- PHILIPPINE JOURNAL OF -

AGRICULTURE AND LIFE SCIENCES

ISSN: 2984-6706

JOURNAL OF AGRICULTURE AND LIFE SCIENCES

VOLUME-9, ISSUE-01, (2026)

JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |27-02-2026|

ABOUT THE JOURNAL

Journal of Agriculture and Life Science is an international, open-access, peer-reviewed academic journal published on a bimonthly basis. The journal is dedicated to advancing high-quality research and promoting scientific knowledge in the fields of agriculture, life sciences, and veterinary sciences. It provides a global platform for researchers, academicians, practitioners, and professionals to share innovative research findings, technological developments, and practical solutions aimed at improving agricultural productivity, environmental sustainability, and animal health.

The primary aim of the Journal of Agriculture and Life Science is to support interdisciplinary research that integrates biological, environmental, and agricultural sciences. The journal seeks to address global challenges such as food security, sustainable agriculture, biodiversity conservation, climate change, and animal health by publishing research that contributes to scientific advancement and practical applications in these areas.

The journal publishes a wide range of scholarly works, including original research articles, review papers, case reports, short communications, and research findings. All submissions undergo a rigorous peer-review process to ensure scientific quality, originality, and relevance to current issues in agriculture and life sciences.

Scope of the Journal

Journal of Agriculture and Life Science covers a broad spectrum of disciplines and sub-disciplines related to agriculture, plant sciences, animal sciences, and environmental studies. The journal encourages interdisciplinary approaches that combine scientific knowledge with practical applications to improve agricultural systems and natural resource management.

The scope of the journal includes agricultural sciences such as agronomy, crop science, horticulture, agricultural engineering, irrigation, hydrology, and tillage and cultivation. These fields focus on improving crop production, optimizing farming techniques, and ensuring efficient use of natural resources.

Research in soil science is also a major focus area, including soil research, soil fertility, fertilization, and sustainable land management. These studies contribute to improving soil health, increasing agricultural productivity, and maintaining ecological balance.

Plant Sciences and Biotechnology

The journal places strong emphasis on plant sciences and biotechnology, recognizing their importance in modern agriculture. Areas of interest include plant biochemistry, plant biotechnology, plant genomics, plant molecular biology, genetic and plant breeding, and plant protection.

Research in these fields contributes to the development of high-yield and disease-resistant crop varieties, improved agricultural practices, and sustainable food production systems. The journal also encourages studies on plant-microbe interactions, which play a crucial role in soil fertility and plant health.

Additionally, topics such as medicinal plants, seed science research, post-harvest biology and technology, and weed biology are included within the journal's scope. These areas address issues related to crop quality, storage, processing, and agricultural sustainability.

Animal and Veterinary Sciences

Journal of Agriculture and Life Science also publishes research in animal and veterinary sciences, which are essential for livestock development and animal health management. The journal covers areas such as animal embryology, animal pathology, animal virology, animal infectious diseases, and animal molecular etiology.

Research in livestock sciences includes anatomy, histology, parasitology, and veterinary clinical practices. These studies contribute to improving animal health, productivity, and welfare.

The journal also includes veterinary epidemiology, veterinary immunology, veterinary pharmacology, preventive veterinary medicine, and veterinary quarantine. These fields are critical for disease prevention, control of animal infections, and ensuring food safety in livestock production systems.

Environmental and Ecological Studies

Environmental sustainability is a key focus of the journal. The Journal of Agriculture and Life Science publishes research related to ecology, environmental science, forestry, biodiversity, and water resource management.

Studies in hydrology, irrigation, and water management are particularly important for addressing challenges related to water scarcity and sustainable agriculture. Research in rural biodiversity and ecosystem conservation contributes to preserving natural habitats and maintaining ecological balance.

The journal also encourages research on stored products, environmental protection, and sustainable agricultural practices that minimize environmental impact while maximizing productivity.

Interdisciplinary Research and Innovation

A major strength of the journal is its focus on interdisciplinary research. By integrating knowledge from agriculture, biology, environmental science, and veterinary medicine, the journal promotes innovative approaches to solving complex global challenges.

The journal supports research that combines traditional agricultural practices with modern technologies, including biotechnology, data analysis, and sustainable resource management. Such interdisciplinary studies are essential for improving agricultural efficiency, enhancing food security, and promoting sustainable development.

Commitment to Academic Excellence

Journal of Agriculture and Life Science maintains high standards of academic quality through a strict peer-review and editorial process. All submitted manuscripts are evaluated using a double-blind review system by experts in the relevant fields.

The editorial board consists of experienced researchers, scientists, and professionals from diverse academic backgrounds. Their expertise ensures that the journal publishes reliable, high-quality research that meets international academic standards.

The journal follows established ethical guidelines in academic publishing. Plagiarism, data falsification, and unethical research practices are strictly prohibited. The journal promotes transparency, integrity, and responsible scientific conduct.

Global Impact and Future Directions

Journal of Agriculture and Life Science aims to contribute to global scientific advancement by promoting international collaboration and knowledge exchange. The journal encourages submissions from researchers worldwide and supports studies that address both local and global agricultural and environmental challenges.

As the demand for sustainable agriculture and environmental protection continues to grow, the journal remains committed to supporting innovative research and scientific progress. It aims to expand its global reach, strengthen academic partnerships, and encourage research that contributes to food security, environmental sustainability, and improved animal health.

Through its dedication to excellence and interdisciplinary collaboration, the journal strives to play a significant role in advancing agriculture and life sciences and in addressing the challenges of the modern world.

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |09-02-2026|

УЎТ: 634.1.03; 634.233

DIFFERENCES IN PHENOLOGICAL PHASES IN DIFFERENT VARIETIES OF APPLE

Uzakbergenov Ulugbek Tanatar ugli
Deputy Director for Scientific Affairs and Innovation of the Karakalpak Scientific Experimental Station of the Academician Makhmud Mirzaev Institute of Horticulture, Viticulture and Winemaking
Akbaraliyev Islombek Raximberdievich
Doctor of Philosophy in Agricultural Sciences (PhD), Academician Makhmud Mirzaev is the deputy director for scientic afairs and innovations of the Tashkent scientic experimental station of the research institute of horticulture, viticulture and winemaking

ABSTRACT

This article describes the phenological phases of local and introduced cherry fruits, which are being studied in the Republic of Karakalpakstan in 2025. The differences in the passage of phenological phases in the orchards of the varieties "Bahor" (control), "Star Giant", "Nimba", "Dragona Zholtaya" and "Valovoy Sertsa" planted in 4x4 and 4x2 meter schemes are presented, including the processes of bud swelling, bud formation, flowering, fruit ripening and fruit ripening.

Keywords: cherry, fruit, variety, flower, bud, phenological phase.

ANNOTATSIYA

Ushbu maqolada Qoraqalpog□iston Respublikasida sharoitida 2025 yilda Ak. M. Mirzayev nomidagi BUVITI Qoraqalpoq ilmiy tajriba stansiyasida ilmiy izlanishlar olib borilayotgan, mahalliy va introduksiya qilingan gilos navlarining fenologik fazalari yoritib berilgan. □Bahor” (nazorat), “Star giant”, “Nimba”, “Dragona joltaya” va □Valovoy sersa” navlari 4x4 va 4x2 metr sxemalarda ekilgan bog‘da fenologik fazalarining o‘tishi kurtak bo‘rtishi, kurtak yozilishi, gullashi, meva pishishi va xazonrezgilikkacha bo‘lgan jarayonlarini farqi keltirilgan.

Kalit so‘zlar: gilos, meva, nav, gul, kurtak, fenologik faza.

АННОТАЦИЯ

В данной статье описываются фенологические фазы местных и интродуцированных сортов черешни, изучаемых в Республике Каракалпакстан в 2025 году. Представлены различия в прохождении фенологических фаз в садах сортов «Бахор» (контроль), «Стар гиант», «Нимба», «Драгона Жолтая» и «Валовой Серца», высаженных по схемам

4x4 и 4x2 метра, включая процессы набухания почек, формирования почек, цветения, созревания плодов и плодоношения.

Ключевые слова: черешня, плод, сорт, цветок, бутон, фенологическая фаза.

INTRODUCTION

Currently, the growing population is causing a sharp increase in demand for food products. The abundance of beneficial properties of fruits for the human body, their healing properties, and, of course, their richness in vitamins and minerals, lead to an increase in demand and supply for them. [2]. This, in turn, means that scientific research is needed to increase the number of existing fruits, create new varieties and hybrids from them, and increase the adaptability of fruits imported from foreign countries to our country's conditions.[4;6].

In recent years, a number of measures have been taken in our republic to improve the quality of fruit products, steadily increase their export potential, further expand the area of intensive gardens, and further improve the agrotechnical measures implemented in them. Our scientists are introducing new fruit species suitable for the climatic conditions of Uzbekistan and applying them to production through scientific research. The Strategy for the Development of Agriculture of the Republic of

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |09-02-2026|

Uzbekistan for 2020-2030 aims to "increase labor productivity in farms, improve product quality, and create high added value."..» is defined as one of the strategic tasks. [1]

Among the fruits in our republic, there is a great demand for cherry fruit, which is distinguished by its sweet tami and beauty[3]. Therefore, the peculiarity of cherries, the cultivation of its varieties, which are adaptable to different climatic and soil conditions, is relevant. Phenological observations, which are the basis of scientific research, are their initial stage.[5].

Research styles. Conducting phenological observations of different varieties of cherries program I methodology sortaizucheniya plodovix I orexoplodnix kultur (Oryol 1999 g.) style was done richly. During this scientific study, the following results were obtained from the varieties of cherries "Bahor", "Dragona joltaya", "Star giant", "Nimba" and "Valovoy sertsa".[7].

Research results. When phenological observations were carried out on cherry varieties, the phases of flowering and development of the Spring variety initially began in the III decade of March. In the varieties "Nimba", "Star giant", "Dragona joltaya" and "Valovoy sertsa", it began in the III-decade of March, with a difference of 1-2 days. The opening of shoots in the spring (control) variety of Cherries began on March 29, the bolsa variety “Dragona joltaya” was observed 8 days late compared to the spring (control) variety, Valovoy sertsa 9 days later, the norvonder Variety 10 days later.

The beginning of flowering has been observed in the spring (control) Variety on April 1, the “Valovoy sertsa” Variety on April 4, The “Dragona joltaya Variety on April 5, the “Nimba” on April 7, and the black cherry variety on April 8. Full flowering initially occurred in the spring (control) Variety on April 7, in the “Valovoy sertsa” Variety on April 13, in the “Dragona joltaya Variety on April 14, in the Star giant variety from April 15, and in the black cherry variety at the latest on April 16.

1-photo. Determining the ripening period of cherry fruits.

While flowering ended first in "Bahor" (control) on April 12, in "Valovoy sertsa" it occurred on April 16. The next day, "Nimba" and "Dragona joltaya" were observed on April 19, and "Star giant" was observed last, on April 21. The duration of flowering has been observed to last 14 days in the most abundant “Dragona joltaya” variety, 13 days in the “Valovoy sertsa” Variety, 12 days in the “Nimba” variety, 11 days in the “spring” (control) and “Star giant” varieties. Cherry fruit ripening began on May 15 in the “spring “(Control), May 23 in the “Nimba”, May 30 in the “Dragona joltaya”, June 1 in the “Valovoy sertsa”, Star giant Variety on June 5. (See Table 1).

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |09-02-2026|

1-jadval

Flowering of phenological phases in local and introduced varieties of cherries in orchards planted in a 4x4 and 4x2 meter scheme (2025).

O /n	Varieties name	Bud		Flowering				Fruit ripening				Leaf fall		
		Bulge	Opening	The beginning	Full	End	Duration.	The beginning	Full	End	Duration.	The beginning	End	Duration.
1.	Bahor (nazorat)	25/III	19/III	01/IV	07/IV	12/IV	11	15/V	19/V	25/V	10	10/XI	20/XI	11
2.	Valovoy sersa	31/III	02/IV	04/IV	13/IV	16/IV	13	01/VI	05/VI	10/VI	10	10/XI	21/XI	12
3.	Dragona joltaya	31/III	01/IV	05/IV	14/IV	19/IV	14	30/V	03/VI	09/VI	11	09/XI	21/XI	13
4.	Nimba	29/III	02/IV	07/IV	15/IV	19/IV	12	23/V	25/V	30/V	8	12/XI	23/XI	11
5.	Star giant	30/III	06/IV	10/IV	16/IV	21/IV	11	05/VI	10/VI	15/VI	11	12/XI	22/XI	11

Full ripening occurred initially on May 19 for "Bahor" (control) and on May 19 for "Nimba".

On May 25, the "Dragona joltaya" variety reached full ripeness on June 3, "Valovoy sertsa" on June 5, and "Star giant" on June 10. The end of ripening was correct for the dates of may 25 in the “spring” (control) variety, May 30 in the “Nimba” variety, June 9 in the “Dragona joltaya variety, June 10 in the “Valovoy sertsa” variety, June 15 in the “Star giant” Variety. The ripening period was 11 days for the Star giant and “Dragona joltaya”, 10 days for the varieties “Bahor” (control) and “Valovoy sertsa”, and 8 days for the variety “Nimba”. The beginning of leaf fall was initially reclaimed in the “Dragona joltaya Variety on November 9, in the songra “Spring” (control) and “Valovoy sertsa” varieties on November 10, at the very end in the “Nimba” and Star giant varieties on November 12. End of leaf fall.

On November 20, in the “Bahor” (control) variety, on November 20, in the “Valovoy sertsa” and “Dragona joltaya” varieties, on November 21, in the “Nimba” and “Star giant” varieties,

It was observed on November 22-23. The duration of the leaf fall was 11 days in the varieties "Bahor" (control), "Nimba" and "Star giant", 12 days in the variety "Valovoy sertsa" and 13 days in the variety "Dragona joltaya".

CONCLUCION

As a result of the scientific research carried out, we can say that when phenological observations were carried out on local and introduced varieties of cherries, tree nesting was initially observed in the spring (control) variety, valovoy sertsa, Dragona joltaya, Nimba, and songra Star giant varieties. The flowering phase was observed first in the Spring (control) variety, and the flowering phase was observed last in the Star giant variety. The ripening phase of cherry fruits was observed first in the “Bahor” (control) variety, then in the “Nimba”, “Dragona joltaya”, “Valovoy sertsa” and “Star giant” varieties.

JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |09-02-2026|

USER LITERATÜRE:

1. O‘zbekiston Respublikasi Prezidentining “O‘zbekiston Respublikasi qis’hloq xo‘jaligini rivojlantiris’hning 2020–2030 yillarga mo‘ljallangan strategiyasini tasdiqlas’h to‘g‘risida” (PF-5853-son, 23 oktyabr 2019 yil)
2. Qars’hiyev A.E. “Gilos yetis’htiris’h” [Matn] : ilmiy nas’hr / «Agrobank» ATB.- Tos’hkent: “TASVIR” nas’hriyot uyi, 2021 y.
3. Abrorov Sh. Zamonaviy intensiv gilos boglari - Toshkent : Baktria press, 2018.
4. CLELAND, E.E., I. ChUINE, A. MENZEL, H.A. MOONEY and M.D. SChWARTZ 2007: Shifting plant phenology in response to global change. Trends Ecol. Evol. 22, 357365.
5. CRAUFURD, P.Q. and T.R. WHEELER 2009: Climate change and the flowering time of annual crops. J. Exp. Bot. 60, 2529 2539.
6. HANSEN, J., M. SATO, R. RUEDY, K. LO, D.W. LEA and M. MEDINA-ELIZADE 2006: Global temperature change. Proc. Natl. Acad. Sci. U. S. A. 103, 1428814293.
7. Programma i metodika sortaizucheniya plodovix i orexoplodnix kultur Oryol 1999 g.

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |11-02-2026|

PHYSICAL AND MECHANICAL PROPERTIES OF SOIL IN TILLAGE AND THEIR IMPACT ON WORK EFFICIENCY AND CROP PRODUCTIVITY

Xurramov Ruziboy Jo'ra o'g'li
Lecturer of the Faculty of Mechanical Engineering and Mining, Termez State University of Engineering and Agrotechnologies, Termez, Uzbekistan

ANNOTATION

In the research, the main physical and mechanical properties of soils in the Surkhandarya region—including loess, saline and solonchak, mountain and foothill, sandy and loamy soils—were analyzed in terms of density, porosity, moisture status, compaction level, plasticity, and susceptibility to erosion.

Keywords: soil, density, porosity, fertility, productivity, physical-mechanical, saline, mountain, foothill, technology

ANNOTATSIYA.

Tadqiqotda Surxondaryo viloyatidagi bo'z, sho'r va sho'rtob, tog' va tog'oldi, qumloq va qumoq tuproqlar-ning zichligi, g'ovakligi, suv holati, siqilish darajasi, plastiklik va eroziyaga ko'rinishi kabi asosiy fizik-mexanik jihatdan tahlil qilingan.

Kalit so'zlar: tuproq, zichlik, g'ovaklik,unumdorlik, hosildorlik, fizik-mexanik, sho'r, tog', tog'oldi texnika**.**

АННОТАЦИЯ.

В исследовании были проанализированы основные физико-механические свойства почв Сурхандарьинской области, включая бозовые, солончаки и засоленные, горные и предгорные, песчаные и суглинистые почвы, такие как плотность, пористость, влажность, степень уплотнения, пластичность и подверженность эрозии.

Ключевые слова: почва, плотность, пористость, плодородие, продуктивность, физико-механические, засоленные, горная, предгорная технология.

INTRODUCTION

At present, the development and application of combined machines characterized by high productivity and operational quality, as well as energy- and resource-saving performance, play a leading role in preparing land for sowing. Considering that *approximately 1.6 billion hectares of land worldwide are cultivated annually for sowing agricultural crops* [1], the introduction of energy- and resource-efficient combined machines with high work quality and productivity for land preparation and sowing is regarded as an important task. In this regard, significant achievements have been attained in developed foreign countries such as the USA, Germany, the United Kingdom, the Russian Federation, and others. Particular attention is being paid to the development and application of combined agregates capable of performing strip tillage and sowing technological processes for land preparation [2].

Worldwide, targeted scientific research is being conducted to develop resource-saving technologies for preparing land for repeated cropping and to create new models of technical means that implement these technologies. Additionally, research efforts are focused on establishing scientific and technical foundations for improving existing machines in order to ensure their resource efficiency during operation. Within this framework, the development of a resource-saving technology for preparing fields for sowing in a single pass, the design of a combined aggregate scheme capable of ensuring high-quality execution of the technological process, and the substantiation of parameters of working bodies that provide resource efficiency during interaction with the soil are considered among the most pressing scientific challenges [1].

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |11-02-2026|

The southern regions of Uzbekistan are characterized by diverse natural conditions in terms of soil structure and mechanical properties. The soil characteristics of these regions are primarily determined by their geographical location, climate, relief, and hydrological conditions. A moderately continental climate, with a high number of sunny days, dry summers, low precipitation in winter, and increased rainfall during spring and autumn, is one of the key factors influencing changes in soil tillage technologies. Moreover, the abundance of sunny days leads to a rapid decrease in soil moisture, which in turn causes irrigation-related challenges—an issue that has been confirmed by scientific studies [2]. Consequently, the development and practical implementation of modern resource-saving technologies remain highly relevant. Prior to applying specialized technologies, it is essential to study soil structure, fertility, moisture content, hardness, as well as its mechanical and chemical composition, as these factors constitute the fundamental basis for assessing the effectiveness of their application.

MATERIALS AND METHODS

The region is located in the southern part of Uzbekistan and is characterized by a diverse geomorphology, including mountainous areas, foothill lowlands, and desert zones. Consequently, the region exhibits a wide variety of soil types. Based on their properties and distribution, the soils of the region can be classified into four main groups.

