THE INFLUENCE OF DROP IRRIGATION AND LOADING OF INFLORESCENCES ON THE GROWTH AND DEVELOPMENT OF THE MOTHER BUSHES OF GRAPES

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Abstract. The high yield of grafted grape seedlings and their quality depend on many factors, including the quality of graft and rootstock components, which in turn is determined by proper care of the mother plantations of grape. Their farming techniques should be aimed at better growth and maturation of shoots. On mother bushes, the technological reception of shoot fragments is mandatory, partial removal of inflorescences is not so common in the agricultural techniques of mother plantings, but has a positive effect on the overall development of plants. Mother plantings should be irrigated if possible, as insufficient moisture supply negatively affects the condition of the bushes throughout the growing season and winter.

The aim of the work was on the basis of physiological, biochemical and biometric indicators of growth and development of mother plants of grapes to develop effective modes of drip irrigation and norms of loading of mother bushes of grapes with inflorescences to obtain high quality graft component.

The work was performed in the department of nurseries and grape propagation of NSC "V.Ye. Tairov IViV "during 2017-2020. Studies were conducted on the table grape Augustine early ripening, the bushes were planted according to the scheme 2.0 × 2.5 m in the spring of 2010. The formation of bushes – horizontal two-stem border with a trunk height of 70 cm, load shoots – 26-28 shoots per bush. The soil of the experimental plot is southern medium loam chernozem.

The study scheme included three experiments that differed in the levels of pre-irrigation soil moisture (LPSM) and the load of bushes with inflorescences. Experiment 1 – LPSM 90% of lowest soil moisture capacity (MC) during the entire vegetation period of plants; experiment 2 – LPSM 80% MC; Experiment 3 – LPSM 70% MC. In

each experiment there were 3 variants, in which different numbers of inflorescences were left on the grape bushes (load of inflorescences 100, 75 and 50% of their total number). Controls were variants where soil moisture was natural.

Sufficient soil moisture during the growing season has a positive effect on the development of the leaves, as evidenced by the intensive course of physiological processes. Physiological indicators of the water regime of grape plants most fully indicate their need for water, depending on the specific environmental conditions. In our research it is shown that irrigation of bushes and reduction of inflorescence load to 50 and 75% of their total number stimulated the accumulation of chlorophylls in the leaves of mother plants, improved watering of leaf tissues, increased respiration during active growth and development of grapes.

There is a positive effect of irrigation and reducing the load of inflorescence bushes to 50 and 75% on the biometrical parameters of mother grape bushes. The largest values of the total length of shoots were in the bushes of variants with LPSM 90% MC 50% inflorescences, 80% MC 50% inflorescences, 70% MC 50 and 75% inflorescences.

The degree of maturation of shoots was the best in the bushes irrigated with LPSM 70% MC 50% inflorescences and 80% MC 75% inflorescences and was 93.5% and 97.9% of the total length. In all variants with watering at a load of 50% of the inflorescences, the length of the mature part of the shoots was greater by 40.1-47.4% compared with the control, the difference is significant. The average diameter of the mature part of the shoots in irrigated bushes was 7.1-7.8 mm, in non-irrigated bushes (control) – 7.5-7.6 mm.

We also analysed the number of shoots of different lengths on the bushes, as a higher yield of standard graft shoots can be obtained precisely due to the development of medium and strong shoots. Thus, in the control variant with 100% inflorescence load, shoots with a length of more than 150 cm accounted for 40.8% of their total number, and in the variant with watering 90% MC such shoots were more – 42.8%, in variants 80% MC – 51.7% and 70% MC – 59.4%. When the load of bushes with inflorescences decreased, the share of long shoots (more than 150 cm) increased to

73.9-74.4% (LPSM 90% MC), 57.7-71.6% (80% MS) and 63.4-72.6% (70% MC), while in control plants the share of long shoots was 49.3-71.1%. The total growth (total length of all shoots) of the bushes of the experimental variants is much larger than in the control. Thus, effective irrigation regimes and reducing the load of inflorescences contributed to the growth of medium and strong full-fledged shoots, which are more productive.

Key words: graft mother planting of grapes, level of pre-irrigation soil moisture, number of inflorescences, watering of leaf tissues, respiration intensity, pigment content, biometrical indicators of bushes.