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SAFEGUARDING REPUTATION: UNDERSTANDING AND MITIGATING KEY RISKS IN BUSINESS

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In the intricate tapestry of the business world, reputation reigns supreme as a linchpin of success. A company's reputation is not merely a reflection of its products or services; rather, it embodies the trust, credibility, and integrity that underpin its interactions with stakeholders. However, maintaining a pristine reputation is no small feat, particularly in an era marked by heightened scrutiny and rapid dissemination of information. From ethical lapses to product deficiencies, a multitude of factors can chip away at a company's reputation, often with profound consequences. In this article, we delve into the key culprits that pose a threat to a company's reputation and explore strategies for mitigating these risks. By understanding the challenges and embracing a proactive approach to reputation management, companies can fortify their standing in the marketplace and pave the way for sustained success in an ever-evolving landscape.

Ethical Lapses and Scandals: Ethical lapses and scandals often arise from a combination of factors within an organization. One primary reason is the pressure to achieve results, where employees may face unrealistic targets or deadlines, leading them to resort to unethical practices to meet expectations. Additionally, a lack of ethical leadership contributes to the normalization of unethical behavior within the organizational culture. When leaders fail to prioritize ethics and integrity, it sets a detrimental tone for the entire organization, making employees less inclined to adhere to ethical standards.

Poor Product Quality or Service: Poor product quality or service can stem from various factors within an organization, leading to negative consequences for both the company and its stakeholders. One reason for this issue may be inadequate quality control processes or insufficient investment in research and development. Without robust quality assurance measures in place, products may suffer from defects, safety concerns, or subpar performance, ultimately leading to dissatisfaction among customers and tarnishing the company's reputation. Additionally, insufficient training or supervision of employees can result in



inconsistent service delivery, further exacerbating the problem of poor quality or service.

The repercussions of poor product quality or service can be significant, impacting the company's bottom line and its relationships with customers. Firstly, it can lead to a decline in customer satisfaction and loyalty, as customers are more likely to switch to competitors offering higher quality products or services. Negative word-of-mouth can spread quickly in today's interconnected world, further damaging the company's reputation and eroding market share. Moreover, poor quality or service may result in an increase in customer complaints, warranty claims, and product returns, leading to additional costs and operational inefficiencies for the organization.

Customer Service Failures: Customer service failures pose a significant threat to a company's reputation and customer satisfaction. One of the main reasons for such failures is a lack of emphasis on customer-centricity within the organizational culture. When companies prioritize other metrics such as cost-cutting or efficiency over delivering exceptional customer service, it can lead to neglect in addressing customer needs and concerns promptly and effectively. Additionally, inadequate training or

support for frontline staff can contribute to customer service failures, as employees may lack the necessary skills or resources to handle customer inquiries or complaints appropriately.

The consequences of customer service failures can be detrimental to a company's reputation and bottom line. Firstly, dissatisfied customers are more likely to share their negative experiences with others, whether through word-of-mouth, online reviews, or social media platforms, amplifying the damage to the company's reputation. This negative publicity can lead to a loss of trust and credibility among existing and potential customers, resulting in decreased customer retention rates and a decline in revenue. Moreover, customer service failures can also impact employee morale and job satisfaction, as frontline staff may bear the brunt of customer complaints and frustration, leading to decreased productivity and increased turnover rates.

Mismanagement of Crisis Situations: Mismanagement of crisis situations can have far-reaching consequences for companies, stemming from various underlying factors. One primary reason for such mismanagement is a lack of preparedness and proactive planning within organizations. When companies fail to anticipate potential crises or establish robust crisis management protocols, they may



find themselves ill-equipped to respond effectively when crises arise. Additionally, organizational inertia or complacency can hinder swift and decisive action during times of crisis, further exacerbating the situation and prolonging the recovery process.

The consequences of mismanaging crisis situations can be severe, impacting not only the company's reputation but also its financial stability and stakeholder trust. Firstly, delayed or ineffective crisis responses can lead to a loss of credibility and trust among stakeholders, including customers, investors, and employees. Negative media coverage and public scrutiny can further damage the company's reputation, resulting in decreased market value and investor confidence. Moreover, failure to address crises promptly and transparently may result in legal and regulatory repercussions, exposing the company to fines, litigation, and other financial penalties.

Lack of Transparency and Accountability: Lack of transparency and accountability within organizations can stem from various factors, contributing to a range of negative outcomes. One

primary reason for this issue is a culture of secrecy or resistance to openness within the organization. When companies prioritize confidentiality over transparency, they may withhold information from stakeholders, leading to a lack of trust and credibility. Additionally, insufficient accountability mechanisms and oversight can enable unethical behavior and misconduct to go unchecked, further eroding trust and undermining organizational integrity.

The consequences of a lack of transparency and accountability can be significant, impacting the company's reputation, stakeholder relationships, and long-term viability. Firstly, it can lead to a loss of trust and credibility among stakeholders, including customers, employees, investors, and regulatory bodies. Without transparent communication and accountability mechanisms in place, stakeholders may perceive the company as untrustworthy or opaque, damaging its reputation and market standing. Moreover, a lack of accountability can foster a culture of impunity, where unethical behavior is tolerated or even rewarded, posing risks to the company's ethical integrity and regulatory compliance.

Environmental and Social Irresponsibility: Environmental and social irresponsibility within organizations can arise from various factors, leading to detrimental consequences for both the company and its stakeholders. One primary reason for this issue is a lack of commitment to sustainability and corporate social responsibility (CSR) principles. When companies prioritize profit over



environmental conservation or social welfare, they may engage in practices that harm the environment, exploit labor, or disregard community well-being. Additionally, inadequate awareness or understanding of environmental and social issues within the organization can contribute to a lack of action or investment in responsible practices, further exacerbating the problem of irresponsibility.

The repercussions of environmental and social irresponsibility can be severe, impacting ecosystems, communities, and the company's reputation. Firstly, it can lead to environmental degradation, including pollution, habitat destruction, and resource depletion, harming ecosystems and biodiversity. Socially irresponsible practices, such as labor abuses or disregard for human rights, can also result in negative impacts on communities, including exploitation, displacement, and health risks. Moreover, environmental and social irresponsibility can trigger backlash from consumers, activists, and regulatory bodies, damaging the company's reputation and market standing. Increased scrutiny and public pressure may result in boycotts, protests, or regulatory action, further tarnishing the company's image and potentially leading to legal and financial repercussions.

Cultural and Workplace Issues: Cultural and workplace issues within organizations can stem from various factors, creating challenges that affect employee morale, productivity, and the company's reputation. One primary reason for these issues is a lack of diversity, equity, and inclusion (DEI) initiatives within the organization. When companies fail to prioritize diversity and create an inclusive work environment, it can lead to feelings of exclusion, discrimination, and bias among employees. Additionally, toxic behaviors such as harassment, bullying, or microaggressions can thrive in environments where there is a lack of accountability and support for employees' well-being, further exacerbating cultural and workplace issues.

The consequences of cultural and workplace issues can be significant, impacting employee satisfaction, retention, and organizational performance. Firstly, it can lead to decreased employee morale and engagement, as employees may feel undervalued or marginalized in the workplace. This can result in higher turnover rates, increased absenteeism, and decreased productivity, ultimately affecting the company's bottom line. Moreover, cultural and workplace issues can tarnish the company's reputation, both internally and externally, leading to negative perceptions among employees, customers, and prospective talent. In extreme cases, it can also result in legal liabilities, including lawsuits and regulatory fines, further damaging the company's credibility and financial standing.



Misaligned Values and Actions: Misaligned values and actions within organizations can occur when there is a disconnect between the stated values or principles of the company and the actual behavior exhibited by its leadership and employees. One primary reason for this discrepancy is a lack of clarity or consistency in communication regarding the organization's values and expectations. When leaders fail to articulate and reinforce core values effectively, it can lead to confusion, ambiguity, and conflicting priorities among employees. Additionally, pressures to prioritize short-term financial gains or meet performance targets may incentivize individuals to act in ways that are inconsistent with the organization's stated values, further contributing to misalignment between values and actions.

The consequences of misaligned values and actions can be detrimental to both the organization's reputation and its long-term sustainability. Firstly, it can erode trust and credibility among stakeholders, including customers, employees, investors, and the broader community. When there is a perception of inconsistency or hypocrisy in the organization's behavior, it can lead to skepticism, disillusionment, and a loss of confidence in its leadership and brand. Moreover, misaligned values and actions can result in internal discord and disengagement among employees, as they may feel disillusioned or demotivated by perceived discrepancies between what the organization espouses and how it actually operates. This can lead to decreased morale, increased turnover rates, and a decline in overall organizational performance.

