

Significance, Distribution, Biology and Varieties of Sesame Cultivated in Uzbekistan

J. B. Khudaykulov

Professor (DSc). Tashkent state agrarian university

Z. Y. Saparbaev

Assistant-researcher – Urgench State University

Relevance of the topic and usage. Sesame is one of the main oil crops grown in Uzbekistan since ancient times. It ranks first among oil crops in terms of the amount of oil contained in its seeds. Cold-pressed sesame is equal to olive oil in taste. Sesame seeds are used in the confectionery industry, in medicine, and also in the preparation of preserves. It is used in the preparation of candies, oriental sweets, various halwa, bakery products. Vegetable oil obtained by hot pressing is used for technical purposes, and it is burned to make a high-quality dream.

Sesame seeds contain 48-65% oil, 16-19% protein, 15.7-17.5% soluble carbohydrates. Cold-pressed kunjari contains 40% protein, 8% oil, and it is used in the preparation of flour used in confectionery, halwa, as well as concentrated feed for livestock. 1Z2 nutritional unit is stored in 100 kg of hot-pressed kunjara. Sesame is not only an oil-producing plant, but it also differs from other oil plants in its medicinal properties. In Eastern countries, fresh sesame leaves and twigs are used to make various delicious salads, and in local medicine, oil made from white and light yellow sesame seeds is used as an ointment to care for the skin of the face and hands, to treat gastrointestinal wounds, and burn areas of the body. In addition, in folk medicine, a drug was prepared from black sesame seeds to increase physical strength. Today, apart from consumption, sesame is widely used in pharmaceuticals, perfumery, medicine and cosmetology.



Homeland and history of sesame. This plant, which is also called sesame, has a long and rich history. Its cultivation began several thousand years BC in Asia, although some researchers consider Africa to be the birthplace of sesame. It was first mentioned in the ancient Egyptian medical papyrus of Ebers, containing a list of herbs and spices. It is known that sesame seed was a universal product. So, the Egyptians ground it into flour, the inhabitants of Babylon made pies and wine from it, and the Romans spread a ground mixture of sesame and cumin on bread. In China, the seasoning was not only added to dishes, but also used as eye mascara, made from soot from burning sesame oil.






Sesame entered Uzbekistan through Punjab (Pakistan). Widespread in Central Asian countries. In world agriculture, sesame is planted on 7.0 million hectares. It is widely cultivated in India,

Pakistan, China, Burma, Mexico, Africa. In Uzbekistan, sesame is grown under irrigated and dry farming. Productivity in irrigated lands is 2-2.5 t/ha, in dryland 1.0-1.5 t/ha.

Already in ancient times, people appreciated the beneficial properties of sesame and used it for medicinal purposes. Gradually the product spread throughout Europe.

There are 26 known types of sesame, but the most popular of them is Indian. The plant is grown in India, Sudan, Mexico, Egypt, Greece, Iran, Ethiopia and Myanmar. There are white and black sesame. The main difference is that the white is husked. But it contains many valuable substances, which is why black sesame is used for medicinal purposes.

PRODUCTION AND TRADE

Sesame seed production – 2020	
Country	Production (tonnes)
 Sudan	1,525,104
 Myanmar	740,000
 Tanzania	710,000
 India	658,000
 Nigeria	490,000
Global	6,803,824
Source: FAOSTAT of the United Nations ^[6]	

In 2020, world production of sesame seeds was 7 million tonnes (6,900,000 long tons; 7,700,000 short tons), led by Sudan, Myanmar, and Tanzania.

The white and other lighter-colored sesame seeds are common in Europe, the Americas, West Asia, and the Indian subcontinent. The black and darker-coloured sesame seeds are mostly produced in China and Southeast Asia. In the United States most sesame is raised by farmers under contract to Sesaco, which also supplies proprietary seed.

What are the benefits of sesame?

