

Picking the fruits of the heritage tree



From our ancestral rituals to our fairy tales, from our traditional medicine to our mother's soulful cooking, culture is grounded in the nature that surrounds us. All around the world, plants, insects, and fungi have left a deep and meaningful footprint on religions, traditions, art and history. During the International Year of Plant Health, we celebrate and share the research that aims at keeping our plants healthy. On Heritage Day, we shall count stories that remind us how plants and their associated pests and pathogens have shaped humanity's cultural identities. Here are a few of these stories.

Joséphine Queffelec, Editor

The art of life

I've kept you
for sixteen years. We've bonded
through the recurring seasons as I
shaped
your undulating figure. Your
roots found the soil through the rocky crevices,
your branches embraced the frame of the wiry scaffold I'd built for you.
I cared for you, pruned you back and gave you water faithfully;
with gratitude, you yielded a crop of leaves
every Spring
and surrendered yourself
to this pot-bound existence. You may be
pampered and petit for a wild fig, but your gnarled and twisted trunk
tells of an austere, weathered upbringing, like that of
the ancient figs on the sun-baked koppies. Your sinuous silhouette now bears the
influence of my creative spirit — my initials are invisibly etched
into your knotted bark.
Take a bough,
patient bonsai.
You've grown
into the perfect
tree: one I saw
in the mountains
near where I grew up.

Steven Hussey, South Africa

Realities of collecting wild mushrooms cultivated by termites



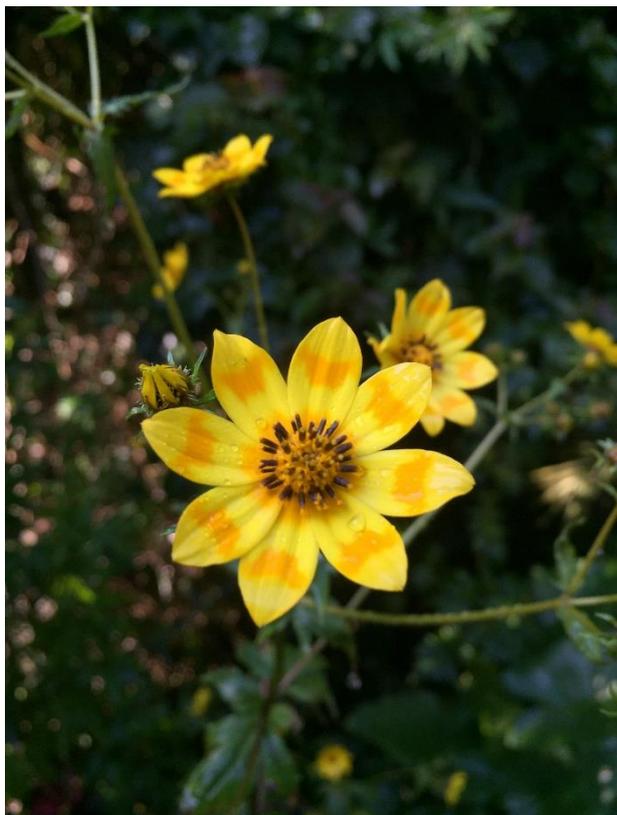
I first heard about the mushroom *Termitomyces umkowaan*, common in Kwa-Zulu Natal and known to the Zulu people as “Ikowe”, from my father who loved the area and its people. Later, my first mycology professor Susara J Truter, provided an animated account of this amazing fungus living in an obligate association with termites in one of the most beautiful examples of insect

agriculture. These remarkable insects are also amongst the most destructive pests of *Eucalyptus* grown plantations on the Kwa-Zulu Natal coast and thus relevant to my interest in tree health. Every year, after the first summer rains, these mushrooms grow from termite colonies and are enthusiastically collected by local people who are lucky enough to know where the nests occur. The mushrooms fetch a good price, are said to be amongst the most delicious of all fungi and known to some as ‘beef steak mushrooms’.

