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EFFICIENCY OF SURFACE TREATMENT OF GRAIN TO ELIMINATE THE ACTIVITY OF MICROORGANISMS

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Processes involving microorganisms in grain occur very quickly. Within a few days, toxins are formed in the freshly harvested grain and a musty smell persists. When favorable conditions for the growth of microorganisms are created in the grain mass, mold fungi are the first to develop. Molds have less harsh living conditions than bacteria and are activated already at the early stages of grain storage, causing significant changes in its quality [7, 9]. However, when the fungal outbreak ends, its effects cannot be eliminated, and the grain batches become unsuitable for long-term storage. If the grain quality indicators deviate from the standards, its technical characteristics seriously deteriorate [1, 2, 3]. For example, moldy grain produces mycotoxins. Mycotoxins are the life products of many mold fungi and are very toxic to humans and animals. Under the influence of microbial activity, first of all, the main indicators of grain freshness (color, shine, smell and taste) change. In addition to changing the color of the grain, microbial outbreaks cause rotting of the grain, which leads to the appearance of various odors. The smell of grain changes for two reasons: due to the deterioration of grain quality - self-heating, spoilage and growth of mold - and due to the adsorption of foreign substances on the grain. It is generally believed that the mold of the genus Penicillium grows on the grain and causes a musty smell after a few days [1, 4, 5]. It has been proven that the treatment of grain with ultraviolet and ozone has a significant effect on microorganisms and their suppression. When processing grain with UV radiation and ozone, only the thinnest surface layer is processed, the bulk of the material is not affected, and therefore the biochemical properties remain unchanged [4, 5]. This is an important advantage of UV treatment compared to other known disinfection methods. Today, more and more companies in various industries are choosing UV disinfection. The popularity of this type of disinfection is explained by its numerous advantages and a small number of disadvantages.

Determination of changes in grain quality and safe storage periods of grain as a raw material for the production of flour, cereals, compound feed and other products. Intermediate samples were taken through a sieve with holes of 6 mm and histological characteristics were determined. Before measuring organic quality indicators in grain samples at below room temperature, the samples were stored in closed jars until the grain temperature reached room temperature. Odor was measured on whole or freshly ground grain. Freshly ground grain has a better smell than whole grain. The change in grain condition and the presence or absence of odor according to intensity category J was evaluated using the following odor intensity categories.

Wheat grains with a moisture content of 13%-14% were used as the starting material for the research. Measurements were carried out for one month under conditions of relative humidity of 78% and temperature of 180°C. The results showed that during processing, wheat grain changes its moisture

to a higher level due to adsorption from the environment, and from the beginning to the end of the technological process, the moisture can change up to 16%, which causes microbiological activation that affects the quality of the final product, and also on storage conditions and methods. Musty smell. A musty odor caused by mold growth is a characteristic feature of the second stage of spoilage, and such products are used for technical purposes. For the purpose of comparison, raw materials were processed at different levels of exposure - 3 and 5 minutes. Based on the obtained data, the intensity of changes in quality indicators for cereals processed with different exposure and for raw materials processed under normal conditions. The obtained data show that the most attractive is the processing of raw materials with a relative humidity of 78% and an exposure time of 5 minutes, which is modified by adjusting the throughput capacity of the unit using the angle of inclination of the guide surface.

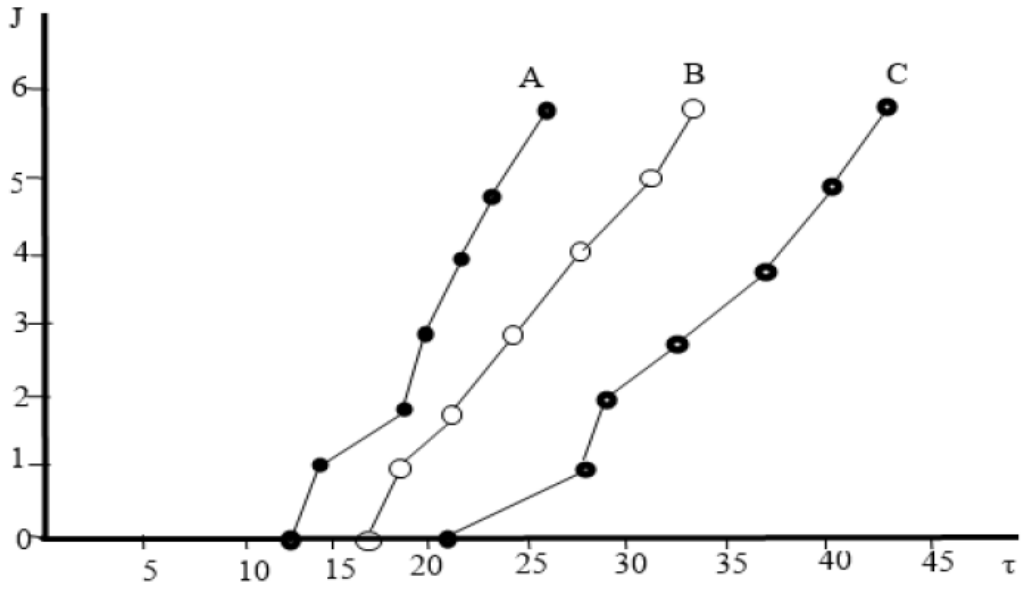

Figure. Dependence of the change in the qualitative indicator:
A- not processed; B- raw material processed t, 3 min; C - raw material processed with the duration of processing t, 3 min

In order to eliminate unwanted effects and the influence of microbial activity, it is recommended to provide ultraviolet and ozone treatment in the process of grain processing according to existing generally accepted technological processes.

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