



## *Celebrating biodiversity in agriculture*

*On 22 May, nations all over the world celebrated the International Day for Biological Diversity. The theme for this year was 'Sustaining people and their livelihoods' and the focus fell specifically on the importance of biodiversity in sectors such as agriculture.*



*The Nguni cattle breed is indigenous to southern Africa and are known for their fertility and resistance to disease.*

Formed by combining the words 'biological' and 'diversity', biodiversity refers to the many millions of organisms on Earth and the way they interact with each other. Biodiversity can be used to describe the variety and relationships of animals, plants and microorganisms in different sized habitats – from the African savanna to the great Arctic region.

Think about the food you eat. What kind of foods come to mind? While we don't always realise it, biodiversity is the foundation of agriculture. It has enabled farming systems to evolve ever since agriculture was first developed over 10 000 ago.

Today, agriculture produces an average of 23.7 million tons of food every day, and provides livelihoods for 2.5 billion people. It is the largest source of income and jobs for especially poor, rural households.

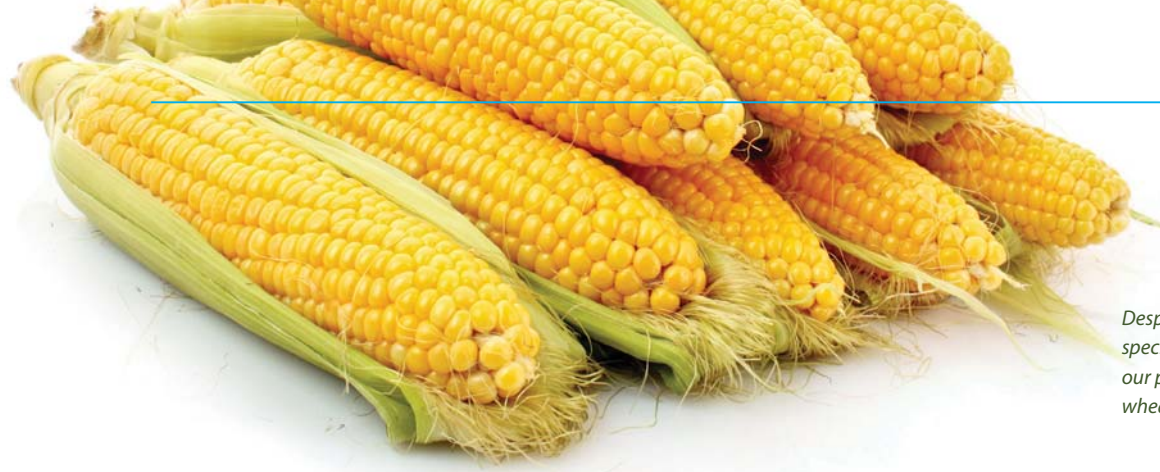
Biodiversity is the origin of all species of crops and domesticated livestock and the variety within them. It is also the foundation of ecosystem services essential to sustain agriculture and human well-being. Biodiversity and agriculture are strongly interrelated because while biodiversity is critical for agriculture, agriculture can also contribute to conservation and sustainable use of biodiversity.

Agricultural biodiversity is the diversity of crops and their wild relatives, trees, animals, microbes and other species that contribute to agricultural production. This diversity exists at the ecosystem, species and genetic level, and is the result of interactions among people and the environment over thousands of years.

Agricultural biodiversity provides humans with food and raw materials for goods – such as cotton for clothing, wood for shelter and fuel, plants and roots for medicines, and materials for biofuels. Agricultural biodiversity also performs ecosystem services such as soil and water conservation, maintenance of soil fertility and biota, and pollination – all of which are essential to human survival.

Genetic diversity of agricultural biodiversity provides species with the ability to adapt to a changing environment and evolve, by increasing their tolerance to frost, high temperature, drought and waterlogging, for example.

However, despite its importance, agricultural biodiversity is threatened. While we know of 7 000 plant species in the world that are edible, over 50% of our plant-derived calories come from only three species: rice, wheat and maize. Our heavy reliance on



*Despite there being 7 000 edible plant species known in the world, over 50% of our plant-derived calories come from rice, wheat, maize and potatoes.*

a narrow diversity of food crops is putting our future food and nutrition security at risk.

