

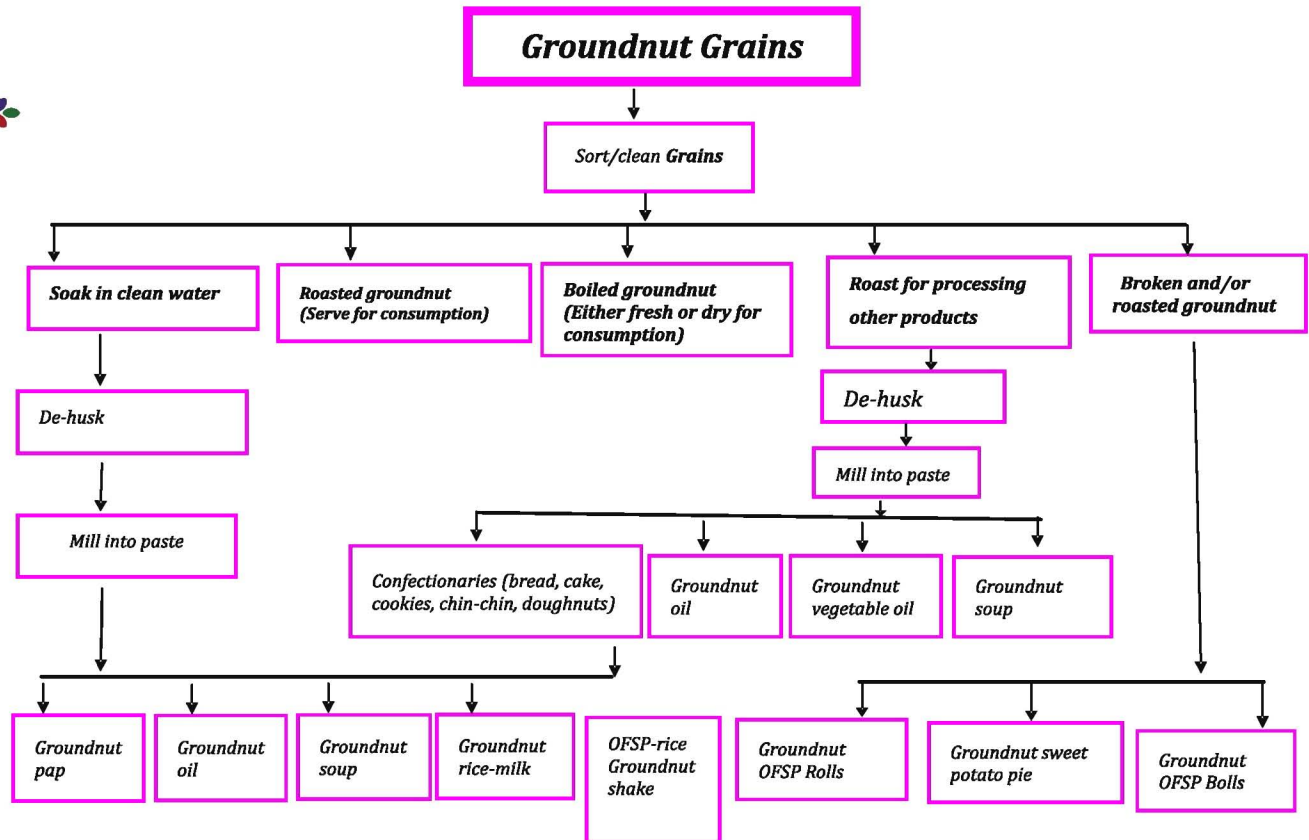
Cook's Guide to Groundnut Delicacies: Favorite Recipes from Northern Nigeria



INTERNATIONAL CROPS RESEARCH
INSTITUTE FOR THE SEMI-ARID TROPICS

Cook's Guide to Groundnut Delicacies: *Favorite Recipes from Northern Nigeria*

Citation: Michael B. VABI, Hakeem A. AJEIGBE, Agathe DIAMA and Hippolyte Affognon, 2018. *Cook's Guide to Groundnut Delicacies: Favorite Recipes from Northern Nigeria*. International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). ISBN 978-93-86527-00-4



Flow chart for processing groundnut grains into different products (Adapted from Maryam Katung – IAR/ABU; 2017)

Acronyms and abbreviations

ADP	Agricultural Development Project/Program/Authority
CRS	Catholic Relief Services
IAR/ABU	Institute for Agricultural Research, Ahmadu Bello University
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IDPs	Internally Displaced Persons
OFSP	Orange-Fleshed Sweet Potato
USAID	United States Agency for International Development
RUTF	Ready-to-Use Therapeutic Foods
WIA	Women in Agriculture
WOFAN	Women Farmers Advancement Network
tbsp	Tablespoon
tsp	Teaspoon
kg	Kilogram



Acknowledgements

This guide is a revised version of a previous one “COOK’S GUIDE FOR SMART GROUNDNUT AND GROUNDNUT-BASED PRODUCTS FOR IMPROVED NUTRITION IN NIGERIA”. That guide was compiled by Michael Boboh Vabi, with contributions from Maryamu D. Katung, Salamatu Garba, Taiwo Olawale, Maimuna El-Labib, Ebenezer Oluloto, Dayo Ogundjo, Joseph Babangida, Olawale Awoyemi, Stephanie Okpere and Sharma Malubhotla. Contributors to the previous guide represented implementation partners of the Nigerian component of the USAID funded Groundnut Technology Upscaling Project. The authors of the present guide thank them for setting the pace for the development of the present guide which is more comprehensive.

