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Electrochemically Activated Water Police Crops With Microelement Solution Processing Before Planting

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Abstract: The article presents the results of preliminary studies conducted on the treatment of pumpkin seeds with a solution of microelements of electrochemically activated water before sowing and studying the effect on plant growth and development.

Key words: Electrochemically activated water, microelements, pumpkin seeds, anolyte, catholyte, pH.

In recent years, consistent measures have been implemented in our country to reform agriculture and introduce market mechanisms into the industry. Improving the quality of agricultural products is closely linked to the development of science in this area, the creation of new progressive technologies, and their wider introduction into production. In recent years, much attention has been paid to expanding the scale of growing vegetable and fruit products, which are considered important for human consumption in agriculture [1].

At present, when growing pumpkin crops in our country, it is envisaged to use new technologies, expand the sowing areas and obtain a high yield. Pumpkin products play a special role in the formation of a healthy lifestyle of our people and are of particular importance due to their high nutritional and complete qualities, healing properties, and richness in vitamins.

According to data published by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO), every eighth person in the world has problems with vitamin deficiency. Poliz products are rich in vitamins and are nutritious, which means that there is a need to develop this industry. Rice crops have the ability to saturate the human body with carbohydrates, proteins and fats. They contain a large number of biologically active substances: vitamins, salts, pectin substances, organic acids, essential oils, aromatic substances, therefore they have healing properties and high taste qualities [2].

In this regard, we conducted experiments to study the effect of pre-sowing treatment of pumpkin seeds with electrochemically activated water and its microelement composition on seed germination and plant development. In the experiment, we used the local pumpkin variety Spain-73. The experiments were conducted in 5 variants with 3 repetitions. For each variant, 20 high-quality varietal pumpkin seeds were selected. Pumpkin seeds of all variants were wrapped in gauze material moistened with the corresponding aqueous compositions and left for 24 hours at a temperature of 24-25 ^{o} C. In variant 1, pumpkin seeds were treated with ordinary non-activated tap water (pH = 7.5 ± 0.1) and this variant was chosen as a control. The remaining variants are experimental variants, variant 2 - with a 0.1% solution of $KMnO_4$, variant 3 - with an acidic (pH = 2.5-3±0.1) part of electrochemically activated water, variant 4 - with electrochemically activated water of copper sulfate. with a 0.01% solution in the acidic (pH = 2.5-3.0) part, copper in variant 5 was treated with a low-concentration solution of sulfur and manganese sulfate in the acidic (pH = 2.5-3.0) part of electrochemically activated water. The pH of the electrochemically activated water is constantly measured using a pH meter during the study.

On 26.02.2024, the seeds soaked in the fabric were sown in polymer bags, in which each field crop was divided into separate cells based on 3 repetitions and indicators with labels were attached (Fig. 1).

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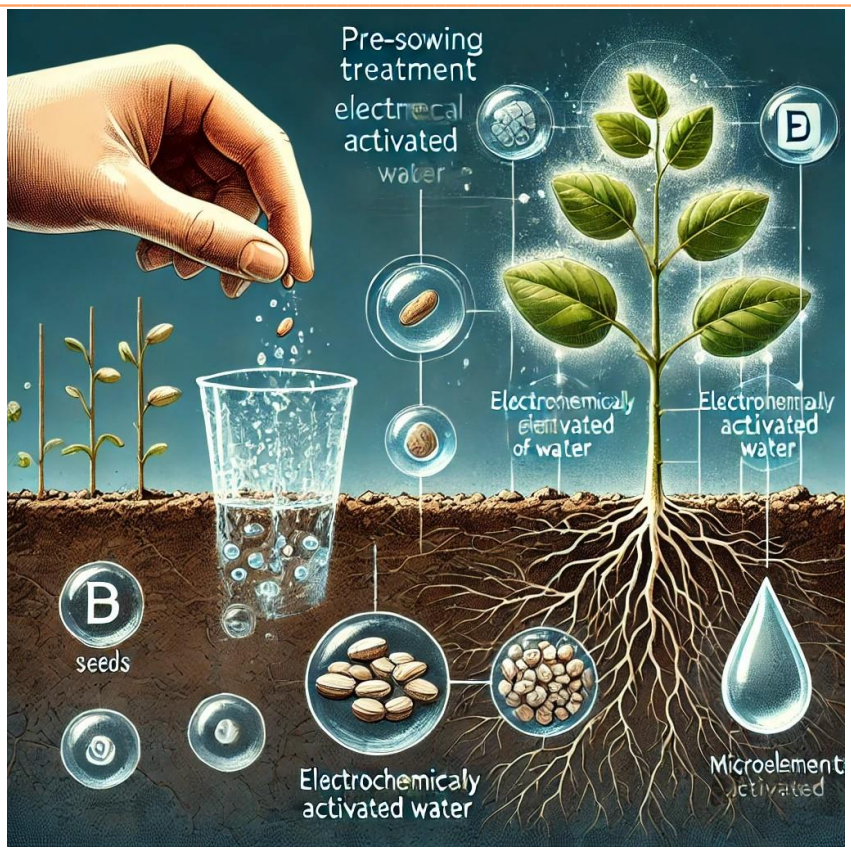

