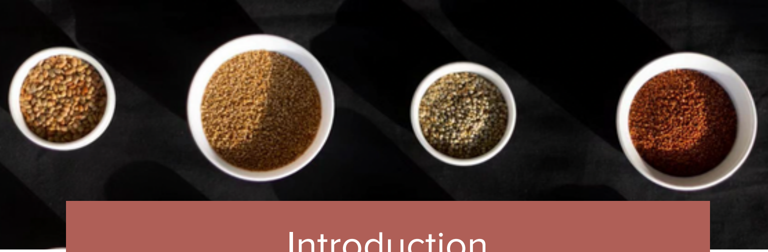
SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK
A GLOBAL INITIATIVE FOR THE UNITED NATIONS

INTERNATIONAL YEAR OF MILLETS 2023

Millet Cookbook

South Africa Finger Millet,
Phindokuhle Phakathi,
IYM Youth Photography Contest Winner



Introduction

The United Nations declared 2023 as the International Year of Millets (IYM 2023) and named the UN Food and Agriculture Organization (FAO) as the lead agency for celebrating the Year in collaboration with other relevant stakeholders. The objective of IYM 2023 is to raise awareness of, and direct policy attention to, the socio-cultural, nutritional, and environmental benefits of millet cultivation. The Year will also promote their potential to provide new sustainable market opportunities for producers and consumers.

Millets can grow on arid lands with minimal inputs and are resilient to changes in climate, rendering them an ideal solution for countries to increase self-sufficiency, reduce reliance on imported cereal grains, and adapt to adverse and changing climatic conditions. Millets are highly nutritious, rich in protein, fiber, and a number of vitamins and minerals. They are also free of gluten and a good choice for anyone with gluten intolerance. Further, millets have been an integral part of traditional cuisines in different communities across the world, although their prominence in the dietary composition has declined over the past few decades. Thus, driving awareness and encouraging consumption of millet will have substantial impacts on improved health, environment, and income in communities around the world, as well as revive the diminishing cultural values which are all core to the realization of the SDGs. To celebrate the IYM 2023 and the many culinary uses of millet, the SDSN hosted a webinar series and photography contest, both of which are highlighted in this cookbook.

Paul Newnham

History of Millets

Paul Newnham, Director of the SDG2 Advocacy Hub Secretariat and Coordinator of the Chefs' Manifesto, opened by presenting important ways millets can address pressing global challenges. Globally, around 3 billion people suffer from some element of malnutrition, while at the same time climate challenges threaten food security. ⅓ of food is lost or wasted, and agriculture contributes up to ⅓ of greenhouse gas emissions, requiring us to transform our food systems.

Millets offer one great solution and need to be part of the discussion. They were one of the earliest crops to be domesticated and hold a rich history and cultural place in many cuisines. The world's current top producers are India, Nigeria, Niger, and China; however, millets only account for 3% of the global grain trade. In addition, millets are climate resilient and can offer good yields even in challenging conditions, making them a solution for food security and to safeguard the livelihoods of farmers. They require significantly less water to produce than rice, and mature in half the time as wheat. Demand for millets has declined in recent decades, following the global expansion of wheat, rice, and maize. Newnham said we have yet to tap the "unlimited potential of these ancient grains." The many different varieties of millet each have their own nutritional values, important cultural significance, and culinary use. Everyone has a role to play to increase the cultivation of and trade in millets, which further can support economic growth for some smallholder farmers worldwide.

Chef Manisha Bhasin, Corporate Executive Chef at ITC Hotels, shared recipes from her more than 30 years of putting local ingredients onto plates. Chef Bhasin noted that India consumed a lot of millets until the 1960s Green Revolution, when it began to decline in favor of wheat and rice. Today, Chef Bhasin is using millet in ways that respect its rich cultural and culinary history, but also bring in new innovations and flavors. She demonstrated how to prepare Millet and Jackfruit Haleem (see page 6), and also suggested incorporating millets into yogurt as an alternative to granola, using millet flour in breads and pancakes, and using millet instead of breading for fish and chips. Dr. Chubbamenla Jamir, Co-Lead, Mountain Agriculture Thematic Working Group, Himalayan Universities Consortium, moderated the event.

