

INTERRELATIONSHIP OF CATALASE ACTIVITY AND TRANSPIRATION INTENSITY IN FRUIT ORGANS OF PERSPECTIVE COTTON VARIETIES

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Annotation. *A variety of internal physiological processes is a complex set of biochemical reactions. This is a violation of the intake and transformation of minerals, the lack of phytohormones, vitamins and the disturbance of oxidation-reduction processes, etc. The article presents data on the activity of catalase in valves and fiber of cotton varieties, which differ in the percentage of falling fruit organs and in yield. The intensity of transpiration in these varieties is also shown. In experiments it was shown that the higher the activity of catalase, the higher the transpiration intensity of all varieties of cotton. Based on the conclusion that such a complex process as the falling the fruit organs is associated with the activity of catalase and the intensity of transpiration.*

Key words: microelements, physiological and biochemical processes, catalase activity, transpiration, falling, seeds, fiber.

Introduction. It has been studied that the process of falling fruit organs is closely connected with fruit formation and depends on many internal and external factors. Internal factors include genetic and physiological-biochemical features of the plant organism. Thus, it was shown that varieties characterized by a high rate of flowering and falling the fruit organs are distinguished by a high content of manganese and iron in the seeds and fiber of the cotton capsule. It was suggested that these varieties have a high level of respiration intensity and oxidation-reduction reactions of the Krebs cycle. (1.2).

Methods and object of research. In this connection, the activity of the iron-containing catalase enzyme in the fruit organs of promising varieties of cotton C-6524, Bukhara-102, Omad, Namangan-34, which differ in many features, including early maturity and yield, was studied. Catalase is found in animal and plant tissues. It catalyses the decomposition of hydrogen peroxide into water and molecular oxygen. The iron atom of the proteolytic group undergoes alternating oxidation and reduction.

Results and discussion. As, catalase takes a direct part in the reaction, then by the amount of decomposed hydrogen peroxide per unit of time, one can judge the amount of the enzyme. The catalase activity is expressed in micro-moles of H_2O_2 , decomposed 1 g of the tested substance within 1 min. As can be seen in table 1, the activity of catalase in the valves of the 21-day cotton boll of varieties Omad, Namangan-34 and Bukhara-102 is higher than in the fiber. In contrast to the varieties listed, in C-65 24, the activity of the enzyme in the valves is less than in the fiber and the percentage of falling in one plant in this variety is 50%. The data indicate that no strict regularity and direct correlation of the iron content and the activity of the hemocontaining

catalase enzyme in the cotton fruit organs have been detected. However, the higher the activity of this enzyme in the valves, the lower the percentage of falling fruit organs.

Determination of catalase activity in micro-moles of H₂O₂ 1 g per 1 min. in the fruit-bearing organs of varieties of cotton and % of falling per 1 plant. Table 1.

№	Variety name	valves	fiber	% per 1 plant
1	Namangan-34	100,0	61,7	17
2	Omad	97,0	73,5	50
3	Bukhara-102	114,7	111,7	10
4	C-65 24	79,4	100,	50

It is known that the transpiration process, which causes a water deficiency in them, significantly influences the fall of cotton fruit elements. In conditions of water deficiency, as our studies have shown, a high percentage of falling in the Namangan-34 variety is noted. The higher the transpiration rate, the higher the percentage of falling the fruit elements, since with increasing transpiration intensity the formation of the separation layer intensifies, which contributes to the falling of fruit elements. A decrease in the intensity of respiration leads to a decrease in the activity of redox enzymes. The experiments showed that the activity of catalase in varieties with a high percentage of falling decreased in comparison with varieties with a lower percentage of falling fruit organs during the development of the fiber.

Conclusions. Thus, the variety Bukhara-102 has a low percentage of falling, a high activity of the catalase enzyme in the valves of the cotton boll and a low transpiration rate, as well as the highest yield per plant compared to other varieties studied. Strict regularity of the correlation between the iron content and the activity of the hemocontaining enzyme catalase was not detected.

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