

PORTABLE DRIP IRRIGATION SYSTEM

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Abstract: In this article, 80% of the consumed water resources are formed in the territory of neighboring countries, the effective use of Uzbekistan's water resources, especially the wide introduction of water-saving systems of crop irrigation and the use of modern technologies in the management of water resources in order to alleviate the growing water shortage in recent years. In addition, the article also provides information about the new portable irrigation system.

Key words: drip irrigation, water resources, food, portable irrigation system, tractor, water tank, water tank lid, modern technologies.

The demand for water resources is increasing year by year due to factors such as population growth, increased food demand, expansion of industrial production, and climate change in the countries of the world. As a result, in many regions of the world, there is a trend of water resource scarcity.

It is known that the agricultural sector is the largest user of water in the whole world. Therefore, the entire scientific community emphasizes the efficient use of water in agriculture, especially in irrigated agricultural fields, including the widespread introduction of water-saving technologies, as the most priority way to alleviate water shortages.

Effective use of Uzbekistan's water resources, where 80% of the consumed water resources are formed in the territory of neighboring countries, especially in order to alleviate the growing water shortage in recent years, to widely introduce water-saving systems of crop irrigation and to expand the possibilities of using modern technologies in water resources management, or It is permissible to admit that it is taking the initiative among the countries of the region.

In the last five years, President Sh.Mirziyoyev passed a number of decrees and decisions on the development of the water sector, the introduction of water-saving technologies, and as a result of them, allocating state subsidies to encourage agricultural producers who introduced new irrigation technology. The creation of a number of benefits for the producers of agricultural goods made a fundamental turn in the development of the irrigated agriculture direction. As a result of the attention of the state leadership, the improvement of the necessary legal norms and the consistent application in practice, the scope of introducing water-saving irrigation systems in our country has increased dramatically in recent years. In 2021 alone, the areas where water-saving technologies have been introduced will increase by 5 times and cover 22% of the total irrigated areas, and in the next five to seven years, this indicator is set to reach 50%. The Parliament of our

country is also conducting large-scale work on improving the legislation in the field of water management.

As the head of our state emphasized the need to approach every issue with science and experience, advanced modern technologies were brought from foreign countries, and their specialists were involved. Due to the year-by-year expansion of the areas where these technologies are introduced, many enterprises have been established in our country, and the production of irrigation system equipment has been started in local conditions.

Now, there is a need for local personnel who build modern water-saving irrigation systems and provide them with service services. At the same time, the issues of creative approach to these irrigation systems, their improvement, adaptation to the unique soil and climate conditions of Uzbekistan are becoming more relevant day by day, and this is required by life itself.

At the present time, when climate change has become a global problem, the efficient use of water resources has become the agenda. In addition, the demand for water in Uzbekistan is increasing due to the wasteful use of natural water, which may exhaust the limited resources of mankind, the continuous increase in the number of people and consumption according to the laws of population, and high economic growth rates.

The growing population of the world, including Uzbekistan, causes the demand for food products to increase year by year. In a situation where the available amounts of water resources, which are the main source of food production, are decreasing, the issue of developing effective methods of their use, economical use of existing water resources is becoming more urgent day by day. In such conditions, the use of water-saving technologies of crop irrigation is being widely implemented in most countries of the world in order to use water sparingly without wasting water. In this regard, countries such as Israel, Japan, Jordan, China, USA, Italy, Turkey, Greece, Australia and India have achieved great results.

Located in the center of the Asian continent, thousands of kilometers away from the oceans and seas, our beautiful homeland is located in a dry and hot region, which is one of the only 2 countries in the world that requires crossing the borders of at least 2 more countries to reach the world ocean. As mentioned above, in the conditions of the Republic of Uzbekistan, where the waters of the main rivers flow from trans-border areas, the issue of effective use of water resources is considered a particularly urgent issue.