We are grateful to Hajiya Hafsat Ibrahim, Mr. Ishiyaku Yohana, Ms Yemisi Thompson, Mr. Abubakar Hassan Inuwa, Mr. Lawal Bala, Dr. Motagi Babu, Mr. Abba Aliyu Kasim and the several small-scale female groundnut processors in Bunkure and Dawakinkudu Local Government Areas (LGAs) of Kano State, Two of these women Hajiya Fatima Muhammed, and Hajiya Tina Suleiman of the Dawakin-Kudu WOFAN supported Women’s Centre, assisted in the description of the preparation of the additional recipes included into this version of the Cook’s Guide.

Mr. Sanusi Dankawu of the Kano State ADP played a key facilitating role throughout the compilation of this booklet. We really appreciate this facilitating role.



Foreword

Groundnut is an important crop for improving the health and nutrition of smallholders in many countries of West and Central (WCA). It is cheaper and more widely available than other locally available sources of protein. Apart from being an important element of regular dishes, groundnut can also be used to prepare Ready-to-Use Therapeutic Foods (RUTFs) to manage severe malnutrition among internally displaced persons (IDPs).

This Cook's Guide to Groundnut Delicacies: *Favorite Delicacies from Northern Nigeria* is one of the pointers of the commitment of ICRISAT to contribute to the reconstruction of the previous groundnut pyramids in different ways. Today, groundnut pyramids should create jobs, expand market opportunities, enhance the processing of groundnut and encourage the systematic consumption of healthy groundnut and groundnut-based products. This is why adopting a market-oriented approach to boost groundnut production in countries of WCA also requires sustained awareness-creation campaigns for its consumption. It covers most of the popular recipes in Nigeria and should therefore help household and women to uncover options for including groundnut and groundnut-based products into their daily meals and opportunities for generating cash incomes.

Professionally, the guide should constitute a handy reference material for field-based development workers of the Agricultural Development Authorities (ADPs), Civil Society Organization (CSOs) and Community-based Groups. A majority of field-based agents, particularly those of the Women in Agriculture (WIA) teams of the ADPs in Nigeria, will find this guide a valuable reference material and companion.

Indeed, this reference guide also raises awareness on the fact that addressing nutrition requires taking actions at all stages of commodity value chains - from production, processing, retail to consumption. I congratulate the authors of this guide for putting together feasible recipes for groundnut into a single reference guide, and urge colleagues of the ICRISAT, WCA hub to adapt and/or develop similar guides for other ICRISAT mandate crops of the region

Dr. Ramadjita Tabo
Regional and Research Program Director
ICRISAT; West and Central Africa (WCA)

Table of Contents

Acronyms and abbreviations	i
Acknowledgements	ii
Foreword	iii
About INCRISAT	1
Introduction.....	2
Groundnut Pap	4
Roasted Groundnut (Shelled)	6
Roasted Groundnut (Unshelled).....	8
Boiled Groundnut.....	10
Groundnut Butter	12
Groundnut Bread.....	14
Groundnut Cake	16
Groundnut Cookies	18
Groundnut Doughnuts	20
Groundnut Oil.....	22
Groundnut-Vegetable Soup.....	24
Groundnut-Rice Shake.....	26
Groundnut-Cereal Pap (Tom Brown)	28
Groundnut–Orange-fleshed Sweet Potato Pie	30
Groundnut–Orange-fleshed Sweet Potato Balls.....	32
OFSP-Rice-Groundnut Shake	34
Groundnut-OFSP Roll.....	36
Dakuwa	38
Groundnut Chocolate	40
Hallaka Kwabo	42
Groundnut Soup	44
Groundnut Sweet	46
Kantin-Gana	48

About ICRISAT

ICRISAT - International Research Institute for the Semi-arid Tropics, is a non-profit, non-political organization that conducts agricultural research for development in the drylands of Asia and sub-Saharan Africa. Covering 6.5 million square kilometers of land in 55 countries, the semi-arid or dryland tropics has over 2 billion people, and 644 million of them are amongst the poorest of the poor. ICRISAT and its partners help empower these poor people to overcome poverty, hunger and degraded environments through better agriculture. ICRISAT is headquartered in Hyderabad, Telangana State, in India, with two regional hubs (Nairobi in Kenya and Bamako in Mali) with country offices in Niger, Nigeria, Zimbabwe, Malawi, Ethiopia and Mozambique. ICRISAT conducts research on five highly nutritious drought-tolerant crops: *chickpea, pigeon pea, pearl millet, sorghum and groundnut*. ICRISAT envisions a prosperous, food-secure and resilient dryland tropics. To achieve this, its mission is to reduce poverty, hunger, malnutrition and environmental degradation in the dryland tropics. It approaches this through partnership that embodies *Science with a Human Face*. ICRISAT's strategy is anchored on an inclusive market-oriented development (IMOD). ICRISAT has defined six developmental outcomes that it believes will help the poor to move along the IMOD path: *food sufficiency, intensification, diversification, resilience and health & nutrition, and women empowerment*. Significant reductions in poverty and increases in food security in the dryland tropics are possible through this route. ICRISAT believes this is the way to meet its inspirational targets of halving the incidence of poverty in smallholder farming households, halving the incidence of hunger, halving childhood malnutrition, and significantly increasing the resilience of tropical dryland smallholder farming.



