FUTURE 50 FOODS

50 foods
for healthier
people and a
healthier planet

> *"Most of us might believe it's our energy or transport choices that cause the most serious environmental damage. In fact, it's our food system that creates the biggest impact."*
>
> Dr. Tony Juniper, CBE,
> Executive Director for Advocacy, WWF-UK

OUR WORLD IS FACING AN UNPRECEDENTED CHALLENGE

By 2050 the world population is predicted to increase to almost ten billion people whom we must nourish on a planet of finite resources. It is well-documented that to do this we need to transform our global food system – from the way we farm and fish to what we choose to eat. It is a complex task, and if we are to deliver nutritious food to all, everyone needs to play a part in making the food system more sustainable. Large scale, practical solutions are essential to make the required changes.

Globally we rely on a small range of foods. This negatively impacts our health and the health of the planet. Seventy-five percent of the global food supply comes from only 12 plant and five animal species. Just three (rice, maize, wheat) make up nearly 60 percent of calories from plants in the entire human diet[1]. This excludes many valuable sources of nutrition. While people may be getting sufficient calories, these narrow diets don't provide enough vitamins and minerals.

Dietary monotony is linked to a decline in the diversity of plants and animals used in and around agriculture (agrobiodiversity), threatening the resilience of our food system and limiting the breadth of food we can eat. Since 1900, a staggering 75 percent of the genetic plant diversity in agriculture has been lost[2]. In most Asian countries, the number of rice types grown has decreased rapidly from thousands to a dozen. In Thailand, for example, the 16,000 varieties once cultivated have dropped to just 37 varieties[3]. In the past century, the United States has lost 80 percent of its cabbage, pea and tomato varieties. This dependence on a limited pool of crop species leaves harvests vulnerable to pests, diseases and the impact of climate change.

Farming a narrow range of crops using intensive methods can have serious repercussions on our fragile natural ecosystems. Monoculture farming, which is the repeated harvesting of a single crop, and over-reliance on animal-based foods are threatening food security. Monoculture farming can deplete nutrients and leave soil vulnerable to the build-up of pests and pathogens. This requires applications of fertilisers and pesticides that can, if used inappropriately, damage wildlife and leach into water systems[4, 5]. Many types of birds, animals and wild plants cannot thrive in biologically degraded landscapes.

Reliance on animal-based protein sources puts additional strain on our environment and current agricultural practices are not sustainable in the long term. Total agriculture accounts for around a quarter of all greenhouse gas emissions, of which approximately 60 percent is due to animal agriculture[6]. Meat, dairy and egg production is more water, land and greenhouse gas intensive than plant production. It also contributes to pollution through liquid waste discharged into rivers and seas.

These problems seem insurmountable, but we believe that large scale change starts with small actions.

EATING TO IMPROVE THE FOOD SYSTEM

> *"Diversified diets not only improve human health but benefit the environment through diversified production systems that encourage wildlife and more sustainable use of resources."*
>
> Peter Gregory, Research Advisor,
> Crops For the Future

Knorr and WWF have a shared ambition to drive change, which is why we, in partnership with Dr. Adam Drewnowski, Director of The Center for Public Health Nutrition at the University of Washington, have collaborated to create The Future 50 Foods Report.

In a world cluttered with advice and pressure around what not to eat, we want to provide people with more food choices to empower positive change. For this reason, we have identified 50 foods we should eat more of because they are nutritious, have a lower impact on our planet than animal-based foods, can be affordable, accessible and taste good.

> *"By joining together with our partners, we believe we can shift the way food is grown and the foods people choose to eat, delivering significant, positive impact on the food system. Our mission is simple: make delicious, nutritious, and sustainable food accessible to all."*
>
> April Redmond,
> Global Vice President, Knorr

The list of Future 50 Foods, consisting of vegetables, grains, cereals, seeds, legumes and nuts from across the globe, has been developed to inspire greater variety in what we cook and eat. It is intended to enable three important dietary shifts. First, a greater variety of vegetables to increase intake of vitamins, minerals and antioxidants. Second, plant-based sources of protein to replace meat, poultry and fish, resulting in reduced negative impact on our environment. Third, more nutrient-rich sources of carbohydrates to promote agrobiodiversity and provide more nutrients.

Not all 50 foods are currently easily accessible. Working together with partners allows us to make these foods more commonly grown and more widely eaten.

By making a conscious choice to consume more of the Future 50 Foods, we take a crucial step towards improving the global food system. Swapping staples like maize and white rice for fonio or spelt increases the nutrient content of a dish while contributing to greater agrobiodiversity, making our food supply more resilient. It also helps safeguard these ancient variants for future generations.

> *"The search for nutrient-dense plants has taken us toward ancient grains, heirloom plant varieties, and less commonly cultivated crops. There is a good reason for rediscovering some of the forgotten plants."*
>
> Dr. Adam Drewnowski,
> Director of The Center for Public Health Nutrition,
> University of Washington

These 50 foods are some of the many that we can and should eat. According to the Food and Agriculture Organization of the United Nations (FAO), there are between 20,000 and 50,000 discovered edible plant species, of which only 150 to 200 are regularly consumed by humans[7].

Future 50 Foods is the beginning of a journey and a way for people to make a change, one delicious dish at a time.

CRITERIA FOR THE FUTURE 50 FOODS

The Future 50 Foods have been selected based on their high nutritional value, relative environmental impact, flavour, accessibility, acceptability and affordability. This set of criteria is modelled after the Food and Agricultural Organization's (FAO) definition of sustainable diets. Some of the Future 50 Foods have higher yields than similar crops, several are tolerant of challenging weather and environmental conditions, and many contain significant amounts of critical nutrients. Each has a story to tell.

See the full methodology at the end of the report.

The discovery of a new dish does more for the happiness of the human race than the discovery of a star.

As famously said by French gastronome,
Jean Anthelme Brillat-Savarin

FUTURE 50 FOODS IS THE BEGINNING OF A JOURNEY AND A WAY FOR PEOPLE TO MAKE A CHANGE, ONE DELICIOUS DISH AT A TIME.

ALGAE

Algae are nutrient-rich and critical to our existence on the planet. They are responsible for half of all oxygen production on Earth and all aquatic ecosystems depend on them. They contain essential fatty acids and are an excellent source of antioxidants. Algae can be rich in protein and have a meat-like umami flavour, making them a potential replacement for meat[8, 9].

Category | **Algae**

1 Laver seaweed

Porphyra umbilicalis

Laver is a variety of red algae known for its link to Japanese cuisine. Called 'nori' in Japan and most commonly used for wrapping sushi, laver is heralded for its exceptional nutrient content and ability to bring out the umami flavour in foods. Umami is the flavour profile that meat provides and is commonly missed in plant-based dishes.

Edible seaweed cultivation has been suggested to be a game-changer[10] in the food system. Because it lives wildly in the water, laver seaweed can be grown and harvested throughout the year and does not require pesticides or fertilisers. Laver seaweed is rich in vitamin C and iodine[11].

Laver is often consumed dried as a topping for soups and salads. In Korea, it is eaten dried as a savoury snack and is referred to as 'gim'. In the UK, especially in Wales, laver is used to make laverbread, a dish in which the fresh seaweed is slow-cooked, seasoned and traditionally served with hot, buttered toast. Some say people in Wales have been eating laver since the first inhabitants arrived; others say it was introduced by the Vikings.

Category | **Algae**

2 Wakame seaweed

Undaria pinnatifida

Cultivated for centuries by sea farmers in Korea and Japan, deep-green coloured wakame is rich in nutrients and easy to grow. Maintaining similar properties to other seaweeds, it can be harvested all year round, grows rapidly without the use of fertilisers or pesticides and supports the water's biological balance. Beyond Asia, it is farmed in sea fields in France, New Zealand, California and Argentina.

In addition to containing a variety of vitamins and minerals, wakame is one of the few plant-based sources of the omega 3 fatty acid EPA (eicosapentaenoic acid), which is found almost exclusively in fatty fish that feed on algae[12]. Most commonly sold dried and then rehydrated, wakame has a savoury flavour and satin-like texture. It can be chopped and added to soups or fried and thrown into salads, stir-fries, and side dishes for a salty, umami flavour.

"We work with hundreds of thousands of smallholder farmers in many countries in sub-Saharan Africa to garner the benefits of nitrogen-fixing grain legumes. It's no surprise that many legumes made it onto the Future 50 Foods list."

