

World Food Day 2016 Climate is changing. Food and agriculture must too.

News release by Kobus Steenekamp, MD, Monsanto South Africa 14 October 2016

“Every day we are met with the challenges of feeding a growing world population in a sustainable manner. Climate change is one of the biggest issues we face in agriculture, as well as one of the most pressing challenges facing humanity. We will have to produce more food while using natural resources more efficiently if we want to continue providing food to all people across the globe. At Monsanto, we focus on and provide technologies, tools and information that empower the world’s farmers to find solutions to the challenge of feeding 9 billion people expected to inhabit the earth by 2050,” says Kobus Steenekamp, MD Monsanto SA.

The world’s poorest - many of whom are farmers, fishers and pastoralists - are hit hardest by higher temperatures and an increasing frequency in weather-related disasters. At the same time, the global population is growing steadily and is expected to reach 9.6 billion by 2050. Food security thus remains a global challenge and in many ways it is related to climate changes across the globe and agriculture, especially in Southern Africa, would have to adapt to adverse climate conditions and become more innovative, productive and sustainable.

The theme for World Food Day 2016 is “Climate is changing. Food and agriculture must too” and line with this Monsanto is committed to bringing a broad range of solutions to help nourish our growing world.

Growing food in a sustainable way means adopting practices that produce more with less in the same area of land and use natural resources wisely. It also means reducing food losses before the final product or retail stage through a number of initiatives including better harvesting, storage, packing, transport, infrastructure, market mechanisms, as well as institutional and legal frameworks. By strengthening the resilience of smallholder farmers, we can guarantee food security for the planet’s increasingly hungry global population also reduces emissions.

“Monsanto produces seed that assist farmers to have better harvests while using water and other important resources more efficiently. We also work to find sustainable solutions for soil health, help farmers use data to improve farming practices and conserve natural resources, and provide crop protection products to minimize damage from pests and disease. Through programmes and

partnerships, we collaborate with farmers, researchers, nonprofit organizations, universities and others to help tackle some of the world's biggest challenges. We apply our knowledge through several practices today, like traditional plant breeding, biotechnology, crop protection and precision agriculture. "

At Monsanto we define sustainability very simply: Helping farmers produce more with fewer resources to help improve lives. With the help of our partners and continued investment in research and new technologies, we are making steady progress on our sustainability goals.

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More about Monsanto's Commitments

Our first commitment is to help farmers produce more and meet the needs of a growing planet. Specifically, we will help farmers with improved seeds and agronomics to double the yields of corn, soy, cotton and canola crops over the 30 year interval between 2000-2030.

Our second commitment is to help farmers conserve more in order to protect vital natural resources for future generations. Specifically, we want to help them reduce the aggregate use of key resources such as soil and land, irrigation water and energy by 1/3 PER UNIT OF OUTPUT by 2030 vs. year 2000 levels.

Our third is to use improved seeds and agronomics to improve the lives of farmers and by extension their families and communities. To do this we intend to price our seed product so they create more value for farmers than alternatives. We also intend to deploy our seed technologies in ways that will help more than 5 million additional subsistence farmers (living on less than \$2/day) by 2020.

"At Monsanto, we are committed to addressing climate change and that starts with our own operations", says Steenekamp. "Monsanto plans to make our entire operations carbon neutral by 2021 through a unique program targeted across our seed and crop protection operations and through collaboration with farmers. We will drive carbon neutral crop production in our seed production operations with the goal of eliminating that portion of our carbon footprint altogether.'

Monsanto will offer farmers' resources to enable the adoption of best management and crop production practices, including the reduction or elimination of tilling and planting cover crops.

Innovation

The need for innovation is compounded when we face the realities of our changing climate. Changing weather patterns have created a volatile environment for farming. Monsanto is focused on innovation in multiple areas to help increase food production from less land. Breeding and biotechnology are two of the tools that help us develop seeds that resist drought, disease and insects while increasing food production. Crop protections and biological treatments help us to protect those crops. Precision farming techniques help farmers to plant the right seed, in the right place, at the right time, to maximize both productivity and efficiency. Combining these solutions will help us make a difference by producing more food with fewer resources.

Sustainable farming means protecting our water and topsoil. Multiple innovations are helping farmers to use water much more efficiently. Drought-tolerant seeds, developed via breeding and biotechnology, help farmers mitigate crop losses by using water more efficiently during drought. Monsanto is developing drought-tolerant cotton, and introduced drought-tolerant corn in the U.S. in 2013.

We also support the Water Efficient Maize for Africa, or WEMA, partnership, which last year introduced its first drought-tolerant maize for smallholder farmers in sub-Saharan Africa. The initial results of the first WEMA harvest show positive results, with food production more than double what was seen with the traditional seeds used in Kenya.