1. Introduction

1.1 Health benefits of groundnut and groundnut-based products

Groundnut plays a vital nutritional role in the diet of many Africans. In northern Nigeria, groundnut represents a substantial portion of the household protein intake. Groundnut is sold, used and consumed in many forms – roasted, boiled, processed, sprinkled on or included in different dishes. A significant proportion of the groundnut production is pressed to obtain groundnut oil which is widely used in most rural and urban households in northern Nigeria. The nuts are processed into groundnut paste (groundnut butter), consumed directly or used for other purposes.

Groundnut provides five essential nutrients: *energy, protein, phosphorous, thiamin and niacin*. The health benefits of groundnut align well with the different ways in which it can be consumed; shelled nuts can be eaten fresh, roasted or boiled. Salted groundnut is sold in small packets or cans. Groundnut oil is used for cooking etc. Unshelled groundnut can also be roasted or boiled and eaten as snacks during festivals and story-telling occasions in villages. This Cooks' Guide recommends including groundnut in at least one meal a day and gives various options for it.

1.2. Groundnut and groundnut-based products in livestock feeding and industries

All parts of the groundnut plant are valuable. The grains can be used to feed domestic birds. Before harvesting, the roots of the groundnut plant fix atmospheric nitrogen by symbiotic association with the bacterium *Rhizobium*, thereby reducing the need for application of chemical fertilizers. Groundnut haulms are used as fodder for sheep, goats and cattle, and as fuel for heating. Groundnut is also one of the most valuable feeds for all types of livestock and one of the most active requirements for compounding poultry rations. The major constituents of groundnut are essential amino acids such as lysine and glutamine. Other components are crude fiber, crude protein and fat.

In industries, groundnut has a variety of uses. Groundnut oil is used in making paint, varnish, lubricating oil, leather dressings, polish, insecticides and nitroglycerin. Soap is also made from the sludge and/or saponified groundnut oil, and many cosmetics contain groundnut oil and its derivatives. The protein portion is used in the manufacture of some textile fibers. Similarly, groundnut shells are used in the manufacture of plastics, wallboards, abrasives, cellulose (used in rayon and paper) and glue.



Table 1. Nutrient values of different food sources.

Food	Energy (kcal/kg)	Fat (g/kg)	Protein (g/kg)
Legumes			
Groundnut	5670	50	258
Soya bean	4160	200	365
Common bean	4330	8	226
Roots and tubers			
Cassava	1490	2	12
Yam	1180	2	15
Potato	1100	2	18
Cereals			
Rice	3610	10	65
Maize	3530	38	93
Animal sources			
Egg	1580	112	120
Beef	1610	79	195
Fish	2550	74	470
Fruits and vegetables			
Orange	450	2	9
Carrot	350	0	7
Cassava leaves	230	3	30

Source: GIZ/WOFAN Nutrition Training Support Materials (2015)

1.3. Aflatoxin Contamination and Allergies

Groundnut is susceptible to invasion by molds and fungi that could be a grave health risk. The main concern is aflatoxin, a highly toxic substance produced by the fungus *Aspergillus flavus*, causing new growths in skin or in the lining of body organs. Best practices, such as improved on-farm management, storage and processing techniques, are known to reduce or even eliminate the risk of aflatoxin contamination. In order to prevent aflatoxin ingestion, many countries are enforcing limits on aflatoxin permitted in all foods of plant and animal origin, including groundnut and groundnut-based products. Once a nut turns greenish or yellowish (due to fungal contamination), it becomes dangerous and is no longer fit for human consumption or as animal feed.

In most culinary uses, groundnut is classified as a nut because it behaves much more like nuts in the kitchen than other legumes, such as cowpea, soya bean, common bean etc. Indeed, groundnut refers more to the underground location favored by the pods of this legume. This distinction is important, given that people with nut allergy can eat groundnut safely. Conversely, people who are allergic to groundnut can eat other nuts with little or no health concerns. However, it should be noted that excessive consumption of groundnut, like virtually any other food, may result in unexpected metabolic challenges, especially constipation.

Groundnut Pap



food
for thought

Groundnut Pap Ideal as complementary feed for young children (6–23 months), during emergency humanitarian responses, during illness and recuperation, and for breaking fasts.



