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DETERMINATION OF SAFETY CONDITIONS FOR STORAGE OF GRAIN MILLET IN METAL SILOS

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Grain storage is one of the most important stages that determines the quality of grain during processing and the quality of the seeds during sowing. It can have a positive effect as a result of post-harvest achievement, and have negative consequences, resulting, under the influence of various factors, in reducing the quality of the grain.

Modern technologies of high quality grain storage provide a full range of protection of the grain mass, focusing on providing conditions, the main of which are: temperature, humidity, shelf life. Particularly important indicator characterizing the grain mass during storage is the temperature of the grain mass.

Millet in the agrarian sector of Ukraine occupies a leading place in the structure of crops in cereals, the value of which is determined by virtually non-waste use of processed products in the food, feed, pharmaceutical, microbiological, industrial sectors of production, as well as the possibility of growing in post-harvest crops.

Technological methods and mechanisms take into account that grain is a living organism, while it breathes, it loses weight as a result of the process of desimilation (decomposition and transformation) of organic substances, sugars. This process is directly related to the temperature and humidity of the mass of the grain and, accordingly, affects the quality and condition of the grain mass during storage. It is known that the higher the temperature, the more intense the process of breathing, especially in warm season. As a result, there is a self-heating with the intensification of weight loss and, accordingly, the cost of grain, the allocation of carbon dioxide and water.

The quality of grain is also influenced by the following factors: mold, fungi, insects. Improper storage conditions can cause mold and mushrooms. Thus, when the temperature of the grain decreases to 8...12 °C, the permissible moisture content of the grain increases, which can be stored safely for a certain period.

We studied the temperature change of the formed layers of millet grain when stored in metal silos of the firm RIELA, the volume is 3990 m^3, the diameter of the silos is 15,15 m, the largest grain weight stored in the silos is 2993 tons. To control the temperature of the grain mass silos are equipped with a system thermometry.

Grain of the II Class was laid for storage, which meets the requirements of DSTU 5026:2008 with the following parameters: humidity 13,5 %, contents of garbage impurity 2,2 %, contents of grain impurity 3,5 %.

The control of grain temperature is the most effective and practically accessible method of tracking the results of biochemical processes occurring in the grain embankment during storage of grain in grain storage facilities.

The optimum storage temperature of the grain depends on geographical factors and weather conditions. In general, when selecting the recommended temperatures, grain storage can be guided by the following principle: the temperature of the grain should be up to 5...10 °C above the average temperatures of the coldest winter months and below the average temperatures of the warmest summer months.