BEAN RECIPES

Ziron-Pulse Promoting the Consumption and adoption of Beans using a variety of ways

Training Manual for Nutrition Field Officers

By
Beatrice N. Kiage and Bertha Munthali
About the booklet

This recipe booklet “Ziron-Pulse Promoting the Consumption and adoption of Beans using a variety of ways” had adopted bean recipes from various sources such as the Kenyan Food Recipes by FAO and Government of Kenya (GoK), local Chefs and households, and the Zambian bean recipe book. It is aimed at providing a practical guideline to bean preparation at household levels and for traders that sell food for enhanced diet quality and improved nutrition and health. It is expected to help promote the consumption and adoption of beans among vulnerable population especially pregnant and lactating women and young children below the age of five years in Kenya. This is because, despite common bean's high nutritive value in terms of energy, protein and micronutrient content, young children often do not get the full nutrition benefit from beans because they are unable to utilize the beans in the most common prepared form for consumption in households. Monotonous preparation of beans also limits consumption by pregnant women who are sensitive to food sensory characteristics such as smell and taste.

This recipe booklet also seeks to serve as a nutrition education tool in providing guidance in the provision of healthy diets to households and individuals. These recipes will contribute in improving nutrition status of the target population. This beans recipe booklet should be promoted hand in hand with nutrition and health education and the bean nutrition resource kit.

This booklet is designed for extension officers, community nutritionists and Community Health Volunteers (CHVs) to help them provide step by step instructions to communities and households on how to prepare and consume common bean using various recipes. The use of various recipes is vital in promoting the upscaling, consumption and adoption of common bean. The booklet therefore provides recipes for preparing bean purees of various types, bean flour for preparing porridges and other products. The purees and porridge are good for children and other population groups that are not able to eat solid food. The recipes are presented in the following order; Bean purees, Bean flour and porridge, Bean snacks, Bean dishes and Bean soups.
Acknowledgements

Ziron-Pulse Project acknowledges the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN), for the financial and technical support towards the development of this booklet. Specifically, we appreciate the leadership, efforts and encouragement rendered to us by Prof. Simbarashe Sibanda and Sithembile Mwamakamba, both of FANRPAN.

We further wish to acknowledge the tireless efforts made by the following Individuals during the development process of this booklet

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About FANRPAN

Ziron-Pulse is project by the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) which is a pan-African network that provides independent evidence to inform policy processes at national and regional levels. FANRPAN's membership includes food, agriculture and natural resources (FANR) related government departments, parliamentarians, research and farmer organizations, private sector, civil society organizations and the media. FANRPAN's multi-tiered network structure consists of a regional secretariat and established national nodes in 17 African countries.

As a leading voice for food and nutrition security policies on the continent, FANRPAN has a reach that spans from local communities to the regional level, has extensive experience in managing and implementing multi-faceted FANR initiatives, and works with different technical and funding partners across the globe. To deliver on its vision of "resilient African agriculture and food systems, securing prosperity and health for all", FANRPAN focuses on three strategic goals to: (i) transform agriculture and food systems through the development and implementation of evidence-based policies; (ii) ensure adequate, safe and nutritious food; and (iii) promote climate change resilient and resource sustainable food systems. These strategic goals are achieved through two themes, namely Climate Smart Agriculture (CSA) and Nutrition-Sensitive Agriculture (NSA), supported by institutional capacity strengthening. In delivering on the NSA goal, FANRPAN seeks to use the adoption of evidence-based policies to improve and sustain access to diverse and nutrient-dense food. In particular, FANRPAN works to promote policies across the agricultural value chain that promote NSA.

FANRPAN promotes policies that reduce barriers to entry for nutrient-rich fertilizer, seeds and feeds into markets, and incentivize farmers to make nutrition-sensitive choices in the production of livestock and crops through market mechanisms and education. FANRPAN promotes policies that support storage practices that reduce post-harvest loss and nutrient loss through the uptake of technology and education. Furthermore, FANRPAN promotes processing technologies such as food fortification and biofortification to improve access to nutritious foods for consumption to improve the overall health of populations. FANRPAN advocates for policies and initiatives that aim to make farmers and consumers (particularly women who grow up to 80% of the continent’s food) more informed about the choices impacting the nutrition of their communities or families, hopefully driving demand for nutrient-rich food.

FANRPAN also promotes greater investment into NSA programs by the private sector and development investors. In delivering on the NSA goal, FANRPAN is implementing two projects in Kenya: i) Improving Dietary and Health Data for Decision-Making in Agriculture and Nutrition Actions in Africa. The project is being implemented in Kenya
and is funded by the International Development Research Centre (IDRC). The project started in September 2018 and is due to end in August 2022. ii) Ziron Pulse: Upscaling adoption and exploitation of a wide diversity of Iron and Zinc-rich beans by rural populations in Africa. This project is being implemented in partnership with The James Hutton Institute, University of Birmingham, Kenya Agriculture & Livestock Research Organisation (KALRO) and the University of Nairobi.

For further information on FANRPAN,

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The overarch ing aim of the Ziron Pulse project is to obtain new knowledge related to micronutrient-fortified bean innovations and provide essential underpinning science that contributes to global food and nutritional security, economic development and growth through the development of health-promoting common bean varieties with proven nutritional efficacy.
Introduction

Worldwide, iron and zinc deficiencies are major public health problems and they are often associated with the phenomenon “hidden hunger” (Tulchinsky, 2010). Hidden hunger is a form of malnutrition that occurs when the intake or absorption of micronutrients is too low to maintain a good health and development and is mainly caused by a combination of poor diet, disease, and increased micronutrient needs (Muthayya et al., 2013). Iron and zinc deficiencies are global health problems, affecting mostly pregnant women and young children with detrimental effects on child development, human functionality and productivity. Chronic micronutrient deficiencies of iron, zinc and vitamins are prevalent among the Kenyan population.

