



EFFECT OF THE USAGE OF BIOSTIMULATORS IN THE GROWING OF TOMATO SEEDLINGS IN PROTECTED AREA

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| Article history: | Abstract: |
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| Received May 10 th 2021 Accepted: May 26 th 2021 Published: June 26 th 2021 | This work is devoted to new approaches to solving the problem of increasing yields with the most rational use of material and labor resources for programming (planning) crops. To program the harvest means to develop a complex of agrotechnical measures, the timely and high-quality implementation of which will ensure the receipt of the maximum possible crop yield. The main directions of the use of biostimulators that promote the activation of germination, optimization of the quality of seedlings, stimulation of flowering and fruit set, increase in adaptability, increase in productivity and improve the biochemical composition of the resulting products, when growing greenhouse tomatoes are considered. |

Keywords: Tomato, greenhouse, soil, vegetables, mineral nutrition, laboratory experiment, model experiment, vegetation experiment, temperature, humidity.

Numerous studies have proven the extremely important role of vegetable products in human nutrition and health. Vegetables contain a large amount of fiber, easily digestible carbohydrates, vitamins, enzymes, mineral salts, organic acids and other biologically valuable substances that have a beneficial effect on the human body.

Taking into account the climatic conditions of our country, the priority direction in providing the population with fresh vegetable products, especially during the off-season period, is the development of greenhouse vegetable growing. Currently, in the Samarkand region, as in other regions of Uzbekistan, greenhouse vegetable growing is intensively developing: new greenhouses are being built, old anthracite greenhouses are being reconstructed. This requires the development and mastering of innovative technologies for growing vegetable crops. The use of new forms of fertilizers allows, against the background of the basic nutritional scheme, to optimize the technology of growing vegetables without large additional costs.

Among vegetable crops in our country, tomatoes occupy one of the leading places, since its fruits have high taste and dietary qualities, they also have a high biological value as a source of antioxidants - substances that help protect the human body from the carcinogenic effects of free radicals (Novikov B.N. , Goryaynova O.D., 2010). As a result, the consumption of tomatoes worldwide is growing steadily. Over the past 10 years, it has increased from 28 to 54 kg per capita (Korol V.G., 2013).

In conditions of protected ground, tomato ranks second after cucumber in terms of cultivation area. However, the production of tomato products has not yet reached the level necessary to meet the needs of the population. An increase in the productivity of tomato can be achieved, first of all, through the use of new highly productive hybrids and the improvement of intensive technologies for their cultivation. Modern hybrids should also possess complex resistance to phytopathogens and unfavorable environmental conditions (Gavriush S.F., 2007).

Mineral nutrition is an important component of the metabolism in a plant organism, which determines the direction of biochemical processes, the growth and development of culture. Studies by many authors prove that in intensive greenhouse vegetable growing, harmonious and optimized plant nutrition is the main factor in increasing crop productivity.

Tomato is an annual plant, but under favorable conditions in greenhouses, it can grow and bear fruit for several years. The stalk of the tomato is herbaceous, juicy at the beginning of the growing season, and at the end it corks. The stem length is from 30 cm in dwarf varieties and up to 3-8 m in vigorous ones. The tomato has a high shoot-forming ability. When grown in greenhouses in 2-3 months, a tomato forms a huge number of shoots and inflorescences. For the growth of shoots, the plant consumes all nutrients, some of the flowers and ovaries dry out and fall off, the fruits do not have time to ripen. Therefore, in tomatoes, it is necessary to remove stepchildren (pinch) and pinch the top (Osipova G.S., 1991).

Depending on the nature of growth and branching of lateral shoots, tomato plants are divided into indeterminate and determinant types of growth. The branching of shoots in both groups of tomato is sympodial (Gavrish S.F., Sysina E.A., 1986).

Tomato is a thermophilic plant. Seeds begin to germinate at a temperature of + 13-15 °C (Lupenko L.G., 1988; Edelyptein V.I., 1962). The optimum temperature for seed germination is + 24-26 °C (Andreeva E.N., 1973; Gavrish S.F., 1987; Popova L.N., Sergienko E.A., Mychenko L.A., 1988; Rey Y. et. Costes C., 1965). At temperatures below +10 °C, they do not germinate. At the same time, tomatoes are resistant to low temperatures and even withstand frosts down to -0.5 °C (Shuin K.A., 1985). After the cotyledons and the first two true leaves appear in plants, the temperature is lowered to + 18-20 °C during the day and + 14-15 °C at night. After the first buds appear on the plant, the temperature during the day is reduced to + 17-18 °C, and at night it is raised to +16 °C (Gavrish S.F., 1987). The sum of active temperatures (> 10 °C) before ripening is 1800-2000 °C. Temperatures above +36 °C have a negative effect on plants (Vlasov A.S., 1991; Hanna N., Hernandez T., 1982).



Schemes of laboratory, model, vegetation and small-scale experiments to study the effect of physiologically active substances on seed germination and initial seedling growth, cold resistance, root development, increased resistance to viral infection, biometric and physiological-biochemical parameters of plants, fruit setting, fruiting dynamics, etc. quality of greenhouse tomato products. Methods for performing concomitant observations and physiological and biochemical analyzes are described.

1 – Balarga 2 – Campbell 33 3 – Floradade 4 – Rio Grande



In relation to moisture, the tomato plant is relatively drought-resistant, which is due to the structure of the aboveground part and a well-developed root system. However, he has a great need for water, especially during the fruiting period. The optimum moisture content of the substrate during the formation and growth of fruits is 70-80%, during ripening - 60-70% HB. The optimum relative humidity is 45-60% (Tarakanov G.I., Mukhin V.D., Shuin K.A. and others, 2003).

The duration of the period of formation of the tomato fruit is determined by the temperature, nutrition, humidity, air regime of the substrate, illumination and early maturity of the variety. The period from flowering to the beginning of ripening in the most early-maturing group of varieties is 15-18 days shorter and more than in the late-ripening ones. Lack of moisture, high temperature significantly accelerate the onset and rate of ripening. The period of fruit ripening on the plant is long. During fruiting, there are active processes of growth and development, especially at the beginning of ripening - the formation of new leaves, buds, flowers, the formation and growth of fruits continues.

CONCLUSION

The duration of the period of formation of the tomato fruit is determined by the temperature, nutrition, humidity, air regime of the substrate, illumination and early maturity of the variety. The period from flowering to the beginning of ripening in the most early-maturing group of varieties is 15-18 days shorter and more than in the late-ripening ones. Lack of moisture, high temperature significantly accelerate the onset and rate of ripening. The period of fruit ripening on the plant is long. During fruiting, there are active processes of growth and development, especially at the beginning of ripening - the formation of new leaves, buds, flowers, the formation and growth of fruits continues.

The tomato is a very flexible plant. Despite this, for normal growth, it requires certain conditions. All factors of life are important to him. With a lack of some, it can grow and develop to a certain extent, while others it sharply reduces its vital activity and productivity. Therefore, knowledge of the biological characteristics of a plant, its requirements for life factors is very important when growing a tomato.

Low temperatures and high air humidity at night contribute to the appearance of many diseases and reduce the fruit formation of tomato, since it is difficult for pollen to enter the stigma.

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