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Research Article

IMPROVING THE PROCESS OF PREPARING THE GRAIN FOR GRINDING

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ABSTRACT

This article discusses progressive technological methods for increasing grain production, increasing the efficiency of grain use, improving its quality, increasing the yield of premium flour, increasing productivity by installing high-performance equipment, automating production processes, and improving the preparation process. grain for grinding. Schemes of the technological process of preparing grain for grinding during threshing and reconstruction are given.

KEYWORDS

Grinding of grain, improvement, production, use of grain, increase in efficiency, improvement of its quality, the highest grade, flour, high-performance equipment, increase in productivity, production, automation of processes, grinding of grain, progressive technological methods, schemes of technological processes.

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Introduction

Wheat is the main and most important food crop grown in most countries of the world in more than 80 countries. Wheat culture has been developing for about 10,000 years, in Europe for more than 5,000 years, and in our country for more than 5,000 years. When building new flour mills, it is easier to solve the problem of improving the technological process than the reconstruction of old ones. But the cost of reconstruction is low and an equal result can be achieved when done based on a good project. Danilin A.S. [1-7].

Methods

Technological re-equipment and reconstruction can bring all flour mills to a modern technical stage. More than 1/3 of high-grade flour should be produced in technically re-equipped enterprises [8-11]. The main tasks to be solved during the reconstruction of the existing flour mill are:

– increase production capacity;
– Improving the efficiency of grain use, improving its quality, increasing the yield of high-grade flour;
– Increasing productivity by installing high-performance equipment, automation of production processes;
– Application of advanced technological methods of preparation of grain for grinding.
– During the reconstruction, the schemes of the technological process of preparation of grain for grinding will be reconfigured:
– preparation of grain for grinding by type, vitreous size and size, wetting in different ways, continuous mixing, two- and three-stream heating lines in winter;
– the grain mixture is separated (air-sieve separators, air separators, etc.);
– the grain surface is treated (in RZ-BMO or RZ-BGO dehumidifying machines, J9-BMA washing machines, etc.);
– pre-steam damping (A1-BSHU-2 rapid damping screw before the first steam, A1-BSHU-1 before the second steam);
– Intensive cleaning of grain, resulting in a decrease in its content by 0.1-0.2%, and ash content by 0.06-0.10%.

Technological efficiency of the cleaning process on grain aspiration machines in terms of size and aerodynamic properties Light components dust, foreign matter, sorghum, sawdust, sawdust, flour, crushed and lean grains, etc.) is determined by separation from the grain and are determined in% according to the following formula: $T = \frac{a-b}{a} * 100,$

In this case, a- is the number of light components before they reach the car;

b-is the amount of light components after processing [12-19].

It is not necessary to maximize the efficiency of the equipment to ensure high technological efficiency of cleaning. The efficiency of the air separator can be judged from the following data:

- air velocity in the pneumatic separator - 7.4 m/s;
- the number of primes in the grain mass
- -RZ-BAB - up to 0.05 separator
- RZ-BAB - after 0.01 separator;
- Coefficient of cleaning from the primes - 90-80%.

Primes are classified according to their size and aerodynamic properties to remove the bulk of the grain from foreign bodies [36], and cylindrical or flat-sieve grain cleaning machines are used. The first cleaning process from the largest primes was carried out on scalper machines. Its power cylinder rotates slowly. More detailed cleaning is carried out in separators with two layers of flat sieves. It forms a simple technological scheme that separates large and fine primes. The efficiency of cleaning grain from large primes in scales is 100% [19-21].

In A1-BIS and A1-BLS separators, in grain sieve nets, primes that differ in thickness and width from grain, in the pneumo-parasitic duct is cleared at the rate of oscillation (jump, vitanie). It is known that in wallpaper machines, the husk of the grain is cleaned of debris, including beards. They are close to the grain in size and specific gravity, so they are difficult to separate in separators [21-24].

