

Mustard



History

Mustard is one of the world's most important spice crops. Throughout history it has been adapted into many different cuisines by many different cultures. In more recent times, mustard has been increasingly used in food preparation for its unique properties. Mustard also has many applications outside of traditional food ingredient uses. Some types offer biological and insecticidal properties and the oil can be used in the manufacturing of biodiesel and other industrial products.

The exact origin of the word mustard is not clear; however, it may have been derived from the use of the seed as a condiment mixed with the sweet must of old wine. This was called, "mustum ardens" which can be translated as, "hot must". The original use was likely not as a flavour enhancer as much as a flavour disguiser, predating the development of safe and efficient methods of food preservation and handling.

Some of the earliest known documentation of mustard uses dates back to Sumerian and Sanskrit texts from 3000 B.C. It has also been described by the Egyptians around 2000 B.C. and appeared in Chinese writings before 1000 B.C. Mustard has been referenced by many scholars and factors prominently in The Bible.

Mustard production began in Western Canada in 1936 with 40 hectares grown in Southern Alberta. At that time, the states of California and Montana monopolized production, but Canadian acreage increased due to higher yields and better quality. During the 1950s and 1960s, mustard production migrated east.

Production

Mustard is an oilseed with both a taproot and fibrous root system. Mustard is an annual plant that is well adapted to cool climates and will germinate at low soil temperatures (4.4°C). The Dark Brown and Black Soils of the Canadian Prairies are excellent for growing mustard.



Processing

Seeds are examined, cleaned, dried, and stored:

When the seeds arrive from the harvester, they are visually examined for quality. They are then loaded onto conveyer belts and passed under water sprayers to remove dirt and other debris. After the seeds dry, they are stored in silos until they are ready to be used.

Seeds are soaked: Some companies soak the mustard seeds in wine and vinegar for lengths of time ranging from a few hours to several days. This softens the seeds, making the hulls easier to remove.

Seeds are crushed and ground: The seeds are loaded into roller mills, where large wheels crush and grind them into flour. Some companies subject the seeds to numerous rounds of crushing and grinding in order to obtain a desired degree of fineness.

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Hulls and bran are sifted out: The crushed seeds are passed through sieves, so that the hulls and bran fall to a tray underneath. Heartier varieties of mustard may include the hulls.

Liquids added to the seed flour: The seed flour is loaded into large mixing vats and specific proportions of white wine, vinegar, and/or water are added. The mixture is blended until a paste is created.

Seasoning and/or flavouring is added: Pre-measured amounts of seasoning and/or flavouring is added to the paste and blended thoroughly.

Mustard paste is heated and cooled: The mustard mixture is then heated to a pre-determined temperature and allowed to simmer for a pre-determined time. It is then cooled to room temperature.

The mustard is bottled and packed for shipment: Pre-measured amounts of mustard are poured into glass jars or plastic bottles that are moving along a conveyer belt. Lids are vacuum-sealed onto the tops of the containers. The containers are then loaded into cartons for shipment.

Quality control: All manufacturers check the mustard at each point in the process. Government food processing regulations set parameters for cleanliness in the plant. These regulations include all utensils and machinery, floors, and workers' garments.

Varieties

Yellow Mustard (*Sinapis alba*): The major market for yellow mustard is the North American condiment industry, where uses include:

traditional hot dog mustard, mayonnaise, and salad dressings. Yellow mustard is also a water-binding agent and protein extender in prepared meats.

Brown Mustard (*Brassica juncea*): Europe is the primary market for brown mustard; the major use is as a condiment.

Oriental Mustard (*Brassica juncea*): Asia is the primary market for oriental mustard where it is used as cooking oil and as a condiment.



Nutrition

Mustard is an oilseed and is therefore high in fat and protein. Mustard's nutritional profile boasts a low calorie count and a plentiful supply of essential minerals including calcium, iron, manganese, phosphorus, zinc, selenium, and magnesium (the latter two being studied for their role in protecting against certain cancers, cardiovascular disease, inflammation, hypertension, and diabetes). Mustard seed is about 25% protein, but contains no cholesterol, and is a good source of the omega-3 fatty acids that may help decrease the risk of heart disease.

Mustard seed is an excellent source of soluble fibre because of the gum on the seed coat of yellow mustard. Early research seems to support the

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concept of using mustard gums to assist with lowering glycemic indexes. Incorporating mustard fibres may therefore aid in the management of blood sugar levels.

The same chemical compounds that give mustard its sharp spice taste may also contribute to its cancer fighting potential: glucosinolates. Animal tests have suggested that mustard exerts its anti-cancer effect by triggering enzymes to detoxify and by changing the way the body's defense mechanism works.

Mustard seeds are a very good source of selenium. This is a trace mineral that research suggests affects cancer risk in a couple of ways. Selenium may prevent or slow cancer growth rates. In addition, as an anti-oxidant, it may protect against free radicals.

Mustard is a good source of magnesium. This trace mineral is connected to everything from reduced blood pressure, asthma relief, to sleep relief for menopausal women. In addition to being a very good source of omega-3 fatty acids it also supplies tryptophan, phosphorus, iron, and protein.

Uses

Oriental mustard is the golden yellow seed coat coloured version of Brassica juncea. The main market for oriental mustard is Asia where it is used as a condiment in Japanese cuisine and as source of cooking oil in some other Asian countries.

Yellow mustard is best known as the main ingredient in North America's traditional hotdog mustard; however, some of the compounds in yellow mustard have unique properties that make it an important functional food ingredient. One of the compounds is mucilage, which is the coating on the outside of the seed. Mucilage has the ability to absorb and hold

liquid, which is important in the manufacturing of hotdogs and other prepared meats. Another important characteristic of yellow mustard is its emulsification properties. Emulsifiers allow for the suspension of one liquid in another, such as oil in water, this is important for salad dressings and mayonnaise.

Brown mustard, also derived from Brassica juncea, has a dark brown seed coat and is used in the manufacturing of Dijon style mustards. Brown mustard is also used in combination with yellow in the making of English style mustard.

Mustard has a long history of medicinal uses. Mustard paste has been used to clear chest congestion and relieve arthritis, rheumatism, toothache, and general stiffness because the active constituents found in the seeds cause a heating sensation. Mustard was a common ingredient in traditional rubs to help with asthma. During an asthma attack, mustard oil would be mixed with a little camphor and massaged over the chest. This loosens up phlegm and eases breathing.

Industry in Saskatchewan

Production: 106,000 tonnes (2019)

Number of Producers: 646 (2019)

Value to Economy: \$54,750,000 in farm cash receipts (2019)

Industry in Canada

Production: 134,600 tonnes (2019)

Number of Producers: 700 (2019)

Value to Economy: \$77,328,000 in farm cash receipts (2019)