Food-based strategies, such as dietary diversification and food fortification, are effective approaches to prevent and combat hidden hunger (Bouis, Hotz, McClafferty, Meenakshi, & Pfeiffer, 2011; Verma, 2015). However, their effectiveness largely depends on necessary changes in behavior and diet and therefore more difficult to reach (Burchi, Fanzo, & Frison, 2011). Another effective approach to reduce micronutrient malnutrition is supplementation programs (Imdad, Herzer, Mayo-Wilson, Yakoob, & Bhutta, 2011). Nonetheless, reaching 100% coverage with these programs is difficult (Wirth et al., 2017).

Biofortification is a relatively new food-based strategy to reduce hidden hunger. This is a breeding process that develops and deploys micronutrient-rich staple crops aiming to improve the nutritional statuses of resource-poor populations (Bouis et al., 2011; Nestel, Bouis, Meenakshi, & Pfeiffer, 2006). Biofortification is a nutrition-sensitive agricultural intervention that is relatively inexpensive, cost-effective, and sustainable considering it involves a single investment in breeding ultimately leading to nutritionally improved crops that will continue to be grown and consumed year after year. By aiming at staple foods such as the common bean (Phaseolus vulgaris L.), which are predominately present in the diets of resource limited people, it is assumed that this target population is already familiarized with the crop of interest and this facilitates adoption (Bouis et al., 2011; Nestel et al., 2006). Furthermore, biofortification may be widely accessible especially for people living in remote areas.

Common bean (Phaseolus vulgaris L.) is the world’s most important food legume for direct human consumption. The common bean is widely affordable, contains substantial amounts of protein, fibers and classified as a source of iron and zinc. Average per capita consumption of common bean in the main bean production areas is high in Africa, estimated at 31.4kg/year (Schoonhoven and Voysest, 1991). High in nutrients and commercial potential, common bean holds great promise for fighting hunger, increasing income and improving soil fertility in Sub Saharan Africa. The crop occupies more than 3.5 million hectares in sub-Saharan, accounting for about 25% of
the global production but production is concentrated in the densely populated areas of East Africa, the lakes region and the highlands of Southern Africa.

In Africa, common bean is a popular crop among small-scale farmers, given its short growth cycle (about 70 days) which permits production even when rainfall is erratic. Common bean is often grown by women farmers for mainly subsistence and markets. Despite the great importance, the growth in common bean productivity has been slow as a result of both social and physical environments in which the crop is grown. In Eastern and Southern Africa for instance, common bean is a small farmer crop, cultivated largely by women in an agronomic setting characterized by marginal environments and low external inputs where stresses maintain productivity at less of 25% of potential yield.

Kenya is the seventh biggest producer of common beans globally and the second leading producer in East Africa (KenInvest, 2016). Beans rank second to maize in importance as a food crop. They are cultivated almost exclusively by about 1.5 million smallholder farmers on about a million hectares, with yields of about 0.6MT/ha. The main producing areas for dry beans include the Rift Valley, Eastern, Lake Victoria zone, Western and Central regions that account for 33%, 24%, 18%, 13% and 20% respectively of national production. National consumption is assessed to be about 755,000MT annually against a production of about 600,000MT a year. Per capita consumption is estimated at 14 kg per year, but can be as high as 66 kg per year in the country’s western regions. However, bean production has been declining in Kenya, from 714,492 tons in 2013 to 615,992 tons in 2014 (KenInvest, 2016). Hence the need to promote their consumption and adoption in the community by for example cooking them using various methods so as to appeal to consumers.

What Are Dry Beans?
Dry beans are considered to be a legume, or more specifically, a pulse. Legumes are plants that have their seeds enclosed within a pod, such as soybeans, peanuts, fresh peas, green beans and pulses. Pulses are the dried seeds of legumes which include lentils, dry peas, chickpeas and dry beans.
What is the Nutrient Profile of One Serving of Dry Beans?

Macronutrients

- Free of cholesterol
- Free of trans fat
- Low in total fat
- Low in saturated fat
- Very high in fibre
- Good source of protein

one serving = 3/4 cup cooked
What is the Nutrient Profile of One Serving of Dry Beans?

<table>
<thead>
<tr>
<th>Micronutrients</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>High in calcium</td>
<td>Aids in the formation and maintenance of bones and teeth.</td>
</tr>
<tr>
<td>Very high in magnesium</td>
<td>A factor in energy metabolism, tissue formation and bone development.</td>
</tr>
<tr>
<td>Very high in iron</td>
<td>A factor in red blood cell formation.</td>
</tr>
<tr>
<td>High in vitamin B₆</td>
<td>A factor in energy metabolism and tissue formation.</td>
</tr>
</tbody>
</table>

What Are the Health Benefits of Consuming Dry Beans?

- **Heart Health**
  - Beans are cholesterol-free and low in fat, which can reduce the risk of heart disease.

- **Diabetes**
  - Beans have a low glycemic index, which helps control blood sugar levels.

- **Cancer**
  - Beans have a unique fiber composition, key nutrients and phytochemicals to help combat cancer risk.

- **Body Weight Management**
  - Beans contain soluble fiber which can increase the feeling of fullness.

- **Constipation**
  - Beans contain insoluble fiber which can regulate the digestive system by adding bulk to stool.
Digestion Tips for Consuming Dry Beans
Why do beans cause abdominal discomfort and flatulence?

Beans contain a particular type of carbohydrate, called oligosaccharides. The human body is not able to completely break down oligosaccharides with our digestive enzymes. Instead, the healthy bacteria that live in the large intestine break down these oligosaccharides through fermentation – leading to a sometimes-unpleasant result.

Tips to reduce discomfort:
Take it slow. Eat small amounts and gradually increase your intake.
Experiment. Try different varieties of beans, not all are made equal.
Fibre boost. Increase your intake of other fibre-rich foods.
Rinse. Always thoroughly rinse canned beans before consuming.
Soak. Soak dry beans for 12-14 hours before cooking to reduce gas.

