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**THE INFLUENCE OF GERMINATION ACTIVATION ON
THE CHANGE OF THE PROOXIDANT-ANTIOXIDANT
BALANCE IN THE TISSUES OF LILIOPSIDA**

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Relevance of research. The research of changes in the state of the components of the pro-oxidant-antioxidant system (PAS) that initiate the process of seed germination opens the prospect of the possibility of regulating and correcting this stage of plant ontogenesis, increasing the germination and friendliness of crops, is especially relevant and economically justified in the conditions of intensification of crop production [1-3].

Aim of the research: to identify changes in the value of indicators of the state of the prooxidant-antioxidant system (PAS) in the tissues of monocotyledonous plants at rest and the initiation of its germination processes..

Methodology. Quantitative determination of indicators of the state of PAS was performed on tissue samples of seeds of the following plants: *Panicum miliaceum L.*, *Oryza sativa L.*, *Avena sativa L.*, *Zea mays L.*, *Hordeum vulgare L.*, *Triticum durum Desf.* The concentration of superoxide anion radical ($\bullet\text{O}_2^-$), TBA-active

products, cytochrome oxidase activity, superoxide dismutase activity, catalase, the concentration of ascorbic acid, glutathione was determined [1].

Analyzing the **results** of the research of PAS of Liliopsida, it can be argued that the initiation of germination causes an increase in the level of $\bullet\text{O}_2^-$ generation in the tissues of *Panicum miliaceum L.* by 38,67%, in the tissues of *Oryza sativa L.* – by 88,97%, *Zea mays L.* – 42,14%, *Avena sativa L.* – 72,14%, *Hordeum vulgare L.* – 36,36%, *Triticum durum Desf.* – by 24,39%. The largest increase in the level of $\Delta\text{TBA}_{\text{ap}}$ is characteristic of *Triticum durum Desf.* (26,11%), the least - for *Avena sativa L.* (6,09%). Germination initiation increases the activity of cytochrome oxidase in the tissues of *Avena sativa L.* by 46,02%, *Panicum miliaceum L.* by 6,99%, in the tissues of *Oryza sativa L.* – by 61,80%, *Zea mays L.* – 11,42%, *Hordeum vulgare L.* – 22,16%, *Triticum durum Desf.* – at 5,18%. Catalase activity is enhanced in experimental plants by the following values: *Avena sativa L.* by 75,79%, *Panicum miliaceum L.* by 21,04%, in tissues of *Oryza sativa L.* – by 105,13%, *Zea mays L.* – 29,99%, *Hordeum vulgare L.* – 42,62%, *Triticum durum Desf.* – at 33,91%. By increasing the growth of SOD experimental plants can be placed in the following order: *Panicum miliaceum L.* (15,11%), *Zea mays L.* (23,20%), *Triticum durum Desf.* (30,40%), *Hordeum vulgare L.* (38,46%), *Avena sativa L.* (86,03%), *Oryza sativa L.* (91,07%). Analyzing the content of low molecular weight antioxidants, it should be noted that the concentration of ascorbate in the seed tissues of experimental Liliopsida plants is on average 1,96 times lower than in Magnoliopsida. Oats *Avena sativa L.*, *Oryza sativa L.*, and *Zea mays L.* have the highest background level of AA, *Panicum miliaceum L.* has the lowest.

Activation of germination processes increases the amount of ascorbate in the tissues of *Avena sativa L.* by 15,34 times, *Hordeum vulgare L.* by 9,86, *Zea mays L.* – by 8,15 times, *Triticum durum Desf.* – 8,06 times, *Oryza sativa L.* – 5,23 times. The smallest increase in the concentration of AA has *Panicum miliaceum L.*, which is 2,74 times. The content of GSH has a similar tendency, so the average concentration of GSH in the tissues of experimental Magnoliopsida is 1,49 times higher than in Liliopsida. The maximum value of the indicator for dormant seeds recorded for *Avena sativa L.*, the

minimum – for *Zea mays L.* Activation of germination processes increases the amount of GSH in the tissues of *Avena sativa L.* by 16,04%, *Hordeum vulgare L.* – by 14,29%, *Zea mays L.* – by 13,48%, *Triticum durum Desf.* – by 11,23%, *Oryza sativa L.* – 11,76%. The smallest increase in the concentration of GSH has *Panicum miliaceum L.*, which is 7,81%. As a result of the analysis of changes in the amount of low molecular weight AO, it can be assumed that when activating the processes of germination of AA seeds has a more protective value compared to GSH. The increase in the concentration of AA is more species-specific, while for GSH is more uniform.

Conclusions: the activation of germination caused an increase in the value of the experimental average PAS as follows: for the generation of $\bullet\text{O}_2^-$ growth is 41,47%, for ΔTBAap – 21,64%, for SOD – 58,62%, catalase – 68,37%, AA – 817.11% (9,17 times), GSH – 12,58%, cytochrome oxidase – 56,02%.

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