Seed Savers Network Kenya

10 Rich underutilised crops

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Foreword

The focus of governments and private sector on improving staple crops in the formal seed system has led to the marginalization of crops and varieties saved and planted by smallholder farmers. Over the last century, approximately 75% of pant genetic resources have been lost worldwide as farmers left their multiple local varieties and landraces for genetically uniform and high-yielding varieties. While still 80% of the seeds used by smallholder farmers are sourced via the informal system, through farmer-to-farmer seed exchange, there is a significant lack of understanding of and investment in farmer-managed seed systems. Through its Open Source Seeds program, Hivos aims to address these issues, and works with farmers, breeders, NGOs, seed enterprises, researchers and governments to improve access to diverse seeds for smallholder farmers. By advocating to recognize and keep farmer-saved varieties in the public domain as a protected commons, we aim to contribute towards improving farmers' food security, recognizing their key role in preserving agricultural biodiversity, and hence in fostering resilience in the food system.

This booklet provides a great overview of ten crop varieties as selected by the Kenyan Seed Savers Network. Through their effort of documenting and characterizing local underutilized seed varieties, the Seed Savers Network delivers a significant contribution to the preservation of plant genetic resources in Kenya. The ten varieties presented in this booklet were selected by the farmers themselves because of their nutritional value, popular taste, resilience to climate change, or a combination hereof. A subsequent step for the farmers is to promote and commercialize these varieties. We are highly appreciative of the Seed Savers' documentation effort and wish to encourage them to keep up the good work. We are also grateful to Hivos private donors who have generously contributed to this project.'

Introduction

This booklet is a reminder of the importance and value of local varieties at the brink of extinction. Putting together traditional knowledge collected from 10 villages on local varieties and going a step further to conduct nutritional analysis and binding it altogether with nutritionist opinion has created all the evidence we need to take action both singularly and collectively.

In their own wisdom, farmers of the olden days were loaded with expertise on food. They knew what to plant when, how to care for their crop, how to store food and even best ways to preserve seeds. Over the years though, there has been a kind of evolution in the food sector that has affected almost every bit of the value chain; from production to preservation and even consumption.

As the world slowly turns to a global village, so is the food sector. Unfortunately, though, is the fact that people are slowly becoming over-reliant on the same kind of foods,while other types are underutilised. Change in eating habits, occasioned by overuse of processed foods has caused an increase in lifestyle diseases like type 2 diabetes and hypertension. Most of the least used crops are highly nutritious, easy to grow and less costly. This means they would be accessible to many people, thus increase food security.

Climate change has highly affected agriculture. Therefore, stakeholders should promote underutilised crops, that are resistant to harsh weather conditions.

Utilising the underutilised crops would mean increasing food varieties and contributing positively towards food and nutrition security. Farmers must be sensitised and be committed to grow the underutilised crops. Government and non-governmental organisations should also promote these crops, by creating awareness on their pros.

But even consumers must play their role, by choosing to consume what may not necessarily be perceived as 'usual.' And we are all consumers, meaning everyone has an obligation of ensuring more utilisation of underutilised crops; for better health and more wealth!

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About this Publication

This booklet documents ten underutilised local crops, with special attributes; either due to being highly nutritious or because there is wealth of traditional knowledge about them. It brings to light traditional and scientific knowledge on cherry tomatoes, gooseberries, black nightshade, dolichos beans, pumpkin, red cowpeas, red millet, yellow maize, bean and red sorghum.

The publication is a product of extensive research carried out between 2018 and 2019 by Seed Savers Network with funding from Hivos as part of the Documentation Project. Under this project, over 60 crops were documented and characterised. Ten crops with special attributes were taken for nutritional analysis at a laboratory. The booklet takes you to farmers' groups across villages within Nakuru County, bringing their traditional knowledge about the crops as gathered through Focus Group Discussions (FGDs).

It is amazing how older people are attached to the foods they used to eat decades ago, but saddening how the current generation is getting detached from these highly nutritious foods.

The memories of how these foods were grown, how they used to be prepared and when they used to be consumed remain alive. The publication, therefore, is a collection of tales from older people who interacted with the crops through growing, cooking, consuming, saving seeds and sharing. Younger people also tell of how they interacted with the same crops as their parents and grandparents grew, harvested, preserved, consumed and traded in them.

The tales tell of a traditional seeds sector that was highly organised and thriving yet it is almost dead due to entrance of multinationals that have taken control of the sector. Well, the book is not only about what the ordinary farmer knows, you will also read the laboratory results of nutritional analysis of the crops. The nutritional-value information has been simplified and explained by a professional nutritionist; bringing together traditional, scientific and professional nutritionist's points of knowledge.

The booklet is expected to inform consumers on the benefits of these foods. It also speaks to stakeholders, both in the government and non-governmental organisations, on reasons why these crops should be fully utilised to enhance food and nutrition security.