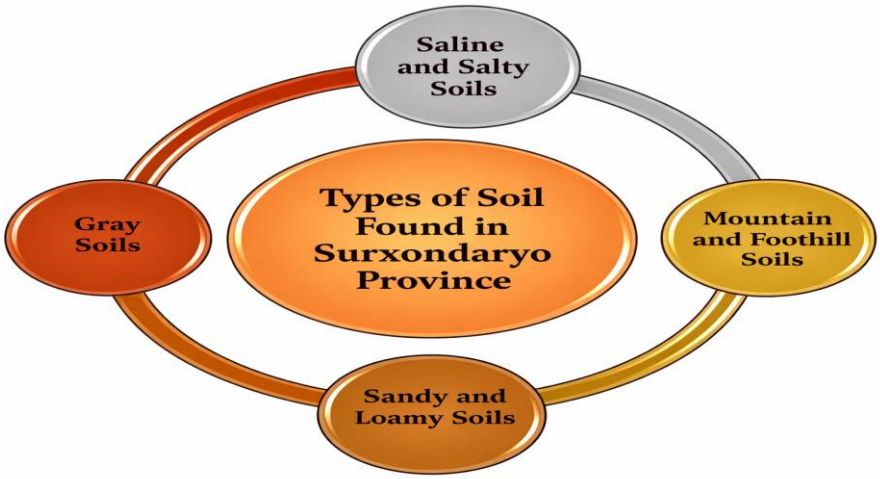

Figure 1. Distribution of soil types in the Surkhandarya region

Gray Soils: Gray soils are widely distributed in the foothill and lowland areas of the region. They are rich in mineral content and, with proper irrigation and agronomic management, can achieve high crop yields.

Saline and Solonetz Soils: These soils are found primarily in the lowland areas near the Amu Darya basin, including the districts of Muzrabot, Sherabad, Qiziriq, and Termez. Soil salinization represents a critical issue for agricultural productivity in these areas.

Mountain and Foothill Soils: Distributed across the eastern, northern, and northwestern parts of the region, these soils mainly consist of fragmented shallow parent materials. Steep mountain slopes in these areas are highly susceptible to erosion.

Sandy and Loamy-Sandy Soils: Found in desert and semi-desert zones, such as Termez, Jarqorg'on, and Angor, these soils exhibit high water permeability. However, they have low fertility due to rapid leaching of nutrients.

Due to the diversity of soil types in the region, soil structure and physico-mechanical properties vary significantly, necessitating tailored tillage and management practices for each soil type.

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |11-02-2026|

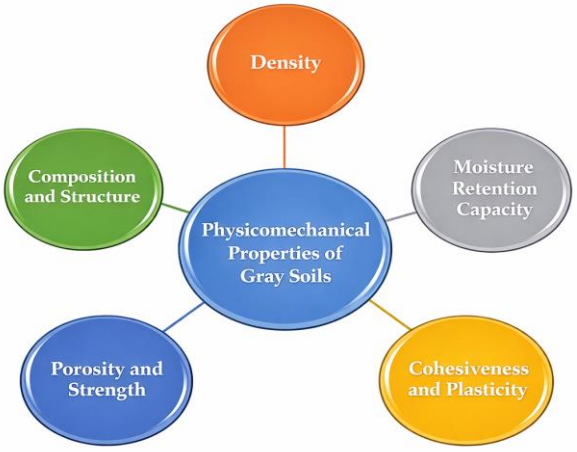

Figure 2. Physico-Mechanical Properties of Soils

Physico-Mechanical Properties of Gray Soils

Composition and Structure: Gray soils are primarily composed of a mixture of clay, sand, and gravel, often exhibiting a clay-sandy or sandy-clay texture. The clay fraction (particles smaller than 0.002 mm) ranges from approximately 20–40%, while the sand fraction (0.05–2 mm) accounts for 50–70%. In the Surkhandarya region, particularly in the foothill areas, gravel and stone fractions are more prevalent in the soil composition.

Density: The bulk density of gray soils (in a dry state) typically ranges from 1.2 to 1.5 g/cm³. High density indicates soil compaction and low water permeability. The porosity of these soils is around 40–55%, with most pores being small capillary voids, which enhance the soil's water-holding capacity, while large air-conducting pores are relatively few.

Water-Holding Capacity: Gray soils exhibit moderate water retention due to a low content of organic matter (humus 0.5–2%). The soil moisture capacity (water retention limit) is approximately 15–25%, which increases the need for irrigation. In the arid climate of Surkhandarya, these soils dry quickly, intensifying evaporation. Water permeability is low to moderate (0.1–1 mm/min), and the high clay content slows the percolation of water to deeper layers, increasing the risk of salinization.

Mechanical properties:

Hardness and Strength: Gray soils are moderately hard when dry but exhibit increased plasticity when moistened. Their mechanical strength is low, particularly in erosion-prone areas, such as mountain slopes, where the soil is easily washed away.

Figure 3. Cross-sectional View of Soil Hardness

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |11-02-2026|

Gray soils are prone to compaction, particularly when agricultural machinery is used or excessive irrigation is applied. In compacted soils, air permeability and root development are significantly reduced.

Adhesion and Plasticity: In gray soils with a high clay content, adhesion is elevated, causing the soil to become sticky when wet. The plasticity index ranges from approximately 7–15%, indicating the soil's ability to undergo deformation.

Erosion Resistance: Gray soils are generally weak against wind and water erosion due to a low content of organic matter and stable aggregates. In the Surkhandarya region, wind erosion is widespread, exacerbated by the Afghan wind and seasonal rainfall.

Physico-Mechanical Properties of Saline and Solonetz Soils

Figure 4. Condition of Saline Soil

Physical Properties:

Composition and Structure: Saline and solonetz soils generally exhibit a clay-sandy or clayey texture. The clay fraction (particles smaller than 0.002 mm) ranges from 30–50%, while the sand fraction (0.05–2 mm) accounts for approximately 40–60% (Figure 2). In saline soils, sodium salts (NaCl, Na_2SO_4) are abundant, leading to a dispersed soil structure. In solonetz soils, the salt content is lower than in saline soils but still affects fertility.

Density: The bulk density of these soils in a dry state ranges from 1.3 to 1.6 g/cm³. The high density of saline soils is associated with salt-induced compaction and low organic matter (humus) content. Porosity is approximately 35–50%, with small capillary pores predominating. Salt crystals bind soil particles together, reducing the number of large air-conducting pores and limiting root respiration.

Water-Holding Capacity: Saline soils have a high water retention capacity (20–30%), as clay and salts retain water. However, much of this water is bound to salts and is physiologically unavailable to plants. In solonetz soils, the proportion of plant-available water is slightly higher, but fertility remains low without irrigation [3].

Water Permeability: Water permeability is very low (0.05–0.5 mm/min), as clay and sodium salts compact the soil and impede water infiltration into deeper layers. This condition exacerbates salinization, as salts are not leached effectively [4].

Color and Structure: Saline soils are light gray, whitish, or yellowish, often with visible surface salt deposits (white patches). Solonetz soils are slightly darker (grayish-gray). The structure is typically blocky or dispersed, and aggregates are unstable due to low organic matter content.

Mechanical properties:

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |11-02-2026|

Hardness and Strength: In a dry state, saline soils are very hard because salt crystals bind the soil particles together. When moist, they become plastic and sticky due to their clay content, which makes soil cultivation more difficult. Solonetz soils are slightly less hard but remain compacted when dry [3].

Compressibility: Saline soils are highly prone to compaction, especially under irrigation or when heavy machinery is used. Compacted soils exhibit reduced air and water permeability, negatively affecting root development [4].

Adhesion and Plasticity: Adhesion is high, particularly in wet conditions, as clay and sodium salts cause the soil to become sticky. The plasticity index is approximately 10–20%, higher in saline soils due to the abundance of sodium ions.

Erosion Resistance: Saline soils are highly susceptible to wind erosion because the dry soil surface disintegrates into fine dust particles. Resistance to water erosion is low, as salts do not stabilize soil aggregates. In the Surkhandarya region, wind erosion is a significant issue due to the Afghan wind.

Salt Content Effects: Saline soils contain 1–2% or more salts, which sharply reduce water and air permeability and lead to soil dispersion, disrupting soil structure. Solonetz soils have a lower salt content (approximately 0.3–1%) and are somewhat more suitable for agriculture. However, without proper reclamation and irrigation, their fertility remains low.

Figure 5. Mountain and Foothill Soils

Physical properties:

Composition and Structure: Mountain soils typically have a coarse texture, with gravel, stone, and sand fractions (0.05–2 mm) constituting 60–80% of the soil mass. The clay fraction (particles smaller than 0.002 mm) is approximately 10–30%, which reduces soil stickiness. Due to the weathering of parent rock (e.g., limestone, sandstone), the soil contains a substantial proportion of skeletal material (stones and gravel) [5].

Density: Soil bulk density ranges from 1.1 to 1.4 g/cm³, as the presence of organic matter and sand-gravel fractions renders the soil relatively soft. The steep slopes further reduce density due to continuous soil movement and erosion [6].

Porosity: Porosity is approximately 45–60%, with a predominance of large pores (macropores). This enhances water and air permeability but reduces water-holding capacity.

Water-Holding Capacity: Mountain soils have low water retention capacity (10–20%) due to the limited clay and organic matter content. The arid climate of Surkhandarya exacerbates this issue [6].

Water Permeability: Permeability is high (1–5 mm/min) because the sand and gravel fractions allow water to infiltrate deeper soil layers easily. This characteristic increases susceptibility to erosion, especially during heavy rainfall.

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |11-02-2026|

Color and Structure: Mountain soils are light brown, grayish-brown, or reddish, depending on the composition of the parent rock. The structure is granular or blocky, and aggregates are unstable due to low organic matter (1–3%).

Mechanical properties:

Hardness and Strength: Dry mountain soils are moderately hard, but their mechanical strength is low due to the presence of gravel and stone fractions. The steep slopes facilitate soil movement (landscape erosion).

Compressibility: Mountain soils are not highly prone to compaction because sand and gravel fractions keep the soil loose.

Adhesion and Plasticity: Adhesion and plasticity are low, as the clay fraction is minimal. The plasticity index is approximately 5–10%, and under wet conditions, the soil rarely becomes sticky or clayey.

Erosion Resistance: Mountain soils are highly susceptible to water and wind erosion, especially on steep slopes. In Surkhandarya, seasonal rainfall and the Afghan wind increase soil washing and dust movement. Low organic matter content and sparse vegetation cover reduce overall soil stability.

Physical-Mechanical Properties of Sandy and Aeolian (Desert) Soils:

Despite relatively high total water-holding capacity, much of the retained moisture in saline soils was physiologically unavailable to plants. High plasticity and stickiness under moist conditions increased energy consumption during soil tillage and complicated the operation of combined agricultural machines.

Mountain and foothill soils showed coarse texture with a high content of gravel and stone fragments (Figure 4). These soils had high water permeability but low moisture retention capacity, making them highly susceptible to erosion processes, particularly on steep slopes.

Figure 6. Desert Soils

Physical properties:

Composition and Structure: Sandy soils contain 70–90% sand fraction (0.05–2 mm) and approximately 5–15% clay (<0.002 mm), with fine sand and minor clay particles present. Loamy-sandy soils have a similar composition, while loamy soils consist of over 90–95% sand, with very low clay and gravel content (below 5%). Both soil types are primarily composed of almost pure sand, exhibiting a light and loose structure, with minimal skeletal material (stones and gravel).

Density: Bulk density in sandy soils ranges from 1.3–1.5 g/cm³, whereas in loamy soils it ranges from 1.4–1.6 g/cm³. The high sand content maintains soil looseness and reduces density.

Porosity is 40–50% in sandy soils and 35–45% in loamy soils, with macropores dominating, which enhances air and water permeability but reduces water retention capacity.

Water Retention Capacity: Water retention in sandy soils is low (10–15%) due to limited clay and organic matter content. In loamy soils, water retention is even lower (5–10%) because water drains rapidly. In the arid climate of Surxondaryo, these soils dry quickly, necessitating regular irrigation. Water permeability is very high: 5–20 mm/min for sandy soils and 20–50 mm/min for loamy soils. This characteristic prevents water retention but reduces the risk of salinization.

Mechanical properties:

Hardness and Strength: In dry conditions, sandy and loamy soils are loose and soft, with low mechanical strength. Upon wetting, strength further decreases due to minimal clay content, causing particles to remain unbound. These soils are prone to easy displacement and are susceptible to wind erosion.

Adhesion and Plasticity: Adhesion is negligible because of the minimal clay fraction. The plasticity index ranges from 0–5%, and in loamy soils it is nearly zero. Resistance to water erosion is low, as soil particles are easily washed away. The absence of vegetative cover or low organic matter content exacerbates erosion.

RESULTS AND DISCUSSION

The conducted study in the Surkhandarya region revealed significant variations in soil physico-mechanical properties across different soil types, reflecting their diverse formation conditions, parent material composition, and geomorphological position. The results provide insights into appropriate tillage strategies and resource-efficient technologies for land preparation.

Gray soils. Gray soils in foothill and lowland areas exhibited a mixture of clay, sand, and gravel, with clay content ranging from 20–40% and sand from 50–70%. The presence of gravel and stones was particularly noticeable in foothill zones. Bulk density ranged from 1.2 to 1.5 g/cm³, with porosity around 40–55%, primarily in the form of small capillary pores. Water-holding capacity was moderate (15–25%), while water permeability was low to moderate (0.1–1 mm/min), indicating potential irrigation requirements (Figure 2).

Mechanically, gray soils were moderately hard when dry, with increased plasticity under wet conditions. The plasticity index of 7–15% suggested moderate deformability. Compaction was observed under heavy machinery or excessive irrigation, reducing aeration and root growth (Figure 3). Low organic matter and weak aggregate stability contributed to susceptibility to wind and water erosion, particularly on slopes affected by the Afghan wind. These findings suggest that gray soils require careful management, including timely irrigation, minimal compaction practices, and erosion control measures.

Saline and solonetz soils. Saline soils contained 30–50% clay and 40–60% sand, with abundant sodium salts (NaCl, Na_2SO_4), while solonetz soils had slightly lower salt content but still presented fertility challenges. Bulk density ranged from 1.3–1.6 g/cm³, with porosity between 35–50%. High salt content induced soil compaction and reduced large pore availability, limiting root respiration and water infiltration (Figures 4).

Water retention in saline soils was high (20–30%), but much of it was physiologically unavailable due to salt binding. Water permeability was very low (0.05–0.5 mm/min), aggravating salinization risk. Mechanical properties indicated high hardness under dry conditions and plasticity when wet, with a plasticity index of 10–20%. Adhesion was elevated, particularly in wet soils, complicating tillage operations. Saline and solonetz soils demonstrated high susceptibility to wind and water erosion, highlighting the need for reclamation, proper irrigation, and agronomic management to improve productivity.

Mountain and Foothill Soils. Mountain and foothill soils exhibited coarse textures, with 60–80% gravel, sand, and stone fractions, and 10–30% clay, resulting in low stickiness. Bulk density ranged from 1.1–1.4 g/cm³, and porosity was relatively high (45–60%), dominated by macropores (Figure 5). Water retention was low (10–20%), while water permeability was high (1–5 mm/min), making these soils highly susceptible to erosion. Mechanically, these soils were moderately hard in dry conditions but had low strength due to the prevalence of gravel and stones. The steep terrain enhanced the likelihood of landscape erosion. Adhesion and plasticity were low, with a plasticity index of 5–10%, and soils rarely became sticky when wet. These characteristics indicate the importance of erosion control measures, such as contour tillage and vegetation cover maintenance, for sustainable land use in mountainous areas.

Sandy and Loamy-Sandy (Desert) Soils. Sandy soils contained 70–90% sand and 5–15% clay, while loamy-sandy soils had 90–95% sand with minimal clay and gravel. Bulk density ranged from 1.3–1.5 g/cm³ for sandy soils and 1.4–1.6 g/cm³ for loamy-sandy soils. Porosity was 40–50% in sandy soils and 35–45% in loamy-sandy soils, with macropores predominating (Figure 6). Water retention was low (10–15% for sandy soils, 5–10% for loamy-sandy soils), while water permeability was very high (5–50 mm/min), necessitating frequent irrigation. Mechanically, these soils were soft and loose, with low strength and minimal adhesion and plasticity (plasticity index 0–5%). They were highly prone to wind and water erosion, and the absence of organic matter or vegetation cover exacerbated this vulnerability. These findings emphasize the need for adaptive tillage strategies, regular irrigation, and soil stabilization measures in desert and semi-desert zones. The results demonstrate that soil type, composition, and mechanical properties directly influence land preparation practices and crop productivity. Gray soils require management focused on maintaining aeration and preventing compaction. Saline and solonetz soils need reclamation and careful irrigation to mitigate salt-related stress. Mountain and foothill soils demand erosion control and contour-based tillage techniques, while sandy and loamy-sandy soils require frequent irrigation and measures to prevent wind erosion.

Integrating these findings with modern resource-efficient combined machines can enhance soil preparation quality and productivity while minimizing energy and water usage. Tailoring tillage operations to the physico-mechanical characteristics of each soil type ensures sustainable land management and long-term soil fertility in Surkhandarya's diverse agroecological zones.

CONCLUSION

The selection and effective implementation of soil tillage technologies primarily depend on the physico-mechanical properties of the soil, its agroecological condition, and the natural-climatic characteristics of the region. In this study, the physico-mechanical properties of gray, saline, mountain, sandy, and loamy-sandy soils in the Surkhandarya region were analyzed, with particular attention to parameters such as bulk density, porosity, water-holding capacity, compressibility, erosion resistance, and plasticity. Analysis of the data indicated that the specific balance of clay, sand, and gravel fractions in gray soils significantly affects their water retention and permeability characteristics. High density and low air conductivity in these soils can hinder root development. To restore such soils, reclamation measures, such as leaching, gypsum application, and proper irrigation systems, are required. In particular, the presence of physiological drought significantly limits plant growth. Mountain and foothill soils, due to their high susceptibility to erosion and skeletal structure, require erosion-protective technologies during tillage. This especially calls for contour tillage on slopes, maintenance of vegetative cover, and the use of minimal tillage methods. Sandy and loamy-sandy soils are distinguished by their light structure and high water permeability. Since they cannot retain water and nutrient reserves, these areas require regular and adequate irrigation, enrichment with

JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |11-02-2026|

organic fertilizers, and soil-compaction prevention measures. The development and implementation of modern energy- and resource-efficient technologies represent an important scientific and practical direction. Designing combined machinery and applying it in accordance with environmental conditions not only meets agro-technical requirements but also preserves ecological balance. Therefore, based on the results of this study, selecting appropriate tillage methods that consider the physico-mechanical condition of the soil during land preparation contributes to increased crop productivity while maintaining long-term soil fertility.

ACKNOWLEDGEMENT

The authors sincerely acknowledge the support and guidance provided by the staff of the Surkhandarya regional agricultural research institutions during fieldwork and data collection. We are grateful to all colleagues who contributed to soil sampling, laboratory analysis, and the preparation of figures and tables. Special thanks are extended to our academic mentors for their valuable advice and critical review of the study. The authors also appreciate the access to regional soil and climatic data, which was essential for conducting comprehensive research and analysis.

REFERENCES

1. Abdullaev, S.A., & Mamatov, F.M. (2009). *Soils of Uzbekistan and their Reclamation Status.* Tashkent: Fan Publishing.
2. Kuziev, R.K., & Sektimenko, V.E. (2004). *Fundamentals of Soil Science*. Tashkent: University Publishing.
3. *Ministry of Agriculture and Water Resources of the Republic of Uzbekistan*. (2015). Irrigated Lands and Soil Resources of Uzbekistan. Tashkent.
4. Pankov, M.A. (1974). *Physical Properties of Soils and Their Importance in Agriculture*. Moscow: Kolos.
5. Tashkent State Agrarian University. (2010). *Properties of Soils of Uzbekistan and Their Efficient Use*. Tashkent.
6. FAO (Food and Agriculture Organization). (2006). *Guidelines for Soil Description*. Rome: FAO.
7. Primkulov, B.Sh., Alimova, F.A., Saidova, M.T., Allanazarov, A.A., & Khurramov, R.J. *Investigation of Operating Environments for Operating Bodies with Low Tillage*.

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |14-02-2026|

KOMPYUTER TEXNOLOGIYALARI SAMARADORLIGI

Qulmanova Umida
Termiz davlat muhandislik va agrotexnologiyalar universiteti qoshidagi 1-akademik litsey katta o‘qituvchisi.