Figure 1. Pumpkin seeds are planted in plastic bags and the seedlings are germinated.

During the research, the germination of pumpkin seeds was checked for the corresponding variants. During the initial control check, it was observed that only 1 seed germinated in 3 variants. It was noted that out of 60 seeds in 2 control experiments, 31 seeds germinated in variant 1, 37 in variant 2, 38 in variant 3, 39 in variant 4, and 38 in variant 5. On 13.04.2024, 3 control inspections were carried out, during which it was noted that 55 seeds germinated in variant 1, 56 in variant 2, 57 in variant 3, 58 in variant 4, and 58 in variant 5 (Table 1).

Table 1

Germination of pumpkin seeds planted in plastic bags.

Experience options	Total number of seeds planted	Number of sprouted seeds, pcs.		
		1st control check 02.04.2024	2nd control check 04/09/2024	3rd control check 13.04.2024
Option 1	60	0	31	55
Option 2	60	0	37	56
Option 3	60	1	38	57
Option 4	60	0	39	58
Option 5	60	0	38	58

According to the results of the preliminary experiment, variants 4 and 5 were distinguished by a larger number of germinated seeds, better plant development and seedling health than other variants.

On 19.04.2024, pumpkin seedlings in polymer bags were transported to the field. In this case, 15 healthy, well-developed seedlings were selected from each variant. After that, the height of the pumpkin seedlings, the number of leaves and the number of honeycombs were monitored every 7 days.

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During the initial inspection, seedlings of all variants produced 1 leaf, the average height of seedlings was 5.2-6.1 cm. During the second inspection, carried out on 04/26/2024, the average number of leaves in seedlings for variant 1 was 2.2, and the average height of seedlings was 6.3 cm. In 2 variants, the average number of leaves in seedlings was 2.6, and the average height of seedlings was 8.4 cm. In 3 variants, the average number of leaves in seedlings was 2.2, and the average height of seedlings was 9.6 cm. In 4 variants, the average number of leaves in seedlings was 2.0, and the average height of seedlings was 8.1 cm. In 5 variants, the average number of leaves in seedlings was 2.0, and the average height of seedlings was 7.8 cm. During the third inspection, carried out on 03/05/2024, the average number of leaves in seedlings for variant 1 was 4.8, the number of combs was 5, the average height of seedlings was 8.2 cm. The average number of leaves in seedlings in 2 variants was 5.6, the number of combs was 3, the average height of seedlings was 10.8 cm. The average number of leaves in seedlings in 3 variants was 5, the number of combs was 7, the average height of seedlings was 13.8 cm. The average number of leaves in seedlings in 4 variants was 5, the number of combs was 7, the average height of seedlings was 11.2 cm. In 5 variants, the average number of leaves in seedlings was 5, the number of combs was 6, the average height of seedlings was 10.6 cm (Table 2).

CONCLUSION

- before planting pumpkin seeds with an acidic (pH=2.5-3±0.1) part of electrochemically activated water and neutralization with a 0.01% solution of electrochemically activated copper sulfate in the acidic part of water (pH=2.5-3.0) is significant due to its low cost compared to other methods, high germination and development of seeds, and environmental efficiency;

- the anolyte part of electrochemically activated water (pH=2.5-3) can be used for disinfection of pumpkin seeds by electrotechnological methods before sowing.