Acknowledgment

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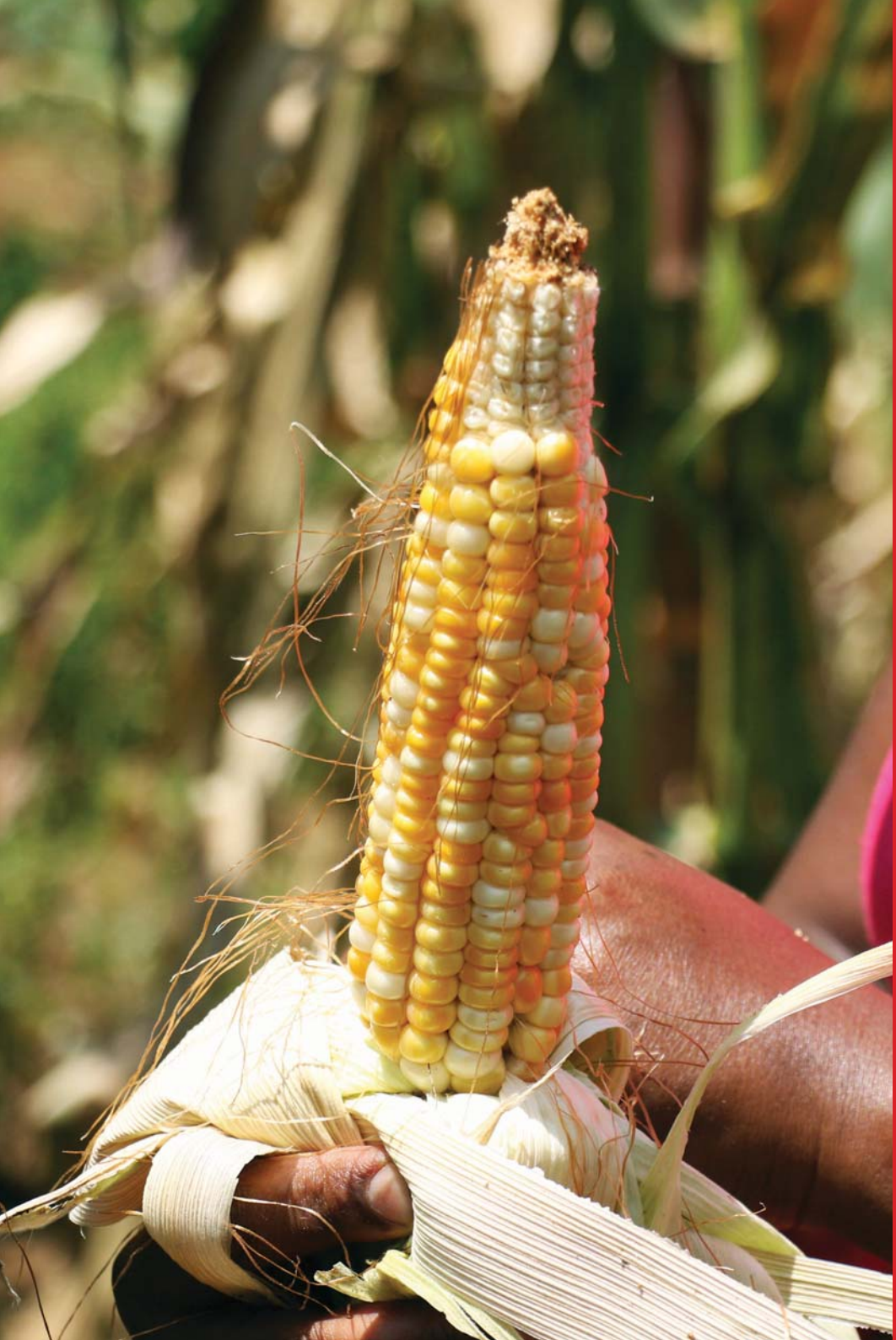
Your generosity with time and information are highly appreciated and did not go unnoticed.

Special acknowledgement to Seed Savers Network team for the commitment in making the production of this publication a success. Gratitude goes to ANALABS Limited, for carrying out nutritional analysis of the ten crops that were identified as underutilised. We recognise the input by the vetting committee, including farmers' representatives, civil society organizations' representatives (Slow Food and Maendeleo Endelevu Action Program (MEAP) and Government Institutions, Kenya Plant Health Inspectorate Service (KEPHIS), Genetic Resources Research Institute (GERRI), Egerton University and Kenyan Ministry of Agriculture, Livestock and Fisheries (MOALF). Thank you to Simon Njaria for the great photographer, Christina Kihara, Nakuru County Nutrition Coordinator, and Lillian Marita, Assistant Director- Nutrition and Dietetics.



YELLOW MAIZE 1

Local Name: Gathirikari
Scientific Name: *Zea Mays*
Farmers Group: Ngeteti Witeithie Self-Help Group

Introduction

The maize has yellow grains and its plants are short and produce bigger cobs Gathirikari is a Kikuyu name which means 'one that belongs to the government.'

Yellow maize earned this name because the government used to distribute it to citizens as relief food during drought. This dates back to the 1930s during the famous drought dubbed ngáragu ya mianga (cassava drought). Though people used to consume yellow maize to pacify hunger, it turned out a delicious and nutritional food. Yellow maize is not only drought-tolerant but also less prone to diseases such as maize smut, which is locally known as nduutu. The crop, farmers say, is also less affected by fall army worm and less prone to aflatoxin compared to hybrid maize varieties.

Utilisation

Traditionally, yellow maize was popular for preparation of fermented porridge, which was beneficial to new mothers. It would make them produce more milk, just like it would to dairy cows when they were fed on it. The yellow maize flour would be mixed with others from cassava, sweet potatoes, millet and sorghum to make a more enriched porridge.

Besides, yellow maize was consumed as ugali (maize meal) and would be served with vegetables, meat or milk, among others. Ugali made from yellow maize was commonly known as ngima ya gatumbi, meaning maize meal that bore the colour of egg yolk.

Yellow maize was also used in preparation of githeri by mixing with legumes such as beans or peas.

Githeri can be eaten as boiled, fried or mashed with potatoes and green leafy vegetables to make irio. Yellow maize githeri is much more delicious than that made from white maize.

Yellow maize would also be ground into small pieces locally known as njenga. The particles were then soaked overnight and boiled to make a meal that was considered same as rice. Unlike white maize, farmers say that yellow maize meals are more delicious. Besides, these meals provide more energy to the body as one consumes less but remain full for longer.

Medicinal benefits

Yellow maize is said to be medicinal as it is believed to lower blood sugar thus good for diabetics. It is also believed to be of benefit to people who suffer from high blood pressure.

Threats to yellow maize

As many farmers focus on agribusiness rather than farming for subsistence, yellow maize has become uncommon. Some brokers demand that farmers should select all yellow maize grains and sell to them exclusively.

