
The Essence of Irrigation Method in Horticulture

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Annotation: Implementation of water-saving irrigation technologies in conditions of typical gray, meadow gray and light gray soils. The development of new and improvement of existing methods of irrigation equipment and technology in intensive horticulture can alleviate water shortages, as well as improve the efficiency of water management and ensure a quality fruit harvest.

Key Words: intensive apple orchards, irrigation methods, soil moisture depth, barrier cross slope, irrigation erosion, water consumption, soil type, mechanical composition, typical, meadow, light gray soils.

Introduction. Development of intensive horticulture and viticulture in Uzbekistan is one of the most important issues in increasing the economic potential of the country and providing the population and domestic markets with cheap and quality fruit and grape products, as well as developing the country's export potential.

Today, apples are the most widely grown fruit in the world, with more than 40 million tons of apples harvested each year. More than 63 million tons of grapes are grown worldwide every year. Eighty-three percent of it comes from Europe and Asia. Eighty-three percent of the grapes grown are used for wine, 12 percent for consumption and 5 percent for raisins.

In our country, extensive work is being carried out on the introduction of advanced water-saving technologies in the cultivation of agricultural crops, the development of irrigation techniques and technologies that ensure the efficiency and productivity of irrigation water in preventing water shortages. In the "Action Strategy for the five priority areas of development of the Republic of Uzbekistan in 2017-2021", approved by the Decree of the President of the Republic of Uzbekistan dated February 7, 2017 № PF-4947, further improvement of irrigated lands, development of reclamation and irrigation networks Particular attention is paid to the widespread introduction of intensive methods, first of all, modern agro-technologies that save water and resources.

In this regard, a number of developed countries: Austria, USA, Canada, Israel, China, India and other countries and their research centers, higher education institutions, ie the United States Department of Agriculture (USDA), Food and Agriculture Organization (FAO), Colorado State University, University of California Business and Irrigation Institute (USA), Institute of Cotton Research (ICR, CAAS), Shehezi University (China), Stockgolm

Technology University (Sweden), International Water Management Institute (IWMI), (Sri Lanka), Australian Cotton Research Institute (Australia), Indian Agricultural Research Institute (India), International Organization for Grapes and Wine (IOGW).

A number of significant scientific researchers have been carried out in Uzbekistan on the development of intensive horticulture, nursery, agro-technical measures, control of diseases and pests of fruit trees, development of optimal irrigation and fertilization standards. It is the result of research by scientists of the Research Institute of Horticulture, Viticulture and Enology named after M. Mirzaev, as well as the Ministry of Agriculture, its research center and research institutes.

Especially scientists working and working in this field: MM Sattorov, Sh.T. Yusupov, N.V. Artomonov, S. Gavrilov, B.D. Mirzoxidov, Sh.Ya. Eshpulatov, A. Kalandarov, A.A.Maxmudov, D.Mamadaliyev, U.Saydaliev, V.V.Kuznetsov, B.Mirzoxidov, A.U.Aripov, R.M.Karimov, O.K.Afanasev, K.I.Baymetov, B.Sh The scientific research of Olmasbaev, TE Ostanakulov, S.Kh. Narzieva, A.Kh. Khamrohodjaev, D.M. Musaev, E.T. Toshmatov, B.Kh. Gulomov, H.B. Shaumarov and others earns.

According to scientists, it is advisable to set the rate of irrigation in the old orchards at 4-1 times in gray soils around 800-1000 m³, and 10-12 times in 300-500 m³ on sandy and gravelly soils.

It certainly follows the same standards when irrigating over conventional land, and of course we are interested in the question of how much water norms should be when using drip or other water-saving irrigation methods.

In our experiments, we have conducted a number of studies and tasks aimed at finding solutions to such issues and providing scientific justification.

Research methods. Determining and scientifically substantiating the method, procedure and norms of intensive apple orchard irrigation based on soil type, its mechanical composition, geological and hydrogeological conditions, as well as water supply levels in the maintenance of intensive orchards in the foothills of Tashkent and Andijan regions field and laboratory studies were conducted.

In the irrigation of young intensive apple orchards, medium and heavy sand, groundwater less than 15 meters, with a salinity of less than 1 g/l (Qibray district), improved the traditional method of irrigation, cross-barrier to reduce water wastage and irrigation erosion. It is planned to determine the number of irrigations and seasonal irrigation standards based on these indicators and the biological characteristics of the plant by setting the water consumption to 1.0-1.5 l/s and the calculated soil moisture content to 0.8 m.

In the care of new orchards, the constant supply of moisture to the layer where the main root part of the soil is located promotes the rapid development of seedlings and the rapid formation of the root system, as well as alternating nutrients and air exchange in the soil.

The main principle of irrigation in this method is that water is given to farmers at a minimum rate, the interval of irrigation is reduced, resulting in a significant reduction in the amount of leaching of soil particles with wastewater, as well as seasonal water consumption, maintaining soil fertility. This increases the efficiency of water and fertilizer use.