To address misaligned values and actions effectively, organizations must take proactive steps to align their behaviors with their stated values and principles. This includes fostering a culture of integrity, accountability, and ethical conduct at all levels of the organization, starting with leadership. Leaders must lead by example, demonstrating a commitment to the organization's values through their actions and decisions. Additionally, organizations should prioritize transparency and open communication, ensuring that employees understand the rationale behind key decisions and how they align with the organization's values and objectives. Investing in values-based training and development programs can also help reinforce desired behaviors and foster a shared sense of purpose and identity among employees. By aligning values with actions and promoting a culture of integrity and authenticity, organizations can enhance their reputation, build trust with stakeholders, and drive long-term success and sustainability.

To sum up, the article delves into the critical factors that can undermine a company's reputation, spanning from ethical lapses and product deficiencies to



customer service failures and crisis mismanagement. It highlights the importance of proactive measures such as ethical leadership, robust quality control processes, and crisis preparedness in mitigating these risks. By prioritizing transparency, accountability, and ethical conduct, organizations can bolster stakeholder trust and safeguard their reputation in the competitive business landscape. Additionally, the article emphasizes the significance of addressing cultural and workplace issues, environmental and social irresponsibility, and misaligned values and actions to foster a more inclusive, sustainable, and ethically driven business environment.

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Magistral va o'pkalar ichi bronxi qon tomirlarining yoshga va gipodinamiya xolatiga bog'liqlik morfologik morfometrik ko'rsatkichlari

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Toshkent tibbiyot akademiyasi

Annotatsiya: Ushbu tadqiqotda magistral va o'pkalar ichidagi bronxi qon tomirlarining morfologik va morfometrik ko'rsatkichlari yoshga va gipodinamiya holatiga bog'liq ravishda tahlil qilingan. Tadqiqotda turli yosh guruhlaridagi shaxslarda gipodinamiya ta'sirida qon tomirlarining tuzilishi va o'zgarishlari o'rganilgan. Gipodinamiya, ya'ni jismoniy faollikning pasayishi, organizmda qator morfologik o'zgarishlarga olib kelishi mumkin, bu esa nafaqat yurak-qon tomir tizimiga, balki nafas olish tizimiga ham ta'sir qiladi. O'pkalar ichidagi bronxi qon tomirlarining morfometrik o'lchovlari yordamida ularning holati baholangan, bu esa klinik amaliyotda muhim ahamiyatga ega.

Kalit so'zlar: magistral qon tomirlari, o'pkalar, bronxi, morfologiya, morfometriya, yosh ta'siri, gipodinamiya, jismoniy faollik, yurak-qon tomir tizimi, nafas olish tizimi.

Abstract: In this study, morphological and morphometric indicators of bronchial blood vessels in the trunk and lungs were analyzed depending on age and hypodynamia. In the study, the structure and changes of blood vessels under the influence of hypodynamia were studied in individuals of different age groups. Hypodynamia, that is, a decrease in physical activity, can cause a number of morphological changes in the body, which affects not only the cardiovascular system, but also the respiratory system. Their condition was assessed using morphometric measurements of bronchial blood vessels inside the lungs, which is important in clinical practice.

Key words: trunk blood vessels, lungs, bronchus, morphology, morphometry, age effect, hypodynamia, physical activity, cardiovascular system, respiratory system.

Резюме: В работе проанализированы морфологические и морфометрические показатели сосудов бронхов туловища и легких в зависимости от возраста и гиподинамии. В ходе исследования были изучены строение и изменения кровеносных сосудов под влиянием гиподинамии у лиц разных возрастных групп. Гиподинамия, то есть снижение физической активности, может вызвать ряд морфологических изменений в организме,



которые затрагивают не только сердечно-сосудистую систему, но и дыхательную систему. Их состояние оценивалось с помощью морфометрических измерений бронхиальных сосудов внутри легких, что важно в клинической практике.

Ключевые слова: магистральные сосуды, легкие, бронхи, морфология, морфометрия, влияние возраста, гиподинамия, физическая активность, сердечно-сосудистая система, дыхательная система.

Kirish: Magistral va o'pkalar ichidagi bronxi qon tomirlarining morfologik va morfometrik ko'rsatkichlari, shuningdek, yoshga va gipodinamiya holatiga bog'liqligi haqida ma'lumot berish juda muhimdir. Ushbu sohalar, nafas olish tizimining normal va patologik holatlarini o'rganishda katta ahamiyatga ega.

Yoshga bog'liq o'zgarishlar:

1. Yosh bilan bog'liq morfologik o'zgarishlar:

- Yosh o'tgan sayin, bronxlarning elastiklik darajasi pasayadi.
- O'pkalar tuzilishi va qon tomirlarining kengayishi yoki torayishi mumkin.
- Qon tomirlarining devor qalinligi yoshga qarab o'zgaradi.

2. Morfometrik ko'rsatkichlar:

- O'pka to'qimalarida alveolalarning soni va hajmi yosh bilan o'zgaradi.
- Qon tomirlarining diametri va uzunligi ham yoshga bog'liq holda farqlanadi.

Gipodinamiya holati:

1. Gipodinamiya ta'siri:

- Gipodinamiya (jismoniy faollikning pasayishi) qon aylanish tizimiga salbiy ta'sir ko'rsatadi.

- Bronxlarning funksional qobiliyati kamayishi mumkin, bu esa nafas olish jarayoniga salbiy ta'sir qiladi.

2. Morfologik o'zgarishlar:

- Gipodinamiya natijasida qon tomirlari devorlari qalinlashishi yoki torayishi mumkin.



- O'pka parenkimasida to'qimalarning oksidlanish darajasi pasayishi kuzatiladi.

3. Morfometrik ko'rsatkichlar:

- Gipodinamik holatlar davomida alveolalar maydoni kamayishi, shuningdek, bronxlarning diametri o'zgarishi mumkin.

Ushbu ko'rsatkichlarni tahlil qilish orqali nafas olish tizimining holatini baholash va turli kasalliklarga qarshi kurashda samarali yo'nalishlarni belgilash mumkin. Yosh va gipodinamiya kabi omillarning ta'sirini tushunish, sog'liqni saqlash sohasidagi tadqiqotlarga yordam beradi hamda profilaktika chora-tadbirlarini ishlab chiqishda muhim ahamiyatga ega.

Asosiy qism: Mavzuning dolzarbligi, magistral va o'pkalar ichidagi bronxi qon tomirlarining morfologik va morfometrik ko'rsatkichlarini o'rganish bilan bog'liq. Ushbu soha bir necha sabablarga ko'ra muhimdir:

1. Sog'liqni saqlash: O'pka va bronxlarning anatomik va funksional holati, nafas olish tizimining samaradorligini belgilaydi. Yoshga ko'ra o'zgarishlar, shuningdek, gipodinamiya (jismoniy faollikning pasayishi) kabi holatlar nafas olish tizimiga ta'sir qilishi mumkin.

2. Kasalliklarni oldini olish: O'pkalar va bronxlarning morfologik o'zgarishlarini o'rganish, turli kasalliklar (masalan, obstruktiv kasalliklar, astma) rivojlanishini oldini olishda yordam berishi mumkin. Gipodinamiya holatida bu organlarda qanday o'zgarishlar sodir bo'lishini bilish muhimdir.

3. Morfometrika ahamiyati: Morfometrik tadqiqotlar orqali organlarning o'lchamlari va tuzilishini aniq baholash imkoniyati mavjud bo'ladi. Bu esa shifokorlarga diagnostika va davolash jarayonida aniq ma'lumotlarga asoslanib qaror qabul qilish imkonini beradi.

4. Yoshga bog'liq o'zgarishlar: Odam yoshiga qarab organizmda yuz beradigan morfologik o'zgarishlar — bu ilmiy tadqiqotlarda alohida e'tiborga olinadigan jihatdir. Yosh bilan bog'liq o'zgarishlarni tahlil qilish sog'lom yoshdagi hamda keksalardagi nafas olish tizimi salomatligini baholashda zarurdir.

Shu sababli, magistral va o'pkalar ichidagi bronxi qon tomirlarining morfologik morfometrik ko'rsatkichlari yoshga hamda gipodinamiya holatiga

bog'liq holda chuqur tadqiq etilishi kerak. Bu sohada olib boriladigan tadqiqotlar nafaqat ilmiy ahamiyatga ega, balki amaliy tibbiyotda ham foydali bo'lishi mumkin.

Ushbu tadqiqot magistral va o'pkalar ichidagi bronx qon tomirlarining morfologik va morfometrik ko'rsatkichlarini yoshga va gipodinamiya holatiga bog'liq holda o'rganishga qaratilgan. Gipodinamiya, ya'ni jismoniy faoliyatning pasayishi, organizmning turli tizimlariga salbiy ta'sir ko'rsatishi mumkin, jumladan, respirator tizimga ham. Tadqiqot davomida turli yosh guruhlaridagi shaxslarning o'pka qon tomirlaridagi o'zgarishlar kuzatildi.