Nutritionist's Remarks

Yellow maize is rich in zinc, a mineral which helps in regulating storage and release of insulin in the body; thus zinc-rich foods are good for people living with diabetes. It is for this reason that farmers say that yellow maize meals are good for people living with diabetes. Zinc also catalyzes many biological reactions and helps the body to function normally.

Zinc helps in boosting immunity, and enhancing sexual maturation and improving reproduction. Yellow maize is energy-dense, which explains why people feed in small amounts, get satisfied fast and remain full for long.

Besides, it has iron, a mineral that helps in formation of blood cells and haemoglobin. Haemoglobin is a protein which aids in transporting oxygen in the body. Iron is a blood builder.

Laboratory Analysis

Lab no	Sample Description	Select Test	Methodology	Units	Results
30436/19	Yellow maize	Total ash*	KS-2160	%	2.70
		Crude fat*	ISO 6492	%	4.46
		Crude protein *	KS ISO 5983-1:2005	%	8.55
		Crude fibre*	ISO 6492	%	2.93
		Moisture*	ISO 6496	%	6.69
		Dry matter*	KS-63-01	%	93.31
		Carbohydrates*	KS-63-01	%	74.68
		Energy kcal/ lOOg*	KS-63-01	kcal/ lOOg	404.96
		Vitamin A~	ISO 20633-2015	ug/Kg	1.94
		Iron (Fe)*	Spectroscopy (MP-AES)	mg/Kg	30.31
		Zinc (Zn)*	Spectroscopy (MP-AES]	mg/Kg	24.14
Comments:					

PUMPKIN

Local Name: Irenge ria Giikamba
Scientific Name: *Cucurbita maxima*
Farmers Group: Kamathatha Muoroto Self-Help Group

Introduction

Irenge ria Giikamba loosely means pumpkin from Kambaland, a variety which derived the name from the fact that traders from the Kamba community used to sell it at Gilgil market back in the early 80s.

The fruit itself is dark green in colour, with light green strips from the stem to the blossom end. Its leaves too are dark green and, just like the fruit, they have light green lines. Traditionally, pumpkin was a very important food due to its rich colour and nutrients. Among the Agikuyu for example, there was a common saying that compared showy people to pumpkin soup.

It goes, 'Kwihe mbere ta thubu wa marenge' (being showy like pumpkin soup).

Any food in which pumpkin is an ingredient does not need colouring as the rich yellow colour is usually appealing enough. Even before cooking, women would predict pumpkin's sweetness by pressing it. The harder, the sweeter.

Utilisation

Giikamba pumpkin fruit was traditionally wholesomely utilised, from its skin to seeds. Boiled pumpkin was a common breakfast meal. Pumpkin and pumpkin leaves can also be mashed with githeri, potatoes and bananas to make irio eaten during lunch or dinner.

Pumpkin leaves can be fried and served with ugali or mixed with other foods such as rice to enrich both colour and nutrition. Pumpkins were common weaning foods for infants because they are soft and smooth making them palatable to the young ones.

Today, pumpkins are also used in making chapatis, soups and pancakes. Giikamba pumpkin seeds are used as a snack and are believed to be medicinal. Pumpkins can be dried and ground to make flour that is blended with others and used in preparation of ugali, chapati or porridge.

Preservation

If well-preserved, pumpkins would last for more than one year, without any preservatives. The trick, which some farmers still employ, is leaving part of the stem on the fruit when harvesting and keeping them in cool dry place. Due to their lengthy shelf-life, pumpkins were stored and eaten during drought.

Decreasing Production

In the past, farmers would harvest as many as 30-40 fruits from a single plant. Farmers would freely give pumpkins to friends and neighbours as they were in abundance.

Production has been dwindling to even less than 10 fruits per plant owing to climate change, which is characterised by long dry seasons that lead to plant destruction. Today, a 2kg pumpkin fruit sells for at least Sh200 in the market.

Medicinal Benefits

Boiled pumpkin was believed to relieve bloating. Boiled unpeeled pumpkin left overnight was used as a de-wormer. For best results, children were fed on the pumpkin for breakfast, first thing after waking up. Ground pumpkin seeds powder is commonly used by people suffering from diabetes and or high blood pressure to manage the diseases.

Besides, the powder is believed to boost libido among men, and women of menopausal age.

Growing Giikamba Pumpkins

The fruit is harvested then seeds extracted, dried and saved for planting during the rainy season. Land is prepared, organic manure added, holes dug and then seeds are planted. You can plant the seeds directly or in a nursery first before transplanting. Pumpkin is great cover crop in maize plantations since it spreads controlling growth of weeds.

Nutritionist's Remarks

The association between pumpkin seeds and enhancing libido is that they are rich in zinc. Zinc is a small mineral that has numerous functions and catalyses many body functions. It helps in enhancing sexual maturation and improving reproduction.

Zinc helps in regulating storage and release of insulin in the body; thus zinc-rich foods are good for people living with diabetes. Being a fibre-rich food, pumpkin helps aids in digestion and eases bowel; movement, thus, its association with relieving bloating. Pumpkin is also rich in protein, a nutrient that helps in building and repairing body tissues.

Laboratory Analysis

Lab no	Sample Description	Select Test	Methodology	Units	Results
30050/19	Pumpkin	Total ash*	KS-2160	%	5.47
		Crude fat*	ISO 6492	%	1.97
		Crude protein *	KS ISO 5983-1:2005	%	29.02
		Crude fibre*	ISO 6492	%	10.95
		Moisture*	ISO 6496	%	80.23
		Dry matter*	KS-63-01	%	19.77
		Carbohydrates*	KS-63-01	%	0.00
		Energy kcal/ lOOg*	KS-63-01	kcal/ lOOg	144.81
		Vitamin A~	A0AC 992.06	ug/Kg	2.02
		Iron (Fe)*	Spectroscopy (MP-AES)	mg/Kg	9.79
		Zinc (Zn)*	Spectroscopy (MP-AES]	mg/Kg	3.79
Comments:					

CHERRY TOMATO

Local Name: Kanyanya ka nyoni
Scientific Name: *Solanum lycopersicum*
Farmers Group: Kikopey Wakulima Self Help Group

Introduction

Cherry tomato is a small, round variety that is green while raw and colourfully red when ripe. Locally known as Kanyanya ka nyoni, which translates to a small tomato loved by birds; that is exactly what cherry tomatoes were traditionally known for. However, they are also consumed by human beings.

