STUDIES REGARDING THE INFLUENCE OF THE DRYING PROCESS TECHNOLOGICAL PARAMETERS ON THE CORN SEED QUALITY

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Abstract

In some special harvesting conditions of corn grains, the seeds have humidities between 25% ... 30%, and they are subjected to the drying operation in order to be safetly stored. Corn seeds subjected to drying, behave differently according to their condition and the operation parameters of the drying technology. Corn seeds do not support aggressive drying conditions characterized by non-uniform temperatures and rates of the drying agent, when passing through the product layer.

The purpose of the paper is to establish the optimal operating parameters for the drying process to maximize the technological effect and to conserve the quality of the corn seeds. In the investigations, corn seeds with four initial humidities were dryed in a layer thickness of 150 mm. During the investigations, was studied the influence of the drying agent's velocity and temperature on the protein content and germination of the seeds. The drying process for corn seeds was carried out using four velocities and five temperatures of the drying agent. To achieve the goal, a laboratory dryer for agricultural products was designed and built.

Experimental research results show that both the protein content as well as the germination capacity of corn seeds were affected by temperatures of the drying agent higher than 50°C. The optimal drying variant of corn seeds, regardless the initial moisture content, was obtained for the drying agent's velocity of 2.5 m/s and the temperature of 50°C. For temperatures of the drying agent higher than 50°C, the protein content and seed germination capacity decreased up to 5.46% and 88%, respectively.

Key words: corn seed drying, protein content, germination capacity