ANNOTATSIYA

Ushbu maqolada, shuni bilish mumkinki, bilimlar bazasining birlamchi bibliografik o‘xshashliklari sifatida turli ensiklopediyalar, lug‘atlar xizmat qiladi. Kompyuter yordamida turli ilmiy axborotlar, o‘quv materiallari, o‘quv materiallari bo‘yicha axborotlarni tavsiya etishning boy imkoniyatlari, xususan ularga integrativ kurslarni kiritish, fanning tarixi va metodologiyasi bilan tanishish, turli fanlar bo‘yicha ularning zamonaviy darajasiga oid bilimlar ta’lim mazmunini sezilarli o‘zgartirish va keskin boyitishga yordam beradi. Uni faollashtirish va rivojlantirishda muhim omil bo‘ladi.

Kalit so’zlar: kompyuter, elektron aloqa, pedagogik axborot, o’quv materially. Integrative kurs

THE EFFECTIVENESS OF COMPUTER TECHNOLOGIES

Qulmanova Umida
Senior Teacher of the 1st Academic Lyceum under the Termez University of Engineering and Agrotechnologies

ABSTRACT

This article highlights the role of computer technologies in enriching the educational process. Various encyclopedias and dictionaries serve as primary sources reflecting the initial bibliographic similarities within knowledge bases. The use of computers provides extensive opportunities for recommending scientific information and instructional materials. In particular, integrating interdisciplinary courses, studying the history and methodology of sciences, and gaining knowledge about the contemporary development of different disciplines significantly transform and enhance the content of education. The application of computer technologies becomes an important factor in activating and developing learners’ cognitive activities.

Keywords: computer, electronic communication, pedagogical information, instructional materials, integrative courses.

ЭФФЕКТИВНОСТЬ КОМПЬЮТЕРНЫХ ТЕХНОЛОГИЙ

Кулманова Умида
Старший преподаватель 1-академического лицея при Термезском университете инженерии и агротехнологий

АННОТАЦИЯ

В данной статье рассматривается роль компьютерных технологий в обогащении образовательного процесса. Различные энциклопедии и словари выступают в качестве первичных источников, отражающих начальные библиографические сходства в базах знаний. Использование компьютеров предоставляет широкие возможности для представления и рекомендации научной информации и учебных материалов. В частности, интеграция междисциплинарных курсов, изучение истории и методологии наук, а также освоение знаний о современном уровне развития различных дисциплин существенно трансформируют и обогащают содержание образования. Применение компьютерных технологий становится важным фактором активизации и развития познавательной деятельности обучающихся.

Ключевые слова: компьютер, электронная коммуникация, педагогическая информация, учебные материалы, интегративные курсы.

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |14-02-2026|

KIRISH

Ta’lim tizimini texnologiyalashtirish g‘oyasi XX asrning 30 yillarida G‘arbiy Yevropa mamlakatlarida va AQSH da ta’lim samaradorligini oshirish, shaxsning ijtimoiylashuvini ta’minlash uchun harakatga kelgan davrda yuzaga keldi. Mazkur g‘oya ta’lim jarayoniga “pedagogik texnika” (ta’lim texnikasi) tushunchasining kiritilishi bilan asoslanadi.

O‘sha davr adabiyotlarida “pedagogik (ta’lim) texnikasi” tushunchasi “o‘quv mashg‘ulotlarini aniq va samarali tashkil etishga ko‘maklashuvchi usul va vositalar yig‘indisi” tarzida talqin etilgan. O‘quv jarayoniga o‘quv va labaratoriya jihozlarining olib kirilishi ulardan samarali, unumli foydalanish material mazmunini ko‘rgazmali qurollar yordamida tushuntirish kabi holatlar ta’lim samaradorligini oshirishga yordam beruvchi yetakchi omillardir, deya baholandi. XX asrning 50 yillariga kelib, ta’lim jarayoniga texnik vositalarni qo‘llash “ta’lim texnologiyasi” yo‘nalishini belgilovchi vosita, deb e’tirof etildi.[2,3]

MAQOLA MAZMUNI

Texnik vositalarning imkoniyatalarini yanada takomillashtirish axborot sig‘imini kengaytirish va ularni uzatishni sifatli tashkil qilish, ta’lim olishni individuallashtirishga qaratildi. Bu borada olib borilgan ilmiy tadqiqotlarning tayanch nuqtasi sifatida texnik vositalarning imkoniyatlari, ularni takomillashtirish jarayoni qabul qilindi. O‘quv jarayonini “texnologiyalashtirish” ning tashkiliy jihatlarini o‘rganishga alohida urg‘u berildi. 60 yillarga kelib, ta’limni dasturlash asosida ta’lim jarayonini tashkil etish “texnologiya” tushunchasining mohiyatini ochib beruvchi omil sifatida qabul qilina boshlandi. .Dasturiy ta’lim o‘quvchilarga muayyan bilimlarning alohida qism holida emas, balki izchil, yaxlit tarzda berilishini nazarda tutadi. Bu ish ilk bora AQSHda faoliyat yurita boshladi. Dasturiy ta’lim o‘zida ta’lim maqsadlari, ularni o‘zgartirish va baholashning mos ravishdagi mezonlari hamda ta’lim muhitining aniq tavsifini qamrab oladi. [6,7]

ADABIYOTLAR SHARI.

Ta’limni axborotlashtirish nazariyasi va metodologiyasi hamda amaliyoti masalalalari U.Begimqulov, R.Jo‘rayev, M.Soy Oliy ta’lim muassasalari talabalari ta’lim jarayonida mustaqil ta’limni tashkil etish masalalari bo‘yicha respublikamiz olimlari B.Ziyomuhammadov ta’limga informatika va axborot texnologiyalar bo‘yich ilmiy tadqiqotlar olib borgan.MDH mamlakatlarida talabalarning mustaqil ishini tashkil etishni takomillashtirish N.V.Smetanina A.A.DrobishevskiylarGaxborot-kommunikatsiya texnologiyalarini kasbiy pedagogik faoliyatida foydalanishga tayyorlash masalalari , N.Ye.PikinaV ilmiy izlanishlar olib borgan. Xorijiy mamlakatlarida Ch.AbbottN.AndersonF.Barbara, A.Connell, A.Edwards, M.Hammind, V.Jadhav kabi olimlar

MAZMUNI

Hozirgi kunda Mustaqil O‘zbekistonimizda ham ta’lim muassalari faoliyatijarayoniga yangi pedagogik texnologiyalarni olb kirishga qaratilgan harakat birqator yetakchi tashkilotlar tomonidan olib borilmoqda.(AXELS, IREXS, KOICA= va boshqalar). Mazkur markazlar tomonidan tashkil etilgan ilmiy seminar, qisqa va= uzoq muddatli kurslarda oily o‘quv yurtlari, akademik litseylar, kasb-hunar= kollejlari hamda umumiy o‘rta ta’lim maktablarning pedagogik xodimlari ishtirok= etib, pedagogik texnologiya va undan ta’lim jarayonida foydalanish borasidagi nazariy va amaliy bilimlarga ega bo‘ldilar.[1,8]

O‘zbekiston Respublikasi Oliy va o‘rta maxsus ta’lim vazirligi qoshidagi Oliy maktab muammolari instituti, Oz PFITI va Nizomiy nomidagi Toshkent davlat pedagogika universiteti qoshidagi markazda bu sohada bir qator ijobiy ishlar amalga oshirilmoqda**.** O‘quv jarayoniga zamonaviy axborot texnologiyalarini qo‘llash ta’lim metodlarining samaradorligini oshirishga, o‘qituvchilar mehnat faoliyatining o‘zgarishiga, ularning pedagogic mahoratlarining

takomillashuviga olib keladi. Bu esa o‘z navbatida pedagogik jarayonlarni axborotlashtirishni tashkil etish va boshqarishga o‘ziga xos vazifalarni qo‘yadi:

– masofaviy o‘quv kurslarini va elektron adabiyotlarni yaratuvchi jamoa o‘qituvchilar, kompyuter dasturchilar, tegishli mutaxassislarning birgalikda faoliyat olb borishni; [5,8]

– o‘qituvchilar o‘rtasida vazifalarning bir maromda to‘g‘ri taqsimlanganligini;

– ta’lim va tarbiya jarayonini yanada mukammal tashkil qilishni takomillashtirish va pedagogik faoliyatning samaradorligini oshirish monitoringini tashkil etish imkoniyatini yaratadi. Kompyuter texnologiyalari (kompyuter savodxonligi)dan foydalanishda o‘qituvchi uning mazmuniga ko‘ra bir qancha vazifalarni bajarishi mumkin. Ular quyidagi asosiy didaktik funksiyalarni bajaradi:

– multimedia texnologiyalarini qo‘llash evaziga o‘quvchilarda fanlarga qiziqishni rivojlantiradi.[4.6]

-- bunda ta’limning interfaolligi tufayli o‘quvchilarning fikrlash qobiliyatlari faollashadi va o‘quv materialini o‘zlashtirish samaradorligi oshadi.

– real holatlardan namoyish qilinishi yoki murakkab jarayonlarni modellashtirish va ko‘rish imkoniyatini berish bilan muhim ahamiyatga ega.

– o‘quv materialini o‘zlashtirish darajasiga ko‘ra emas, balki o‘quvchilarning mantiqan erishish darajasiga ko‘ra ham samarali hisoblanadi.

– masofadan turib ta’lim olishni faqat o‘zlashtiruvchi o‘quvchilar uchun yoki internet ta’limi uchun tashkil etilmaydi. Balki sababsiz dars qoldirgan o‘quvchilar uchun ham tashkil etish imkoniyatini beradi.

– o‘quvchilarga mustaqil izlashi uchun materiallarni topish hamda muammoli masalalarga jovob berish orqali ma’lum tadqiqot ishlarini bajarish uchun imkoniyat yaratadi.[7.5] o‘quvchilarning yangi mavzuni o‘zlashtirishi, misollar yechishi, insho, bayon yozish ishlarida, o‘quv materiallari bilan mustaqil tanishish, axborot va ma’lumotlarni tahlil etish kabi masalalarni tez bajarish uchun sharoit yaratadi. Ta’lim tizimini takomillashtirishning bosh xususiyatlaridan biri kompyuter bilan muloqot jarayonida uning doimiy murojaat qilinadigan “qo‘llab quvvatlovchi axborot” ini ko‘paytirish, kompyuter axborot muhiti va hozirgi zamon talablariga javob bera oladigan darajadagi axborot bazasining yaratilganligini, giper matn va multimedia o‘qitishda immitatsiya, kommunikatsiya tizimlari qabul qilingan. Ma’lumotlar bazasi deganda, axborotni kompyuter texnikasi yordamida kiritish, tizimlashtirish, saqlash va foydalanish uchun tavsiya qilish tushuniladi.

Bir qator axborotlarni an’anaviy qayta ishlash uchun ularni tayyorlashning standart shakllari mavjud bo‘lib, ularga bibliografiya, statistik ma’lumotlar, referatlar kiradi. Ma’lumotlar bazasi axborot tarkibiga statistik, matnli, grafik va ko‘rinishli axborotlarni cheksiz ko‘p miqdorda va albatta, belgilangan ko‘rinishlarda qabul qiladi. Bilimlar bazasi esa yopiq tizimda mazkur mavzu bo‘yicha qo‘shimcha axborotlarga ehtiyoj sezmagan holda va uning har bir elementi mantiq jihatidan bog‘langan boshqa elementlarga chiqa olish bo‘yicha axborotlashtirilgan tizimga ega bo‘ladi. Bunda ushbu bilimlar bazasiga kiritilmagan, ya’ni undan tashqi elementlarga murojaat qilinishiga imkon bo‘lmaydi. Kompyuter yordamida turli ilmiy axborotlar, o‘quv materiallari, o‘quv materiallari bo‘yicha axborotlarni tavsiya etishning boy imkoniyatlari, xususan ularga integrativ kurslarni kiritish, fanning tarixi va metodologiyasi bilan tanishish, turli fanlar bo‘yicha ularning zamonaviy darajasiga oid bilimlar ta’lim mazmunini sezilarli o‘zgartirish va keskin boyitishga yordam beradi. Uni faollashtirish va rivojlantirishda muhim omil bo‘ladi.[2.3]

Kompyuter vositalari yordamida mustaqil ta’limni tashkil etish nuqtai nazaridan tahlil etadigan bo‘lsak, uning interfaolligini, bevosita muloqot yordamida o‘quvchi o‘quv rejasida ko‘rsatilgan, istalagan fan sohasida maxsus o‘quv dasturlari yordamida bilim olish imkoniyatiga ega

ekanligini ta'kidlash mumkin. Kompyuter vositasi, o'quvchi yoxud o'qituvchi murojaatlariga "javob" beradi, ular bilan "muloqot"ga kirishadi. Kompyuterli o'qitish metodikasining boshqa bir muhim xususiyati u o'qitish jarayonining barcha bosqichlarida yangi o'quv materialini tushuntirishda, qaytarishda, umumlashtirishda, o'quvchilarning fan bo'yicha erishgan bilim, malaka va ko'nikmalarini tekshirishda yanada yorqinroq namoyon bo'ladi. Bunday jarayonda o'qituvchi kompyuterning o'quvchi uchun turli vazifalarni, xususan o'qituvchilik, ishchi qurol, ta'lim ob'yekti o'zaro muloqot kabi funksiyalarini bajarishni bilishi kerak. [1.5]

Bugungi kunda axborot texnologiyalari fani va jumladan, inson bilimlarining rivojlanishida keskin o'zgarishlar amalga oshirilmoqda. Bunda insonning ichki tuzilishi, mohiyati, qadriyatlari, psixologik qonuniyatlari va tafakkurining xususiyatlari yangicha namoyon bo'lmoqda. Dolzarb va muhim bo'lgan vazifalardan biri mustaqil ishi ongli ravishda o'quv-biluv faoliyatini shakllantirish, amaliy tajribalarga asoslangan holda ma'lum bir maqsadlarni ko'zlab, tafakkur operatsiyalarini bajarish alohida talabalar tomonidan o'zlashtirilgan bilimlar va ko'nikmalarning puxtaligi, barqarorligi va mustahkamligini talabalarning mustaqil ishini tashkil etishni takomillashtirish va o'quvchanligining rivojiga ko'p jihatdan bog'liqdir.

Axborotlashgan ta'lim muhitida talabalar tomonidan faol ijodiy nostandart ravishda bilim olishga o'rgatish, aqliy faoliyatga uyishtirish, tashkil etish usullari, vositalari, hamda talaba tomonidan shug'ullanish texnologiyasi, ishlash ishtiyoqi, motivi, qiziqishi, hissiy intilishini amalga oshirish yuzasidan mutafakkirlarimizning qomusiy fikrlari qarashlari mavjud bo'lib, ular quyidagicha ifodalangan.

Axborot texnologiyasining nazariyasiga ko'ra "axborot tushunchasi bu (lotincha "informatsion" tushuntirish, xabar berish) kibernetikaning asosiy tushunchalaridan biri bo'lib, xabar, ma'lumot, ko'rsatkichlar majmuasidir" degan ta'rifni anglatadi [6].

Davlatimiz tomonidan ta'lim jarayonini axborotlashtirish, uning moddiy-texnik bazasini boyitish, o'quv jarayonida aborot-kommunikatsion texnologiyalardan samarali foydalanish uchun kerakli zamonaviy dasturiy vositalar bilan ta'minlash yuzasidan ko'plab tadbirlar amalga oshirilmoqda. 2003 yil 11 dekabrdagi O'zbekiston Respublikasining "Axborotlashtirish to'g'risida"gi qonuni, O'zbeksiton Respublikasi Vazirlar Mahkamasining 2018 yil 12 oktyabrdagi 821-son qarori "Axborot-kommunikatsiya texnologiyalarini joriy qilish va rivojlantirish bo'yicha ustuvor loyihalarning hududiy manzilli ro'yxatlarini shakllantirish va moliyalashtirish tartibi to'g'risida qarori"dagi va boshqa e'lon qilingan qarorlari buning yaqqol misolidir.

Demak "Axborot ta'lim muhiti" aniq bir maqsadga yo'naltirilgan o'quv jarayonini ta'minlovchi axborot-texnik, o'quv-metodik tizimlar majmuidir.

Axborot ta'lim muhitining quyidagi tipologik belgilarini ajratib ko'rsatish mumkin:

1. Har qanday darajadagi ta'lim muhiti tizimlilik tabiatiga ega bo'lgan murakkab tuzilmali obyekt hisoblanadi.

2. Ta'lim muhitining yaxlitligi tizimlilikka erishish tushunchasi bilan bir ma'noni anglatib, u o'quv muassasasi bitiruvchisining shaxsiy va kasbiy modelini amalga oshirishdagi ta'lim va tarbiya maqsadlarining amalga oshishini o'zida mujassamlashtiradi.

3. Ta'lim muhiti ta'lim va tarbiya ishlarining asosiy sharti bo'lish bilan birga uning muhim vositasi hamdir.

Axborot - ta'lim muhitini ta'riflashda bir qancha o'zaro farq qiluvchi qarashlar mavjud, jumladan:

• inson bilan ta'lim muhitining subyekt sifatida uzviy bog'langan axborot, texnik, o'quv-metodik ta'minotning tizimli tashkillashtirilgan majmuasi;

• an’anaviy va elektron axborot tashuvchilar, virtual kutubxonalar, taqsimlangan ma’lumot bazalari, o‘quv-metodik majmualarini mujassamlashtiruvchi kompyuter-telekommunikatsiya texnologiyalari integratsiyasi asosida qurilgan yagona axborot ta’lim muhiti[6].

Fikrimizga ko‘ra, axborot ta’lim muhitini boshqarishda tizimli yondashuvni joriy qilish lozim.

Bunda o‘qituvchining vazifasi dars jarayonida o‘quvchilarni kompyuterdan to‘g‘ri foydalanishlarini nazorat qilishdan iborat. Kompyuter texnologiyalari asosida o‘qituvchi o‘zining kasbiy mahoratini oshirish uchun mustaqil faoliyatda quyidagi vazifalarni bajaradi:

1. O‘quv jarayonini bir butun guruh sifatida tashkil etish.

2. O‘quvchilarni individual kuzatish, individual yordam ko‘rsatish, har bir o‘quvchi bilan individual muloqot olib boorish.

3. Axborot muhitini tashkil etuvchilari (shaxsiy kompyuter, o‘quv va namoyish qurilmalarning har xil turlari, dasturiy vositalar va tizimlar, o‘quv metodik ko‘rsatmalar va h.k.) ma’lum o‘quv kursining mazmuni bilan aniqlangan bog‘liqlik asosida tashkil etish.

NATIJALAR

Kompyuter texnologiyasi asosida mustaqil ta’limni ta’minlashda o‘qituvchilar quyidagi tuzilmalar to‘g‘risida ma’lumotga ega bo‘lishlari kerak ekanligi isbotlandi: informatika va hisoblash texnikasining asosiy tushunchalarini bilishi; kompyuter texnikasining funksional imkoniyatalarini bilishi; zamonaviy operatsion tizimlarni bilishi va ularning asosiy buyruqlarini o‘zlashtirishi; zamonaviy dasturiy vositalar va operatsion tuzilmalarni bilishi va ularning vazifalarini o‘zlashtirishi; kamida bitta matn muharriri bilan tanish bo‘lishi; algoritmlar, tillar va dasturlashtirish haqida dastalabki tushunchalarga ega bo‘lishi; amaliy dasturlashdan foydalanish to‘g‘risida dastlabki tajribaga ega bo‘lishi;[3.4] Ta’limni jadallashtirishda axborot texnologiyalaridan foydalanish o‘quv jarayonining samaradorligini oshiradi. Buni quyidagi misollarda ko‘rish mumkin: o‘qituvchilar, ilmiy xodimlar jahonning salmoqli ilmiy, metodik adabiyotlaridan foydalanish imkoniyatiga ega bo‘ladilar; o‘qituvchilarning o‘zaro trening va seminarlari o‘tkaziladi; masofaviy ta’lim, axborotlar almashinish va shunga o‘xshash juda ko‘p imkoniyatlarga ega bo‘ladilar; Shunday qilib, zamonaviy axborot texnologiyalardan ta’lim muassasalarida amalda tadbiq etish o‘quv jarayonida zamonaviy o‘qitish metodlarini qo‘llashda hamda o‘qituvchi pedagogik mahoratini namoyish etishda keng imkoniyatlar yaratadi.