What you need

- ✿ Raw or slightly roasted crushed groundnut: ½ kg
- ✿ Raw groundnut paste: 300 g (about 2 Peak milk containers)
- ✿ Cereal of choice (rice, sorghum or millet): 2–4 tbsp Tamarind
- ✿ juice or lime juice: ½ cup
- ✿ Cereal paste (thickener/flour): 1 cup
- ✿ Sugar to taste
- ✿ Water: 600 ml

Guide to Preparation

- ✿ Soak tamarind in (preferably hot) water and extract juice. Alternatively, you can use lime juice
- ✿ Wash and soak raw groundnut for 15 minutes. Then remove skin and grind into paste.
- ✿ Mix the paste with water and sieve well.
- ✿ Pour the mixture into a pot, add the cereal of your choice and cook for 30 minutes on a medium flame.
- ✿ Mix tamarind water with the cereal paste*.
- ✿ To the cooked groundnut + cereal mixture, add the cereal paste mixed with tamarind water and stir until the mixture thickens.
- ✿ Turn off the heat.
- ✿ Add sugar to taste and serve warm.

* Cereal Paste

- Soak cereal in water for 24 hrs.
- Grind with enough water and sieve well to extract the chaff.
- Allow the sieved paste to settle for 12 hrs and then drain the water.
- Pour the settled paste into a tied muslin cloth to drain the remaining water until the paste solidifies.
- Refrigerate and use as desired

Roasted Groundnut (Shelled)

Recipe >



food
for thought

Groundnut is consumed around the world in raw, boiled, roasted, fried and crushed forms in numerous recipes.

**smart
food** Recipe

What you need

- Shelled groundnut: 1 mudu (about 1 kg)
- Fine sand: 2 cups
- Firewood

Guide to Preparation

- Pick and winnow the groundnut to remove dirt.
- Wash well with clean water.
- Soak groundnut in water for 2–4 hours.
- Drain and dry the groundnut in the sun or under shade.
- Put fine sand into a frying pan and roast for five minutes.
- Add the groundnut and continue to roast.
- When roasted to desired taste, remove and spread on a large dish or mat to cool.
- Serve as desired.

Roasted Groundnut (Unshelled)



food
for thought

Unshelled roasted groundnut offers more protection against aflatoxin and roasting improves the digestibility of groundnut.



What you need

- Unshelled groundnut: 1 mudu (about 1 kg)
- Salt (optional)
- Ash: 1 cup
- Water
- Fine sand: ½ kg

Guide to Preparation

- Pick to remove bad kernels.
- Wash well to remove dirt and sand particles.
- Boil for 3–5 minutes.
- Drain groundnut.
- Sprinkle salt (optional).
- Spread on a mat to dry.
- Heat ash or sand in an iron or clay pot to very high temperature.
- Add the dried groundnut to the pre-heated sand.
- When roasted to desired taste, remove and spread on a large dish or mat to cool.
- Serve as desired.

Boiled Groundnut



food
for thought

Boiled groundnut has lower calories and fats, and a higher concentration of nutrients than roasted groundnut.



What you need

- Cleaned, graded raw groundnut
- Clean water
- Salt (optional)

Guide to Preparation

- Wash the groundnut well.
- Boil water in a pot, add salt and groundnut.
- Boil for 2-3 hours on low flame.
- Strain boiled groundnut and serve.

Groundnut Butter



food
for thought

Groundnut butter is rich in protein, fiber, potassium, magnesium, vitamin E, antioxidants and monounsaturated fats.



What you need

- Roasted groundnut: 2 cups
- Powdered ginger: 1 tbsp
- Pepper (optional): 1 tbsp
- Salt or sugar (optional): 1 pinch or ½ tsp

Guide to Preparation

- Clean and sort groundnut.
- Roast on dry hot pan till golden brown.
- De-husk and winnow.
- Grind into paste.
- Add spices, sugar or salt, as desired.
- Mix thoroughly until fluffy.
- Scoop into a bottle or airtight container.
- Serve with bread or use in preparing other dishes such as soups and pastries.

Groundnut Bread



food
for thought

Groundnut Bread can be a good alternative to other breads which are unhealthy and/or more expensive (wheat bread)



What you need

- Groundnut butter: 2 cups
- Wheat flour: 8 cups
- Butter: ½ cup
- Yeast: 2 tsp
- Eggs: 2 large (optional)
- Sugar: 1 cup (optional)
- Salt: a pinch (optional)

Guide to Preparation

- Add yeast, sugar and water (warm enough to dip finger in). Keep for 3-5 minutes to activate the yeast.
- Combine all requirements and mix into a thick dough.
- Keep in a warm place to rise.
- Knock/press down and cut into different sizes of bread or bread rolls.
- Keep in warm place to rise.
- Bake in oven at 250C till golden brown.
- If using local pot and sand, ensure that the sand becomes very hot.

Groundnut Cake



food
for thought

Groundnut is a rich source of vitamin E, zinc and magnesium, all of which help to keep skin healthy.



What you need

- Fried, crushed groundnut or groundnut butter: 2 cups
- Flour: 8 cups (Alternatively, 7 cups of flour + 1 cup of groundnut powder)
- Sugar: 3 cups
- Butter: 5 cups
- Eggs: 20
- Flavor: 1 bottle
- Baking powder: 2 tsp

Guide to Preparation

- Cream sugar and butter together till soft and fluffy.
- Add ½ a bottle of the flavor and beat.
- Add eggs and rest of the flavor and beat till smooth.
- Add the flour.
- Beat in groundnut butter to a soft consistency.
- Pour into oiled cake pan and bake at 350OC for 15 minutes.

