



Healthy innovation to local snacks;— Promoting local consumption of locally produced foods to end hunger and malnutrition in Kenya

JAICAF ジェイカフ

GICHANGI
Cereals and spices

 **家田製菓株式会社**
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Overview

Bioversity International's work with farmers and markets in Kenya took a new turn in 2016 with a project that looked at a novel way to develop markets for traditional grains and seeds in Africa—'popcorn' made from sorghum, finger millet, rice, green gram and a host of other 'unfashionable' seeds.

Recent years have seen a dramatic increase in 'snack culture' in Kenya. Office workers and especially children grab a quick bite at lunch time and even between meals, and the snacks are commonly sugar-based confectionaries or, increasingly, French fries and crisps. These energy-rich foods are associated with increasing incidence of obesity and other non-communicable diseases such as diabetes and heart disease.

Can this deteriorating health situation benefit from snacking?

In partnership with local communities, Bioversity International has been pioneering a community-led business intervention that adds value to underutilized local cereals, legumes, and wild tree nuts through pressure puffing technology and marketing of products.

Since 2016, through financial and technical support from the Japanese Ministry of Agriculture, Forestry and Fisheries (MAFF), and Japan Association for International Collaboration of Agriculture and Forestry (JAICAF), a prototype machine was fabricated by a Kenyan private company, DK engineering co. LTD, using locally available materials. Three local communities in Kitui, Embu and Migori counties initiated an experimental produc-

tion to explore the puffing properties of a number of local grains and also embarked on marketing the new foods, providing cheap, natural and healthy local snacks for both local and urban people and especially children.

The intervention has resulted in a few cases where local individual entrepreneurs subsequently purchased the machine with their funds and initiated their local business based on puffing.



* Pressure-puffed or popped grains (Chinese: "ppeong twigi" Japanese: "pon gashi") are created using a simple method placing grains under high temperature with steamed pressure in a containment vessel. When the vessel's seal is suddenly broken by opening the lid that makes immediate pressure release (burst) as explosion to bloat the grain volume to many times its original size.

The puffing technology offers confirmed potential to provide new income for the groups, and to add new economic value and opportunities for local food resources used as snack. It has also been confirmed that the puffing activity strengthens cohesion among group members as production is an outdoor activity that keeps individual members active.

This intervention has confirmed the great potential to contribute to food security in this region specifically in following points.

- Promoting diet diversification and use of local food resources

Nutrition Facts

Pressure-puffed cereals

		Pearl Millet		Sorghum	
		Raw	Puffed	Raw	Puffed
Energy	kcal/g	366.2	404.9	341.2	397.1
Moisture content	%	8.8	4.1	7.9	4.8
Crude Protein content	%	7.8	12.6	13.7	12.6
Crude Fat content	%	5.5	9.4	1.7	5.5
Carbohydrate content	%	71.5	64.4	67.9	74.4
Acid insoluble Ash	%	1.7	1.5	1.1	0.1
Crude Fibre content	%	4.8	5.0	5.3	4.8
Calcium (Ca)	%	0.0	0.0	0.0	0.0
Magnesium (Mg)	%	0.1	0.1	0.1	0.1
Potassium (K)	%	0.2	0.2	0.2	0.3
Sodium (Na)	%	0.0	0.0	0.0	0.0
Zinc (Zn)	%	0.0	0.0	0.0	0.0
Iron(Fe)	%	0.0	0.0	0.0	0.0
Phosphorus (P)	%	0.3	0.4		
VA	IU/100g			<0.01	0.58
VB1	mg per 100g			<0.01	0.21
VB2	mg per 100g			0.09	0.33



Some of the grains the project has popped (top to bottom): Red sorghum (*Sorghum bicolor*), Finger millet (*Eleusine coracana*), and Lablab (*Lablab purpureus*).



Kenyan President, His Excellency Hon. Uhuru Kenyatta attended a project exhibition in Agricultural show in Nieri county where varieties of puffed cereal made from local food crops were sampled.



Demonstrating the popper in the market (left), women group packing products (left). Street vendors in Embu market (right).

- Creating income and industry for local communities especially for youth and women
- Enhancing local private partnerships, entrepreneurships and value chains
- Conservation of local food resources, production landscapes, and culture associated with local foods.

Puffing cereal is still new to Kenyans people and the business is considered as small for those local entrepreneurs who already have established businesses and thus were not prepared to make further invest-

ments. In order to scale out this activity further, we have confirmed it is important for strengthening individual consultations, providing information and practical trainings for those who interested in starting the, as well as supporting the development of unique community products for which varieties of local food resources can be used.

Bioversity International will continue involved in this long lasting partnership and supporting farmers to get fresh options and new markets, and consumers get a nutritious and tasty snack that is also good for the environment.