Bugungi kunda erkin shaxsni shakllantirish muammosi ta’lim muassasalarida o‘quv tarbiyaviy ishlarni innovatsion pedagogik texnologiyaga o‘tkazishni taqazo etadi. Bu jarayon oson bo‘lmaydi, chunki ixtiyoriy qurilayotgan va joriy etayotgan o‘qitish tizimini qat’iyan ilmiy asoslangan pedagogik tizimga aylantirish kerak. V.P. Bespalkoning fikriga ko‘ra, “pedagogik tizim-ma’lum shaxs sifatlarini shakllantirishga tartibli, aniq maqsadni ko‘zlab va oldindan o‘ylab pedagogic ta’sir etishni vujudga keltirish uchun zarur bo‘lgan o‘zaro bog‘liq vositalar, metodlar, jarayonlar yig‘indisi” [4.5]

Milliy dastur ta’lim-tarbiya soxasidagi davlat byurtmasi hisoblanib, milliy mafkuraning mohiyat-mazmuniga to‘liq mos keladi. Faqat davlat buyurtmasigina ta’lim-tarbiyaning umumiy maqsad va vazifalarini aniq belgilab beradi yoki oliy ta’lim uchun pedagogik tizmning mavjudlik shartlarini kafolatlaydi.

XULOSA

Pedagogik texnologiya shunday bilimlar sohasiki, ularning vositasida yangi ming yillikda davlatning ta’lim sohasidagi siyosatida tub burilish yuz beradi, o‘qituvchi (pedagog) faoliyati yangilanadi, o‘quvchi-talabalarda hur fikrlilik, insonparvarlik tuyg‘ulari tizimini shakllantiradi. Bugungi kunga kelib, o‘qituvchi (pedagog)lar faoliyati yangilanadi va ko‘p hollarda texnologiyadan ajrata olmayaptilar. Shu bois bu tushunchalarga aniqlik kiritish kerak bo‘ladi. Metodika o‘quv

jarayonini tashkil etish va o‘tkazish bo‘yicha tavsiyalar majmuasidan iborat ekanligi o’z isbotini topdi..[5.7.]

FOYDALANILGAN ADABIYOTLAR

1. Mahmudov Yusuf, Qosimov Asroriddin, “Innovatsion ta’lim texnologiyalaridan o’quv jarayonida foydalanishning metodik-didaktik asoslari” Toshkent “Yangi nashr” 2018.
2. СултоноваЎ.Н. Физикадан дарс ва тўгарак машғулотларида янги педагогик технологиядан фойдаланиш // Высшая школа**. -**2018. 23 декабрь. -С. 255-258.
3. Sultanova. O‘.N. Basad on students’ competency – based approach to physics solve experimental and graphical problems // International interdisciplinary research. In volume 9, May, 2021. -903-98 pp.
4. Sultonova O’N. The Dependence of Didactic Cames on Physics in the Preparation of Technical Engineers and its Competence Approach” Vol 12 no 1 Jan-Feb-.: 2020 й, 52-57,Б www.enggjournals.com/ijet//vol12issue1.html
5. Sultanova O‘.N. “Technology to improve the methods of teaching physics in higher education based on a competency approach (on the example of training
6. султонова ў.н. galaxy international interdisciplinary research journal (giirj)импакт фактори: 7.472 issn: 2347-6915ссылкаси: based on students' competency-based approach to physics solve experimental and graphical problems
7. Маҳмудов Ю.Ғ.,Қосимов А.С. Инновацион таълим технологияларидан ўқув жараёнларидан фойдаланишнинг методик-дидактик асослари. Тошкент. 2018 й.196 бет.

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |23-02-2026|

UDK. 63.5995.+633

QOVOQDOSH EKIN PATISSONNING SOLNISHKO VA SAMBRERO NAVLARINING HOSILDORLIGINI STANDARTGA NISBATAN BAHOLASH

Kenjayeva To‘lg‘onoy Rahmonovna
Sabzavot, poliz ekinlari va kartoshkachilik
ilmiy-tadqiqot
instituti ilmiy tadqiqotchi
Telefon raqami: +99-899-572-91-33
kenjayeva67@mail.ru
ORCID: https://orcid.org/0000-0002-2528-2994
Nurmatov Norqobil Jo‘rayevich
Termiz davlat pedagogika instituti,
Kimyo-biologiya kafedrasi mudiri,q.x.f.d.
ilmiy rahbar
Telefon raqami: +99-897-073-14-12
ORCID: https://orcid.org/0009-0001-8825-646X

ANNOTATSIYA

Mazkur maqolada patisson (Cucurbita pepo L.) ekinining “Solnishko”,“Sambrero” navlarining biologik va xo‘jalik jihatdan qimmatli belgilarini standart “Oq-13” naviga nisbatan taqqoslab o‘rganish natijalari keltirilgan. Tadqiqotlar davomida hosildorlik, bitta o‘simlikdan olingan meva soni va meva massasi ko‘rsatkichlari tahlil qilindi. Olingan natijalarga ko‘ra, “Solnishko” va “Sambrero” navlari standart navga nisbatan yuqori hosildorlik ko‘rsatdi. Patissonning “Solnishko” va “Sambrero” navini ishlab chiqarishga joriy qilish maqsadida Surxondaryo viloyati Sho’rchi tumani «Choriyorov Eliyor» fermer xo’jaligi dalalariga ekib parvarishlandi.

Kalit so‘zlar: patisson- qovoqdosh ekin, Solnishko, Sambrero, standart nav, biometrik ko‘rsatkichlar, taqqoslama tahlil, iqtisodiy samaradorlik.

ОЦЕНКА УРОЖАЙНОСТИ СОРТОВ ТЫКВЫ «СОЛНЫШКО» И «САМБРЕРО» В СРАВНЕНИИ СО СТАНДАРТОМ.

Кенжаева Тўлғоной Раҳмоновна
Научный сотрудник
Научно-исследовательский институт овощных, бахчевых культур и картофелеводства
Телефон: +99-899-572-91-33
E-mail: kenjayeva67@mail.ru
ORCID: https://orcid.org/0000-0002-2528-2994
Нурматов Норқобил Жўраевич
Заведующий кафедрой химии и биологии
Термезский государственный педагогический институт
Доктор сельскохозяйственных наук (DSc)

Научный руководитель
Телефон: +99-897-073-14-12
ORCID: https://orcid.org/0009-0001-8825-646X

АННОТАЦИЯ

В данной статье представлены результаты сравнительного исследования биологических и экономически значимых признаков сортов тыквы (Cucurbita pepo L.) «Солнишко» и «Самбреро» по сравнению со стандартным сортом «Ок-13». В ходе исследования были проанализированы показатели урожайности, количества плодов на растении и массы плодов. По полученным результатам, сорта «Солнишко» и «Самбреро» показали более высокую урожайность, чем стандартный сорт. Для внедрения сортов тыквы «Солнишко» и «Самбреро» в производство они были высажены и выращены на полях хозяйства «Чориёров Элиёр» Шорчинского района Сурхандарьинской области.

Ключевые слова: культура кабачков и цуккини, Солнишко, Самбреро, стандартный сорт, биометрические показатели, сравнительный анализ, экономическая эффективность.

EVALUATION OF THE YIELD OF THE SOLNISHKO AND SAMBRERO CULTIVARS OF PUMPKINS IN COMPARISON WITH THE STANDARD

Kenjayeva To‘lg‘onoy Rahmonovna
Researcher
Research Institute of Vegetable Crops, Melons, and Potato Growing
Phone: +99-899-572-91-33
Email: kenjayeva67@mail.ru
ORCID: https://orcid.org/0000-0002-2528-2994
Nurmatov Norqobil Jo‘rayevich
Head of the Department of Chemistry and Biology
Termiz State Pedagogical Institute
Doctor of Agricultural Sciences (DSc)
Scientific Supervisor
Phone: +99-897-073-14-12
ORCID: https://orcid.org/0009-0001-8825-646X

ABSTRACT

This article presents the results of a comparative study of the biological and economically valuable traits of the squash (Cucurbita pepo L.) varieties “Solnishko”, “Sambrero” in comparison with the standard variety “Oq-13”. During the research, the indicators of yield, number of fruits per plant and fruit mass were analyzed. According to the results obtained, the varieties “Solnishko” and “Sambrero” showed higher yields than the standard variety. In order to introduce the squash varieties “Solnishko” and “Sambrero” into production, they were planted and cultivated in the fields of the “Choriyorov Eliyor” farm in the Shorchi district of the Surkhandarya region.

Keywords: squash-zucchini crop, Solnishko, Sambrero, standard variety, biometric indicators, comparative analysis, economic efficiency.

KIRISH

Sabzavotlar alohida ahamiyatga ega qimmatli oziq-ovqat mahsulotidir. Sabzavotlarning oziq-ovqatdagi ahamiyati va almashtirib bo‘lmaydiganligi shundaki, ular tirik organizmning normal faoliyati uchun zarur bo‘lgan uglevodlar, vitaminlar, efir moylari, mineral tuzlar, fitontsidlar va xun tolasining asosiy yetkazib beruvchilari hisoblanadi (Litvinov S.S., 2008).

Sabzavotlar assortimentini kengaytirish, yilning hamma fasllarida (yoz-kuz davrlari) mahsulot olish va ularni iste'mol qilishda patisson sabzavot ekinini yetishtirishga katta qiziqish

uyg‘otadi. FAO ma’lumotlariga ko‘ra, “Qovoqdoshlar oilasiga mansub, kabachki va patisson mevalarini ishlab chiqarishda Xitoy (7,2 mln. t,), Hindiston (4,9 mln. t.), Ukraina (1,27 mln. t.), Rossiya (1,128 mln. t), AQSh (1,05 mln. t.) va Eron (0,9 mln. t.) davlatlarida keng miqyosda yetishtirilmoqda” .

Tadqiqotlar Surxondaryo Ilmiy Tajriba Stansiyasida olib borildi.

O‘zbekiston Respublikasi Prezidentining 2022 yil 28 yanvarida PF-60-sonli «2022-2026 yillarda yangi O‘zbekistonning taraqqiyot strategiyasi» to‘g‘risidagi farmonida belgilab berilgan 3 ustuvor yo‘nalishi maqsadida «Qishloq xo‘jaligini ilmiy asosda intensiv rivojlantirish orqali dehqon va fermerlar daromadini kamida 2 baravar oshirish, qishloq xo‘jaligining yillik o‘sishini kamida 5 foizga yetkazish» vazifasi qo‘yilgan. Buning uchun iqtisodiy foydali xususiyatlari qonuniyatlarini bilish, N.I.Vavilovning so‘zlariga ko‘ra, "seleksiya ishini genetik jihatdan yanada mazmunli qiladi" (Texanovich G.A., 2004).[1] Ammo, bu yo‘nalishda olib borilayotgan ishlar talab darajasida emas. Shannon S., Robinson R.W.larning fikricha patissondagi turli xil shakllar o‘z-o‘zidan paydo bo‘ladigan mutatsiyalar, shu jumladan erkak bepushtligi bo‘lgan shakllar tufayli genetik jihatdan paydo bo‘lishi mumkin.[2].

Makarova N.S., Korostelyova L.A.lar tomonidan o‘tkazilgan tajribalarda patisson urug‘larining biologik sifatiga agrotexnika, oziqlantirish va changlanish usullarining ta’siri o‘rganilgan. [9]. Mahalliy ilmiy manbalarda esa, G‘aybullayev A. (2017), Karimov S.A., Maxmudov N.lar tomonidan patissonning O‘zbekiston sharoitidagi vegetatsiyasi, unuvchanlik ko‘rsatkichlari, agrofon sharoitida meva va urug‘ hosili shakllanishi borasida dastlabki tadqiqotlar e’lon qilingan.[3]

Dyutin K.E., Puchkov M.Yu.larning fikricha genetik belgilar ishlab chiqarishda duragay o‘simliklarni gibrid bo‘lmagan o‘simliklardan ajratish imkonini beradi [4].Bundan tashqari boshlang‘ich manbani yaratish va uni baholash (biotexnologiya, molekular metodlar) sohasida ham jiddiy orqada qolish kuzatilmoqda. Alohida belgilarning irsiyat xarakteri haqidagi ishonchli ma'lumotlar patisson navlarini tanlash usullarini takomillashtirish va qisqa vaqt ichida bu ekinlarning yangi yaxshilangan navlari va geterotik duragaylarini yaratish imkonini beradi (Kvasnikov B.V., 1968).[5]

M. Gneyshuk, B. Vuysik-Stopchinska, G. A Texanovlar tomonidan esa uning mevasi tarkibidagi kerakli vitaminlar, minerallar aniqlanib uning parhezlik va dorivorlik xususiyatlari hamda xalq xo‘jaligidagi ahamiyati o‘rganilgan[6]. Turkiyalik olimlar R. Grumet, N. Katsir, X. G.Mas, Koreyalik seleksionerlar Dr.Sang-Hoon Lee, Dr. Kyuying –Soo-Kim, Dr.Jong-Soo lee lar tomonidan agrotexnikasi hamda seleksiya va urug‘chiligi bo‘yicha ilmiy tadqiqot ishlari olib borilgan. Biroq, mamlakatimizda patisson bo‘yicha ilmiy-tadqiqot ishlari qisman amalga oshirilgan. Patissonning mahalliy navini yaratishda O‘zbekistonda Sh. Jabborov ish olib borgan. N.N. Balashev, M.N. Kulakova, V.I. Zuyev va X.Ch. Bo‘riyevlar tomonidan navlarni tanlash, ekish muddati va sxemalarini ishlab chiqishga oid tadqiqotlar olib borilgan.[7].

Mazkur tadqiqotning maqsadi: Solnishko va Sambrero patisson navlarining hosildorligini standart Oq-13 naviga nisbatan baholashdi

Tadqiqot obyekti. Tadqiqot obyekti sifatida patissonning quyidagi navlari tanlandi: Oq-13 (standart nav), Solnishko, Sambrero. O‘simliklarning o‘sishi va rivojlanishi kuzatildi hamda hosildorlik ko‘rsatkichlari hisoblab chiqildi. Baholashda quyidagi ko‘rsatkichlar inobatga olindi: bitta o‘simlikdan olingan meva soni (dona), bitta mevaga to‘g‘ri keladigan o‘rtacha massa (g), umumiy hosildorlik (t/ga).

Tadqiqotning usullari. Tadqiqot uchun olib borilgan tajribalar «Sabzavotchilik, polizchilik va kartoshkachilikda tajribalar o‘tkazish metodikasi» (Azimov B.J., Azimov B.B., 2002), «Методика полевого опыта в овощеводстве и бахчеводстве» (Белик В.Ф., 1992) ва «Методические

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |23-02-2026|

указания ВИР по изучению и поддержанию мировой коллекции тыквенных культур (патиссон)» (1977) uslubiy qo‘llanmalari asosida olib borildi, tadqiqot natijalarining statistik tahlili «Excel 2010» ва «Statistica 7.0 for Windows» kompyuter dasturida, 0,95% ishonchlilik oralig‘i bilan «Методика полевого опыта» (Доспехов Б.А., 1985) dispersion usuli bo‘yicha hisoblandi.

Tadqiqot natijalari va ularning tahlili. Tadqiqot natijalari shuni ko‘rsatdiki, barcha o‘rganilgan navlar o‘sish va rivojlanish ko‘rsatkichlari bo‘yicha bir-biridan farq qildi.

1-jadval. Patisson navlarining hosildorlik ko‘rsatkichlari

№	Nav nomi	Meva soni (dona/o‘simlik)	Meva massasi (g)	Hosildorlik(t/ga)
1	Oq-13(st)	8,2	320	18,5
2	Solnishko	9,6	340	21,8
3	Sambrero	9,1	335	20,9

Jadval ma’lumotlaridan ko‘rinib turibdiki, Solnishko naviga mansub o‘simliklarda meva soni va umumiy hosildorlik eng yuqori bo‘ldi. Ushbu nav standart Oq-13 naviga nisbatan 3,3 t/ga ko‘proq hosil berdi. Sambrero naviga mansub o‘simliklar ham standart navdan ustun bo‘lib, hosildorlik farqi 2,4 t/gani tashkil etdi.

2-jadval. Patisson navlarining fenologik rivojlanish ko‘rsatkichlari

Nav nomi	Nihollarning unib chiqishi (kun)	Gullash boshlanishi (kun)	Meva berish boshlanishi (kun)
Oq-13 (st)	7–8	35	42
Solnishko	6–7	32	39
Sambrero	6–7	33	40

Jadvaldan ko‘rinib turibdiki, Solnishko va Sambrero navlari standart Oq-13 naviga nisbatan 2–3 kun ertaroq meva bera boshlagan.

3-jadval. Patisson navlarining biometrik ko‘rsatkichlari

Nav nomi	O‘simlik bo‘yi (sm)	Barglar soni (dona)	Meva soni (dona/o‘simlik)
Oq-13 (st)	58,4	18,6	8,2
Solnishko	62,7	20,1	9,6
Sambrero	60,9	19,4	9,1

Biomassaning faol shakllanishi Solnishko navida kuchliroq bo‘lib, bu uning yuqori hosildorligiga ijobiy ta’sir ko‘rsatgan.

4-jadval. Patisson navlarining hosildorlik ko‘rsatkichlari (standart bilan taqqoslaganda)

Nav nomi	Meva massasi (g)	Hosildorlik (t/ga)	Standartga nisbatan farqi (± t/ga)
Oq-13 (st)	320	18,5	–
Solnishko	340	21,8	+3,3
Sambrero	335	20,9	+2,4

Eng yuqori hosildorlik Solnishko navida qayd etilib, u standart Oq-13 naviga nisbatan 17,8 % yuqori natija ko‘rsatdi.

XULOSA

1. Tajriba ishlari ochiq dala sharoitida olib borildi. Tadqiqot obyekti sifatida patissonning quyidagi navlari tanlandi: Oq-13 (standart nav), Solnishko, Sambrero.

2. Solnishko va Sambrero patisson navlari hosildorlik ko‘rsatkichlari bo‘yicha standart Oq-13 naviga nisbatan ustunlik qildi.

4. Eng yuqori hosildor deb tanlangan Solnishko navi 2024 yilda Surxondaryo viloyati Sho‘rchi tuman «Choriyorov Eliyor» nomli fermer xo‘jaligi dalalariga 0.2 ga yerga ekilib parvarishlandi.

5. Patisonning “Sambrero“ (oq rangli) navidan 0.51 tonna, Solnishko (sariq) navidan 0.49 tonna sifatli urug‘ olindi va 41018 ming so'm/ga sof daromad olishga erishildi. Rentabillik darajasi Sambrero navida 71 % , Solnishkoda 95% bo‘lishiga erishildi.

6. Ushbu navlar janubiy tuproq-iqlim sharoitida ekish uchun istiqbolli hisoblanadi va ishlab chiqarishga tavsiya etilishi mumkin.

FOYDALANILGAN ADABIYOTLAR

1. Kenjayeva T.R., N.J.Nurmatov. Patisson (Cucurbita pepo var. melopepo) o‘simligining xalq xo‘jaligidagi ahamiyati. O‘zbekiston qishloq va suv xo‘jaligi jurnali. 2025 yil 6-son 43-46 betlar.
2. Kenjayeva T.R. Создание исходного материала для селекции растения патиссон (Cucurbita pepo var. melopepo L) и разработка элементов семенной технологии. Xorazm Mamun akademiyasi axborotnomasi
3. № 3 soni Noyabr, 2023 yil.
4. Kenjayeva T.R., Sanoqulova M. Qovoqdosh ekin patissonning kimyoviy tarkibi va foydali xususiyatlari. INTERNATIONAL CONFERENCEON MULTIDISCIPLINARY SCIENCE ICMS FULL ISSUE-4. 31. 10. 2023
5. Dusmuratova S.I., Xakimov R.A., Aripova Sh.R. Qovoqcha (Cucurbita pepo L.) mevalari va urug‘larini yetishtirish texnologiyasi bo‘yicha tavsiyanoma. Toshkent, 2020. – 18 b.
6. Qodirov R.Q. Sabzavot ekinlari navshunosligi – Toshkent, 2018.
7. Briefing, V. Zuyev, A. Dirie, M. Mukhamedov, National Encyclopedia of Uzbekistan, 478 (Sharq Press,Tashkent, 2002)
8. Чернявская, О.В. Перспективы гибридного семеноводства кабачка и патиссона в Нечерноземной зоне России
9. В.А. Лудилов, О.В. Чернявская, М.В. Долженко // Современное состояние и перспективы развития овощеводства и картофелеводства. - Барнаул, - 2007. - С. 388-391.

