

# Transforming agriculture

To reduce agricultural emissions, consider the humble plant



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**A**mid the accelerating climate emergency, the search continues for ways to transform agriculture, which accounts for 20 to 30 per cent of our greenhouse gas emissions. Modern agriculture faces enormous pressure to produce enough food for the world's growing population. Instead of treating agriculture as a climate culprit, we should look more closely at its contributions to a sustainable future.

Plants have evolved over millions of years to suck CO<sub>2</sub> from the atmosphere and convert it – with water – into carbohydrates and oxygen. This process of photosynthesis is better and cheaper than any carbon capture machine. Might our agricultural crops be part of the solution too?

Food production must adapt to the changing climate. Warmer weather will bring more pests, disease and extreme conditions, so plants must become more climate-resilient, using land and water more efficiently.

Fortunately, science and nature provide us with tools. For over a century, plant breeders have been successfully selecting, breeding and improving our plants for the benefit of farmers and society alike. The doubling of Mexican wheat yields in the 1960s, the rescue of hundreds of millions from starvation in South Asia, and the increase of European crop yields after World War II were remarkable. Today's improved varieties are even more productive, more nutritious, more resilient.

Plant breeding delivers innovations that meet the needs of farmers and consumers in terms of productivity and yield, which are essential for food security. However, with the challenge of climate change increasing, demand is moving towards more resilient varieties. With the help of the latest breeding methods, plant breeding will be more than ever part of the solution.



Some of the most exciting advances will be linked to climate mitigation. Storing more carbon in soils is one possible contribution – some plant breeders are developing varieties with a bigger root system, thus absorbing more CO<sub>2</sub> from the atmosphere, which is then buried in the ground for decades. The six major crops (corn, soybean, rice, wheat, cotton and rapeseed) might one day suck even more carbon from the air.

## Going beyond the science

To fully unlock the potential of these innovations, we must go beyond the science.

First, as a society, we need full and open discussions about innovation in general – particularly the latest breeding methods and the products that emerge from them. How do we ensure their safe and effective application? And how do we reassure regulators and society alike? For its part, ISF will continue to support a constructive dialogue around plant breeding and how it contributes to a safe, nutritious and diverse supply of food and feed.

Second, we must create the right enabling environment for breeders to deliver innovation to farmers. Breeding new varieties depends on full access to the genetic materials that may hold solutions for the future. Genetic resources must be shared and biodiversity conserved. The IP system must be balanced and efficient. The UPOV convention's continued promotion is a necessity wherever IP systems consistent with it are not yet in place or not properly enforced.

Third, and arguably most important, how do we share access to the latest breeding methods, new varieties and innovations with developing countries? The vast majority of the world's farmers are in developing countries and will suffer most from climate change. Access to a wider choice of improved seeds will help them to overcome the many climate obstacles they face. Our public and private sectors must work together, building trust, coordinating investment and developing a shared vision. Together we will succeed.

Whatever ideas and actions will finally emerge in the battle to beat our changing climate, plants offer important solutions. ■

 **International Seed Federation**  
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