occasionally, until the beans turn brown (not too much as it will turn black) then dehull.
2. Put soybean in a mortar and pound it into fine flour.
3. If you have a blender, you can blend the fried soybeans.

15. SOY BEVERAGE

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Mortar and pestle or blender
- Wooden spoon ('mwiko')
- Sieve

Ingredients

Soybean	2 kg	8 cups
Sugar	15g	1 ½ tablespoons



Cold soy beverage



Hot soy beverage

Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RFE	mg	mg	mg	mg
Recipe total	2,015	8,380	730	399	5,540	314	120	144	17	17	208	120
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		399	1390	997	1231	1427	80	29	1942	1243	1505	429

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Clean and roast soybeans in a heated saucepan for 30 to 45 minutes, stirring occasionally, until the beans turn brown and have a full aroma.
2. Transfer the roasted beans to a mortar in batches and grind them into powder.
3. Sieve the powder to remove coarser particles and regrind as needed.
4. Add sugar to powder and mix. Keep in an airtight container.
5. To prepare beverage, add 3 tablespoons to 2 cups of boiling water.
6. Serve hot or allow cooling.

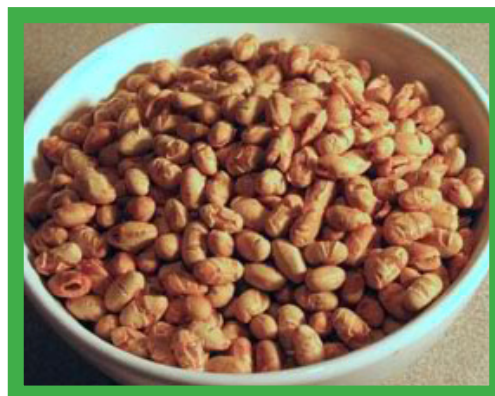
16. SOY CRUNCHIES: MAKES 20 PORTIONS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Wooden spoon ('mwiko')
- Frying pan

Ingredients

Dry soybean	1 kg	4 cups
Cooking oil	500ml	2 cups
Water	4L	8 cups
Salt	4g	1 tablespoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	1,054	4,605	365	249	2,770	157	300	72	9	9	104	60
RDI for population		2,100	53	40	450	22	150	500	1	1	14	28
% RDI met		219	695	624	616	714	200	14	971	621	753	214

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Sort soybeans and clean with water.
2. Boil soybean for 30 minutes, drain water from the soybeans and deep fry until crispy and golden brown.
3. Remove soybean, drain excess oil.
4. Add salt to taste.
5. This recipe may be plain fried using less oil, but the cooking time is slightly extended.

17. SOY CRACKERS: MAKES 12 PORTIONS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Wooden spoon ('mwiko')
- Frying pan

Ingredients

Chopped / mashed soybeans	300g	1 cup
Wheat flour	150g	1 cup
Dairy milk or soy milk	1500ml	6 cups
Cooked and mashed sweet potatoes	1000g	3 1/3 cups
Cooking oil	125ml	½ cup
Sugar	62.5g	¼ cup
Baking powder	2g	½ teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	2,138	3,876	175	246	2,579	50	3,993	854	3	5	48	33
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		185	333	614	573	226	2662	171	361	373	349	118

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Sort, clean and soak soybeans overnight (8-12hrs) and pour out soaking water and wash.
2. Add water, boil for 60 minutes, drain, cool and pound. Set aside.
3. Clean unpeeled sweet potatoes and boil for 45-60 minutes then peel and mash.
4. Add 1 cup of wheat flour and 1 cup of pounded soybeans to the mashed sweet potatoes and mix thoroughly.
5. Add milk to the mixture in small portions while kneading. Roll out the dough and cut into thin, wide strips.
6. Deep fry the strips in ½ cup cooking oil for 3-5 minutes, turning once.
7. Remove from frying pan, allow oil to drain.
8. Add salt to taste.
9. Serve with peanut butter or other sauces.

18. SOY SAMOSAS: MAKES 8 TO 15 PORTIONS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Frying spoon or wooden spoon (mwiko)
- Frying pan
- Flat board and roller for rolling
- Knife

Ingredients

Cooked soybean (chopped)	300g	1 cup
Wheat flour	150g	1 cup
Cooking oil	1000ml	4 cups
Onion	50g	1 medium
Ginger, crushed	5g	1 teaspoon
Fresh chilli		2 pieces
Salt	8g	2 teaspoons
Water	250ml	1 cup



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	% RDI	mg	mg	mg	mg
Recipe total	583	2,886	127	187	854	49	498	22	3	3	36	18
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		137	241	468	190	222	332	4	311	191	262	64

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Mix the cooked chopped soybeans and onion and the crushed chilli and ginger. Set aside.
2. Mix flour, water, 2 tablespoon of cooking oil and salt in a bowl.
3. Knead into a firm dough and roll out into thin sheet.
4. Cut the sheet into large triangles for wrapping the soybean mixture.
5. Place 1 litre of oil into a frying pan and heat.
6. Meanwhile, stuff the samosas with 1 heaping spoonful of mix onto each triangle, and fold.
7. To seal the samosas, mix a small amount of flour with warm water to form a thick sticky substance to "glue" close the folded edges.
8. Deep fry for one minute or until it becomes reddish-brown.
9. Remove the samosa and place on a clean surface ready to serve.



