

Bambara Groundnut

by

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Introduction

Bambara Groundnuts (*Vigna subterranea*), also known as Nyimo Beans in Zimbabwe and Jugo Beans in South Africa are an underutilized African legume widely cultivated in sub-Saharan Africa. Its center of origin is thought to be Bambara, near Timbuktu in Central Mali, West Africa (hence it's name Bambara Groundnut).

It is now widely distributed and is grown in Asia, parts of Northern Australia, and South and Central America.

The Bambara Groundnut is the third most important crop after groundnuts and cowpeas but it has low status as it is seen as a snack or food supplement but not a lucrative cash crop. Additionally, it is traditionally grown by women which means it is often given less value and less priority in the allocation of land. Between 10-40% of the harvest is sold, the rest is consumed by the rural farmers themselves.

Seeds for growing the beans are rarely purchased by farmers because the women are responsible for passing the seed down through the generations, saving seed yearly and putting dried beans away for food security. The women are usually given it by female relatives (mother in law) when they are married. Sometimes the local chief gives them the seed when they move into the area.

The Bambara Groundnut is one of the most adaptable of all plants and tolerates harsh conditions better than most crops. It is ideally suited for hot, dry regions where growing other pulses is risky. It yields on poor soils in areas of low rainfall and does not yield well in times of heavy rainfall. However, substantial yields have been known when the crop is grown under more favourable conditions than the traditional harsh conditions of bad soils and low rainfall. In Zimbabwe it is normally intercropped with maize in November/December and harvested 5-6 months later.

No chemicals or fertilizers are used and the crop is relatively unaffected by pests and diseases. The main problem affecting the crop is that sometimes the leaves dry up and there are no pods (or they are empty). After harvesting the seeds are usually stored in their shells otherwise they are susceptible to weevils.

The Bambara Groundnut is important for rural-farmers because it fixes nitrogen into the soil which improves soil fertility.

The beans are an important source of food security because it is highly nutritious and is unusually high in methionine, an essential amino acid.

The beans are eaten fresh after harvest and also dried and stored for later consumption. The beans are extracted from the pods by gently pounding the pods with a pestle and mortar. One of the reasons for its underutilization at rural level is that the dried seeds are difficult to cook and require lots of time, fuel and water. Boiling from fresh = 45 mins, boiling from dried = 3-4 hours

Statistics in Zimbabwe

Approximately 50 tonnes a year are grown in Zimbabwe.

Number of small-scale farmers growing:	3,500
Area planted:	2,300 ha
Average yield in the 1990's:	650kg's/ha
Number of large-scale commercial farmers growing:	48*
Area planted:	84 ha

* Prior to the farm invasions in February 2000. It is unlikely that there are any commercial farmers growing Bambara Groundnut now.

Nutritional Information

Carbohydrates - 54.5-69.3%

Protein - 17-24.6%

Fat - 5.3-7.8%

Calories - 367-414 Kcal per 100g

Good source of fibre, calcium, iron and potassium

Unusually high in methionine, an essential sulphur-containing amino acid

The beans have the potential for providing a balanced diet in areas where animal protein is expensive and the cultivation of other legumes is risky because moisture levels are unfavourable. The red seeds could be useful in areas where iron deficiency is a problem as they contain almost twice as much iron as the cream seeds.

Red seeds are more popular than the cream seeds and command a higher price with the Grain Marketing Board because they are classed as Grade A.

Nutritional Comparisons

	Bambara	Soya	Cowpea	Kidney	Broadbean	Chickpea
Calories	390 kCal	416 kCal	343 kCal	333 kCal	341 kCal	364 kCal
Protein	20.8g	36.5g	23.8g	23.6g	26.1g	19.3g
Carbohydrates	61.9g	30.2g	59.6g	60g	58.3g	60.6g
Fat	6.55g	19.9g	2.1g	0.8g	5.7g	6g

It can be seen that Bambara Groundnut compares favourably with other well known and highly commercialized beans.

Traditional Uses

- It is made into a relish mixed with onions, tomatoes and oil.
- The seeds are milled into flour and used to make small flat cakes or biscuits.
- The flour is mixed with cereals and used to make a porridge.
- It is mixed with maize to make a very filling porridge.
- It is boiled and eaten together with plantains.
- Fresh seeds are roasted and eaten as a snack.

Benefits for rural farmers

The Bambara Groundnut is an ideal crop for small-scale rural farmers because it is a difficult crop to harvest mechanically – discouraging large-scale commercial farmers from growing them. It yields on poor soils in areas of low rainfall which are the types of areas where most small-scale farmers in Zimbabwe are based.

They can be grown without fertilizers and chemicals which are costly and difficult to collect as they are only available in the cities and larger towns.

They are an ideal crop for intercropping with other crops and so do not need to take up vast areas of land that could be used for other crops considered more important or lucrative.

The Bambara Groundnut is useful in crop rotation because it contributes nitrogen to the soil and improves the fertility of the soil.

Speciality Foods of Africa Pvt Ltd

Our mission is to produce and supply high quality natural food products from Africa in accordance with principles of fair trade and environmental sustainability. All our products are marketed under the brand name Tulimara.

Makoni Herbal Tea (*Fadogia ancyrantha*)

Masau Jam (*Ziziphus mauritiana*)

Marula Jelly (*Schlerocarya birrea*)

Mazhanje Jam (*Uapaca kirkiana*)

Nyimo Beans (*Vigna subterranea*)

Nyemba Beans (*Vigna unguiculata*)

During 2004 we will be launching 2 new herbal tea's, healthy snack bars using Baobab pulp, canned mopane worms, dried fruits, new wild fruit jams and honey.