Rebbie Harawa

Sustainability of Millets

Dr. Rebbie Harawa, Country Representative for Kenya and Regional Director for Eastern and Southern Africa of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), began by discussing how crops, like millets and sorghum, can help build resilience and transform food systems, while generating a variety of co-benefits. Dryland cereals (millets and sorghum) and grain legumes (groundnuts, pigeon peas, chickpeas), are good for both people and the planet because they are nutrient-dense and are adaptable to climate change, drought conditions, and low nutrient soils. In addition to being affordable plant-based proteins, sorghum, pearl millet, and finger millet are low on the glycemic index, provide daily requirements for iron and zinc, have high fiber content, are gluten free, and rich in antioxidants. As a matter of fact, finger millet has three and thirty times more calcium than cow milk and maize, respectively.

Millets are increasingly important all over the world. Many lifestyle diseases, including diabetes, hypertension, and anemia, can be avoided with the introduction of millets to the diet. Millets require significantly less water and fertilizer to grow due to their drought tolerance and ability to thrive in poorer soils, and can be used for livestock and malting, as well. The ICRISAT plans to continue increasing awareness of the sustainability of millets at the India-Africa International Millet Conference to be held in Nairobi later this year.

Chef Pierre Thiam, Executive Chef of Nok by Alara (Lagos, Nigeria), Signature Chef of the Pullman Hotel (Dakar, Senegal), Executive Chef and Co-Owner of Teranga (New York City, USA), shared recipes using fonio, an ancient variety of millet mainly consumed in West Africa. Chef Thiam explained that he is using fonio and other West African crops in his restaurants and company, Yolélé, bringing these underutilized crops to the global market. He demonstrated how to prepare a fonio and mango salad (see page 7) and fonio chocolate pudding (see page 8). For additional recipes, see the Yolélé and ICRISAT cookbooks. Chef Thiam concluded by emphasizing the importance of using underutilized crops, like millets, to transform the global agricultural system to one that is sustainable, resilient, and economically beneficial to local communities. Lauren Barredo, SDSN Chief of Staff, moderated the event.

Jessica Fanzo

Nutritional Benefits of Millets

Professor Jessica Fanzo, Columbia University Climate School, explained that millets do not require a significant amount of inputs; are integral to ancestral traditions, cultures, and Indigenous knowledge; and can create decent jobs for women and youth through innovative processing and marketing opportunities. Millets are also important for nutrition, contributing positively to both human and animal health, as well as thriving, sustainable agrifood systems.

There are many different types of millets used and grown around the world, including sorghum, foxtail, pearl, barnyard, guinea, fonio, and finger millet, which vary in their nutritional content, texture, color, shape, size, taste, agronomic practices, and daily use. When compared to other staple crops, such as rice and maize, studies have shown that many millets have higher protein, iron, and zinc content. When comparing nutritional yields, climate resilience, and price, Professor Fanzo and fellow researchers have found that across agro-ecological regions in India, for example, rice, the dominant crop of the region, is the least land efficient for providing iron and most sensitive to rainfall variability. Sorghum and maize provide high nutritional yields, while small millet is most resilient to climate variability.

Some studies suggest that millets have potentially important roles in contributing to human health because they have antioxidant properties and are anti-hypertensive, anti-inflammatory, antibacterial, and antimicrobial; they are important in reducing cholesterol, are low on the glycemic index, and promote healthy gut microbiota; they also have anti-carcinogenic potential. While the contribution of millets to human health is promising, increased research and resources are required to address the lack of accessible milling technology, declining seed quality and the need to ensure that processing and post-harvest storage systems minimize the contamination of millets that can negatively affect the health of consumers. Professor Fanzo concluded by highlighting the importance of diversifying the crops we grow and foods we eat to sustainably transform local agrifood systems for better production, better nutrition, a better environment, and a better life, leaving no one behind. Dr. Chubbamenla Jamir, Co-Lead, Mountain Agriculture Thematic Working Group, Himalayan Universities Consortium, moderated the event.

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Chef Manisha Bhasin's

Millet and Jackfruit Haleem

Haleem is a type of stew widely consumed in South Asia. This dish is traditionally made with lamb or chicken, which could be substituted for the jackfruit, or chickpeas as well.