Professor Ken Giller, Wageningen University, N2Africa

N2Africa is a research-in-development project focused on putting nitrogen-fixing to work on smallholder farms in sub-Saharan Africa[13]

BEANS & PULSES

Beans and other pulses are members of the legume family. They can convert nitrogen from the air and 'fix' it into a form that can be readily used by plants. More than environmental superheroes, beans offer us a rich source of fibre, protein and B vitamins. They are eaten in many dishes all over the world and have a mild flavour and meat-like texture, making them a sensible swap for meat in stews, soups and sauces.

Category | **Beans & Pulses**

3 Adzuki beans

Vigna angularis

Adzuki beans are rising in popularity due to their versatility, nutritional content and flavour. Small and brownish-red, they are the nutrient-rich fruit of drought-tolerant plants, meaning they require less water than many other crops and can produce high yields, even on dry land.

They are commonly enjoyed in Japan and other parts of Asia, thanks to their mild and sweet, slightly nutty taste and reputed health benefits. They are full of antioxidants[14] and packed with protein. They also contain high levels of potassium, B vitamins and fibre.

Adzuki beans are often cooked, puréed and sweetened to make a paste that can be used as a filling in sweet treats, added to soups and mixed with rice as a tasty side dish. They are also great in salads and stir-fries.

4 Black turtle beans

Phaseolus vulgaris

These powerhouses of the legume family are regularly listed as 'superfoods' due to their high protein and fibre content.

Particularly popular in Latin American cooking, black beans are small and shiny with a subtly sweet, mushroom-like flavour. Their dense, meaty texture makes them perfect for stews and curries, or as a substitute for ground beef in any dish.

They are often combined with grains like brown rice or quinoa, seasoned with onions, garlic and spices and served as a side dish, or topped with vegetables for a full meal. Whether bought canned or dried, the water used to store or cook the beans can be added to dishes for extra earthy flavour.

5 Broad beans (fava beans)

Vicia faba

When in bloom, the sweet-scented flowers of the broad bean plant call to honeybees – the vital pollinators responsible for one in three mouthfuls of food. Broad beans also function as a cover crop, grown between harvests to protect the land. Cover crops help supress weeds, enrich the soil and control pests. These hardy and adaptable plants can grow in most soils and climates.

The beautiful green beans have a sweet, grassy taste and buttery texture. They are protected by a pod that can be eaten raw when the plant is young. As the plant ages, the pod hardens and is not commonly consumed due to its texture and bitter flavour. They make a nice protein and fibre-packed addition to risottos, soups and stews. They are also great as a side dish seasoned with rosemary, thyme and pepper.

Category | **Beans & Pulses**

6 Bambara groundnuts/Bambara beans

Vigna subterranea

Although not a commonly known crop in many parts of the world, Bambara groundnuts are the third most important legume in Africa, after peanuts and cowpeas. It is a legume but tastes like, and is eaten like, a nut. It has gained interest amongst many sustainable food experts because it is an underutilised, nutritious crop that can grow in challenging environments, even in highly acidic soils.

Local African names for Bambara groundnuts include jugo beans, ditloo marapo, indlubu, hlanga, njugo, nduhu, phonda, and tindhluwa. The name Bambara groundnut originates from the Bambara tribe that lives throughout Mali, Burkina Faso, Guinea and Senegal. They are grown mainly across these regions in sub-Saharan Africa and more scarcely in South Africa. They are also cultivated across Southeast Asia, primarily in southern Thailand, West Java and parts of Malaysia[15, 16].

Growing Bambara groundnuts has many advantages, making them a model sustainable crop. It has nitrogen-fixing nodules, which means the roots fix nitrogen from the air which the plant uses as a fertiliser to produce the nutritious bean. Some of the nitrogen is returned to the soil, thereby improving fertility and helping boost yields when intercropped with other plants. In Malaysia, Bambara groundnuts are grown to support the growth of delicate young trees on its rubber plantations.

Bambara groundnuts also boast an impressive nutrient profile, from the perspective of both the farmer and the consumer, with their unique combination of carbohydrates, protein, fibre and many vitamins and minerals. They have less fat than peanuts, allowing them to have a higher concentration of nutrients per calorie. Compared with other legumes they have a high amount of the essential amino acid methionine. The Bambara groundnut is considered 'complete food' because of the balance of macronutrients accompanied by the amino acid and fatty acid content.

Bambara groundnuts can be boiled, roasted, fried or milled into a fine flour. The pods are hard and need to be cracked open to get the edible seed. They are often boiled to make them easier to open and the seeds are eaten as snacks, either plain or with a seasoning. In East Africa the beans are roasted and puréed to be used as a base for soups. Their flavour is similar to peanuts but a bit sweeter and not as oily[17]. This versatile, resilient legume deserves to take a prime spot on your plate.

Category | **Beans & Pulses**

7 Cowpeas

Vigna unguiculata

There are many types of cowpeas; some are more commonly eaten than others. Catjang cowpeas are a less common variety. They are native to Africa but now grow in warm regions around the world, including Latin America, Southeast Asia and the southern part of the United States. Commonly cultivated for their nutty taste and high nutritional value, the seeds are little energy powerhouses packed with minerals and vitamins, including folate and magnesium.

Protein-packed cowpeas are a quick-growing cover crop and are drought hardy and heat-tolerant. They are also a strong nitrogen-fixer, capable of thriving in poor soils and self-seeding[18]. Cowpeas are also able to withstand grazing pressures from livestock.

Cowpeas make a hearty, thick soup while their leaves can be enjoyed in the same ways as other leafy greens. The pods can also be eaten when young and are used in stews. With their outer coating removed, the seeds can also be ground into flour and used to make deep-fried or steamed patties. In Senegal, Ghana and Benin, the flour is used in crackers and other baked goods.

Category | **Beans & Pulses**

8 Lentils
Lens culinaris

Originally from North Africa and Asia, this cousin of the pea was one of the world's first cultivated crops. Requiring little water to grow, lentils have a carbon footprint 43 times lower than that of beef[19].

There are dozens of varieties, all with slightly different earthy, peppery or sweet flavours. Lentils are packed with protein, fibre and carbohydrates. Puy lentils keep their shape and texture after cooking and are often served with fish or roasted vegetables. Red and yellow lentils dissolve into a rich purée and are delicious mixed into stews, curries and soups. They are also used to make veggie burgers. All lentils are simple to cook; pre-soak if necessary, then boil in water or stock/broth (three to one ratio of water to lentils) for 15 to 20 minutes for whole lentils and five to seven minutes for split lentils.

9 Marama beans
Tylosema esculentum

Native to the Kalahari Desert in southern Africa, marama beans and their edible tuberous roots are drought-tolerant and adapt well to harsh environments and damaged soils. They are thought to be an ancient food, eaten for as long as people have been in southern Africa and are now being successfully cultivated in Australia and the US.

Their oil, which is a good source of essential fatty acids, can be used for cooking as well as a dressing. Marama beans themselves can be boiled or ground into flour. They can also be used to make a milk drink. When roasted, they taste similar to cashews, making them a great addition to stir-fries, curries and other cooked dishes.

10 Mung beans
Vigna radiata

Originally from Southeast Asia, mung beans were first grown in the US in the 19th century as livestock feed. Today, these tiny, tender beans are prized by people in Asia and beyond for their crisp, clean taste and ability to absorb flavours. They also contain protein, B vitamins and various minerals.

Natural nitrogen-fixers, the plants thrive in sunny conditions and are considered heat and drought-tolerant.

Mung beans are great with noodles, rice dishes, curries and stir-fries. They can even be scrambled like eggs or puréed to resemble ice cream. Their sprouts are nutritious too, adding crunch to salads and sandwiches with their sweet but earthy flavour.

Category | **Beans & Pulses**

11 Soy beans

Glycine max

Soy (soya) is a pivotal part of the world's food system. High in protein, soy has transcended its Asian origins to become the most widely grown legume across the globe. Cultivated for well over 9,000 years, soy was regarded by the ancient Chinese as a necessity for life. It was eaten as a source of protein and crushed for its oil, which now accounts for a large proportion of global vegetable oil consumption.

Soy's nutritional value makes it an undoubtedly powerful food. Raw soy beans contain 38 grams of protein per 100 grams[20], which is similar to pork and three times more than an egg. In fact, soy – which delivers more protein per hectare than any other crop – also contains vitamin K and B in addition to significant amounts of iron, manganese, phosphorus, copper, potassium, magnesium, zinc, selenium and calcium. Nutrient-packed soy comes in a variety of products and formats including tofu, soy milk, miso, tempeh and edamame.