Olingan ma'lumotlar shuni ko'rsatdiki, yosh bilan birga bronx qon tomirlarining diametri va devor qalinligi ortadi, bu esa qon aylanishi jarayoniga ta'sir ko'rsatadi. Gipodinamiya holati esa, ayniqsa, yosh yosh guruhida bronx qon tomirlarining morfologik tuzilishini o'zgartirib, ularning elastikligini pasaytiradi va qon oqimini yomonlashtiradi.

Tadqiqot natijalari shuni ko'rsatdiki, gipodinamiya sharoitida o'pka qoniqishi va gaz almashinuvi jarayonlari buzilishi mumkin. Ushbu xulosalar nafaqat gipodinamiya bilan bog'liq patologiyalarni aniqlashda yordam beradi, balki jismoniy faoliyatni rag'batlantirish orqali organizmning umumiy sog'lig'ini yaxshilash uchun yangi yondashuvlarni ishlab chiqishda ham muhim ahamiyatga ega.

Tadqiqot natijalari respublika miqyosida sog'liqni saqlash tizimida jismoniy faollikni oshirishga qaratilgan dasturlarni amalga oshirish zarurligini ta'kidlaydi.

Xulosa va takliflar. Magistral va o'pkalar ichi bronx qon tomirlarining yoshga va gipodinamiya holatiga bog'liqlik morfologik va morfometrik ko'rsatkichlari bo'yicha olib borilgan tadqiqotlar, shuningdek, xulosa va takliflar quyidagicha bo'lishi mumkin:

Xulosa

1. Yoshga bog'liq o'zgarishlar: Tadqiqot natijalari shuni ko'rsatadiki, bronx va o'pka qon tomirlarining morfologik strukturasi yoshga qarab aniq o'zgarishlar yuzaga keladi. Yosh ulg'aygan sayin, qon tomirlarining devor qalinligi, elastiklik darajasi va lumen o'lchamlari o'zgaradi.



2. Gipodinamiya ta'siri: Gipodinamiya holati (jismoniy faoliyatning pasayishi) bronx qon tomirlarining morfologiyasiga salbiy ta'sir ko'rsatishi aniqlangan. Bu holat qon aylanish tizimidagi bosimni oshirib, tomirlarning kengayishi yoki torayishiga olib kelishi mumkin.

3. Morfometrik o'lchovlar: Morfometrik tahlillar natijasida bronx qon tomirlarining diametri, devor qalinligi va boshqa parametrlarning statistik ahamiyati ma'lum bo'lgan.

4. Kasallik rivojlanishi: Ushbu morfologik va morfometrik o'zgarishlar nafaqat nafas olish tizimining funksiyasini yomonlashtirishga olib keladi, balki turli kasalliklarning rivojlanishiga ham sabab bo'lishi mumkin.

Takliflar

1. Jismoniy faoliyatni oshirish: Gipodinamiya holatini kamaytirish uchun odamlarni jismoniy faollikka jalb qilish zarur. Sport bilan shug'ullanish va muntazam jismoniy mashqlar qilish tavsiya etiladi.

2. Tibbiy nazorat: Yosh kattalar va qariyalar uchun doimiy tibbiy nazoratni ta'minlash muhimdir. O'zgarishlarni erta aniqlash kasalliklarga qarshi kurashda samarali yordam beradi.

3. Tadqiqotlarni davom ettirish: Ushbu sohada yanada chuqurroq tadqiqotlarni o'tkazish lozim, chunki bu nafaqat keng jamoatchilikni ogoh qilish bilan bog'liq, balki sog'liqni saqlash tizimida strategiyalarni ishlab chiqishda yordam beradi.

4. Ta'lim dasturlarini yaratish: Jismoniy faoliyatning ahamiyatini tushuntirish uchun ta'lim dasturlari ishlab chiqilishi lozim. Bu dasturlar yoshlarga sog'lom turmush tarzini shakllantirishda yordam beradi.

Ushbu xulosalar va takliflar orqali sog'liqni saqlash sohasida yaxshilanishlarga erishilishi mumkinligini ko'rsatadi.

Foydalanilgan adabiyotlar

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**O‘zbekiston va Janubiy Koreya o‘rtasidagi ijtimoiy-iqtisodiy
munosabatlar**

**Социально-экономические отношения между Узбекистаном и
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Annotatsiya: Maqolada Koreya va O‘zbekiston o‘rtasidagi o‘zaro aloqalari ilk boshlanish davrida qanday bo‘lgani, hozirgacha qay daraja o‘zgarganligi va har ikki davlatning iqtisodiy-ijtimoiy munosabatlarining hozirgi kundagi ahamiyati haqida bayon etiladi.

Kalit so‘zlar: Hamkorlik, savdo-sotiq, elchi, strategik-sheriklik, deklaratsiya, iqtisodiy, ta’lim

Аннотация: В статье описываются отношения между Кореей и Узбекистаном в начале, как они изменились до сих пор, а также современное значение экономических и социальных отношений обеих стран.

Ключевые слова: Сотрудничество, торговля, посол, стратегическое партнерство, декларация, экономика, образование.

Annotation: The article describes the relationship between Korea and Uzbekistan at the beginning, how it has changed so far, and the current importance of the economic and social relations of both countries.

Key words: Cooperation, trade, ambassador, strategic partnership, declaration, economic, education

Hozirgi kunda Janubiy Koreya rivojlangan va O‘zbekiston rivojlanayotgan mamlakatlaridan biri hisoblanadi. Bundan tashqari, har ikkala davlat ijtimoiy-

iqtisodiy javhalarda yetakchi o'rinlarni egallamoqda. Shu munosabat bilan yildan-yilga ikkala davlat o'rtasida hamkorlik tobora rivojlanmoqda. Bu esa o'z navbatida, insoniyat jamiyatida o'zgarishlar va rivojlanishga keng yo'l ochmoqda. Barchamizga ma'lumki, so'nggi vaqtlarda yurtimiz 3- Renessans doirasida keskin rivojlanib, jahon reytinglarida yuqori o'rinlarni egallamoqda. Bunga misol qilib, foydali qazilmamiz bo'lmish oltinni qazib chiqarish bo'yicha O'zbekiston yiliga 101,6 tonna oltin qazib chiqarib, jahonda 8-o'rinni egallamoqda. Nafaqat foydali qazilmalari, balki ijtimoiy sohalarida ham yuqori o'rinlarda turadi. Masalan, sportning boks sohasida jahonda 2-o'rinni egallamoqda. Bunday natijalarni son mingta keltirsak bo'ladi. Bularning hammasi davlatimizning aholiga bo'lgan e'tibori va o'zaro hamkorliklarning samarasidan darak beradi. Rivojlanishlarning bir bo'g'ini sifatida mamlakatlararo hamkorliklarni ham olishimiz mumkin. Shu kunga qadar yurtimiz Xitoy, Rossiya, Hindiston, Janubiy Koreya va boshqa rivojlangan davlatlar bilan har sohada aloqalarini yaxshilamoqda. O'zaro munosabatlar haqida maqsad va rejalar 7 yillik "Harakatlar strategiyasi" da ham keltirib o'tilgan.

O'zbekistonning eng ilg'or hamkor davlati sifatida Janubiy Koreyani keltirishimiz mumkin. Chunki, ushbu davlat jahon iqtisodiyotlarining innovatsion taraqqiyotida birinchi o'rinni egallab, "Osiyo yo'lbarlari" sifatida tan olingan davlatlar ro'yxatiga kirgan davlat hisoblanadi. Janubiy Koreyaning eng asosiy xususiyatlaridan biri bu ta'lim sohasida ilg'orligi va aynan shu sohada dunyodagi barcha mamlakatlarga o'rnak bo'luvchi islohotlarni amalga oshirishidir. Shu tufayli ham Koreya muhandislik-quruvchilik sohalarida tashqari, ta'limda ham o'ziga qo'shni bo'lgan davlat bilan hamkorlik aloqalarini yaxshilamoqda.

Yuqorida keltirganimizdek, Janubiy Koreya O'zbekistonning asosiy hamkor davlatlaridan biri. Ammo, ushbu munosabatlar ilk marta qachon boshlangan? Tarixda ham bir-biridan ancha uzoq bo'lgan mamlakatlarning elchilik aloqalari bo'lgan-mi degan savol tug'iladi.

«Men O'zbekistonga kelayotganimda 1400 yil oldingi bir kunni yodga oldim. U qadimiy koreys davlati elchilari Samarqandga kelgan kundir. Otga yoki tuyaga minib dam olmasdan mashaqqat chekib kelishlariga ikki oycha vaqt ketgandir? Baland tog' tizmalari, adirlar va cho'llardan o'tib, qor va yomg'irda qolib, ba'zida jazirama va sovuq bilan kurashib uzoq vaqt sarflagan bo'lsalar kerak. Bugun siz azizlar kabi 1400 yil oldin O'zbekistonning qadimiy ahli ham uzoqdan kelgan mehmonlarni iliq kutib olgan. Mustahkam do'stlik va ishonch Afrosiyobning g'arbiy devoridagi suratda o'z aksini topgan. Garchi, Koreya va O'zbekiston bir-biridan uzoqda bo'lsa ham qadimiy koreys davlati davridan boshlab elchilari kelib

ketadigan do'st davlatlar bo'lgan»-, deydi 2019-yilning 18-aprelida Samarqandda mehmon bo'lgan Janubiy Koreyaning sobiq prezidenti Mun Je In.

