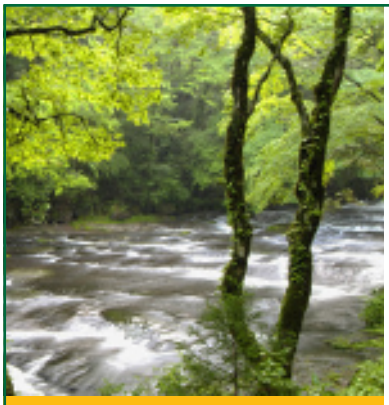

SUPPORTING SUSTAINABLE SOLUTIONS IN AGRICULTURE

With the help of modern agricultural technologies like agricultural biotechnology, we're feeding more people on less cultivated land

Concerns about growing populations, increased food scarcity, and the environment have led researchers, farmers, non-profit organizations, governments, and industry representatives to work together to help find sustainable solutions to meet the world's growing demand for food, fuel, and water. Now more than ever, agricultural practices need to be as sustainable as possible—this means getting more from cultivated land with a lighter environmental footprint, and in an economical way.

The Keystone Alliance for Sustainable Agriculture—a diverse group of growers, conservation organizations, and companies throughout the agriculture and food supply chain—defines sustainable agriculture as follows:

- Meeting the needs of the present while improving the ability of future generations to meet their own needs
- Increasing productivity to meet future food demands
- Decreasing impacts on the environment
- Improving human health
- Improving the social and economic well-being of agricultural communities

ENVIRONMENTAL SUSTAINABILITY

According to the Keystone Alliance for Sustainable Agriculture, over the past decade, since the commercial adoption of biotech crops such as corn, soybeans, and cotton, the United States has seen gains in productivity (yield) per acre, while improving agriculture's efficiency in the use of resources such as land, energy and water.

Every year, population growth is putting a heavier strain on the planet's land and water resources. To conserve natural resources for future generations, it is necessary to use sustainable agricultural practices. Doing so allows farmers today the ability to produce enough food, fuel, feed and fiber for themselves and for generations to come.

Agricultural biotechnology can increase protection against weeds, insects and diseases, and has the potential in the future to help plants better tolerate stresses like droughts, floods, excessive cold, and salt. The use of pest-resistant crops means that farmers can use more targeted crop protection products, which helps further reduce agriculture's environmental footprint.

CONSERVING LAND

In 1961, one acre of food crops was harvested to provide each person's food supply globally. By 2006 the amount of land necessary to meet each person's food supply had decreased by more than 50 percent. That means today, with the

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help of modern agricultural technologies like agricultural biotechnology, we're feeding more people on less cultivated land (Elam, 2007).

Bioenergy crops, which frequently include biotech traits, can provide food, feed, fuels, and other high-value co-products from the same crop, making the best possible use of the land. Protein from advanced biofuel crops could even reduce the acreage of land required to feed livestock.

CONSERVING WATER

New developments will help American farmers produce crops that use water more efficiently, thus reducing the negative consequences of drought such as yield or total crop loss. While research continues around the world, some initial breakthroughs in biotechnology to address this issue have already arrived. Field testing is well underway for a variety of drought-tolerant crops, including corn and canola. Initial results show encouraging yield increases for some crops. Drought tolerant corn could be widely available as early as 2012 (James, 2009).

REDUCING CARBON EMISSIONS

With the adoption of biotech crops, farmers have reduced tilling needed to control weeds, resulting in better containment of carbon in the soil (sequestration) and less tractor fuel needed to plow the land. In 2008, the combined savings of carbon emissions attributable to biotech crops was equivalent to removing almost 7 million cars from the road (Brookes and Barfoot, 2010, forthcoming).

According to the Renewable Fuels Association, the national trade association for the U.S. ethanol industry, ethanol, often produced with biotech crops, reduces greenhouse gas emissions by up to 29 percent - the equivalent to removing 2.1million cars off America's highways; cellulosic ethanol is expected to reduce emissions by 85 percent or more.

ECONOMIC SUSTAINABILITY

The world is confronting a multitude of financial challenges. Agricultural biotechnology is helping farmers throughout the world realize higher incomes. The net economic benefit to biotech crop farmers globally totaled $9.2 billion in 2008 (Brookes and Barfoot, 2010, forthcoming). Of the 14 million farmers who grew biotech crops in 2009, ninety-three percent were small-holder or resource-poor farmers from developing countries (James, 2009).

The economic benefits to farmers are a result of increased yields and lower production costs, such as fewer pesticides needed and increased income from more crops sold to meet demand (Brookes and Barfoot, 2009).

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ABOUT THE COUNCIL FOR BIOTECHNOLOGY INFORMATION

The Council for Biotechnology Information communicates science-based information about the benefits and safety of agricultural biotechnology and its contributions to sustainable agricultural solutions. Agricultural biotechnology enables farmers around the world to use economically and environmentally sustainable agricultural practices. In the United States, agricultural biotechnology is contributing today to sustainability, and it has the potential to make additional contributions in the future, through renewable biofuels to help meet energy needs; drought-tolerant plants to help manage water resources; and improved crop productivity and higher quality crops grown on existing farm land to help feed the United States and the world's growing population.

CBI members are the leading agricultural biotechnology companies.

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