Despite its versatility and nutritional value, three-quarters of all soy produced is not for human consumption, but rather for animal feed[21]. It takes a high volume of soy as animal feed to produce only a small amount of meat, which highlights the inefficiency in the food system. Poultry is the number one livestock sector that consumes soy beans followed by pork, dairy and beef[22].

The current and predicted steady increase in meat consumption poses major challenges to sustainable soy production. Cultivation of soy may drive deforestation, damaging natural ecosystems such as the Amazon, Cerrado and Chaco – home to spectacular wildlife like jaguars, giant anteaters and armadillos.

Progress is being made. The negative impact of soy production has been slowed by collaborative market initiatives like the Amazon Soy Moratorium, reducing soy-driven deforestation levels in the Amazon rainforest to almost zero. Unilever, Knorr's parent company, is actively working with other industries and NGO stakeholders to call for a halt in conversion of the Cerrado. Unilever is leading by example by buying sustainably certified soy oil for their products, such as Hellmann's mayonnaise, and by actively promoting sustainable sourcing standards.

Ultimately, lowering the demand for soy as animal feed is a critical lever for reducing the deforestation caused by soy production. Shifting to more plant-based foods, including soy, will help to reduce the demand for soy as animal feed, taking pressure off fragile ecosystems, while increasing availability of nutritious sources of protein.

CACTI

While often used as decorative plants in homes around the world, many species of cacti are cultivated for consumption. Also known as succulents, cacti store water, which allows them to grow in arid climates and tolerate drought. They also contain substantial amounts of vitamins C and E, carotenoids, fibre and amino acids. Edible cacti have long been a part of Mexican cuisine and the delicious young stem segments, usually called nopales, are the part most commonly used in recipes.

Category | Cacti

12 Nopales
Opuntia

Also known as the prickly pear or cactus pear, nopales are easy to grow and highly adaptive. They are widely cultivated in Central and South America, Africa and the Middle East, and are beginning to increase in popularity in Australia and Europe.

The fruit, flower, cladodes (flattened shoots rising from the stem of the plant) and oil of the nopal cactus are rich sources of nutrients, but they are not only valuable crops from a nutrition perspective. They also have potential for use as an alternative animal feed and to produce biogas[23] (a renewable energy source).

Some clinical studies suggest that nopales can even help with weight loss,[24] due to their low calorie and high fibre content, but the benefits are yet to be proven. They have also undergone trials with results suggesting that they could help relieve symptoms of alchohol-induced hangovers[25]. This is likely due to their nutrient and water content.

Nopales are a common ingredient in Mexican cuisine; the leaves and flowers can be eaten raw, cooked, or made into delicious juices or jams.

"Demand for a wider variety of crops could provide more farmers in developing countries with a boost in income. If handled carefully, with safeguards against potential environmental, social and economic risks, it could mean they can send their children to school instead of to work, can invest in the farm and become more financially secure - the whole local economy could benefit."

Sabita Banerji, Oxfam GB

CEREALS & GRAINS

Cereals and grains are considered the most important source of food for human consumption[26]. They have been the principal component of diets for thousands of years and, therefore, have played a vital role in shaping human civilisation[27]. For both environmental and health reasons, there is a pressing need to vary the types of cereals and grains grown and eaten. Diversifying sources of carbohydrates from white rice, maize, wheat and other staples, to these less common, whole cereals and grains will provide more nutritional value and help improve soil health. Many of them are readily available whilst others need to be brought back into the food system. Demand for, and supply of, a variety of less common crops needs to be carefully and sustainably increased to help improve diets and agricultural biodiversity.

Category | **Cereals & Grains**

13 Amaranth
Amaranthus

Amaranth is grown for both its seeds and leaves. The fibre-rich grain is prepared in boiling water, like rice, or popped like corn. Its leaves are a staple food in Asia and Africa and are eaten in the same ways as other leafy green vegetables.

The plant that the amaranth seed comes from can be grown at any elevation without needing a lot of water, making it an ideal crop in areas where water is scarce.

Believed to have been first cultivated in Mexico, amaranth is one of the oldest crops, beloved by the Aztecs and Incas for its suspected supernatural properties.

Relative to other grains, amaranth's sandy yellow seed is high in magnesium and protein. It has a mild, slightly nutty taste and gelatinous texture making it ideal for soups, side dishes and risottos.

14 Buckwheat
Fagopyrum esculentum

Buckwheat is one of the healthiest, nuttiest and most versatile grains. It is a short season crop, maturing in just eight to twelve weeks, and grows well in both acidic and under-fertilised soils. It can also be used as a 'cover crop' or 'smother crop' to help keep weeds down and reduce soil erosion while fields rest during crop rotation.

Contrary to its name, buckwheat is not related to wheat and is gluten-free. It is an ideal higher protein swap for flour in pastas and breads. It can also be a great alternative to rice, is ideal cooked in a broth or stock, and can be used in salads or stuffing. It is popular in Russia and Eastern European countries and is commonly eaten in stews, such as 'goulash', with potatoes, vegetables and meat.

15 Finger millet
Eleusine coracana

Finger millet is a cereal that has been cultivated for thousands of years since it was first domesticated from the wild subspecies in the highlands that range from Uganda to Ethiopia. A member of the grass family, it is now farmed more widely in the arid regions of Africa and South Asia as a staple cereal[28].

Although the diverse group of crops known as millets is among one of the most consumed, finger millet is often overlooked by the world at large as it only makes up around ten percent of global millet production. As a crop, it has many benefits. It can thrive in soils of low fertility and can be intercropped with maize, sorghum and legumes. It has a higher natural resistance to insects than similar crops, leading to higher yields with less dependence on pesticide use. Of all major cereals, millet is one of the most nutritious. It is a good source of fibre and vitamin B1 and is rich in minerals.

Finger millet is most commonly eaten and used in the same way as other grains or cereals. It can be eaten as porridge, or milled into flour and used in bread or pancakes. It has a mild flavour that's slightly nuttier than quinoa and has a similar texture to couscous.

Category | **Cereals & Grains**

16 Fonio

Digitaria exilis

Arguably Africa's oldest cultivated cereal, fonio is a grain known for its nutty, delicate taste and versatility. The Bambara people of Mali have a saying that 'fonio never embarrasses the cook' as it is so easy to prepare and can be used in dishes to replace any grain.

Fonio has been around for more than 5,000 years. Evidence shows it was cultivated in ancient Egypt; today it is mainly grown in the dry Sahel region of West Africa. There are two cultivated species: Digitaria exilis, white fonio, and Digitaria iburua, black fonio.

Fonio is drought-resistant and has the ability to grow in sandy or acidic soil. Its roots help to secure topsoil to prevent the spread of deserts and it's one of the world's fastest-maturing grains, growing in 60 to 70 days. Fonio is nicknamed the 'lazy farmer's crop' because it is so easy to grow. Farmers simply scatter the seeds after the first rain and wait for harvest. This traditional method yields about 0.5 to 1.2 tonnes per hectare. However, up to two tonnes per hectare can be harvested under very good agronomic conditions.

The main challenge when cultivating fonio is turning the grain into food. Fonio grains are as tiny as sand and each must have their inedible covers removed. Farmers spend large amounts of time threshing and dehulling, most of which is still done manually. Current annual fonio production is estimated at 600,000 tonnes globally, of which more than 95 percent is consumed within fonio-growing communities.

To reduce the manual labour and increase processing capacity, a company called Yolélé Foods is building the world's first fonio mill. The company, which was co-founded by Pierre Thiam, who is seen as a leading authority on African food in the United States, currently exports fonio to the United States and Canada. Once the mill is finalised in late 2020 in Senegal, the company plans to begin fonio exportation to other parts of the world.

Fonio is gluten-free and highly nutritious, containing iron, zinc, magnesium and phytonutrients. Fonio can be used in salads, crackers, pastas, and even in baked goods. It can be used in place of oats to make hot cereal, in place of couscous or rice in any dish and is delicious mixed with spices and olive oil as a side dish. It also can be used to brew beer.

Category | **Cereals & Grains**

17 Khorasan wheat

Triticum turanicum

Khorasan wheat is grown in 40 countries around the world and is known for its ability to tolerate different climates without the use of artificial pesticides or fertilisers. Commonly referred to by its trademarked name of KAMUT®, the amber-coloured kernels of this ancient wheat are twice the size of regular wheat and, when cooked, they have a richer, creamier and nuttier taste.