It is not surprising that when I first became a mycology professor, I was really keen to introduce my students, not only to the famous “Ikowe”, but also to share with them the importance of termites as tree pests. One Spring morning, on returning from a regular inspection of plantations in Kwambonambi, I was lucky to encounter people selling these mushrooms at the roadside. I was happy to pay a high price for some superb specimens and proudly presented them to my students when I returned to the laboratory that day. We set up a Bunsen burner and sauteed mushrooms in butter and had a great meal. And we left a few on the laboratory bench for further study. When we returned to the laboratory the next day, all we found was a slimy mass alive with worms. Imagine the disgust of the students who had eaten the mushrooms the previous day! I was sure that some of them would be sick knowing that they had probably eaten as many “worms” as the delicious fungus. This served as a great reminder that mushrooms are very short-lived and the insects (various beetles and flies) that feed on them must complete their life cycle very rapidly. Something to think about when one collects wild mushrooms. Another way to think of this is, although perhaps a little less appetizing, is the fact that the beetle and fly maggots are merely more protein and more delicious fungus!

Mike Wingfield, South Africa

Adey Ababa: A joy of spring and a symbolic flower of the Ethiopian New Year



Growing up as a little kid in Ethiopia, New Year (አንቁጣጣሽ in Amharic) to me was all about the bright yellow flower that blooms every September. The first of September (መስከረም ፩ in Amharic) on the Ethiopian calendar, which lies on the 10th or the 11th of September on the Gregorian calendar, marks the new year on the Ethiopian calendar, which is unique to the country. Meaning that Ethiopia follows the rarest Julian calendar and only welcomed the year 2013 E.C. on the 11th September 2020. White snow is one of the spirits that triggers our memories during the celebration of the western new year. Likewise, the yellow flower carpet that covers the Ethiopian highlands from the beginning of September to end of October is a spirit of change and harmony and ignites various memories in all

Ethiopians. Adey Ababa (*Bidens macroptera* or አደይ አበባ in Amharic) is a flower indigenous to Ethiopia and belongs to the family of *Asteraceae*. The Adey Ababa flower has a strong cultural and social value in the country. In its cultural sense, the yellow colour of Adey Ababa is the symbol of peace, hope, and love, which spices up the festivities. Interestingly, in the morning of the new year, groups of well-dressed children with traditional outfits express their good wishes by giving away Adey Ababa flowers and chanting beautiful songs to the neighbourhood. In return, they receive blessings and gifts from the elderlies. I still remember those nights on New Year's Eve I spent awake in excitement for the morning chants and the Adey Ababa giveaways with my siblings and friends during my childhood. Adey Ababa is also an attraction to many tourists who like to visit the colourful mountainous landscape of Ethiopia every year in September. Owing to its popularity, products, streets, restaurants, organizations, and a stadium have been named after the iconic flower.

Firehiwot Eshetu, Ethiopia

The cherry tree, home of God and symbol of the Japanese spirit



The cherry tree (or Sakura 桜 in Japanese) is the most important tree to Japanese people. It is a small deciduous tree (ca. 10 m in height) with a dense crown. In April, the tree produces white to pink flowers with five petals. The symbolism of the cherry tree has changed over time, but this tree always reflects the Japanese spirit. In ancient Japan, the cherry tree was believed to be the home of the god of the rice plant. Etymologically, “Sa” indicates the god of the rice plant and “Kura” means a place where God rests. So, “Sakura” literally means the home of the god. The trees bloom just before farmers start planting rice in the fields. People believed that the blooming of the trees was a sign that God was present and was resting in the trees.

After Buddhism was introduced into Japan in the sixth century, cherry blossoms became a symbol of transient life because the trees lose their petals within a week. Consequently, Japanese people know how to appreciate beauty in fragile things or even in tragedy itself. This idea holds a bright and a dark side. On the bright side, people try to live their short lives with all their might and to make it beautiful, like a cherry blossom. On the other hand, this idea was used to erase the fear of death in people, especially soldiers (or Samurai). Thus, the cherry blossom has significantly affected Japanese values. Today cherry trees are planted in schools and parks in Japan. Because the school year starts in April in Japan, cherry blossoms have become a symbol of starting a new life. Every year, people also have parties under the blooming cherry trees to celebrate friendship.