Ingredients

200 g Sorghum	30 g Ginger Garlic Paste	1 g Star Anise	3 g Allspice
100 g Pearl Millet	15 g Green Chili Paste	1 g Bay Leaf	3 g Garam Masala
100 g White Urad Dal	30 ml Refined Oil	1 g Caraway Seed	30 g Fried Golden Onion
30 g Cashews	40 g Deesi Ghee	15 g Red Chili Paste	5 g Coriander Powder
200 g Raw Jackfruit (Peeled & Diced)	1 g Cardamom	10 g Turmeric	Large Sprig Fresh Mint
	1 g Cinnamon	5 g Yellow Chili Powder	Salt to Taste

Directions

1. Soak millets overnight. Next morning, boil the sorghum, pearl millet, cashew nuts, and urad dal in excess water until all are cooked and soft. Drain and allow to come to room temperature. Ground all to a coarse paste and set aside.
2. Marinate the (peeled and diced) jackfruit with salt, half the ginger garlic paste, and half the green chili paste for 30 minutes.
3. Heat the oil in a frying pan and shallow-fry the marinated jackfruit on slow heat until cooked. Drain the excess oil away and once cool, pull apart the jackfruit into smaller strands.
4. Heat ghee in a deep, heavy-bottomed copper pan. Add the cardamom, cinnamon, star anise, bay leaf, and caraway, and allow to crackle. Add the remaining ginger garlic paste and chili pastes and sauté.
5. Add the powdered spices and cook on medium heat a few minutes, sprinkling water at intervals to avoid burning the spices. Cook until the fat separates.
6. Add the sorghum and millet paste mixture, followed by the pulled jackfruit. Gently mix to combine and season with salt.
7. Cook on very low heat for approximately 30 minutes, stirring gently at intervals with a wooden spoon.
8. Add the onions, coriander, and mint.
9. Finish with a drizzle of ghee, fried onions, and lemon wedge.

SERVINGS: 4 COOKING TIME: 140 MIN

INTERNATIONAL YEAR OF MILLETS 2023

Chef Pierre Thiam's

Fonio and Mango Salad

Grown and revered across West Africa for over 5,000 years, fonio is a gluten-free, nutritionally dense grain that is rich in minerals and amino acids with a low glycemic index.

This fonio mango salad is bursting with fresh herbs and lemon, and so easy to throw together it will become a weeknight staple! Bring it to summer picnics or whip up for a bright #MeatlessMonday dinner!

Ingredients

4 cups cooked fonio
Juice of 1 lemon (plus more to taste)
1 tbsp grated fresh ginger
1 tsp salt (plus more to taste)
Black pepper or red pepper flakes

1/3 cup olive oil
1 large ripe mango (peeled, pitted, and diced)
1/2 red onion (finely diced)
1 pint grape tomatoes (quartered)

1 cup diced cucumber (English, or Persian have best crunch and less bitter skin)
1 bunch mint (finely chopped)
1 bunch parsley (finely chopped)

Directions

1. To prepare the dressing, whisk together lemon, ginger, salt + pepper. Slowly pour in the olive oil and keep whisking to emulsify.
2. Combine the cooked and cooled fonio with all of the other ingredients in a large bowl.
3. Pour dressing over salad, toss, adjust seasoning to taste, and serve!

SERVINGS: 6 | PREPARATION TIME: 15 MIN | COOKING TIME: 10 MIN

Chef Pierre Thiam's

Fonio Chocolate Coconut Pudding

This chocolate coconut fonio pudding is dairy-free and lower in sugar than most packaged versions. It is easy to whip up, and has everything you want in a creamy chocolate pudding!

You can purchase fonio products from Yolélé and support biodiverse, regenerative, and climate-resilient farming systems! Learn more at yolele.com.

Ingredients

2 cups full-fat coconut milk (plus more as needed)
1 tsp vanilla extract
1/2 cup Medjool dates (pitted and chopped)

1/2 cup raw cacao powder (plus more for sprinkling)
1 cup cooked fonio
2 tbsp chopped cocoa nibs or dark chocolate (plus more for sprinkling)

2 cups fresh raspberries
3 tbsp honey
1 large mango (diced)
1 tbsp toasted unsweetened shredded coconut

Directions

1. Bring 1 1/2 cups water to a boil. Add fonio. Bring back to a simmer. Stir, cover, and remove from heat. Let sit for 5 minutes, then fluff with a fork and set aside.
2. Add coconut milk and vanilla to a small pot. Stir over medium-low heat for 2 minutes.
3. Add cacao and stir. Bring to a simmer over medium-low heat.
4. Stir in vanilla, shredded coconut, and cocoa nubs.
5. Fold in fonio. Cover and let thicken until the fonio has absorbed most of the liquid.
6. Turn off heat and let pudding cool. It should have the texture of chocolate mousse. If it's too solid, add more coconut milk.
7. Divide into 4 containers. Top with roasted mango, raspberries, shredded coconut, and cocoa nubs.

SERVINGS: 4

PREPARATION TIME: 20 MIN

COOKING TIME: 10 MIN