

UDK 634:631.674.6(575.146)

TOMCHILATIB SUG'ORISHDA SUG'ORISH TEXNIKA ELEMENTLARINI TAKOMILLASHTIRISH

Fazliyev Jamoliddin Sharofiddinovich

*Buxoro davlat texnika universiteti "Transport vositalari muhandisligi"
kafedrası katta o'qituvchisi t.f.f.d. (PhD), Buxoro shahri, O'zbekiston Respublikasi.*

Email: jamolliddinfazliyev@gmail.com.

Raxmatova Maftuna Jamshid qizi

*Buxoro davlat texnika universiteti Suv taminoti muhandislik tizimlari
yo'nalishi talabasi. Buxoro shahri, O'zbekiston Respublikasi*

Annotatsiya. Maqolada olma bog'larini tomchilatib sug'orish texnologiyasi orqali sug'orish rejimlari o'rganilgan va natijalari keltirilgan. Sug'orish texnika elementlari takomillashtirilishi natijasida hosildorlikning oshishi va suv resurslarining iqtisod qilinishiga erishilgan. Agarda intensiv bog'larda tomchilatib sug'orish texnologiyasi joriy etilsa, suv resurslari 40-60 foiz, mineral o'g'itlar 50 foiz va yoqilg'i-moylash materiallari 30 foizgacha iqtisod qilinishi isbotlangan. Bundan tashqari, sug'orish rejimi o'simliklarning suvga bo'lgan ehtiyojiga mos kelishi va ortiqcha suv ishlatilmasligi, namlik faqat o'simliklarning ildiz tizimiga yaqin joyda to'planishi, natijada suv butun dala bo'ylab tarqalmasligi keltirilgan.

Kalit so'zlar: sug'orish, tomchilatib sug'orish, sug'orish usullari, yer osti suvlari, suv resurslari, ildiz, bug'lanish, suv tanqisligi, suvni tejash texnologiyalari, sug'orish tezligi, cheklangan dala nam sug'imi (CHDNS), mineralizatsiya, sug'orish texnikasi, vegetatsiya davri.

O'zbekiston Respublikasi suv xo'jaligini rivojlantirishning 2020-2030 yillarga mo'ljallangan konsepsiyasida mamlakatimiz bo'yicha suv tejovchi sug'orish texnologiyalarini qo'llaydigan maydonlarni 2030 – yilgacha 2 mln. gektarga yetkazish vazifasi belgilangan. Bu borada 2021-yilda 433 ming gektar, 2022-yilda 355 ming gektar, 2023-yilda 285 ming gektar, 2024-yilda 894 ming gektarda joriy qilingan bo'lsa, 2025-yilda 1116 ming gektarga qo'llash belgilangan. Shundan joriy yilda qishloq xo'jaligi ekinlarini sug'orishda tomchilatib sug'orish texnologiyasini qo'llash 79 ming gektarga yetkazish rejalashtirilgan.

O'simlikdagi hayotiy jarayonlar – fotosintez, o'suv nuqtasida hujayralar bo'linishi va boshqa jarayonlar hujayralarda suv yetarli bo'lgandagina yaxshi o'tadi. Suvning yetarli bo'lishi ikki jarayonni, ya'ni ildiz tizimining suv berib va barglar yuzasining bug'lantirib turish jarayonlarining o'zaro moslanishi bilan ta'minlanadi.

Meva daraxtlarining qancha suv sarflashi iqlim omillari, daraxtlarning tabiati,

ularning yoshi, hosilning miqdori va agrotexnika tizimiga qarab belgilanadi. Sug'orish butun yil mobaynida bog'larni namlik bilan ta'minlabgina qolmay, balki bog' mikroiklimiga ijobiy ta'sir etadigan omil hamdir.

Tuproqning namligi va sug'orish, mevalarning sifatiga ta'sir qiladi. Suv miqdori kamroq, shuningdek, kechiktirib sug'orish mevalarning to'kilib ketishiga sabab bo'ladi. Olma daraxtlari yetarli miqdorda sug'orilmasa, mevasining saqlanish muddati 2 haftagacha qisqarib, ular tarkibidagi qand va kislotalar miqdori kamayadi.

