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SCIENCE FROM THE FIELD TO THE BENEFIT OF THE PLANET: ACTION IS NOW

Many of us know the huge agricultural challenge that is before us. We must feed a growing world population. We must produce more food in the next 50 years than has been produced in the last 10,000 years so that we can feed nearly 10 billion people by 2050.

And we need to produce this food sustainably, respecting and improving our environments.

It may not be easy to grasp abstract numbers such as 10 billion people, or thirty-two years into the future. To make it more manageable – by the time you read this sentence 10 people will have been added to the [world's population](#). By the end of this article that number will be 1,500. If we are to provide food, feed, fiber and renewable energy for our future generations we need to act now.

How will we do this? We will grow more food on less land, using fewer inputs, respecting water quality/quantity, improving soil health, working to mitigate climate change.

I am a farmer in Iowa in the heartland of the United States. I am also a grandmother. Every day I look into the eyes of four little boys and think about their future. I am personally compelled to act, to do my small part to protect and preserve our farmland and resources for them and their children.

Whatever agricultural business we are engaged in, we can, and we must do something on a personal level to defend what it is we do and why we do it. We must take responsibility to challenge and correct myths and misinformation about food production and technology that might influence our very own circle of families, friends and acquaintances. We need to make our voices heard. And we need to be mindful of the of those, often far removed from the production side of food and energy, who perhaps get their information from social media or NGOs without the benefit of having any context.

Farming, food production, pesticides and technologies such as genetic modification are under siege in ways that perhaps none of us could have imagined. The challenge is not only to ensure that food and energy security are safe and properly regulated, but also to ensure that consumers are not left behind in understanding what we do, why we do it and why safe and tried technologies are critical to sustaining our planet.

We must not, we simply cannot, allow ideology to overwhelm the pressing need for innovation and new technologies. Of course, we must weigh the risks and costs of adopting new technologies – food safety comes first.

I am grateful that we live in an age and generation when science provides us with tools to evaluate and manage risk. We must also assess the risk and cost of not adopting a new technology.

I believe we are entering another critical phase in mankind's evolution of food and agriculture. It is perhaps best described as a sustainable revolution.

Farmers, like me, need access to the best tools and technologies if we are to meet production challenges and farm sustainably. Farmers everywhere, across every generation, have always looked to new and safe ways to improve their operations, grow better crops and livestock, improve soil quality, and make better and sustainable use of natural resources.

Advancing technologies enable us to build and integrate energy agriculture and food agriculture, as a way to increase food security, bring more stability to food prices, and to stimulate and implement technological improvements in all areas of agriculture.

In my lifetime I have seen and been able to use technologies that would have been unimaginable a generation ago. And while GPS navigation, precision agriculture, drones and big data might be more common on farms in the developed world, other technologies such as tensiometers to control water irrigation and biotechnology to improve seeds and reduce chemical use can be scale-neutral thus allowing even small farmers to benefit.

In the midst of this great progress, we should be concerned about the unprecedented attacks on science, innovation and technology by professional activists who threaten to slow and even halt the adoption of some technologies. Technologies that could solve many of the issues facing our world's food and energy security.

We should be worried about the growth of so-called scientific papers which are being published in questionable scientific journals without proper peer review. Such reports are quoted extensively by activists and politicians as "evidence" contrary to regulatory assessments.

In June, *The Economist* magazine reported that in 2010 there were 53,000 so-called scientific articles published in questionable publications often having paid for the privilege. Today, that number is 400,000 such articles.

We should be worried about the increasing failure of many politicians and regulators across the world to support science-based decisions when considering new technologies.

We have seen legislation on new product approvals suffering delays in one region while being approved in others. This results in trade distortion of commodity crops such as maize and soya when legislation on agricultural biotechnology for example are out of sync between exporting and importing countries.

We should worry that the lessons of history will be repeated when we consider some of the new technologies such as plant breeding innovations which could suffer the same fate as genetic modification demonized by bogus claims and pseudo-science, leaving consumers confused and fearful.

Farmers and the food industry will need access to the best tools and technologies if we are to meet the world's challenges sustainably. Shortly before he died, the father of the green revolution, Dr. Norman Borlaug, said "Get it to the farmer". He knew farmers need access to continued research, innovation and technology, bringing science from the lab to the field and yes science from the field to the benefit of the planet.

We come from the earth, and we will return to the earth. What we do with our time in between is up to us. It is our responsibility. It is our legacy. So, the time is now for us to engage on the world's agricultural challenges before it is too late. For our children's sake.

About the author:



Pam Johnson is a sixth-generation farmer who works with her husband, Maurice, their two sons and their young families to produce corn and soybeans in northern Iowa. She has served as a volunteer leader in many commodity groups over the course of her career and is a leading advocate for agriculture and rural economic development issues on the local, state, national and international levels. She is vice president of the Foundation for Food and Agricultural Research and a past director of the National Coalition for Food and Agriculture Research (NC-FAR). She was president of the National Corn Growers Association in 2012-13 and is the immediate past president of international maize farmers alliance, MAIZALL.

Note from the editor:

This article was adapted from the opening speech given by the author as President of MAIZALL at the Global Agribusiness Forum in Brazil in July

The U.S. Sustainability Alliance (USSA) comprising American farmers, fishermen and foresters was formed by recognizing that sustainability is not an arbitrary threshold, but rather a commitment to continuous improvement and innovation. A goal of the Alliance is to share U.S. stewardship and sustainability practices with colleagues and counterparts across the world for greater mutual understanding of resource management practices.