Hiroyuki Suzuki, Japan

Sacred bugs safeguarding the forest

Edible stinkbugs (*Encosternum delegorguei*), commonly known as “harurwa” in Zimbabwe have become synonymous with sacredness, and the legend surrounding their abundance in Nerumedzo Communal Area, in the South-east of Zimbabwe has become somewhat of a domestic tale at every homestead. These insects are mostly important to inhabitants of the Nerumedzo Communal Area because the “harurwa” are a source of livelihood in this area. They have become popular as a delicacy and they are prepared by roasting and salting, after their toxins have been squeezed out.

Contrary to what most stink bugs do to plants, the “harurwa” do not feed on plant leaves, they only survive on dew and rainwater. The “harurwa” only appear in the Nerumedzo sacred forest and this baffles most people, including the villagers, as the bugs only appear in winter and always show the same body size. Nearly nothing is known about their hibernating places, making it a mystery as to where they breed. Therefore, the edible insects are believed to be a “mana” from God.

The origin of the sacredness and symbolism behind this mysterious insect is explained in a myth about the forefathers of the Nerumedzo inhabitants, commonly referred to as “vaDuma” or the Duma people of the “Moyo” (heart) totem. It is believed that there is a complex interconnection between humans, forests, ancestors, and the “harurwa” in this communal area. These four factors participate in different ways to forest conservation in Nerumedzo Communal Area. When the inhabitants of Nerumedzo violate the traditions, if they do not hold a welcoming function for the insect every season, for example, or if they do not follow other traditions previously set by their fore-fathers, it is believed that the stink bugs will migrate away from the area. The only way to bring them back is by brewing traditional beer to appease the angry ancestors. The beer is then consumed during a ceremony led by the ruling clan to appease the ancestral spirits. If the ceremony is conducted properly, the insects will come back.

This insect is the major actor at the centre of tree conservation and protection in the Nerumedzo area. Today, the forest is one of the outstanding areas of Zimbabwe believed to house different types of mushrooms, medicinal plants, wild fruit trees and other non-timber forest products.

Privilege Makunde, Zimbabwe

The Elixir of long life, the world's best kept secret



Plants have been used for their medicinal and curative properties for centuries. And distillation is a fairly old and common way to extract curative properties from plants. Nowadays, the distillation process can take various forms and is mostly industrial and “impersonal”. However, the process of distillation behind the production one of the oldest plant-based liquors found in

the French Alps has a vivid history and personality. The Chartreuse liquor, also called “Queen of liquors” or “elixir of long life”, has an internationally known reputation. The green beverage became so popular that its name was given to a colour: “Chartreuse green”.

The liquor was initially used as a medicine and is still commonly used in the local culture. I once went to a doctor who prescribed me one glass of hot milk and two shots of chartreuse before going to bed when I struggled to sleep before my exams. To me, that was the best sleeping tablet ever made. I remember sleeping like a baby.

In addition to be used as a sleeping tablet by anxious students, the Chartreuse is commonly drunk at the end of a meal as a digestive. This way, the strong liquor helps digestion after a nice local potato gratin called “Dauphinois”, a serving of smooth little pasta named “raviole”, some Vercors blue cheese and a piece of walnut cake.

Aside from the medicinal properties, there is a very mystical dimension to this drink. The liquor is made by monks living a life of solitude and silence in a monastery in the Chartreuse mountain range. The liquor was intended to be used as a medicine and is made using almost all the medicinal plant known at that time, about 130 plants. However, the recipe remains a mystery and has been passed on among the monks for centuries. The monks have confessed that the recipe has been tweaked over the years because some local plants became too rare while others are now prohibited for consumption. Destruction of the biodiversity endemic to the French Alpes can, literally in this case, leave a bad aftertaste, and must be avoided. In a way, I find it beautiful that a liquor made from a secret recipe by silent and isolated monks, has achieved to spread around the globe to cure people.

Quentin Guignard, France

A gourmet ingredient, wait... insect pest?