Unit of measure
Cup 380-400 ml
Tablespoon 15 ml
Teaspoon 5 ml

Utensils needed
Pots
Cooking sticks
Dish/bowl/basin/bucket
Spoons
Cups
Pounding Mortar and Pestle
Sieves
Jars
Charcoal/ Gas/ Firewood
Plates
Knife Bucket
Baking tins
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Initial preparation steps of beans

Sorting beans
- Use one type of bean variety. Do not mix the bean varieties
- Sort out all foreign matters
- Remove all broken, discolored and not fully matured, weevil damaged or rotten beans

Soaking beans
1. Measure 1 cup of beans and put in basin
2. Wash the beans thoroughly with cold water
3. Add 3 cups of cold water and leave the beans to soak overnight (this is about 12-14 hours)
   Note: 1 cup of dry bean when soaked gives 2 cups of beans
4. Drain the soaking water
5. Check that the beans soaked well, remove any beans that is not soaked.
   Note: Soaking and draining the soak water reduces gases. Gases are caused by complex sugars in beans which are not digested by the human enzymes. Soaking also reduces cooking time.

Dehulling of beans
- Remove the husks manually using hands

Cooking Beans
- Place the dehulled beans in a pot
- Add water - 2½ to 3 cups but do not add all at once
- Bring the beans to boil and cook till soft
- Then reduce the fire and add 3 table spoons of cooking oil and cover so that the beans cook slowly
- Note: These dehulled and cooked beans will be used as a starting material in a number of recipes in this booklet
1. Purees

**Bean Puree**

**Ingredients**
- Dehulled and cooked beans - 2 cups
- Salt

**Utensils**
- Knife
- Pot
- Cooking stick
- Dish/bowl/basin/bucket

**Process**
- Add salt to taste to the dehulled and cooked beans
- Mash the dehulled and cooked beans using a cooking stick
- Simmer (at very low heat) for a 3-5 min if necessary
- Cool and serve

**Spiced Bean Puree**

**Ingredients**
- Beans, dehulled and cooked - 2 cups
- Onion, medium size - 1
- Tomatoes, medium size - 2
- Curry powder, ½ teaspoon
- Cooking oil 3 tablespoons
- Salt

**Utensils**
- Dish/bowl/basin/bucket
- Pot
- Pan for frying
- Cooking stick
- Knife

**TARGET GROUP**

*Suitable for:*
- Children 6 to 23 months
- The sick
- The elderly
Process
• Peel off the tomatoes skin by putting them in boiling water and cut in small pieces
• Chop the onion in small pieces
• Put the curry powder on a hot pan or pot and turn
• Add cooking oil, onion, and tomatoes and fry until the mixture is cooked.
• Add salt to taste

Adding spices to cooked beans
• Add the spice-mix to the dehulled and cooked beans and then mash to a smooth paste/puree
• Simmer for 3-5 minutes if necessary and remove from fire
• Cool and serve with ugali/chapati or rice

TARGET GROUP
• Suitable for Children 24 months and above and Adults
• Note: Not suitable for people allergic to spices

Bean- Sweet Potato Puree

Ingredients
Orange fleshed sweet potatoes - peeled
Dehulled and cooked beans - 2 cups
Cooking oil - 3 table spoons
Salt

Utensils
Pot and diced - 6 cups
Cooking stick
Cup
Table spoon
Knife
Bean Irish Potato Puree

**Ingredients**
- Irish potatoes, peeled and diced - 6 cups
- Beans, dehulled and boiled - 2 cups
- Cooking oil - 3 table spoons
- Salt - to taste

**Utensils**
- Pot
- Knife
- Cooking stick

**Process**
- Cooking the Irish potatoes
  - Put the peeled and diced Irish potatoes in a pot
  - Add enough water, salt to taste and cooking oil
  - Boil the potatoes till soft
  - Simmer until almost dry

**Preparing the Puree**
- Add the dehulled and cooked beans to the cooked Irish potatoes
- Mash to a smooth puree or paste
- Cool and serve

*Note: May serve with vegetables, tomato salad, fish or meat*
2. Bean Flour

Materials
Beans, sorted - 4 cups

Utensils
Flat basket
Mortar and pestle or a stone with a flat rough surface and concrete surface
Heavy duty pot or pan

Roasting
• Roast the beans for 5-7 minutes or when the grains are cracked.
  *(Make sure the heat is not too much but well distributed)*

• Cool the roasted beans on a flat basket.
  *(Cooling makes it easy to remove the husks)*

• Dehull the roasted beans by lightly pounding in a mortar using a pestle or crack
  the beans on a flat rough concrete surface with a stone

• Winnow the dehulled beans to remove the husks.
• Grind the winnowed beans using a hammer mill to make a flour.

Uses of Bean flour
Preparation of complementary flour for porridge and composite flour for baking

*Important*: The beans should not be under roasted such that the anti-nutritional factors are not destroyed. On the other hand the beans should not be over roasted *(burnt smell)* such that the nutrients get destroyed.
Blended Bean Flour

Blending or Mixing

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>1 kg Handy Measure</th>
<th>3 kg Handy Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole maize meal</td>
<td>3 cups - level</td>
<td>9 cups level</td>
</tr>
<tr>
<td>Bean flour</td>
<td>1 cup</td>
<td>3 cups level</td>
</tr>
<tr>
<td>Sugar</td>
<td>9 table spoonful</td>
<td>3/4 cups</td>
</tr>
<tr>
<td>Oil</td>
<td>6 table spoons</td>
<td>½ cup</td>
</tr>
</tbody>
</table>

Process
To prepare 1 kg of blended bean flour
• Measure 3 cups of whole maize flour and place in a clean bowl
• Add cooking oil by rubbing in bit by bit until the whole amount is completely mixed with no lump of maize meal.
• Add the bean flour and mix well
• Add sugar and mix thoroughly
• Store the blended flour in a clean container or plastic bag

Uses of maize meal bean flour blend
used for making porridge
3. Blended Bean Flour Porridge

Ingredients
- Blended bean flour 2-3 heaped table spoonful
- Salt - to taste

Utensils
- Pot
- Plate
- Spoon
- Cup
- Cooking stick

Instruction for preparing porridge
- Mix blended bean flour with one cup of drinking water in a pot
- Bring the mixture to boiling with continuous stirring
- Add salt to taste
- Simmer for 10-15 minutes (volume of porridge reduces to about half (250 ml) when cooked
- Cool and serve