Groundnut Cookies



food for thought

In northern Nigeria, groundnut represents a substantial portion of the household protein intake.

Groundnut is sold, used and consumed in many forms – roasted, boiled, processed, and sprinkled onto foods.



What you need

- Groundnut butter: 2 cups
- Flour: 8 cups
- Sugar: 3 cups
- Butter: 5 cups
- Flavor: 1 bottle
- Nutmeg: 2 (large)
- Eggs: 10
- Baking powder: 1 tsp

Guide to Preparation

- Cream sugar and butter till fluffy.
- Add flour with all other ingredients and mix into a soft consistency.
- Mold to desired shapes about ½ cm thick and 4 cm diameter.
- Bake at 350°C for 15 minutes.
- Cool on a rack.

Groundnut Doughnuts



food
for thought

Groundnut provides heart-friendly fats, reducing the risk of cardiac diseases.



What you need

- Groundnut butter: 2 cups
- Flour: 8 cups
- Sugar: 2 cups
- Butter: 1 cup
- Eggs: 2
- Flavor: 2 tsp
- Nutmeg: 1
- Yeast: 2 tsp
- Salt: 1 tsp
- Groundnut oil: 1.5 liters

Guide to Preparation

- Mix the yeast with a little warm water and sugar. Allow to activate for a few minutes or till it foams.
- Mix all other ingredients together to form a thick but pliable dough.
- Cover and allow rising till double in size.
- Roll on floured board and cut into doughnut shapes.
- Keep in a warm place and allow to rise to double size.
- Heat groundnut oil in a pan and deep fry the doughnuts one by one to a golden-brown color.
- Cool on wire rack.

Groundnut Oil



food for thought

Groundnut oil is rich in resveratrol, a polyphenol antioxidant that eliminates free radicals and acts on vasoconstrictors such as angiotensin. Therefore, regular intake of groundnut oil can help prevent cancer and high blood pressure.



What you need

- Sorted graded and cleaned groundnut: 2.5kg (to yield 1litre oil)
- Warm water: 150 ml
- Salt to taste
- Dried ginger powder (optional): a pinch
- Dried pepper powder (optional): a pinch

Guide to Preparation

- Roast groundnut to a light brown color.
- Crush coarsely to make grinding and pressing easier.
- Add ginger and pepper powder (optional) to crushed groundnut and grind in a mill.
- Add warm water to ground paste and stir. Do not pour water on one spot but sprinkle evenly over the whole paste.
- Mix paste thoroughly for 5 minutes, at the end of which there should be no dry paste at the bottom of the container.
- In a separate container, heat the oil until water evaporates.
- Shape paste into small balls or strips and fry in a deep pan with a little oil under low heat.
- Fry until all strips and balls are dry and stir frequently to prevent burning. The popular snack, Kuli-kuli*, is now ready.
- Remove Kuli-kuli quickly once fried to prevent them from soaking up the oil again.
- Allow to cool before storage.
- Allow oil to cool and sediments to completely settle.
- Filter and store oil for use.

***Kuli-kuli:** A complementary product of the process of extracting groundnut oil.

Things to Remember

- Minimize risks of accidents from burning by hot oil and spillage.
- Ensure that containers to be used to store or transport oil are clean, dry and well covered.

Groundnut-Vegetable Soup



food
for thought

Groundnut-vegetable soup is healthy and can be enjoyed by all ages (except infants younger than six months of age). In fact, it is often served in refugee camps.



What you need

- Pounded raw groundnut: 1 cup
- Spinach: as desired
- Tomatoes: 4 (large)
- Peppers: 2 (large)
- Meat: ½ kg
- Onions: 1 (large)
- Locust bean powder: 1 tbsp
- Food seasoning: 4 cubes
- Salt to taste
- Garlic: ½ clove
- Palm oil: 2 cooking spoons

Guide to Preparation

- Wash and boil meat. Do not discard the water after meat is boiled. This will be used as stock later in the recipe.
- Wash tomatoes, pepper, onions and garlic and chop finely.
- Put palm oil into a clean cooking pot and place on fire.
- Add the chopped vegetables and cook for 5 minutes.
- Add boiled meat and stock along with 2 cups of water.
- Cook for 15 minutes.
- Add locust bean powder, food seasoning, salt and groundnut and cook for another 10 minutes.
- Wash and chop spinach. Then add to soup and cook for 3-5 minutes.
- Serve with any dish of choice.

Groundnut-Rice Shake



food
for thought

Groundnut-rice shake is an excellent alternative to regular milk for people with lactose intolerance and appropriate for competitive feeding programs.



What you need

- Raw groundnut soaked for 8-12 hours: 1 cup
- Brown rice soaked for 8-12 hours: ½ cup
- Water: 1 liter

Guide to Preparation

- Drain and rinse the soaked groundnut thoroughly.
- Blend groundnut and add water.
- Pour the mixture into a nut bag placed in a sieve over a large deep bowl.
- Squeeze to get out as much liquid (milk) as you can.
- Keep this groundnut 'milk' aside.
- Drain and blend the soaked rice.
- Add water.
- Sieve and squeeze liquid out. Keep aside.
- Mix the groundnut and rice milks.
- Your shake is ready!

