



# Bambara groundnut

## Nutrition, products, processing and uses

Food for thought



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# CFFRC MRes Project

## Sustainable nutrition

- Comparative study of the nutritive value of four local genotypes of Bambara groundnut (*Vigna subterranea* L. Verdc) grown under arid conditions of Dosso Region in Niger Republic

## Objectives

- To provide information on the nutritive value of Bambara groundnut, increase the production to reduce food insecurity and malnutrition
- Motivate farmers to grow the crop and reduce malnutrition

# What do we know?

- **Nutritional value**

- Highly nutritious, the food that sustains, complete food

- **Processing potential**

- Flour (partial replacement of wheat or fortification of staples such as cassava), starch, vegetable milk, roasting, germination, extruded snacks

Table 1: Proximate composition of different varieties of Bambara Groundnut seeds, flour and seed coat.

Cultivars	Crude Protein	Fat (%)	Moisture content	CHO soluble	CHO content	Ash content
Red	19.5	6.5	8.0	7.6	54.4	3.0
Black	21.7	8.5	9.0	4.0	52.8	3.5
Cream	19.5	6.0	9.7	6.5	56.0	2.5
Brown	19.0	6.5	10.3	12.0	54.4	3.0
<b>FLOUR</b>						
Red	20.9	3.0	9.3	2.2	48.0	2.0
Black	22.6	4.0	9.0	1.4	32.0	2.0
Cream	22.3	3.0	9.0	1.6	49.6	1.5
Brown	19.4	3.5	10.0	2.9	48.0	2.0
<b>SEED COAT</b>						
Red	5.7	0.5	3.0	2.6	8.4	1.0
Black	6.1	2.0	3.5	3.0	6.0	1.5
Cream	6.8	1.0	3.0	1.8	9.2	1.0
Brown	6.3	2.0	3.0	0.5	9.1	1.0

Source (Ojimekwe *et al*; [12])

Table 2: Macro-elements of Bambara groundnuts (% dry matter)

	K	Mg	Ca	P	N
Roots	1.5	0.6	0.9	0.2	2.7
Leaves	1.1	0.5	2.6	0.2	1.8
Seed	1.6	0.2	0.9	0.6	3.9

Source: Mkandawire [31]

Table 3: Nutritional comparison of some legume crops

	Bambara	Soya	Cowpea	Kidney	Broadbean	Chickpea
Calories (kCal)	390	416	343	333	341	364
Protein (g)	20.8	36.5	23.8	23.6	26.1	19.3
Carbohydrates (g)	61.9	30.2	59.6	60	58.3	60.6
Fat (g)	6.55	19.9	2.1	0.8	5.7	6.0

Source: Caroline de Kock [32]

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Source : Caroline de Kock [32]

# Chick peas



# Bambara groundnut



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<http://www.google.com.my/imgres?um=1&hl=en&sa=N&tbo=d&biw=1077&bih=921&tbm=isch&tbnid=s7LVhaXIEd3TIM:&imgrefurl=http://www.dreamstime.com/stock-photos-bean-sprouts-thai-bambara-groundnut-image16261303&docid=6bRgOeNZTvgLLM&imgurl=http://www.dreamstime.com/bean-sprouts-and-thai-bambara-groundnut-thumb16261303.jpg&w=400&h=266&ei=OVbGUOXbM8TqrAfhhogGDA&zoom=1&iact=hc&vpx=216&vpy=424&dur=4187&hovh=183&hovw=275&tx=136&ty=101&sig=105776858626018498852&page=1&tbnh=124&tbnw=169&start=0&ndsp=28&ved=1t:429,r:12,s:0,i:119>

Processed flour with improved functional properties, nutritional qualities, acceptability and sensory attributes were prepared from Bambara groundnut (BGN) and cowpea seeds which are common legumes in Nigeria. Roasting and germination were chosen as optimal methods of processing, prior to flour production. The complementary effect of the flour from Bambara and cowpea with wheat flour used in biscuit production were up to 50% and 30% respectively. This will increase the domestic and industrial utilization of these legumes particularly BGN, which is underutilized at present. It has been demonstrated in the present study that processed flours from these legumes can be incorporated up to about 20% in the cassava based product, garri. Enrichment of biscuit with BGN and cowpea greatly improved the essential amino acid composition of the blend, especially lysine.

Bambara and cowpea processing



Jane Okafor

## Processing and utilization of Bambara groundnut and Cowpea

Nutritional, Functional and Sensory Qualities of  
Toasted Cassava Granules and Biscuits



Jane Okafor

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# Effect of supplementation of Bambara groundnut (*Vigna subterranean* L.) flour on the quality of biscuits

Ferial M. Abu-Salem\* and Azza A. Abou-Arab

Department of Food Technology, National Research Centre, Dokki, Cairo, Egypt.

Bambara flour was **higher in protein than wheat flour**. Bambara groundnut flour was supplemented with wheat flour at 5, 10, 15, 20, 25 and 30% level. Biscuits prepared without Bambara groundnut flour were kept as control. The mean quality score of the biscuits decreased with the level of the Bambara groundnut flour was increased. Thickness of the biscuits showed gradual increase as the level of Bambara groundnut flour replacement. While colour and crispiness of the biscuits showed a declining trend, there is improvement in the flavour and texture of biscuits formed. **Biscuits containing 20% and lower** level of the Bambara groundnut flour were acceptable in retention to their overall acceptability. Significant addition of the Bambara groundnut flour restricted the spread of the biscuits.

# The role of CFFRC



## Increased utilisation

- Food security (sustainable nutrition)
- Processing into snacks and other products? Flour, inclusion in staples

## Starch extraction and utilisation

- Fish food?
- Non-food application?

**Start with the consumer – what are their needs?**