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |26-03-2026|

ПРОИЗВОДСТВЕННАЯ САНИТАРИЯ И ГИГИЕНА ТРУДА

Каршинский государственный университет
Студент образовательного направления "Охрана труда и техника безопасности"
Абдиалимова Бекзода Усмон угли
Научный руководитель:
Буранова Шахноза Ураловна

АННОТАЦИЯ

В данной статье анализируются понятия производственной санитарии и гигиены труда, их влияние на здоровье рабочих и условия труда. Также будут освещены меры по снижению вредных факторов и обеспечению безопасной рабочей среды.

Ключевые слова: Производственная санитария, гигиена труда, условия труда, физиология человека.

INDUSTRIAL SANITATION AND OCCUPATIONAL HYGIENE

Student of the Educational Program "Occupational Safety and Health" Karshi State University
Abdialimova Bekzoda Usmon ugli
Scientific Supervisor:
Buranova Shakhnoza Uralovna

ANNOTATION

This article analyzes the concepts of industrial sanitation and occupational hygiene, their impact on the health and working conditions of workers. It also covers measures to reduce harmful factors and ensure a safe working environment.

Keywords: Industrial sanitation, occupational hygiene, working conditions, Human physiology.

ISHLAB CHIQARISH SANITARIYASI VA MEHNAT GIGIYENASI

"Mehnatni muhofaza qilish va texnika xavfsizligi" ta'lim yo'nalishi talabasi Qarshi davlat universiteti
Abdiolimova Bekzoda Usmon o'g'li
Ilmiy rahbar:
Buranova Shaxnoza Uralovna

ANNOTATSIYA

Ushbu maqolada ishlab chiqarish sanitariyasi va mehnat gigiyenasi tushunchalari, ularning ishchilar salomatligi va mehnat sharoitlariga ta'siri tahlil qilinadi. Shuningdek, zararli omillarni kamaytirish va xavfsiz ish muhitini ta'minlash choralari yoritiladi.

Kalit so'zlar: Ishlab chiqarish sanitariyasi, mehnat gigiyenasi, mehnat sharoitlari,Inson fiziologiyasi.

Производственная санитария – это система организационных, гигиенических и санитарно-технических мероприятий и средств, направленных на устранение вредных факторов, воздействующих на работников. Основная задача производственной санитарии заключается в создании здоровых и безопасных условий труда на основе установленных предельно допустимых концентраций (ПДК) вредных веществ. Известно, что многие работы в различных отраслях народного хозяйства, включая сельское хозяйство, бурение и эксплуатацию нефтяных и газовых скважин, проводятся на открытом воздухе. В таких случаях на работников большое влияние оказывают метеорологические условия, такие как температура воздуха, влажность, давление, снег, дождь, солнечная радиация и другие подобные факторы. Эти факторы могут действовать двумя путями, то есть по воздуху или посредством прямого контакта.

Во-первых, к вредным факторам, воздействующим через воздух, можно отнести количество показателей, определяющих микроклиматическое состояние рабочего места, пыль, газ, шум, инфразвук и ультразвук, уровень освещенности, электромагнитное поле, инфракрасное и ультрафиолетовое излучение и другие.

Во-вторых, к факторам, воздействующим непосредственно через контакт, относятся различные твердые и жидкие вредные вещества, вибрационные приборы и устройства. Учитывая вышеперечисленные факторы, важно и необходимо изучить их влияние на здоровье человека и разработать меры по устранению этого влияния. Этот вопрос является основной задачей гигиены труда.

Гигиена труда – является частью медицинской науки, изучает влияние условий труда на здоровье и работоспособность человека, а также разрабатывает санитарно-гигиенические, профилактические и лечебные мероприятия, направленные на оздоровление условий труда и повышение производительности.

Условия труда определяются процессом труда, то есть интенсивностью выполняемых работ, состоянием тела человека во время работы, уровнем психологического напряжения нервов, характером движений человека, определяющим напряжение отдельных органов в организме, и состоянием окружающей среды.

Условия труда можно разделить на **четыре основные группы** факторов:

Факторы первой группы – санитарно-гигиеническое состояние окружающей среды К ним относятся температура воздуха, чистота окружающей среды (чистая, запыленная, загрязненная другими вредными веществами и т.д.), уровень освещенности и шума и другие.

К факторам второй группы – средства труда: машины и механизмы, оборудование и приспособления, используемые в производстве.

К третьей группе факторов – к ним относятся организационные мероприятия, а именно правильная организация режима работы и отдыха, разделение труда и трудовая дисциплина.

Четвертая группа – социальные факторы, связанные с взаимоотношениями людей, отношением работника к месту работы и результатам труда.

Правильная организация труда положительно влияет на организм человека, повышая его лёгкость и силу. Изучение физиологии человека помогает организовать нормальный режим работы, повысить работоспособность и определить, в каком состоянии должен находиться рабочий при выполнении различных работ.

Известно, что зрение, слух, дыхание, осязание и нервная система являются важными органами для человека. Человек может слышать звуковые волны с частотой колебаний от 20 до 20000 Гц. Чувствительность уха значительно выше, он нормально слышит звуки в диапазоне от 2000 Гц до 4000 Гц, но чувствительность несколько снижается при частотах ниже 800 Гц и выше 6000 Гц.

Воздух, поступающий в легкие при вдохе, содержит 21% кислорода, а при выдохе - 16%. Вредные вещества, содержащиеся в воздухе (газы, пары, пыль и другие), очень вредны для человека и вызывают различные заболевания.

Чистый воздух содержит 77% азота, 21% кислорода, 1% угарного газа и других активных газов, 1% инертных газов (аргон, неон и другие газы).

Чем насыщеннее состав воздуха отрицательными ионами кислорода, тем лучше уровень снабжения организма кислородом.

Однако в производственных условиях практически отсутствует естественный чистый воздух. Потому что многие технологические процессы сопровождаются выделением

JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |26-03-2026|

различных вредных веществ. Дозирование этих вредных веществ в воздухе рабочего помещения осуществляется путем совершенствования технологии производства, использования новых современных технических средств, комплексной механизации, автоматизации и герметизации производства.

Профилактика профессиональных заболеваний и личная гигиена.

Изменения в здоровье человека, возникающие в результате неблагоприятных производственных факторов, негативно влияющих на организм человека в процессе труда, называются профессиональными заболеваниями.

Профессиональные заболевания на производстве возникают в результате воздействия запыленного воздуха, газов, шума и вибрации на рабочих местах, а также колебаний температуры, давления и влажности воздуха.

Длительное воздействие неблагоприятных производственных факторов на организм человека может привести к профессиональным заболеваниям, что может привести к временной или полной потере трудоспособности.

Соблюдение правил личной гигиены играет важную роль в поддержании здоровья работников и сохранении их трудоспособности.

Основными требованиями личной гигиены являются чистота тела и рук, регулярное мытье рук с мылом перед едой, поддержание чистоты себя и одежды, правильная организация своевременного приема пищи и отдыха на работе.

ЗАКЛЮЧЕНИЕ

Производственная санитария и гигиена труда играют важную роль в поддержании здоровья работников и улучшении условий труда. Сокращение вредных факторов в производственном процессе и создание безопасной рабочей среды способствует повышению эффективности. Поэтому важно соблюдать санитарно-гигиенические правила на предприятиях и постоянно совершенствовать их.

ИСПОЛЬЗОВАННАЯ ЛИТЕРАТУРА:

1. Конституция Республики Узбекистан.Тошкент, "Ўзбекистон," 2023 й.
2. Гармонично развитое поколение - основа развития Узбекистана. Ташкент, "Шарк," 1998.
3. Трудовой кодекс Республики Узбекистан. Ташкент, 2023.
4. Закон Республики Узбекистан "Об охране труда." Ташкент, 2016.
5. Каримова.К.Б. "Безопасность жизнедеятельности" Учебное пособие Т-2023, 244 с.
6. К.Б.Каримова."Безопасность жизнедеятельности" Т-2023, 242 с.

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |26-03-2026|

ТЕОРЕТИЧЕСКИЕ ПРЕДПОСЫЛКИ ПО ОБОСНОВАНИЮ ПАРАМЕТРОВ ЛОЖЕОБРАЗОВАТЕЛЯ ДЛЯ ГИБКИХ ПОЛИВНЫХ ТРУБОПРОВОДОВ

Туймурадов Зулпикар Худайкулович,
Доцент Каршинского государственного университета, к.т.н.,
tuymurodovzulpiqor@gmail.com

АННОТАЦИЯ

В статье приведены результаты теоретических исследований по обоснованию параметров ложеобразователя для гибких поливных трубопроводов, предотвращающее повреждения трубопровода и повышающее производительность труда на поливе сельскохозяйственных культур.

Ключевые слова: водосберегающие технологии, гибкий поливной трубопровод, дистанционная раскладка трубопровода, ложеобразователь для трубопровода, ограничитель, нож и выравниватель ложеобразователя.

MOSLASHUVCHAN SUG‘ORISH QUVURLARI UCHUN YOTOQ HOSIL QILUVCHI QURILMA PARAMETRLARINI ASOSLASHNING NAZARIY SHART-SHAROITLARI

Tuymurodov Zulpiqar Xudayqulovich
Qarshi davlat universiteti dotsenti, texnika fanlari nomzodi (PhD)
tuymurodovzulpiqor@gmail.com

ANNOTATSIYA

Maqolada qishloq xo'jaligi ekinlarini sug'orishda ishlatiladigan egiluvchan quvurlar zararlanishining oldini olish va mehnat unumdorligini oshirishni ta’minlaydigan egiluvchan quvurlar uchun izochgichning parametrlarini asoslash bo'yicha nazariy tadqiqotlar natijalari keltirilgan.

Kalit so‘zlar: suvni tejovchi texnologoyalar, egiluvchan sug‘orish quvuri, quvurlarni dalaga kirmasdan yoyish, quvur uchun izochgich, izochgichning cheklagichi, pichog‘i va tekislagichi.

THEORETICAL PREREQUISITES FOR SUBSTANTIATING THE PARAMETERS OF A BED-FORMING DEVICE FOR FLEXIBLE IRRIGATION PIPELINES

Tuymuradov Zulpiqar Khudaykulovich
Associate Professor, Candidate of Technical Sciences (PhD), Karshi State University
tuymurodovzulpiqor@gmail.com

ABSTRAKT

The article presents the results of theoretical studies to substantiate the parameters of a bed former for flexible irrigation pipelines, preventing damage to the pipeline and increasing labor productivity in the irrigation of agricultural crops.

Key words: water-saving technologies, flexible irrigation pipeline, remote pipeline layout, bed former for pipeline, limiter, knife and bed former leveler.

ВВЕДЕНИЕ

В целях устойчивого обеспечения сельского хозяйства водой в Узбекистане ведется широкомасштабная работа по применению водосберегающих технологий, сокращению эксплуатационных расходов. Осуществляется это путем развития государственно-частного партнерства в области управления водными ресурсами, внедрению в практику научных инновационных разработок в сфере водного хозяйства [1; 2].

Одним из наиболее совершенных способов поверхностного полива является полив с применением переносных трубопроводов. При замене временной оросительной сети в земляном русле переносными (в том числе гибкими поливными) трубопроводами увеличивается коэффициент земельного использования, уменьшается потери воды на

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |26-03-2026|

фильтрацию, повышается производительность труда на поливе [3; 4]. Кроме того, улучшается распределение оросительной воды по бороздам, следовательно повышается урожайность.

Остающийся всё ещё широко распространенным в зоне хлопководства поверхностный способ полива требует больших затрат ручного труда по выращиванию хлопчатника [3; 5]. Полив сопровождается с неравномерным распределением воды по бороздам [6; 7].

Из переносных трубопроводов наиболее широкое применение нашли гибкие поливные трубопроводы. Однако отсутствие высокоэффективных технологий дистанционной раскладки (и сборки) сдерживало их широкое применение. Учитывая это, предложена высокоэффективная технология дистанционной раскладки гибких трубопроводов [8; 9]. В данной работе приводятся теоритические предпосылки по обоснованию параметров ложеобразователя, входящего в эту технологию.

МАТЕРИАЛЫ ИССЛЕДОВАНИЯ И МЕТОДИКА

Схема работы ложеобразователя, входящего в высокоэффективную технологию дистанционной раскладки гибких поливных трубопроводов приведена на рис.1. Он состоит из установленных на единой оси 1 в технологической последовательности конического ограничителя 2, цилиндрического ножа 3 и дискового выравнивателя 4. Ограничитель и выравниватель имеют цилиндрические опорные поверхности. Нож закреплен к оси посредством радиальных перемычек. Ось ложеобразователя снабжена крюками 5, 6 для крепления к тросу 7 и трубопроводу 8.

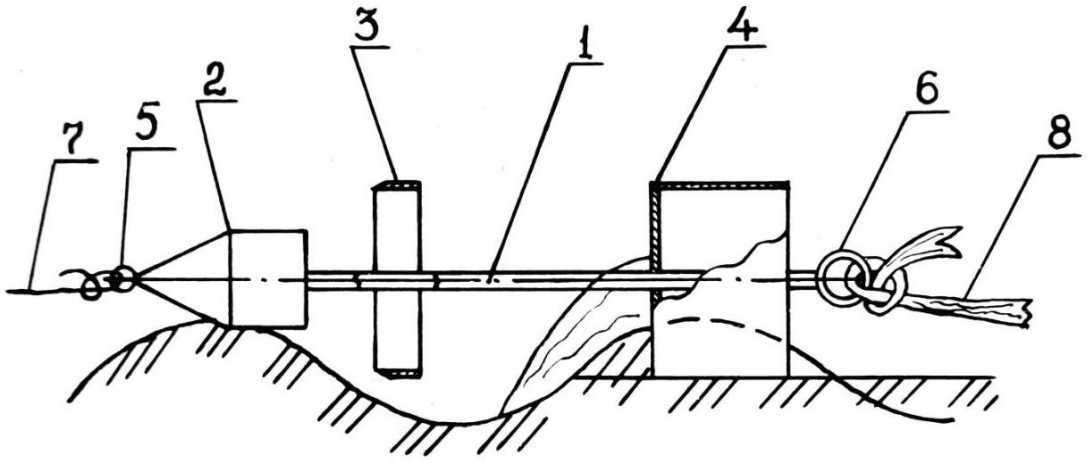

Рис.1. Ложеобразователь для трубопровода

1 - ось; 2 - ограничитель; 3 - нож; 4 - выравниватель; 5,6 - крюки; 7 - трос; 8 - гибкий трубопровод.

При раскладке ложеобразователь движется поперек борозд, снимая почву с верхушек гребней и засыпая ею дно борозд. При этом ограничитель перемещается над уровнем гребней, предотвращая чрезмерное заглубление ложеобразователя. Поскольку диаметр ограничителя несколько меньше, чем диаметр последующего за ним ножа, происходит срезание им верхушки и эту срезанную почву при дальнейшем движении ложеобразователя с гребня в борозду перемещает выравниватель, имеющий одиноковый диаметр с ножом. Благодаря наличию цилиндрических опорных поверхностей рабочих органов ложеобразователя обеспечивается его движение поперок борозд без чрезмерных заглублений и выглублений.

Для обоснования параметров ложеобразователя нужно было определить размеры ложа для трубопровода. Ширину ложа - $в_л$ (см.рис.2) можно определить исходя из следующих соображений. Рабочему, осуществляющему укладку трубопровода (расправляя в ленту), трудно следить за тем, чтобы постоянно совпадали оси ленты трубопровода и ложа, так как

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |26-03-2026|

трубопровод укладывается над ложей и поэтому она не видна рабочему. Предположим, что максимальное отклонение ленты трубопровода в том случае, когда край трубопровода совпадает с краем ложа (см.рис.2 *а*), так как при большем чем это отклонении, рабочему не трудно заметить и устранить отклонение. При подаче воды трубопровод постепенно раздувается и уменьшается площадь его опоры к почве. Это приводит к уменьшению устойчивости трубопровода и он может закатиться в ложу в том случае, если $в_л = в_{л2}$ (см.рис.2 *а*), а если $в_л = в_{л1}$ трубопровод в ложу может не закатиться, так как в этом случае точки опоры трубопровода располагаются за пределы ложа. Таким образом

$$в_л = в_{л2} \geq \frac{В_т}{2}, \qquad (1)$$

где - $B_т$ - ширина трубопровода в расправленном виде. Учитывая, что $Вт = \frac{\pi D_т}{2}$, а $D_т$ - диаметр трубопровода равен 300 ... 350 *мм*, согласно выражению (1) принимаем $в_л$ = 275 *мм*.

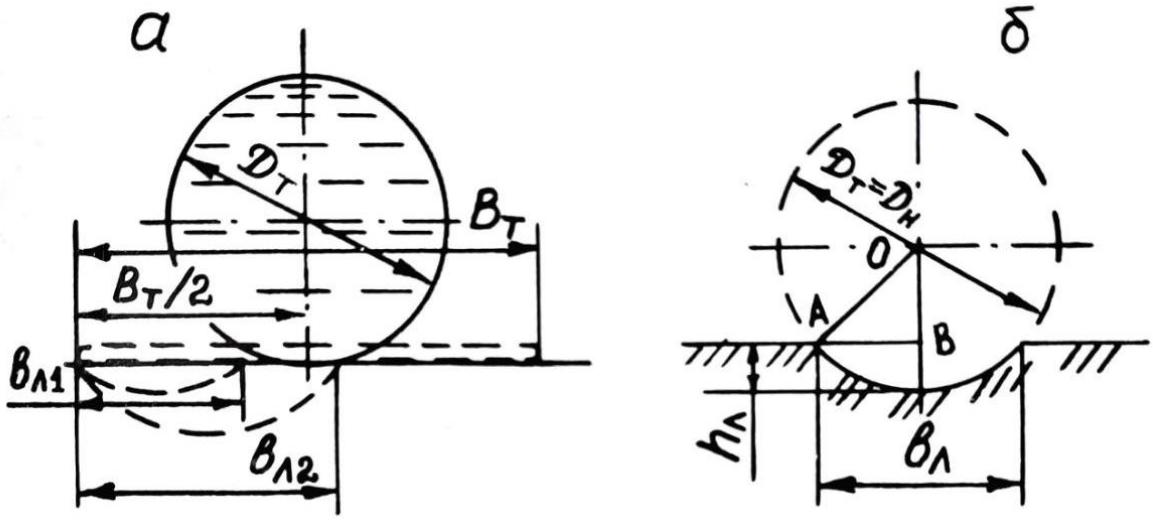

Рис.2. Схема к определению размеров ложа для трубопровода

Ширина ($в_л$) и глубина ($h_л$) ложа имеют взаимосвязь (см. рис. 2 *б*). Это можно выразить (пользуясь треугольником АОВ) в следующем виде:

$$\frac{в_л}{2} = \sqrt{D_н h_л - h_л^2}, \qquad (2)$$

где - $D_н$ - диаметр цилиндрического ножа ложеобразователя.

Он, следовательно и диаметр выравнивателя - $D_в$ (так как $D_н = D_в$), зависит от диаметра трубопровода - $D_т$, желательно чтобы - $D_н = D_т$. Поэтому учитывая возможность обеспечения минимальной металлоемкости ложеобразователя, принимаем $D_н$ равным 300 мм - нижнему пределу $D_т$.

Имея численные значения $в_л$ и $D_н$ из выражения (2) находим, что $h_л$= 90*мм*.

Угол конусности ограничителя - α_o (рис.3) определили из условия отсутствия образования уплотненного ядра и залипания его поверхности почвой. Условие работы ограничителя схоже с условием работы полоза, например, хлопковых сеялок.