Tulimara Canned Nyimo Beans

Our canned Nyimo Beans are mixed with brine (salt water) and are ready to serve. No cooking is required after opening the can.

The canned beans can be added to stews and salads, made into dips or eaten straight out of the can as a healthy and filling snack

Commercialisation of Nyimo Beans in Zimbabwe – some of the considerations

Collection

During the harvesting season there is an abundance of beans which brings prices down but once the season is over the beans are extremely difficult to find.

Collection of the beans is expensive and time consuming because the small-scale farmers are very remote and spread over large areas. Some of the roads are badly maintained which makes it difficult to reach the farmers.

In recent years there has been a lot of interest from South African purchasers which has pushed prices up on the local market making the beans unaffordable for low-income earners in the cities.

Supply is not guaranteed each year because small-scale farmers do not have any formal agreements with companies/individuals to supply. Therefore if they feel there is more money to be made elsewhere they will grow something else.

Supply is not guaranteed because in times of drought when other crops fail, farmers are not willing to sell their beans because they need them for their own food security.

Processing

There are no companies or individuals that are able to provide a reliable supply of dried beans all year around so small companies wanting to process the beans have to buy a year's supply at harvesting time.

There is very little processing or preservation done so after the harvesting season the beans are in short supply until the next season. It is therefore extremely difficult to establish markets and find customers when the product is not available all year around.

Grading of the beans after purchase is time consuming because there are broken beans, stone and insects mixed in with the beans. This is sometimes done on purpose to increase the weight of the beans as they are sold in 50kg bags.

Storage of the beans before processing can be a problem because they are susceptible to weevils. They have to be fumigated monthly or stored in cold rooms to avoid contamination. Another alternative is to process a year's supply of the beans in one go – but this is an expensive venture and sales are not guaranteed even after the expense of processing.

R&D costs are expensive and most companies are not prepared to spend money on a bean that is not widely known.

Lack of knowledge about the bean makes R&D more difficult – there is very little research information available about products made from the bean. There is no information about what has been tried and what was successful and has potential on commercial markets.

Marketing

Marketing is made difficult by a general lack of awareness of Nyimo Beans on local, regional and international markets. Processors and growers in sub-Saharan Africa are often unfamiliar with export markets and don't know how to tap into export markets because they don't know who to contact.

Consumers are often unwilling to try new products that they are unfamiliar with and most African producers do not have the funds for marketing and promotions – especially on export markets.

In Zimbabwe consumers have some negative perceptions about the bean which impacts on sales:

- It is seen as an indigenous crop eaten only by poor black people in the rural areas
- It is usually grown in people's homes so it is not considered an important cash crop
- It has always been seen as a minor crop by government and traders who have the potential to increase awareness of the bean
- It is seen as a women's crop and therefore of less value

The bean is relatively expensive compared with peanuts and cowpeas and so in most sub-Saharan countries where there are many low-income earners, people don't get the opportunity to try the beans

Distribution

Tulimara Nyimo Beans are stock in all major supermarket chains around Zimbabwe (Spar, TM, Bon Marche, OK) and many smaller independent supermarkets.

Because the canned beans are relatively expensive they are not as widely available in supermarkets or shops in high density areas and smaller towns.

The canned beans are not available in rural areas because it would be too expensive to deliver to those areas and the sales would not justify the costs of delivery

Potential New Products

There are a range of potential products that could be developed from nyimo beans:

- Chilli Nyimo Beans
- Baked Nyimo Beans (in a tomato sauce)
- Mixed 3 Bean Salad
- Dried and Salted Nyimo Beans (like salted peanuts)
- Nyimo Bean Cereal, Biscuits and Snack Bars
- Nyimo Bean Flour
- Nyimo Bean Milk (similar to Soya Milk)

Achievements to date

Speciality Foods of Africa is the first company in Africa to add value to nyimo beans in any meaningful way. To my knowledge no other company in Africa is processing the beans and certainly no one is canning them. There are no reports of the beans having been widely commercialised and consumed and they do not appear to be on sale in Europe or the US. Nyimo beans are the only product that we have not yet managed to find an export customer for. However, we are in negotiations with an Italian fair trade customer who may purchase the beans packed in their dried form.

Five tonnes of the beans were exported from Zimbabwe to the US five years ago but a repeat order did not materialise. The conclusion here must be that either the beans were not popular in the US or the purchaser planted the beans and is now selling them in the US himself.

Through canning of the beans and selling them in the more upmarket supermarkets in Zimbabwe, high income earners have a greater awareness of the beans. High income earners in the cities tend to be the main purchasers of the canned beans because they are relatively expensive and therefore unaffordable for most low income earners.

Regrettably sales of the beans are not yet high enough to impact meaningfully on small-scale farmer's incomes. Until farmers start to see real advantages from growing the beans it is unlikely that they will increase the quantities that they grow. Unfortunately, until there is a guaranteed supply of the beans it is unlikely large companies will take commercialisation seriously.

Suggested interventions for successful commercialization

- More R&D is needed into the nutritional values and comparisons with similar products for marketing purposes
- Extensive R&D should be undertaken into potential new products that will add value and have potential on local and export markets
- Strategies should be developed to encourage more small-scale farmers to grow the bean for their own consumption as well as for generating income

- Promotional strategies should be developed to create awareness of the Bambara Groundnut within Africa and internationally
- Research should be undertaken into niche export market opportunities
- Producer groups and companies wanting to commercialise Bambara Groundnuts should be encouraged to do so and provided with relevant information and assistance to achieve that aim