Cleaning the wallpaper should also partially eliminate the bacteria that accumulate in large quantities on the surface of the grain. The microflora, which is not lost during cleaning, causes millions of bacteria to enter the flour. They survive even when baking dough. This does not guarantee the safety of the bread. The dry cleaning method involves the use of fast-rotating metal rods inside a cylindrical grinding drum. "Soft" wallpaper machine designs are also used. In them, the surface of the cylindrical drum is made of metal. In granulated wallpaper, the

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grain is beaten with sticks, from which the grain hits the rough surface of the cylinder .

Depending on the magnitude of the kinetic energy expended on the impact, partial or complete crushing of the grain, or partial destruction of the husk, occurs. Different mechanical changes occur for different sizes and varieties of steam. Grinding of grain is not required in najdak wallpaper. Therefore, we are interested in the magnitude of the force that can perform the main function of the wallpaper machine [15-19].

If the rotational speed of the stick through y is set in m/s, the force required to hit the grain on the stick is my2/2, and the force hitting the surface of the grain is my2 sin2á/2.

The authors of some studies consider the impact of a stick-on grain to be important in determining the threshold value of velocity, and find the impact force using the expression my2/2 [38-41], because two blows are observed at each meeting of the bitch with the grain.

Hence the impact force of the bitch at each encounter with the grain

$m\upsilon^2/2 + m\upsilon^2 \sin^2\acute{\alpha}/2$

For the outer and inner diameters of the slag wallpaper stick, we find sin 400 = 0.4, assuming that the change in angle in the range of 20-500 is on average 400. To make the wallpaper work properly, set the number of times the stick meets the grain with K, the equation for the impact force on the wallpaper in kilograms can be written:

$K(m\upsilon^2/2 + m\upsilon^2 \sin^2\acute{\alpha}/2) = A$

The value of A was found above for the individual grains. Thus, we received an assignment for the operation of the wallpaper, in which the values of K and y should be related to the above formula. To find the value of K, it is necessary to experimentally break up the grain husk in the wallpaper as if we had struck it in a laboratory with a force of 0.0015 kg/m.

Knowing the true value of y in the wallpaper, we find the value of K. By putting the value of K found for a particular case in a formula, we can find the possible value of the velocity of the circle For the general case

$$v = \sqrt{\frac{2 * 9?81 * \Phi}{k(1+0,4) * G}}$$

In this case, G is the weight of wheat grains of different sizes. From the formula, it is clear that the value of the rotational speed of the wallpaper stick is directly proportional to A and inversely proportional to - G.

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The value of A has different values for different varieties, and the weight of the grain depends on the size of the grain when the density is the same. It follows that: As the endurance of the endosperm increases, the rotational speed of the bitch may increase or vice versa. As the grain size increases, the rotational speed of the stick should decrease.

Table 1. The sizes of the individual fractions of grains

The generation of wheat	Fraction 3,0-2,75	Fraction 2,75-2,50	Fraction 2,50-2,25	Fraction 2,25-2,0
Durum wheat (durum)	0,045	0,0368	0,0358	0,0238
Soft wheat with a thin endosperm (belozernaya)	0,0388	0,0350	0,0292	0,0240
Soft wheat with vitreous endosperm (Ukrainka sorts)	0,0424	0,0350	0,0280	0,0234

As can be seen from this table, the size of the individual fractions of grains is given, which shows that the fractions vary depending on the variety of wheat. The moments that weaken the impact force in Najdak wallpaper are as follows:

- The elasticity of the grain, due to which the grain does not completely lose its speed after hitting the nail polish;
- The effect of air resistance on the impact of grain on the grain;

Adds strength to the impact force:

The rough surface of the najdak and the one-tenth of the friction that occurs with it are y = cos the fruit husk and the rest of the sludge are separated from the grain under the influence of the speed at which the grain is directed along the surface of the gravel at this point.

CONCLUSION

The grain mass, which is free of primers, needs additional processing. Contaminants and dust added during grain transportation and storage should be removed. In addition, damage to the grain can damage its husk and partially fold it. To clean the grain from these contaminants, its surface is treated by the dry or wet method. In the first case, wallpaper and brush machines are used or the grain is de-husked on the machine A1-ZSHN-3. When the grain surface is treated by the wet method, a washing machine or wet dehumidification machines are used.

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