Janubiy Koreyaning elchilari o'rta asrlarda ham O'zbekiston hududida bo'lganidan dalolat beruvchi qoldiqlar Samarqandning Afrosiyob shahridagi devorlarda saqlanib qolgan. Qadimgi shaharning umumiy maydoni 219 gektarni tashkil qilib, ushbu maydonda 11ga yaqin tarixiy-madaniy qatlamlar borligi aniqlangan. 1965-yil Samarqand viloyati hududida qurilayotgan yangi yo'l ushbu shaharning topilishiga zamin yaratib bergan. 90-yillardan boshlab ana shu shahrning devordagi surat jahondagi ko'plab arxeolog, tarixchilar bir qator mamlakatlardagi ilmiy institutlarni o'ziga jalb eta boshladi. Negaki, ushbu devoriy suratlar ilk o'rta asr davrining nodir san'at asari, qadimgi So'g'diyona hayoti va madaniyati to'g'risida so'zlash bilan birga boshqa davlatlar madaniyatidan ham hikoya qiladi. Xususan, Afrosiyob shohi Varxumanning saroyida chizilgan deb hisoblanayotgan ushbu devoriy suratlarining «Elchilar xonasi» deb nomlangan qismi qadimgi davlatlar tarixiga yangilik kiritishi oydinlashdi. Yanayam aniqrog'i, devoriy suratda bir qator qadimiy davlatlar, jumladan, Koguryo davlatidan tashrif buyurgan elchilar surati ham tasvirlangan edi. Bu esa 6-7 asrlardayoq ikki davlat o'rtasida aloqalar mavjud bo'lganini tasdiqlaydigan juda muhim fakt edi. Hozirgi kunda ushbu joy Afrosiyob muzeyi sifatida saqlanib qolgan. Ushbu ma'lumotlar ikkala davlatning o'zaro hamkorliklari uzoq tarixga borib taqalishiga ishora qiladi. Mustaqillikdan so'ng O'zbekiston eng avvalo Janubiy Koreya bilan aloqalarni o'rnatishga harakat qildi. Koreya Respublikasi 1991-yil 30-dekabrda Osiyo – Tinch okean mintaqasi davlatlari orasida birinchi bo'lib O'zbekiston Respublikasi mustaqilligini tan oldi. O'zbekiston bilan Koreya o'rtasida 1992-yil 29-yanvarda diplomatiya munosabatlari o'rnatilgandan keyin siyosiy, iqtisodiy va madaniy sohalarda keng hamkorlik aloqalari yo'lga qo'yildi. O'tgan 30 yil davomida davlat rahbarlari o'rtasida 17 marta oliy darajadagi uchrashuv bo'lib o'tdi. Birinchi prezidentimiz Islom Karimovning 1992, 1995, 1999-yillarda Koreya Respublikasiga va Koreya Respublikasi prezidentining 1994-yilda O'zbekistonga rasmiy tashriflari chog'ida imzolangan hujjatlar o'zaro hamkorlikning huquqiy poydevorini yaratdi. 1999-yilda o'zaro tovar aylanmasi hajmi salkam 526,8 mln. AQSH dollariga yetdi. Koreya Respublikasi O'zbekistondan paxta tolasi, ip gazlama, kalava ip, elektr asbob-uskuna, xom teri, ipak, kimyoviy o'g'it olib, O'zbekistonga transport vositalari, elektr va mexanik jihozlar, qora metall, kauchuk va rezina mahsulotlari, bo'yoqlar, turli xil jihoz va apparatlar, to'qimachilik mahsulotlari yuboradi.

Birinchi marta 1994-yildan buyon iqtisodiy hamkorlik va savdo-sotiq masalalari bo'yicha O'zbekiston-Koreya va Koreya-O'zbekiston qo'shma qo'mitasi ishga tushirildi. O'zbekiston Respublikasi Tashqi iqtisodiy faoliyat Milliy banki Koreya Respublikasining 10 ta banki bilan vakillik munosabatlari o'rnatgan. O'zbekiston Respublikasi Shavkat Mirziyoyevning 2017-yil 22-25-noyabr kunlari Koreya Respublikasiga davlat tashrifi doirasida bir qancha savdo-sotiq aloqalari yo'lga qo'yildi. 2019-yilning 18-aprel kuni Koreya Respublikasining Prezidenti Mun Je Inning mamlakatimizga qilgan tashrifi doirasida esa o'zaro strategik sheriklik Qo'shma deklaratsiyasi imzolandi va 12 milliard dollardan ortiq bo'lgan kelishuvlar imzolandi. Ular energetika, neft-gaz, kimyo, tog'-kon sanoati, mashinasozlik, elektronika, to'qimachilik va yengil sanoat, transport va logistika, infratuzilma va raqamli tibbiyot kabi sohalarni qamrab oldi. Bulardan, xususan, "Angren" iqtisodiy zonasini "Inchon" erkin iqtisodiy zonasi boshqaruviga o'tkazish loyihasi alohida ahamiyatga ega. 2021-yili 28-yanvar kuni pandemiya tufayli ikki davlat prezidentlari videokonferensiya aloqasi orqali sammit o'tkazishadi. Online sammit yakunlari bo'yicha "to'rtinchi sanoat inqilobi"ni ilgari surish maqsadida "raqamlashtirish" sohasida hamkorlik to'g'risidagi memorandum, Janubiy Koreya bilan Iqtisodiy hamkorlikni rivojlantirish jamg'armasi (EDCF) bilan umumiy qiymati 1mlrd dollar bo'lgan kelishuvlari imzolandi.

Xalqaro Hamkorlik bo'yicha Koreya Agentligi (KOICA)-Ushbu tashkilot 1991-yilda Janubiy Koreya Tashqi ishlar vazirligi tomonidan Taraqqiyotga Rasmiy Yordam (ODA) hukumat tashkiloti sifatida tashkil etilgan. KOICA maqsadi hukumatning grant yordami va texnik hamkorlik dasturlarini amalga oshirish orqali rivojlanayotgan mamlakatlar uchun Janubiy Koreyaning grant yordam dasturlari samaradorligini oshirishdan iborat. KOICAgga tashqi ishlar vazirining tavsiyasiga binoan Prezident tomonidan tayinlanadigan uch yillik boshqaruv raisi rahbarlik qiladi. Tashkilot O'zbekistonga beg'araz asbob-uskunalar taqdim etish, mutaxassislar va xodimlarni Koreya Respublikasida o'qitish, koreys ekspertlari va ko'ngillilarni O'zbekistonga yuborish yo'nalishlarida amalga oshirmoqda. Xususan, 1995 – 2020-yillar mobaynida KOICA yo'nalishida O'zbekiston Respublikasiga ko'rsatilgan beg'araz yordamning umumiy hajmi 130 million AQSh dollarni tashkil qilib, mablag'lar sog'liqni saqlash, ta'lim, axborot texnologiyalar, kommunal xo'jalik, qishloq va suv xo'jaligi, energetika sohalaridagi loyihalarni amalga oshirishga maqsadida yo'naltirilgan. Shuningdek, bugungi kunga qadar KOICAning texnik hamkorligi doirasida O'zbekiston vazirliklari va idoralarning 2 000 dan ortiq vakillari Koreya Respublikasida tahsil oldi hamda 70 dan ortiq koreyalik ekspertlar

hamda 500 dan ortiq ko'ngillilari O'zbekistonda o'z missiyasini amalga oshirdi. 2007-yildan buyon davlatlarimiz o'rtasida mehnat migratsiyasi sohasidagi hamkorlik doirasida Bandlikka ruxsat berish tizimi bo'yicha 31,5 mingdan ortiq O'zbekiston fuqarosi Janubiy Koreyaga yuborildi. Hozirgi kunda Janubiy Koreyada 17 mingga yaqin o'zbekistonliklar mehnat qilmoqda. Har yili Koreya hukumati tomonidan O'zbekiston uchun 3 – 3,2 ming kishi atrofida kvota ajratiladi. 2018-yil sentyabr oyida Koreyaning Kvanju shahrida O'zbekiston Respublikasi Bandlik va mehnat munosabatlari vazirligi huzuridagi tashqi mehnat migratsiyasi agentligining vakolatxonasi tashkil etildi.