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |26-03-2026|

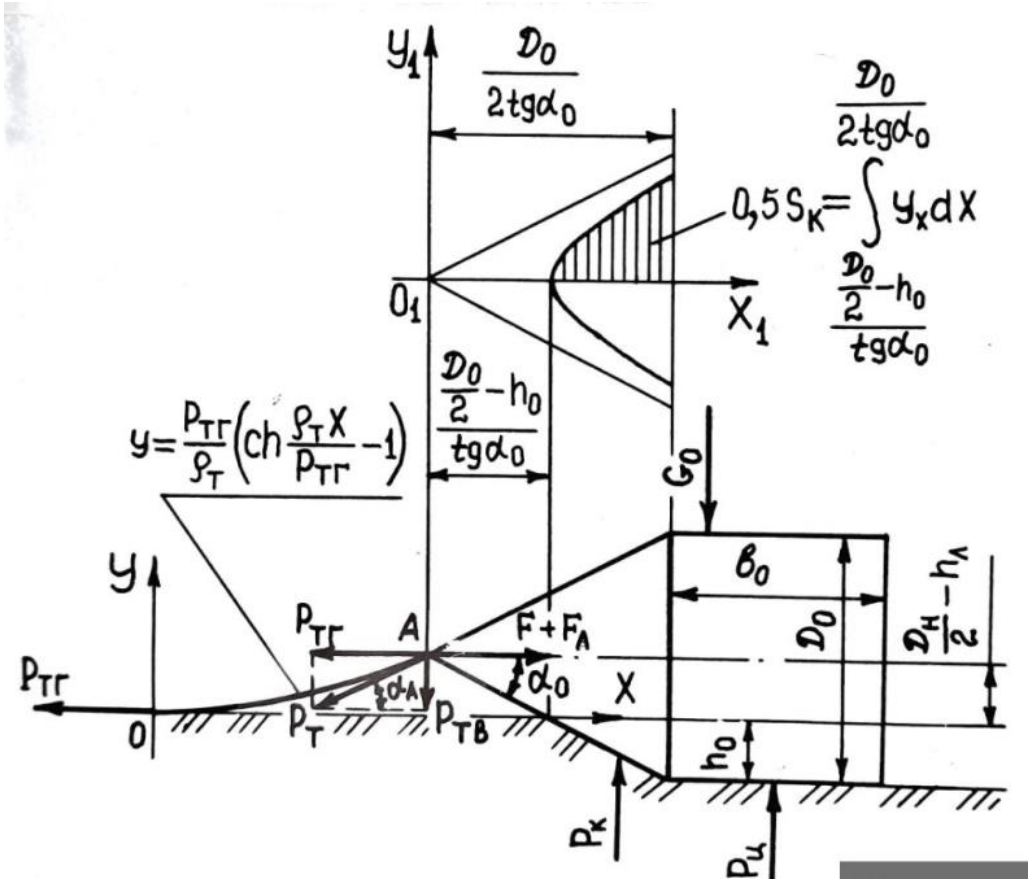

Рис. 3. Схема к определению диаметра ограничителя ложеобразователя

Для определения максимального угла наклона передней части полоза (для ограничителя это угол конусности - α_o) академик Г.М.Рудаков [10] применил неравенство

$$\alpha_o \leq \left(45^o - \frac{\varphi_п}{2}\right) \div \left(45^o - \frac{\varphi_c}{2}\right),$$

где $\varphi_п$ - угол трения почвы о почву;

φ_c - угол трения почвы о сталь.

Для сухой почвы (как полоз, так и ограничитель работает в самом верхнем горизонте почвы) $\varphi_п = 40^o$ и $\varphi_c = 28^o$ [11], тогда $\alpha_o \leq 25 \ldots 31^o$. Условие полного отсутствия образования уплотненного ядра обеспечивается при нижнем пределе угла, поэтому принимаем $\alpha_o = 25^o$.

Для определения диаметра ограничителя - D_o рассмотрим условия его равновесия в вертикальной плоскости. Из рис. 3 можно установить:

$$G_o + P_{тв} = P_ц + P_к, \qquad (3)$$

где G_o - часть силы тяжести ложеобразователя, действующая на ограничитель;

$P_{тв}$ - сила прижатия ограничителя к почве натяжением троса;

$P_ц$ и $P_к$ - вертикальная составляющая нормального давления почвы на соответственно цилиндрическую и коническую части ограничителя.

Минимальное значение силы G_o равно весу самого органичителя (по экспериментальному образцу 3,5 *даН*), а максимальное - порядка половине веса всего ложеобразователя (по экспериментальному образцу 6,5 *даН*), так как при нахождении ножа над бороздой ложеобразователь опирается о почву ограничителем и выравнивателем, каждый из которых принимает на себя около половины веса всего ложеобразователя.

Для определения величины сил $P_{тв}$ провисаемую перед ложеобразователем часть троса рассмотрим как однородную нерастяжимую гибкую нить, которая при провисания принимает форму кривой ценной линии [12]. Учитывая это можно написать

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |26-03-2026|

$$У_А = \frac{Р_{тг}}{\rho_т}\left(ch\frac{\rho_т X_А}{Р_{тг}} - 1\right), \quad (4)$$

где $P_{тг}$ - горизонтальная составляющая натяжения троса - $Р_т$. Она равна по величине, но противоположна по направлению сумме сопротивлений трубопровода (F) и ложеобразователя ($F_л$) перемещению;

$\rho_т$ - линейная плотность троса;

$У_А$ и $X_А$ - координаты точки крепления троса и ограничителя ($А$) в системе $XOУ$ (см.рис. 3).

При проведении инженерных расчетов с применением гиперболических функций допускается большая неточность, а для получения точных результатов необходимо провести громоздкие расчеты. Поэтому на практике уравнение цепной линии (4) заменяют параболой [13, 14, 15] путем разложения гиперболического косинуса на ряд Тейлора и удерживания членов ряда до второго подряда. После замены уравнивания (4) параболой вышеуказанным путем оно примет вид

$$У_А = \frac{\rho_т X_А^2}{2Р_{тг}}. \quad (5)$$

Согласно рисунку 2.6

$$Р_{тв} = Р_{тг} tg\alpha_А$$

где $\alpha_А$ - угол наклона силы натяжения троса в точке $А$ к оси X. Поскольку

$Р_{тг} = F + F_л$, $\quad tg\alpha_А = \frac{dy}{dx} = \frac{\rho_т X_А}{Р_{тг}}$ и согласно выражения (5) и рисунка 2.6.

$$X_А = \sqrt{\frac{2Р_{тг}У_А}{\rho_т}}, \quad , \quad У_А = \frac{D_н}{2} - h_л ,$$

то

$$Р_{тв} = \sqrt{\rho_т(F + F_л)(D_н - 2h_л)} . \quad (6)$$

Анализ литературных источников по обработке почвы показал, что ограничитель ложеобразователя имеет схожий процесс работы с некоторыми почвобрабатывающими органами, например, как отмечалось ранее, полозом сеялки [145], сошниками [150, 151] и малой выравнивателем [152]. Однако, в отличии от них ограничитель имеет коническую, переходящую в цилиндрическую, поверхность контакта с почвой и оставляет за собой цилиндрическую уплотненную ложу. Величины сил $P_ц$ и $P_к$ определим исходя из этих особенностей и из условия равенства вертикальной составляющей нормального давления почвы на поверхность рабочего органа на умножение площади пятна контакта к среднему значению удельнего сопротивления почвы вертикальному смятию ($P_ц$). Поэтому

$$Р_ц = S_ц p_у = 2Р_у в_о\sqrt{D_o h_o - h_o^2} , \quad (7)$$

где $S_ц$ - площадь пятна контакта цилиндрической части ограничителя с почвой;

$в_о$ - ширина цилиндрической части ограничителя;

$h_о$- глубина хода ограничителя.

А для конической части ограничителя:

$$Р_к = p_у S_к , \quad (8)$$

где $S_к$ - площадь пятна контакта конической части ограничителя с почвой, которая равна площади сечения конуса с плоскостью поверхности почвы. Ординаты этого сечения в системе координат $У_1O_1X_1$ (см.рис.3) являются уравнением гиперболы, т.е.

$$У = \sqrt{x^2 tg^2\alpha_o - \left(\frac{D_o}{2} - h_o\right)^2},$$

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |26-03-2026|

тогда

$$S_к = 2\int_{\frac{D^o}{2}-h_o}^{\frac{D_o}{2tg\alpha_o}} \sqrt{x^2 tg^2\alpha_o - \left(\frac{D_o}{2}-h_o\right)^2}\, dx.$$

Решив интеграл и подставив значение $S_к$ в выражение (8) получим:

$$P_к = p_y ctg\alpha_o \left[\frac{D_o}{2}\sqrt{D_o h_o - h_o^2} - \left(\frac{D_o}{2}-h_o\right)^2 \ln\frac{D_o+2\sqrt{D_o h_o - h_o^2}}{D_o-2h_o}\right]. \quad (9)$$

Это значение $P_к$ включает только статическое сопротивление почвы, а в процессе работы ложеобразователя возникает также динамическое сопротивление почвы, действующее на коническую часть ограничителя. Однако при низких скоростях движения рабочих органов (до 8 ...9 км/час [153], а ложеобразователь движется со скоростью 0,8 м/с) динамическим сопротивлением почвы можно пренебречь.

Таким образом, выведены формулы (6), (7) и (8) для определения членов уравнения (3) равновесия ограничителя. Неизвестными, входящими в эти формулы являются D_o и h_o. Если учесть, что согласно рисунку 3

$$\frac{D_o}{2} = \frac{D_н}{2} - h_л + h_o ,$$

откуда

$$h_0 = h_л - \frac{1}{2}(D_н - D_o) \quad (10)$$

то неизвестным остается только D_o, для изучения влияния которого на подъемную силу ограничителя построим графическую зависимость правой части уравнения (3) от D_o. При этом учитывали следующие особенности процесса работы ложеобразователя. Мы рассмотрели процесс взаимодействия ограничителя с гладкой поверхностью почвы, а ложеобразователь будет применяться в основном при раскладке трубопроводов поперек борозд, где ограничитель входит в контакт только с насыпами, образованными на гребнях при нарезке борозд. Поэтому площадь опоры ограничителя уменьшится примерно вдвое, так как поперечное сечение насыпи представляет треугольник, площадь которого в два раза меньше, чем площадь четырехугольника (при гладкой поверхности почвы) с одинаковым основанием. Кроме того, цилиндрическая часть ограничителя не участвует в формировании его следа, а лишь поддерживает ложеобразователь на уровне, обеспечиваемым конической частью ограничителя. Поэтому величину силы $P_{сц}$ можно принять равной нулю.

Пользуясь литературными источниками и результатами собственных исследований для проведения расчетов приняли следующие значения факторов, входящих в зависимости (6) и (9): $G_o = 6{,}5$ *даН*; $\rho_т = 0{,}355 \frac{Н}{см}$; $F = 0 \ldots 400$ даН; $F_л = 22$ даН; $D_н = 300$ мм; $h_л = 90$ мм; $p_y = 2{,}5 \ldots 17{,}5 \frac{Н}{см^2}$ [11]; $\alpha_o = 25^o$. Результаты расчетов приведены в рис. 4, из которого можно сделать выводы по определению оптимальных значений диаметра ограничителя (D_o), который должен обеспечить равновесия силы подъема ограничителя почвой и силы прижатия его тросом и весом ложеобразователя к почве, при заданной оптимальной глубине хода ложеобразователя. Это условие выполняется при таких значениях D_o, при которых правая часть уравнения (3) уравновешивается с экстремальными значениями его левой части. На графике это точки пересечения кривой $P_o = P_ц + P_к = f(D_o)$ с прямыми $P_o = G_o + P_{тв}$ при $F = 0$ и при $F = 400$ *даН*. Этим точкам соответствуют значения D_o порядка 160 … 170 мм. Однако, эти значения следует считать лишь нижними пределами поиска его оптимального значения, так как на практике при воздействии ограничителя и насыпи часть

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |26-03-2026|

почвы не сминается, а выжимается за пределы поперечного сечения насыпи. Следовательно, они не участвуют в формировании следа ограничителя, поэтому подъемная сила почвы будет несколько меньше. Это необходимо компенсировать увеличением диаметра ограничителя от найденной 160…170*мм*.

Ширину полки ножа - $в_н$ приняли так же как в рабочих органах культиваторов (бритва, стрельчатые лапы, фрезерные ножи и др.) [16; 17] исходя из условия обеспечения необходимой прочности, минимальной металлоемкости и самоочищения равным 70 мм.

Остальные параметры определены исходя из условия предотвращения чрезмерного заглубления и выглубления рабочих органов при движении поперек борозд путем сохранения постоянной горизонтальности положения оси ложеобразователя. Это условие может быть обеспечено в том случае если рабочие органы ложеобразователя не будут копировать поверхность дна борозды, то есть если количество точек опоры ложеобразователя на гребни междурядья не будет менее двух, причем одна из этих точек должна относиться к рабочим органам, расположенным на передней части ложеобразователя (к ограничителю или к ножу), а другая к расположенному на задней его части выравнивателю.

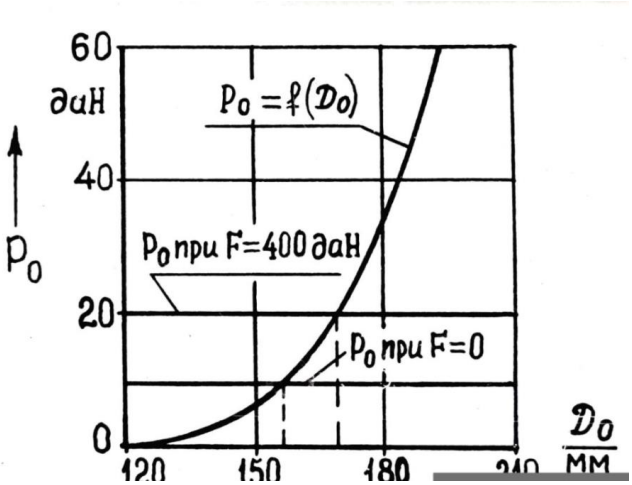

Рис. 4. Сопротивление почвы заглублению в зависимости от диаметра ограничителя

Анализ процесса работы ложеобразователя показал, что его работоспособность зависит от ширины и глубины борозды. Чем шире и глубже борозда, тем уже гребень, следовательно, меньше площадь, на которую опирается ложеобразователь. Самую широкую и глубокую борозду имеет междурядье шириной 90 *см*, образованное за большим колесом трактора после последней нарезки поливных борозд. Имея профиль междурядья, графоаналитическим методом определили оптимальные величины некоторых параметров ложеобразователя (см. рис. 5). например, ширина выравнивателя - $в_в$ должна быть больше $в'_в$ (рис.5 *а*), так как в противном случае выравниватель может опуститься вниз - в дно борозды, что приведет к зацеплению выравнивателя за не срезанный ножом слой почвы, связанной с повышением при этом тягового сопротивления ложеобразователя и нарушением горизонтальности положения его оси, следовательно и равномерности глубины хода. Исходя из этого $в_в$ приняли равным 300 *мм*.

Для того, чтобы не происходило чрезмерное заглубление ножа необходимо предотвратить опускание его в дно борозды. Это обеспечивается при выполнении условия:

$$в_о + l_{он} + в_н \geq l'_{он}, \qquad (11)$$

где $в_о$ - ширина цилиндрической части ограничителя (рис. 5. *б*);

$l_{он}$ - расстояние между ограничителем и ножом;

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |26-03-2026|

$l'_{он}$ - 345 *мм* - определена графоаналитическим способом с использованием результатов междурядья, при теоретически определенном оптимальном диаметре ограничителя - 170 *мм*.

В зависимости (11) имеются неизвестных - $в_о$ и $l_{он}$, последний из них может быть определен исходя из условия предотвращения попадания комков большого размера в полость цилиндрического ножа (см.рис. 5 *в*), что обеспечивается при

$$l''_{он} \le \frac{D_н}{2} - \frac{d_{ст}}{2}, \qquad (12)$$

где $l''_{он}$ - расстояние между задней кромкой ограничителя и передней кромкой ножа;

$d_{ст} \approx 36$ *мм* - диаметр ступицы ножа.

При выполнении неравенства (12), расположенные в зоне работы ложеобразователя комки, размеры которых больше, чем размер щели полости ножа, или срезаются им, или отодвигается в сторону. Однако, при

$$l''_{он} \le \frac{D_н}{2} - \frac{d_{ст}}{2}$$

попусту (в сторону ножа) увеличивается ширина цилиндрической части ограничителя, что приводит к повышению металлоемкости ложеобразователя. Поэтому желательно:

$$l''_{он} = \frac{D_н}{2} - \frac{d_{ст}}{2}.$$

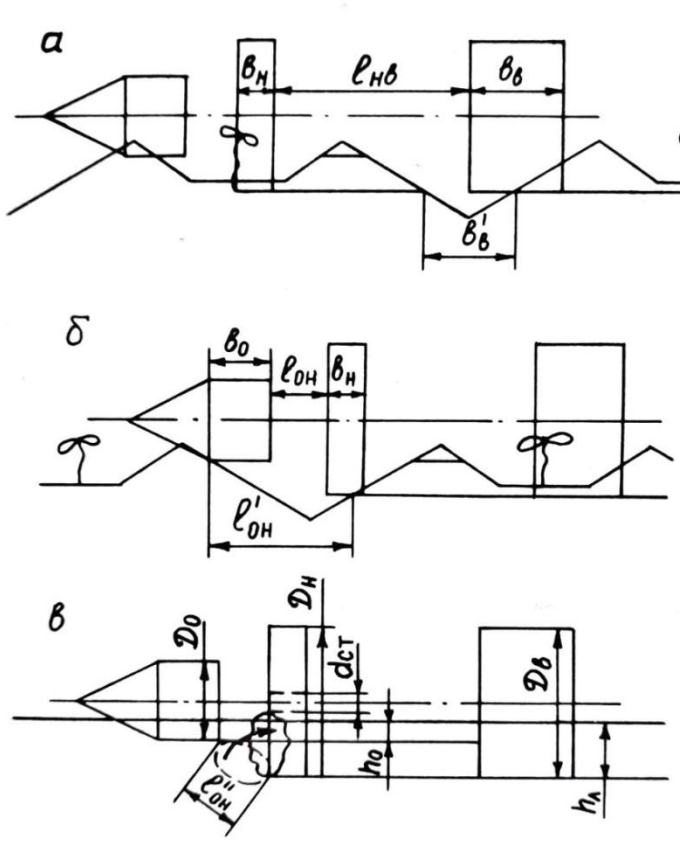

Рис.5. Схемы к определению параметров ложеобразователя

Выразив $l''_{он}$ через $l_{он}$, D_o и $D_н$ после некоторых преобразований получим

$$l_{он} = \frac{1}{2}\sqrt{(D_н - d_{ст})^2 - (D_н - D_о)^2}. \qquad (13)$$

При определенных ранее значениях $D_н$, $d_{ст}$ и $D_о$ соответственно 300 *мм*, 36 *мм* и 170 *мм* находим, что $l_{он}$ = 115 *мм*. Тогда из выражения (11) находим, что $в_о$ = 160 *мм*.

Эти значения $l_{он}$ и $в_о$ определены при значении $D_о$=170 *мм*, потому после экспериментального уточнения величины $D_о$, следует пересчитать $l_{он}$ и $в_о$ согласно зависимостям (11) и (13).

АНАЛИЗ И РЕЗУЛЬТАТЫ

Применение ложеобразователя с выщеприведенными параметрами предотвращает повреждения растений и скручивания трубопровода в жгут, а следовательно перекрытия его. Если в скрученный трубопровод вода подается из высоконапорной сети (например, насосом при работе поливных машин типа ППА-165), трубопровод разрывается от напора. А при подаче воды из малонапорной сети трубопровод может выдержать, но в этом случае для восстановления рабочего положении трубопровода требуется отсоединение его от водоисточника, вручную перекатывать на исходное положение и обкладывать комками или подсыпать почвой, что весьма трудоемко. Кроме того, при укладке трубопровода без ложа он копирует профиль междурядья и повышается гидравлическое сопротивление, что приводит к уменьшению пропускной способности трубопровода, следовательно и производительности полива.

При дистанционной раскладке гибкого трубопровода с применением ложеобразователя максимальное потребляемое усилие на перемещение трубопровода при пересчете на 1 *м* составило около 6 *Н*, что обеспечивало дистанционную раскладку трубопровода длиной необходимых нескольких сотен метров без повреждения.