Chopped soy bean

19. CHOPPED SOYBEANS STEW: MAKES 6 TO 8 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Wooden spoon (mwiko)
- Knife
- Frying pan

Ingredients

Cooked soybeans (chopped)	900g	3 cups
Tomatoes	180g	3 medium
Onions, chopped	200g	2 larger
Cooking oil	30ml	3 tablespoon
Salt	4g	1 teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	1,314	4,119	332	210	2,551	142	302	515	8	8	95	90
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		196	633	525	567	646	201	103	891	565	686	320

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Put cooking oil in a preheated saucepan followed by onion, sauté onions in cooking till golden brown add tomatoes and stir to fine paste.
2. Add chopped boiled soybeans and cook for 10 minutes, stirring often.
3. It is ready to serve.

20. BEAN SPROUTS

Sprouts may be prepared from common beans, soybeans and cowpeas. Sprouts are consumed raw in salads or cooked as vegetables. Care must be taken not to overcook sprouts as their vitamins may get lost.

Bean sprouts have the richest source of amino acids (for protein), vitamins and minerals, and also contain a good amount of fiber. They contain vitamins A, B, C, D, E and K and folate, and are an excellent source of iron, potassium, calcium, phosphorous, magnesium and zinc.

NB: Soybean sprout is not included in the NutrVal tool.

21. BEAN SPROUT SALAD

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Wooden spoon (mwiko)
- Knife

Ingredients

Soybean sprouts, rinsed and drained	500g	3 cups
Garlic, crushed	6g	6 cloves
Onion, chopped	50g	1 medium bulb
Olive oil	20ml	1 tablespoon
Green paper and red paper	3.0	½ piece each
Salt	4g	1 teaspoon
Carrot	100g	1 piece



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	Mg	mg	mg
Recipe total	77	197	0.6	20.1	10	0.1	241	208	0.02	0.01	0.3	9
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		9	1	50	2	1	161	42	3	1	2	32

(Offline Nutritional Value Tool: NutVal 3.0)

Carrot and bean sprout are not included in the estimation because they are not in the NutVal tool. Sprouts contain all types of vitamins (A, B, C, D, E and K), folate and are an excellent source of iron, potassium, calcium, phosphorous, magnesium and zinc. Carrot is good source of vitamin A (beta carotene).

PROCEDURE

1. Sort and wash beans.
2. Soak 1 cup of seeds in water overnight and place into the small bag/sack with drainage.
3. Cover the sack with a clean, moist cloth, kept in the dark and sprinkled with clean water 3 to 4 times a day.
4. The sprouts are ready when they are 3 to 6 cm in length after 4 to 5 days.
5. Wash the sprouts in clean cold water to remove outer coats and remove any bean husks.
6. Place them in a pot and add 1 cup of water. Do not fill the pot.
7. Bring to a boil and cook for about 5 minutes. (Do not lift the lid to check if the pot is boiling because an unpleasant, fishy odor will fill your kitchen.)
8. Remove from heat, rinse in cold water, and drain.
9. Add onions, garlic, carrot, olive oil/virgin coconut oil, salt, green and red pepper.
10. Combine thoroughly, adjusting the salt and chili powder to your taste.
11. Serve warm or chilled.

22. SPROUT BEAN 2: MAKES 6 TO 8 SERVES

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Wooden spoon (mwiko)
- Knife

Ingredients

Soybean sprouts, rinsed and drained	500g	3 cups
Garlic, crushed	6g	6 cloves
green onion or onion, chopped	50g	1 medium bulb
Roasted sesame seeds	5g	1 teaspoon
Cooking oil	20ml	1 tablespoon
Chill	2.5g	½ teaspoon
Salt	4g	1 teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	G	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	79	226	2	23	59	1	241	0	0.1	0.02	1	3
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		11	3	56	13	4	161	0	7	2	6	11

(Offline Nutritional Value Tool: NutVal 3.0)

NB: Soybean sprout is not included in the estimated value. Sprouts contain all types of vitamins (A, B, C, D, E and K), folate and are an excellent source of iron, potassium, calcium, phosphorus, magnesium and zinc.

PROCEDURE

1. Rinse the sprouts in cold water and blot them dry.
2. Place soybean sprouts in a saucepan.
3. Add the salt and ½ cup of water and cover.
4. Bring to a boil over medium high heat for 10 minutes. Drain.
5. Put the cooked soybean sprouts in a mixing bowl. Add garlic, chili, green onion, sesame seeds, and cooking oil (pre heated) and mix by hand. Transfer to a serving plate.
6. Serve as a side dish to rice.