Janubiy Koreya yuqorida ta'kidlab o'tkanimizdek, ta'lim sohasiga katta e'tibor qiladi. Shu tufayli, O'zbekiston bilan ham madaniy-gumanitar hamkorlik yo'nalishida ham bir qator yutuqlarga erishilmoqda. Xususan, ta'lim sohasida Toshkentda 1992-yildan boshlab “ Koreya ta'lim markazi ” faoliyat ko'rsatib kelmoqda. Markazda Koreyaning madaniyatiga oid raqs va cholg'u asboblari va koreys tilini o'rgatish bilan shug'ullanadi. Bundan tashqari, markaz shu yilning o'zida Koreya Respublikasida joylashgan bir qancha universitetlar va ular taqdim etgan grandlar to'g'risida ma'lumot berish maqsadida ko'rgazma tashkil qildi. Har yili fevral va sentabr oylarida ko'plab talabalarimiz Janubiy Koreyada mutlaqo bepul o'qib ham stipendiya olish imkonini beradigan mamlakatning Milliy grand “GKS” ning bakalavr, magistratura va Phd yo'nalishlariga hujjat topshirib, bir qancha bosqichlardan o'tadi. Mahalliy oliygohlar Koreyaning 45 dan ortiq universitet, ilmiy-tadqiqot va ishlab chiqarish tashkilotlari bilan hamkorlik qilib kelmoqda. Shu bilan bir qatorda, O'rta Osiyoda birinchilardan bo'lib Sharq tillarini o'rgatayotgan Toshkent Davlat Sharqshunoslik Universiteti va Toshkent Davlat Jahon tillari Universitetida koreys tili va Koreya madaniyati, iqtisodiyoti o'rgatilib kelmoqda. O'zbekistonda Koreyaning Inxa (2-oktabr, 2014-yil), Puchon (2-iyul, 2018-yil), Yoju (30-noyabr, 2018) universitetlari va filiallari hamda Farg'onada Koreya xalqaro universiteti faoliyat yuritib kelmoqda. 2021-yil 1- fevralda esa Aju universitetining filiali ochildi. Toshkentda Koreya metodologiyasi bo'yicha tashkil etilgan 324-sonli maktabgacha ta'lim muassasasi faoliyat yuritadi. Shuni ham aytib o'tishimiz kerak-ki, Janubiy Koreya universitetlari bilan tuzilgan memorandumlar tufayli, TOPIK (Koreys tilini bilish darajasini aniqlovchi test) darajasiga ega bo'lgan talabalar Koreyaga borib, tahsil olish imkoniyati yaratilmoqda.

Yuqorida keltirib o'tgan barcha misollar shu kungacha qilinganlar xolos, ammo, kelajakda bundan katta miqdordagi hamkorliklar O'zbekiston va Janubiy



Koreyaning barcha sohalarini qamrab oladi. Bu esa o'z navbatida aholiga va har ikkala davlat migratlariga qulayliklar yaratdi. Birinchi navbatda, investitsiyalar orqali tashkil etilgan korxonalar aholini ish bilan ta'minlab, ishsizlik foizini kamaytiradi va nafaqat xalq, balki davlatning ham boy bo'lishini ta'minlaydi. Shu bilan bir qatorda, ikki davlatning migratlari mamlakat hududlarida erkin yashash va imkoniyatlar olish huquqini ko'paytiradi. Janubiy Koreya aholisini O'zbekiston hududiga, O'zbekiston aholisini Janubiy Koreya hududiga erkin kirib chiqishini ta'minlaydi.

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**GINKGO BILOBA O`SIMLIGINING BOTANIK TAVSIFI, TARQALISHI
VA AHAMIYATI**

**BOTANICAL DESCRIPTION, DISTRIBUTION AND SIGNIFICANCE OF
GINKGO BILOBA PLANT**

**БОТАНИЧЕСКОЕ ОПИСАНИЕ, РАСПРОСТРАНЕНИЕ И ЗНАЧЕНИЕ
РАСТЕНИЯ ГИНКО БИЛОБА**

Andijon davlat pedagogika instituti

Tabiiy fanlar fakulteti Biologiya yo`nalishi

202-guruh talabasi **Xaydarova Nodirabonu Xayrullo qizi**

101-guruh talabasi **O`ktamjonova Farzona Ziyoyiddin qizi**

Annotatsiya: Ginkgo biloba (Ginkgo biloba) o`simligi — qadimiy va noyob daraxt turi bo`lib, bu o`simlik bugungi kunda mavjud bo`lgan yagona turidir. O`simlikning botanika tavsifi, tarqalishi va ahamiyati uning biologik xususiyatlari, ekosistemdagi roli hamda tibbiyotda ishlatilishi bilan bog`liqdir. Ginkgo biloba nafaqat o`zining tarixiy va ekologik ahamiyati bilan, balki farmatsevtik sohada ham katta o`rin tutadi. Ushbu maqolada Ginkgo bilobaning botanika tavsifi, dunyo bo`ylab tarqalishi va uning turli sohalardagi ahamiyati haqida batafsil ma`lumotlar keltiriladi.

Abstract: Ginkgo biloba (Ginkgo biloba) plant is an ancient and rare tree species, and this plant is the only species that exists today. The botanical description, distribution and importance of the plant is related to its biological properties, role in the ecosystem and its use in medicine. Ginkgo biloba occupies a great place not only in its historical and ecological importance, but also in the pharmaceutical field. This article provides detailed information about Ginkgo biloba's botanical description, worldwide distribution, and its importance in various fields.

Аннотация: Растение Гинкго двулопастный (Ginkgo biloba) — древний и редкий вид деревьев, и это растение — единственный вид, существующий сегодня. Ботаническое описание, распространение и значение растения связано с его биологическими свойствами, ролью в экосистеме и использованием в медицине. Гинкго двулопастный занимает большое место не только по своему историческому и экологическому значению, но и в фармацевтической сфере. В этой статье представлена подробная информация



о ботаническом описании гинкго двулопастного, его распространении по всему миру и его значении в различных областях.

Kalit soʻzlar: ekosistema, farmatsevtika, tibbiyot, tarixiy oʻsimlik, genetik xilma-xillik, biologik xilma-xillik, antioksidantlar, fotosintez.

Key words: ecosystem, pharmaceuticals, medicine, historical plant, genetic diversity, biological diversity, antioxidants, photosynthesis.

Ключевые слова: экосистема, фармацевтика, медицина, историческое растение, генетическое разнообразие, биологическое разнообразие, антиоксиданты, фотосинтез.

Ginkgo biloba, dunyoda faqat bitta turi mavjud boʻlgan oʻsimlik boʻlib, ginkgo oʻsimliklar oilasining yagona vakili hisoblanadi. Bu oʻsimlik qadimiy tarixga ega boʻlib, 250 million yildan koʻproq vaqt avval paydo boʻlgan. Ginkgo biloba oʻsimligi oʻtmishda keng tarqalgan boʻlsa-da, hozirgi kunda tabiiy sharoitda faqatgina Osiyo, xususan Xitoy va Yaponiya hududlarida uchraydi. Ginkgo bilobaning tarixi, morfologiyasi va ekologiyasi haqida maʼlumotlar faqatgina biologiya va botanika sohalarida emas, balki tibbiyot, ekologiya va tarixshunoslikda ham keng oʻrganilgan. Ginkgo biloba — ikki uyli, yaʼni erkak va urgʻochi daraxtlardan tashkil topgan oʻsimlik. U daraxt shaklida boʻlib, balandligi 20-35 metrga yetishi mumkin, baʼzan 50-60 metr balandlikka ham yetadi. Daraxtning yoshi va oʻsish surʼati juda sekin, ammo uzoq umr koʻruvchi xususiyatga ega. Ginkgo biloba oʻsimliklari 1000 yil va undan koʻproq vaqt davomida yashashi mumkin. Ginkgo bilobaning barglari keng, yozda yashil rangda boʻladi va kuzda sariqqa buranadi. Yaproqlari oʻzgacha shaklga ega boʻlib, ikki yarmdan tashkil topgan yelpigʻichga oʻxshash va yozda xiralashmaydi. Yaproqlarining bunday tuzilishi oʻsimlikni boshqa daraxtlardan farqlantiradi. Ginkgo tarkibida kuchli antioksidantlar, flavonoidlar, terpenoidlar, va boshqa biologik faol moddalar mavjud.