Groundnut-Cereal Pap (Tom Brown)



food for thought

Groundnut-cereal pap (or Tom Brown) is a popular weaning food for babies. The cereal used is usually maize, though other cereals can also be used. It is beneficial for the elderly as it is rich in Vitamin A.



What you need

- Groundnut: 1cup
- Cereal of your choice: 1 cup
- Palm oil (optional): 2 tsp
- Sugar (optional): 1 tsp

Guide to Preparation

- Hand pick and sort the groundnut and the cereal of choice.
- Wash and dry them separately.
- Soak the groundnut overnight or for a minimum of 2 hours.
- Drain the groundnut, remove the skin (to reduce toxicity) and dry in shade.
- Roast the dried groundnut lightly for about 5–10 minutes.
- Grind the cereal of choice to a fine powder.
- Take a cup of the cereal powder and a cup of groundnut powder.
- Add a cup of water to the combined powders and make a paste, taking care to avoid lumps.
- Heat water in a pan. When it boils, reduce the heat and add the mixed paste gradually until it thickens and is cooked well.
- If desired, add sugar to taste, and a drop of palm oil or carrot paste to get desired color.

Groundnut-Orange-fleshed Sweet Potato Pie



food for thought

High levels of beta carotene in the OFSP gives it its characteristic orange color. Beta carotene is converted into Vitamin A upon consumption. OFSP is also rich in Vitamins B, C and E.



What you need

For the pie base

- All-purpose flour: 1 kg
- Baking powder: 2 tsp
- Groundnut oil: 500 g
- Salt: 2 pinches
- Water: ½ cup
- Egg: 1 (Whisk the yolk and white together to prepare an eggwash).

For the filling

- OFSP: 1 (medium size)
- Broken groundnut: 1 cup
- Onion: 1 (medium size)
- Vegetable oil: 2 cooking spoons
- Food seasoning: 1 cube
- Thyme: ½ tsp
- Plain flour: 2 tbsps
- Water: 1 cup
- Salt to taste

Guide to Preparation

- Peel the OFSP, wash and cut into small cubes.
- Dice the onions.
- Put the vegetable oil in a pot and heat it.
- Add diced onions, seasoning and thyme. Stir for a bit and add a little water.
- Add the diced OFSP and stir.
- Add the broken groundnut, stir and cook till everything is well done. Set aside.
- Take flour in a large mixing bowl. Add the baking powder and salt and mix well. The pie will get most of its taste from the filling so much salt is not needed.
- Use a tablespoon to scoop the margarine in small bits into the bowl of flour. The smaller you make the bits of margarine, the easier it is to rub it into the flour. Rub the margarine into the flour until the mix develops a crumbly consistency.
- Start adding water to the flour a little at a time and knead the dough till a stiff ball of dough is formed. At the most, add half a cup of water to the 1 kg of flour.
- Knead the dough very well, and let it rest for 5–7mi. to make the dough more elastic.
- Preheat an oven to 170°C (335°F).
- Knead the dough again and roll it out into a circle of 5 mm thickness.
- Cut the dough into a circle and scoop some pie filling onto one half of the circle.
- Rub a teaspoonful of mixed egg on the inside edge of the cut meat pie dough.
- Fold one part of the dough to meet the other end and use a fork to press the two edges to close tightly.
- Place in the greased oven tray. Make more pies till all the dough is used.
- Rub a teaspoon of egg wash on the surface of all the pies. This gives them a golden-brown look when done.
- Set the tray in the preheated oven and bake for 30 to 40 minutes. You can confirm that the meat pie is done when it starts browning. (It is alright to open the oven to check.)

Groundnut-Orange-fleshed Sweet Potato Balls



food for thought

Minerals such as copper, manganese, potassium, calcium, iron, magnesium, zinc and selenium are present in adequate amounts in groundnut.



What you need

- Groundnut (roasted and coarsely broken): ¼ cup
- OFSP: 5 (medium-size)
- Onions (chopped): 5 tbsp
- Assorted vegetables (sliced) – cabbage, red and green peppers (as desired)
- Salt to taste
- Curry powder to taste
- Seasoning cube:1
- Thyme: to taste
- Eggs: 3
- Wheat bread crumbs: 1 cup
- Groundnut oil for frying
- Margarine: 2 tsp

Guide to Preparation

- Wash and peel the OFSP.
- Slice the roots into small chunks for quick cooking.
- Put them into a saucepan and add enough water to cover.
- Add some salt and allow it to boil until cooked.
- Drain and mash the OFSP until smooth.
- Add the onions, other vegetables, margarine and groundnut.
- Add the spices and stir.
- Add one beaten egg and knead the mixture.
- Crack and beat the other two eggs well.
- Form small balls from the dough and dip them into the beaten egg.
- Roll the balls in the bread crumbs one after the other.
- Heat groundnut oil in a pan.
- Deep fry the balls.
- Remove and drain on a paper towel.