In the early days, birds fed on the tomato fruits and broadcasted seeds in their droppings. People would then pick the fruits that grew anywhere - on farms, along the roads and in forests. While grazing livestock or picking firewood, children would feed on the beautiful tomatoes attracted by the good colour and nice taste.

This variety of tomatoes does not need any chemicals when growing since it is resistant to pests and diseases unlike the hybrid varieties. Cherry tomatoes also need little water to grow, therefore, would do well under minimal rainfall. Growing up in Aguthi, Nyeri, in the 70s, Jackson Kihara recalls his grandmother picking cherry tomatoes that grew on their own on her coffee plantation. She would spare some for preparing family's meals and sell the others at the local market.

Unfortunately, the crop no longer grows in the coffee plantations due to what Aguthi suspects to be excessive use of chemicals. Its market has since been overtaken by hybrid tomatoes. However, all is not lost as increasing awareness on the harmfulness of agrochemicals used in growing hybrid varieties is making farmers embrace the variety.

Growing Cherry Tomatoes

In a bid to save the crop that is under threat, Seed Savers Network has been training farmers on how to extract seeds, plant in a nursery and transplant in their farms. This starts by cutting ripe fruits into two and extracting the seeds. Then wash them in clean water inside a container and decant.

Dry the seeds under a shade for seven days. The dry seeds are then planted in a well-prepared nursery bed before they are transplanted to the field after three weeks. Seeds can also be planted in a container filled with soil and the plantlets transplanted later to farms. Cherry tomatoes mature after four months and harvesting goes on for up to three months.

Traditional Nutritional Knowledge

According to members of Kikopey Farmers SHG, cherry tomatoes contain plenty of vitamins, especially when eaten raw.

Threat From Birds

A decrease in forest and natural vegetation cover has raised competition for food between man and birds. Therefore, birds are the greatest threat to cherry tomatoes.

Nutritionist's Remarks

Cherry tomato is rich in iron, which is a blood builder. Iron, is important for formation of blood cells and haemoglobin, a protein which aids in transporting oxygen in the body. Iron also helps in the transportation of hemoglobin. Iron is especially good for women of reproductive age as well as children. After age of six months, infants do not get iron from breastmilk. Therefore, it is ideal to feed them on iron-rich foods like cherry tomatoes. Anemia, which is a disease caused by iron deficiency, is an issue of government concern. Besides, cherry tomatoes are rich in fibre, meaning they aid in digestion ease bowel movement.

Laboratory Analysis

Lab no	Sample Description	Select Test	Methodology	Units	Results
30437/19	Cherry tomato	Total ash*	KS-2160	%	4.12
		Crude fat*	ISO 6492	%	1.29
		Crude protein *	KS ISO 5983-1:2005	%	10.39
		Crude fibre*	ISO 6492	%	15.23
		Moisture*	ISO 6496	%	80.76
		Dry matter*	KS-63-01	%	19.24
		Carbohydrates*	KS-63-01	%	0.00
		Energy kcal/ lOOg*	KS-63-01	kcal/ lOOg	56.96
		Vitamin A~	A0AC 992.06	ug/Kg	0.0002
		Iron (Fe)*	Spectroscopy (MP-AES)	mg/Kg	12.53
		Zinc (Zn)*	Spectroscopy (MP-AES]	mg/Kg	4.34
Comments:					

GOOSEBERRIES

Local Name: Nathi
Scientific Name: *Physalis peruviana*
Farmers Group: Mwiruti Women Group

Introduction

Gooseberries are yellow, small, sour-tasting fruits which flourish during rainy seasons but are adaptive to dry seasons as well.

Most of the time when she went to her farm, Margaret Njeri would return home with traditional basket (kiondo) full of gooseberries. They were common fruits that grew on their own in her farm. Her children would enjoy eating the fruits, which she gave them as a reward depending on how they take part in house chores.

But things have changed. Njeri is shocked that a handful of these fruits is hawked for Sh20 along the Nakuru-Nairobi highway. Njeri, like many of her age-mates, is saddened by the turn of events since her grandchildren do not even know that gooseberries exist and have never tasted them. Today, one would consider himself lucky to find gooseberries growing without having been planted. Those growing them are in commercial ventures.

Utilisation

Gooseberries are eaten as fruits, and are believed to be rich in vitamins, according to members of Mwiruti Women Group. The leaves and roots are said to be medicinal, and traditionally, they would be boiled and the drink offered to people with stomach upset.

Although gooseberries plants' leaves can be consumed as a vegetable, they are too bitter especially for children.

Therefore, a very small amount is best mixed with other traditional vegetables for consumption.

Threats To Gooseberries

In the past, birds would not feed on gooseberries, probably because they had alternative foods in the bushes. However, things have since changed and today, man and birds compete for the few gooseberries available.

Nutritionist's Remarks

Gooseberry fruit is a rich fruit, loaded with vital nutrients such as proteins, vitamin A, Iron and crude fibre. This means it is a blood builder because of its iron content. A mineral, iron, is important for formation of blood cells and haemoglobin. Haemoglobin is a protein which aids in transporting oxygen in the body. Protein makes it good for building and repairing body tissues.