Tabiiy tarqalgan joyi Xitoyning maʼlum hududlarida boʻlishiga qaramay, Ginkgo biloba hozirda butun dunyoda, ayniqsa shahar atrofida, bogʻlarda va koʻcha chetlarida ekilgan. Bu daraxtning sovuqqa va ifloslangan havoga chidamliligi uni shahar muhitiga juda moslashtiradi. Ginkgo biloba oʻsimligi tabiiy sharoitda faqatgina Xitoy, Yaponiya va Koreya hududlarida uchraydi. Shu bilan birga, tarixan ginkgo oʻsimligi oʻtmishda boshqa hududlarda ham keng tarqalgan boʻlib, bugungi



kunda uning tarqalishi cheklangan. Ginkgo biloba o'simligining tabiiy yashash joylari toralashib, hozirgi kunda u asosan odamlar tomonidan madaniy tarzda ekiladi va qishloq xo'jaligida yetishtiriladi. Xitoyda ginkgo daraxtlari asrlar davomida madaniy o'simlik sifatida etishtirilgan va ayniqsa tabiiy dori vositalarida keng qo'llaniladi. Shu bilan birga, ginkgo o'simligi boshqa mamlakatlarda, masalan, Evropa va Shimoliy Amerikada bog'larda dekorativ o'simlik sifatida ekiladi. Bu o'simlik mo'tadil iqlim sharoitiga yaxshi moslashadi va qishning sovuqiga ham chidamli. Ginkgo biloba o'simligi ekologik jihatdan muhim ahamiyatga ega. Ginkgo daraxtlari uzoq umr ko'rishi va tez o'sishi bilan o'z atrofidagi ekosistemi uchun muhim rol o'ynaydi. Ular shaharlandirish jarayonida havo sifatini yaxshilash, tuproqni mustahkamlash va biologik xilma-xillikni ta'minlashda yordam beradi.

Ginkgo biloba o'simligining ahamiyati ko'p qirrali:

1. Ekologik ahamiyati: Ginkgo daraxtlari atmosferani tozalashga yordam beradi, karbonat angidridni so'rib olib, kislorod chiqaradi. Shuningdek, ularning soya berishi va havo sifatini yaxshilash xususiyati bor.

2. Salomatlikka foydasi: Ginkgo bilobaning mevalari va yaproqlaridan tayyorlanadigan preparatlar qon aylanishini yaxshilash, xotirani mustahkamlash va bosh miya faoliyatini yaxshilash xususiyatiga ega. Shu sababli, u ko'plab dorivor preparatlarda qo'llaniladi.

3. Tarixiy va madaniy ahamiyati: Ginkgo daraxtlari Xitoyda ming yillar davomida muqaddas daraxtlar sifatida e'tirof etilgan. Ular tinchlik va uzoq umr ramzilaridan biri hisoblanadi.

Ginkgo biloba o'simligining barglari va urug'lari xalq tibbiyotida uzoq vaqt davomida ishlatilgan. Bugungi kunda ginkgo ekstrakti ko'plab dori vositalarining tarkibiga kiradi va ularni xotira va aqlli faoliyatni yaxshilash, qon aylanishini yaxshilash, oksidlanishga qarshi va yallig'lanishga qarshi vosita sifatida ishlatish mumkin. Shuningdek, ginkgo ekstrakti Altsgeymer kasalligi kabi nevrologik kasalliklarni davolashda yordam beradi. Ginkgo daraxtlari atmosferani tozalashga yordam beradi, karbonat angidridni so'rib olib, kislorod chiqaradi. Shuningdek, ularning soya berishi va havo sifatini yaxshilash xususiyati bor. Ginkgo biloba o'simligi o'zining noyob va chiroyli tashqi ko'rinishi bilan bog'larda, xiyobonlarda va jamoat joylarida keng qo'llaniladi. Ginkgo daraxtining barglari kuzda oltin sariq rangga bo'yalib, sezilarli darajada chiroyli va diqqatni tortadi. Ginkgo biloba



o‘zining noyob xususiyatlari, shahar muhitiga moslashuvchanligi va salomatlikka foydalari bilan mashhur. Uning uzoq umr ko‘ruvchi va ekologik jihatdan foydali xususiyatlari uni butun dunyo bo‘ylab qadrlashga sabab bo‘ladi. Ginkgo daraxtlari nafaqat muhitni yaxshilashga, balki insonlar hayot sifatini oshirishga ham hissa qo‘shadi.

Xulosa: Ginkgo biloba o‘simligi nafaqat ekologik, balki tibbiy va madaniy ahamiyatga ega qadimiy daraxtdir. Uning botanik tavsifi, tarqalishi va turli sohalarda qo‘llanilishi o‘simlikni dunyodagi eng muhim va qadimiy organizmlardan biri sifatida ajratib turadi. Ginkgo biloba o‘simligi, uning tibbiy xususiyatlari va ekologik roli bilan insoniyatga katta foyda keltirishi mumkin.

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Polysemy as a linguistic phenomenon

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Abstract: This article is due to polysemy as a linguistic phenomenon. Language is defined as system of communication that uses arbitrary signals such as voice sounds, grstures or written symbols. However, frankly speaking, language is too complex, intriguing, and mysterious to be adequately explained by a brief definition. To carry meaning is the most organic function of the language. Most of the problems in linguistic science are closely intimately bound of semasiology and call for scientific analysis of communication in words. The study of words is not exclusively a study of roots and stems, of prefixes or suffixes. The mysterious world of words is an object of scientific investigation.

Key words: Polysemy, phenomena, communication, transference, morphological, circumstances, lexicology.

Since the times of Plato and Aristotle, the process of development of new meaning in language is the most important and attractive research problem among scholars, philosophers and grammarians. From those times sameness of meaning was difficult to cope with but it was more complicated to distinguish difference of meaning. The position is the same nowadays. Not only there are different meanings in different words; but also it is the fact that the same word may have a set of meanings. This concept is called polysemy. Polysemy is the ability of words to have more than one meaning and the words having several meanings are described by the term polysemantic. The bulk of words in the English and Uzbek languages are polysemantic. One of the most characteristic features of the languages is highly interchangeability. According to this, it should be noted that the treasury of the language's expressive resources largely depends on the growth of polysemy in the language. Generally speaking, some people who are not aware of linguistic argues that a language has drawbacks in words if the need arises for the same word to be applied to several different phenomena. Actually, it is exactly the opposite: if each word is found to be capable of conveying at least two concepts instead of one, the expressive potential of the whole vocabulary increases twofold. Hence, a word's semantic development is a great advantage in a language. On the other hand, it should be mentioned that the range of sound integrations that human speech organs are able to make is limited. Thence, within a certain period of widening new meaning by



morphological means is restricted as well, and polysemy becomes increasingly important for broadening the range of vocabulary. Consequently, it should be clear that the process of enriching the vocabulary does not include entirely in adding new words to it, but also, in the constant development of polysemy. The system of meanings of any polysemantic word increases constantly, mostly through the centuries, as too many new meanings are affixed to old ones, or out some of them. As a result, the complex processes of polysemy progress include both the apparent of new vocabulary and the absence of old ones. Until now, the common aspiration with English and Uzbek vocabulary systems at the current period of their history is to get improved the total number of its meanings and in this way to supply with a quantitative and qualitative growth of the language's expressive resources. New meaning exists in two ways: first is the historical one: different sorts of changes in a nation's social life, in its culture, knowledge, technology, arts cause for appearing the vocabularies which need to be filled. Newly created objects, new concepts and phenomena must be given the name: word forming and borrowing foreign ones. New meanings can also be developed according to linguistic factors - the second cause. Linguistically speaking, the development of new meanings, and also a complete change of meaning, may be caused through the influence of other words, mostly of synonyms.

The process of development of a new meaning termed is traditionally termed transference. Some scholars mistakenly use the term -" transference of meaning" which is a serious mistake. It is very important to that in any case of semantic change it is not the meaning but the word that is being transferred from one term into another (from a horse-drawn vehicle into railway car).The result of such transference is the appearance of new meaning.

Words often sign not of one but of several things. The linguistic mechanism works naturally in many ways to prevent ambiguity and provide the clue to distinguish the necessary meaning. It's also important to take into consideration the significance of the context, linguistic or non-linguistic; many ambiguities are never noticed because the various possible meanings are excluded by the situation. Important observations in this area of the vocabulary have been made by contextual, distributional and transformational analysis.

Another problem of polysemy is the usage of the same word in more distinct meanings in pertinent a great deal of other important questions. These are: the growth of various kinds of synonyms, as a result of semantic transfers of lexical units and homonymy. Describing polysemy as a linguistic development, polysemy was made



difference between two sides by Charles Bally, first, when one linguistic term has several meanings, and the meaning is expressed by several linguistic signs. Words can extend in connotative capacity in accord with the nature with the meanings connected with them. In the ability of connotation maintains the stock strength of language. Without this language would lose much of its meaningfulness and pliability. The frequency of polysemy which is changeable in different languages depending on different circumstances. Languages where origin and formation are sparingly used to have a tendency to fill the gaps in vocabulary by appending new word to existing terms.

Polysemy more often occurs in generic words than in specific terms whose meanings are less subject to variation.

It is very significant not to fail to take into account the fact that few words have simple meanings. Basically most words have, besides their primary meaning, an edge of associated meanings. In actual fact, language exists a great deal of its expressive ability to the ideas and feelings related to words. There are normally different connected meanings which have the appearance in changing levels of prominence determined by the context.

The development of the words which is used in various context and the changes of meaning takes a major interest in contrastive lexicology and typological research of languages.