The most optimal conditions can be considered to be the treatment of pumpkin seeds with electrochemically activated water and its microelement composition in laboratory conditions, storage of seeds in a cloth soaked in the mixture for 24 hours at a temperature of at least 24 ^{o} C.

LITERATURE

1. Yusupova, M. N. "Biological method of crop protection in the fergana valley." *Agrarian science* 6 (2018): 68-70.
2. Юсупова, Махпуза Нумановна, Азиза Нуьмановна Тургунова, and Сайдулло Нуриддинович Очилов. "Система интегрированной защиты растений." *Российский электронный научный журнал.–2015* 1 (2015): 169-174.
3. MN, Yusupova, and B. Z. Nosirov. "Control Of Cotton Pests On Stubble Lands." *International Journal of Applied* 10.2 (2015): 99-108.
4. Yusupova, M. N., S. T. Hodzhaev, and K. S. Mamatov. "Possibilities of the biological method of cotton plant protection." *Agriculture and Biology Journal of North America* 2.5 (2011): 742-744.
5. Yusupova, Maxpuza. "Protection of after harvest cultures-as a reservetors of cotton pests." *Agriculture and Biology Journal of North America* 4.5 (2013): 576-582.
6. Ходжаев, Ш. Т., Юсупова, М. Н., Юлдашев, Ф., Исаев, О. Б., & Шокирова, Г. (2011). Борьба с вредителями хлопчатника на пожнивных культурах в севообороте. *Вестник защиты растений*, (2), 46-52.
7. Misirova, S. A. "Systematic types of fungi of allocated and determined types from decorative flowers in conditions region Tashkent." *Agricultural sciences* 6.11 (2015): 1387.
8. Misirova, Surayyo, and Ibrohim Qurbanov. "Biological Characteristics of Fungal Pathogens of Bulb Flowers and Control Measures." *Texas Journal of Agriculture and Biological Sciences* 22 (2023): 49-56.
9. Abdumutalovna, Misirova Surayyo, and Sarimsaqova Nilufar Sobirjonovna. "Bioecology of Fungi-Pathogens of Flower Crops and the System to Combat Them." *Agricultural sciences* 7.8 (2016): 539-547.
10. Misirova, S., et al. "Growing Dutch tulips in Namangan region." *Bulletin of Agrarian Science of Uzbekistan* 1 (2021).