Vitamin A is very important in boosting immunity especially among young children. Besides, Vitamin A improves eyesight. Therefore, gooseberries is a great fruit for all, especially children.

Laboratory Analysis

Lab no	Sample Description	Select Test	Methodology	Units	Results
30044/19	Gooseberry	Total ash*	KS-2160	%	7.53
		Crude fat*	ISO 6492	%	1.38
		Crude protein *	KS ISO 5983-1:2005	%	12.55
		Crude fibre*	ISO 6492	%	41.03
		Moisture*	ISO 6496	%	74.91
		Dry matter*	KS-63-01	%	25.09
		Carbohydrates*	KS-63-01	%	0.00
		Energy kcal/ lOOg*	KS-63-01	kcal/ lOOg	67.19
		Vitamin A~	A0AC 992.06	ug/Kg	22.50
		Iron (Fe)*	Spectroscopy (MP-AES)	mg/Kg	35.91
		Zinc (Zn)*	Spectroscopy (MP-AES]	mg/Kg	6.18
Comments:					

COMMON BEANS

Local Name: Mboco ya kanungununguu
Scientific Name: *Phaseolus vulgaris*
Farmers Group: Kikopey Wakulima Self Help Group

Introduction

In 2015, Janet Wanjiru went to the market in Nakuru and was attracted by a small purplish-pinkish bean variety. She enquired about the bean variety and was told that it is known as kanungununguu, a name derived from nungununguu, a Kiswahili name for porcupine. The variety was given the name because porcupines love eating it.

Its origin, as Wanjiru would find out, is Uganda. She bought a kilo of the beans from the market and planted on her farm in Kiamolo village, Gilgil sub-county, Nakuru.

She harvested about 20 kilos, nearly double what she harvests from most of other varieties after planting the same a similar amount. Since then, she has not only been growing the beans, but also sharing seeds with members of her farmers group, who double up as her neighbours.

Unlike most other beans varieties, according to farmers, kanungununguu is sweeter, more appetizing and does not cause bloating. Besides, it cooks faster meaning one saves on fuel, thus, helping conserve the environment in a community where firewood is the main source of cooking energy.

Kanungununguu bean variety is drought-resistant as plants do not easily dry up even when rains fail. When mixed with other varieties in a plantation, it is easy to identify kanungununguu as it starts fruiting early and produces more pods.

Delicacies

The delicious kanungununugu beans stew can be eaten with chapati, potatoes, rice, among other foods. Besides, they can be boiled, mashed and fried to make a paste that is eaten with ugali.

Also, the beans are commonly mixed with maize to make githeri, a common Kenyan cuisine. The plants' leaves can also be cooked as vegetables and served with ugali, chapatti, rice, among other foods.

Seeds Production

There is need to multiply kanungununugu seeds to increase production so that the crop can not only be grown for subsistence, but also commercially.

Nutritionist's Remarks

This bean variety is energy-dense. This means that people can feed in small amount, get filled fast and remain satisfied for long. Therefore, it is suitable for children below two years as their stomachs are small, and therefore, they need to feed on little, energy-dense foods like kanungununugu beans.

Besides, it is rich in iron, which is a blood-builder and helps in formation of blood cells and haemoglobin. Haemoglobin is a protein which aids in transporting oxygen in the body.

It also contains zinc, a small mineral that has numerous functions and catalyses many body functions. Its protein content helps in building and repairing body tissues.

Laboratory Analysis

Lab no	Sample Description	Select Test	Methodology	Units	Results
30045/19	Beans	Total ash*	KS-2160	%	3.86
		Crude fat*	ISO 6492	%	7.47
		Crude protein *	KS ISO 5983-1:2005	%	21.90
		Crude fibre*	ISO 6492	%	7.47
		Moisture*	ISO 6496	%	11.84
		Dry matter*	KS-63-01	%	88.16
		Carbohydrates*	KS-63-01	%	53.71
		Energy kcal/ lOOg*	KS-63-01	kcal/ lOOg	343.34
		Vitamin A~	A0AC 992.06	ug/Kg	0.3
		Iron (Fe)*	Spectroscopy (MP-AES)	mg/Kg	60.31
		Zinc (Zn)*	Spectroscopy (MP-AES]	mg/Kg	35.76
Comments:					

BLACK NIGHTSHADE

Local Name: Managu ma kienyeji (Mangu mega)
Scientific Name: *Solanum villosum*
Farmers Group: Mwiruti Women Group

Introduction

Managu are rich-green leafy vegetables.

Wanjiru Gichuki, 90, recalls her youthful days when she would pick managu from the bushes, along footpaths and on her farm, and prepare the vegetable for her family.

By then, the vegetable grew on its own - like weeds - and people would have it in abundance, especially during the dry seasons. Children enjoyed its orange-coloured seeds as fruits, which are sweet-sour, and are known as nagu.

But indigenous managu is no longer easily available on the farms and forests, amid rising demand for this vegetable. In the past, managu would not be sold in the markets as it was available all over- in farms, along foot paths, in forests and even home compounds.

Some farmers would even uproot managu plants to pave way for other crops. But it has now become one of the most expensive vegetables.

The traditional variety of managu has slowly been replaced by hybrids, commonly known as 'managu ma agriculture'. The hybrid varieties have black seeds and wide leaves. Unlike the indigenous ones though, these seeds are not palatable and are neither eaten by children nor birds.

Utilisation

Managu is commonly served with ugali and can also be mixed with other foods such as rice, githeri and legumes. Sometimes managu is cooked with rice to replace tomatoes and add colour to the food.

Traditionally, preparation of managu would start by boiling the leaves. However, people are slowly abandoning the method and frying the vegetables without boiling to conserve the nutritional value.

Milk or dairy cream can added to the vegetable while cooking to reduce the bitter taste. Managu doesn't have to be cooked alone, it can be mixed with other vegetables to add taste and improve nutrition. In the past, the water used to boil managu leaves would be drunk for its nutritional value.