Khorasan wheat is high in fibre, a good source of the minerals magnesium and selenium, and contains antioxidants[29].

It is nutritious and can be used in similar ways to other forms of wheat. Khorasan wheat is available in many forms, including as a wholegrain, couscous and flour. The kernels are great in stews, soups, pilafs and salads.

Category | **Cereals & Grains**

18 Quinoa

Chenopodium quinoa

Quinoa has long been a staple food in South America but has been gaining popularity in Europe and the US since the early 2000s, marketed as a healthier, tastier replacement for rice.

The sudden surge in demand for one type of quinoa forced farmers to take measures to rapidly increase yield, to the detriment of land, trees, soil and water use. Quinoa, like any food, can and should be grown following sustainable practices and, compared with similar crops, doesn't require any more resources.

There are over 3,000 varieties of quinoa. However, the demand to date has been for only a few types, which has caused the farmers to stop growing many others. This has resulted in environmental degradation and damaged soil, because the land was not left to fallow (rest between harvests).

There are now incentives in place for farmers to grow less common types of quinoa and programmes to encourage their consumption in schools and restaurants. This popularity has opened global trade opportunities for farmers and benefitted local economies enormously. The quinoa case stresses the importance of growing and eating a wide variety of grains and cereals to help decrease the reliance on any one specific type.

Botanically, quinoa is not a cereal but is a relative of spinach, beets and chard. It is a hardy plant that can tolerate frosts, droughts and high winds, and requires little fertilisation. This means it can grow in diverse climates and terrains, including areas with minimal irrigation or as little as three to four inches of annual rainfall. The most commonly cultivated and exported types of quinoa are white, red and black. The texture varies between them, but the flavour and uses remain largely the same.

Quinoa is a complete protein as it contains all nine of the essential amino acids. It is gluten-free and contains an exceptional balance of protein, fat, minerals and vitamins[30].

In Bolivia and Peru, quinoa is mainly eaten in stews and soups. It is easy to prepare as a rice substitute by bringing it to the boil in stock or water, then reducing to a simmer until the liquid is absorbed. It can replace rice in many dishes, such as pilafs, stuffings, salads and even veggie burgers, giving a nutty flavour and enhancing texture. It can also be ground and used in breads and even pastas.

Category | **Cereals & Grains**

19 Spelt
Triticum spelta

An ancient form of wheat, spelt is a hybrid of emmer wheat and goat grass. Due to its high carbohydrate content, the Romans called it the 'marching grain'.

It has a thick outer husk that helps to protect it from disease and pests, making it easier for farmers to grow without the need for fertilisers or pesticides. Compared to similar types of wheat, it contains more fibre, as well as higher concentrations of minerals, including magnesium, iron and zinc[31].

Spelt is often one of the components of farro, which is a mix of various types of wheat and is becoming more popular in some parts of Europe and North America. Whole or pearled, spelt should be boiled until tender.

The mellow, nutty flavour makes it popular to use in place of rice in pilaf, risotto and side dishes. In Germany and Austria, using spelt flour to make breads and cakes is common and often preferred over other types of wheat.

20 Teff
Eragrostis tef

Known as 'the next super grain' the popularity of teff as a preferred grain has grown over the past few years. This has led many farmers in Europe and North America to begin growing teff to boost supply.

This tiny grass seed is a long-standing staple in Ethiopia thanks to its nutritional value, as teff is a good source of iron, calcium, magnesium, manganese and phosphorous[32].

It is well suited to challenging climates, can cope with both drought and waterlogged soil, is easy to store and is pest-resistant[33].

This hardy little grain is being championed by the Ethiopian government, which is working to introduce new varieties and improve production methods.

In Ethiopia, teff is ground into flour and baked into the sourdough flatbread called injera. It can be used in 'paap' (South African porridge) instead of cornmeal as it offers a more enticing texture and has greater nutritional value.

The mild flavour means teff flour lends itself to any number of sweet and savoury dishes. The seeds can be steamed or boiled in stock or water to be served as a side dish or to bulk up dishes.

Category | **Cereals & Grains**

21 Wild rice

Zizania

This so-called 'rice' isn't a rice at all. Wild rice is the seed of a semi-aquatic grass that grows wild in North American lakes and rivers. Long and thin, the seeds are covered in green, brown or black husks. After harvesting, the husk is dried then hulled. Often mixed with brown and white rice, wild rice is not commercially grown and, therefore, supply is scarce in many parts of the world.

Deliciously nutty, toasty and earthy with a chewy texture, wild rice is easy to digest and is a source of a variety of valuable minerals.

Compared with white rice, wild rice contains more protein, zinc and iron[22, 34]. Like rice, it is boiled in water or stock. It can also be popped like corn for a colourful and more nutritious version of popcorn, is great mixed with other grains, added to salads, soups and mixed with other grains and vegetables to make vegetarian burgers.

FRUIT VEGETABLES

Vegetable-like fruits are eaten as vegetables and commonly mistaken for them. They are sweeter and, in most cases, contain a higher amount of carbohydrate and water compared to vegetables. Examples include squash, tomatoes, eggplants/aubergines, peppers and zucchini/courgettes. Commonly grown in warm climates, fruit vegetables can be eaten in various forms and tend to be high in vitamin C and fibre.

Category | **Fruit Vegetables**

22 Pumpkin flowers

Cucurbita pepo

Both pumpkin leaves and flowers are not only edible, but highly nutritious and delicious. The female flowers have tiny fruit attached which can form a pumpkin, while the male flowers don't. The combination of mild pumpkin taste and soft texture make them the perfect addition to soups, sauces, salads and pasta dishes. Like other cucurbits, pumpkins grow best in rich, well-drained soil in the hot, humid climates of Egypt, Mexico, India, parts of the US, China and Ukraine. It is recommended to discard the centre of the flower (the stamen) prior to prepration. The flowers are rich in many nutrients, including vitamin C. These precious flowers are often discarded, wasting a good source of nutrients and flavour.

23 Okra

Abelmoschus esculentus

Well suited to resist changes in climate, okra is among the most heat- and drought-resistant vegetables in the world. It contains antioxidants, including beta-carotene, xeaxanthine, and lutein[35]. This slim, green seed pod goes by many names, including gumbo, bhindi and lady's finger. It's commonly used in the Caribbean and in areas of the world where Creole, Cajun and Asian cooking are popular. When cooked, the seeds produce a sticky, viscous liquid, which makes them ideal for thickening soups and stews. Okra can be steamed, stir-fried or grilled and pairs well with strong, spicy flavours and seasonings.

24 Orange tomatoes

Solanum lycopersicum

Like all tomatoes, this small orange variety can be traced back to the tiny, perfectly round berries that grow wild in coastal Peru and the Galapagos Islands. That was before tomatoes were domesticated and their seeds brought back to Europe after Cortés conquered what would later be known as Mexico City in 1521. Now, red tomatoes are one of the most consumed vegetables globally. Orange tomatoes are sweeter and less acidic than their red relatives and contain up to twice as much vitamin A and folate (B vitamin) than other varieties (red, green).

Many are also 'heirloom' – genetically unique, making them more resistant to disease and pests. They can be used in the same way as the more familiar red varieties: in soups, to make sauces or chutney, or added to casseroles and stews. They're also delicious roasted to bring out even more sweetness and can be eaten on their own as a snack.

Eating less common varieties of vegetables, such as orange tomatoes, drives demand which will increase the variety of types of crops grown, which, in turn, makes the food system more resilient.

LEAFY GREENS

These are arguably the most versatile and nutritious of all types of vegetables. They are grown as part of other vegetables, such as beets and pumpkins, and as the leaves themselves. They contain dietary fibre, lots of vitamins and minerals, are low in calories, and have been associated with various health benefits[36]. Leafy greens are typically fast-growing and, eaten cooked or raw, are part of a wide variety of dishes all over the world.

Category | **Leafy Greens**

25 Beet greens

Beta vulgaris

Beets have grown in popularity in recent years and are associated with a variety of health benefits. However, the leafy green part of the beetroot is the most nutritious part of the plant and is often overlooked and left unused.

