

## CONCENTRATION RATIOS OF STARCH AND AMYLASE IN WINTER WHEAT GRAIN UNDER VARIOUS CULTIVATION CONDITIONS

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The paper presents the results of studies of starch accumulation and concentration ratios of starch and amylase enzyme in grain of winter wheat cultivated after various predecessors, as well as with one- and two-fold application of nitrogen fertilizer. The studies were conducted on the experimental field of the Agroecology laboratory of the Samara State Agrarian University (Samara Region). The experiment was based on a typical medium-humus, medium-thick, heavy-clay chernozem. The research results have shown that growing winter wheat on a fallow field contributed to better germination of winter wheat seeds. Wheat growing on a fallow field with two-fold application of nitrogen fertilizer resulted in the following: the highest indicators of crop structure (plant height, number of grains per ear and weight of 1000 grains), the maximum grain yield (25.4 kg ha<sup>-1</sup>), the highest starch content (68.4%), the highest values of the amylolytic enzyme activity of grain (224.26 and 199 mg starch g<sup>-1</sup> grain·min<sup>-1</sup>, respectively), the highest indicators of starch concentration and enzymatic activity of amylolytic enzymes (that destroy starch grains and hydrolyze starch molecules), activity of  $\alpha$ -amylases,  $\beta$ -amylases and their total activity. The obtained coefficients of correlation for the studied characteristics of grain (starch content, total enzymatic activity, activity of  $\alpha$ -amylases and  $\beta$ -amylases in winter wheat grain) have shown that the relationships between the parameters were strong, direct and significant ( $r = 0.82\text{--}0.99$ ), which indicates the fact that when one of the studied values increases, the others also tend to increase linearly.

**Key words:** *Triticum aestivum* L., yield, starch,  $\alpha$ -amylase,  $\beta$ -amylase,  $\alpha$ + $\beta$ -amylases.