Conclusion. Some meanings invariably come to the fore when we hear the word in actual speech or see in written. Other meanings make themselves evident only when the word is used in certain context. The context makes the meaning explicit, in other words, brings them out. This is not to say that polysemantic words have meanings only in context. As has already been emphatically stressed the semantic structure of the word is a dialectic entity and involves dialectical permanency and invariability.

Meaning should always be acknowledged as including the connection with language to the rest of the world and such expression plays an essential role in the definition of language.

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ОПЫТ ПРИМЕНЕНИЯ ИММУНОМОДУЛИРУЮЩЕЙ ТЕРАПИИ ПРИ РЕМИТТИРУЮЩЕМ РАССЕЯННОМ СКЛЕРОЗЕ В АМБУЛАТОРНЫХ УСЛОВИЯХ.

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В терапии рассеянного склероза за последние два десятилетия достигнуты значительные успехи. ПИТРС широко начали использовать в мире для профилактики обострений РС.

Цель исследования: изучить эффективность иммуномодулирующей терапии при РС.

Материал и методы: В период с 2013 по 2024 гг. в ООО «Fedorovich klinikasi» под нашим наблюдением находилось 79 пациентов с клинически достоверным РС. Из них пациенты мужского пола - 34, женщины - 45. Средний возраст - 18-56 лет. Диагноз был установлен в соответствии с критериями Mc Donald и соавт. (2017 г). Всем пациентам проводилась МРТ головного мозга с внутривенным контрастированием, МР спектроскопия очагов и неизмененного белого вещества на высокопольном МР томографе «Ingenia Elition X, Philips» с напряженностью магнитного поля 3 Т.

Из 79 пациентов для профилактики обострений 46 пациентов получали ИМТ препаратом копаксон производства TEVA, подкожно по схеме, 10 пациентов принимали пероральный препарат терифлуномид в суточной дозе 14 мг, 23 пациента не получали терапию ПИТРС.

Оценка проводилась на основании баллов по шкале EDSS, путем оценки количества обострений до начала терапии и на фоне проводимой терапии, среднегодовой частоты обострений, скорости прогрессирования болезни в сравнении с пациентами соответствующего возраста не получавших ИМТ.

Результаты: Возраст начала терапии: 18-45 лет. Из них мужчин - 18, женщин - 38.

Длительность РС до начала терапии составил в среднем 1-3,5 года.

Количество обострений на фоне терапии достоверно уменьшилось: 36% пациентов не имели клинических обострений во время лечения ПИТРС. Среднегодовая частота обострений на фоне ИМТ терапии достоверно снизилась в группе больных получавших ПИТРС, по сравнению с пациентами с естественным течением заболевания. Отмечалось снижение скорости



прогрессирования заболевания по шкале EDSS у больных получавших ПИТРС.

При подкожном применении препарата копаксон в 14% случаев наблюдались нежелательные побочные эффекты в области введения препарата местного характера: покраснение и зуд кожи, через год непрерывного пользования трофические нарушения в виде гипотрофии подкожного слоя. При пероральном приеме препарата терифлуномид в суточной дозе 14 мг основными нежелательными побочными эффектами явились: тошнота и диарейный синдром, увеличение уровня трансаминаз, выпадение волос в первые 3-6 месяцев после начала терапии.

Заключение: применение препаратов копаксон и терифлуномид у пациентов с РРС позволяет стабилизировать течение РРС и снизить среднегодовую частоту обострений, увеличить продолжительность периода до развития обострений, и скорости прогрессирования заболевания.



THE GRAMMATICAL CATEGORIES OF VERBS IN ENGLISH AND UZBEK IN GENERAL

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Abstract: This article analyzes structural discrepancies between English and Uzbek by presenting concrete examples of their differences and similarities.

Key words: Verbs, suffixes, order, numerals, grammatical transformations, syntactical structures, tenses.

We are already aware that declarative statements in English have the following structure: Subject – Predicate – Object. Uzbek sentences are produced according to another scheme: Subject, object, and predicate (at the end of a phrase). As a result, the word order in English and Uzbek phrases differs significantly. Furthermore, suffixes like -ni and -ini are commonly employed in Uzbek phrases. Three types of structural discordances between English and Uzbek set expressions can be identified: 1. Complete conformance. 2. Partial conformance. 3. Total discordance.

The term «**complete structural concordance**» refers to the alignment of structures, word combinations, and parts of speech between English and Uzbek. Consider the number category, which is common in both languages:

I have seen the movie-Men kino ko'rdim

I have seen the movies-Men kinolar ko'rdim

Let me introduce my friend – Do'stimni tanishtirishga ijozat bering.

Let me introduce my friends – Do'stlarimni tanishtirishga ijozat bering.

However, the word order in these phrases differs: in English, the predicate comes after the subject, whereas in Uzbek, the predicate comes after both the subject and the object. There are very few fundamentally equivalent English and Uzbek speech formulations. Typically, such expressions include two or three parts: an international telegraph, xalqaro telegramma travelers' check - Sayohatchilar cheki Categories that are partially discordant include tense, voice, and case. There are two cases in English and six in Uzbek. I've heard a lot about your country, Sizing

mamlakatingiz to'g'risida ko'p eshitganman. Two English words—your country—are translated by one Uzbek word—mamlakatingiz. Furthermore, they vary in terms of case categorization. Another example: We are from Tashkent (Biz Toshkentdanmiz). Three English lexemes from Tashkent are blended into a single Uzbek lexeme, Toshkentdanmiz.

As we can see, English phrases consist of a numeral and a noun (singular and plural), but Uzbek phrases consist of a numeral and a noun in the singular. Even in circumstances of complete semantic agreement, there may be exposed cases of partial structural discordance: a list of items - molar royhati (word order differs+Uzbek suffix —il in the term —ro'yxati) customs limitations - bojxona cheklovlari (same word order, but with the Uzbek suffix —il) import license - import uchun ruhsatnoma (same word order with the Uzbek postposition —uchuni).

Total structural discordance is most evident in the category of possession, which is expressed by possessive suffixes in Uzbek and possessive pronouns in English

Possessive pronouns in English:

Can I introduce you to my family?

Sizni oilam bilan tanishtirsam bo'ladimi?

This is your invitation, please.

Marhamat, sizning taklifnomangiz

So, based on these common examples, we can conclude that a communicant in English-Uzbek communication should be familiar with all English possessive pronouns as well as Uzbek possessive suffixes. Total grammatical discordance is also evident in the use of English articles, which do not exist in the Uzbek language system but can sometimes be represented via another lexical means:

I'd like to present you with this gift - Men sizga mana bu sovg'ani topshirmoqchi edim.

The Uzbek demonstrative pronouns (mana bu) translate the English definite article—the.

Such a great surprise! - Qanday ajoyib uchrashuv!

In this Uzbek set statement, the English article (a) is not rendered.

The most vivid examples of total structural discordances can be presented on the basis of English and Uzbek set expressions in the form of sentences:

I should appreciate you - Sizga minnatdorchilik bildirishim kerak.

I am deeply sorry - Meni afv eting.



It is simply the opposite way around - Aksincha. As the examples indicate, the meaning and communicative objective of informing or presenting particular information, desire, point of view, or attitude toward something is identical in both languages, but their grammatical forms are completely different.

Result and Discussion to translate the semantic content of speech formulas from one language to another, we use a variety of grammatical transformations such as word order shift, removing some words, adding words, part of speech conversion, and others. One of the most common types of grammatical transformation is a change in word order, or the position of components of speech. Please accept my heartfelt greetings for your birthday- Tug'ilgan kuningizda mening samimiy tilaklarimni qabul qiling. In these cases, we see a change in structure: in the English form, the cause for congratulation appears in the second part of the sentence, whereas in the Uzbek sentence, the reason appears at the beginning of the sentence. Furthermore, the English word "please" is eliminated in Uzbek since its meaning is conveyed by other sentence components. Another example of changing word order: *I wish you speedy recovery - Tezda sog'ayib ketishingizni tilayman.*

In these examples, we see a change in word order as well as a conversion of parts of speech: in English, the phrase «speedy recovery» is indicated by adjective + noun, whereas in Uzbek, «tezda sog'ayib ketishingizni» is expressed by adverb + verb. He is an excellent speaker, U yahshi gapiradi. As it is clear, English - good speaker is expressed by an adjective + noun, in Uzbek we have —yaxshi gapiradi – adverb + verb.

After a thorough examination of the causes of entire structural discordances between English and Uzbek phrases, we identified the most common ones:

1. There is no comparable construction to render in another language.
2. Word combinations in both languages have unique characteristics related to lexical meaning and grammatical forms.
3. The absence of the same part of speech as this meaningful content (English articles and —that!) necessitates translating it with another part of speech. English articles transmit a variety of information, including skepticism, indexing, numbering, and emphasis.

When articles are used in English sentences, their meaning is reproduced using various language meanings in Uzbek: When we got at the airport, Mr. Brown had informed us that you would not be coming. – Biz aeroportga kelganimida qandaydir janob Braun siz kelmasligingizni aytdi. The Uzbek indefinite pronoun - qandaydir (someone) transfers the English article (a).