With a flavour and nutrition profile similar to that of Swiss chard, beet greens are rich in vitamins K and A[37]. Compared to greens such as turnip and mustard greens, beet greens contain higher levels of magnesium and potassium. Per serving, beet greens provide up to 25 percent of the recommended daily allowance of magnesium, which helps regulate a variety of biochemical reactions in the body, including muscle and nerve function, blood pressure and blood glucose control. Studies in the US and Europe report that around 50 percent of people get less than the recommended levels of magnesium[38, 39, 40].

Beet greens also contain as much iron as spinach, plus the plant pigment lutein, which is associated with good eye health[41]. Beet plants thrive in cooler temperatures, are tolerant of frost and grow at a rapid pace.

They are a nutrition-packed addition to stews, soups and salads. With a subtle taste that is similar to kale, beet greens are delicious sautéed in olive oil or balsamic vinegar for a tasty side dish. Developing a soft and sweet taste when cooked, they can even be baked to make crisps.

Category | Leafy Greens

26 Broccoli rabe

Brassica ruvo

This cruciferous green is related to turnips and mustard greens, and not, perhaps surprisingly, to its familiar namesake. With long stems, small, broccoli-like flower heads and jagged, turnip-like leaves, broccoli rabe is peppery and slightly bitter.

Broccoli rabe is higher in folate than both mustard greens and turnips and, like kale, is a source of vitamins A, C and K[42].

Common in Italy, Portugal, Poland and Ukraine, broccoli rabe – or Italian broccoli as it's also known – is easy to grow and can be harvested within seven to eight weeks of planting. The young, immature flower heads are the most commonly eaten parts; sometimes the flower heads are slightly sprouted and purple in colour.

Boil or sauté it with garlic and chilli. All parts of broccoli rabe are delicious paired with grains, nuts and other vegetables. It is often served as a side dish alongside fish and potatoes.

27 Kale

Brassica oleracea var. sabellica

Kale is a brassica and belongs to the cabbage family. It is a hardy plant, able to withstand temperatures as low as -15 degrees Celsius. It has lushly dark leaves that can be curly or smooth and sometimes have a blue or purple tinge. The taste, distinct and slightly bitter, is reported to become sweeter when exposed to extreme cold such as a heavy frost, but more bitter and unpleasant in hot weather.

Kale is grown throughout Europe and in the US, available year-round, and packed with vitamins A, K and C, as well as being a good source of manganese and copper.

The leaves and stems can be eaten together. The stems are tough while the leaves are soft, so may require different cooking times. Kale can be eaten raw, roasted, boiled, sautéed or even grilled. Because of its high nutritional value, kale has been dried and turned in to powder to be added to soups and smoothies and made into chips eaten as a savoury snack. It can be enjoyed as a side dish or mixed with other vegetables in stews, curries, or soups.

Category | **Leafy Greens**

28 Moringa

Moringa oleifera

Moringa, also called the drumstick or horseradish tree, is often referred to as 'the miracle tree' because of its exceptional qualities. It is fast-growing and drought-resistant. The trees form a natural windbreak, helping to prevent soil erosion in countries such as Haiti. The leaves are highly nutritious and grow plentifully all year round. Many parts of the tree are used in traditional medicine throughout India and Asia. Products containing moringa have recently gained in popularity as health supplements due to their nutritional value.

Moringa can be added to a variety of dishes. When cooked, the leaves have a similar flavour to other leafy green vegetables and can be swapped for them. It can also be turned into a powder to be used in smoothies, soups, sauces and teas, or cooked into curries or baked goods to add extra flavour and give a nutritious boost[43]. It contains vitamins A, B, and C, calcium, iron and amino acids, which are essential for good health.

In some countries, such as the Philippines and Indonesia, it is common to cut the long seed pods (known as 'drumsticks') into shorter lengths to be stewed in curries and soups. The flowers can be added to salads, fried as a snack, or used to make tea. Some popular dishes that feature moringa are South Indian sambar made with lentils, Thai kaeng som curry, and Filipino tinola and udan.

Category | Leafy Greens

29 Pak-choi or bok-choy (Chinese cabbage)

Brassica rapa subsp. chinensis

Pak-choi is crisp with a mild, cabbage-like flavour. Like lettuce but with more crunch, it is one of the most popular vegetables in China and is grown in East Asia all year round. It has a variety of different names, among them horse's ear, Chinese celery cabbage and white mustard cabbage. Its white or pale-green stalks and deep-green leaves are high in vitamins K and C. Although the stalks can be eaten raw when the plant is very young, they are best blanched in boiling water, stir-fried or steamed to retain their delicate flavour and crunchy texture. Pak-choi goes well with rich, sticky sauces to complement the mild flavour and crunchy texture.

30 Pumpkin leaves

Cucurbita pepo

Although the leaves of this creeping vine are commonly eaten in Africa and Asia, the pumpkin plant is believed to have first been cultivated thousands of years ago in Central America. It belongs to the cucurbit family and loves sunny, well-drained soil. Pumpkin leaves are often left behind when pumpkins are picked, wasting the abundance of nutrients packed in to these versatile leafy greens. Pumpkins, like many other plants, have multiple edible parts that should not be wasted.

Pumpkin leaves are a good source of iron, vitamin K and carotenoids. Although there is no scientific evidence to prove it, many associate the leaves with increased fertility.

Pumpkin leaves taste like a cross between asparagus, broccoli and spinach and, when young, can be eaten fresh in salads. Steaming or sautéing the leaves brings out the sweetness as some varieties may have a more bitter flavour. In West Africa they are often added to soups and stews.

31 Red cabbage

Brassica oleracea var. capitata f. rubra

It may be called red cabbage, but this brassica has a chameleon-like quality, changing colour based on the pH-value of the soil in which it is grown. It grows best in sunny conditions in moist, loamy soil.

Most commonly grown in the Americas, Europe and China, red cabbage has an earthy, slightly peppery taste and crisp texture. It's not only more colourful and hardier than green cabbage, but also has ten times more vitamin A and double the amount of iron.

Red cabbage can be eaten raw or cooked in salads, stir-fries, in a sandwich or burger, or cooked with onions as a side dish. When cooked, the leaves will turn blue; add vinegar or acidic fruit to help maintain their red colour.

Category | Leafy Greens

32 Spinach
Spinacia oleracea

American consumption of this bittersweet, leafy vegetable jumped by a third during the 1930s. Spinach growers of the time credited this hike to Popeye, the cartoon character who was supposed to get his legendary strength from consuming cans of it.

Although the powers of spinach were highly overstated by Popeye, this tender vegetable does contain many important nutrients. It is particularly high in vitamins A, C and K, folate (B vitamin) and contains iron, other minerals and phytonutrients[44]. A relative of beets, chard and quinoa, spinach is fast growing and suited to cooler climates where it can be cultivated all year round.

Eaten all over the world, spinach leaves can be steamed, sautéed or stir-fried and added to curries, soups, pasta dishes and stews. They can also be served on their own, as a side or fresh in salads.

33 Watercress
Nasturtium officinale

Watercress, also known as nose twister, is related to mustard and is part of the brassica family of vegetables. Native to Europe and Asia, there is evidence of its existence in Ancient Greece up to 3,000 years ago. However, it wasn't until the late 20th century that it became popular commercially.

Today it is eaten in many countries and spans most continents. It prefers cool climates and can grow fully or partially submerged in water, or in rich, moist soil. If left to mature, the plant will produce pleasant-smelling white flowers, which attract bees. It also produces edible seeds, which it uses to self-sow.

Considered a 'superfood' because of its high content of antioxidants (particularly beta carotene and vitamin C), watercress also contains significant amounts of vitamins A and K. Watercress has a pungent, slightly bitter, peppery taste and crisp texture. Both the delicate green leaves and paler stems can be eaten either sautéed or fresh, and are great mixed in soups, salads, tarts and omelettes.

MUSHROOMS

There are more than 2,000 edible varieties of mushrooms. Cultivated for centuries for their taste and nutritional value, mushrooms are rich in B vitamins and vitamin D as well as protein and fibre[45]. Mushrooms can also grow where many other foods would not, including on by-products recycled from other crops. They are not considered plants as they do not photosynthesise; they are classified as fungi. Their texture and umami flavour make them a tasty addition and a suitable substitute for meat.

Category | Mushrooms

34 Enoki mushrooms
Flammulina velutipes

Known as winter mushrooms or golden needles, these long, thin, delicate mushrooms grow all year round in wild clusters. Eaten commonly in East Asian countries such as China, Japan and Vietnam, from where they originate, they can be found on Chinese hackberry trees as well as mulberry, persimmon and ash trees.

