

Investigation of water sols copper/carbon nanocomposite application in lily growing

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Abstract

To effectively grow flower crops in protected soil, it is necessary to introduce innovative technologies that ensure high yields, allow to reduce material costs and increase profitability. In modern industrial floriculture, methods of nanotechnology (NT) make it possible to influence the process of growing flower crops, their productivity and the quality of flowers. Scientific researches in the field of the use of NT in protected soil during the cultivation of flower crops are rare. In this connection, the aim of the work was to study the effect of metal/carbon nanocomposite (NC) based on copper on lily cultivation under protected soil conditions. For two years the reaction of the lily to the treatment of copper/carbon NK was studied. The biometric indices of the lily were determined as the height of the flowering shoot in the bud budding phase, the number of buds, the diameter of the open flower, and the height of the stem when cutting plants. When treated with nanocomposites, there was a significant increase in the height of the flowering shoot of lilies from 4.9 to 8.4 cm. The highest plants were Santander lily plants when treated with 0.01% NC. The productivity of the lily (cutting lilies) is determined by the number of buds in the inflorescence, the diameter of the flower and the height of the plant. When cutting lilies, the number of buds on the plant remains the same as in the bud budding phase. There were also a greater number of buds in the Siberian lily variety than in Santander. Depending on the treatment with different concentrations, the maximum number of buds was noted at 0.01% concentration of copper/carbon NK. The diameter of the open flower in the Santander variety was significantly larger than that of the Siberian variety (21.3 cm). Treatment of bulbs with NK contributed to a significant increase in the diameter of the open flower. The largest diameter of the flower was noted when treated with 0.01% NK (22.0 cm). The height of the stem when cutting lilies increased by treatment with copper/carbon NK to 131.0-141.0 cm in comparison with the control (99.0-102.3 cm).

Thus, the results of scientific and industrial experiments have shown that the treatment of lily bulbs with copper/carbon nanocomposites contributes to an increase in height when cutting plants, the number of buds and the diameter of the open flowers.

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