Due to the excessive use of water by the extensive agriculture of our country, the problem of shortage of water resources primarily affects the water supply of irrigated areas, and this effect is increasing year by year. In such conditions, the use of water-saving technologies of crop irrigation will further increase the value of these blessings.

For this purpose, with the initiatives of the President, in the last five years, the state has paid great attention to the widespread introduction of water-saving technologies of crop irrigation. In particular, a number of benefits, such as exemption from taxes and allocation of subsidies by the state, were created for agricultural producers who introduced water-saving irrigation systems. As a result, the areas where water-saving technologies are used in our republic are expanding year by year. In this process, of course, there is an increasing need for qualified national specialists who implement water-saving irrigation systems, use them, and provide service.

Training of qualified local personnel for the field of water management, improvement of their training system, development of mutual cooperation between education, science, and

production sectors and development of scientific achievements and know-how the need to introduce the issue is one of the most important strategic tasks of our country.

In the conditions of Uzbekistan, which is located in an arid region, agriculture is the sector that consumes the most water. About 90% of available water resources are used for agricultural production. In recent years, the state in Uzbekistan has given great importance to the effective use of existing water resources based on the widespread introduction of water-saving irrigation technologies in the irrigation of agricultural crops.

In particular, according to the Decree of the President of the Republic of Uzbekistan No. PF-6024 of July 10, 2020 «On approval of the concept of water management development of the Republic of Uzbekistan for the years 2020-2030», the areas where water-saving irrigation technologies are used in our country 2030 to reach 2 million hectares by 2021, drip irrigation system according to the Decision of February 24, 2021 PQ-5005 «On approval of the strategy for the management of water resources and development of the irrigation sector in the Republic of Uzbekistan for 2021-2023» the tasks of rapidly expanding the cultivated areas and bringing them up to 800,000 hectares in 2023 have been set.

As a result of comprehensive support at the level of the state leadership, effective work has been carried out in recent years to raise the living standards of the country's population to higher levels by increasing the quantity and quality of the harvest obtained from irrigated areas based on the effective use of water resources.

Taking the above into account, as a result of our research, we have developed a small portable drip irrigation system for irrigation in areas where water does not reach and uneven terrain (Fig. 1). This unit consists of a tractor, water tank, water tank cover, truck, water pump and drip pipes.