ISSN NO: 2771-8840
November 2024

11. Misirova, Surayyo, and Ibrohim Qurbanov. "Biological Characteristics of Fungal Pathogens of Bulb Flowers and Control Measures." *Texas Journal of Agriculture and Biological Sciences* 22 (2023): 49-56.
12. Misirova, Surayyo. "Technology of growing orchid flowers from seeds." *E3S Web of Conferences*. Vol. 390. EDP Sciences, 2023.
13. MISIROVA, SA, and NN ERNAZAROVA. "FIGHTING MEASURES THE DISEASE CAUSES A VERY DANGEROUS FUNGAL SPECIES WIDESPREAD IN TASHKENT REGION." *International Journal of Botany and Research (IJBR)* 6 (2016): 5-12.
14. MISIROVA, SA. "TECHNOLOGY OF CULTIVATION AND REPRODUCTION OF ORNAMENTAL AND UNIQUE ORCHID FLOWER IN NAMANGAN CONDITIONS." *World Bulletin of Social Sciences* 17 (2022): 156-164.
15. Misirova, S. A. "BIOLOGICAL CHARACTERISTICS OF FUNGAL SPECIES THAT CAUSE DISEASES OF ONION FLOWERS AND MEASURES TO COMBAT THEM." (2022).
16. Misirova, S., and M. Haydarova. "Flowers from Nederland are Considered to Develop in the Climatic Conditions of Uzbekistan and Are Identified the types of Fungus." *Annals of the Romanian Society for Cell Biology* 25.4 (2021): 5922-5929.
17. Misirova, S. A., et al. "Determination types of fungi-pathogens of ornamental flower crops in conditions region Namangan." *ISJ Theoretical & Applied Science* 10.66 (2018): 185-189.
18. Abdumutalovna, Misirova Surayyo, and Muhabbat Davlatova Urmanovna. "Technology of in vitro propagation of mangosteen in the climatic conditions of Uzbekistan." *NVEO-NATURAL VOLATILES & ESSENTIAL OILS Journal| NVEO* (2021): 5610-5617.
19. Мисирова, Сурайё Абдумуталовна. "БИОЛОГИЧЕСКАЯ ЭФФЕКТИВНОСТЬ ФУНГИЦИДОВ В БОРЬБЕ С МУЧНИСТОЙ РОСОЙ И РЖАВЧИНОЙ РОЗ." *Научный поиск в современном мире*. 2016.
20. Misirova, Surayyo. "Reproduction technology of a unique orchid flower in the conditions of Namangan." *Texas Journal of Agriculture and Biological Sciences* 22 (2023): 37-48.
21. Мисирова, Сурайё Абдумуталовна, Иброхим Шарифбаевич Курбонов, and Назокат Кобилжоновна Сайфуллаева. "ОПРЕДЕЛЕНИЕ ГРИБКОВЫЕ БОЛЕЗНИ ЦВЕТОЧНЫХ КУЛЬТУР В УСЛОВИЯХ ОБЛАСТИ НАМАНГАНА." *Theoretical & Applied Science* 10 (2018): 185-189.
22. Мисирова, Сурайо Абдумуталовна. "Биоэкология грибов-возбудителей болезней цветочных культур и создание ситемы борьбы с ними." *Материалы 54-й Международной научной студенческой конференции МНСК-2016: Сельское хозяйство*. 2016.
23. Насритдинов, А., А. Нормирзаев, and А. Нуриддинов. "Разработка агрегатов для основной и предпосевной обработки почвы к севы промежуточных." *ФУНДАМЕНТАЛ ФАНЛАР* (2015): 44.
24. Насритдинов, Ахмаджон Абдухамидович, and Хусниддин Тургунбоевич Киргизов. "Агрегат для полосной обработки почвы." *Современные научные исследования и инновации* 12 (2015): 412-416.
25. Байбобоев, Н. Г., Насриддинов, А. А., Нормирзаев, А. Р., & Нуриддинов, А. Д. (2014). Энергоресурсосберегающий комбинированный агрегат для обработки почвы. *Вестник Рязанского государственного агротехнологического университета им. ПА Костычева*, *3*(23), 42-44.
26. Насритдинов, Ахмаджон Абдухамидович. "Результаты исследования формы лобовой поверхности стойки чизеля-культиватора." *Universum: технические науки* 1 (58) (2019): 18-20.
27. Бойбобоев, Набижон Гуломович, and Ахмаджон Насритдинов. "Теоретические определение перемещение частиц почвы по поверхности углоснима." *Science Time* 6 (18) (2015): 84-89.
28. Бойбобоев, Набижон Гуломович, and Ахмаджон Насритдинов. "Теоретические определение перемещение частиц почвы по поверхности углоснима." *Science Time* 6 (18) (2015): 84-89.
29. Ходжаев, Ш. Т., Сагдуллаев, А. У., Исаев, О. Б., & Юсупова, М. Н. (2011). Проблемы защиты растений в Узбекистане. *Защита и карантин растений*, (8), 23-24.