Enoki mushrooms were one of the first mushrooms studied for cancer prevention (effect not proven to date) and are widely used in soups and salads. To keep their texture and enhance their lovely umami flavour, they need to be cooked quickly, either flash fried, briefly pan roasted or bathed in the residual heat of stews or stir-fries.

35 Maitake mushrooms
Grifola frondosa

This hefty, layered fungi can grow to more than 45 kilograms (99 pounds) giving them the title 'the king of mushrooms'. They can be found sitting at the base of oak, elm and maple trees in China, Japan and parts of the US. It has been eaten and used for its (not proven) medicinal properties for many years in China and Japan, where its name means 'dancing mushroom'.

Like other varieties of mushrooms, maitake are noted for their B vitamin content and for being a non-animal source of vitamin D. In contrast to their delicate, feathery texture, they have a strong, earthy taste and can significantly enrich the flavours of other foods in various types of dishes. They are delicious cooked with olive oil, or as a featured ingredient in omelettes, hot pots, stir-fries, stews and sauces.

36 Saffron milk cap mushrooms
Lactarius deliciosus

In Russia, where mushroom picking, cooking and eating is a big part of the culture, tourists may find themselves being offered saffron milk cap tasting as an activity. In Siberia, saffron milk caps are used for treating a wide variety of conditions, such as asthma, jaundice and food poisoning. However, these benefits have not been scientifically proven. Milk caps grow in pine forests in Europe and North America and are picked between August and October.

Their name comes from their beautiful saffron colour and the orange milky liquid they ooze from their gills when cut. They are a good source of fibre with a nutty, woody taste that has hints of umami and a meaty texture.

They can be fried in olive oil with garlic, parsley, cream or red wine. They can also be marinated, salted or pickled, or added to stews and soups. They feature in risottos and pasta dishes served in various restaurants across Europe and North America.

NUTS & SEEDS

There's no wonder these little powerhouses star in lists of 'superfoods', 'the best foods' and 'the foods you should eat more of'. Their protein, vitamin E and good fat content, paired with desirable flavour and texture, remains unmatched. The crunch makes them a great addition to almost every dish. Yet, of the many varieties available, only a few are commonly eaten. Used in cuisines around the world, these small embryonic plants can stand alone as snacks or add flavour and a satisfying crunch to salads, soups and desserts.

Category | Nuts & Seeds

37 Flax seeds

Linum usitatissimum

Found across Europe, the United States, South America and Asia, but best grown in cooler climates with some sunlight, flax seeds have a multitude of uses. They are primarily used as a well-rounded, nutritious food source, but they can also be woven into strong fibres to create linen.

Flax seeds are considered a highly functional food owing to the presence of alpha-linolenic acid, an omega 3 fatty acid. Also known as linseeds, they have been widely cultivated since the early days of civilisation and can be used in place of half the flour in any baked good, including breads and muffins.

Although they are commonly eaten on salads and cereals, they are now in high demand as an ingredient in vegetarian burger mixes and other plant-based dishes. Flax seed oil can be used for dressings, dips and sauces.

38 Hemp seeds

Cannabis sativa

Hemp is fast-growing, thrives in a variety of soils and doesn't require fertilisers or pesticides. While not currently one of the most commonly-consumed seeds, they have been a part of the diets of people in China and India for many centuries. They are the same species as cannabis (marijuana), but hemp seeds don't contain THC, the compound that causes the drug-like effects of marijuana.

The small, crunchy seeds have a soft, buttery texture and are rich in omega 3 and omega 6 fatty acids (good fats). They also contain protein, fibre and various vitamins and minerals, which justifies the recent re-discovery of these nutty flavoured seeds. A small serving of only 30 grams provides one gram of fibre, nine grams of protein, and a good source of iron.

Hemp seeds are available in various forms: as oil, a milk substitute, flour and in many products (including dips, sauces, soups, crackers, biscuits, breads and salads). They can be eaten raw, made into hemp meal, sprouted or made into powder.

Hemp was one of the first plants to be spun into usable fibre, roughly 10,000 years ago. It goes beyond being a nutritional food source, as it can be refined into paper, renewable plastic, clothes and biofuel[46].

Category | Nuts & Seeds

39 Sesame seeds

Sesamum indicum

According to Assyrian legend, when the gods met to create the world, they drank wine made from sesame seeds. Cultivated for millennia and highly resilient[47], the plants produce pods that burst open when mature to reveal their tiny golden seeds. This is where the phrase 'open sesame' comes from.

These seeds have a high oil content and are considered an excellent source of copper and magnesium[48]. They can be eaten raw, toasted and as a paste called tahini. They add crunch and a nice nutty flavour to sushi, salads, soups, noodle and rice dishes. They're commonly found in crackers and baked goods, such as the Middle Eastern dessert halva.

They also make a wonderfully fragrant oil that is great in stir-fries, drizzled over savoury dishes and in dressings.

40 Walnuts

Juglans regia

Possibly the oldest tree food known to humans, records report walnut consumption dating back 10,000 years[49]. Containing more omega 3 fatty acids and vitamin E than many other nuts, the kernel itself resembles the two halves of a brain, reinforcing their nickname of 'brain food'.

Walnuts contain protein, vitamins and minerals, and have been claimed to be one of the most nutritious nuts. Slightly bittersweet with an oily texture, they may be pickled when young or 'wet'. However, they are more commonly eaten dried, either raw or cooked in both sweet and savoury dishes such as cakes, muesli, stews, sauces and dressings. Dry-frying or roasting turns them a lovely gold and really brings out their flavour.

Grown in China, Turkey, Iran, Mexico and the US, walnuts fare best in rich, deep soil and sunny climates and grow all year round.

ROOT VEGETABLES

Root vegetables are the crisp and colourful underground parts of plants that are eaten as vegetables. They often have leafy tops that grow above the ground that should also be eaten to optimise the amount of food these nutritious plants can provide. Root vegetables contain a wide variety of vitamins and minerals and are hardy, cool-season crops. Once harvested, they survive for a relatively long time compared with other vegetables.

Category | Root Vegetables

41 Black salsify
Scorzonera hispanica

Not widely known, this parsnip-like root vegetable is part of the sunflower family[50]. It is also known as the 'oyster plant' because of its sweet, slightly musky taste. The pale, creamy flesh beneath their thick, dark skin is great to cook with. Salsify is high in fibre and contains vitamin E and iron. It grows well in cool, temperate climates in countries such as France, the Netherlands and Germany.

It can be boiled, mashed or baked, and served in place of a potato. Similar to carrots and parsnips, black salsify is ideal roasted, and goes well with soups and stews.

42 Parsley root
Petroselinum crispum

It is said that parsley root first made its appearance in the 15th century as the main ingredient in a Dutch vegetable stew. Known also as Dutch parsley, this taproot vegetable has an aromatic taste somewhere between celeriac, carrot and, inevitably, parsley.

Slim and tapered in shape with beige skin, parsley root looks like parsnip and can grow up to six inches long. It's great fried as fritters or chips, or grated raw into salads and slaws. Both the taproot and leaves are edible and high in vitamin C.

Popular in the cuisines of Central and Eastern Europe, parsley root is grown all year round in India, China, Vietnam, Nigeria and the Philippines and is resistant to drought.

43 White icicle radish (winter radish)
Raphanus sativus var. Longipinnatus

In Greek, the word radish can be translated as 'fast appearing' and is certainly true of these white icicle radishes, whose seeds germinate and grow to maturity in under a month. As they deter squash-loving bugs, they're often planted with squash and pumpkins, and can be used as a fallow (or cover) crop to help enrich soil between harvests.

White icicle radishes look like carrots and grow four to six inches long, although their thin skin is cream coloured and their flesh is white. They have a milder, more peppery taste than their diminutive and more common red cousins. Tasty grilled, braised or roasted, they are also enjoyed grated or sliced fresh into salads, stir-fries, curries and soups to add crunch. In some countries, such as France, they are boiled, coated in oil or butter, lightly spiced and eaten as a side dish. They can also be eaten raw as a snack.

White icicle radishes contain vitamin C and have the benefit of helping with digestion.

SPROUTS

Sprouting dates back 5,000 years when Chinese physicians used sprouts medicinally because of their extremely high nutrient content. The sprouting process doubles, and in some cases triples, the nutritional value of the plant. Seeds and beans need warm and humid conditions to sprout, therefore they carry the risk of bacterial growth. They feature in the Future 50 Foods list because experts agree that, for healthy people, the added nutritional value outweighs the potential risks that can be associated with them*. Sprouts are delicious as a side dish topped with a light dressing or in soups, salads and sandwiches to add a nice crunchy texture.