Results of the study: In an experiment conducted on typical gray soils (Qibray district) with a slope, level higher than 0.015, two different irrigation methods, simple tillage and transverse barrier furrows were used, in intensive apple orchard irrigation. In these methods, the elements of irrigation techniques, ie the duration of irrigation, the water consumption per hectare, as well as the calculated layers of soil moisture are determined at different depths.

In the experiment, in the traditional tillage, (control variant) 1.0 m layer of soil was irrigated with moisture, while in the cross-barrier method 1.0 m, 0.8 m and 0.5 m layers of soil were irrigated with moisture. . In all variants of the experiment, (uncontrolled) pre-irrigation soil moisture is carried out in the order of 75-80-70% of the limit field moisture capacity, providing moisture to 0.5 and 0.8 m and 1.0 m layers of soil, cross-barrier irrigation increased.

The number of irrigations in the experimental field was 4 times in the control variant, the irrigation norms were 660 m³/ha, and the seasonal water consumption was 2600 m³/ha on average over the years. In this experimental field, the number of irrigations in Option 3, which irrigated orchards by providing 0.8 m layer of soil with moisture, was 5 times, and the average seasonal water consumption was 2200 m³/ha (Fig. 1).

The control of the experiment, i.e., providing a 1.0 m layer of soil with moisture and irrigating from a simple field, yielded a 3-year average fruit yield of 23.4 tons per hectare, while 0.5 of the soil; In the variants irrigated from transverse barrier slopes with moisture supply of 0.8 and 1.0 m layers, these values are 24.8, respectively; 30.7 and 29.0 tons, respectively. The maximum 3-year average yield (30.7 t / ha) was determined in the variant irrigated from transverse barrier ridges, providing moisture to 0.8 m layer of soil.

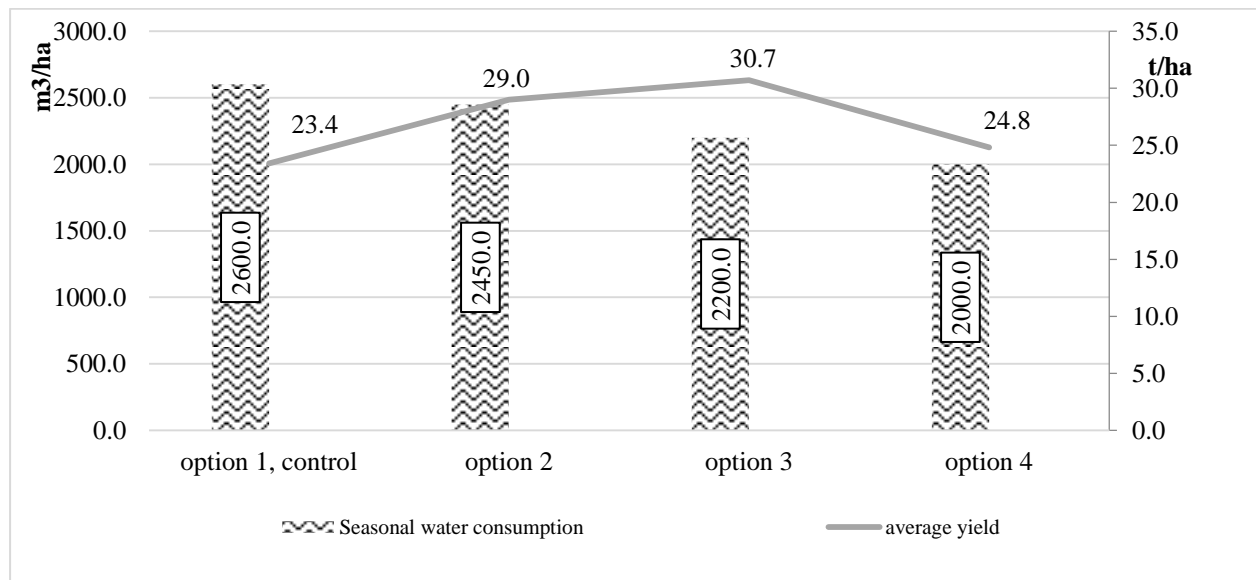


Figure 1: Seasonal water consumption and apple yield in the experimental field (3-year average).

In this experimental field of our scientific research, the amount of leaching of soil particles as a result of irrigation was also studied.

In areas with irrigation erosion, the rate of water flow will vary depending on the slope level of the soil, and in this case the level of soil fertility will also vary.

A lot of scientific research has been done in this regard. As a result of field research conducted by OA Alikhanov, KM Mirzajanov, Sh.N. 25 and 0.19 m / s at the bottom.

Conclusions. In conclusion, the most important thing for us today is to maintain and constantly increase the productivity of irrigated lands, which are invaluable resources, as well as to increase the efficiency of natural water and land resources, to provide the population and domestic markets with cheap and quality fruits. , is the widespread introduction of advanced water-saving, as well as science-based technologies in agricultural production, ensuring high and quality fruit yields while increasing the country's export potential.

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