23. BOILED GREEN BEANS (KIDNEY BEANS, SOYBEANS AND COWPEAS-YOUNG UNRIPE PODS): MAKES 4 TO 6 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Wooden spoon (mwiko)
- Knife

Ingredients

Fresh green beans	500g	3 hand size
Butter or margarine	40g	2 tablespoons
black pepper	2.5g	½ teaspoon
Salt	2g	½ teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	542	2,368	183	132	1,397	79	150	466	4	4	52	30
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		113	348	330	310	357	100	93	486	312	376	107

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Wash beans, removing ends.
2. Cut them in diagonal strips or leave them whole.
3. Put them in a saucepan, add 1 cup of water boil for about 10-15 minutes until tender but still crunchy.
4. Add butter, salt and pepper to taste.

24. SOYBEAN AND MASH PATTIES: MAKES 6 TO 8 PATTIES

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Frying spoon or wooden spoon (mwiko)
- Frying pan
- Knife

Ingredients

Dry soybean	500g	2 cups
Orange fleshed sweet potatoes or any sweet potato	400g	2 medium
Maize flour, breadcrumbs or ugali	37.5g	¼ cup
Onion, crushed	50g	1 medium
Cooking oil	125ml	½ cup
Chillies	5g	1 tablespoon
Salt	4g	1 tablespoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	1,117	3,691	192	228	1,494	82	279	2,656	5	4	56	125
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		176	365	569	332	375	186	531	579	317	407	447

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. In a large bowl, mix the mashed potatoes, soybeans, salt, chopped onion, and chopped chilli until a thick mash form.
2. Form the mash into small patties and powder the outside with flour, bread crumbs or ugali..
3. Fry in hot oil, make sure to thoroughly cook one side before turning to prevent breaking.

25. SOY “MEATBALLS”: MAKES 20 PIECES

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Frying spoon or wooden spoon (mwiko)
- Mortar and pestle or blender
- Frying pan
- Frying spoon
- Knife

Ingredients

Soybeans grits	1 kg	4 cups
Wheat flour	150g	1 cup
Eggs	120g	2
Garlic peeled and crushed	20g	20 cloves
Ginger peeled and crushed	10g	1 piece
Cooking oil	1000ml	4 cups
Onions	150g	3 medium
Freshly squeezed lemon	20ml	2 tablespoons
Salt	4g	2 teaspoons



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	1,444	4,933	399	214	2,899	161	367	304	9	9	113	82
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		235	760	535	644	731	245	61	1007	672	816	294

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Sort, clean and soak soybeans overnight (8-12hrs).
2. Remove coats/dehull and wash soybeans.
3. Dry them over sun.
4. Roast them.
5. Pound them in a mortar or blend to get grits.
6. Mix soy grits with the onions, garlic and ginger.
7. Add 4 tablespoon of oil to frying pan and fry the mixture for 5 minutes.
8. Allow to cool then add the wheat flour, eggs and lemon juice and mix well.
9. Scoop out the mixture with a tablespoon and roll them out into small balls using your palms.
10. Heat the cooking oil and carefully deep fry the soy balls to a golden-brown colour.
11. Drain off excess oil and place in an open dish to avoid sogginess.

26. SOY AND MAIZE PORRIDGE: MAKES 4 TO 6 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Wooden spoon (mwiko)

Ingredients

Soybean flour	112.5g	¾ cup
Maize flour	200g	1 cup
Water	1000ml	4 cups
Sugar	62.5g	¼ cup



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	375	1,418	61	30	326	23	7	8	2	1	16	7
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		68	116	76	72	105	5	2	195	99	116	24

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Bring water to boil.
2. Mix maize and soybean flour in a bowl and add water to make a thick puree.
3. Add the puree into the boiling water with near constant stirring to avoid lumps.
4. Cook for 20 minutes.
5. Add more water or milk to desired consistency then add sugar and stir.

27. SOY FORTIFIED CERELAC

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Wooden spoon (mwiko)
- Mortar and pestle or blender
- Frying pan

Ingredients

Raw soybean	75g	½ cup
Raw maize	400g	2 cups
Margarine	250g	1 cup
Sugar	125g	½ cup



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	850	4,025	66	233	258	16	0	2,712	2	2	18	1
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		192	125	582	57	71	0	542	222	126	133	2

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Mill the raw maize and soybeans separately into smooth flour by using mortar and pestle or blender.
2. Mix the flour together with the sugar. Roast the mixture bit by bit in a hot, dry saucepan for about fifteen minutes each.
3. Pour all the roasted flour in a big bowl and mix the powder with margarine whilst it is warm.
4. Leave the mixture to cool down.
5. Roast the whole flour again bit by bit for about ten minutes each.
6. Allow the flour to cool.
7. Your cerelac is now ready for use.
8. Keep in a container with lid.

4.3 GROUNDNUT/PEANUTS

4.3.1 Health benefits of groundnut/peanuts

Groundnut/peanuts are an extremely high source of plant protein. The nuts are a rich source of minerals such as copper, manganese, potassium, calcium, iron, magnesium, zinc and selenium that are needed by our body to function well. Adequate supply of these minerals ensures a healthy heart and minimized risk of mineral deficient diseases. Groundnuts lower blood cholesterol levels and thereby reducing the risk of coronary heart diseases. Peanuts contain high concentrations of the antioxidant (especially boiled), which prevent cancer.

