Pulses



What Are Pulses?

Pulses are the dried, edible seeds of some plants in the legume family. The four main types of pulses that are grown in Canada are dry peas, lentils, beans and chickpeas but faba beans are also grown. Pulses are very high in protein and fibre, as well as low in fat. Pulses are high in protein, fibre, and complex carbohydrates making them a top source for plant-based protein.

Pulses and the Environment

Pulses are nitrogen-fixing plants. This means that they take nitrogen from the air and convert it to plant food which helps the plants grow. Because of this extra nitrogen pulses provide, farmers don't need to put as much fertilizer in their soil. This makes pulses a more sustainable crop to grow as growing them has a lower environmental impact than other crops or animals. Because of this, pulses are an important crop and source of protein for the future.





Pulses grown in Saskatchewan include:

- Chickpeas
- Dry peas
- Lentils
- Dry beans
- Soybeans
- Faba beans

Peas



History

Pea is among the oldest crops in the world as it was first cultivated as early as 9,000 years ago. It is native to Syria, Iraq, Iran, Turkey, Israel, Jordan, and Lebanon, and has been cultivated in Europe for several thousand years. It is now grown in all climatic zones, including the tropics where it is grown at high elevations.

Production

Peas do not tolerate salinity or water logging. Pea plants develop best in deep soils and grow poorly in eroded or compacted soils. Field pea is a cool season crop sensitive to drought, especially during flowering and pod set. It yields highest in the cooler Black and Grey soil zones.

The Dark Brown and Brown soil zones dryland pea yields are, on average, less than yields in the Black or Grey soil zone, or than when grown under irrigation. In Saskatchewan, pea yields average 2,220 lbs/ac (2,490 kg/ha).

Peas are a legume with a taproot root system. Growing peas can be very good for soil that has lost a lot of its nutrients. Peas are able to put nitrogen back into the soil.



Varieties

The two major types of field pea are round seed, used primarily for food and feed, and those with wrinkled seed, which are usually harvested when immature and used for freezing and canning. The round-seeded pea is the main type grown in Saskatchewan. Pea seeds may have either green or yellow cotyledons under a white or occasionally pale green seed coat. A third type of pea has coloured seed coats and coloured flowers. This type includes the Austrian winter pea and maple pea, which are feed peas and not normally used for food.

Nutrition

Peas are rich in protein, carbohydrates, vitamin C and B group vitamins. Peas are also an excellent source of fibre.



Industry in Saskatchewan

Number of Producers: 6,388 (2019)

Value to Economy: \$477,546,463 in farm cash receipts (2019)

Industry in Canada

Production: 4,220,000 tonnes (2019)

Lentils



History

Lentil (*Lens culinaris L.*) was first grown in Southwest Asia about 7,000 B.C. It is best adapted to the cooler temperate zones of the world, or the winter season in Mediterranean climates. In 2018, global production of lentils was 6.3 million tonnes. Major lentil producing countries include Canada, India, Turkey, Syria, Australia, Nepal, and the United States. Canada is the leading lentil producing and exporting nation, while India is the leading lentil consumer.

Commercial production of lentil in Western Canada began in 1970, when approximately 600 hectares (ha) were grown. The release of the large green variety, Laird, by the Crop Development Centre in Saskatoon in 1980 was the single most important factor contributing to the rapid expansion of the lentil industry in Canada.

Production

In Saskatchewan, lentil is best adapted to the Brown and Dark Brown soil zones, but can be grown successfully in the Thin Black soil zone in years without excessive moisture. To date, most lentil production in Saskatchewan has been of the small red market class. The average yield of lentil is 1520 lb/ac (1700 kg/ha).

Lentils are a legume with a fibrous root system. The crop grows well on flat land that is free from sticks and stones. Lentils need to drain well so they generally prefer drier growing conditions. Growing



lentils can be very good for soil that has lost a lot of its nutrients. Lentils are able to put nitrogen back into the soil. Because of this extra nitrogen lentils provide, farmers don't need to put as much fertilizer in their soil.

Varieties

There are several different varieties of lentils produced in Saskatchewan:

Red Lentils: may look brown, grey, or tan but are red/orange on the inside. Seed coat colour has some influence on red lentil quality, particularly the ability to withstand weathering in years with prolonged periods of wet weather at maturity. The most common red lentils are small and extra small market classes.

Green Lentils: have green seed coats and yellow cotyledons (seed leaves). There are large green, medium green, and small green market classes.
Other varieties less commonly grown are
French green, Black beluga, and Spanish brown.

Nutrition

Lentils offer many health benefits and have seen increased growth in the North American diet.