Managu was traditionally believed to boost milk production among breastfeeding mothers and aid digestion.

Growing Indigenous Managu

To save this endangered managu variety, farmers are now saving seeds. The fruits (nagu) are harvested, the seeds extracted and dried under the shade. They are then planted in a seedbed and transplanted after three weeks.

However, there is need to train today's farmers on how to grow the crop since little traditional knowledge is being passed across generations. The secret to harvesting longer from managu plants is on how one picks it. You should pluck the long suckers first and save the shorter ones for the next harvest. This way, the plant lasts longer and yields more.

Nutritionist's Remarks

Managu is a fibre-rich vegetable, therefore, it helps in digestion and enhances stool motility. That is why farmers say, above, that it aids digestion.

Due to its high, moisture content, managu causes hydration in the body. A breastfeeding mother who is well hydrated will produce more milk. It is for this reason that managu was traditionally liked to boosting breast milk among nursing mothers.

Managu is rich in iron, a mineral which is important for formation of blood cells and haemoglobin. Haemoglobin is a protein which aids in transporting oxygen in the body. Iron is a blood builder.

Laboratory Analysis

Lab no	Sample Description	Select Test	Methodology	Units	Results
30438/19	Black Nightshade	Total ash*	KS-2160	%	13.07
		Crude fat*	ISO 6492	%	3.66
		Crude protein *	KS ISO 5983-1:2005	%	35.36
		Crude fibre*	ISO 6492	%	12.05
		Moisture*	ISO 6496	%	82.92
		Dry matter*	KS-63-01	%	17.08
		Carbohydrates*	KS-63-01	%	0.00
		Energy kcal/ lOOg*	KS-63-01	kcal/ lOOg	187.47
		Vitamin A~	A0AC 992.06	ug/Kg	0.078
		Iron (Fe)*	Spectroscopy (MP-AES)	mg/Kg	164.43
		Zinc (Zn)*	Spectroscopy (MP-AES]	mg/Kg	13.75
Comments:					

DOLICHOS BEAN

Local Name: Njahi ya Gikuyu
Scientific Name: *Lablab purpureus*
Farmers Group: Kikopey Wakulima Self Help Group

Introduction

Njahi ya Gikuyu (black beans for the Gikuyu) is a black bean variety with a white spot at its head. Njahi ya Gikuyu was for decades a popular delicacy during important traditional ceremonies and was thus highly regarded.

So precious was this legume that farmers would not thresh it after harvest. If it was kept threshed and clean, it was believed, women would be tempted to cook it even when there was no ceremony. However, while stored without threshing, it would be too much work to thresh, clean and cook and therefore, temptations would be minimal.

Dolichos was served during special ceremonies such as ruracio (dowry payment), ngurario (traditional wedding), irua irua (circumcision) among others.

Special Meal For New Mothers

Njahi ya Gikuyu would be boiled, then mashed and mixed with ripe bananas to produce a delicacy called itaha, which would be served to new mothers. This meal would help them produce more milk, and regain energy faster following birth.

Newly circumcised youths would also heal faster after being fed on Njahi ya Gikuyu.

Medicinal Benefits

Traditionally, people who had fractures would be served dolichos soup to hasten their healing. The grains would be boiled for about two hours and the soup served to the patient.. The crop is believed to not only be rich in proteins, but also calcium.

Utilisation

Njahi ya Gikuyu can be mashed, stewed or mixed with maize to make githeri. The crop's leaves can also be steamed and served with ugali, chapati and rice.

Njahi Ya Gikuyu Vs Hybrids

Over the years, Njahi ya Gikuyu has been replaced by hybrid varieties as its consumption and position in the community deteriorates. It is no longer harvested in large quantities and stored for the special occasions as it used to be done.

Njahi ya Gikuyu plant is taller than the new varieties, which are commonly known as 'njahi cia girigacha' (breeds bred by agriculturalists). However, the indigenous variety, though rare in the modern times, is more productive unlike the new varieties. It is a climbing bean, meaning it bears more pods than the new varieties that are short.

Unlike the hybrids, farmers do not need to keep planting Njahi ya Gikuyu every time. All they have to do is chop-off the old plant near the base and it would sprout again, giving more vegetables and grains.

Njahi ya Gikuyu cooks better compared to the hybrids. It is powdery when pressed after cooking. Although, it takes longer to cook, it rarely causes bloating. As the crop becomes rare to come by, there is need for aggressive efforts to conserve it.

Nutritionist's Remarks

Dolichos bean is rich in iron, zinc, protein and carbohydrates. The presence of protein can be associated with its 'soup' contributing to fast recovery among people with fractures and injuries, as farmers say. This is because, protein is key in tissue building and repair.

Besides, this crop's wealth in iron, a mineral that is important for formation of blood cells and haemoglobin. Haemoglobin is a protein which aids in

transporting oxygen in the body. Iron is a blood builder. Carbohydrates are the main source of energy. Carbohydrates help in calcium absorption and have proteins-sparing properties.

Laboratory Analysis

Lab no	Sample Description	Select Test	Methodology	Units	Results
30049/19	Beans	Total ash*	KS-2160	%	3.38
		Crude fat*	ISO 6492	%	0.84
		Crude protein *	KS ISO 5983-1:2005	%	22.62
		Crude fibre*	ISO 6492	%	8.72
		Moisture*	ISO 6496	%	8.98
		Dry matter*	KS-63-01	%	91.02
		Carbohydrates*	KS-63-01	%	55.43
		Energy kcal/ lOOg*	KS-63-01	kcal/ lOOg	350.74
		Vitamin A~	A0AC 992.06	ug/Kg	34.3
		Iron (Fe)*	Spectroscopy (MP-AES)	mg/Kg	51.63
		Zinc (Zn)*	Spectroscopy (MP-AES]	mg/Kg	27.52
Comments:					

RED SORGHUM

Local Name: Muhia, amabere, mosonik
Scientific Name: *Sorghum bicolor*
Farmers Group: Kampi Farmers Group

Introduction

The sorghum grains are red-maroonish in colour and smaller in size. The crop almost resembles a maize plant, but yields from the head. When almost ready, the head turns down from the peduncle, making it easy to harvest, hard to fall, attract predators or be destroyed by heavy rains.

