

EMBRAPA SOYBEAN

SCIENCE AND INNOVATION
FOR SOYBEAN FARMERS



Embrapa

A woman with glasses and a white lab coat is looking at several small, clear plastic cups containing young soybean plants. The cups are arranged on a white shelf in a greenhouse or laboratory setting. The background shows green metal shelving units and more plants.

EMBRAPA SOYBEAN

Founded on April 16, 1975, in Londrina, State of Paraná, Embrapa Soja (Embrapa Soybean) has a history of delivering solutions for the soybean production systems. Supported by a broad inter-institutional network of partnerships, it has become a world reference in technology generation for soybean cultivation in tropical regions. Among its several contributions to the soybean crop, the followings should be highlighted: 1) inoculants with nitrogen-fixing bacteria; 2) soil management, 3) fertilization, 4) soil conservation techniques; 5) integrated management of insect pests, diseases, and weeds, and 6) development of soybean cultivars for the different Brazilian agricultural regions, which allowed the crop expansion to non-traditional cultivation areas at low latitudes; among many others. Embrapa Soybean also develops wheat cultivars for the states of Paraná, São Paulo, and Mato Grosso do Sul.

RESEARCH INFRASTRUCTURE

≈ 260 Employees

≈ 60 Researches (with doctorate)

37.221 m² Built area

38 Greenhouses

31 Research laboratories

350 ha Experimental field 1 (Santa Terezinha farm)

121 ha Experimental field 2 (Maravilha farm)



AXES OF ACTION FOR SUSTAINABILITY

The DNA of Brazilian agriculture is science and innovation. Embrapa Soybean research lines are organized into 4 thematic axes to assist producers and technicians in maintaining Brazilian competitiveness.

1. LOW CARBON SOYBEAN

The Low Carbon Soybean Program aims to support the sustainability of Brazilian soybean production, making tangible qualitative and quantitative aspects of the grain production system. The basis of the Low Carbon Soybean Program is the measurement of benefits and the certification of production practices proven to reduce the emission of greenhouse gases (GHGs). The initiative has used intrinsic methodology, based on internationally validated scientific protocols with objective measurable, reportable, and verifiable criteria. The certification of Brazilian soybean will be voluntary, private, and done by specialized companies (3rd party certification) partners of Embrapa Soybean in the Low Carbon Soybean Program.

2. BIOINPUTS

Embrapa Soybean traditionally develops research on bioinputs, such as technologies for the biological control of soybean pests and biological nitrogen fixation. Embrapa Soybean aims to meet the growing challenges of bioinputs use by supporting their participation in insect pests and disease control and promoting plant growth in conventional and agroecological-based systems. It also seeks to encourage the substitution of non-renewable fertilizers for bio-based inputs in soybean crop among others sustainable practices related to this area.

3. ADVANCED GENETICS

Embrapa Soybean has always been at the forefront of knowledge related to genetics, so much so that innovative trends in modern biotechnology are routine in its laboratories. Assisted selection by molecular markers has helped researchers choose superior cultivars with maximum efficiency, speed, and low cost. Molecular biology and genetic engineering have produced profound changes in developing new soybean cultivars. Transgenics have brought gains to agricultural production systems, and genome editing has made it possible to modify parts of the plant's DNA to achieve better agronomic desirable characteristics. Embrapa Soybean uses advanced genetic technologies to develop soybean cultivars more tolerant to climatic adversities, with superior oil quality for human feeding, biofuels, and the green-based chemical industry.

4. DIGITAL AGRICULTURE

The technological changes in the digital field impacted the last few years. Several solutions are already available and under development to meet the needs of agribusiness. The strengthening of innovation at Embrapa Soybean is through initiatives such as the open innovation public call, the "Soja Open Innovation", designed to enable partnerships between Embrapa Soybean, startups, and innovative entrepreneurs in digital technologies applied to agribusiness. Connectivity, remote sensing, big data, and blockchain, among other tools, enhance Digital Agriculture's role in crop monitoring improvement, input rationalization, and productivity and profitability increase.

BRAZIL: LEADER IN TROPICAL SOYBEAN

Soybean was the fastest-growing crop in Brazil in the last four decades. Currently, the country is the world leader in soybean production and exports. From 1970 to 2021, soybean production in Brazil grew 91 times, jumping from 1.5 million tons in 1970 to 138 million tons in the 2020/2021 crop season.

Despite the production growth being almost 100 times greater in this period, the cultivated area increased only 30 times, jumping from 1.3 million hectares to about 40 million hectares.



