

USE OF CEREAL PRODUCTION TECHNOLOGY IN THE FOOD INDUSTRY

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Abstract: One of them is sorghum. All parts of this plant are of economic value. From sorghum grain, you can get cereals and flour, molasses, starch, syrup, beer and wine. Sorghum is a raw material for the production of ethyl alcohol, cellulose, paper, cardboard, brushes and brooms. Grain is a good concentrated feed for all kinds of animals and birds, green leaves and stems are used for livestock feed in fresh form and are well siloed.

Keywords: cereals, rice groats, nutritional value, germ, grains, buckwheat, oatmeal, kernels, semolina.

Grits are whole, crushed or flattened particles of the central part of the grain core, obtained as a result of removing the flower films of the fruit and seed shells of the aleurone layer and embryo, grinding, polishing and sorting [1,3,4].

The nutritional and consumer value of cereals is characterized by physical, chemical, colloidal and biochemical properties that depend on the natural characteristics of the grain, soil and climatic conditions of crop growth, the state of the art and technology of obtaining cereals [2,5,6].

Various types of cereals in the recipe of cereal concentrates, especially the first and second lunch dishes, make up 50-80%. Their initial taste qualities and nutritional value determine the quality of the finished product to the greatest extent [6,7,8].

Rice groats are produced polished and polished in three grades: the highest, the first and the second. Depending on the shape and consistency of the grain, rice is divided into three categories: glassy, semi-glassy and powdery. Polished rice is produced only from vitreous grains [9,10,11,12].

The ground rice of the highest, first and second grade is grains processed on grinding machines, in which the flower films, fruit and seed shells, most of the aleurone layer and the embryo are completely removed. The surface of the ground rice is rough.

Polished rice of the highest, first and second grades are grains of polished rice processed on polishing machines, produced from vitreous varieties. The surface of the polished rice is smooth, shiny [13,14,15].

Crushed rice is crushed kernels formed during the production of ground or polished rice, additionally processed on grinding machines and not passed through a sieve with holes with a diameter of 1.5 mm.

Rice groats of the highest and I grades are used in the production of food concentrates.

Buckwheat. From the grain of buckwheat, which has a triangular shape and a dark-colored fruit shell, the following types of krunka are produced: a kernel, a fast-growing kernel [16,17,18,19].

The kernel - the kernel of buckwheat, freed from the fruit shells - is released in grades I and II. The done - crushed buckwheat kernel - is not divided into varieties. Kernels, fast-growing kernels of grades I and II contain whole and chipped buckwheat kernels that do not pass through a sieve with holes of 1,6x20 mm [20,21,22,23].

The fast-growing process contains buckwheat kernels split into parts, passing through a sieve with holes of 1.6x20 mm and not passing through a wire mesh sieve N8. [24,25,26]

Fast-growing buckwheat is produced from buckwheat that has undergone hydrothermal treatment, which improves consumer properties and increases the yield of whole grains [27,28]. Due to steaming of grain, the duration of cooking cereals is significantly reduced. The rapidly developing kernel has a darker color, the amount of water-soluble substances and the coefficient of digestibility (boiling) increase, the porridge becomes more crumbly, the smell is more pleasant. Their initial taste qualities and nutritional value determine the quality of the finished product to the greatest extent.

In the production of food concentrates of lunch dishes, a fast-growing grade I kernel is usually used [29,30].

Millet millet is millet kernels completely freed from flower films and mainly from fruit and seed shells and embryo. Grits are obtained by processing the kernel (millet shingle) on grinding machines [31,32].

Millet of the highest, I and II grades differs in the content of broken and spoiled kernels and unpeeled grains. In addition, crushed rice is produced, which is not divided into varieties. In the production of food concentrates, it is advisable to use millet only of the highest grade.

VNIIZOM has developed an improved technology of millet of improved quality (such as crushed) by strengthening the grain cleaning by using new screw-pressing machines U1-BSHG for grain grinding operations. In such millet, the content of fiber, protein and fat is somewhat reduced, but consumer properties are significantly improved: the cooking time is reduced by almost 2 times, the volume welding is 8-9% higher, the color is lighter. The product is an excellent raw material for the production of concentrates [33,34,35,36].

From oats, unbroken oat groats of the highest and I grades are produced, flattened oat groats of the highest and I grades, oat flakes "Hercules", petal flakes and prepared oat flour – oatmeal. In the production of food concentrates, oatmeal is mainly used.

Oatmeal is produced from oats, purified from weed impurities, puny and underdeveloped grains. Before grinding oats into flour, it is soaked in vats, steamed, dried, cooled and peeled, followed by sifting to isolate flour (crushed) and sifting to separate the husk[37].

Barley is used to produce pearl barley and barley groats. Pearl barley is available in five numbers, depending on the size, shape of the kernel, color and shade. In the production of cereal concentrates, cereals N 1, 2 and 3 are used.