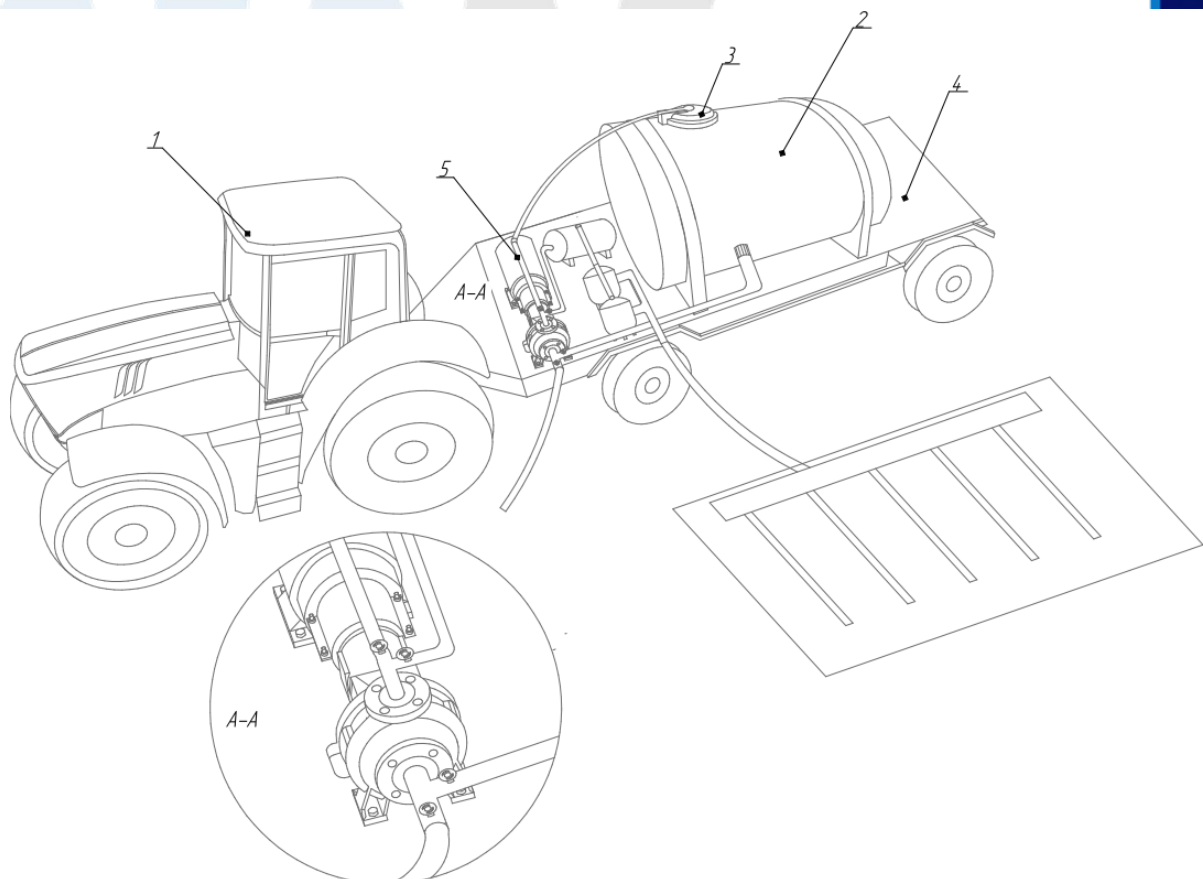


Figure 1. General view of the portable drip irrigation unit.

1 - tractor, 2 - water tank, 3 - water tank lid, 4 - truck, 5 - water pump

The portable drip irrigation unit is designed to water crops on any land at different times. 5000 liters of water goes into the water tank of this irrigation unit. When irrigating land with this unit, water is supplied to the drip pipes through a water pump. If the water in the water tank runs out during watering, it is removed through the removal device located above the pump. After that, it is possible to bring water from the source to the tractor as aggregated water.

Therefore, one of the most promising directions for the development and stability of agricultural production is the cultivation of crops in an intensive way, which aims to achieve the highest possible efficiency of the material and financial resources spent on crop care. In particular, the most correct way to effectively use water resources used in crop care is the widespread use of water-saving technologies of irrigation methods. The portable drip irrigation system offered by us allows to achieve such a goal.