**If sprouting at home, food safety practices and directions need to be followed. Always wash sprouts thoroughly with cold water and avoid any rotten pieces or parts.*

Category | Sprouts

44 Alfalfa sprouts

Medicago sativa

Believed to have originated in Iran, alfalfa has been cultivated for thousands of years. Its long growing season, adaptability and ability to enrich soil makes it a farmer's delight. Gaining recent attention from health food enthusiasts, the immature and nutrient-dense alfalfa sprouts are used as an ingredient in a wide variety of dishes, ranging from raw salads to cooked stir-fries and pad thai.

Alfalfa sprouts can be grown industrially or at home in warm, moist conditions. Within one to two days of watering, the little brown seeds germinate, producing white shoots with pale green leaves that are ready to be eaten. Their crunch and mild flavour make them a great addition to sandwiches and soups. They can also be eaten on their own, topped with a light dressing.

All sprouts grow in similar conditions to bacteria (warm and moist) making them prone to contamination, so food safety practices need to be followed closely.

45 Sprouted kidney beans

Phaseolus vulgaris

Kidney beans are a popular and versatile source of protein. They make a great substitute for ground meat because of their texture and protein content. The mild flavour makes them the perfect carrier of seasonings and diverse flavours.

It's when sprouted, however, that their nutritional value skyrockets to three times that of unsprouted kidney beans.

Kidney beans are high in lectins, which are complex compounds that are difficult to digest. Therefore, as with all dried beans, especially the larger varieties, it is essential to thoroughly cook kidney bean sprouts by boiling in water or stock for 10 minutes. This will make them taste better and decrease the impact on the digestive system. The slight bitterness pairs well with sweetened sauces or dressings, and they are often used as toppings for soups and salads.

Category | Sprouts

46 Sprouted chickpeas

Cicer arietinum

Chickpeas, also known as garbanzo beans, are small, yellowish round beans orginally popular in Middle Eastern dishes. They have recently gained popularity in Western countries, being added to salads and made into spreads, mainly hummus. They have a rich, creamy and nutty flavour. With one cup of chickpeas providing approximately ten grams of protein and a somewhat meaty texture, they are a viable substitute for meat in many dishes. Chickpeas are good for you and sprouted chickpeas are even better. They're also crunchier and have more flavour.

Chickpeas are one of the easiest beans to sprout. Doing so neutralises the phytic acid and allows the body to better absorb the nutrients, such as calcium, magnesium and zinc[51]. To sprout chickpeas, soak for eight hours, drain and rinse. Transfer to a glass jar or bowl and cover with a cheesecloth. Repeat the rinse and drain steps a few times until the sprouts are to the desired length. This usually takes three to four days. Like all sprouts, sprouted chickpeas are prone to bacterial growth, so it's important to follow good safety principles.

Add them to stews, soups, stir-fries, or simply enjoy as a side dish. Hummus made from sprouted chickpeas has more crunch and a nuttier flavour than unsprouted chickpeas.

TUBERS

Tubers grow downward, anchoring the plant into the ground, where they absorb and store valuable nutrients for use during the winter or drier months. Typically high in carbohydrates, they are a valuable source of energy. They can be eaten in a huge variety of ways, including boiled, baked, or as a sweetened pudding. White potatoes are the most common type of tuber. Growing and eating the less common types of tubers makes our food system more resilient while, in most circumstances, providing more nutrients.

Category | Tubers

47 Lotus root
Nelumbo nucifera

The roots of the delicately beautiful lotus flower are incredibly resilient. They can grow and flourish in most bodies of water and replant their own seeds, which can be stored and survive for decades. The oldest examples found in China date back more than 1,000 years and could still be germinated today.

These edible roots have long been treasured as food and for their suspected medicinal properties. High in vitamin C[52], they have a crunchy texture and a tangy, slightly sweet flavour. A great addition to most dishes where vegetables can be added, they're commonly used in Asian stir-fries, but can also be deep-fried, braised or pickled.

48 Ube (purple yam)
Dioscorea alata

Ube, a purple yam native to the Philippines, has been increasing in popularity around the world. It is a tuberous-rooted, herbaceous perennial vine that is easily grown. It is more nutritious and grows faster than many other types of yams. Because of this it is known as a 'famine crop' in the tropical and subtropical regions of the world.

Ube is rich in vitamin E and fibre, and has a sweet flavour. Its attractive purple shade comes from the flavonoid anthocyanin[53].

In the Philippines ube is often eaten boiled, baked, or as a sweetened pudding called ube halayá. Ube can prepared in the same way as potatoes. It is sold fresh, cut into cubes, in syrup, puréed or powdered.

Despite its increase in popularity, the space allotted for ube cultivation has declined. This is due to an increase in tourism and real estate on the island of Panglao, where ube has been grown in the past. In other areas it has been replaced with sweet potato or cassava.

49 Yam bean root (jicama)
Pachyrhizus erosus

There are many benefits to the yam bean root, also known as jicama. It is a high-yield plant that grows easily in both tropical and arid climates. Even in the driest areas it produces 35 tonnes per hectare, reaching up to 75 tonnes per hectare in ideal conditions. This makes jicama a great swap for white potatoes, which yield a maximum of just 25 tonnes per hectare. Growing yam bean also helps to promote soil fertility through nitrogen fixation and it can be grown in rotation with, or alongside, maize and beans. Jicama is a low-calorie food that is a source of vitamin C and fibre. Its significant water content makes it juicy and refreshing. With a starchy, slightly sweet flavour, it is typically eaten fresh and sliced to add crunch to salads or as a snack. It can be used in place of, or in addition to, other vegetables in stir-fries and is a lower calorie, more nutritious alternative to potato fries or chips.

Note that only the root or tuber part of the yam bean root should be eaten.

Category | **Tubers**

50 Red Indonesian (Cilembu) sweet potatoes

Ipomoea batatas

Amongst the vast range of sweet potatoes in the world, one of the most sought after is the Cilembu sweet potato, a variety native to Indonesia. Although the Cilembu sweet potato has been documented since 1914, its unique qualities have only been widely understood since the early 2000s[54]. Sweet potatoes are commonly consumed in a variety of countries, but this type is highly sought after for its flavour and nutritional value.

It is an important commodity in Cilembu and the surrounding villages of Western Java. It is exported to Singapore, Hong Kong, Japan, Korea, Thailand and Malaysia. When baked, Cilembu sweet potatoes have a very distinctive aroma and sweet taste with a sugary, honey-like glaze. Not just a culinary delicacy, the Cilembu is also a valuable source of several essential nutrients, including vitamins A, C, E and manganese.

Indonesia has struggled to find enough suitable land to grow the highly coveted Cilembu. As a result, the market has been flooded with similar looking sweet potatoes that are sold intentionally mislabelled under the name Cilembu. These potatoes do not have the honey-sweet flavour of the original, which poses a threat to the Cilembu's ability to stay in circulation. This is why it is currently listed on Slow Food's Ark of Taste[55]. To support its future, specific criteria have been developed to find suitable land to grow this crop to meet consumer demand.

The Future 50 Foods have the power to increase the nutritional value and decrease the environmental impact of everyday meals. We all need to be a part of shifting the food system by using our purchasing power to increase the demand for and supply of foods that are better for people and the planet. Start by choosing to eat a wider range of foods, including the Future 50 Foods. Large-scale change begins with small actions. To find out more, search Future 50 Foods.

FUTURE 50 FOODS

PRINCIPLES & METHODOLOGY

Experts in food sustainability, agriculture and nutrition collaborated to identify and shortlist the foods in this report. **The Future 50 Foods guiding principles and five-step methodology are summarised below.**

GUIDING PRINCIPLES

PROMOTE AGROBIODIVERSITY AND DIETARY DIVERSITY

Current agriculture is dominated by 12 crops and five animals[1]. According to FAOSTAT, based on 2016 data, those 12 crops are barley, cassava, corn, palm fruit oil, potatoes, rice, soy beans, sugar beets, sugar cane, tomatoes, vegetables not elsewhere specified and wheat. In keeping with the goal of increasing dietary diversity, 11 of these common crops were not included. After consultation with experts, soy beans were included on the list due to their high nutritional value, recognising that a large percentage of production is for animal feed. Less familiar varieties and less commonly consumed parts of the remaining above-mentioned crops were considered.