TARGET GROUP
Suitable for
- Children 6 months and above
- Pregnant and lactating mothers
- The elderly and adults
- The sick who are unable to chew
4. Snacks

Bean based mandazi

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Handy Measure</th>
<th>Metric Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beans flour</td>
<td>½ cup</td>
<td>100 g</td>
</tr>
<tr>
<td>Wheat flour</td>
<td>2 cups</td>
<td>400 g</td>
</tr>
<tr>
<td>Sugar</td>
<td>9 table spoons</td>
<td>90 g</td>
</tr>
<tr>
<td>Yeast</td>
<td>2 teaspoons</td>
<td>10 g</td>
</tr>
<tr>
<td>Salt</td>
<td>½ to ¾ teaspoon</td>
<td></td>
</tr>
</tbody>
</table>

Procedure

- Sieve the wheat flour
- Sieve the bean flour and mix with the wheat flour
- Add sugar and salt to the mixture of wheat and bean flour then mix
- Add yeast to the mixture directly if you are using active yeast. *If you are not using active yeast dissolve the yeast in luke warm water and mix leave it to stand for about 15-20 minutes add to the flour mix*
- Add water until you get a smooth dough that does not stick to the side of the dish or hands
- Leave the dough to rise for about 1-2 hours
- Shape as desired
- Deep fry in oil until golden brown
- Cool and serves

**TARGET GROUP**

Suitable for
- Children 12 months and above
- Pregnant and lactating mothers and adults

Bean Based Bites
Ingredients
• Mashed and cooked whole beans
• Wheat flour
• Baking powder
• Onion
• Sugar
• Salt
• Curry powder
• Yeast (active)
• Water
• Cooking oil
• 500 ml for deep frying

Hand measure
1 cup
2 cups
1 teaspoonful
1 large
1 teaspoon
1½ teaspoonful
1 teaspoonful
½ teaspoon

Cooking the Beans
1. Soak 1 cup of clean whole beans in 3 cups of water overnight
2. Discard soak water
3. Boil the beans until soft then mash

Preparation of the bites
Sieve flour and add baking powder and yeast then mix
1. Measure 1 cup of mashed beans and place in a separate bowl
2. Cut onion into small pieces and add to the mashed bean
3. Add salt, sugar, and curry powder to the mixture of beans and onion. Mix well with a wooden stick
4. Add the above mixture to the dry ingredients (mixture of flour/baking powder/yeast)
5. Add sufficient water to the mixture to make a consistency that drops from the spoon (should not flow)
6. Cover the dough with a cloth or lid
7. Leave the dough to rise for about 1-2 hours
8. Spoon a teaspoonful of the batter into hot oil and deep fry until golden brown
9. Serve while warm

Option: may add chilli powder or chopped onion leaves

TARGET GROUP
Suitable for
• Children 12 months and above
• Pregnant and lactating mothers
• Adults
Beans Samosas

Ingredients

**Samosa Filling**
- Cooked Whole Beans
- Wheat flour
- 1 teaspoonful
- Onion
- 1 teaspoon
- Salt
- Curry powder
- ½ teaspoon
- Water
- Cooking oil
- Green onions
- 500 ml for deep frying
- 2 red onions, finely chopped
- 5 cloves of garlic, grated
- 1-inch fresh ginger, grated
- 1 fresh green chilli, finely chopped (Optional)
- ½ teaspoon of turmeric
- ½ teaspoon cumin seeds
- 1 bunch of fresh coriander, coarsely chopped
- Juice of ½ a lemon (optional)
- Salt and ground pepper to taste

**Hand Measure**
- 2 Cups
- 2 cups
- 1 large
- 1½ teaspoonful
- 1 teaspoonful

**Cooking the Beans**
1. Soak 1 cup of clean whole beans in 3 cups of water overnight
2. Discard soak water
3. Boil the beans until soft
4. Before the water completely evaporates, add onions, ginger, garlic, chili and spices.
5. Season with salt and pepper
6. Remove from heat and stir in fresh coriander and the lemon juice
7. Remove from heat and allow to cool completely

**Preparing Samosa Pockets**
1. In a small mixing bowl, mix ½ a cup of flour with a little water and make a thick flour paste to serve as a “glue” for sealing samosa pockets
2. Follow the simple steps showed below to prepare samosa pockets
3. Fold all samosa pockets first in a cone shape before filling them with the cooled meat. Use a small ice cream scoop or a tablespoon to fill the samosa pockets (Do
not overfill them)
4. Seal using the “glue” you prepared (Seal them very well otherwise they’ll open up when frying!)
5. Filled and sealed samosa pockets can be stored in the refrigerator and be deep fried the next day or one can also deep freeze them as desired
6. Heat up oil in a deep-frying pan or sufuria
7. Test your oil by gently dropping a small piece of dough into the oil. If the dough stays at the bottom for a couple of seconds then rises to the surface then your oil is ready for frying but if it rises up immediately after dropping it into the oil, then your oil is too hot and you need to reduce the heat. Too hot oil will only cook the outside and the inside will be uncooked especially if the samosas were frozen
8. Deep fry samosa till golden brown on both sides and crispy, use a kitchen paper or a clean towel to drain off any excess oil

**Note:** Serve hot or cold accompanied by a chutney of any kind or a piece of fresh lime

### Bean muffins

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Handy measure</th>
<th>Metric measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mashed cooked beans</td>
<td>1 cup</td>
<td>300g</td>
</tr>
<tr>
<td>Wheat flour</td>
<td>1 ¼ cup</td>
<td>234g</td>
</tr>
<tr>
<td>Eggs</td>
<td>3 medium to large</td>
<td></td>
</tr>
<tr>
<td>Castor sugar</td>
<td>¼ cup</td>
<td>100g</td>
</tr>
<tr>
<td>Margarine</td>
<td>3 table spoons</td>
<td>100g</td>
</tr>
<tr>
<td>Baking powder</td>
<td>3 teaspoonful</td>
<td>15g</td>
</tr>
<tr>
<td>Salt</td>
<td>½ teaspoon</td>
<td>5g</td>
</tr>
</tbody>
</table>
Utensils
Muffins baking tins
Cooking stick
Teaspoon Bowls/basin or pot
Scoop or table spoon
Tea towel
Perforated scooping spoon