ISSN NO: 2771-8840
November 2024

30. Yusupova, M. N., and A. M. Gapparov. "Biological Method Of Plant Protection In Uzbekistan." *The American Journal of Agriculture and Biomedical Engineering* 2.11 (2020): 29-32.
31. Ходжаев, Ш. Т., Юсупова, М. Н., Курязов, Ш., & Саттаров, Н. (2008). Перспективы биологической защиты хлопчатника от хлопковой совки. *Сб. трудов.-Ташкент: Таллин*, 44-49.
32. Yusupova, M. N. "Biological method of crop protection in the fergana valley." *Agrarian science* 6 (2018): 68-70.
33. Юсупова, Махпуза Нумановна, Азиза Нуьмановна Тургунова, and Сайдулло Нуриддинович Очилов. "Система интегрированной защиты растений." *Российский электронный научный журнал.–2015* 1 (2015): 169-174.
34. MN, Yusupova, and B. Z. Nosirov. "Control Of Cotton Pests On Stubble Lands." *International Journal of Applied* 10.2 (2015): 99-108.
35. Yusupova, M. N., S. T. Hodzhaev, and K. S. Mamatov. "Possibilities of the biological method of cotton plant protection." *Agriculture and Biology Journal of North America* 2.5 (2011): 742-744.
36. Yusupova, Maxpuza. "Protection of after harvest cultures-as a reservetors of cotton pests." *Agriculture and Biology Journal of North America* 4.5 (2013): 576-582.
37. Ходжаев, Ш. Т., Юсупова, М. Н., Юлдашев, Ф., Исаев, О. Б., & Шокирова, Г. (2011). Борьба с вредителями хлопчатника на пожнивных культурах в севообороте. *Вестник защиты растений*, (2), 46-52.
38. Ходжаев, Ш. Т., Юсупова, М. Н., Юлдашев, Ф., & Жамалов, А. Г. (2010). Хлопковая совка на пожнивных культурах. *Защита и карантин растений*, (12), 22-23.
39. Юсупова, М. "Особенности защиты хлопчатника посеянного под пленки от вредных организмов." *Автореф. канд. дисс./М. Юсупова–Ташкент* (2001).
40. Yusupova, Makhpuza, Shakhnoza Irisova, and Otabek Numonov. "Biology of Pomegranate Pests, Control Measures and First Aid in Case of Pesticide Poisoning." *BIO Web of Conferences*. Vol. 82. EDP Sciences, 2024.
41. Yusupova, M., Turgunova, A., & Ochilov, S. INTERGRATED PLANT PROTECTION SYSTEMS.
42. Yusupova, M. N., and B. Z. Nosirov. "Cotton Pest Control on Stubble Crops at Crop Rotation." *International Journal of Biotechnology and Allied Fields* 1.11 (2013): 472-482.
43. Khodzhaev, S. T., Sagdullaev, A. U., Isaev, O. B., & Yusupova, M. N. (2011). Plant protection problems in Uzbekistan.
44. Khodzhaev, S. T., Yusupova, M. N., Yuldashev, F., & Zhamalov, A. G. (2010). Cotton bollworm in the post harvest crops.
45. Khodzhaev, Sh T., and M. N. Yusupova. "Defoliation times and bollworm." (2001): 35.
46. Sabirov, R. Z., Kurbannazarova, R. S., Melanova, N. R., & Okada, Y. (2013). Volume-sensitive anion channels mediate osmosensitive glutathione release from rat thymocytes. *PLoS One*, *8*(1), e55646.
47. Rashidovna, Melanova Nazira, and Numonov Otabek Urmonovich. "Comparative Characteristics of the Leaving of Glutathione From Cells of Different Types." *International Journal on Orange Technologies* 2.10: 79-82.
48. Sabirov, R. Z., Kurbannazarova, R. S., Melanova, N. R., & Okada, Y. (2010, January). Swelling-induced release of glutathione from rat thymocytes. In *JOURNAL OF PHYSIOLOGICAL SCIENCES* (Vol. 60, pp. S13-S13). 1-11-11 KUDAN-KITA, CHIYODA-KU, TOKYO, 102-0073, JAPAN: SPRINGER TOKYO.
49. Melanova, N. R., M. U. Davlatova, and O. Numanov. "The Effect of Extracellular Glutathione on the Regulation of Thymocyte Volume in Rats under Conditions of Hypoosmotic Stress." *Annals of the Romanian Society for Cell Biology* (2021): 7032-7038.
50. Меланова, Назира Рашидовна. "Сравнительная характеристика выхода глутатиона из различных типов клеток." *Universum: химия и биология* 5 (59) (2019): 9-12.
51. Melanova, N. R., & Yulchiyeva, S. A. (2021). EFFECT OF EXTRACELLUIAR GLUTATHIONE ON COLLOID-OSMOTIC LYSIS OF HUMAN RED BLOOD CELLS. *Scientific Bulletin of Namangan State University*, *2*(2), 144-149.