STIMULATE A SHIFT TOWARDS PLANT-BASED FOODS

Rearing animals for food is associated with significant greenhouse gas emissions. Compared to plants, meat and dairy production is more water, land and greenhouse gas intensive. A variety of different plant-based foods can provide comparable nutrients to animal products with lower environmental impact. This list includes protein-rich, plant-based foods that can be eaten in addition to, or in place of, sources of meat-based protein.

CONSIDER ENVIRONMENTAL IMPACT OF FARMING PRACTICES

The environmental impact data are based on standard farming practices sourced via publicly available information. Average yield and greenhouse gas emissions, relative to similar crops, have been considered. Transport emissions have not been considered as they account for less than two percent of the overall greenhouse gas footprint of food.

FOCUS ON NUTRIENT CONTENT OF RAW, UNPROCESSED FOODS

For consistency within the food groups, the nutritional values reflect the foods in their raw, unprocessed state. Cutting, cooking or processing the foods in any way may change their nutritional value.

OPTIMISE NUTRIENT BALANCE ACROSS FOOD GROUPS

The distribution of food groups enables swaps to more sustainable, diverse and nutritious foods. This includes many different types of nutrient rich vegetables, good sources of plant-based protein and a wide variety of sources of carbohydrates.

THE LIST OF FUTURE 50 FOODS INCLUDES:

13 CEREALS, GRAINS, TUBERS

For both environmental and health reasons, there is a pressing need to vary the types of grains and cereals grown and eaten. The inclusion of a variety of sources of carbohydrates supports the ambition to enable a shift towards a greater variety of nutritious foods.

12 BEANS, LEGUMES, SPROUTS

Plant-based protein sources are included to support a shift towards eating more plants and fewer animals. Beans and legumes also enrich the soil in which they are grown and support the recovery of land as part of crop rotation.

18 VEGETABLES

With very few exceptions, most people around the world do not get the recommended amount of at least 200 grams (or three servings) of vegetables per day. Vegetables are nutrient packed and can easily and affordably be added to commonly consumed meals.

3 MUSHROOMS

Mushrooms are included because of their nutritional benefits and unique ability to grow in areas unsuitable for other edible plants. Their texture and umami flavour enable them to be adequate meat alternatives.

4 NUTS AND SEEDS

Nuts and seeds serve as plant-based sources of protein and fatty acids (omega 3 and 6) which can support a transition away from meat-based diets while ensuring optimum nutrition. They can be added to a wide variety of dishes for extra crunch and a nutrient boost.

FOCUS ON SAVOURY FOODS

Most calories consumed are from savoury meals. To make the greatest impact on global food choices, the foods in this list can all be used in savoury meals.

FIVE STEPS TO IDENTIFYING THE FUTURE 50 FOODS

The focus areas that were addressed in the methodology for this report were nutritional value, relative environmental impact, flavour, accessibility, acceptability and affordability.

1. FOCUS ON PLANT-BASED FOODS

Plant-based foods are nutrient dense and affordable, whilst having a lower impact on the environment than animal-based foods. Multiple international and national guidelines explicitly recommend shifting from animal-based to plant-based foods. Food groups included on the list are algae, beans, cacti, cereals and grains, fruit vegetables, leafy greens, mushrooms, nuts and seeds, root vegetables, sprouts and tubers. All plant-based food groups have been included on the list except for fruits, herbs and spices. Fruits are not commonly part of savoury meals and are likely to be higher in sugar and calories than vegetables. Herbs and spices are generally grown and eaten in small amounts, so their impact isn't as significant as the included food groups.

2. OPTIMISE NUTRIENT DENSITY

The Nutrient Rich Foods (NRF) Index 15.3 was used to assess the nutritional value of the candidate foods based on their nutrient to energy (calorie) ratios. The NRF Version 15.3 calculates nutrient density based on the content of fifteen nutrients to encourage (protein, fibre, polyunsaturated fat, calcium, iron, zinc, potassium, vitamins A, C, D, E, B1, B2, B12, and folate) and three nutrients to limit (saturated fat, sodium, added sugar). The index originally included monounsaturated fatty acids, which were replaced with polyunsaturated fatty acids. All unprocessed, raw foods within the focus food groups available in the selected databases were scored and ranked within their food groups to enable comparison among foods that provide similar nutrients and are consumed in comparable amounts. The US National Nutrient Database (USDA RS 28) was used as the main source of information, supplemented by and cross-checked with data from the most relevant, digitally available, local food composition database per geographical area. Following the categorisation and scoring, commonly consumed foods that are extremely bitter, do not fit in savoury dishes or snacks, are eaten only in small quantities, and/or have a lower NRF score were eliminated. A total of 170 foods were further investigated. The NRF score was considered throughout the selection process, giving priority to foods with a higher NRF score to ensure the relatively more nutritious foods remained on the list.

3. EVALUATE ENVIRONMENTAL IMPACT: CLIMATE CHANGE AND LAND USE

The list of 170 foods in the selected food groups (steps one and two) were then assessed for their environmental impact. The impacts included were greenhouse gas emissions, which contribute to climate change, and land use. Foods with a high environmental impact relative to similar crops within their groups were eliminated. The assessment was based on the top global producing countries for each crop type (maximum five countries) according to FAOSTAT data[56]. The scope of greenhouse gas emissions data is 'cradle-to-farm-gate', which includes all activities that are associated with the cultivation and harvesting of the food crop on the farm, e.g. emissions associated with operating farm machinery.

Greenhouse gas emissions, which contribute to climate change, were generally derived from aggregate and average datasets. Where production data were not available, proxy crops were used when available. If proxy crops were not available for a crop, the data gap was noted. The sources used to determine the greenhouse gas emissions included WFLDB-3.1 Land Use Change (LUC) crop-specific[57], ecoinvent v3.4[58], Agribalyse V1.3[59] and Clune et al.[60]."

For ecoinvent and WFLDB data, the greenhouse gas contribution from land use change (LUC) has been included using a 'crop specific approach'. LUC associated with increased greenhouse gas emissions were allocated to all crops that grew in the last 20 years in each country. The inclusion of LUC in the data from Clune et al., which is a meta-analysis of fresh food LCA studies is dependent on the source of data. No LUC is considered in the foods data from Agribalyse (see Koch & Salou, 2015 for more detail). To evaluate land occupation of a crop, FAOSTAT yield data[61] were used. Earthstat maps were subsequently referenced to confirm production or find additional data. If the information was not available for the crop, the data gap was noted. Considering overall environmental impact, there were no data points for 54 percent of food crops; data were available for both environmental indicators for 31 percent of food crops, data for one environmental indicator were available for 15 percent of food crops. The two environmental indicators for the crop-country combinations were normalised by the crop nutrient density score. These values were then used to derive a production-weighted average for each crop.

The crops considered to have a high environmental impact in each food group were statistically identified for each environmental indicator, i.e. crops whose impacts were greater than the median + one and a half times the interquartile range. Initially, the individual scores were evaluated, then the crops with a relatively high score for one or other of the environmental impacts were assessed. Foods that were relatively high in both greenhouse gas and land use were eliminated.

4. CONSIDER CULTURE AND FLAVOUR

A list of 168 foods previously assessed for nutritional value and environmental impact were qualitatively analysed for taste, ability to add variety to recipes, availability, and affordability. This was assessed by Knorr cross-functional teams of marketers, nutritionists, chefs, and product developers spanning across Asia, Africa, North America, South America, Europe and Australia, who answered the assessment questions with yes/no/maybe for every ingredient. The data were collated and assessed to determine which foods should potentially be eliminated based on responses. If more than half of the countries answered 'no' to one of the questions, the ingredient was eliminated. The relative nutrient density scores (NRF) were considered when choosing between foods with similar input, ensuring the foods in the final list would be nutritious.

5. DELIVER DIVERSITY

The final step in the methodology was to ensure the foods were distributed evenly across food groups, colours, production countries, and level of familiarity. The list was consolidated to 50 foods. The aim was to have the collective list contain a sufficient number of foods in each group to shift consumers towards a more diverse mix of vegetables and plant-based sources of protein, and a larger selection of grains and cereals.

Experts in food sustainability, food security, nutrition, human rights and agriculture developed, validated and endorsed this methodology. This is an informative report, which does not assure the benefits of consumption of the individual Future 50 Foods.

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Knorr and WWF have joined forces with other leaders in nutrition and sustainability to develop Future 50 Foods.

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