Mevali bog'larni sug'orishda maqbul sug'orish rejimini aniqlash bo'yicha juda ko'p olimlar ilmiy tadqiqot ishlarini olib borganlar, ular jumlasiga B.B.Malichenko, T.I.Gorin, M.N.Bagrov, A.D.Axmedov va boshqalarni kiritish mumkin. Ularning olib borgan tajriba natijalari qayd etishicha mevali daraxtlar uchun tuproqning eng maqbul namlik darajasi CHDNSga nisbatan 75...80 % ni tashkil qiladi. Mevali bog'larni tomchilatib sug'orishning me'yorlarini tadqiqot doirasida o'rganishlar natijalari mevali bog'larni tomchilatib sug'orish rejimi (sug'orish me'yor va soni) bog'ni tomchilatib sug'orish tizimining turiga (har bir tup yonidan, daraxtlar qatorining polosasi bo'ylab) bog'liq ekanligini ko'rsatdi. Mevali daraxtlarining qancha suv sarflashi iqlim omillari, daraxtlarning tabiati, ularning yoshi, hosilning miqdori va agrotexnika tizimiga qarab belgilanadi. Sug'orish butun yil mobaynida bog'larni namlik bilan ta'minlabgina qolmay, balki bog' mikroiklimiga ijobiy ta'sir etadigan omil hamdir. Intensiv yoki yarim intensiv olma bog'lari eski usulda ariqdan sug'orilganda, tuproqning ortiq darajada nam bo'lib ketishi bog' uchun zararlidir. Bu holda tuproq botqoqlanib, uning fizik xossalari, ayniqsa, havo muhiti yomonlashadi, ildiz tizimining faoliyati uchun noqulay sharoit paydo bo'ladi. Zaxlatib sug'orilgan bog'lardagi daraxtlarning kuzgi o'sishini kechiktirib yuboradi va ularning sovuqqa chidamliligini kamaytiradi.

Ekinlarni sug'orishda ilg'or usullardan hisoblangan tomchilatib sug'orish texnologiyasini joriy qilish borasida O'zbekistonda keng ko'lamli ishlar amalga oshirilmoqda. Tomchilatib sug'orish usuli o'zining yuqori samaradorligi, ya'ni suv resurslari cheklanganlik sharoitida kam suv sarflab, barqaror yuqori hosil olish imkonini berishi bilan ajralib turadi.

2019-2021 yillarida tomchilatib sug'orish texnologiyasida bog'larni sug'orish tartibini ishlab chiqish maqsadida dala tajribalari o'tkazildi. Tajriba maydonining tipikligi (o'xshashligi) V.V.Shabanov va E.P.Rudachenko uslubi bo'yicha aniqlandi.

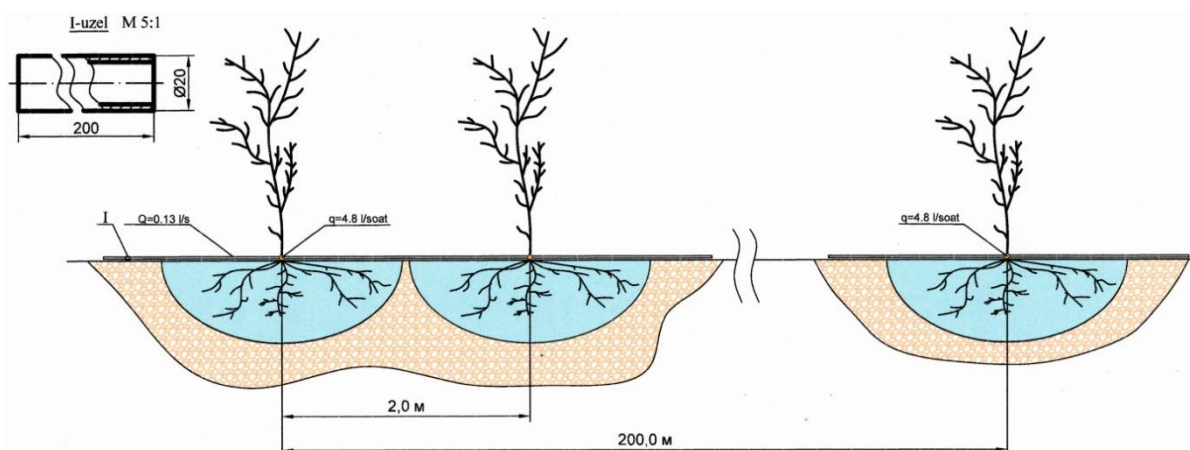
Tajriba maydoni tuprog'i granulometrik tarkibiga ko'ra o'rta qumoq o'tloqi allyuvial, kuchsiz sho'rlangan tuproqlardir. Sizot suvlari joylashuvi 2,1-3,0 m mineralizatsiyasi bo'yicha 1-3 g/l kam minerallashtirish hisoblanadi.