Preparation of mashed Beans
1. Wash 1 cup of well sorted white dry beans and soak in 3 cups of water over night
2. Drain soak water
3. Add 3 cups of water (do not add the water at once) and boil until soft
4. Mash the beans with a cooking stick to a smooth paste

*Note: Do not add salt*

Baking
5. Pre-heat the oven to 220-230°C
6. Sieve the flour and add baking powder and salt in a bowl
7. Cream together margarine, sugar and egg in the bowl (for a light texture added 2 eggs whole, while the 3rd egg add only the egg white
8. Combine the dry ingredients, mashed beans (1 cup) and margarine egg mixture
9. Stirrer with a wooden stick until just mix. Do not over mix. The batter should be lumpy.
10. Grease the pan
11. Spoon the batter into the greased pan using a scoop
12. Reduce the oven temperature to 190-180°C and bake for 25 – 30 minutes
13. Cool and serve

**TARGET GROUP**
Suitable for
- Children 12 months and above
- Pregnant and lactating mothers
- Adults
5. Dishes

Coconut beans

Ingredients

- 1/2kg beans
- Salt to taste
- 1,1/2 large onions
- 2 large tomatoes
- 200ml coconut milk
- gloves garlic
- Table spoon cooking oil

Process

1. Boil beans until soft
2. Chop onions and tomatoes into small slices and set aside
3. Crush the 3 gloves of garlic and put a side
4. In pot or pan pour 3 table spoon of cooking oil, when the oil is bit hot, put the chopped onion on the pot and sauté until golden brown
5. Add crushed garlic and sauté for 10 seconds
6. Add chopped tomatoes and Cook for 5 minutes, add salt to taste.
7. Add boiled beans and mix well
8. Pour 200ml of coconut milk, mix and cover the pot.
9. Cook for 10 minutes on low heat/ flame
10. Serve with chapati/rice.
Fried beans

Ingredients

- 1/2kg Beans
- 2 Large onions
- 3Tbs cooking oil
- Salt to taste
- Water

Process

1. Boil the beans until soft and put a side.
2. Cut onions into small sizes
3. Put a pan or pot on a stove and pour 3 Tbs of cooking oil, when the oil is a bit hot put the chopped onions saute until golden brown and then add salt to taste
4. Add boiled beans and stir well
5. Add little water and cover the pot, cook for 10 minutes and remove from the stove.
6. Can be served with rice/chapati.
Beans Curry

Ingredients

- Green beans/French beans
- 2 Large onions
- Ginger
- Gloves garlic
- 1/2 tsp cumin seeds
- Few mint leaves
- 1 tsp turmeric powder
- 1/2 tsp garam masala
- 1 tsp coriander powder
- 3 Tbs cooking oil
- Salt to taste
- 5 Tbs curd
- 1/2 bunch coriander leaves

Process

- Wash and then cut the green beans into small sizes
- In a blender put the roughly chopped onions, 5 gloves of garlic, ginger and few mint leaves add little water and blend
- Put a pan on the stove, add 3 Tbs of cooking oil, heat it for 1 minute and then add cumin seeds
- Pour the blended mixture and Cook for 3 minutes.
- Add coriander powder, turmeric powder, garam masala and salt to taste.
- Add washed French beans followed by little water.
- Add 5 Tbs of curd and mix well, cook for 8 minutes, garnish with chopped coriander leaves, put off the heat and serve.

Bean Stew
Ingredients
Beans - 1 cup
Onion-medium to large - 1
Tomato-medium to large -1
Cooking oil
Salt
Water

Utensils
Basin
Pot
Pan
Knife
Measuring cup
Teaspoon
Tablespoon
Serving plate

Methods
• Clean, wash and soak the beans in 3 cups of water overnight
• Boil the beans in the same water
• Peel, wash and cut onions into pieces
• Wash tomatoes and cut into pieces
• Heat the oil and fry the onion till golden brown
• Add tomatoes and fry a bit
• Add to beans and simmer for 10-15 minutes
• Serve with Ugali, Rice or Chapati
• Note: Beans can be cooked directly without soaking

Bean stew with spices

Ingredients
Beans - 1 cup
2 Onion-medium to large
1 Tomato-medium to large
1 teaspoon curry powder
Cooking oil
Salt
Water

Utensils
Basin
Pot
Pan
Knife
Measuring cup
Teaspoon
Tablespoon
Serving plate
Methods
• Clean, wash and soak the beans in 3 cups of water overnight
• Boil the beans in the same water
• Peel, wash and cut onions into pieces
• Wash tomatoes and cut into pieces
• Heat the oil and fry the onion till golden brown
• Add tomatoes and fry a bit
• Add to beans and simmer for 10-15 minutes
• Serve with Ugali, Rice or Chapati

Beans, with roasted groundnut flour

Ingredients
Beans - 1 cup
½ cup roasted groundnut
Flour/paste
2 onions
1 tomato
1 tablespoon curry powder
Cooking oil
Water
Salt

Utensils
Pot
Pan
Tablespoon
Cup
Knife
Serving plates

Methods
• Clean, wash the beans and soak in the 3 cups of water overnight
• Boil the beans in the same water until they are cooked
• Clean, wash and cut tomatoes and onions
• Heat the oil and fry the onions, add curry powder
• Add tomatoes, fry until the tomatoes are cooked then add to the beans
• Add salt and roasted groundnuts flour to the beans
• Simmer for about 10 minutes and mix well
• Serve with Rice or Ugali
Kande enriched with groundnut flour