Being a good source of folate, peanuts reduce the incidence of birth defects, and anemia related conditions. It is essential for growth and development. The nuts are packed with many important B-complex groups of vitamins. Only 100g of peanuts provides about 85% of the RDI (Recommended Daily Intake) of niacin, which contributes to brain health and blood flow to the brain.

4.3.2 Groundnut recipes

Groundnuts are either cooked with the pods or shelled and can be boiled or roasted. The shelled groundnut can be roasted with or without salt and can be consumed directly. Roasted groundnuts can also be grounded and used in sauces or as ingredients in other food dishes.

28. ROASTED GROUNDNUTS: MAKES 20 PORTIONS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans, frying pan
- Wooden spoon (mwiko)

Ingredients

Groundnuts	1kg	4 cups
Salt	8g	2 teaspoons



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	1,008	5,670	258	492	920	46	680	0	6	1	162	0
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		270	491	1230	204	208	453	0	711	96	1171	0

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Sort and wash the groundnuts.
2. Place in saucepan add salt and ½ cup of water and cook while stirring frequently until they are dry.
3. Then roast for 10 minutes.
4. Remove from heat as it is ready to serve or store in an airtight container.

*Roasted groundnuts can be eaten as as a snack on their own or or with tea/coffee.

29. GROUNDNUT PASTE

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans, frying pan
- Wooden spoon (mwiko)

Ingredients

Roasted groundnuts	1kg	4 cups
Salt	8g	1 teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	1,008	5,670	258	492	920	46	680	0	6	1	162	0
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		270	491	1230	204	208	453	0	711	96	1171	0

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Remove the coat and sort again the grounded nuts to remove the damaged ones .
2. Pound the groundnuts in a mortar into a fine paste.

**The paste can be eaten with bread or used to cook different type of vegetable like pumpkin leaves, cowpeas leave etc.*

30. GROUNDNUT SOUP: MAKES 3 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans, frying pan
- Wooden spoon (mwiko)
- Mortar and pestle or blender
- Frying pan

Ingredients

Groundnuts flour	200g	1 cup
Dairy Milk or soymilk	62.5g	¼ cup
Onion	50g	1 medium
Water	250ml	1 cup
Salt	1g	½ teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	G	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	264	911	41	76	220	7	100	35	1	0.32	25	4
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		43	79	191	49	32	67	7	111	23	181	14

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

Making the groundnut flour

1. Sort and wash groundnuts.
2. Roast them for 3 minutes to dry.
3. Pound the groundnuts by using mortar and pestle or blender to get groundnut flour.

Making the soup

4. Place the groundnut flour in saucepan, add salt and 1 cup of water followed by the onions.
5. Simmer in an open pot until thick.
6. Add milk to thin it to a lighter consistency.
7. Serve in bowls.

*Additional ingredients to the soup may include mushrooms, or chilli.

31. GROUNDNUT SAUCE: MAKES 6 TO 8 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans, frying pan
- Wooden spoon (mwiko)
- Mortar and pestle or blender

Ingredients

Groundnuts flour	200g	1 cup
Wheat flour	10g	2 teaspoons
Cooking oil	10ml	1 tablespoon
Tomato	60g	1 medium
Onion	50g	1 medium
Black pepper powder	1g	¼ teaspoon
Bell pepper	40g	1 large
Water (boiled)	250ml	1 cup
Salt	1g	½ teaspoon

Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	370	1,296	54	109	206	10	42	195	1	0.31	33	43
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		62	103	272	46	44	28	39	151	22	241	154

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Prepare groundnut flour as above.
2. Wash and cut onions, tomatoes and bell pepper into small pieces and put aside.
3. Put cooking oil in a saucepan.
4. Pre-heat the cooking oil for 1 minute, add onion and sauté.
5. Add tomato, bell pepper, salt and black pepper and cook for 10 minutes until soft.
6. Put groundnut flour in a bowl, add water and stir into a smooth paste.
7. Add groundnut mixture to the cooking pan and cook for another 20 minutes.

*The sauce is best served with "ugali" or cooked arrow roots.

32. GROUNDNUT BUTTER: MAKES 2 CUPS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans, frying pan
- Wooden spoon (mwiko)
- Mortar and pestle or blender

Ingredients

Groundnuts flour	400g	2 cups
Cooking oil	20ml	1 teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	420	2,446	103	217	368	18	80	0	3	1	65	0
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		116	197	542	82	83	53	0	284	39	468	0

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Sort groundnuts and roast them to dry.
2. Remove coats and chop groundnut.
3. Mix the groundnut with oil and pour crush the mixture using a mortar and pestle until smooth or blend them.
4. If a hand food processor available, blend to a smoother paste.
5. Groundnut butter may be used immediately in recipes requiring groundnut sauce, or stored in a sealed container and eaten over a few days.
6. For a sweeter taste, add 1 tbsp of sugar and ½ tsp salt to the groundnut while crushing.

