Study of the system content of microelements in fruit organs of the perspective cotton varieties

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Studies of recent years have shown that the process of fall of the fruit organs is closely related to fruit formation and depends on many internal and external factors. Internal factors include genetic and physiological-biochemical features of the plant organism. The article gives data on the experiment in the content of microelements in cotton fiber and seeds of promising varieties of cotton. As a result, it is shown that a certain relationship exists between the content of some microelements in the fiber and cotton seeds at the rate of flowering, growth, and development of plants. Differences in the development of different varieties of cotton are revealed in the content of microelements, which are included as proteolytic groups of enzymes involved in redox reactions and in nitrogen exchange.

Key words: *microelements, fruit formation, flowering, varieties of cotton, fall of the fruit organ, fiber, seeds, Krebs' cycle, phenological observations.*

Introduction. The task of increasing the production of raw cotton can and should be solved mainly by increasing the yield of cotton by developing agrotechnical measures, increasing soil fertility, chemicalization, breeding and seed production. Among these problems, from our point of view, should be related the study of the physiological and biochemical bases of fruit formation and fall of fruit organs in cotton and the development of management techniques for this process. In connection with this, cotton varieties were used for the study, characterized by varying degrees of drought resistance and precocity.

Methods and object of research. In this regard, experiments were laid in the soil culture on the vegetation site of the Uzbek Research Institute of Cotton production according to the following scheme: the seeds of cotton varieties were soaked in a solution of salts of microelements of copper and boron in a concentration of 1 norm and 2 norm [1] and then sowed in vessels with soil. It is shown that the dynamics of flowering is not the same. Each variety has in time maximums and minimums of flowering. Thus, the maximum number of flowers in the C-6524 variety was observed on July 29, and in the Bukhara-102 and Namangan-34 varieties on August 2. As our research showed, a certain relationship exists between the content of some microelements in the fiber and cottonseeds and the rate of flowering, growth, development of plants.

Results and discussion. The systemic content of microelements showed that the amount of manganese in the fiber of the early-ripening variety C-6524 is significantly larger than that of Omad, Bukhara and Namangan-34. The same pattern is maintained in seeds. It is known that manganese activates enzymes that catalyze the reactions of the Krebs' cycle and the intensity of respiration. The number of copper in seeds is higher than in the fiber of the Omad and Bukhara varieties. Most of all copper is in the Omad fiber (8,46) and Bukhara -102 (11,9) against C-6524 (<1,2) and Namangan 34 (<1,2). The role of copper in nitrogen exchange is enormous, because in it copper activates nitrate reductase and protease and is largely concentrated in chloroplasts. Zinc is significantly more abundant in Omad fiber (7.92) than in Bukhara - 102 (4,87), C-6524 (5,65) and Namangan - 34 (5,02). Zinc plays an important role in the formation of auxin and significantly affects the

growth rate of cotton. In the fiber of grade C-6524 (<0,1), molybdenum is less than in all the varieties Namangan (0,23), Bukhara 102 (0,19) and Omad (0,13). Since molybdenum plays an important role in nitrogen exchange, the obtained data on molybdenum completely agree with the data on the copper content in the fiber of the early-ripening variety C-6524. Cobalt is a part of vitamin B_{12}, which is synthesized in the plant. Along with molybdenum, it is necessary when fixing atmospheric nitrogen. For the growth of cotton, sodium is also needed, which is most abundant in the Omad and Bukhara -102 fibers. These data indicate that these varieties are the most salt-tolerant in comparison with the C-6524 and Namangan-34. Spectral analysis, in addition to these micronutrients, found iron, nickel, rubidium, strontium, bromine and others.

Conclusions. Thus, the differences in the development of different varieties of cotton were revealed in the content of microelements, included as proteolytic groups of enzymes involved in redox reactions and in nitrogen exchange. Ecological resistance of Bukhara-102 and Namangan-34 varieties is probably related to the activity of these enzymes and can serve as a physiological basis for productivity and adaptability.

References. *1*.B.M.Isaev. Physiological and agrochemical bases for nutrition cotton plant with microelements // T:. Monograph “O’qituvchi”1979, 35-39.