

Plants should be kept at an optimum temperature to prevent flowers from opening too quickly. Any broken, dead or diseased leaves and flowers should be removed [1, 3].

In conclusion it can be said that post-harvest treatments do not improve but simply help to maintain plants quality. These treatments also help flowers cope with the stress of handling and transportation. If you follow some important considerations you will ensure maximum attraction to your cut flowers, greens and potted plants.

References

1. Emtsev V.T., Vankova A.A. Soil biology at new stage of development. – M.: RSAU-MTAA, 2007. – P.1147-1148.
2. Glazunova A., Firdous Hazieva Polemonium caeruleom is a useful resource for medicines production. – M. RSAU-MTAA. 2018. – P. 321-322
3. Maree J., Van Wyk B. Cut flowers of the world. A complete reference for growers and florists. – London: Timber Press, 2010. – 400 p.
4. Tepper E.Z., Shilnikova V.K. Microbiology manual. – M.: Drofa, 2004. – 216p.
5. Vankova A.A., Malankina E.L., Zharkova E.K. Antimicrobial activity of essential oil of Lamiaceae family species // Perspective of medicinal plants science. – M.: VILAR, 2018. – P.286-288.

УДК 631.674.6

RESOURCE-SAVING TECHNOLOGIES ON THE EXAMPLE OF DRIP IRRIGATION OF RED RASPBERRY

Ilchenko K.Yu., postgraduate student, department of Agricultural Melioration, Forestry and Land Development, RSAU – MTAA, il4encko.kir@yandex.ru

Scientific supervisor: N.N. Dubenok, professor, department of Agricultural Melioration, Forestry and Land Development, RSAU – MTAA, ndubenok@mail.ru

Abstract: *The questions of the effectiveness of drip irrigation during the cultivation of raspberries, ensuring the maintenance of optimal moisture supply of plants, creating the conditions for obtaining the highest yield of raspberries on sod-podzolic soils of the Central region of the Non-chernozem zone of the Russian Federation, are considered.*

Keywords: *red raspberries, drip irrigation, cultivation, factors*

Raspberry is one of the most valuable berry crops. Its fruits are in high demand among the population, in view of the fact that they have high taste, nutrition and medicinal properties [2].

The normal growth and development of raspberries is ensured by five main factors: light, warm air, water and nutrition. These environmental elements are interconnected and indispensable in all phases of plant vegetation. At the same time, the optimal supply of plants with the main factors of life occurs in different ways,

some components (water, food, air) can be regulated, others (heat) are only partially regulated, and others (light) are practically uncontrollable in natural conditions [2].

Of greatest interest are regulatory factors. An important of these is water, which plants consume in large quantities during the growing season. It is established that from 300 to 800 units of water are used to create one unit of dry mass. Moreover, 99.8% of the moisture goes to evaporation (transpiration) and only 0.2% to create organic matter. Therefore, one of the main requirements presented by plants to the water-air regime of the soil, first of all, is a sufficient supply of moisture in the soil. For plants, there is an optimal range of soil moisture, with upper and lower limits. Soil moisture above the upper limit or a decrease below the lower limit will slow down the growth and development of plants and reduce their productivity. The upper limit of moisture is determined by the requirement of plants for the air regime of the root layer of the soil [1].

The surface location of the root system and the high rates of raspberry transpiration make it susceptible to a lack of moisture in the soil. At the same time, with excess moisture in the cultivation areas, the root system suffers from a lack of oxygen [2].

From the foregoing, it turns out that questions of improving the technology for drip irrigation of raspberry ordinary, aimed at obtaining high yields in a temperate continental climate, are of both theoretical and practical interest [1].

The aim of the work is the development of drip irrigation regimes of raspberry ordinary on sod-podzolic soils of the Central region of the Non-Chernozem zone of the Russian Federation.

To achieve the designated goal, the following main tasks were set:

1. To establish the features and patterns of water consumption of raspberries, depending on the parameters of the drip irrigation system.
2. To study the influence of the parameters of the drip irrigation system on the main indicators of growth, development and productivity of raspberries.
3. To develop elements of the drip irrigation regime of raspberries, ensuring the maintenance of a favorable water and nutritional regime of the root layer of the soil.

The experiment is two-factor and consists of two varieties of raspberries and four modes of soil moisture.

Raspberry varieties were selected as the most recommended for cultivation in the Moscow region: Sunny and Reward.

Moistening modes were defined as follows:

- I. control (without watering)
- II. 80% of the lowest moisture capacity as the most favorable for the growth and development of raspberries
- III. 70% of the lowest moisture capacity, as the lower limit of the maximum humidity
- IV. 60% of the lowest moisture capacity is the humidity of slowing down the growth and development of plants.

Studies are conducted in open ground in the Central region of the Non-chernozem zone of the Russian Federation on the basis of the educational

experimental laboratory of the Michurinsky Garden laboratory of the Russian State Autonomous Agricultural University named after K.A. Timiryazev.

Raspberry drip irrigation will be carried out with the help of droppers located along the length of the pipeline at a distance of 0.3 m. Monitoring of soil moisture is planned to be carried out by thermostat-weight method. The experiments will be accompanied by phenological observations, harvesting, analysis of soil and plant samples.

Expected results:

1. The development of drip wetting regimes of raspberries on sod-podzolic soils of the Moscow region.

2. Definitions of the relationship between raspberry water consumption and the total influx of solar radiation, the sum of active temperatures and humidity of the active soil layer.

3. Identification of the positive impact of drip irrigation regimes on the growth, development, productivity of raspberry and its quality.

References

1. Балакай Г.Т. Безопасные системы и технологии капельного орошения: научный обзор ФГНУ «РосНИИПМ» [Текст] / Г.Т. Балакай [и др.]. — М.: ФГНУ ЦНТИ «Мелиоводинформ», 2010. — 52 с.

2. Размножение ягодных культур : учебно-методическое пособие / С.А. Сучкова [и др.]. — Томск: Томский государственный университет, 2014. — 68 с.

УДК 626-335.3

PROSPECTS FOR THE USE OF ARTIFICIAL ROUGHNESS AS FLOW ENERGY DISSIPATORS ON THE SPILLWAY SURFACE OF A LOW-HEAD CONCRETE DAM

Kanyarugendo Leonidas, PhD student of the Department of Hydraulic Engineering Structures, Russian Timiryazev State Agrarian University, kany.l@mail.ru

Aleksei Yu. Alipichev, PhD (Ed), Associate Professor of the Department of Russian and Foreign Languages, Russian Timiryazev State Agrarian University, alipichev@rgau-msha.ru

Abstract: *The paper describes various design models and the application of artificial roughness as a flow energy dissipator for solving various technical tasks in hydraulic engineering. It also justifies hypothesis of possible strengthened roughness efficiency on the spillway surface of a low head concrete dam.*

Keywords: *artificial roughness, high-velocity channels, energy dissipators.*

The regulation of flow parameters on artificial stream beds or when a stream transits from hydraulic structures to natural river beds has always been for interest in hydraulic engineering. The flow parameters in open channels must be adjusted for the