It is astonishing how little diversity makes its way into our world’s mainstream food systems: just 15 crops produce 90 percent of our food energy intake. Of those 15 crops, just four – wheat, rice, maize and potato – provide 60 percent of all calories. Given that we have an estimated 300,000 edible crop species globally, it is staggering that only about 200 (less than 0.1 percent!) are widely used in our international food chains. There is so much out there for us chefs to explore – literally hundreds of thousands of under-utilised ingredients!

For chefs, flavour is key. Ingredients are the source of our food, our vision and our work. As we translate these ingredients into a plate of wholesome food, we need to consider producers and farmers, the people who grow and provide our flavour palette. With the challenges of climate change increasing, producers are looking at foods of the future – nourishing and climate-friendly crops that we can work into plated magic. To survive these challenges, we need crops that are also agro-ecologically friendly.

Many useful and climate-friendly ingredients have been ‘discovered’ outside of their origins by chefs exploring global food cultures. Twenty years ago, ube, yuzu, and even tofu were not yet found on menus outside their regions of origin. One of the wonders of adopting ingredients from global food cultures is getting to know the crops
The Crop Trust is an international organisation based in Bonn, Germany with the unique global mission to ensure the conservation of crop diversity in genebanks, forever. The Crop Trust, the United Nations Food and Agriculture Organization (FAO) and other partners started the Food Forever Initiative in 2017 to raise awareness on the importance of safeguarding agrobiodiversity to build resilient food systems.

that get transferred along the way. Some of these crops have unique traits that make them especially powerful for driving the transformations of food systems. They might even become the lifeblood of the future.

Millets are one such example. Although usually classified as a grain, millets are actually seeds. They are nutritionally charged, packed with amino acids and energy.

In terms of flavour, they bring an interesting and delicious nuance with each and every variety. The major types of millets such as pearl, foxtail and finger millet, are quite well known. Minor millets, like burgu, fonio, barnyard and Guinea, are lesser known and often endangered. Bringing these threatened seeds to our plates is imperative for the resilience of our food systems. It is exciting to see all the possibilities chefs have to create sustainable plates of food, to encourage education and inspire positive changes in food systems.

The Crop Trust supports the international efforts to conserve mainly two types of millets: finger millets and pearl millets. ‘Finger millet is a highly nutritious, drought-tolerant crop, but one that doesn’t get the research attention it deserves. Finger millet can survive in soils with low levels of nutrients and has a short growing season that requires few inputs. Even though it is an important subsistence crop for small-scale farmers, particularly women in East Africa, finger millet is one of the most under-researched and under-funded cereal crops in the world.’

The Crop Trust
Favourite way to use millet diversity

In an Indian dessert called kheer, which is a softer version of rice pudding. I use barnyard millets instead of rice as I much prefer the creamier, softer texture that millets give. And it feels less heavy after eating it! Historically, millets have been used in Indian festivals around the time of their harvest. As much as this might seem ‘traditional’, it is also coming from a place of common sense and science. Using produce at its peak allows the ingredients to shine as it did for our ancestors. We can still learn from them!

Social
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My story with millets

After a lot of experience in kitchens and working with inspirational chefs all over the world, I returned to India with the dream of running my own restaurant. It is called ‘Together at 12’; ‘12’ because it’s on the 12th floor and ‘together’ as everything needs to come together to become something! Our space is run collaboratively and this extends out to our wider partners. We work with farmers, have guest chefs, corporations, brands. Anyone who wants to join in is welcome! Looking at what produce we wanted to use, going as local and sustainable as possible was our first principle.

During my research, I became increasingly enamoured with Indian produce. New ingredients I had never heard of, old ingredients I remember my grandmother using, they were all coming to my mixing bowl, which was incredibly inspiring! This of course led me down the path of food provenance: where have these foods come from, who was farming them and how? Importing food quickly became a no-go in our restaurant. We decided to go 100 percent local – everything from a tap to a tumbler is from India. The way to get to the most exciting ingredients is by talking to farmers and producers, finding out what they are growing, why, and importantly, when. Our menus are entirely based on what our farmers have on offer. They tell me what will be available in a week or even in three months, and I plan the menus accordingly. This way, we are not instructing the farmers how to farm, nor the seasons when to change. We work in harmony with people and nature, with the goal of a plate full of flavour and deliciousness!

Millets are easily accessible in India. They are on many menus, which is great because it means they are coming back to life. We love experimenting with millets: if you introduce them gently to diners, they get excited about the flavours and combinations and will ask questions, so I get the opportunity to chat to them and spread the message. It is making the ingredient accessible and delicious.

After a few months of the restaurant being closed during lockdown, we returned to our kitchen garden to discover millet growing wild and in abundance! With no care or water, it had survived and flourished. Given the tough nature of the plant, it is prized by farmers in arid climates and areas with unpredictable weather patterns. Many farmers even use it as a cover crop in orchards, because it is so hardy and good for the soil. The farmer I source from mixes her millets into different flours. Millets’ greatest gift is definitely its range of flavours. They are wildly different, and so you can use them in many dishes! As chefs, we love mixing flavours from different ingredients. This is something that excites us and helps us create beautiful plates – and millets are an exceptional tool in this area. It feels good to be working with an ingredient that is so good for the land, the farmer and the plate!

CALL FOR ACTION!

Be aware, be curious! Act responsibly.
MOKGADI ITSWENG

Region
South Africa

Favourite way to use millet diversity
I love a millet tabbouleh! Along with millet balls, which are like croquettes made of millet and aubergine, with a crispy crumb.

