



METHODS AND METHODS OF COLD CONDITIONING OF GRAIN

Akramova Gulhayo Abidovna
PhD Andijan Institute of Mechanical Engineering

Annotation: *the quality of the grain product in its processing and proper processing. From improving grain quality, soaking the flour uses cold and hot conditioning types for the steaming process. This increases the quality of the flour and saves time.*

Keywords: *grain, hot and cold condiratory, grain processing, soaking.*

Аннотация: *качество зернового продукта в его обработке и правильной обработке. Замачивание муки от повышения качества зерна использует холодные и горячие виды кондиционирования для процесса испарения. Это повышает качество муки и экономит время.*

Ключевые слова: *зерно, горячее и холодное кондиционирование, обработка зерна, увлажнение.*

Annotatsiya: *Don maxsulotining sifati uni qayta ishlash va to'g'ri ishlov berishda. Don sifatini oshirishdan unni namlash bug'lash jarayoni uchun sovuq va issiq konditsionerlash turlaridan foydalanadi. Bu esa unning sifatini oshiradi va vaqt sarfini tejaydi.*

Kalit so'zlar: *don, issiq va sovuq kondirsionerlash, donni qayta ishlash, namlash.*

Optimization of technological technologies, characteristics of grain, its processing by hydrothermal method. Grain conditioning is used in flour, grain and mixed feed production technologies. Technological improvements are achieved by adjusting processing parameters to grain properties (eg, temp-ry, pressure, moisture, output duration. technologist. operations). In the scientific and special journal of the 20th century, the term "grain conditioning" is replaced by the term "hydrothermal processing of grain".

Cold air conditioning. Grain with gel conditioner is moistened in the usual way - with a lock or washing agent, and goes into the drying containers, the duration of which varies from 8 to 60 hours, depending on the type of wheat.

Grain moistening is carried out with the calculation of 15-16% moisture. Hard and dry wheat needs double and even triple locks. For example, in the American grain cleaning scheme, the lock is produced before washing, then washing machine and before grinding. The gradual wetting of the grain in the settling boxes allows the grain to obtain sufficient moisture (in the case of obtaining grain with a small amount of moisture to clean the grain).

Supplying a large amount of moisture with one lock of grain at a time (for example, in a washing machine) can cause moisture to swell from the surface of the grain, which does not have time to enter the shells, and as a result, the grain does not reach the required moisture in the 10th drainage.

Generally, vitreous and durum wheat are twisted for 24-48 hours.

Soft wheat flour is soaked once, sometimes twice. Cooking soft wheat for 16-24 hours. this leads to sufficient technological impact. In some cases, longer lying has a negative effect

on the grain, increases the viscosity too much, which affects the increase in energy consumption during grinding and the deterioration of technological performance.

During low-temperature grain processing (in winter), wheat is moistened with warm water.

Sometimes (in American practice) it is properly heated up to 25° in front of the lock, which leads to good air conditioning results.

Hot conditioning, moistening the grain, then heating it and cooking the ground grain for a short time before grinding, the so-called "hot conditioning" has some advantages over the "cold conditioning" method, but the latter is much more economical in terms of operating costs.

Warm conditioning can significantly reduce the cooking time required to distribute the moisture content of the grain and ensure its uniform distribution. Depending on the variety of wheat, the time of laying down after hot conditioning can be taken from 4 to 12 hours, that is, it is reduced several times compared to the time of flight in cold conditioning.

In addition, a number of recent studies on the effect of conditioning on the mechanical properties of dough and gluten have shown that hot conditioning has a very strong effect on these properties.

Heating and cooling of grain in a hot air conditioner is carried out in special air conditioners, the design of which differs depending on whether it serves as a coolant. There are three types of air conditioners: water, air and combined - "air-water".