Pearl barley is a barley kernel, freed from flower films, well polished. Pearl barley N1 and 2 is characterized by an oval shape of the kernel and a white color with a yellowish tinge. Pearl barley N3 has a rounded shape with a small dark line or dot in the place of the groove.

Pearl barley is sorted by size on sieves with round holes. Pearl barley N 1, 2 and 3 is characterized by passage through sieves with holes with a diameter of 3, 2.5, 2 mm.

Barley groats are particles of crushed kernels of various sizes and shapes, completely freed from flower films and partially from fruit shells. According to the content of the endosperm, barley groats are inferior to pearl barley because they contain an aleurone layer, a significant part of the fruit and seed shells [38,39].

Barley groats are produced in three numbers, depending on the size of the kernel. In the production of food concentrates, barley groats N 1 and 2 are used. Groats N1 is characterized by a passage through a sieve with holes with a diameter of 2.5 mm and a descent of a sieve with holes with a diameter of 2 mm, groats N 2 - 2 and 1.5 mm, respectively.

Corn is used to produce grits ground in five numbers, large - for flakes and small - for the production of crispy sticks.. In the production of cereal concentrates, ground corn groats of the first three numbers are used. The ground grain consists of a coarsely crushed corn kernel, freed from fruit shells and germ, well sanded. Depending on the color of the processed corn grain, the ground grain can be white, light yellow and amber in color [40,41,42].

Groats N1 is characterized by passage through sieves with holes of 4 mm in diameter, and the descent of the sieve with holes of 3 mm, groats N2, respectively, are 3 - 2.5 and 2mm.

Produce whole peas peeled polished and crushed peeled polished. Whole peas consist of undivided cotyledons that do not pass through a sieve with holes 4-4.5x20 mm. The cereal contains crushed peas, peeled and polished, no more than 5%. According to the content of the endosperm, barley groats are inferior to pearl barley because they contain an aleurone layer, a significant part of the fruit and seed shells Whole polished peas have a spherical shape, a smooth surface with a whitish coating.

Split polished peas consist of divided cotyledons passing through a sieve with holes with a diameter of 4-4.5x20 mm and not passing through a sieve with holes with a diameter of 3 mm. Split peas have the shape of hemispheres, the surface is polished with a light whitish coating and rounded edges around the circumference. The color of peas, both whole and chopped, can be yellow and green [43,44,45].

Corn is used to produce grits ground in five numbers, large - for flakes and small - for the production of crispy sticks.. In the production of cereal concentrates, ground corn groats of the first three numbers are used. Both types of cereals are used in the production of food concentrates.

Wheat groats. Durum wheat (Durum) is used to produce "Poltava" groats of four numbers, "Artek" and semolina. Grain "Poltava" N1 wheat grain (passage through a sieve with holes with a diameter of 3.5 mm, exit from a sieve with holes with a diameter of 3 mm), freed from the embryo and partially from fruit and seed shells, sanded, oval in shape with rounded ends. Cereals-N3 and 4 - particles of crushed wheat grain of various sizes, completely freed from the embryo and partially from fruit and seed shells. The grain particles are rounded and sanded [46,47].

Artek grits are particles of finely crushed wheat grain (passage through a sieve with holes with a diameter of 1.5 mm, exit from the sieve N063), completely freed from the embryo and partially from the fruit and seed shells. Grain particles are sanded. Ground wheat groats are translucent, light yellow in color.

According to the content of the endosperm, barley groats are inferior to pearl barley because they contain an aleurone layer, a significant part of the fruit and seed shells Whole polished peas have a spherical shape, a smooth surface with a whitish coating.

Semolina is selected during the varietal grinding of wheat into flour from intermediate products (grains). This grain is the best part of the kernel peeled from the shell, crushed, sorted and sifted through appropriate sieves. Semolina from soft wheat varieties is indicated by the symbol M, from hard varieties - T, and from soft wheat varieties with an admixture of up to 20% of hard ones – MT [48,49,50].

Semolina of the M brand is an opaque powdery white grain, soft to the touch. This grain is the best part of the kernel peeled from the shell, crushed, sorted and sifted through appropriate sieves. The content of fine flour in it (passing through the nylon sieve N 38) should be no more than 2%, the large fraction (passing through the sieve N 23) no more than 8%.

Semolina of the MT brand is an opaque powdery white grain with the presence of a translucent ribbed grain of cream or yellowish color. The content of fine flour in it (passage through the sieve N 38) should be no more than 1%, the large fraction (passage through the sieve N 23) - no more than 5%. This grain is the best part of the kernel peeled from the shell, crushed, sorted and sifted through appropriate sieves. The content of fine flour in it (passing through the nylon sieve N 38) should be no more than 2%, the large fraction (passing through the sieve N 23) no more than 8%. Semolina of the T brand is a translucent ribbed grain of cream or yellowish color [51].

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