



Bambara groundnut. Credit: Bioversity International/G. Meldrum

## Bambara groundnut: Protein-rich crop for diversified production systems in Africa

Bambara groundnut (*Vigna subterranea*), known also as voandzou, is the third most important legume in Africa after peanut (*Arachis hypogaea*) and cowpea (*Vigna unguiculata*). Native to West Africa, Bambara groundnut has been heavily displaced by introduced crops with greater economic potential, such as peanut. Bambara groundnut is, nonetheless, still widely grown and is an important crop for the food security of rural households in semi-arid sub-Saharan Africa. Considering its widespread cultivation, the crop has received limited attention to raise its yields or marketing potential to improve its contribution to local livelihoods and nutrition.

### General features

Bambara groundnut is capable of producing in poor-fertility soil, is drought tolerant and resistant to pests and disease, all without the presence of chemicals and fertilizers, which are often expensive or difficult for smallholders in Africa to access. Like other legumes, Bambara groundnut contributes to soil fertility through nitrogen fixing and is thereby useful in crop rotation systems. Bambara groundnut seeds range from round to elliptical in form and can be cream, red, or black in color.

### Nutrition

Bambara groundnut is rich in a variety of nutrients. It is an excellent source of fibre, iron, potassium, calcium, and several B vitamins. It is a good source of protein, fat and carbohydrate, with sufficient levels to be considered a complete food. It contains

similar levels of protein as other important legumes in Africa such as cowpea and peanut. Although Bambara groundnut is deficient in amino acids methionine and cysteine, it surpasses the levels in cowpea, peanut, and pigeon pea, and contains all other essential and non-essential amino acids. It also generally has comparable levels of calcium, iron, zinc, copper, potassium and magnesium. Red-colored seeds contain twice as much iron as cream-colored seeds. Tannins and trypsin inhibitors are anti-nutrients found in Bambara groundnut that

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Roasting Bambara groundnut. Credit Bioversity International/ S. Padulosi.

limit protein absorption, but dehulling and other preparation methods, such as boiling, reduce their activity. Dark-colored seeds have been found to contain higher concentrations of tannins, therefore light-colored seeds may be preferable to improve nutrition and reduce the cooking times needed to break down tannins.

## Processing

Harvesting of Bambara groundnut occurs roughly four months after sowing. Because the pods are produced underground, they are difficult to harvest mechanically. They are typically harvested manually by pulling or lifting the plant. Dehulling of Bambara groundnut seeds can be burdensome due to the high concentration of fiber and protein-starch complexes in the cell walls. Immature pods may be eaten as a fresh snack, roasted, boiled, or crushed for use as a condiment. Mature seeds are boiled and require more time to cook due to their harder coats. Boiling fresh nuts takes 45-60 minutes, while dried nuts may take as long as three to four hours. Due to longer cooking times compared to other legumes, Bambara groundnut requires more fuel and water to process. It can be ground into flour to add nutrient value to a variety of foods. However, due to its fibrous shell, it shows poor milling characteristics.



Cookies prepared with Bambara groundnut flour. Credit: Institut d'Economie Rurale/Y. Koreissi

### Cookies

#### Ingredients

250 g high quality Bambara groundnut flour  
250 g wheat flour  
115 g margarine  
150 g sugar  
5 g salt  
11.5 g baking powder  
125 ml water

#### Preparation

In a small mixing bowl, combine the dry ingredients (flours, baking powder, and salt) and mix. In another bowl, combine the wet ingredients (margarine, sugar, water). Be sure the margarine has first been softened. Mix the wet ingredients together, and when thoroughly mixed, begin to add the dry ingredients in small amounts at a time. Mix together to make the dough. After mixing, roll the dough into small balls and place on a cooking tray. Bake the cookies for 8-10 minutes at 190°C.

Credit: (Institut d'Economie Rurale/Y. Koreissi 2017)



Roasted Bambara groundnut sold in the market. Credit: Bioversity International/G. Meldrum

Fact sheet and literature review by  
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