OFSP-Rice-Groundnut Shake



food
for thought

OFSP is a biofortified food that has pro-Vitamin A (beta carotene) in addition to the vitamins B, C, E and K that are found in other sweet potato varieties.



What you need

- Rice (tuwon, Basmati, etc.): 2 cups
- Groundnut (picked and cleaned): 2 cups
- OFSP: 1 (medium size)
- Ginger (fresh or dried): 1 inch
- Cloves: 1 tsp
- Walnuts (optional): 1 (medium size)
- Sugar to taste
- Water: 2 liters

Guide to Preparation

- Wash rice to remove any impurities and soak overnight (or for 10 hours) in cold water.
- Peel the OFSP and dice.
- In a blender, grind the diced OFSP with the groundnut to make a smooth paste.
- Add ginger, cloves and other desired spices.
- Put rice and blend again into a paste.
- Divide the blended groundnut rice paste into two parts. Set one part aside.
- Boil some water and pour into one part of the paste. Stir until it gets a thick consistency like pap (kamu). Leave it uncovered and allow it to cool.
- Now add the other part of the paste that was kept aside and stir well. (It is all right for it to be a bit watery after sometime).
- Leave it overnight. (It is better to prepare this dish in the evening, except for soaking that should be done in the morning).
- Sieve it in the morning and add sugar to taste.
- Serve.

Groundnut-OFSP Roll



food
for thought

Replacing conventional snacks with groundnut-based products such as OFSP Roll can decrease exposure to heart diseases, diabetes and other chronic health conditions.



What you need

- Broken roasted groundnut: ¼ cup
- OFSP: ½ cup
- Hard wheat flour: 1½ cup
- Groundnut oil: 1 cup
- Margarine (or groundnut oil): 300 ml
- Baking powder: 1½ tbsp
- Onion: as required
- Milk: 150 ml (1 tin)
- Eggs: 2
- Sugar: ½ cup
- Nutmeg: ½ tbsp
- Yeast: 1½ tbsp
- Minced meat: ½ pound
- Water: as needed

Guide to Preparation

- Peel and chop the OFSP into medium-sized pieces.
- Put in a pot with sufficient water and cook till soft.
- Mash the cooked OFSP.
- Mix half of the mashed OFSP with wheat flour in a bowl. (Keep other half aside for stuffing.)
- Add oil/margarine and knead.
- Grate nutmeg into it and mix well.
- Mix sugar with ½ cup water and add to the dough.
- Add yeast and a pinch of salt to the dough.
- Add baking powder to mixture and mix well.
- Knead well and roll on a table.
- Mix minced meat with the cooked OFSP (kept aside earlier) and broken groundnut.
- Add spices and seasoning.
- Stuff into rolls.
- Prepare baking pans by coating with oil.
- Beat an egg and use it to glaze the top of the rolls before baking.
- Bake at 335°F for 15 minutes.

Dakuwa *(Hausa Language)*



food for thought

Dakuwa remains a delicacy during marriages though its reputation has been on the decrease. This explains why there is little knowledge about this delicacy amongst the younger generation. It is served as appetizer and special offer to important guests.



What you need

- 1 cup of tiger nut
- ½ cup of roasted groundnut
- ½ teaspoon of dried chili or pepper
- ½ teaspoon of ginger powder
- ½ cup of sugar or honey (optional)
- A pinch of salt (optional)
- ½ cup of Sorghum/tiger nut/ Groundnut

Guide to Preparation

- Hand pick groundnut to remove bad grains and dirt
- Roast in a dry hot pan till golden brown and set aside
- Sort, hand pick the tiger nuts to remove dirt
- Wash and sundry
- Roast the tiger nuts till golden brown for 20-30 minutes
- Allow to cool
- Softly pound to remove coats and then winnow
- Alternatively, mix tiger nuts, groundnut, ginger, chili, etc. and take to the grinding machine (machine could be adjusted to desired texture)
- Mold into desired sizes and shapes and serve as desired

Things to Remember

There are three different options for making Dakuwa:

- a. Groundnut with tiger nut
- b. Sorghum with groundnut,
- c. Groundnut only (***Alandya and may include other specific ingredients***).

Whatever the option chosen, the careful sorting of the ingredients (groundnut, sorghum and tiger nuts) and careful cleaning of all the utensils largely limit the chances of aflatoxin contamination.

Groundnut Chocolate



food
for thought

Served as snacks during ceremonies; It is a take-away offer to children. Increasingly, It is a cheaper alternative to conventional chocolates.

smart
food Recipe

What you need

- Roasted groundnut
- Sugar
- Juice from two lemon
- ½ cup of water

Guide to Preparation

- Hand pick groundnut to remove bad grains and dirt
- Roast groundnut in a dry pan till it becomes golden brown
- De-husk and winnow
- Grind into paste and store in a clean container
- Put sugar and ½ cup of water into clean pot and put on fire
- Add lemon juice
- Allow to cook for 20 minutes
- Add two serving spoon of groundnut paste
- Continue to stir frequently to prevent burning until it becomes golden brown
- Spread it on a nylon and allow to cool
- Cut into desired sizes.