In the past, red sorghum was used to make 'tea', which was very popular, well, until the real tea replaced it. To make sorghum beverage, one needed to thresh and clean the grains, then roast them in a cooking pan just as it is done with groundnuts. The roasted grains were then grounded on a special stone and the flour used in making sorghum 'tea'.

However, this indigenous beverage is no longer common, as tea and sugar replaced it. People do not want to get tired preparing sorghum as modern day lifestyles do not allow. Processed tea is readily available in the shops unlike sorghum, which one has to spend time and energy to prepare.

Red sorghum was also used to prepare a githeri-like meal that was known as 'muthura'. It was prepared by boiling the sorghum and mashing it with bananas. This meal was common during drought when there was food shortage.

The meal would be served in portions scooped using calabashes and put on traditional trays. Family members would each pick a scoop - known as itaha - during meals. The delicacy would even last for a week without going bad, yet there were no preservatives used.

Red Sorghum was used as a major ingredient in preparing porridge. This porridge was especially common among breastfeeding mothers as it boosted milk production.

Besides, red sorghum flour was and is still used to make ugali, and is commonly used by people living with diabetes and hypertension.

Pregnant women would be advised to chew raw red sorghum seeds instead of soil when cravings would strike. This is because sorghum was considered to be nutritionally and hygienically safe.

Indigenous red sorghum is not attacked by pests. Therefore, it is only preserved in a cool dry place, both for utilisation as seeds and for consumption. Traditionally, farmers would not thresh the sorghum. This way, women would not rush to prepare it for meals as it would be a long tedious process. Therefore, it would be kept long for food security.

Sorghum bunches were known as magira. In the olden days, red sorghum was used as a medium of exchange. Farmers from Bunyore for example, would exchange clay cooking pots for red sorghum grains, a business that thrived during the harvesting season.

Red sorghum is not as conspicuous and tasty as the white variety. Therefore, it is not prone to destruction by birds meaning farmers are assured of harvest. Besides, this variety of sorghum has grains facing down, protecting them from destruction by heavy rains.

Indigenous red sorghum has stronger and better aroma and offers higher yields.

Nutritionist's Remarks

It best to ferment red sorghum and other plant-sources of iron before consumption. This is because plants give non -haem iron which is not easily absorbed in the body. Therefore, such foods needs to be fermented to convert the noh-haem iron to haem form. Alternatively, Consumers are advised to add citrus by squeezing lemon juice to foods with non-haem iron so that it can be converted to haem. Eating citrus-rich fruits after a non-haem iron-rich food also helps in conversion to haem.

Red Sorghum is rich in proteins, which help in building and repairing body tissues.Besides, red sorghum contains zinc, a mineral that catalyzes many body functions. Its high carbohydrates levels make it energy-dense, thus suitable for groups of people who need high energy like breastfeeding mothers.

Laboratory Analysis

Lab no	Sample Description	Select Test	Methodology	Units	Results
30438/19	Red Sorghum	Total ash*	KS-2160	%	2.30
		Crude fat*	ISO 6492	%	3.21
		Crude protein *	KS ISO 5983-1:2005	%	10.53
		Crude fibre*	ISO 6492	%	4.62
		Moisture*	ISO 6496	%	11.20
		Dry matter*	KS-63-01	%	88.80
		Carbohydrates*	KS-63-01	%	68.15
		Energy kcal/ lOOg*	KS-63-01	kcal/ lOOg	374.13
		Vitamin A~	A0AC 992.06	ug/Kg	0.8
		Iron (Fe)*	Spectroscopy (MP-AES)	mg/Kg	70.48
		Zinc (Zn)*	Spectroscopy (MP-AES]	mg/Kg	27.86
Comments:					

RED COWPEAS

Local Name: Thoroko
Scientific Name: *Pisum sativum*
Farmers Group: Four Road Farmers Group

Introduction

Red Cowpeas are red-maroonish legumes, that are small in size. Virginia Nyaguthii, 90, has never forgotten her childhood experience with mashed red cowpeas. Her neighbour would make the meal, commonly known as mataha, and keep in her granary because she believed it was too tasty to share.

One day, Nyaguthii and her friends broke into the 'mean' neighbour's granary and ate some of her mataha stock. From that day, the neighbour stopped being mean.

Her story tells of a crop that was common and significant in the olden days, but which is now being replaced by other varieties such as green peas.

Utilisation

Traditionally, red cowpeas were prepared as mataha, a dish made by mashing boiled seeds with potatoes, especially the indigenous kamucomoro variety, or bananas. It was then served in portions and stored in an airy room. The meal would be eaten for about three days without going stale.

Mataha was eaten by everyone in the family, from the young to the old. Today, red cowpeas are often served as stew with chapati, irio or rice. The grains can also be boiled with maize to make githeri gia thoroko (githeri mixed with red cowpeas).

Red cowpeas leaves, which are a good source of vitamins, minerals as well as fibre, are also consumed as vegetables.

Seed Preservation

Traditionally, seeds were selected, dried and preserved in a dry clay pot which was kept covered until the next planting season. However, this technology is almost going extinct.

Growing red cowpeas

Seeds are planted in shallow trenches or small holes. Usually, the crop is ready for harvest in three months, while vegetables can be harvested from six weeks.

The crop thrives under warm-humid weather conditions. Nutritional Value Red cowpeas grains are believed to be a great source of protein, just like beans.