33. GROUNDNUTS BEAN STEW: 6-8 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans, frying pan
- Wooden spoon (mwiko)
- Mortar and pestle or blender
- Knife
- Lids

Ingredients

Groundnuts flour/paste	200g	1 cup
Boiled soybean beans	500g	2 cups
Cooking oil	20ml	1 teaspoon
Tomatoes	120g	2 medium
Onion	100g	1 big
Turmeric powder	3 g	1 teaspoon
Water	8 cups	
Salt	4g	1 tablespoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	924	3,274	236	198	1,601	88	314	336	6	5	85	52
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		156	450	496	356	401	210	67	637	333	615	184

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

Soybean preparation

1. Sort, clean and soak beans overnight (8-12hrs).
2. Put beans in saucepan, add water to immerse the beans, cover with lid and boil the beans till tender (60 to 90 minutes).
3. *Alternatively boil beans for 5 minutes then pour out water to reduce phytates, cook for 2 hours.*

Stew

4. Put fat in a saucepan, pre-heat for 2 minutes, add onions, tomatoes, salt and mix while cooking.
5. Take groundnut flour add ½ of water, stir into a thick paste.
6. Add the cooked beans without the water.
7. Mix well and cover with the lid, leave for 5 minutes.
8. Gently add the groundnut paste into the cooking soybeans while stirring, followed by the beans soups.
9. Simmer for 15 minutes and remove from heat.
10. Serve with rice, matoke or ugali.

N: B The same procedure can be used to prepare groundnuts common bean stew.

34. GROUNDNUT FISH SOUP: MAKES 4 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Wooden spoon (mwiko)
- Knife
- Lids

Ingredients

Groundnut flour	100g	½ cup
Dried fish	500g	
Garlic, chopped	10g	2 cloves
Palm oil	20g	2 tablespoons
Tomatoes	120g	2 medium
Onion	50g	1 medium
Pepper	5g	1 teaspoon
Salt	4g	1 teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	Mg	mg	mg
Recipe total	894	2,895	368	150	15,207	52	283	1,500	2	1	131	18
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		138	701	375	3379	237	189	300	205	93	948	66

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Wash and cut onions and tomatoes into small pieces and put aside.
2. Add 1 ½ cup of water to groundnuts and stir to smooth puree, put aside.
3. Wash fish and cut into small pieces and put aside.
4. Put palm oil or sunflower oil in a saucepan, pre-heat for 2 minutes, add onions followed by garlic and pepper.
5. Add tomatoes, salt and mix while cooking.
6. Add the groundnut puree into the boiling mixture, followed by dry fish.
7. Boil for 20 minutes.

4.4 COMMON BEAN AND COWPEAS RECIPES

4.4.1 Health benefits of common beans

Common beans: are nutritional powerhouses packed with protein, fibre, B vitamins, iron, potassium, and are low in fat; but this mighty food can also pose potential health risks. Eating beans may reduce blood cholesterol, a leading cause of heart disease. Beans also provide substantial insoluble fiber, which can keep constipation and other digestive woes away. It causes a slower rise in blood sugar.

4.4.2 Health benefits of cowpeas

Cowpeas reduce body plasma cholesterol. They have a comparatively lower glycemic index. As a high quality anti-oxidant, they curb the cancerous cells within the body. Cowpeas are an important component of weight loss as they are low in calories. They reduces blockages or even discomfort related to urination problems. Additionally, they are a rich source of fibre and help with regular bowel movement.

35. BEAN/COWPEAS SOUP: MAKES 4 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Wooden spoon (mwiko)
- Knife
- Lids

Ingredients

Bean or cowpeas	250g	1 cup
Groundnut	125g	½ cup
Garlic chopped or grinded	4g	2 cloves
Palm oil	20ml	2 tablespoons
Pepper	2g	1 piece



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	395	1,736	94	84	254	17	30	1,313	3	1	28	5
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		83	179	211	56	76	20	263	284	48	199	16

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Mash the boiled beans/cowpeas, add water, sieve and put aside.
2. Wash and cut onions and tomatoes into small pieces and put aside.
3. Add 2 cups of water to groundnuts and stir to smooth puree, put aside.
4. Put palm oil or sunflower oil in a saucepan, pre-heat for 2 minutes, add onions followed by garlic.
5. Add pepper, salt and mix while cooking.
6. Add the groundnut puree into the boiling mixture, followed by sieved bean or cowpeas. Boil for 20 minutes.
7. Serve hot.

36. BASIC BEAN STEW: MAKES 6 TO 8 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Wooden spoon (mwiko)
- Knife
- Lids

Ingredients

Beans	500g	2 cups
Tomatoes	120g	2 medium
Onion	50g	1 medium
Cooking oil	60ml	3 tbsp
Water	4000ml	8 cups
Salt	4g	1 teaspoon

Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	734	2,250	102	66	737	41	243	300	3	1	31	18
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		107	194	166	164	188	162	60	285	81	227	66

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Sort, clean and soak beans overnight (8-12hrs)
2. Put them in the cooking pan containing water and cook for 2 hours.
3. Reserve the bean liquid to be added as needed.
4. Put fat on saucepan, add onions, salt, tomatoes and mix while cooking.
5. Mix at intervals of 5 minutes and cover with the lid.
6. Cook for 25 minutes and remove from heat.
7. Serve with rice, matoke or ugali.