ИСПОЛЬЗОВАННАЯ ЛИТЕРАТУРА

1. Пастоновление Президента РУз “О повышении эффективности государственного управления в сфере водного хозяйства” от 10.10.2019 г.
2. O`zR Prezidentining “O`zR suv xo`jaligini rivojlantirishning 2020-2030 yillarga mo`ljallangan konsepsiyasini tasdiqlash” to`g`risidagi Farmoni.
3. Туймурадов З.Х. Усовершенствованная технология раскладки и сборки гибких трубопроводов. Монография. Карши. “Фан ва таълим”. 2021.
4. Пензин М.П., Терпигоров А.А. К вопросу обоснования способа регулирования поливных струй при поливе по бороздам.-В кн.: Новое в технике и технологии полива. М., 1977. с. 9…17 (Труды/ВНИИГИМ вып.10).
5. Лактаев Н.Т. Полив хлопчатника.-М.: Колос,1978.-176 с.
6. Tuymuradov Z.X. Improving the reliability and tightness of fixing the water outlet of flexible irrigation pipelines. International Conference on Advance Research in Humanities, Sciences and Education MALAYSIA CONFERENCE https://confrencea.org October 15th 2022.
7. Гафуров В.К. Расход влаги хлопковым полем на транспирацию. Сельское хозяйство Туркменистана: - Ашхабад, 1968, № 6, с. 34…35.
8. А.с. 1142060 (СССР). Устройство для раскладки гибких поливных трубопроводов; авт.изобрет. З.Х.Туймурадов.-Заявл. 09.02.88, № 4399403.
9. Tuymuradov Z.Kh. Технология дистанционной раскладки гибких поливных трубопроводов. THE MULTIDISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY. VOLUME-5, ISSUE-1. 10.01.2025.
10. Рудаков Г.М. Технологические основы механизации сева хлопчатника. - Ташкент: Фан 1974, с.158...196.
11. Эгамов А.Т. Обоснование параметров малы выравнивателя с регулируемым давлением на почву: - Дисс.к.т.н. - Янгиюль - 1988-139с.

12. Мацелинский Р.Н. Статистический расчет гибких висячих конструкций - М, -Л.: Госсройиздат, 1950.-191 с.
13. Дукельский А.И. Подвесные канатные дороги и кабельные краны. - М. Л.:Машгиз, 1951-397 с.
14. Качурин В.К. Теория висячих систем. - М. - Л.: Госстройиздат, 1962.-223 с.
15. Василенко П.М., Габий П.Т. Культиваторы (конструкция, теория и расчет). - Киев.: Издательство Украинской Академии сельскохозяйственных наук, 1961.-239 с.
16. ГОСТ 1343-82. Лапы и стойки культиваторов.

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |11-04-2026|

O‘ZBEKISTONDA O‘STIRISH UCHUN TAVSIYA ETILGAN TERAKLAR

Ochildiyev Najmiddin Narbayevich
PhD, katta ilmiy xodim
Farxodova Gulxayo Faxriddin qizi
talaba

ANNOTATSIYA

O‘zbekistonda o‘rmonchilikni yuksaltirish uchun istiqbolli bo‘lgan terak navlarini o‘rganish va ularni boshqa navlarga taqqoslash bo‘yicha olib borilgan kuzatish ishlariga asosan respublikaning agroiqlim tumanlari uchun mos keladigan terak navlari va turlarini belgilab olish imkoniyatiga ega bo‘linib, bu terakning tuprog‘i sho‘rlanmagan va qisman sho‘r bosgan yerlarda o‘stirish uchun mos keladigan turlarini tavsiya etishda katta yordam berdi.

Kalit so‘zlar: Istiqbolli, terak navlari, agroiqlim, tuproq, sho‘rlanmagan, qisman sho‘r bosgan, sho‘rlangan, nav, yetishtirish agrotexnikasi, vegetatsiya, harorat, havo namligi.

АННОТАЦИЯ

На основе проведенних наблюдений и сравнений перспективних сортов тополя для улучшения лесного хозяйства Узбекистана с другими сортами удалос определит сорта и види тополя, подходящие для агроклиматических регионов республики, что значително помогло в виборе видов тополя, пригодних для виращивания на незасоленних и частично засоленних почвах.

POPLAR VARIETIES RECOMMENDED FOR CULTIVATION IN UZBEKISTAN

ANNOTATION

Based on observations and comparisons of promising poplar varieties for improving forestry in Uzbekistan with other varieties, it was possible to identify poplar varieties and species suitable for the agroclimatic regions of the republic, which significantly assisted in selecting poplar species suitable for cultivation on non-saline and partially saline soils.

Keywords: promising varieties, poplar varieties, agroclimate, soil, non-saline, slightly saline, saline, variety, cultivation agrotechnics, vegetation, temperature, air humidity.

O‘zbekistonning o‘rmon daraxtlari o‘stiriladigan sharoiti yetarli darajada xilma-xildir. Ular uchun xarakterli tomoni tuproq qatlami o‘ziga xos turli-tuman va iqlimi keskin o‘zgaruvchandir. O‘sishi (vegetatsiya) davrining davomiyligi, masalan Samarqand viloyatida 260 kungacha, yillik o‘rtacha harorat 15,6^0 ga va eng yuqori harorat 48° gacha borishi mumkin. O‘zbekistonning ayrim zonalarida masalan, Mirzachul quyilishida eng past harorat — 34° gacha pasayishi mumkin. O‘rtacha yillik yog‘in-sochinlarning eng kam miqdori (79—87 mm) Amudaryo etaklarida ro‘y berib, eng ko‘pi Chotqol chuqqisi tarmoqlariga (Toshkent viloyati) tushadi, bu yerda yoqqan yog‘in-sochinlar miqdori 1000 mm va bundan ham ko‘proqqa boradi.

Lekin havo namligi nisbatan bir xil bo‘lishi kuzatiladi. Chunonchi, respublikaning ko‘pchilik tumanlarida havoning nisbiy namligi iyul oyida 50 % dan past bo‘ladi.

Iqlim sharoiti ko‘rsatkichlariga asoslangan holda, shuningdek, O‘zbekiston uchun o‘simliklarni tumanlashtirish bo‘yicha amaldagi takliflardan foydalanib, 5 ta agroiqlim tumanlarni ajratish mumkin (1-jadval).

1-jadval

O‘zbekistonning agroiqlim tumanlari

Agroiqlim tumanining	Sovuq bo‘l-	Havoning harorati, ^{0}C				Havoning o‘rtacha yog‘in miqd
		O‘rtacha	Eng		Eng	

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |11-04-2026|

nomi	maydigan davr, kun	Yillik	Yanvar	Iyul				
Quyi Amudaryo	180-205	11,0-12,1	4,5-6,9	27,0-27,4	32,0	44,0	78-87	41-43
O‘rta Sirdaryo	205-217	13,0-15,0	1,0-3,0	27,0-30,0-	34,0	40,0	268-367	41-46
Farg‘ona	208—218	12,8-13,8	1,3 - 3,5	26,3-28,0	27,0	44,0	98-226	42-48
Qashqadaryo, Zarafshon	203—235	13,4-15,1	0,0-1,0	25,9-29,6	27,0	46,0	125-328	37-42
Surxondaryo	220—260	15,6	1,1-2,0	28,4	23,0	48,0	360	39

Hamma agroiqlim tumanlarning ajralib turadigan belgilari yog‘in-sochinlarning kam mikdorda bo‘lishi, uning ham asosan o‘sish davrida tushmasligi va havoning nisbiy namligi g‘oyat past bo‘lishidan iboratdir. Iqlim sharoitlarining ana shu xususiyatlari terak o‘stirish arealini kengaytirish imkonini kamaytiradi va uni faqat sug‘oriladigan dehqonchilik tumanlarida o‘stirish bilan chegaralanishni shartlab qo‘yadi. Lekin V.P.Fimkin tomonidan tavsiya etilgan tipologiya bo‘yicha terak o‘stiriladigan sharoit 8 tipga bo‘linadi. Bu esa terakni sug‘orilmaydigan sharoitda o‘stirish imkonini beradi. Lekin O‘zbekistonda bu xildagi sharoitga ega bo‘lgan yerlar unchalik ko‘p emas. Bularni hamma agroiklim tumanlarida uchratish mumkin (2-jadval).

2-jadval

Sug‘ormasdan terak o‘stirish mumkin bo‘lgan joylar sharoiti

Gidrologik sharoiti	Tuproqlari		
	sho‘rlanishga moyil bo‘z-o‘tloqi, botqoq-o‘tloq, qayiralyuvial va taqir tuproklar	sho‘r bosmagan och tusli bo‘z, tipik va to‘q tusli bo‘z, osti shag‘al kolmat-gorizont bilan 0,6—1 m va ko‘p	sho‘rlanmagan o‘tloq va o‘tloq-botqoq (dasht va bo‘z tuproqlar mintaqasi)
Sezot suvlari 3-4 m dan chuqur joylashgan	A_2	V_1	-
Sizot suvlari 2 dan 3 m gacha chuqurlikda	A_1	-	S_2
Sizot suvlari 1 dan 2 m gacha chuqurlikda	A_3	-	S_3
Sizot suvlari 1 m gacha chuqurlikda	A_4	-	S_4

Eslatma: terak A_3 va A_4 tip tuproqlarda o‘stiriladigan bo‘lsa, sizot suvlari sathini pasaytirish bo‘yicha meliorativ tadbrlar o‘tkazish kerak.

O‘zbekistonda o‘rmonchilikni yuksaltirish uchun istiqbolli bo‘lgan terak navlarini o‘rganish va ularni boshqa navlarga taqqoslash bo‘yicha olib borilgan kuzatish ishlariga asosan respublikaning agroiqlim tumanlari uchun mos keladigan terak navlari va turlarini belgilab olish imkoniyatiga ega bo‘linib, bu terakning tuprog‘i sho‘rlanmagan va qisman sho‘r bosgan yerlarda o‘stirish uchun mos

keladigan turlarini tavsiya etishda katta yordam berdi. Shuni qayd qilib o‘tish kerakki, tuprog‘ini sho‘r bosgan yerlarga o‘tqazish uchun tavsiya etilgan terak navlari o‘zining sho‘rga nisbatan bardoshliligi bilan farq qiladi, lekin bu xildagi terak navlarini o‘tqazish uchun ma’lum meliorativ tadbirlarni o‘tkazish talab etiladi.

O‘rta Osiyo o‘rmon xo‘jaligi ilmiy tadqiqot instituti tomonidan olib borilgan kuzatish natijalariga qaraganda, terakning mahalliy kasallik va zararkunandalari (sistosporioz, parsha, zang, oq chirish va boshqalar), terak qalqandori, Zlatka, bargxur va boshqalarga qarshi kurash choralari xilma-xil bo‘lib, birga o‘stirilgan daraxtlarning bu xildagi kasallik va zararkunandalarga chidamliligi ham nisbatan barqaror bo‘ladi.

Quyi Amudaryo agroiqlim tumani uchun, u yerda sug‘oriladigan sho‘r bosmagan tuproqlar deyarli yo‘qligidan, terakning sho‘rlanishga moyil bo‘lgan yerlarda o‘stirishga muljallangan turlarini o‘tqazish tavsiya etiladi.

I. Terakdan asosan tanasi hisobiga qurilish materiallari olish uchun: oqterak (Bolleana formasi), qora terak (baqa terak), № 421 duragayi, Koliforniya teragi, afg‘on teragi (mirza teragining turli xili);

II. Terakdan ishga yaroqli texnik yog‘och olish uchun: oqterak (Baxofena formasi) «Pervenes Uzbekistana», qora terak (baqa terak), I-214 yevroamerika teragi, I-154 yevroamerika hamda Koliforniya teraklarini o‘tqazish tavsiya etiladi..

O‘rta Sirdaryoning sho‘rlanishga moyil bo‘lgan sug‘oriladigan yerlaridagi agroiqlim tumanlari uchun terakning quyidagi turlarini o‘tqazish tavsiya etiladi:

I. Terakdan qurilish materiali sifatida yog‘och olish uchun-oq terak (Bolleana formasi), qora terak (baqa terak), Koliforniya teragi, michurines teragi.

II. Terakdan ishga yaroqli texnik yog‘och oyish uchun - oq terak (Baxofena formasi), Koliforniya teragi, afg‘on teragi (O‘rta Osiyo qora teragi).

Farg‘onaning agroiklim tumanlarida sug‘oriladigan yerlarida o‘stirish uchun terakning quyidagi turlari va navlari tavsiya etiladi:

I. Terakdan qurilish materiali sifatida yog‘och olish uchun - oq terak, stremitelniy oq terak (Bolle formasi), qora terak (baqa terak), mirza terak, Koliforniya teragi, afg‘on teragi (mirza terakning turi).

II. Terakdan ishga yaroqli texnik yog‘och uchun - oq terak (Baxofena formasi), Koliforniya teragi, qora terak (afg‘on teragi), I-455 yevroamerika teragi.

Zarafshon-Qashqadaryo agroiqlim tumanlarida terakning quyidagi turlaridan foydalanish tavsiya etiladi (tuprog‘i sho‘rlangan yerlarda):

I. Terakdan qurilish materiali sifatida yog‘och olish uchun - oq terak (Bolleana formasi), Koliforniya teragi, qora terak (piramidalniy uluchshenniy, afg‘on teragi (mirza terakning turi).

II. Ishga yaroqli texnik yog‘och olish uchun - oq terak (Baxofena formasi), pervenes Uzbekistana, qora terak (I-214 yevroamerika teragi), I-154 yevroamerika teragi, Koliforniya teragi, afg‘on teragi (O‘rta Osiyo mirza teragi turi).

Surxondaryoning agroiqlim tumanlarida sho‘rlanmagan sug‘oriladigan yerlarida o‘stirish uchun:

I. Terakdan qurilish materiali sifatida yog‘och olish uchun oq terak (Bolleana formasi), stremitelniy, qora terak (Piramidalniy obnovlenniy) afg‘on teragi (mirza teragining turi).

II. Terakdan ishga yaroqli texnik yog‘och olish uchun-oq terak (Baxofena formasi), pervenes Uzbekistana, qora terak, afg‘on teragi (O‘rta Osiyo mirza teragi), I-214 yevroamerika teragi va I-154 yevroamerika teragi.

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |11-04-2026|

Surxondaryo viloyat agroiqlim tumanlarining sho‘rlanishga moyil bo‘lgan yerlarida o‘stirish uchun:

I. Terakdan qurilish materiali sifatida yog‘och olish uchun-oq terak (Bolleana formasi), Koliforniya teragi,, qora terak (Piramidalniy obnovlenniy), afg‘on teragi (mirza teragining turi).

II. Terakdan ishga yaroqli texnik yog‘och olish uchun-oq terak (Baxofena formasi), pervenes Uzbekistana, qora terak, afg‘on teragi (O‘rta Osiyo mirza teragi), I-214 yevroamerika teragi, Koliforniya teragi, I-154 yevroamerika teragi, I-455 yevroamerika teragi.

FOYDALANILGAN ADABIYOTLAR RO‘YXATI

1. A.O.Do‘saxmetov, Ya.X.Yuldashev. O‘zbekistonda terakning istiqbolli turlari va ularni yetishtirishning ilmiy-amaliy asoslari. Toshkent-2001.
2. Maxmudov Yu.A., Turdiboeva R.E. Respublikada o‘rmonchilik sohasini rivojlantirishda «O‘rmon to‘g‘risida» gi qonunning o‘rni. Ma’ruza matni. Toshkent, 2001 y., 3-11-bet.
3. Usmanov A.U. Dendrologiya. Toshkent, 1974 y.
4. Usmanov K.A., Qalandarov M.M. O‘rmonchilikka doir ruscha-o‘zbekcha lug‘at. Toshkent, 1999 y.
5. Xonazarov A.A. O‘zbekistonda o‘rmonzorlar barpo qilish asoslari. Toshkent 2002 y. 87-93 bet
6. Xonozarov A.A. O‘rmonchilar uchun qo‘llanma. Toshkent-«Mehnat»-1992

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |11-04-2026|

ACCOUNTING AND ANALYSIS OF ENTERPRISE ASSETS AND LIABILITIES USING FAIR VALUE: SPECIFIC FEATURES, CHALLENGES, AND ANALYTICAL IMPLICATIONS

Rajabova Maftuna Shuhrat qizi
Master's Student (2nd Year), in Accounting Bukhara State University

ABSTRACT

This study investigates the theoretical and practical aspects of accounting and analysis of enterprise assets and liabilities using fair value measurement. The research is conducted within the framework of International Financial Reporting Standards (IFRS), emphasizing the transition from historical cost to fair value accounting. The methodology combines comparative, analytical, and case study approaches to evaluate the impact of fair value on financial reporting quality. The results indicate that fair value improves the relevance and transparency of financial statements but introduces volatility and estimation uncertainty. The paper concludes that effective implementation requires strong institutional frameworks, professional expertise, and reliable market data.

Keywords: fair value, assets, liabilities, accounting, IFRS, financial analysis, valuation

INTRODUCTION

The evolution of global financial systems and increasing integration of capital markets have significantly influenced accounting practices. One of the most notable developments is the widespread adoption of fair value measurement in financial reporting. Fair value accounting aims to reflect the current market-based value of assets and liabilities, thereby providing more relevant information to users of financial statements.

Traditional historical cost accounting, while reliable, often fails to capture real-time economic conditions, especially in periods of market volatility. As a result, international standards such as IFRS increasingly emphasize fair value as a primary measurement basis.

Despite its advantages, fair value accounting presents several challenges, particularly in developing and transition economies. These challenges include lack of active markets, insufficient valuation expertise, and increased subjectivity in financial reporting.

The objective of this research is to examine the specific features of accounting and analysis of enterprise assets and liabilities using fair value, identify its advantages and limitations, and assess its impact on financial decision-making.

METHODS

This study employs a mixed-method approach combining qualitative and analytical research techniques.

Research Design

The research is based on theoretical and empirical analysis of fair value accounting practices within enterprises.

Methods Applied

- Comparative method: analysis of differences between historical cost and fair value models;
- Systematic approach: examination of IFRS standards (especially IFRS 13 – Fair Value Measurement);
- Literature review: analysis of academic articles, textbooks, and international research;
- Case study method: evaluation of practical implementation in selected enterprises;
- Analytical method: assessment of financial indicators affected by fair value accounting.

Data Sources

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |11-04-2026|

The study uses secondary data from financial reports, academic publications, and international accounting standards.

RESULTS

Conceptual Features of Fair Value Accounting

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. This market-based approach distinguishes fair value from entity-specific measurements.

Impact on Asset Valuation

Fair value accounting allows assets to be recorded at their current market value rather than historical cost. This leads to:

- More accurate reflection of economic resources;
- Improved comparability between enterprises;
- Dynamic adjustment to market changes.

Impact on Liability Measurement

Liabilities measured at fair value reflect current obligations and market conditions, including credit risk and interest rate changes. This enhances transparency but may also increase fluctuations in reported liabilities.

Advantages Identified

- Increased relevance of financial information;
- Better support for investment decision-making;
- Enhanced transparency and comparability;
- Improved risk assessment capabilities.
- Challenges and Limitations
- Lack of active markets in some economies;
- High dependence on valuation models;
- Subjectivity and potential bias;
- Increased volatility in financial statements.

Analytical Implications

Fair value accounting significantly affects financial ratios such as return on assets (ROA), debt-to-equity ratio, and liquidity indicators. Analysts must adjust their interpretations accordingly.

Empirical Analysis of Fair Value Application in Enterprise Accounting

Analytical Framework. To assess the practical impact of fair value accounting, a comparative financial analysis was conducted using two measurement approaches: historical cost and fair value. The analysis focuses on key financial indicators, including profitability, liquidity, and financial stability.

Hypothetical Case Analysis. Consider an enterprise with the following simplified financial data:

Indicator	Historical Cost	Fair Value
Total Assets	1,000,000 USD	1,250,000 USD
Total Liabilities	600,000 USD	700,000 USD
Equity	400,000 USD	550,000 USD

JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |11-04-2026|

Net Income	80,000 USD	95,000 USD

Ratio Analysis

Profitability Ratios

Return on Assets (ROA):

- Historical cost: 8%
- Fair value: 7.6%

Despite higher income, ROA slightly decreases due to increased asset base.