CROP SEASON 2021/2022*

SOYBEAN IN NUMBERS

BRAZIL

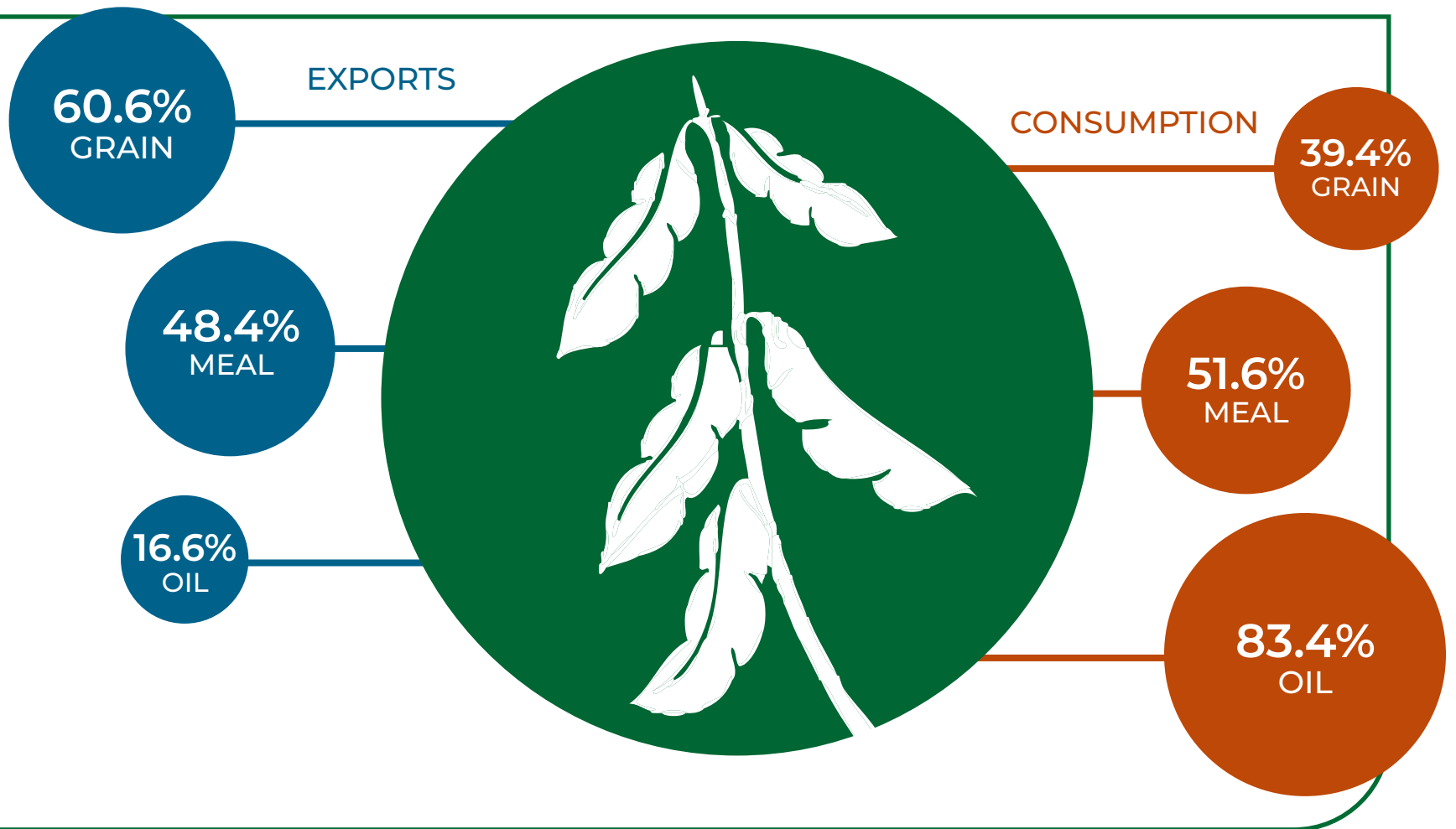
Area (millions ha): **40.8**

Production (millions t): **122.4**

Yield (kg/ha): **3,000**

*Source: Conab. Harvest Bulletin:
7th Survey, April/2022

DATA FROM BRAZILIAN SOYBEAN



Source: Conab and Secex. | Note: Estimate of crop season 2021/2022. Data from april/2022.

SOYBEAN: A VERSATILE GRAIN



SOYBEAN GERmplasm BANK

Embrapa Soybean curates one of the largest soybean collections in the world. Embrapa's Active Germplasm Bank contains approximately 65,000 accessions of soybeans. Preserving this diversity is essential for developing more productive soybean cultivars with agronomic characteristics and sources of resistance to different pests and diseases and the effects of global climate change.

SOYBEAN VERSATILITY

Traditionally, soybean goes into the production of animal feed, cooking oil, and biodiesel. With technological development, soybean grains have multiple functions and uses, such as cosmetics, therapeutic products, biofuels, tires, and other unconventional uses. In this context, the demand for the oilseed tends to increase in the coming years, expanding the opportunities for the Brazilian soybean producer.





SOYBEAN AND ITS GLOBAL IMPACT

Soybean is the world leading source of cheap protein available in large volumes and the basis for animal diets and for producing better quality protein in pork, cattle and poultry, as well as in the production of milk, eggs, and other by-products of animal origin. Without the current levels of soybean production in the world, it would be difficult for the population to access diversified protein sources at affordable prices.



Soybean

Empresa Brasileira de Pesquisa Agropecuária
Embrapa Soja
Ministério da Agricultura, Pecuária e Abastecimento

Rodovia Carlos João Strass, s/n, Acesso Orlando Amaral
Caixa Postal 4006, CEP 86085-981, Distrito da Warta, Londrina/PR
Telefone: +55 (43) 3371 6000
embrapa.br/soja
embrapa.br/fale-conosco/sac

Folder 03/22 | February 2023 | 1,000 copies

MINISTRY OF
AGRICULTURE
AND LIVESTOCK

BRAZILIAN GOVERNMENT
BRASIL
UNITING AND REBUILDING