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Utensils</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange maize seeds - 2 cups</td>
<td>Basin</td>
</tr>
<tr>
<td>Beans - 1 cups</td>
<td>Pot</td>
</tr>
<tr>
<td>1 cup roasted groundnut flour/paste</td>
<td>Cup</td>
</tr>
<tr>
<td>2 onions</td>
<td>Wooden spoon</td>
</tr>
<tr>
<td>2 tomatoes</td>
<td>Knife</td>
</tr>
<tr>
<td>Water</td>
<td></td>
</tr>
</tbody>
</table>

**Method**

- Clean and wash the beans then soak in 6 cups of water overnight
- Clean and wash the maize and soak for 1 hour
- Boil the beans in the soak water for about 30 minutes
- Then mix the beans and maize then boil together until both are cooked
- Wash and cut the onions and tomatoes, then add to the bean-maize mixture
- Simmer until the tomatoes and onions are cooked
- Add roasted groundnuts flour/paste and salt to taste
- Continue cooking by simmering for a while
- Serve the kande with tomato salad

*Note: Kande is a bean DISH cooked together with maize SAMP*

Bean - cassava enriched with groundnuts

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Utensils</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cassava (sweet variety) peeled and diced - 6 cups</td>
<td>Basin</td>
</tr>
<tr>
<td>Beans - 1 cup</td>
<td>Pot</td>
</tr>
<tr>
<td>Roasted groundnut flour/paste - 1 cup</td>
<td>Measuring cups</td>
</tr>
<tr>
<td></td>
<td>Wooden spoon</td>
</tr>
<tr>
<td></td>
<td>Knife</td>
</tr>
</tbody>
</table>

**Method**

**Preparation of cassava**

- Peel the cassava
- Wash and chop in small pieces
Put in a pot, add water and boil until soft

**Preparation of beans**
- Clean and wash the beans
- Boil the beans until soft
- Then mix the beans with cooked cassava add salt to taste
- Simmer for about 5 minutes
- Add roasted groundnuts flour/paste simmer about 5 minutes and mash the mixture
- Continue cooking by simmering for a few minutes
- Serve as a dish

**Muthokoi (Dehulled Maize and Beans)**

**Ingredients**
- 2 ½ cups (440 g) maize, white, de-germed
- 2 2/3 cups (474 g) beans, kidney, dry, raw
- 21 1/3 cups (4646 g) water (to boil muthokoi)
- 1 onion red skinned, raw, unpeeled (182 g)
- 1 ¼ cups (185 g) cooking fat, shortening, commercial, vegetable fat
- ½ tsp. (22 g) salt, iodized

**Process:**
- Put the maize and beans into a pot and boil in all the water for 2 hours 30 minutes or until cooked.
- Drain and keep the remaining water.
- Peel, wash and chop the onion into a separate bowl.

**Stewing:**
- Heat oil in a cooking pot for 1 minute.
- Add the chopped onions and cook until soft.
- Add muthokoi and salt; stir to mix.
- Add the water drained from the boiled muthokoi.
- Cover to cook for 3-5 minutes.
- Turn off the heat.
- Serve.
Firinda (Skinned Bean Stew)

Ingredients
- 2 ¼ cups (400 g) beans, kidney, dry
- 1 ½ tbsp. (20 g) cooking oil
- 29 1/8 cups (6326 g) water
- 2 ½ tsp. (12 g) salt, iodized
- stalks (67 g) spring onions, unpeeled

Process
i. Sort and wash the beans.
ii. Soak in 14 cups of warm water for 3 hours.
iii. Drain the water soaking the beans.
iv. Remove and discard the skin.
v. Put the beans into a cooking pot, add the rest of the water and bring to a boil for 2 hours.
vi. Meanwhile, peel, wash and chop the spring onion.
vii. Add the chopped onions, oil and salt into the boiling beans.
viii. Continue boiling until the beans are tender and well cooked.
ox. Serve.

Ndoto (Sautéed Red Kidney Beans & Red Sorghum)

Ingredients
- 3 cups (501 g) red sorghum
- 1 ¾ cups (308 g) red kidney beans
- 23 ¼ cups (5059 g) water
- 3 tsp. (14 g) salt, iodized
- 1 ½ cups (176 g) onions, red skinned, raw, unpeeled
- 3/4 cups (144 g) cooking oil

Process:
- Sort the beans.
- Wash and put on the fire in 21 cups of water.
- Let the beans boil until cooked (2 hours 30 minutes).
- As the beans are boiling, sort out the red sorghum.
- Once beans are ready, wash the red sorghum and add it into the mixture with the remaining water.
- Let the red sorghum boil until cooked (2 hours 50 minutes).
- Cook until all the liquid is almost dry.
- Remove from fire.
Frying:
Peel and chop the onion.
Put in a pot with the cooking oil and fry onion until golden brown.
Add the boiled red sorghum, red kidney beans and salt.
Cook for 6 minutes and remove from fire.

Fiqe (Red Sorghum, Beans and Teff Flour)

Ingredients
1 ½ cups (262 g) beans kidney, raw
1½ cups (207 g) red sorghum flour
2 cups (323 g) teff flour
1 medium-size bowl (611 g) sukuma wiki leaves, raw
1 ½ tbsp. (22 g) salt, iodized
7 tbsp. (88 g) ghee
8 2/3 cups (1882 g) water

Process
• Boil beans in 8 2/3 cups of water until cooked (1 hour).
• Wash and cut the sukuma wiki.
• Add diced sukuma wiki into the boiled beans in the same cooking pot and cook for 20 minutes.
• In a separate bowl, mix the teff flour and the red sorghum flour together.
• Add the mixed flour into the mixture of beans and kale. Add salt and stir gently until evenly mixed.
• Add ghee after 20 minutes and continue mixing for minutes.
Serve hot.

Mukimo (Maize, Beans, Potatoes & Pumpkin Leaves)

Ingredients
potatoes, unpeeled, Irish, white (1386 g)
stalks (81 g) pumpkin leaves, raw
½ cups (1182 g) white maize and kidney beans, cooked
2/3 cups (999 g) water
2 ½ tsp. (13 g) salt, iodized

Process
• Peel, wash and cut the potatoes.
• Cut the pumpkin leaves.
• Meanwhile, measure 7 ½ cups of previously boiled maize and beans mixture (the ratio of maize to beans is 1:2).
• Put all the water into the empty cooking vessel. Add potatoes and salt.
• Boil the potatoes for 20 minutes and add the cut pumpkin leaves.
• Cover the pot and cook for 2 minutes.
• Add the cooked maize-bean mixture and cover to cook for 20 minutes.
• Remove from heat and mash the mixture.