The product is famous for its medicinal properties. It is rich in zinc, iron, magnesium, phosphorus, calcium, potassium, as well as vitamins A, vitamins B, C, E. Sesame contains the valuable substance sesamin. It is considered a very powerful antioxidant that prevents skin aging and is useful for preventing cancer. Thiamine, which is part of the seeds, improves metabolic processes and has a beneficial effect on the nervous system. Sesame contains a lot of calcium, which improves the condition of the nail plates, strengthens bones and joints, which is why it is recommended for the prevention of osteoporosis for people over 45 years of age. Due to its high fat content, it satisfies well and is recommended as an addition to diets. Calorie content of 100 grams of sesame is 565 kcal. The main benefits of sesame are reducing cholesterol levels, fighting inflammation, improving the overall tone of the body and normalizing the digestive system.

When it's dangerous

Sesame seeds can be harmful for people with varicose veins and vascular problems, because some substances that the product is rich in increase blood clotting.

“If we are talking about the daily consumption of a significant amount of sesame, then there can be many side effects - from a decrease in blood pressure in hypotensive patients to an exacerbation of inflammatory processes in urolithiasis. As for pregnancy, there are contraindications, but this depends on individual intolerance. Children under 5-7 years old It is

not recommended to consume sesame in large quantities, although a few seeds on a bun may not make any difference,” Khovanskaya emphasized. Like sesame, sesame oil can cause harm to the body in the form of an allergic reaction, so you should use it carefully for the first time.

How it is used in medicine.

Sesame seeds are used as a medicine to this day. In medicine, it is used as a hemostatic agent, which can accelerate blood clotting and is effective against bleeding. The benefit of sesame oil is its pronounced wound-healing effect, so it helps with external inflammation of the skin. In addition, scientific studies have proven that it can relieve pain from limb injuries and have a restorative effect on osteoarthritis of the knees.

Indian healers prescribe sesame for weak bones, lack of menstruation and hair loss.

At the same time, black sesame is much healthier than peeled sesame - it contains 60% more calcium. It can improve metabolism, rejuvenate and cleanse the body of waste and toxins and reduce cholesterol levels.

This is not all the benefits of sesame seeds: they are effective for gastritis, help with constipation, ease breathing and coughing, have a diuretic effect and neutralize increased stomach acidity.

The oil contained in the seeds is a popular product in cosmetology, rich in saturated fatty acids, triglycerides and glycerol esters. Masks, lotions, tonics and creams are made from it, because the oil not only tones the skin, but also regenerates and rejuvenates it.

Use in cooking.

Sesame seeds are one of the main spices in Asian cuisine. They are used to season salads, hot dishes, side dishes, and make sweets. The seeds are added to baked goods and sprinkled on buns to give them a more interesting taste.

“Here you can only rejoice at the breadth of methods of use,” the nutritionist noted. “You can add it to roasts or other hot dishes, to steamed vegetables, to porridge, to muesli and granola, to breads and muffins, to yogurt and smoothies, to salads and dressings, to hummus and other side dishes.”

How to select and store.

Before buying sesame, you need to evaluate its appearance. High-quality seeds should be dry, crumbly, and not sticky and glued together. Also, fresh seeds have no odor, and a rancid aroma indicates a stale product that will have a bitter taste.

Unpeeled sesame lasts a little longer than peeled sesame. An ordinary airtight container is suitable for it, which should be placed in a dry and cool place. Sesame will keep in this form for up to three months. If you freeze it, then the shelf life will increase to six months or even up to a year. Hulled seeds can also be stored in an airtight container or in the refrigerator, but will spoil a little faster.

How to use it correctly

To get maximum nutrients, it is better not to fry sesame seeds, because during heat treatment they lose their beneficial qualities. You also need to eat it correctly, not exceeding the optimal daily intake of 1.5 tablespoons. It is better not to consume sesame oil on an empty stomach.