ISSN NO: 2771-8840
November 2024

52. Choriyeva, N. M., & Melanova, N. R. (2019). STUDY OF LYSIS OF HUMAN ERYTHROCYTES UPON ADMINISTRATION OF GOSSYPOL, MEGOSIN AND BATRIDEN. *Bulletin of Namangan State University: Vol*, *1*(9), 11.
53. Melanova, N. R., Yulchieva, S., Rahimova, G. L., & Mamadjanova, M. A. (2020). The role of intracellular camp in the production of glutathione from rat thymocyte cells under hypoosmotic stress. *International journal of Advanced Science and Technology*, *29*(8 Special Issue), 821-825.
54. Melanova, N. R. (2023). REPRODUCTION OF THE MAGNOLIA (MAGNOLIACEAE) PLANT IN NAMANGAN CONDITIONS. *British Journal of Global Ecology and Sustainable Development*, *22*, 81-87.
55. Melanova, Nazira R. "The importance of the soap tree plant (Kelreiteria Paniculata) in environmental protection and landscaping in the climatic conditions of the Namangan region." *E3S Web of Conferences*. Vol. 390. EDP Sciences, 2023.
56. Шамситдинов, Ф. "Результаты опыта." *Защита и карантин растений* 5 (2003): 27-27.
57. Абдуалимов, Ш. Х., and Ф. Р. Шамситдинов. "Влияние применения стимуляторов роста на всхожесть семян, рост, развитие и урожайность хлопчатника в условиях светлых сероземных каменистых почв Наманганской области Республики Узбекистан." *Актуальные проблемы современной науки* 5 (2019): 47-51.
58. Абдуалимов, Шухрат Хамадуллаевич, and Фазлиддин Расулович Шамситдинов. "НАМАНГАН ВИЛОЯТИНИНГ ҚИР АДИРЛИ ТОШЛОҚ ЕРЛАРИДА ЯНГИ СТИМУЛЯТОРЛАРНИНГ ҒЎЗА БАРГ ЮЗАСИ ВА ҲОСИЛДОРЛИГИГА ТАЪСИРИ." *Журнал Биологии и Экологии* 1 (2019).
59. Kurbanov, I. G. "CARE OF TULIP VARIETIES OF THE NETHERLANDS IN THE CLIMATIC CONDITIONS OF THE NAMANGAN REGION." *American Journal of Interdisciplinary Research and Development* 6 (2022): 117-120.
60. Qurbonov, Ibragim Sharifjonovich. "CLONELY MICRO-CULTIVATION OF PLANTS AND ITS APPLICATION TO AGRICULTURE." *Scientific Bulletin of Namangan State University* 1.4 (2019): 74-78.
61. Qurbonov, I. "E-RECRUITMENT: SOCIAL MEDIA AND RECRUITING." *InterConf.–2021*.
62. Qurbonov, I. "Tulip varieties imported from the netherlands technology of cultivation of namangan region. galaxy international interdisciplinary research journal (giirj) issn (E): 2347-6915 Vol. 9." (2021).
63. Yusupova, M., Irisova, S., & Numonov, O. (2024). Biology of Pomegranate Pests, Control Measures and First Aid in Case of Pesticide Poisoning. In *BIO Web of Conferences* (Vol. 82, p. 01014). EDP Sciences.
64. Irisova, Sh. "Protection Of Plants Sown After Cereals In The Fergana Valley." *Science and innovation* 2.D11 (2023): 158-166.
65. Irisova, Sh. "GROWTH AND REPRODUCTION CHARACTERISTICS OF BLACK FISH (SCHIZOTHORAX INTERMEDIUS) IN A PASTORAL POOL." *Science and innovation* 3.D10 (2024): 132-136.
66. IRISOVA, Shakhnoza. "BIO-ECOLOGICAL FEATURES OF BLACKFISH (SCHIZOTHORAX INTERMEDIUS) IN CHERVOK RESERVOIR." *Journal of Experimental Studies* 1.12 (2023): 18-24.
67. Yusupova, Makhpuza, and Shakhnoza Irisova. "Agrotechnological protection of cotton from sucking pests in various ways of planting." *E3S Web of Conferences*. Vol. 390. EDP Sciences, 2023.
68. Faxriddinovna, Irisova Shaxnoza. "Ekish oldidan chigitga elektrofaollashgan suv bilan ishlov berishning g'o'zaning o'sish davriga ta'siri." *Science and innovation* 2.Special Issue 11 (2023): 421-425.
69. Urmonovich, Numonov Otabek. "MANGOSTEEN NUTRITIONAL PRICE AND FUNCTIONAL PROPERTIES." *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ* 14.5 (2023): 3-5.
70. Abduhamidovich, Nasritdinov Ahmadjon. "MANGOSTIN DARAXTI VA MEVASINI TIBBIYOTDA FOYDALANISH." *Journal of new century innovations* 28.2 (2023): 12-14.