Biotechnology

Biotechnology has helped us to develop highly effective solutions for farmers over the past 30 years, strengthening plants' resistance to disease, insects and adverse weather conditions. Here's how the GMO process works: we take a beneficial trait that helps a living thing thrive in nature, like an ability to use water efficiently, and adapt that trait to a new plant so that it can better survive in its environment. These traits help farmers grow their crops in a sustainable way. For example, farmers are planting corn today that is more tolerant to drought, insects and disease. GMO soybeans and corn enable farming without tilling, which helps preserve precious topsoil and reduce CO2 emissions.

Another example of the benefits of biotechnology is papaya, which faced extinction from disease until resistance to a papaya virus was developed through biotechnology.

Drought-tolerant corn, which can offset the damage of erratic climate events such as the 2012 U.S. drought that cost farmers an estimated \$18 billion. (Source: Vincent H. Smith, economist, quoted in http://www.washingtonpost.com/national/health-science/drought-puts-federal-crop-insurance-under-scrutiny/2012/08/13/3d9e2960-e0c7-11e1-a19c-fcfa365396c8_story.html)

Monsanto and others in the industry are currently working on a new generation of GMO crops that could deliver important health benefits, like a soybean that can be converted to cooking oil without harmful trans fat, or rice that provides vitamin A, an important nutrient that is often lacking in diets in developing countries today.

Biologicals and Precision Agriculture

Biologicals and Precision Agriculture are two exciting new areas of innovation that can improve the productivity and sustainability of agriculture.

Microbial-based biological products are derived from naturally occurring microorganisms, such as bacteria and fungi. They protect crops from pests and diseases and enhance plant production and fertility. Biologicals offer tremendous potential to deliver sustainable solutions that can increase food production from the same acre.

The better understanding of irrigation efficiency results in the industry deploying new technologies in accordance. For example, new drip irrigation techniques, when combined with precision farming, can deliver water efficiency of up to 95 percent, compared with around 50 percent for traditional irrigation systems. The combination of better technology and better techniques is powerful. Our AquaTEK program in Italy provided farmers there with a systems-based approach to irrigation, combining different irrigation techniques with monitoring tools to help farmers apply the right amount of water at the right time to maximize the efficiency of every drop used. Learnings from this work and other partnerships are now being incorporated into our precision farming services that analyzes water, soil, weather and seed options to optimize planting and crop management for farmers.

Precision Agriculture is a rapidly evolving area that provides data analysis capabilities to help farmers better manage their crops. With precision agriculture tools, we're able to provide farmers with more detailed information in a much faster and more organized manner than ever before. This enables them to better manage variables of the season more efficiently and effectively. From seed, soil and water properties to weather and climate trends, there are a lot of elements that impacts famers' many

decisions. These services can help farmers maximize efficiency on every meter of farmland, making the right decisions at every stage of planting and growth.

FieldScripts, which integrates solutions in seed science, agronomy, data analysis, precision agriculture and service to help farmers boost farm productivity. One way this is done is by identifying “high potential” areas in farmers’ fields, where they can plant more seeds to get a bigger harvest while saving seed by using less on “low potential” areas. This information also helps farmers reduce their impact on the environment by using fewer resources in low potential areas and enabling the natural resources to be used efficiently in high potential areas.

“We believe these practices can help farmers not only deal with the effects of climate change, but also reduce their impact on the environment.”

Sustainability Report

In March 2016 Monsanto released its 2015 Sustainability Report highlighting the positive progress we are making toward our commitments. The report, *Growing Better Together*, provides a transparent review of Monsanto’s sustainability efforts from three perspectives – people, planet and company.

- **People**: Helping make balanced meals more accessible for everyone on the planet, and improving lives for farmers, employees, consumers and communities.
- **Planet**: Pursuing agricultural solutions that help mitigate climate change, ensure access to fresh water, preserve biodiversity and improve soil health.
- **Company**: Placing high ethical standards, effective corporate governance, responsible product stewardship and transparent reporting at the center of the way it operates its business.

Monsanto recently advanced several important sustainability goals. The company has increased irrigation efficiency in its seed production business and curbed its operational greenhouse gas emissions intensity in its crop protection business. Monsanto also became the first company to partner with the National Fish and Wildlife Foundation’s Monarch Butterfly Conservation Fund, making a multimillion-dollar commitment to support efforts to benefit monarch butterflies.

Other highlights from the 2015 report include the following:

- Reducing greenhouse gas emissions from its crop protection operations by 22 percent by 2020: Attained 73 percent of goal.
- Increasing irrigation water application efficiency across the global seed production operation by 25 percent by 2020: Attained 35 percent of goal.
- Helping farmers use nutrients more efficiently to curb greenhouse gas emissions on 1 million acres in the United States by 2020: Attained 20 percent of goal.

About Monsanto Company

Monsanto is committed to bringing a broad range of solutions to help nourish our growing world. We produce seeds for fruits, vegetables and key crops – such as corn, soybeans, and cotton – that help farmers have better harvests while using water and other important resources more efficiently. We work to find sustainable solutions for soil health, help farmers use data to improve farming practices and conserve natural resources, and provide crop protection products to minimize damage from pests and disease. Through programs and partnerships, we collaborate with farmers, researchers, nonprofit organizations, universities and others to help tackle some of the world's biggest challenges.

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