- Heart Healthy: lentils are low in fat and high in fibre which helps lower blood cholesterol levels.
- Control blood sugar: after consuming lentils, blood sugar levels tend to rise slowly so the body needs less insulin. Eating lentils regularly improves fasting blood sugar levels and longterm blood sugar control in people with Type 2 diabetes.

Lentils



- Curb hunger: the high fibre and protein in lentils help you feel full longer
- Healthy gut: the high fibre in lentils also promotes regular bowel movements and healthy gut bacteria.
- Lentils are a gluten free, vegetarian, and diabetic alternative food.
- Lentils are great for athletes because they have a natural mix of protein and carbohydrates which are important to consume before exercise and a better alternative to pasta or other heavy carbohydrates. Lentils also provide a slow release of energy to your muscles which increases stamina for endurance sports.
- Compared to other pulse crops lentils are quickcooking. They are also a low cost, healthy food choice. Lentils can be precooked and frozen in small quantities for a quick and healthy addition to your meals, baking and desserts.







Industry in Saskatchewan

Production: 2,000,000 tonnes (2019) Value to Economy: \$748,998,551 in farm cash receipts (2019)

Industry in Canada

Production: 2,163,000 tonnes (2019)

Chickpeas

Histo**ry**

Garbanzo beans or "chickpeas" originated in the Middle East, the region of the world whose varied food cultures still heavily rely upon this high-protein legume. The first record of garbanzos being consumed dates back about seven thousand years ago. They were first cultivated around approximately 3000 B.C. Their cultivation began in the Mediterranean basin and subsequently spread to India and Ethiopia.

Chickpeas were grown by the ancient Egyptians, Greeks, and Romans and were very popular among these cultures. During the 16th century, garbanzo beans were brought to other subtropical regions of the world by both Spanish and Portuguese explorers, as well as Indians who immigrated to other countries. The top commercial producers of garbanzos are India, Canada, Pakistan, Turkey, Ethiopia, and Mexico. Today, chickpea is the second largest pulse crop in terns of global pulse productions (after dry bean), making up 18 percent of the world's pulse production.

Production

Chickpea is a cool season plant. It grows best if daytime temperatures are between 21 and 29°C and night temperatures are between 18 and 21°C.

Seedlings will tolerate light spring frost, but frost damage on immature seeds (especially of Kabuli chickpea) will prevent the seeds from turning the desirable golden colour. Chickpea is a relatively drought tolerant crop. The long taproot allows the chickpea plant to use water to a greater depth than other pulse crops. In the absence of disease, chickpea performs best when there is between 15 to 25 cm of rainfall during the growing season, and when cropped on soils that are well drained.

In Saskatchewan, the majority of chickpeas are grown in the Brown and Dark Brown soil zone. Chickpeas have a higher yield potential than lentil in the Brown soil zone and the average yield is 1700 lb/ ac (1900 kg/ha).



Growing chickpeas can be very good for soil that has lost a lot of its nutrients. Chickpeas have the ability to put nitrogen back into the soil. This allows the farmer to put less fertilizer into the soil.

Varieties

There are two types of chickpeas grown in Saskatchewan:

Kabuli Chickpeas: have large, round, cream to white coloured seeds with a thin white (zero tannin) seed coat. The seeds are about twice the size of field pea (260 to 600 g/1000 seeds). They are usually sold whole, with larger seeds receiving a higher premium. About ten to 15 percent of the world's chickpea production is of the Kabuli type.

Chickpeas

and falafel.

Desi Chickpea: seeds are smaller (120 to 320 g/1000 seeds) and more angular, with the seed coat varying in colour from green to purple, brown or black. Desi chickpea plants are shorter, higher yielding, earlier maturing, and more resistant to disease, frost, and insect damage than Kabuli chickpea plants.



Nutrition

Chickpeas are a good source of cholesterollowering fibre, as are most other pulses. In addition to lowering cholesterol, the high fibre content in chickpeas prevents blood sugar levels from rising too rapidly after a meal, making these pulses an especially good choice for individuals with diabetes, insulin resistance, or hypoglycemia.

Chickpeas are rich in both soluble and insoluble dietary fibre. Soluble fibre forms a gel-like substance in the digestive tract that catches bile (which contains cholesterol) and transports it out of the body.

When combined with whole grains such as rice, chickpeas provide virtually fat-free high quality protein. Chickpeas are an excellent source of the trace mineral, molybdenum, an integral component of the enzyme sulfite oxidase, which is responsible for detoxifying sulfites.

Industry in Saskatchewan

Production: 141,000 tonnes (2012)

Number of Producers: 376 (2019)

Industry in Canada

Production: 263,000 tonnes (2019)

Food Common foods that contain chickpeas are hummus