Botanical classification. Cultivated or Indian sesame *Sesamum indicum* L. annual plant. Belongs to the Sesame family. Its 19 species are known, but all cultivated varieties belong to the cultivated sesame type. Sesame has a tap root that penetrates the soil to a depth of 1.2-1.5 m. The height of the stem is 100-150 cm in irrigated land, 50-80 cm in dry land, four- or eight-sided, covered with green hairs. Feathers can be dense or sparse depending on the characteristics of the variety. The stem is branched in some varieties, the branches grow upwards. One bush produces 4-12 branches. There are also non-branching forms. The leaves are arranged oppositely or

alternately. The lower part of the stem is entire, divided in the middle, the upper leaves are narrow, lanceolate. The flower is 5-type, 1-3 are formed in the leaf axil. One-flowered and three-flowered forms are distinguished depending on the short location of the flower band. The petals are pink, purple, white. Calyx and corolla hairy. It is self-pollinated, but it can also be pollinated with the help of bees from outside. The fruit is green, hairy, elongated capsule. The calyx consists of 2 or 4 fruit leaves, the edges of which turn inward to form a false skin. In some cases, false barriers are well developed. The blisters crack open. If there are obstacles in the bag, the seeds will not be spilled, if there are no obstacles, they will be spilled. The seed pods are shed when the plant is matured and the root is shaken upwards. Varieties whose pods do not burst when ripe are being created through selection. Pods 4-8 cells, 4 cm long, 0.9 cm wide. 20-100 pods are formed in one plant. There are 70-80 seeds in one pod. The seed is small, ovoid, 2.7-4 mm long, 1.7-1.9 mm wide, 1000 seeds weigh 2-5 g. The color is white, brown, brown, black.

Biological properties. Sesame is a heat-loving plant, its seeds begin to germinate at a temperature of 1516 0C, and a temperature of 1820 0C is required for its grass to germinate. The sowing-germination period is shortened when the temperature is 23-25 0C. It is resistant to frost, its grass dies at a temperature of 0.5-1 0C. If the air temperature is low at the beginning of the growing season, the plant develops slowly, turns yellow, and becomes stunted. Therefore, when planting sesame, the most favorable planting periods should be selected. Flowers fade at -2 0C air temperature; At -3 0C, adult plants also die from frost. The most optimal temperature for the growth and development of sesame is 25-30 0C. When the temperature drops to 12-15 0C, sesame stops growing. An active temperature of 2200-2500 0C is required during the growing season. At the beginning of the growing season, the plant develops slowly, 10-12 days before flowering, growth accelerates. The flowering period passes quickly.

Light requirement. Sesame is a light-loving, short-day plant. In the north, the growing season of sesame is prolonged, and it often does not ripen.

Moisture requirement. Sesame is drought tolerant, but yields increase with increased moisture availability. The most demanding period for moisture is from germination to flowering.

Sesame yields well in mountain and sub-mountain regions with annual rainfall of 350-400 mm.

Soil requirement. It grows well in fertile, weed-free, porous soils with a high content of organic matter. Heavy clay, salty soils are unsuitable for sesame.

Growth period - 73-150 days. Varieties are divided into early, medium and late ripening groups. Early varieties ripen in 75-78 days, medium-ripening ones in 85-110 days, and late-ripening varieties in 120-150 days. The growing season varies depending on the weather, applied agrotechnics and varieties.

Regional varieties of sesame in Uzbekistan.

Tashkentsky-122, "Black Prince", Serakhsy-470", "Kubanets-55", "Khorazm" and "Khiva", "Fergana Valley" varieties of sesame are grown in Uzbekistan.

Description of the variety "Tashkentsky-122". In Uzbekistan, since 1942, it has been regionalized in all regions. Height 150 cm in irrigated land, 100 cm in non-irrigated conditions, 1000 seeds weigh 3-3.5 g. In the evening, the growing season is 136 days in irrigated land, 110 days in dry land. Productivity in irrigated lands is 17.3-20 tons/ha. The seed oil content is 56-61%. In Uzbekistan, the Tashkentsky-122 variety is included in the State Register for planting in all regions.

Conclusions. In the process of getting acquainted with the reviews of scientific literature and analyzing them, you can witness that sesame is a plant that has been grown in the soil and climate conditions of Uzbekistan since ancient times. Tashkentsky-122, "Kora Shahzoda", Serakhsy-470", "Kubanets-55", "Khorazm" and "Khiva", "Fergana Valley" varieties of sesame

are cultivated in Uzbekistan. it indicates that it is urgent to carry out scientific research work on the cultivation of high-quality abundant crops.

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