Being a small legume, it is believed to contain more concentrate of proteins than the larger legumes. The leaves are a source of vitamins and fibre.

Nutritionist's Remarks

It is easy to link the fact that mataha from red cow peas grains were filling because the legume is energy-dense. It is therefore suitable for people who have small stomachs, but need a lot of energy like children aged under two years.

This grain is also rich in protein, a nutrient that helps in building and repairing body tissues. Red Cowpeas' leaves are rich in fibre meaning they aid digestion and ease stool mobility and that is why, they are associated with 'cleaning' the digestive system.

Laboratory Analysis

Lab no	Sample Description	Select Test	Methodology	Units	Results
30046/19	Red Cowpeas	Total ash*	KS-2160	%	3.34
		Crude fat*	ISO 6492	%	1.26
		Crude protein *	KS ISO 5983-1:2005	%	23.18
		Crude fibre*	ISO 6492	%	14.95
		Moisture*	ISO 6496	%	9.64
		Dry matter*	KS-63-01	%	90.36
		Carbohydrates*	KS-63-01	%	47.63
		Energy kcal/ lOOg*	KS-63-01	kcal/ lOOg	322.56
		Vitamin A~	A0AC 992.06	ug/Kg	2.2
		Iron (Fe)*	Spectroscopy (MP-AES)	mg/Kg	55.89
		Zinc (Zn)*	Spectroscopy (MP-AES]	mg/Kg	34.66
Comments:					

RED MILLET

Local Name: Ugimbi, pek, enguruma, obulle, ngákima
Scientific Name: *Pennisetum glaucum*
Farmers Group: Kampi Farmers Group

Introduction

Just as the name suggests, this millet variety's grains are red in colour. They are tiny in size. The plant looks like grass, which grows to a height of about 45cm when mature.

Utilisation

Red millet can be prepared as ugali, non-fermented or fermented porridge (ucuru wa mukio) and as traditional brew (busaa), among others. Red millet porridge was common for new mothers. The millet flour would be blended with others from cassava or maize to enrich it. The porridge is believed to increase milk production among breastfeeding mothers thus positively impacting on babies' health. This kind of healthy feeding would make new mothers regain energy faster after birth, resuming home chores such as fetching water and firewood in a month.

Sometimes the porridge would be a complete meal for the whole family. It was a favourite as a lunch meal, whereby, families would drink porridge and resume farm work. It was satisfying and energising just as a solid meal. While the grains are human food, millet stems and leaves are food for livestock.

Medicinal

Red millet meals were also common among newly circumcised boys, especially among the Kalenjin people. It was believed that red millet-rich meals helped the initiates heal faster. This belief still stands to date and new initiates are fed on red millet porridge and ugali. For this reason, red millet prices often shoot up during circumcision period.

Seed Preservation

Traditionally, red millet seeds were preserved by adding ash and then storing them in a clay pot, which would remain covered until the next planting season.

Growing Red Millet

In the past, farmers did not use herbicides. Instead, they would burn weeds as a way of land preparation. Red millet seeds would then be broadcasted. Usually, the crop would be ready for harvest after three months.

Red millet is best grown on fertile land, and application of organic manure boosts production.

Barter Trade

In the olden days, red millet was used as a medium of exchange. Farmers from Bunyore, western Kenya, for instance, would exchange clay pots for the millet. This business thrived during the harvesting season and the practice was common among other communities too, with farmers exchanging cereals for various goods.

Stronger Taste

Compared to hybrid varieties, indigenous red millet leaves a strong, sour taste on the throat after swallowing either as ugali or porridge.

Nutritionist's Remarks

It is advisable to ferment red millet and other plant-sources of iron before consumption. This is because plants give non -haem iron which is not easily absorbed in the body. Therefore, such foods needs to be fermented to convert the noh-haem iron to haem form. Alternatively, Consumers are advised to add citrus by squeezing lemon juice to foods with non-haem iron so that it can be converted to haem. Eating Citrus-rich fruits after a non-haem iron-rich food also helps in conversion to haem.

Red millet is energy-dense and therefore, gives energy to the bodies of new mothers, which is used in producing milk. It is for this reason that it is associated with increasing breast milk production. Red millet contains zinc,

which is a small mineral with many functions. It catalyzes many biological reactions and helps the body to function normally. Zinc helps in boosting immunity, and enhancing sexual maturation and improving reproduction Zinc helps in regulating storage and release of insulin in the body; thus zincrich foods are good for people living with diabetes.

Laboratory Analysis

Lab no	Sample Description	Select Test	Methodology	Units	Results
30047/19	Red Millet	Total ash*	KS-2160	%	1.90
		Crude fat*	ISO 6492	%	0.75
		Crude protein *	KS ISO 5983-1:2005	%	7.72
		Crude fibre*	ISO 6492	%	3.75
		Moisture*	ISO 6496	%	11.55
		Dry matter*	KS-63-01	%	88.45
		Carbohydrates*	KS-63-01	%	74.34
		Energy kcal/ lOOg*	KS-63-01	kcal/ lOOg	367.52
		Vitamin A~	A0AC 992.06	ug/Kg	2.9
		Iron (Fe)*	Spectroscopy (MP-AES)	mg/Kg	38.24
		Zinc (Zn)*	Spectroscopy (MP-AES]	mg/Kg	20.83
Comments:					

"Seeds are common goods, and just like air they are provided by nature for all of us"

Daniel Wanjama

About the Writer

Rachel Kibui is a Kenyan-based journalist and communication consultant. She is especially passionate about writing on Agriculture, Food Security, Nutrition and Development matters. Rachel has written other publications including 'Farm to Fork' for EU-United Nations Development organisation. She has also consulted for other organisations including USAID.Besides, Rachel publishes with Nation Media Group, East and Central Africa's leading newspaper In 2017, Rachel was given an honorary award by USAID for Excellence in Agriculture Journalism.

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