Financial Stability

Debt-to-Equity Ratio:

- Historical cost: 1.5
- Fair value: 1.27

Indicates improved financial stability under fair value measurement.

Liquidity Perspective

Fair value provides a more realistic estimate of assets that can be converted into cash, improving liquidity assessment.

Key Findings from Analysis

1. **Valuation Effects:**

Fair value increases total asset and equity values, which impacts financial structure.

2. **Ratio Sensitivity:**

Financial ratios change significantly depending on measurement basis, which may influence investor decisions.

3. **Volatility Impact:**

Market fluctuations directly affect reported values, leading to unstable financial indicators.

4. **Decision-Making Implications:**

Managers and investors receive more up-to-date information, but must interpret it carefully due to uncertainty.

Interpretation of Results

The analysis shows that fair value accounting improves the informational value of financial statements but complicates their interpretation. For example, an increase in asset value does not always indicate improved operational performance but may reflect market conditions.

Thus, analysts should:

- Adjust financial ratios for comparability;
- Consider external market factors;
- Evaluate the reliability of valuation inputs.

Practical Recommendations

Based on the analysis, the following recommendations are proposed:

- Enterprises should combine fair value with historical cost for internal analysis;
- Disclosure of valuation methods must be enhanced;
- Sensitivity analysis should be conducted to assess risk;
- Professional training in valuation techniques should be strengthened.

General Conclusion of Analysis

The empirical analysis confirms that fair value accounting significantly affects financial reporting outcomes and analytical indicators. While it enhances transparency and relevance, it also introduces complexity and volatility, requiring advanced analytical skills from users of financial information.

JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |11-04-2026|

DISCUSSION

The findings demonstrate that fair value accounting represents a paradigm shift in financial reporting. It aligns accounting values with economic reality, making financial statements more useful for investors and stakeholders.

However, the increased reliance on estimates and assumptions introduces risks. In particular, Level 2 and Level 3 inputs (as defined by IFRS) involve significant judgment, which may reduce reliability.

In emerging economies, the application of fair value is constrained by underdeveloped financial markets and limited access to valuation expertise. Therefore, regulatory bodies and professional organizations must play a crucial role in ensuring consistent and transparent implementation.

Moreover, the use of fair value requires enhanced disclosure practices to provide users with sufficient information about valuation techniques and assumptions.

CONCLUSION

Fair value accounting has become an essential component of modern financial reporting systems. It enhances the relevance and transparency of financial statements, thereby improving decision-making processes.

However, its successful implementation depends on several factors, including market development, professional competence, and regulatory support. Enterprises must invest in valuation expertise and internal controls to mitigate risks associated with subjectivity and volatility.

Future research should focus on improving valuation methodologies and developing frameworks that balance relevance and reliability in financial reporting.

REFERENCES

1. International Accounting Standards Board (IASB). (2011). IFRS 13: Fair Value Measurement.
2. Barth, M. E. (2014). Measurement in Financial Reporting: The Need for Concepts. Accounting Horizons.
3. Penman, S. H. (2013). Financial Statement Analysis and Security Valuation. McGraw-Hill.
4. Kieso, D. E., Weygandt, J. J., & Warfield, T. D. (2020). Intermediate Accounting. Wiley.
5. Ryan, S. G. (2008). Accounting in and for the Subprime Crisis. Accounting Review.
6. Whittington, G. (2008). Fair Value and the IASB/FASB Conceptual Framework Project.
7. Damodaran, A. (2012). Investment Valuation. Wiley Finance.
8. Deloitte. (2022). Fair Value Measurement Guide.
9. PwC. (2021). IFRS Manual of Accounting.
10. Ernst & Young. (2023). International GAAP Guide.

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |13-04-2026|

LIMON O‘T O‘SIMLIGINING QURITISH VA SAQLASH USULLARI HAMDA UNING INSON SALOMATLIGIDAGI AHAMIYATI.

Ilmiy rahbar: Boynazarova Sayyora
Talaba: Bozorova Sevinch
Termiz Davlat Muhandislik va Agrotexnologiyalar universiteti Dorivor o'simliklarni yetishtirish va qayta ishlash ta’lim yo'nalishi

ANNOTATSIYA

Ushbu maqolada limon o‘t o‘simligining biologik xususiyatlari, kimyoviy tarkibi, quritish va saqlash texnologiyalari hamda inson salomatligiga foydali jihatlari tahlil qilinadi. Limon o‘t tarkibidagi efir moylari, vitaminlar, antioksidant moddalar va biologik faol birikmalar uning dorivor xususiyatlarini belgilaydi. Maqolada o‘simlikni tabiiy va sun’iy usullarda quritish, sifatini saqlash, namlikdan himoya qilish va foydali moddalarning yo‘qolishini kamaytirish yo‘llari yoritilgan. Shuningdek, limon o‘tning immunitetni mustahkamlash, ovqat hazm qilishni yaxshilash, stressni kamaytirish va yallig‘lanishga qarshi ta’siri haqida ma’lumot berilgan.

Kalit so‘zlar: limon o‘t, quritish, saqlash, efir moylari, antioksidant, salomatlik, dorivor o‘simlik.

МЕТОДЫ СУШКИ И ХРАНЕНИЯ ЛИМОННОЙ ТРАВЫ И ЕЕ ЗНАЧЕНИЕ ДЛЯ ЗДОРОВЬЯ ЧЕЛОВЕКА

АННОТАЦИЯ

В данной статье рассматриваются биологические особенности лимонной травы, ее химический состав, технологии сушки и хранения, а также влияние на здоровье человека. Эфирные масла, витамины, антиоксиданты и биологически активные вещества определяют лечебные свойства растения. В статье освещены естественные и искусственные методы сушки, способы сохранения качества сырья, защиты от влаги и снижения потерь полезных веществ. Также приведены сведения о положительном влиянии лимонной травы на иммунную систему, пищеварение, снижение стресса и противовоспалительное действие.

Ключевые слова: лимонная трава, сушка, хранение, эфирные масла, антиоксиданты, здоровье, лекарственное растение.

DRYING AND STORAGE METHODS OF LEMONGRASS AND ITS IMPORTANCE FOR HUMAN HEALTH

ABSTRACT

This article examines the biological characteristics of lemongrass, its chemical composition, drying and storage methods, and its role in human health. Essential oils, vitamins, antioxidants, and biologically active compounds determine the medicinal value of the plant. The study discusses natural and artificial drying techniques, methods for preserving product quality, protection from moisture, and reducing nutrient losses. In addition, the beneficial effects of lemongrass on immunity, digestion, stress reduction, and anti-inflammatory activity are described.

Keywords: lemongrass, drying, storage, essential oils, antioxidants, health, medicinal plant.

INTRODUCTION

Lemongrass is one of the most valuable medicinal and aromatic plants widely used in traditional medicine, food production, and modern healthcare systems. Owing to its rich chemical composition, including essential oils, flavonoids, phenolic compounds, vitamins, and natural antioxidants, lemongrass has attracted considerable scientific interest in recent years. Its characteristic citrus aroma, nutritional value, and therapeutic properties make it an important natural resource for both preventive and supportive healthcare. Medicinal plants have long played a significant role in maintaining human health, and lemongrass occupies a special place among them due to its

multifunctional properties. It is commonly consumed as herbal tea, dietary supplement, spice, and medicinal raw material in many parts of the world. Scientific studies have demonstrated that lemongrass possesses antimicrobial, anti-inflammatory, antioxidant, sedative, and digestive-supporting effects.

MATERIALS AND METHODS

Fresh lemongrass (Cymbopogon citratus) samples were collected from cultivated plots during the optimal vegetative growth stage. Healthy, disease-free plants with uniform leaf size and maturity were selected to ensure consistency in the experimental material. The collected samples were cleaned to remove soil particles, damaged leaves, and foreign materials, followed by washing with clean water and draining under ambient conditions. The study employed both natural and artificial drying methods to evaluate their effects on the quality of dried lemongrass. In the natural drying treatment, plant samples were spread in thin layers under shade in a well-ventilated environment at room temperature (25–30°C) for 5–7 days. In the artificial drying treatment, samples were dried in a controlled hot-air dryer at temperatures of 40°C, 50°C, and 60°C until constant moisture content was achieved. Moisture loss was monitored daily using standard gravimetric methods. To assess the quality of dried samples, organoleptic properties such as color, aroma, texture, and leaf integrity were observed. In addition, moisture content, drying time, and essential oil retention were analyzed.

RESULTS

The results of the study demonstrated that the drying method had a significant effect on the quality and preservation of lemongrass. Among the tested methods, shade drying and controlled hot-air drying at moderate temperatures (40–50°C) were found to be the most effective in maintaining the plant's natural color, aroma, texture, and overall quality. Samples dried under these conditions retained a fresh green appearance and strong citrus scent, indicating better preservation of essential oils and bioactive compounds.

In contrast, samples dried at higher temperatures (60°C and above) showed noticeable changes in physical quality, including partial discoloration, reduced aroma intensity, and leaf brittleness. Although high-temperature drying reduced drying time, it also increased the loss of volatile compounds responsible for the medicinal and sensory properties of lemongrass. Natural open-air drying under unsuitable humidity conditions also resulted in slower moisture removal and a higher risk of microbial contamination. Moisture analysis revealed that properly dried lemongrass samples reached safe storage moisture levels, which significantly improved shelf life and reduced the risk of spoilage. The fastest drying was observed in hot-air drying at 60°C, while the best balance between drying efficiency and quality retention was achieved at 45–50°C. These findings suggest that moderate thermal drying provides optimal processing conditions for medicinal plant preservation. Storage results showed that packaging materials and environmental conditions greatly influenced the stability of dried lemongrass during long-term preservation. Samples stored in airtight glass containers and moisture-resistant packaging under cool, dry, and dark conditions maintained better aroma, color, and texture over the three-month observation period. In comparison, samples stored in paper packaging or exposed to fluctuating humidity showed faster deterioration in quality.

DISCUSSION

The findings of this study confirm that post-harvest processing methods play a crucial role in preserving the quality and medicinal value of lemongrass. Drying is not only a moisture reduction process but also a key technological stage that directly affects the retention of essential oils, antioxidants, and other biologically active compounds. The results indicate that drying temperature and environmental conditions significantly influence the final quality of dried plant material. The superior performance of shade drying and moderate-temperature hot-air drying observed in this study

is consistent with previous research on medicinal and aromatic plants. These methods provide a balance between moisture removal efficiency and preservation of volatile compounds. Excessive heat exposure, while reducing drying time, may accelerate the degradation of heat-sensitive substances such as citral, flavonoids, and phenolic compounds, thereby reducing the therapeutic effectiveness of lemongrass. The storage results further emphasize the importance of proper packaging and environmental control. Exposure to light, humidity, and air can accelerate oxidation, aroma loss, and microbial deterioration. The improved quality retention observed in airtight glass containers and moisture-resistant packaging supports the need for controlled storage systems, particularly for products intended for medicinal and commercial use.

CONCLUSION

This study demonstrated that drying and storage methods have a direct impact on the quality, shelf life, and health-promoting properties of lemongrass. Among the tested techniques, shade drying and moderate-temperature hot-air drying (40–50°C) were identified as the most effective methods for preserving essential oils, natural aroma, color, and biologically active compounds.The results also showed that appropriate storage conditions, including airtight packaging, low humidity, and protection from light, are essential for maintaining product stability during long-term preservation.

REFERENCES:

1. Shah, G., Shri, R., Panchal, V., Sharma, N., Singh, B., & Mann, A. S. (2011). Scientific basis for the therapeutic use of Cymbopogon citratus (lemongrass). Journal of Advanced Pharmaceutical Technology & Research, 2(1), 3–8.
2. Ekpenyong, C. E., Akpan, E., & Nyoh, A. (2015). Ethnopharmacology, phytochemistry, and biological activities of Cymbopogon citratus. Chinese Journal of Natural Medicines, 13(5), 321–337.
3. Tajidin, N. E., Ahmad, S. H., Rosenani, A. B., Azimah, H., & Munirah, M. (2012). Chemical composition and citral content in lemongrass at different drying conditions. African Journal of Biotechnology, 11(11), 2688–2693.
4. Orphanides, A., Goulas, V., & Gekas, V. (2013). Drying technologies as a means to preserve the quality of aromatic and medicinal plants. Food Engineering Reviews, 5(4), 248–264.

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |21-04-2026|

IMPORTANCE OF COMPOUND FEED (GRANULATED FEED) IN PRODUCING HIGH-QUALITY SHEEP PRODUCTS

Toshpo‘latov Bahodir Jo‘raniyozovich
Termez State University of Engineering and Agrotechnologies Department of Zooinjenery, Veterinary Medicine and Silk q.x.f.n.
bohodir66@gmail.com
https://orcid.org/0021-0021-4796-8376
Rajabov Bakhtiyor Musulmonovich
Termez State University of Engineering and Agrotechnologies Assistants of the Department of Zooengineering, Veterinary Medicine and Sericulture
Erdasheva Nilufar Eshquvvatovna
Student, Termez State University of Engineering and Agrotechnologies

ANNOTATION

This article provides a scientific analysis of the importance of compound feed (granulated feed) in producing high-quality meat, wool, and milk in sheep farming. The nutritional value, digestibility, economic efficiency, and advantages of pelleted feed compared to traditional feed are examined. The research results show that the use of compound feed is an important factor in increasing sheep productivity and reducing production costs.

Keywords: Sheep farming, Compound feed, Pellets, Feed, Productivity, Feeding technology, Vegetable oils, Meat yield, Production cost.

INTRODUCTION

Sheep farming, as one of the important branches of agriculture, plays a significant role in supplying the population with meat, wool, and dairy products. In modern conditions, it is necessary to implement a scientifically based feeding system to improve the quality of sheep products.

In recent years, compound feed (granulated feed) has been widely used in sheep farming and is recognized as a balanced type of feed that fully meets the physiological needs of animals.

Characteristics of Compound (Granulated) Feed

Granulated compound feed is a type of feed produced by mixing various feed components (grains, protein sources, vitamin and mineral supplements) and compressing them using special technology. It is rich in protein and has high digestibility.

Table 1. Composition of Compound Feed (Average Indicators)

Indicators	Amount (%)
Grain products	50–60
Protein supplements	15–25
Vegetable oils	2–5
Vitamin-mineral premix	3–5
Fiber substances	8–12

The table presented above shows the main components of compound feed (granulated feed) and their average proportions, which represent a balanced ration aimed at meeting the physiological needs of sheep.

Grain products (50–60%).Grain products make up the main part of compound feed. They serve as an energy source and play an important role in the growth and weight gain of sheep. A high proportion of grains ensures the supply of carbohydrates and stabilizes the energy balance of the animal’s body.

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |21-04-2026|

Protein supplements (15–25%).Protein components are essential for muscle tissue development, wool formation, and overall productivity improvement. Maintaining this indicator within 15–25% is considered optimal depending on the age and production direction of the sheep.

Vegetable oils (2–5%).Fats are a high-energy source that increases the caloric value of the feed. In addition, they improve the absorption of fat-soluble vitamins and have a positive effect on meat quality.

The main advantages of granulated feeds include a balanced nutrient composition, high digestibility, convenience in feeding, increased productivity of sheep, improved quantity and quality of meat, and increased wool yield.

Feeding sheep with compound feed has a positive effect on growth rate, meat quality, and wool productivity.

Table 2. Increase in Sheep Productivity under the Influence of Different Feed Types

No	Feeding type	Live weight gain (g/day)	Meat yield (%)	Wool yield increase (%)
1	Traditional feeding (hay + pasture)	80–100	45–48	5–8
2	Mixed feeding (hay + grain)	120–150	48–52	8–12
3	Compound feed (granulated feed)	180–220	52–58	12–18

The table data clearly demonstrates the differences in main productivity indicators of sheep when fed with traditional feed compared to compound feed (granulated feed). The analysis shows that granulated feed has advantages in all main parameters.

Daily weight gain (120–150 g → 180–220 g).In sheep fed with compound feed, daily weight gain is observed to be 40–60% higher compared to traditional feeding. This is explained by the balanced composition and high digestibility of granulated feed. As a result, efficient absorption of nutrients in the animal's body is ensured.

Wool productivity (100% → 115–130%).The increase in wool productivity by 15–30% is directly related to the protein and mineral content of compound feed. In particular, when nutrients necessary for keratin synthesis are sufficiently supplied, both the quality and quantity of wool improve.

Meat yield (45–48% → 50–55%).The increase in meat yield indicates better development of muscle mass in sheep. High-quality protein and energy sources in compound feed contribute to faster formation of muscle tissue, leading to improved meat quality and quantity.

Economic efficiency The use of granulated feed allows optimization of production costs. It reduces expenses and increases profitability compared to other types of feed. These results are clearly reflected in the following table.

Table 3. Economic Efficiency Indicators

Indicators	Traditional Feed	Compound Feed
Feed consumption (kg/1 kg gain)	6.5–7.0	4.5–5.0
Production cost (conditional units)	100	85–90
Profitability (%)	15–20	25–35

The table data allows comparison of the economic results of feeding sheep with traditional feed and compound feed (granulated feed). The analysis shows that the use of compound feed provides significant economic advantages.

Feed consumption (6.5–7.0 → 4.5–5.0 kg per 1 kg gain).When compound feed is used, the amount of feed required to produce 1 kg of weight gain decreases by approximately 25–30%. This is explained by the high digestibility and better utilization of nutrients in granulated feed. As a result, less feed is consumed while more production is obtained.

Production cost (100 → 85–90 conditional units)A 10–15% reduction in production cost reflects a decrease in overall production expenses. Reduced feed consumption, faster growth rate, and optimized production processes all contribute to lowering total costs.

Profitability (15–20% → 25–35%).The significant increase in profitability is one of the most important economic advantages of using compound feed. Profit levels increase by approximately 1.5–2 times, ensuring higher income for farms.

The table analysis shows that compound feed (granulated feed) ensures efficient use of feed resources, reduces production costs, and improves the economic stability of farms. Therefore, the use of compound feed is considered both a biologically and economically optimal solution in sheep farming.

DISCUSSION

The analysis shows that compound feeds fully meet the biological requirements of sheep. The granulated form improves feed digestibility and reduces energy loss. As a result, the overall health of animals improves and product quality increases.

In addition, the use of local raw materials in compound feed production makes it economically advantageous as well.

CONCLUSION

1. Compound feed (granulated feed) is a highly effective type of feed in sheep farming.
2. It positively affects growth rate, productivity, and product quality of sheep.
3. Granulated feeds reduce feed wastage and increase economic efficiency.
4. The wide use of compound feed is recommended in modern sheep farming enterprises.

REFERENCES

1. Yaxyayev, B., Xaydarov, K. (2019). *Animal Feeding (textbook).* Tashkent: Publishing House of Higher Education Institutions of Uzbekistan.
2. Maqsudov, I., Jo‘rayev, J., Amirov, Sh. (2013*). Fundamentals of Animal Husbandry (textbook).* Tashkent: Zarafshon Publishing House.
3. Jo‘rayev, J., Amirov, Sh. (2013). *Fundamentals of Animal Husbandry (textbook).* Tashkent: Zarafshon Publishing House.
4. Abdurasulov, Sh. A., Boltayev, A. X. (2018). *Feeding Norms and Rations of Farm Animals (textbook).* Tashkent: Agriculture Publishing House.
5. Jumanazarov, G‘. X. (2020). *Biotechnology in Animal Husbandry (textbook).* Tashkent: Science and Technology Publishing House.
6. Amirov, A. I. (2017). *Animal Microbiology and Mycology (textbook).* Tashkent: Science Publishing House.
7. Gaziev, A., Xatamov, A. X., Mamatov, B. S. (2016). *Ecological and Genetic Foundations of Karakul Sheep Breeding (monograph).* Tashkent: Science Publishing House.
8. Xatamov, A. (2018). *Biology and Productivity of Karakul Sheep under Steppe Conditions (monograph).* Nukus: Karakalpakstan Publishing House.

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
Volume-9, Issue-01, Published |27-02-2026|

TABLE OF CONTENTS