

# Soybeans

## HISTORY

Soybeans are an ancient crop. Botanists believe the soybean was first domesticated in China as early as 7000 BC. Soybeans reached the United States in the early 1800s. They arrived here in Manitoba from the United States in the early 1900s and were grown in the Red River Valley region for both human and animal consumption.

In the 1950s, scientists began developing new soybean varieties that mature earlier, yield more, and contain higher levels of protein. These new varieties could be grown in areas with shorter growing seasons – so in the early 2000s, soybean production in Manitoba expanded beyond the Red River Valley to more northern and western parts of the province. New varieties along with increased demand have led to an increase in soybean crops from 50,000 acres in 2001 to 1.3 million acres in 2021. Soybean research continues to this day, helping farmers produce a more efficient, successful, nutritious product for consumers.

## PRODUCTION

Today, soybeans are Manitoba's third most-grown crop – just behind wheat and canola. Our farmers are known for producing high-quality soy products. We produce nearly 20 per cent of Canada's soybeans, making us the second-highest soybean producer in the country. And we process 10 per cent of that right here at home, at one of several Manitoba processing plants that convert soybeans into everything from food for human and livestock consumption, to a wide range of non-food products.

Farmers like growing soybeans because:

- They can be planted in many ways
- They grow well under different crop management styles
- They perform well in hot weather
- They have a long season
- They can handle more moisture than many other crops

Heavy clays make it hard for soybean seedlings to push through, and sandy soils may not provide enough water for the plant – which is why you're most likely to find soybeans growing in their favourite loamy black soils around Portage la Prairie, Carman, Morden, Winkler and Altona. *Loam* describes fertile soil with equal proportions of sand, silt, and clay.

That doesn't mean soy can't be found growing in other areas – especially as plant scientists develop innovative new varieties. Today, soy is grown north and east of Winnipeg, west of Brandon, and as far north as Swan River.

The soybean plant is an annual species of *legume* belonging to the bean family. The plant ranges in height from several inches to more than a meter. Characterized as a branching plant, the soybean grows flowers that are pink or light purple. Soybean flowers are self-fertilizing. Once fertilized, each flower develops *pods*, which contain the seeds. There can be as many as 20 pods on the plant, and four to five seeds within each pod. Seeds can range in colour from yellow, green, brown, black, or bi-coloured.

Planting season begins in late spring, after the last frost and once the soil has warmed up. If the ground is too cold, it can result in low germination and rotted seeds. Before seeds are planted, an *inoculant* is applied. Inoculants encourage the formation of nitrogen-fixing nodules on plant roots for richer



soil, bigger plants, and better yields. In excellent conditions, germination can occur within eight to 16 days.

Soybeans are harvested in late September or October when the leaves fall from the plant, and the moisture level drops to below 14 per cent. Soybeans are *direct combined* (straight cut) with a *floating cutter bar* to minimize bean loss. Soybeans are stored in bins where moisture and humidity conditions are closely monitored.

Manitoba’s booming hog industry is currently driving demand for soybean production, which it uses for soy meal and *biodiesel* production. This in turn creates opportunities for Manitoba soy processing facilities.

**USES**

Soy is an important component in countless foods, and a staple in many diets around the world. Different varieties of soy are used to produce different products. For example, light-coloured seeds are used in foods such as tofu. Soy that will be roasted or crushed – for instance, for animal feed – contains more protein.

Foods/ingredients that can be made from soy include:

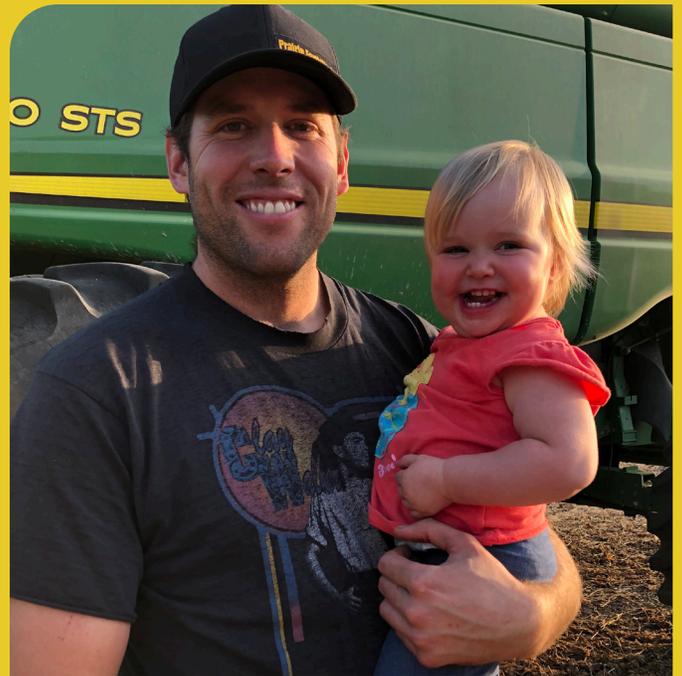
- Soy milk
- Tofu
- Soy sauce
- Natto
- Miso
- Tempeh
- Oil
- Margarine
- Shortening
- Soy nuts
- Edamame
- Simulated meat, like artificial bacon bits
- Animal feed (roasted and ground into a meal)



Soy is also an essential component of many non-food products:

- Printing ink
- Biodiesel
- Candle and crayon wax
- Solvents
- Lubricants
- Hydraulic fluid
- Plastics
- Fibres and textiles
- Adhesives

**FARMER PROFILE**



**BRYCE MACMILLAN**

Marquette, Manitoba

“I like growing soybeans because they provide their own nitrogen and add diversity to our crop rotation.”

### INDUSTRY IN MANITOBA

**Production:** 1.5 million metric tonnes (2023)

**Acres Grown:** 1,595 million (2023)

**Value to Economy:** \$716 million in farm cash receipts (2022)



### INDUSTRY IN CANADA

**Production:** 6.98 million tonnes (2023)

**Acres Grown:** 5.6 million (2023)

**Value to Economy:** \$4.25 billion in farm cash receipts (2022)



### NUTRITION

Soybeans are high in protein (35 to 38 per cent). Because of that, they're commonly used in human and animal diets. Soy is a great source of protein for animal feed, especially in hog and poultry diets, because the animals' stomachs can easily digest the protein.

In 2018, scientists studied the effects of soy consumption on blood pressure, arterial stiffness, cholesterol, and antioxidant status. They found that a diet based on or including soy can make the body's blood vessels more elastic, which lowers the strength of the pulse and decreases stress on the cardiovascular system.

### ENVIRONMENT

Bacteria in the inoculants applied to soybean seeds can *fix* nitrogen from the environment around them into a form they can use so farmers do not need to apply extra nitrogen fertilizer.

Soy is also a major feedstock for producing *biodiesel*, a biodegradable, renewable fuel alternative. Using biodiesel can help improve urban air quality by significantly reducing emissions of sulfur dioxide, carbon monoxide, and particulate matter. Reduced emissions may help offset health risks associated with inhaling air pollutants found in diesel exhaust. Since conventional diesel, an incomplete burning fuel, releases compounds that have been linked to lung, stomach and skin cancer, biodiesel is considered a cleaner-burning diesel fuel.



About 90% of US daily newspapers use soy-based ink.

## CAREERS

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- » Seed producer
- » Geneticist
- » Researcher
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