References

1. O'zbekiston Respublikasi Prezidentining 2020 yil 10 iyuldagi PF-6024-son «O'zbekiston Respublikasi suv xo'jaligini rivojlantirishning 2020-2030 yillarga mo'ljallangan konsepsiyasini tasdiqlash to'g'risida»gi Farmoni.
2. 2021 yil 24 fevraldagi PQ- 5005-son «O'zbekiston Respublikasida suv resurslarini boshqarish va irrigatsiya sektorini rivojlantirishning 2021-2023 yillarga mo'ljallangan strategiyasini tasdiqlash to'g'risida»gi Qarori.
3. Imomov Sh., Jurayev A., Ruziqulov J., Kurbonboyev S., Ruziqulova D., Xusinov S., Madadxonov T. (2022). THEORETICAL STUDIES ON THE DESIGN OF TRENCHER WORK EQUIPMENT. Eurasian Journal of Academic Research, 2(12), 989–996. <https://www.in-academy.uz/index.php/ejar/article/view/6504>
4. Sh.J.Imomov, [J.U.Ruzikulov](#), S.S.Kurbanbayev, H.S.Safarov, K.S.Sobirov, and Z.Sh.Isakov “Technological process of provisional dig a ditch”, Proc. SPIE 12296, International Conference on Remote Sensing of the Earth: Geoinformatics, Cartography, Ecology, and Agriculture (RSE 2022), 1229600 (6 July 2022); <https://doi.org/10.1117/12.2642980>
5. Sh. J. Imomov, [J. U. Ruzikulov](#), S. S. Kurbanbayev, H. S. Safarov, K. S. Sobirov, and Z. Sh. Isakov «Technological process of provisional dig a ditch», Proc. SPIE 12296, International Conference on Remote Sensing of the Earth: Geoinformatics, Cartography, Ecology, and Agriculture (RSE 2022), 1229600 (6 July 2022); <https://doi.org/10.1117/12.2642980>
6. Energy-saving device for temporary ditch digging I S Hasanov1, J U Ruzikulov1, F A Ergashov1, M J Toshmurodov1 and M R Sotlikova1 Published under licence by IOP Publishing Ltd [IOP Conference Series: Earth and Environmental Science, Volume 868, International Conference on Agricultural Engineering and Green Infrastructure Solutions \(AEGIS 2021\) 12th-14th May 2021, Tashkent, Uzbekistan](#)Citation I S Hasanov et al 2021 IOP Conf. Ser.: Earth Environ. Sci. 868 012091DOI 10.1088/1755-1315/868/1/012091
7. Ruziqulov Jasur Uktam ugli, Isakov Zafarjon Shuxrat ugli, Qurbonboyev Sindorbek Sarvarbek ugli, Ruziqulova Dilnoza Uktamovna, Xusinov Sarvarbek Nodirbek ugli. (2022). INCREASING THE WORKING PRODUCTIVITY OF THE CASE 1150 L BULLDOZER BY IMPROVING THE WORKING EQUIPMENT. Neo Science Peer Reviewed Journal, 4, 87–90. Retrieved from <https://www.neojournals.com/index.php/nsprj/article/view/83> .

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8. Imomov Shavkat Jakhonovich, Murodov Tohir Faxriddin ugli, Isakov Zafarjon Shuxrat ugli, Ochilov Nuriddinjon zokirovich, Iskandarov Johongir Ochil ugli, & Ruziqulova Dilnoza Uktamovna. (2022). LOCAL FERTILIZER MACHINE WITH AUGER. Neo Science Peer Reviewed Journal, 4, 91–93. Retrieved from <https://www.neojournals.com/index.php/nsprj/article/view/84>

9. Ruziqulov , J. ., Kurbonboyev, S. ., Xusinov, S., & Ruziqulova , D. . (2023). IMPROVEMENT OF THE SCRAPER WORK EQUIPMENT AND IMPROVING ITS EFFICIENCY. Eurasian Journal of Academic Research,3(1 Part 4), 12–16. извлечено от <https://in-academy.uz/index.php/ejar/article/view/8935>

10. P.G.Hikmatov, J.U.Ruzikulov, O.S.Sayidov, Ruziqulova Dilnoza Uktamovna , IMPROVED MACHINE FOR SPREADING AND COMPACTING ROAD CONSTRUCTION MATERIALS., International Bulletin of Applied Science and Technology: Vol. 3 No. 6 (2023): International Bulletin of Applied Science and Technology <https://researchcitations.com/index.php/ibast/article/-view/2020>

11. P.G.Hikmatov, J.U.Ruzikulov , O.S.Sayidov, Ruzikulova Dilnoza Uktamovna , SELECTION OF AN AUGER DEVICE FOR A MACHINE FOR SPREADING AND COMPACTING IMPROVED ROAD CONSTRUCTION MATERIALS , International Bulletin of Applied Science and Technology: Vol. 3 No. 6 (2023): International Bulletin of Applied Science and Technology <https://researchcitations.com/index.php/ibast/article/view/2009>