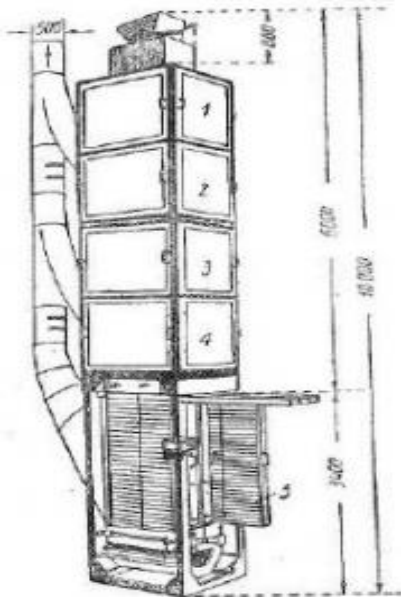


Fig. 117

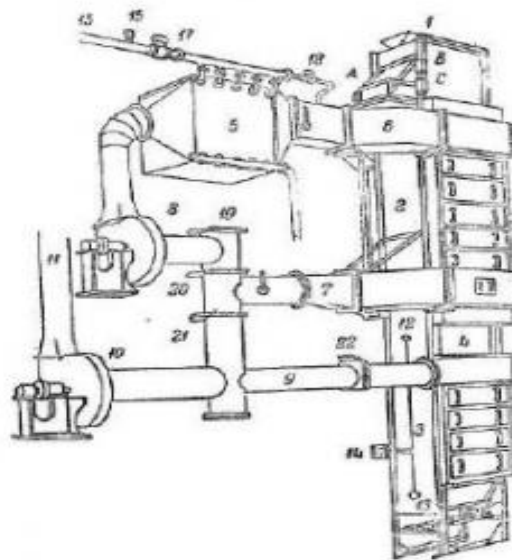


Fig. 118

Figure 1-2. Water conditioner. 5-section air conditioner operation diagram sec.

The grain enters the upper preparation and heating part (1) and gradually falls into the lower parts. Heating of grain in sections (1-4) is carried out by hot water circulating radiators. Sections (2), (3), (4) ventilation and heating, so in addition to radiators for hot water, they are also provided with ventilation ducts, from which air is drawn by the exhaust.

Heat is transferred to the grain by direct contact with the walls of radiators, as well as by heat transfer of air in the internuclear space. The lower part (5) intended for cooling the

grain has only a specially designed ventilation channel. The conditioner works without air recirculation (closed cycle with moisture return to grain).

Such images, the operation of the air conditioner can be divided into the following stages;

- 1) grain preheating, 2) heating and ventilation (drying), 3) cooling.

Air conditioner. The air conditioner consists of the following sections (Fig. 2):

- 1) heating, 2) neutral, 3) cooling.

The heating sections have channels that communicate with the hot air chamber (6) and the exhaust air chamber (7). The cooling chamber consists of a series of air channels open on both sides for cold air entering the chamber.

The incoming grain is heated by hot air from the chamber (6) and drawn through the grain layer into the chamber (7). In this case, the mouth of the cart located on the surface of the grain evaporates and saturates the air removed from the chamber (6) and enters the heater again (5). Thus, a bent cycle of air movement is obtained. Saturated air gives part of the moisture to the grain as the grain's ability to absorb water increases in the high heating parts. In the neutral zone, the constant mass of the grain provides a great resistance to the air flow, and thus the heating section is separated from the cooling section. From the neutral zone, the grain enters the cooling room, where it is cooled to normal temperature. The scheme of operation of the air conditioner (a) and without air circulation (b) is shown in Sec. If part of the grain moisture is removed from the conditioner, part of the saturated air is released into the atmosphere through the fan (10) (see Figure 2).

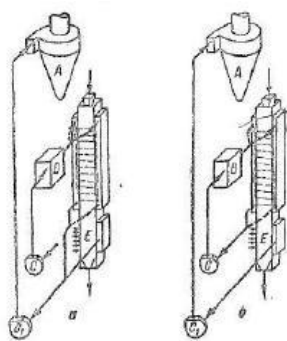


Рис. 119

Fig. 3 - Scheme of operation of the air conditioner (a) and without air circulation (b) Sec.

Air conditioning efficiency. A comparative study by Kuprits and Senatorsky of grain preparation in production conditions without a lock, cold conditioning method and hot conditioning (using a radiator conditioner produced by the main manufacturer) proved this. generally, conditioning improves the flour's flour and baking quality.

According to Kuprin and Senatorsky, the characteristics of changes in flour and baking qualities under the influence of conditioning can be basically expressed as follows:

a) 0.05-0.10% decrease in freedom of grinding of 72% flour of one variety along with improvement of flour color. An approximately similar decrease in ash is observed with other grinding.

b) improving the grinding of final grinding products and obtaining large bran, the latter having a higher ash content. For example, in the processing of 78% wheat of type 3



Ukrainka, the ash content of bran was 5.10%, in cold conditioning it was 5.40-5.50%, and in hot conditioning it was 5.6-5.74%.

c) increasing the volumetric productivity of bread and improving its quality in general.

According to the same authors, with regard to the change of the energy regime, the total energy consumption per 1 ton of daily productivity is reduced by 8-10% by milling high-grade Vitreus wheat (subtypes 1 and 2). For soft wheat, no significant reduction in energy consumption is observed under the effect of conditioning.

REFERENCES:

1. Afanasyev V. A. "Systematic analysis of technological processes of food production". Voronezh, 1999;
2. Butkovsky V. A. Merko A. I., Melnikov Or. M. "Technologies of Subprocessors". M., 1999;
3. <https://hleb-produkt.ru/mukomolnoe-proizvodstvo/1537-metody-kondicionirovaniya.html>