37. BANANA “KATOGO”

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Wooden spoon (mwiko)
- Knife
- Lids
- Raw banana leave

Ingredients

Banana	450g	6 fingers
Dry red kidney beans	200g	¾ cup
Amaranths	100g	
Palm oil	26g	2 tablespoons
Bitter tomatoes ('ntongo')	150g	4 medium size
Tomatoes	100g	3 medium
Onion	32g	1 medium
Water	4000mls	32 cups
Salt	4g	1 teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	1,062	1,761	84	68	788	40	18	4,206	2	2	28	145
RDI for population		2,100	52.5	40	450	22	150	500	0.90	1.40	13.9	28
% RDI met		84	160	171	175	182	12	841	256	149	205	519

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Sort, clean and soak beans overnight (8-12hrs).
2. Put beans in saucepan, add water to immerse the beans, cover with lid and boil the beans till tender (60 to 90 minutes).
3. Alternatively boil beans for 5 minutes then pour out water to reduce phytates, cook for 2 hours.
4. While beans are boiling peel bananas cut into at least two pieces per finger.
5. Put them into a saucepan with water to avoid browning.
6. Cut bitter tomatoes into two halves.
7. Add them to the saucepan with bananas.
8. Wash and cut onions and tomatoes into small pieces and put aside.
9. When beans are tender, add the peeled and chopped green bananas, onion, tomatoes, bitter tomatoes and palm oil to the boiling beans and add water to submerge the mixture, cover with banana leaves followed by a lid and cook covered for 20 minutes.
10. While the mixture is boiling sort and clean amaranth leaves, cut them into larger chunks pieces.
11. After 20 minutes open and remove covers (the lid and banana leaves) add amaranth to the boiling mixture.
12. Dissolve salt (1 teaspoon) in ¼ cup of water and add to the cooking food, mix the ingredients by stirring.
13. Cover again and cook for 7 minutes and take out of heat.
14. Serve hot.

38. DRIED COWPEAS LEAVES “NKARANGO” WITH GROUNDNUT FLOUR: MAKES 4 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Knife, wooden spoon (mwiko)
- Pestle or blander
- Lids

Ingredients

Dried cowpeas leaves	300g	2 bundle hand size
Groundnuts flour/paste	200g	1 cup
Onion	100g	2 medium
Tomatoes	180g	3 medium
Cooking oil	60ml	3 tablespoons
Salt	2g	½ teaspoon

Preparation of “nkarango”

1. Pick tender cowpeas leaves, sun-dry for 3 hours, twirl using fingers.
2. Put in a sauce pan, add water to sub immerse the leaves.
3. Cook until water dry.
4. Remove from heat, let them cool. Twirl again.
5. Sundry to until the leaves are brittle.

Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	842	2,761	128	163	387	23	172	585	4	1	42	35
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		131	244	406	86	105	114	117	388	66	302	124

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Add one cup of water to the dried cowpeas leave (“nkarango”), set apart.
2. Add 1 cup of water to groundnuts flour and stir to get a thin paste.
3. Wash and cut onions and tomatoes into small pieces and put aside.
4. Put fat in a saucepan, pre-heat for 1 minute, add onions, tomatoes, salt and mix while cooking.
5. Add the dried cowpeas leaves and stir.
6. While string add gently, groundnut paste to the cooking mixture.
7. Cook for 7 minutes.

39. COWPEAS STEW: MAKES 6 TO 8 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Wooden spoon (mwiko)
- Knife
- Lids

Ingredients

Cowpeas	500g	2 cups
Tomatoes	120g	2 medium
Onion	100g	2 medium
Coconut oil	125ml	½ nut
Water	4000ml	8 cups
Salt	4g	1 tablespoon



N:B Ghee or any other cooking oil can be used

Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	849	2,207	129	48	325	26	258	525	4	1	17	35
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		105	246	121	72	116	172	105	408	76	120	124

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Sort and clean cowpeas.
2. Boil peas for 5 minutes then pour out water to reduce phytates, cook for 90 minutes or until tender.
3. Put fat in saucepan, pre-heat for 2 minutes, add onions, tomatoes, salt and mix while cooking.
4. Strain soup from cowpeas, put soup apart.
5. Add the cooked cowpeas to the cooking mixture.
6. Mix well and cover with the lid, leave for 5 minutes.
7. Stir again, add the cowpeas soups.
8. Simmer for 10 minutes and remove from heat.
9. Serve with rice, matoke or ugali.