Serve while hot.

**Mushenye (Green Maize and Sweet Potatoes)**

**Ingredients**
- ¾ cups (757 g) beans, kidney, dry
- 2 cobs (917 g) green maize, with husks
- sweet potatoes, unpeeled, pink skin, raw (1.6 kg)
- tsp. (20 g) salt, iodized
- 1 1/3 cups (323 g) peanut butter
- 30 cups (6501 g) water

**Process**
1. Boil beans for 2 hours in 21 cups of water.
2. Remove husks and shell the maize grains into a bowl.
3. Add the green maize and 4 cups of water to the cooked beans.
4. Let the maize boil until it is cooked for about 1 hour.
5. Meanwhile peel and wash the sweet potatoes.
6. Add sweet potatoes, peanut butter, salt and the rest of the water.
7. Cook the sweet potatoes in the maize-bean mixture for 1 hour 15 minutes.
8. Once cooked, mash, remove from heat and serve.
**Wukunu (Sweet Potatoes & Dehulled Black Beans)**

**Ingredients**
- 2¼ cups (384 g) black beans, dolichos lablab, raw, dry
- sweet potatoes, unpeeled, pink skin, raw (1.8 kg)
- 13½ cups (2946 g) water
- 2 tsp. (11 g) salt, iodized

**Process**
- Sort the black beans and wash.
- Boil the beans in 9 cups of water for 1 hour 20 minutes (or until almost cooked).
- While the beans boil, peel the sweet potatoes and set aside covered with water.
- Remove the boiled beans from fire and set aside to cool.
- Once cool enough to handle, shell the beans (remove the outer skin)/ you can also blanch after cooling the beans to make shelling easier.
- Put the shelled black beans into a pot, add 4 ½ cups of water and boil for 4 minutes.
- Add the peeled sweet potatoes, salt and boil for 50 minutes or until the sweet potatoes are tender
- Remove from fire and mash to a smooth consistency.
- Serve.

**Kimanga Cha Ndizi (Smoked Green Bananas and Kidney Beans)**

**Ingredients**
- 1 ¾ cups (310 g) beans, kidney, dry
- green bananas, peeled smoked (169g)
- 2½ tsp. (12 g) salt, iodized
- 19 ¼ (4180 g) water
Process
• Boil beans in all the water until they are ready.
• Without draining the water used to cook the beans, add the smoked bananas, cover and cook for 10 minutes.
• Add salt and stir.
• Cook until the bananas are soft.
• Remove and mash.
• Serve while hot.

**Kimito (Mashed Beans & Potatoes)**

**Ingredients**
- potatoes, unpeeled, Irish, white, raw (1.9 kg)
- cups (515 g) beans, kidney, raw, dry
- tsp. (21 g) salt, iodized
- ½ tbsp. (7 g) cooking oil
- 36 1/3 cups (7898 g) water

**Process**
• Sort and wash the kidney beans.
• Put beans and 23 cups of water into a pot.
• Turn on the heat and boil until the beans are soft and ready; about 2 hours 30 minutes.
• Meanwhile, peel and wash the potatoes.
• Remove the boiled beans and transfer to a bowl.
• Put potatoes into a pot and spread the beans on top.
• Add the rest of the water and salt.
• Cover and cook for 50 minutes or until the potatoes are soft and tender.
• Drain the excess water if necessary.
• Add the cooking oil and mash the content to a smooth consistency.
• Serve while hot.
Kimanga cha Viazi Vitamu (Mashed Sweet Potatoes and Black Beans)

**Ingredients**
- brown skin sweet potatoes, unpeeled, raw (1 kg)
- 2 cups (365 g) dolichos beans, black
- 2 tsp. (11 g) salt, iodized
- 28 ¾ cups (6239 g) water

**Process**
- Sort the black beans and wash.
- Put the washed black beans into the cooking pot and boil in 18 cups of water for 2 hours or until soft.
- In the meantime, peel and cut the sweet potatoes and put them in water.
- Add the peeled sweet potatoes, the rest of the water and salt onto the boiled black beans, cover and boil until the sweet potatoes are properly cooked or soft.
- Turn off the heat and mash.
- Serve hot.

Beans Mokimo

**Ingredients**
- ½ Kg beans
- pieces potatoes
- Large onions
- Tbs cooking oil
- 2 Tbs blue band /butter/margarine
- 100Ml Fresh milk

**Process**
- Boil beans until soft and set a side
- Chop 3 Large onions and set aside.
- Peel the potatoes and put them on a pot to boil
- On a separate pot put 3 Tbs of cooking oil and then add the chopped onions, sauté until golden brown and then set a side
- Add the boiled beans on the pot containing the boiled potatoes add salt to taste
- On a low heat/ flame mash potatoes and beans using a cooking stick, add fried onions, blue band/butter and milk, continue mashing until it becomes fine, when it is ready put the flame /heat off.
- Can be eaten as it is or with beef stew.
Mashed Beans

Ingredients
½ Kg Beans
2 Tbs cooking oil
2 Large onions
2 Large tomatoes
Gloves garlic
Salt to taste
Water

Process
Wash beans and put it on a pot, boil it until soft and then set a side
Chop tomatoes and onions into small sizes. set a side
Crush 3 gloves of garlic into a paste and set aside.
Put the boiled beans into a blender add little water, blend it until it becomes smooth and set aside.
Place pan /pot on a stove add 2 Tbsp of cooking oil, when oil is a bit hot, put chopped onions and sauté until golden brown.
Add crushed garlic and stir for 10 seconds.
Add chopped tomatoes and salt to taste, cook for 3 minutes or until tomatoes are well cooked.
Add the blended beans and little water, cover the pot and on low heat/ flame cook for 10 minutes.
Put off the flame /heat and serve.
serve with chapati/rice.
Beans Stew