Tajriba uchastkasining maydoni 2.04 gektar. U to'g'ri to'rtburchakli 200x36 m, 250x24 m, 300x24 li maydonlar tanlab olindi.

Dala tadqiqot ishlari TIQXMMI, ISMITI, PSUEAITlarining uslublari asosida tomchilatib sug'orish texnologiyasini takomillashtirish asosida "Golden" navli olmani

sug'orish tartibini o'rganish bo'yicha dala tadqiqotlari olib borildi.

Tomchilatib sug'orishning texnika elementlari sug'orish quvurining uzunligi 200, 250 va 300 m, tomizgich orasidagi masofa 2 m, sug'orish quvuri orasidagi masofa 3 m, tomizgichning suv sarfi 4,8 l/soat, sug'orish quvurining suv sarfi 0.13 l/s ni tashkil etadi. 1-rasm.



1-rasm. Tomchilatib sug'orishning texnika elementlari

Tajribaning tomchilatib sug'orish texnologiyasi orqali sug'orilgan variantlarida sug'orish oldi tuproq namligi CHDNS ga nisbatan 70-75-60 va 70-80-65 % tartibda amalga oshirildi. Egatlab sug'orilgan nazorat variantda bu ko'rsatkich faktik kuzatuvlar orqali tajribada aniqlandi.

Tajribada olma bog'i egatlab sug'orilgan nazorat variantida sug'orishlar 1-3-1 sxemada 5 marotabani tashkil etib, sug'orish me'yori 720-790 m³/ga va mavsumiy sug'orish me'yori 3748 m³/ga ga teng bo'ldi.

Tajribada sug'orish quvuri 200 m bo'lgan tomchilatib sug'orish texnologiyasida sug'orish oldi tuproq namligi CHDNS ga nisbatan 70-80-65% da bo'lgan nazorat variantda bo'lgan sug'orishlar 2-11-5 sxemada 18 marotabani tashkil etib sug'orish me'yori

87-145 m³/ga va mavsumiy sug'orish me'yori 1940 m³/ga teng.

Tuproq namligini boshqarishda tajriba tizimida belgilab olingan CHDNS qiymatlariga amal qilish zarur. Shuni ham ta'kidlash joizki, ko'chat uchun namlik bilan birga qatorda ozuqa-havo-issiqlik-yorug'lik faktorlarini me'yorida bo'lishi katta ahamiyatga ega hisoblanadi. Tajriba dalasining barcha variantlarida tajriba tizimida keltirib o'tilgan ko'rsatkichlarga asosan bajarildi. Vobkent tumani "Garden Buxoro Agroklastar" MCHJ ning kuchsiz sho'rlangan, mexanik tarkibi bo'yicha o'rta qumoq tuproqlarida ishlab chiqarish nazorati ya'ni 1-variantida tuproqdagi namlik: 68,9-70,4 foiz atrofida bo'ldi. Olmani sug'orishda tomchilatib sug'orish texnologiyasi qo'llanilgan 2-4-6-variantlarda CHDNSga nisbatan 70-75-60 % va 3-5-7-variantlarda CHDNSga nisbatan 70-80-65 % bo'lganda, olmani 100 sm. qatlamni sug'orish me'yori

aniqlandi. Shu asosda olmani suvga bo'lgan talabi boshqarildi. Tuproqdagi namlik olma gullashigacha bo'lgan fazada hamda gullash-meva tugish fazasida tuproq namligi CHDNSga nisbatan 69,0-79,9 % atrofida bo'ldi. Pishish davrida esa tuproqdagi CHDNSga nisbatan 64,5-66,4% bo'ldi. Tajriba dalalarda bajarilgan ilmiy-tadqiqot ishlaridan olgan natijalarga asosan tajriba tizimidan belgilangan sug'orish oldi tuproq namligi $\pm 2,0$ foiz atrofida bo'lganligi kuzatildi.