ISSN NO: 2771-8840
November 2024

71. Юсупова, Махпуза Нумановна. "ФАРҒОНА ВОДИЙСИ ШАРОИТИДА ИГНА БАРГЛИ ДАРАХТЛАРНИ ЗАРАРКУНАНДАЛАРДАН ҲИМОЯЛАШ." *SO ‘NGI ILMIY TADQIQOTLAR NAZARIYASI* 6.4 (2023): 316-320.
72. Юсупова, Махпуза Нумановна. "АНОРНИ ЗАРАРКУНАНДАЛАРДАН ҲИМОЯЛАШ." *PEDAGOG* 6.4 (2023): 562-567.
73. Юсупова, Махпуза Нумановна. "БИОЛОГИЧЕСКИЙ МЕТОД ЗАЩИТЫ РАСТЕНИЙ." *Scientific Impulse* 1.9 (2023): 1460-1464.
74. O’rmonovna, Davlatova Muhabbat. "MANGOSTIN DARAXTI VA UNING KIMYOVIY XUSUSIYATLARI." *INNOVATION IN THE MODERN EDUCATION SYSTEM* 3 (2022): 1-4.
75. Юсупова, Махпуза Нумановна. "УФТ: 635 САБЗАВОТ ЭКИНЛАРИГА БИОЛОГИК КУРАШ ҲАҚИДА МУЛОХАЗАЛАР." *Научный импульс* 355.
76. Юсупова, М. Н., and О. У. Нумонов. "ЗАЩИТА ТУТОВОГО ДЕРЕВА ОТ ВРЕДИТЕЛЕЙ." *Экономика и социум* 6-1 (121) (2024): 1500-1503.
77. Shamsitdinov, Fazliddin, and Numonov Otabek Urmonvich. "FIBERS OF THE PREPARATION BIOBARS-M IMPACT ON QUALITY INDICATORS I." *American Journal of Interdisciplinary Research and Development* 23 (2023): 173-175.
78. Юсупова, Махпуза Нумановна. "ТУТ ПАРВОНАСИ ВА УНИНГ ЗАРАРИ." *O'ZBEKISTONDA FANLARARO INNOVATSIYALAR VA ILMIY TADQIQOTLAR JURNALI* 3.32 (2024): 35-38.
79. Khusanova, Onarkhon, and Muhammadali Kamoliddinov. "The ecological features of the soil seaweeds." *AIP Conference Proceedings*. Vol. 2789. No. 1. AIP Publishing, 2023.
80. Khusanova, O. G., M. I. Kamoliddinov, and D. B. Muhammadjanova. "The taxonomic structure of soil waterweed in altitudinal belt of the north fergana." *Asian Journal of Multidimensional Research (AJMR)* 8.2 (2019): 332-336.
81. Xusanova, Onarxon. "FARG ‘ONA VODIYSI TEKISLIK MINTAQALARIDA TARQALGAN AL'GOSENOZLARNING EKOLOGIYASI." *Namangan davlat universiteti Ilmiy axborotnomasi* 8 (2023): 190-195.
82. Khusanova, Onarkhon, and Zulfiya Rakhimova. "ФАРҒОНА ВОДИЙСИ ТУПРОҚЛАРИДА ЎЧРАЙДИГАН (CHLOROPHYTA) ЯШИЛ СУВ ЎТЛАРИ." *Formation and Development of Pedagogical Creativity: International Scientific-Practical Conference (Belgium)*. Vol. 1. 2023.
83. Khusanova, Onarkhon. "GREEN SOIL ALGAE DISTRIBUTED IN THE SOILS OF FERGANA VALLEY." *Conferencea* (2023): 63-66.
84. Khusanova, Onarkhon. "SOIL ALGAE INDICATORS." *E Conference Zone*. 2023.
85. Onarkhon, G., Khusanova Kh, and X. A. Alimjanova. "Structure and taxonomic analysis of soil algae steep areas of northern Ferghana in winter." *European science review* 7-8 (2018): 26-29.
86. Khusanova, Onarkhon Gaybullaevna. "TAXONOMIC ANALYSIS OF THE SUANOPHYTA DEPARTMENT ON THE SOILS OF THE NORTHERN FERGANA." *Scientific Bulletin of Namangan State University* 2.2 (2021): 136-140.