

U.S. SOYBEAN SUSTAINABILITY QUESTIONS AND ANSWERS

How does the United Soybean Board define soybean sustainability?

The United Soybean Board (USB) defines sustainable soybean agriculture consistent with the USDA definition: Sustainable soybean agriculture will meet the needs of the present while improving the ability of future generations to meet their own needs. Soybean producers accomplish those goals through:

- Adoption of technology and best practices which increase productivity to meet future needs while being stewards of the environment;
- Improving human health through access to safe, nutritious food; and
- Enhancing the social and economic well-being of agriculture and its communities.

According to the [USDA National Agricultural Library](#), citing the 1990 Farm Bill, "... the term sustainable agriculture means an integrated system of plant and animal production practices having a site-specific application that will, over the long term:

- Satisfy human food and fiber needs;
- Enhance environmental quality and the natural resource base upon which the agricultural economy depends;
- Make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls;
- Sustain the economic viability of farm operations; and
- Enhance the quality of life for farmers and society as a whole."

Which production system is more sustainable: Organic farming, conventional varieties or transgenic (biotechnology) soybeans?

Sustainability performance is dependent on a number of elements common to all production systems – resource management, energy efficiency and climate impact are a few examples. Performance against these metrics in any production system, not the choice of production system, determines sustainability performance. According to the [Council for Agricultural Science and Technology](#) (CAST), "... conventional, transgenic and organic

(soybean systems) are environmentally sustainable and can be managed for profit when proper practices and technologies are used." [Free Download of CAST Soybean Sustainability Report](#).

Throughout the world, millions of people are starving. How can anybody claim that agriculture is sustainable?

Hunger has been a terrible problem throughout human history, and today is no different. In the last 150 years the world population has increased from about 1 billion to nearly 7 billion, and agricultural productivity and efficiency have increased at a similar pace. While feeding everyone will remain an unsolved problem for the foreseeable future, U.S. soybean producers are helping address this inequity. We manage hundreds of outreach programs in more than 80 countries to help improve agricultural productivity and human nutrition worldwide. [United States Soybean Export Council](#); [World Initiative for Soy in Human Health](#).

How does soy help improve livestock production efficiency?

Livestock products have played an important role in human nutrition since before recorded history, and raising livestock efficiently reduces environmental impact. By including soy meal in feed formulations, livestock receive an efficient source of protein and other nutrients that uses fewer natural resources than other nutrition alternatives. This substantially increases production efficiency. The same is true in aquaculture, where innovations in using soy to replace traditional fish food have dramatically increased productivity while reducing pressure on ocean fisheries and decreasing environmental impact.

Doesn't modern soybean production rely on pesticide use to produce a crop?

All agricultural crops require effective pest control to be sustainable. Whether raising conventional, transgenic or organic varieties, all soybean production systems include weed and insect control, using methods that are carefully regulated to minimize environmental and human impact. In some cases pesticide will be the most

effective and environmentally efficient method; in other cases a specific crop rotation may manage pests. The recent trend has been toward decreased pesticide use and increased yields. The average U.S. soybean yield is about 43 bushels per acre, up almost 33 percent just since 1990. Since the advent of biotechnology in 1996, pesticide application has decreased by an estimated 350,000 metric tons. In recent years, transgenic soybeans adopted on 92 percent of U.S. acres have helped farmers simplify weed control and rely almost exclusively on glyphosate-based herbicide that is less toxic than table salt.

Doesn't reliance on fossil fuel make soybean agriculture ultimately unsustainable?

U.S. agriculture is a relatively low consumer of fossil fuels relative to other energy-consuming sectors, accounting for about 1 percent of U.S. energy use in 2002. Between 1987 and 2007, the amount of energy used to produce a bushel of soybeans has decreased by about 66 percent, according to the Keystone Alliance for Sustainable Agriculture. Meanwhile, U.S. agriculture has viable alternatives to fossil fuel. One of those alternatives is biodiesel. About 18 percent of the soybean is oil, making it an ideal oilseed feedstock for producing biodiesel. Many farmers are using biodiesel blends in their tractors and other farm equipment, helping to limit any reliance on fossil fuel.

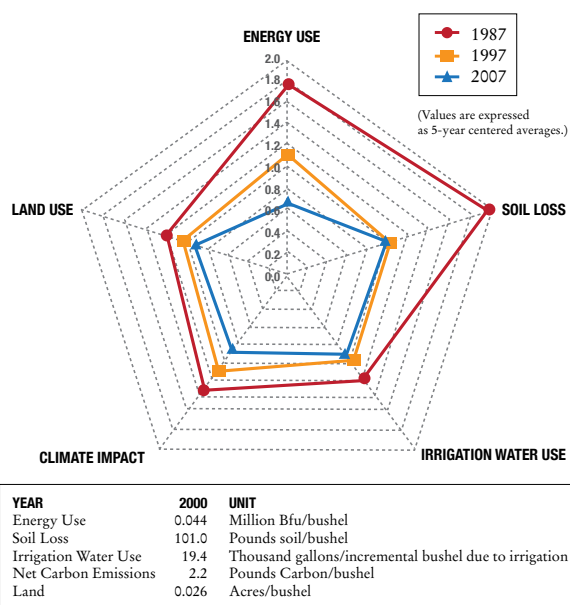
What is the impact of U.S. soybean production on greenhouse gas emissions?

Even before climate change was a hot topic, U.S. soybean producers were making significant reductions in greenhouse gas emissions. Modern soybean farming contributes toward carbon sequestration in soils. More than 84 percent of U.S. soybean acres are farmed with reduced tillage methods, using herbicides to control weeds instead of plowing, which increases the transfer of CO₂ from the atmosphere into the soil through crop residues and other organic solids. By sequestering carbon, soybean producers offset emissions from fossil fuel combustion while enhancing soil quality and long-term agronomic productivity. Also, reduced tillage has enabled farmers to reduce on-farm fuel consumption by millions of gallons in the last decade. That fuel savings in turn reduces greenhouse gas emissions.

What is the overall environmental impact of soybean production?

In 2009 the Keystone Alliance for Sustainable Agriculture released a report that measures five key indicators of soybean environmental efficiency: Energy use, soil loss, irrigation water use, net carbon emissions and land required for production. For each criterion, soybeans showed significant improvements in environmental impact since 1987, while yields steadily increased at the same time.

SOYBEAN EFFICIENCY INDICATORS
(PER UNIT OF OUTPUT, INDEX 2000 = 1)



What is the United Soybean Board?

Like producers of other commodities, such as beef, dairy and eggs, soybean farmers collectively invest 0.5 percent of the market price per bushel sold each season to fund research and promotion efforts. This investment is called a checkoff. The efforts of the checkoff are directed by the United Soybean Board, composed of 68 volunteer farmer-leaders nominated by their state-level checkoff organizations, and appointed by the U.S. Secretary of Agriculture. USB helps facilitate market growth and creation by funding and directing marketing, research and commercialization programs throughout the world.

Our soybean checkoff.
Effective. Efficient. Farmer-Driven.