Hallaka Kwabo *(Hausa Language)*



food
for thought

Popular snack during ceremonies and source of petty cash for elderly women and young unmarried girls.

 smart
food Recipes

What you need

- 1 cup of groundnut
- 1 cup of sugar
- Ginger

Guide to Preparation

- Hand pick groundnut to remove bad grains and dirt
- Pound in a mortar with ginger
- It should be grinded into a coarse form not smooth or soft one
- Put sugar into clean pot and place on fire
- Allow the sugar to melt
- Add the pounded groundnut
- Stir frequently to prevent burning till golden brown

Groundnut Soup



MIYAR GYADA

food
for thought

Common dish during wedding and death ceremonies and regularly consumed in many households. Considered to be a nutritious dish for breast-feeding and pregnant women.

 **smart**
food Recipe

What you need

- One cup of roasted groundnut
- Tomatoes
- Pepper
- Onion
- Meat or fish
- Seasoning cube to taste
- Salt to taste

Guide to Preparation

- Hand pick groundnut to remove bad grains and dirt
- Roast groundnut in a dry hot pot for 5 minutes and de husk
- Grind roasted groundnut in a mortar
- Boil beef/meat/fish until it becomes tender (to taste)
- Add salt to taste, blend tomatoes, pepper and sliced onion
- Add seasoning, water as needed and allow to cook for between 20 - 30 minutes
- Serve with any other swallow of choice.

Groundnut Sweet



food
for thought

Popular snack during ceremonies bringing children together and source of petty cash for elderly women and young unmarried girls.

smart
food Recipe

What you need

- Groundnut
- Sugar
- Juice from two lemon fruits

Guide to Preparation

- Hand pick groundnut to remove bad grains and dirt
- Partially pound roasted groundnut in a mortar into halves
- Put sugar into a clean pot
- Add ½ cup of water
- Add juice from two lemon fruits
- Allow it to cook for 15-20 minutes
- Add pounded roasted groundnut and continue to stir to prevent burning until it becomes brown
- Allow to cool and mold into desired shapes

Kantin-Gana *(Hausa Language)*



food
for thought

Popular snack for children and sold in several gatherings by women including prominent mosques during Friday Prayers.



What you need

- 1 cup of groundnut
- ½ cup of sugar

Guide to Preparation

- Sort, handpick groundnut to remove bad grains and dirt
- Pound in a mortar into coarse form
- Put sugar and ½ cup of water into a clean pot
- Place on fire and allow the sugar to melt
- Add the pounded groundnut
- Continue stirring to prevent burning till it becomes golden brown
- Spread it on a clean surface and allow it to dry, then cut into desired shapes

Important things to remember

- Groundnut meant for consumption or for preparation of any products described in this guide should be carefully selected and thoroughly cleaned to remove dirt, decayed and withered kernels.
- Poor handling of groundnut may result in their contamination by aflatoxin-producing fungi at any stage of processing
- Due to their nutritional contents, groundnut and groundnut-based snacks are healthier alternatives to all other snacks
- In processing groundnut-based products, processors should ensure high standards of safety and hygiene throughout all the stages of preparation



INTERNATIONAL CROPS RESEARCH
INSTITUTE FOR THE SEMI-ARID TROPICS



We believe all people have a right to nutritious food and a better livelihood.

ICRISAT works in agricultural research for development across the drylands of Africa and Asia, making farming profitable for smallholder farmers while reducing soil salinisation and environmental degradation.

We work across the entire value chain from developing new varieties to agriculture and linking farmers to markets.

ICRISAT-India
(Headquarters)
Patancheru, Telangana, India
icrisat@cgiar.org

ICRISAT-India Liaison Office
New Delhi, India

ICRISAT-Mali
(Regional hub WCA)
Bamako, Mali
icrisat-s-mail@cgiar.org

ICRISAT-Niger
Niamey, Niger
icrisatn@cgiar.org

ICRISAT-Nigeria
Kano, Nigeria
icrisat-kano@cgiar.org

ICRISAT-Kenya
(Regional hub ESA)
Nairobi, Kenya
icrisat-nairobi@cgiar.org

ICRISAT-Ethiopia Addis
Ababa, Ethiopia
icrisat-addis@cgiar.org

ICRISAT-Mali
Mopti, Mali
icrisat-mali@cgiar.org

ICRISAT-Mozambique
Maputo, Mozambique
icrisatmz@cgiar.org

ICRISAT-Zimbabwe
Bulawayo, Zimbabwe
icrisatzw@cgiar.org

ICRISAT appreciates the support of CGIAR investors to help overcome poverty, malnutrition and environmental degradation in the hardest dryland regions of the world. See <http://www.icrisat.org/forisat-donors.htm> for full list of donors.



About ICRISAT: www.icrisat.org



ICRISAT's scientific information: EXPLORE.icrisat.org

11

ICRISAT

ICRISAT

Yoelg

ICRISAT

ICRISAT

PHOTO

ICRISAT/MAORS

ICRISAT/MCO

smart
food

Good for you - the planet - the farmer

About Smart Food: www.icrisat.org/smartfood

For the consumer: www.smartfood.org