Buxoro viloyatining o'tloqi allyuvial, mexanik tarkibiga ko'ra o'rta qumoq tuproqlari sharoitida "Golden" navli olma bog'larida tomchilatib sug'orish texnologiyasida mavsum davomida 18 marta 87-145 m³/ga sug'orish me'yorlari va 1940 m³/ga mavsumiy sug'orish me'yorlari bilan sug'orilganda undan olinadigan hosildorlik 216 s/ga teng bo'lib, nazoratdagi egatlab sug'orishga nisbatan 48 foizga suv resurslari tejallishi va qo'shimcha 106 s/ga olma hosili olishga erishilgan.

Adabiyotlar:

1.O'zbekiston Respublikasi Prezidentining 2020 yil 10 iyuldagi noyabrdagi PF-6024 sonli "O'zbekiston Respublikasi suv xo'jaligini rivojlantirishning 2020-2030 yillarga mo'ljallangan kontseptsiyasini tasdiqlash to'g'risida" gi Farmoni.

2. Dala tajribalarini o'tkazish uslublari. – Toshkent 2007 y., – 176 b.

3. Isabaev K.T., Xamidov M.X., Alieva D. "Ekinlarni sug'orish va xosildorlik". – Toshkent., "Mexnat". 1991. – 104 b

4. **Khudayev I., Fazliev J.** "Water-Saving Techniques and Technologies for Irrigating Agricultural Crops." **Bulletin of the Khorezm Mamun Academy**, 2020, Issue 11, pp. 272–275. (06.00.00 No. 12).

5.Фазлиев Ж.Ш., Сатторов В., Жумаев И. Экономическая эффективность применения водосберегающей технологии полива виноградников. Инновационное развитие науки и образования янбар 2021 Казахстан Международная конференция с 6-7.

6.Fazliyev J., Jumaev I., Madirimov A. Efficiency of use of clay water with drip irrigation. Cutting-edge science 2021. International scientific and practical conference. pp 66-67. USA march, april 2021.

7.Xudayev I., Fazliyev J., To'rayev B., Efficiency of use of clay water with drop Irrigation. Monografia pokonferencyjna science, research, development 26 v. 2 Poznan/ Poznan 27.02.2020- 28.02.2020 b 122-124.

8.Fazliyev J., Kattayev B. "Application of Water-Saving Technologies in the Irrigation of Orchards and Vineyards." Proceedings of the 14th Republican Multidisciplinary Scientific Distance Online Conference on Scientific and Practical Research in Uzbekistan, No. 14, Part 8, pp. 179–182, March 8, 2020.

9.Fazliev J.Sh., Jo'rayev Sh.B. "Efficiency of Applying Modern Water-Saving Technologies in Orchards." **Proceedings of the Republican Scientific-Theoretical**

Conference on Improving the Efficiency of Rational Use of Water and Land Resources, November 22–25, 2019, Bukhara, pp. 180–181.

10. Fazliev J.Sh., Abdisamatov O.S. Efficiency of use of clay water with drop irrigation. International scientific and practical conference «Science, education and innovation for agro-industrial complex: problems and prospects» II – collection November 22–23, 2019, Tashkent – 2019, pp. 215–219.

11. Фазлиев Ж.Ш., Баратов С.С. Эффективность использования глинистой воды при капельном орошении. Пут науки. The Way of Science International scientific journal № 11 (69), 2019 Волгоград, 2019 с 96-97.

12. Xudayev I.J., Fazliyev J.SH, Madirimov A. Water – saving Irrigation Technology uses. International journal of trend in scientific research and development E-ISSN 2456-6470 april 2021 pp 157-159.

13. Худоев И.Ж., Фазлиев Ж.Ш., Технология капельного орошения садов и виноградников. **Interdisciplinary Innovations and Scientific Research Journal of Uzbekistan**, Issue 2, Part 1, November 20, 2021, pp. 176–180.