Social
@chefmokgadi

My story with millets
I believe that part of being a passionate chef is researching the space you are operating in and doing the investigation work! After many years in kitchens, my health started to suffer. I became aware of what kind of foods were making me unwell, and the journey took me all the way back to the source: to food farming and agriculture. I realised that it is so important to know where your food is from and to source the right ingredients, for the health of the planet and for the health of people. We often look at these separately, but they are inextricably linked. The health of the planet is the health of people!

Here in Africa, we are blessed with a lot of incredibly fertile land. Farmers and food producers are however badly affected by changing weather systems and large demand for water. Many of the water-thirsty crops we are growing are neither indigenous nor resilient enough. If you consider plants we ate a long time ago, for example before maize, you find that they are very drought resistant and tough, but also packed with nutrients, often less processed and incredibly good for us. I would like to see more of them on the shelves, in particular sorghum and millets! Can you believe that most of the millets in stores are for animal feed? Food-grade millets are around, but not widespread enough – it is a chore for people to find them. And if something is difficult to find, people will not cook with it. I feel my role is to use my platform to bring these ingredients back, and to teach people how to use them!

In our cultures, millets have a long history. If you talk to older generations about them, their faces light up. Millets are associated with traditional cooking and health. Mixing them with bambara nuts, making porridges with ground sorghum – our heritage has many millet recipes on offer. Bringing these back with a modern view and palate is a sure way to create a buzz around these ingredients. They are so incredibly important now because of climate change. Ask anyone in Southern Africa if they remember a year of drought that affected maize production and price – we all know those years. But ask people what crops are unaffected by these droughts and the answers are not so obviously known.

CALL FOR ACTION!

The challenge is finding millets right now, as most are currently used as animal fodder. I would advise chefs to look locally for a type of millet that is available and see if you can incorporate it into menus and on plates. Local is lekker (Afrikaans for ‘great’)! Play around with indigenous ingredients in the kitchen and get creative! Do lots of research, it is all out there for you to find. Once you open the door and walk down a more sustainable path in a kitchen, you will see that there are millions of new and exciting ingredients available.
At ICRISAT, I worked as Theme Leader for pre-breeding for four main crops: pearl millet, pigeonpea, chickpea and groundnut. In short, a pre-breeding expert is a breeder who uses special skills and knowledge to bring in novel variations from the untapped genetic resources, such as exotic landraces and wild species, into cultivated backgrounds for further use in crop improvement programmes.

Although pearl millet is better adapted to hot and dry climates, as well as infertile soils than other cereal crops, climate change will expose it to more adverse climatic conditions such as severe drought and heat stress. In the African and Asian ecologies, drought is this crop’s biggest challenge, while heat stress is more pronounced in North Western India and some Western African countries. Diversity within pearl millet is crucial as it will provide insurance against such scenarios and help develop new climate-smart varieties. These research endeavours will improve the cultivation of pearl millet in traditional and nontraditional areas, increasing the production and productivity of this crop in the arid and semi-arid regions.

Featuring pearl millet on menus across the globe will ensure both food and nutritional security. Compared to major cereal crops such as wheat, rice, maize and sorghum, pearl millet is more nutritious. It is a gluten-free grain with a higher quality of protein, vitamins, antioxidants, essential micronutrients (iron and zinc) and a balanced essential amino acid profile. Due to its high nutritional value, it is also known as ‘nutri grain’ or high-energy cereal.

Changing people’s dietary habits is the most challenging task and an important factor in determining a crop’s significance and prevalence. Chefs have the opportunity to create new millet recipes for different occasions and seasons. These recipes should be easy to cook, both in terms of time and ingredients as millets can easily replace the grains a household would normally have on hand and have the added benefit of a longer shelf life. Nowadays, people are more conscious of their health, however time is a major limiting factor to cooking healthy food on a daily basis. Chefs can provide inspiration for new recipes by including a combination of millets with pulses, suggesting pathways to achieve more nutritious diets to people around the world. Thereby, chefs can play an important role in increasing the acceptance of the crop as a more commonly recognised and utilised food. Essentially, chefs have the skills needed to develop recipes which are easy to cook with simple ingredients commonly available in most kitchens, with a focus on quick cooking times and maximising nutritional value.

Dr. Shivali Sharma
Pre-breeding expert at the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) / the Consortium of International Agricultural Research Centers (CGIAR)
Pearl millet is one of the world's most important cereal crops. The cereal is highly resilient to harsh climates, and is mostly grown under hot, dry conditions, where many other crops cannot take the heat. Having long been a significant component of cuisines from South Asia to West Africa, pearl millet is high in proteins, iron, calcium and other nutrients. Source: FoodForever

The adaptations of pearl millet to withstand extreme heat and drought are truly extraordinary. When there is a little moisture available, the seedling germinates and rapidly extends its roots far down into the soil to where water is available. Meanwhile the surface temperatures can climb above 50°C. In drought, the plant can stay dormant for long dry spells, bursting into growth once the rain returns.

Source: Crop Trust

<table>
<thead>
<tr>
<th>Svalbard Global Seed Vault holds</th>
<th>Global Seed Banks holds</th>
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<tbody>
<tr>
<td>21,448 pearl millet samples</td>
<td>6,264 pearl millet samples</td>
</tr>
<tr>
<td>6,125 finger millet samples</td>
<td>13,325 finger millet samples</td>
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Also known as bulrush or cattail millet, pearl millet holds the top positions in terms of both imports and production. It is a staple in many countries around the world, including Nigeria, India, and South Korea.