Santander is a department located in the North-central mountains of the Colombian Andes. This region is particularly famous for its delicacies, including the “hormigas culonas” (big bottomed ants) or leaf-cutting ants (*Atta* sp.). Consuming leaf-cutting ants is a tradition that is over 500 years old and started with the Guanes indigenous people. Today, the ants have become a

gourmet ingredient consumed for its nutritious and so believed-aphrodisiac properties.

In rural areas, the “hormigas culonas” are trapped using bags, jars, pots, or sheets during the nuptial flights. The wings are removed and the clay pots ready to cook, fry or roast. During harvest season (spring), local stores are full of the final product that will be consumed as a snack or a great complement to a side dish. “Hormigas culonas” butter, with its nutty flavour and crunchy texture, is also exceptional to enjoy with a traditional arepa and coffee.

The “hormigas culonas” have however become one of the most devastating insect pest in agricultural crops and forestry plantations in South America. These eusocial insects use leaves to cultivate their symbiotic fungus that serves as the main food source for the colony. A mature colony can be found several meters underground and have hundreds or thousands of fungal chambers. This makes management particularly difficult as large areas must be covered. In Colombia, the control of leaf-cutting ants is based on an integrated pest management approach. Next time you visit Colombia, try this delightful gourmet ingredient as a way of helping to control a forestry pest in South America.

Ginna M. Granados, Colombia

La cigale



O my Cicadas,
The temperature is increasing, and your arrival is around the corner.
Synonym of holidaying, you will rhythm our summer and die at the beginning of winter.

O my Cicadas,
In Provence, summer is sunny and hot, males' volume turns up.
One of the world's loudest insect, 120 decibels can be reached up.

O gentlemen,
I know the purpose of your melody, you just want to invite ladies to your party,
You wear us out all summer long, by simply flirting in a tree, while we are drinking some Pastis and
Campari!
Thankfully, when nightfall comes, the temperature decreases, your cymbals are burned out.
Impossible for you to chirp, it is time to put down your drums, nocturnal chorus of crickets can then pop
out.

O Cicadas,
Do you know you carry some phytoplasma?
With your stylet, this harmful weapon, you can transmit fatal micro-bacteria,
As it gets hotter, your presence gets more power.
But please don't kill the lavender, our Provence's famous flower.

O famous Hemiptera,
You are part of the charm of our beloved French Provence.
A summer without you would be boring,
Even if you kept me awake every morning.

Elisa Pal, France

A locust flies on a full tummy



I am an African, and with this I pride myself. I am the son of a land that is rich in minerals, has the perfect climate, the most arable land and above all, has a people that is culturally diverse but yet unified in principles and sayings.

One of the primary goals of an African parent is to ensure that their family is well-fed, as food nourishes and energizes the body. Hence the Sepedi saying, “tšie e fofa ka moswane” (a locust flies on a full tummy). My childhood is filled with many

food memories. I spent all my schooling life in boarding school where we were fed lasagne, burgers, and jam on toast. But my fondest food memories are those during the hot December school holidays when my siblings and I would visit our grandparents at our homestead in Tzaneen, Limpopo. My grandparents lived on the land and they farmed an array of vegetables, including maize and pumpkin. Once the maize was mature, our grandparents would let us go into the field to harvest it together with the pumpkin and “morogo” (leaves from the pumpkin). The maize would then be milled into really fine powder and then cooked to make pap. This pap would be enjoyed with savoury “morogo”. If we were lucky, we would enjoy crushed ground nuts as an extra treat in the “morogo”. The pap and “morogo” duo go hand in hand as the “morogo” contains iron, zinc, antioxidants, vitamin A and vitamin C, and complement the low levels of calcium, magnesium, and iron in maize. “Morogo” tastes similar to many other leafy green vegetables such as spinach and kale. Many people enjoy their “morogo” prepared very simply with just some onions, tomatoes, salt, pepper and a little chilli for those who like a bit of heat. Occasionally during the growing season, the fields would be infested with locusts which can be maize pests. Although one generally views pests in a negative light, for us the locusts were considered a blessing, as my siblings would catch them to be enjoyed later as a snack while watching an “interesting” Rambo movie. The locusts were fried in a bit of oil and seasoned with salt and vinegar. The lessons I have learnt from this is that food need not be fancy to be loved and enjoyed. Sometimes it is the simple pleasures in life that are the best. It was during these simple meals that our relationships as siblings, children and grandchildren were strengthened. Another saying is, “tšie e phala morogo” (locusts are a better protein source than vegetables). This means that one should accept their situation and make the most of it even when it is not ideal.