14. Хакимова З.З. “Эффективность использования сточных вод при выращивании люцерны.” Актуальные проблемы современной науки журнал. № 6 (135) 2023. Москва . 59-63 с. (06.00.00; № 5).

15. Fazliyev J. U.Ravshanov. “Effectiveness of drip irrigation technology introduction” Bukhara State University “Problems and scientific solutions to the improvement, conservation, protection and restoration of soil fertility” Republican scientific-practical conference Pp. 316-318.

16. **Khalilov J.M.** Cultivators for Inter-Row Tillage in Intensive Orchards and Their Application. Proceedings of the International Scientific Conference on “Topical Issues of Agroecosystem Sustainability in the Efficient Use of Natural Resources.” – Bukhara, 2022. – Pp. 300–304.

17. **Z.Z. Hakimova.** The Effect of Irrigation with Wastewater on the Yield of Maize (Silage) Crops. "Agro Ilm" – Scientific Supplement of the Uzbekistan Agricultural Journal. Issue 1. Tashkent, 2024. – Pp. 60–62. (06.00.00; No. 1).

18. **Khalilov J.M.** Machines for Inter-Row Cultivation in Intensive Orchards and Their Importance. Proceedings of the International Scientific-Technical Conference on “Innovative Solutions for the Development of High-Performance Agricultural Machinery and Improving the Use of Technical Means.” – Gulbahor, 2022. – Pp. 89–91.

19. **I. Islomov, Z.Z. Hakimova.** Efficiency of Leaching Salinity from Alluvial-Meadow Soils Using Wastewater. Journal “Agrochemistry, Plant Protection and Quarantine.” No. 5, 2023. Tashkent. – Pp. 157–160. (06.00.00; No. 11).

20.I. Islomov, Z.Z. Hakimova. The Effect of Using Wastewater for Irrigating Alfalfa and Maize Grown for Livestock on the Mineral Content of Groundwater. Journal of New Century Innovations, Issue 41, Part 2, November 2023. Tashkent. – Pp. 172–177.

21.Imomqulov K.B., Nishanboyev N.N., Khalilov J.M. Justification of the Parameters of a Working Body That Covers Exposed Tree Roots in Intensive Orchards. Scientific Journal "Mechanics and Technology", Namangan, 2023. – No. 4 (13). – Pp. 80–84.

22.Z.Z.Hakimova, I.Islomov “Determination of rules for irrigation when growing corn (silage) with wastewater..” In International Multidisciplinary Conference “22 nd International Conference on Innovations in Applied Sciences, Education and Humanities” Published with Conference International Database, hosted online from Barcelona, Spain on January 26 th 2024. 30-34 p.

23.Z.Z. Hakimova, G. Olimova. Current Efforts for the Proper and Efficient Use of Drinking Water (on the Example of Bukhara Region). Organizing Committee of the International Scientific-Practical Online Conference “Innovative Equipment and Technologies for Agriculture and Water Management,” dedicated to the 10th anniversary of the Bukhara Branch of the Tashkent Institute of Irrigation and Agricultural Mechanization Engineers. 2020.

24.Xudayev I.J. Fazliev J.Sh. Yusupova A. Water saving up-to-date irrigation technologies. AEGIS 2021 Agricultural Engineering and Green Infrastructure Solutions (AEGIS). IOP Conf. Series: Earth and Environmental Science 868 (2021) 012040. 5 Pp. doi:10.1088/1755-1315/868/1/012040.

25.Xudayev I.J. Fazliev J.Sh. Water-saving irrigation technology in the foothill areas in the South of the Republic of Uzbekistan. AIP Conference Proceedings 2612, 050029 (2023); <https://doi.org/10.1063/5.0118786> Published Online: 15 March 2023.

26.Fazliev, Z. S., Kattaev, B. S., & Saylikhanova, M. K. (2014). Efficiency of use of clay water with drop irrigation. The Way of Science, 76.

27.Xudayev, I. J., & Fazliyev, J. S. (2020). Efficiency of use of clay water with drop irrigation. Эффективность применения инновационных технологий и техники в сельском и водном хозяйстве (pp. 213-215).

28.Fazliyev, Zh. Sh., & Shokhimardanova, N. Sh. (2024). A Method for Determining the Soil-Moisture Contour During Drip Irrigation of Orchards. IMRAS, 7(2), 34–38