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PROCESSING OF OATS INTO GROATS AND FLAKES

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Standard products of processing oats in Ukraine are not crushed oats groat of which during further processing produces flaked groats, flakes "Hercules", "Pelyustkovi". Separate oat products are flakes "Extra" and "Tolokno" – special prepared oats flour.

The technological processes of processing oats are amongst the most difficult in cereal production and the need for large production areas for its implementation.

For example in the production of not crushed oats groats cleanup of impurities, divided into two factions and specially prepared oats grain enters operational silos passes magnetic control and goes to dehulling stage which carried out on two systems separately for each faction. Modes of dehullers set so that provide a minimum amount of crushed groats at the maximum value of the dehulling coefficient on the first dehulling system. After each dehulling system carried out sorting of dehulling products using the groats separation stage. First at sieving machine (usually use dressing reel) use sieves Ø 2,0 mm removing husking bran then on the two systems of aspirators removed hulls and remainder of husking bran. Mixture of dehulling products which consists of dehulled and undehulled crops sent to groats separation stage which is carried out on paddy separators. The classic scheme provides two sequential passages of these machines. Overflow from first Paddy machine represents undehulled crops which are sent for second dehulling system, underflow – dehulled crops control on second paddy separator and then sent to pearling. Pearling conducted on one system. Usually, at this stage are used pearlier machines. Also allowed the possibility of exclusion from the technological scheme if dehulling conducted at hulling stone and air transport is used to transport products of processing. Under these conditions, more intensive processing of grain at hulling stone and friction in the walls of products pipe line provide a similar surface treatment as the pearling system. After pearling are carried sorting

products, which are formed at this stage. From the mixture remove husking bran, particles of crushed groat and small amount of hulls. Sorting of pearling products is carried out at plansifter. Overflow from sieve 2,5x20 mm referred to feed impurities, underflow of sieve Ø 2,0 mm removed a mixture of crushed kernels and husking bran. Oats groat obtains by underflow of sieve 2,5x20 mm. End product for control passed through two control systems of paddy separator and then controlling in one system of air separators. In applying the classical scheme provides the production of high, first and second grades of groats, the total yield of finished products is 45-55 %.

Oats are the raw material for the production of a wide range of flaked products. From it produce flaked groats, flakes "Hercules", "Pelyustkovi" and "Extra". For all types of flakes as raw material allowed using oats groats or oats grain. Each type of flakes has its production technological features.

For the production of flaked oat groats are used high or first grade of oats groat. In the first stage groats sent to water heat treatment which consists in its steaming at horizontal screw steamer with the vapor pressure 0,05-0,10 MPa. Steamed groats temper in special insulated bins for 20-30 min. Flaking of groats allowed to carry on flaking machine or roller mills with ribbed rollers. Thickness of flakes typically is 0.7-0.9 mm. Flaked groats sent to sorting, during which by underflow of sieve Ø 2,0 mm conduct removing of husking bran and particles of crushed groats, by overflow from this sieve obtain flaked groats which controlling by passed through two control systems of air separators. For the production of flakes "Hercules" is used high grade of oats groat. The classical scheme includes the following steps: steaming, tempering, flaking, sorting and cooling of end products. At the beginning of the technological process carried out additional control of groats at two consecutive systems of paddy machines and one system of groats separation. At systems of paddy machines remove unprocessed grain which return to dehulling systems or if plant does not have the conditions for it processing sent to waste products. Control of husking bran and crushed groats conduct at groats separation machines. By overflow from sieve 2,5×20 mm obtain groats which sent for further processing. Water heat treatment in the production of flakes "Hercules" carried out a similar scheme and modes which provides for the production of flaked groats. Flaking stage carry on flaking machine with smooth rollers, thickness of flakes typically is 0.6 mm. Obtained flakes are dried at belt dryer to standardized humidity12,0 % and control at two control systems of air separators. For the production of flakes "Pelyustkovi» is used high or first grade of oats groat. At the beginning of the technological process carried out additional control of groats which carried similarly of the process of production flakes "Hercules" and then groats additionally send to one pearling system. Surface treatment of groats reduces the content of mineral elements to 1.9 % which is regulated by standard. The mixture of pearling products at first sorts at dressing reel where by underflow of sieve № 080

remove husking bran, after this at groats separation machine remove crushed kernels and separates groats into two factions which sent to control at air separators systems. Next stages: water heat treatment, flaking, drying and control operations carried similarly of the process of production flakes "Hercules".

Analyzing the classical technology of processing oats in groats and flakes it can be concluded that they are outdated, contain large amounts of energy-intensive operations after which get a low yield of groats and flakes. Almost half of all refined products consists waste products (up 46 %). In modern conditions carrying out such a complex technological process with low yield of finished products is unprofitable.

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