40. COWPEAS AND SWEET POTATOES: MAKES 6 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Wooden spoon (mwiko)
- Knife
- Lids

Ingredients

Cowpeas	250g	1 cup
Sweet potato	200g	1 small
Tomatoes	120g	2 medium
Onion	80g	1 large
Groundnut	5g	1 teaspoon
Cooking oil	20ml	2 tablespoons
Salt	4g	1 teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	679	1,285	67	26	218	13	254	1,723	2	1	10	71
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		61	128	66	48	60	169	345	244	39	74	253

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Sort and clean cowpeas.
2. Boil peas for 5 minutes then pour out water to reduce phytates, cook for 90 minutes or until tender.
3. While the cowpeas are boiling, peel and wash sweet potato, cut it into cubes.
4. After 60 minutes add sweet potato cubes to the boiling cowpeas and boil for 30 minutes.
5. Clean tomatoes and onion, cut into small pieces, set aside.
6. Pre-heat oil in a cooking pan, add onion, fry until it turns golden, add tomatoes and salt.
7. Cook until tomatoes are tender.
8. Add the mixture of onion and tomatoes to the mixture of boiled sweet potato and cowpeas, and mix together.
9. Mash slightly and serve.

41. COWPEAS LEAVES: “KUNDE”: MAKES 4 TO 6 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Bowl, saucepans
- Wooden spoon (mwiko)
- Knife
- Lids

Ingredients

Cowpeas leaves	500g	2 bundles-hand size
Fresh milk or milk cream	120ml	½ cup
Tomatoes	60g	1 medium
Onion	50g	1 medium
Garlic	6g	6 cloves
Cooking oil	20ml	2 tablespoons
Water	250ml	1 cup
Salt	2g	½ teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	757	415	19	29	1,010	11	151	3,164	0.4	1	11	142
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		20	36	73	224	49	101	633	48	49	78	507

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Wash cowpeas leaves, drain off water.
2. Put 1 liter of water to boil.
3. Add cowpeas leaves, boil them for about 25 minutes, remove from the fire and drain excess water (this reduce bitterness of cowpeas leaves).
4. While leaves are boiling, pound garlic in a mortar with ½ of salt. Set apart.
5. Heat vegetable oil in a pan and add the chopped onions and garlic, stirring occasionally, until the onions and garlic are soft.
6. Add tomatoes, salt and the boiled cowpeas leaves, then cook for 5 minutes, stirring occasionally.
7. Add the cream, cover and simmer for 5 minutes.

42. COWPEAS LEAVES IN SOYBEAN SAUCE: MAKES 4-6 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Saucepans, lids, bowl
- Wooden spoon (mwiko)
- Cooking spoons
- Knife

Ingredients

Cowpeas leaves	500g	2 bundle-hand size
Dried soybean	500g	2 cups
Tomatoes, chopped	180g	3 medium
Onion	50g	1 medium
Traditional salt/local ash "magadi"	10g	2 tablespoon
Cooking oil	40g	4 tablespoon
Water	125ml	½ cup

Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	1,280	2,612	199	144	2,263	90	645	3,431	5	5	62	186
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		124	378	360	503	407	430	686	534	346	448	665

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Soak 2 cups of dried soybean overnight.
2. Pour out the soaking water.
3. Add water, cook for 60 minutes or until soybeans are soft.
4. Pour out the water and mash soybeans with a large spoon until paste forms then set aside.
5. Wash cowpea leaves and shred into small pieces.
6. Fry with cooking oil the chopped onion until golden brown.
7. Add tomatoes while stirring followed by cowpea leaves ('kunde'), stirring constantly.
8. Add water and the traditional salt/local ash or salt, bring to boil and simmer for 10 minutes.
9. Add the soybean paste, stirring occasionally and bring to a low heat or simmer for 10 minutes.
10. Season with salt and serve with ugali.

43. 'KUNDE' (COWPEAS LEAVES) WITH GROUNDNUT: MAKES 4-6 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Saucepans, lids, bowl
- Wooden spoon (mwiko)
- Knife

Ingredients

Cowpeas leaves (kunde)	250g	1 bundle-hand size
Peanut butter/groundnut flour	125g	½ cup
Coconut or cow milk	250ml	1 cup
Cooking oil	5ml	1 tablespoon
Onion, chopped	50g	1 medium
Chilli pepper, chopped	2g	1 piece
Salt	4g	1 teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	684	1,720	48	152	585	17	279	1,473	1	1	28	76
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		82	92	381	130	78	186	295	129	32	204	273

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Wash kunde, boil in 1 litre of water and ½ teaspoon salt over medium heat, and simmer for 30 minutes stirring occasionally.
2. Set cooked leaves aside.
3. Sauté onions and chilli pepper in oil until onion is transparent. Add peanut butter and coconut milk slowly, stirring constantly until it comes to a boil.
4. Add kunde then add the remaining salt to taste.
5. Reduce heat and simmer for 15 minutes or until the kunde is cooked.

44. MAKANDE YA MAHARAGE: MAKES 8-12 SERVINGS

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Saucepans, lids, bowl
- Wooden spoon (mwiko)
- Knife

Ingredients

Beans	1000g	4 cups
De-hulled maize	500	2 cups
Groundnuts flour	400g	2 cups
Tomatoes, chopped	180g	3 medium
Onion, chopped	80g	1 large
Turmeric	5g	1 teaspoon
Water	10 L	40 cups
Salt	4g	1 teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
		Recipe total	2,164	7,431	356	229	1,867	115	325	450	10	4
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		354	678	573	415	521	217	90	1065	271	1000	100

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Sort, clean and soak beans overnight (8-12hrs).
2. Wash maize and put in a large pot, add water to submerge them cook for 30 minutes, then add the soaked beans.
3. Add enough cold water to submerge again.
4. Bring to a boil and simmer in a covered pot for 1 to 1½ hours or until maize and beans are tender.
5. Season with salt.
6. In the finished dish, most of the water should be absorbed, and the corn and beans should be tender yet still intact, not mushy.
7. Fry onion in oil add, turmeric followed by tomatoes to make a paste.
8. Pour the onion, turmeric, tomatoes mixture in the makande and mix, then simmer for 5 minutes.
9. Serve hot, alone as a main dish or as a side to any other dish.