Mahlane Godfrey Kgatle, South Africa

A gift from the mounds

I remember the excitement of hunting for the mushrooms *Termitomyces* during Christmas summer holidays that we sometimes spent on the farm of a family member in the Otjiwarongo region, 3/4 up the middle of Namibia, when I was young. If it rained around Christmas time, which might be some of the very first heavy summer rains after a long dry spell, the mushrooms would pop up around the termite nests that were scattered through the beautiful savanna of that area.

Holding onto the rails on the back of a slow moving bakkie as we drove through the veld you had to look carefully at each mound as you passed, peering through the Acacia thorn bush branches and yellow grass. These mounds are large - up to 2 meters or taller if I judge correctly. And rock hard. As children we would sometime break one open with a pickaxe and marvel at how hard they were, and the perfectly smooth large tunnels that ran like veins right through them. Much too large to imagine that it was built, or used, by termites. You had to spot the mushrooms soon after they emerged off course, otherwise they would be full of insects and become tough in the sun. But when you did, it was a feast.

The species is large, with caps that can be the size of a dinner plate. And there could be 10, 20 or 30 of them - maybe the numbers have grown with my fading memory of those days. But there were often many! If you carefully pulled it by its stem it would bring a long root with it, leaving a hole in the base of the rock-hard mound. We marveled at how such a soft mushroom body could push through that mound base.

Back at home, after washing, we would prepare for a feast. Large specimens could be cut in thick slices and directly fried on the fire, with a bit of salt and butter. I remember us adding Aromat to it... I can't imagine spoiling it like that today. There was enough left for butter fried sliced blocks to eat with a meat braai or on bread. The taste is not easy to describe - it is delicious, that is for sure. People say it has a meaty taste - but not quite like meat - much softer, and rich but not fatty. And with a texture that is firm, but melt-in-your mouth mushroom-like. After eating as much as you can, there would still be loads left. The remaining will be sliced into small blocks, lightly fried in butter and frozen for later use in soup or sauces. What a feast! I miss Otjiwarongo, December summer rain, and *Termitomyces* on the termite mounds!

Bernard Slippers, Namibia

Fishermen in the canopy



Cyttaria espinosae, commonly called “digüeñe”, is a fungus present in south-central Chile. The word “digüeñe” comes from the word “diweñ” from the Mapudungun language spoken by the Mapuche people. “Digüeñe” is a parasitic pathogen of the genus *Nothofagus* spp., that can affect tree branches and stems. The native forest and the presence of *Nothofagus* trees affected by “digüeñe” represent a piece of childhood for me, my ancestors and most people that live in southern Chile. In this part of the country, seasons are marked by rainy winters and dry summers. As rain leaves and spring starts, it is possible to find the “digüeñe” mushrooms in the native Chilean forests. Affected trees exhibit white globose fruiting bodies. As the mushrooms grow, their white colour gets lost and intense orange-coloured asci become visible.

This mushroom is very popular in Chile and is usually enjoyed in salads. Many Chileans wait all year for September to be able to buy “digüeñe” at market stalls on the streets.

The collection of this mushroom demands great effort, because people must use long rods to reach the branches where they are found. This traditional way of collection is important to me, as this practice is passed on through generations. I especially remember it from my mother's stories about which of her siblings could reach the branch carrying the most mushrooms. She was the short one and would often lose but the tallest brother would often be the winner. This tradition also represents outdoor play for me, but this practice seems less appealing to new generations. This form of collection remains a genuine practice that has, unfortunately, been put at risk due to the recent and indiscriminate felling of native forests. Despite the obstacles, this tradition remains typical of my country. In Cunco, within the region of Araucanía, people now organize a “digüeñe” gastronomic festival aimed at expanding the use and production of the mushroom.