Ingredients
½ Kg Beans
2 Tbs cooking oil
1 Large onions
2 Large tomatoes
Cloves of garlic
1,1/2Large onions
1 bunch coriander leaves
1capsicum/hoho

Process
• Wash beans and put it on a pot, boil it until soft and set it aside.
• Chop onions and set a side
• Chop tomatoes into small sizes and set a side
• Crush 3 gloves of garlic into fine paste and set a side
• Peel 1,1/2 carrots and cut them into slices and set aside.
• Cut capsicum into slices and set aside.
• Put a pan/pot on a stove add 2 Tbs of cooking oil when the oil is bit hot add chopped onions sauté until golden brown
• Add crushed garlic and sauté for 10 seconds
• Add chopped tomatoes, salt to taste, carrots, capsicum cook for 5 minutes and then Add the boiled beans add little water and then cover the pot, cook for 10 minutes on a low heat /flame.
• Put of the heat and serve.
• Can be served with rice/chapati.
Githeri

**Ingredients**

- ½ Kg beans
- ½ Kg fresh maize
- 2 large onions
- 2 large tomatoes
- cloves of garlic
- 1½ carrots
- pieces potatoes
- Tbs cooking oil
- 1 large capsicum
- 1 bunch of coriander leaves
- Salt to taste

**Process**

- Wash beans and maize
- Put them on a pot and bring to boil until soft /tender and set a side
- Chop onions into small sizes and set a side
- Chop tomatoes into slices and set a side
- Crush 3 cloves of garlic into a paste and set aside
- Peel carrots and cut them into slices and set aside
- Peel 4 potatoes and cut them into cubes and set a side
- Cut capsicum into cubes and set a side
- Chop 1 bunch of coriander leaves and set a side
- Put a pan / pot on a stove add 3 Tbs of cooking oil, when the oil is a bit hot add chopped onions sauté until golden brown.
- Add crushed garlic and Cook for 10 seconds.
- Add chopped tomatoes, salt to taste and Cook for 5 minutes.
- Add carrots, potatoes and capsicum mix well
- Add mixture of boiled maize and beans, add little water mix and cover the pot, cook for 10 minutes on a low flame / heat.
- Garnish with chopped coriander leaves and serve.
Beans Masala

Ingredients
- ½ Kg beans
- 2 large onions
- large tomatoes
- cloves garlic
- 2 tsp garam masala
- 1 tsp coriander powder
- 3 Tbs cooking oil
- 1/2 bunch coriander leaves
- Salt to taste
- Water

Process
- Boil beans until soft and set a side
- Cut onions into small sizes
- Chop tomatoes into slices and set a side
- Crush garlic into paste and set a side
- Chop 1/2 bunch of coriander leaves and set a side
- Cut a pan /pot on the stove using a low flame / heat
- Add 3 table spoon cooking oil
- Add chopped onions and sauté until golden brown
- Add crushed garlic and continue sauté for 10 seconds.
- Add chopped tomatoes, garam masala powder, coriander powder and salt to taste.
- Cover the pot and Cook for 3 minutes.
- Add boiled beans and little water mix well.
- Cover and Cook for 10 minutes on low flame/ heat.
- Garnish with chopped coriander leaves and serve.
- Can be served with rice /chapati.
6. Soups and sauces

Bean and Vegetable Soup (Moringa)

Ingredient
Beans - 1 cup
Moringa leaves - 1 cup
Carrots - 1/4
2 onions
Cooking Oil
1 tomato
Salt
Water

Utensils
Bowl
Cooking stick
Pot
Sieve
Measuring cup
Serving plate

Process
• Sort the beans to remove dirty
• Soak the beans in 3 cups of water overnight
• Boil the beans till they are soft
• Mash the cooked beans
• Add water 2-3 cups, then sieve to obtain bean liquid (soup)
• Put the soup in the pot and boil
• Add the rest of the ingredients to the soup except Moringa leaves and continue to boil
• Add the Moringa leaves, continue boiling and cook for a while.
• Serve hot
Bean Leaves in Groundnut Sauce

Ingredients
1.5 grams fresh beans leaves
400 grams groundnuts pounded
150 grams tomato
50 grams onion
salt
water

Utensils
• Sauce pan / clay pot
• Wooden spoon
• knife
• bowl
• chopping board
• Process
• Pluck leaves from the stems and wash in cold water
• Put in sauce pan, bring to boil and cook 15 minutes
• Make groundnut paste and add to the vegetables
• Add salt and keep stirring for 20 minutes to allow groundnuts to cook
• Add chopped tomato and onion and immediately remove from fire
• Stand 5 minutes and stir to blend the mixture together
Beans porridge

Ingredients

1/2 beans
gloves of garlic
Large tomatoes
2 Large onions
2 Tbs of cooking oil
Salt to taste
Coriander leaves
Water

Process

• Boil beans until soft and set a side
• Put 3 roughly chopped tomatoes in a blender add the 3 gloves of garlic and 1
  roughly chopped onion add little water and blend into a smooth paste and set
  aside.
• Cut the remaining 1 onion into small sizes
• Put a pan on a medium heat
• Add 2 Tbs of cooking oil when the oil is a bit hot put the chopped onions and
  sauté until golden brown.
• Add the blended paste and stir well cook for 3 minutes.
• Add boiled beans and salt to taste
• Add little water and mix well.
• Cover the pan and Cook for 10 minutes on low flame.
• Open the lid and stir, using the back of cooking stick mash the beans to give a
  gravy sauce.
• Garnish with chopped coriander leaves.
• Put off the heat and serve.

Can be served with chapati/ rice.
This work is part of the ZIRON Pulse Project on Upscaling adoption and exploitation of a wide diversity of Iron and Zinc-rich beans by rural populations in Africa.

Funding is from

UK Research and Innovation
The James Hutton Institute

The Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) is a pan-African network that provides independent evidence to inform policy processes at national and regional levels.

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