45. COWPEAS AND SWEET POTATO PILAU

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Saucepans, lids, bowl
- Wooden spoon (mwiko)
- Knife

Ingredients

Cowpeas	250g	1 cup
Sweet potato	400g	2 medium pieces
Coconut milk	250ml	1 cup
Sunflower cooking oil	30ml	3 tablespoons
Tomatoes	180g	3 medium
Pilau masala	15g	3 tablespoon
Onion	50g	1 medium
Garlic, crushed	9g	9 cloves
Salt	4g	1 teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	1,164	2,696	77	118	265	19	257	593	2	1	14	121
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		128	147	296	59	85	171	119	261	66	102	433

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Sort and wash cowpeas, cook for 1 to 1½ hours or until tender.
2. Peel and wash sweet potato and cut into small pieces and set apart.
3. Wash tomatoes and onion cut into small pieces in separate bowl.
4. When cowpeas are tender. Heat sunflower oil in a pan; add onion, followed by garlic and pilau masala sauté till onion and garlic are brown.
5. Add tomatoes and stir until tomatoes are soft.
6. Pour the mixture into the boiling cowpeas, add sweet potato, coconut milk and salt.
7. Simmer for 30 minutes while stirring.
8. Serve your food.

*The same procedure can be used to cook **soybeans or common beans pilau** with cassava or sweet potatoes.

46. FRESH COWPEAS RELISH

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Saucepans, lids, bowl
- Wooden spoon (mwiko)
- Knife

Ingredients

Fresh cowpeas	500g	2 cups
Cooking oil	20ml	2 tablespoons
Tomatoes, chopped	240g	4 medium
Onion	50g	1 medium
Carrot	80g	1 small
Garlic, crushed	10g	10 cloves
Green chilli	4g	1 small
Sweet green pepper, finely chopped	20g	1 medium
Salt	4g	1 teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
		Recipe total	841	1,960	126	27	316	23	256	1,066	4	1
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		93	240	67	70	106	171	213	403	76	111	237

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Remove fresh cowpeas from their pods.
2. Wash them and put in a cooking pan add water to submerge them.
3. Cook for 30-45 minutes or until tender.
4. While cowpeas are cooking, skin tomatoes in boiling water chop into pieces and set apart.
5. Heat oil in a separate pan to medium heat; add onion, garlic, carrot and chilli, fry until soft.
6. Strain soup from the cowpeas; add cowpeas to the onion tomato mixture simmer for 5 minutes.
7. Serve hot with ugali or rice or any other food.

*The same procedure can be used to cook dry cowpeas relish.

47. COWPEAS GROUNDNUTS “MAKANDE” MAKANDE YA KUNDE NA KARANGA

Tools and utensils

- Heat source (charcoal, firewood, gas, electricity)
- Saucepans, lids, bowl
- Wooden spoon (mwiko)
- Knife

Ingredients

Dry cowpeas	500g	2 cups
Maize (de-hulled)	250g	1 cup
Ground nuts	375g	1 ½ cups
Onions	100g	2 medium
Tomatoes	240g	4 medium
Cooking oil	20ml	2 tablespoons
Salt	6g	1 ½ teaspoon



Estimated nutritional value

	Serving weight in gram	Energy	Protein	Fat	Calcium	Iron	Iodine	Vit. A	Thiamine	Riboflavin	Niacin	Vit. C
		kcal	g	g	mg	mg	µg	µg RE	mg	mg	mg	mg
Recipe total	1,491	4,940	243	222	957	66	442	675	8	2	98	44
RDI for population		2,100	52.5	40.0	450	22	150	500	0.90	1.40	13.9	28
% RDI met		235	462	554	213	301	295	135	888	148	708	159

(Offline Nutritional Value Tool: NutVal 3.0)

PROCEDURE

1. Wash maize and set apart.
2. Sort and wash cowpeas, boil for 5 minute and pour out water, set apart.
3. Mix cowpeas and maize in a large cooking pan.
4. Add water to the mixture and cook for 1 to 1½ hours or until they are tender.
5. Wash tomatoes and onion, cut into small pieces in separate bowl.
6. While the mixture is boiling, add water to groundnut flour and make a smooth paste and set apart.
7. When they are tender.
8. Heat cooking oil in a pan, add onion and sauté for 2 minutes.
9. Add tomatoes and stir until the tomatoes are soft.
10. Pour the mixture into the cooked cowpeas maize mixture.
11. Add the groundnut paste while stirring and let it simmer for 5 minutes.

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