Myriam Solis, Chile

Tulsi, the wonder herb from Ayurveda



Tulsi (*Ocimum tenuiflorum*) is a mint native to the Indian sub-continent. This plant has both spiritual and medicinal significance in the Indian culture. In Hinduism, Tulsi is regarded as the avatar of Lakshmi – the goddess of wealth and prosperity. During our Hindu prayer sessions, we offer leaves of Tulsi along with various other flowers to the deity. The woody stem of a matured Tulsi plant is also used to

make prayer beads which I keep in our home. Like in many Hindu houses, we plant Tulsi in our courtyard to exploit its spiritual and medicinal properties.

At home, Tulsi is a part of my herbal first aid box. Formal benefits of Tulsi are listed by various alternative medicinal systems such as Ayurveda – the book of Hindu healing science. In Ayurveda, *Tulsi* is known as “Surasa” and is recommended to treat several diseases such as arthritis, bronchitis, cancer, diabetes, gastrointestinal ailments, malaria, skin diseases, and many more.

Tulsi has a warm but sweet taste, with notes of peppermint, cloves, and lemon (depending on the variety) with a refreshing minty aroma. Therefore, in my family, we often use Tulsi for preparing tea (along with other herbs) which refreshes our sore throats. Tulsi has soothing and antimicrobial properties. As a child, squished leaves of Tulsi were often handy for curing my bruises or burns. And I remember my mom and cousins using Tulsi leaves in their face masks.

Recent scientific studies have attested the medicinal benefits of Tulsi. This plant is packed with a diverse number of organic chemicals that are responsible for its medicinal properties. In India, and globally, organic farmers are equally benefitting from Tulsi. Extracts of Tulsi along with other plant extracts (such as Neem - *Azadirachta indica*) are used for controlling foliar pests and pathogens while dried leaves enhance the shelf life of stored crops. Therefore, Tulsi can surely be classified as a ‘wonder herb’ with medicinal, pesticidal and spiritual significance.

Tanay Bose, India

The Oak tree: Guardian of the untamed Celts

In the misty north western France is a region that the romans conquered but never tamed. For centuries, this region, called Brittany, has conserved a strong connection with its Celtic ancestors and has never forgotten its traditions. This land, covered by luscious forests and draped by a grey sky, is my home. It is a land of mystery and legends where each cave, stream and woodland is inhabited by spirits, fairies and korrigans.

Among the spirits of the forest, no figure is more meaningful to the Celts than the Oak king. Usually the tallest tree in the forest, the oak is often struck by lightning while its roots grow deep beneath the earth. For this reason, the oak serves as a bridge between the world of the dead, the underground; the world of the living, the earth; and the world of the gods, the sky.

The oak also holds great significance for our traditional healers called druids. The name druid actually comes from the Celtic word for oak, “Duir”, and means “the one that receives strength and wisdom from the oak”. The mistletoe found in an oak after it has been struck by lightning was also thought to be the most powerful of all mistletoes when used in traditional medicine. Shortly after the winter solstice, the druids would harvest this mistletoe blessed by the gods using a ceremonial golden sickle.

Like many other cultures, the Celts have a long history of being conquered and asked forcefully to give up on their traditions, languages and believes. Today, the Celts are dispersed across Western Europe, in Galicia (Spain), Brittany (France) and the British Isles. We speak many different languages and belong to very different cultures. But the spirit of our ancestors is there to unify us. This spirit is strong, mighty, and untamed. To me, this spirit lives on in the Oak King.

“In the woods stands the Oak King
With his roots, our lands he belts
He is struck for our blessing
He, who God, with thunder pelts

With his crown, makes the wind sing
From his acorns, our spirit smelts
Mighty and wise is the Oak King
Keeper of the untamed Celts”

Joséphine Queffelec, France

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