It is estimated that around 940 species of cultivated plants are threatened globally. When a species or the diversity within a species is lost, we also lose genes that could be important for improving crops, promoting their resistance to pests and diseases, or adapting to the effects of climate change. This rapidly diminishing gene pool is worrying for experts. Having a broad range of unique characteristics allows plants and animals to be bred to meet changing conditions. It also gives scientists the raw materials they need to develop more productive and resilient crop varieties and breeds. In those places where hunger is worst, the resource-poor countries of the developing world, farmers may be more likely to need crops that grow well in harsh climates, rather than strains that yield well under good conditions, or animals that are smaller but possess higher resistance to disease. Indeed, for the poorest farmers, the diversity of life may be their protection against starvation.

In South Africa, for example, there is increasing focus on traditional African vegetables, grains and legumes such as Bambara groundnut, cowpea, sorghum, and amaranth to name a few. These plants, which have been cultivated by local

communities for hundreds of years, have proven to require less water than commercial crops, while generally providing more nutrition.

Finally, with plants, animals and their environments left intact, a range of essential services provided by nature are preserved. Livestock, fungi and microorganisms decompose organic matter, transferring nutrients to the soil. Ants and other insects control pest populations. Bees, butterflies, birds and bats pollinate fruit trees. Wetlands filter out pollutants. Forests prevent flooding and reduce erosion. In the ocean, intact ecosystems help keep fish populations stable and healthy, ensuring tomorrow's catch. To feed a growing population, agriculture must provide more food. It will also be essential to increase its resilience by protecting a wide array of life forms with unique traits, such as plants that survive drought or livestock that reproduce in harsh conditions. Sustainable agricultural practices can both feed people and protect the oceans, forests, grasslands and other ecosystems that harbour biological diversity.

Global efforts to conserve plants and animals in gene banks, botanical gardens and zoos are vital. But an equally important task is to maintain biodiversity of farms and in nature, where it can evolve and adapt to changing conditions or competition with other species. As custodians of the world's biodiversity, farmers can develop and maintain local plants and trees and reproduce indigenous animals, ensuring their survival.

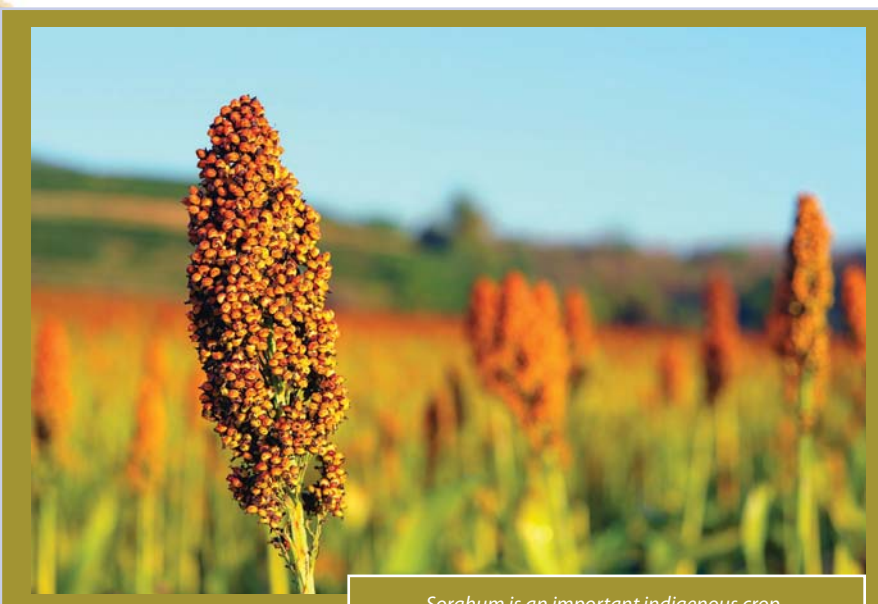
Sources: [www.cbd.int/idb/2016](http://www.cbd.int/idb/2016) and [www.fao.org](http://www.fao.org)



**Biodiversity is essential in agriculture to:**

- Ensure the production of food, fibre, fuel and fodder
- Maintain other ecosystem services
- Allow adaptation to changing conditions – including climate change
- Sustain rural peoples' livelihoods

Source: [www.cbd.int](http://www.cbd.int)



*Sorghum is an important indigenous crop.*