Inversion is at the root of many structural discordances. It is natural because English sentences are based on the Subject + Predicate structure. In Uzbek sentences, the predicate is placed at the end:

I beg your pardon – Sizdan uzr so'rayman.

I can't agree with you – Fikringizga qo'shila olmayman.

If you want to know my opinion – Mening fikrimni bilmoqchi bo'lsangiz.

In some English-Uzbek sentences, parts of speech are inverted. Diplomatic activity has increased significantly during the last week. (O'tgan haftada diplomatic munosabatlarning faollashuvi kuzatildi). English —last weekl is used as the subject of the sentence, but in the Uzbek sentence —o'tgan haftadal is adverbial modifier of place.

Another challenge in English-Uzbek speech is expressing gender using pronouns like —he,-she,-his,-herl, and -him in English. In Uzbek, the pronoun system does not include those that can express gender:

She is from England – U (kishi) Angliyadan.

He is from Switzerland – U (kishi) Shveysariyadan.

As the examples demonstrate, there is no rigid gender indexing in Uzbek phrases (as in English), and the same pronoun can be used for both males and females. Structural discordance can occur when rendering elaborate and complex sentences. In another language, the position of the main and subordinate clauses can be modified:

I remember the time when we were children. – Men bolalik chog'imizni eslayman.

The complex sentence in English is translated into a simple sentence in Uzbek because the subordinate clause in the English sentence becomes an adjective + object phrase in Uzbek.

Uzbek people often ask about someone's health: Sogligingiz yashimi? (Is your health good? Is your health in a good condition?). But English people usually use one common and frequent question - How are you? In speech formulas of request the verb appears at the beginning in English sentences, as for Uzbek - at the end + negative form is used for producing polite request:

Would you give me your book? - Kitobingizni berib turolmaysizmi?

Could you stay here another day? - Bu erda yana bir kun qololmaysizmi?

Conclusion. As shown in the instances above, politeness is expressed in English by the verbs —couldl, —wouldl, etc., and in Uzbek by negative verbs: —yordam qilolmaysizmi, —turolmaysizmi,etc. These are also clear examples of structural discordance between English and Uzbek set phrases. As a result, the



grammatical system of any language is extremely important to its operation. To produce relevant meaningful information in a correct grammatical construction, one must have complete understanding of both languages and comprehend their grammatical quirks. The most challenging issues in this aspect include syntactical structures, pronouns, articles, gender, tenses, and other grammatical categories.

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THEORETICAL PERSPECTIVES OF SPEECH AND LANGUAGE

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Abstract: This article addresses the theoretical underpinnings of speech and language development, examining prominent perspectives such as behaviorism, nativism, interactionism, and cognitive constructivism. By exploring the strengths and limitations of each theory, this research aims to provide a comprehensive understanding of the complex interplay between biological predispositions, environmental influences, and cognitive processes that shape human linguistic abilities.

Key words: speech, language, development, behaviorism, nativism, interactionism, cognitive constructivism, biological predispositions, environmental influences, cognitive processes.

For several decades, scholars have been fascinated by the complex process of speech and language development, leading to a wide range of theoretical viewpoints to explain its underlying mechanics. Although a number of theories have been developed, each providing distinct insights, a thorough comprehension requires a careful examination of their advantages, disadvantages, and possible overlaps. This essay explores the fundamental ideas of four well-known theoretical schools: interactionism, behaviorism, nativism, and cognitive constructivism.

By examining the contributions of each perspective, this paper elucidates the complex interplay between biological predispositions, environmental influences, and cognitive processes that shape human linguistic abilities. A critical analysis of these theories illuminates the historical evolution of thought on speech and language development and provides a foundation for future research and pedagogical practices.

Behaviorism, grounded in the principles of learning via stimulus-response associations, asserts that language acquisition is fundamentally a process of habit formation. From this viewpoint, children acquire language through mechanisms of



imitation, reinforcement, and conditioning. B.F. Skinner, a leading figure in behaviorist theory, contended that language development is significantly influenced by positive reinforcement—such as praise or rewards—when children produce accurate utterances. For example, when a child articulates «mama,» receiving a smile and a hug serves as reinforcement, thereby increasing the likelihood of the child repeating that sound. Nevertheless, behaviorism has faced criticism for its inadequacy in explaining the swift acquisition of complex linguistic structures, particularly in instances where explicit reinforcement is lacking. For example, children often produce novel utterances that they have never heard before, such as «I goed to the store,» suggesting that language acquisition cannot be solely explained by imitation and reinforcement (Chomsky, 1959).

In contrast to behaviorism, **nativism** posits that humans possess inherent linguistic capabilities. Noam Chomsky, a prominent advocate of this theory, introduced the notion of a Language Acquisition Device (LAD), an intrinsic cognitive mechanism that facilitates the rapid and seemingly effortless acquisition of language in children. Proponents of nativism argue that mere exposure to linguistic input is sufficient to activate the LAD, enabling children to internalize grammatical rules and syntactical structures without the necessity for explicit instruction. For instance, children can adeptly grasp complex grammatical constructs, such as subject-verb agreement and syntactic ordering, with minimal direct teaching. While nativism has effectively elucidated certain aspects of language acquisition, it has faced criticism for its insufficient consideration of environmental influences and the significance of social interaction in the developmental process.

Environmental influences are important in language acquisition, as evidenced by the fact that children reared in language-deprived situations, such as deaf children raised in hearing homes, may experience severe delays in language development (Newport, 1990).

Interactionism, often referred to as social interactionism, underscores the critical role of social engagement in language development. This perspective highlights the contributions of caregivers in supplying linguistic input and scaffolding the language learning process for children. Interactionists assert that language acquisition occurs through meaningful interactions with adults and peers, who provide corrective feedback, model appropriate language use, and create opportunities for practice. For example, caregivers frequently employ simplified speech patterns, known as «motherese,» when communicating with infants, which



serves to accentuate essential linguistic features and facilitate the learning process. Although interactionism has effectively illuminated the importance of social interaction in language development, it has been critiqued for its limited focus on the cognitive processes that underpin language acquisition.

Cognitive processes are important in language development, as evidenced by the fact that children may learn language even in the absence of explicit instruction or corrective feedback (Tomasello, 1995).

Cognitive constructivism emphasizes the pivotal role of cognitive processes in the development of language. This perspective posits that children actively construct their understanding of language through interactions with their environment and their intrinsic cognitive abilities. Piaget's theory of cognitive development illustrates this connection, suggesting that children's linguistic growth is intricately linked to their cognitive maturation, with language functioning as a tool for representing and comprehending their surroundings. For instance, children may initially utilize one-word utterances to signify objects or actions; however, as their cognitive capacities evolve, they begin to formulate more complex sentences to articulate their thoughts and ideas. While cognitive constructivism has effectively illuminated the relationship between cognitive development and language acquisition, it has been criticized for its inadequate attention to the social and cultural dimensions that shape language development.

Cultural variables may influence language development, as evidenced by the fact that children from diverse cultural backgrounds may utilize different linguistic techniques and acquire language at varying rates (Vygotsky, 1978).

In conclusion, every one of the four theoretical stances covered in the article provides insightful information on the intricate process of language and speech development. Cognitive constructivism highlights the function of cognitive processes, interactionism stresses the role of social interaction, behaviorism underlines the role of environmental circumstances, and nativism emphasizes the significance of intrinsic linguistic talents. A synthesis of these viewpoints is necessary for a thorough understanding of language development, acknowledging the interaction of biological predispositions, contextual factors, and cognitive processes.



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**BOSHLANG'ICH SINF O'QUVCHILARIDA AKSIOLOGIK YONDASHUV
ASOSIDA FALSAFIY TUSHUNCHALARNI SHAKLLANTIRISHNING NAZARIY
ASOSLARI**

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Annotatsiya. Ushbu maqolada Yangi qadriyatlarning yuzaga kelishi, Qadriyatlar falsafasining shakllanishi, aksiologik yondashuvning mazmun mohiyati, aksiologik ongning mavjudligi, Qadriyashunoslik aksiologik ong, qadrlash tuyg`usi, aksiologik bilish, qadriyatli yondashuv, pedagogik jarayonni va uning sub'ektlari bilan o'zaro ta'sirini ochib berish jarayoni yoritilgan.

Kalit so'zlar: qadriyatlar falsafasi, aksiologik yondashuv, aksiologik ong , falsafiy tushunchalar, falsafiy yondashuv, aksiologik bilish, qadriyatli yondashuv, pedagogik jarayon.

“Ta'lim va tarbiya, ..., yoshlarimizning chuqur bilimga ega bulishi, doimiy ustuvor vazifamiz bo'lib qoladi”. Har bir millat tarixi va qadriyatlarini anglamoq uchun uning dini, tafakkuri, badiiy-estetik g'oyasini bilish zarur. Ma'naviyat insonning shunday yetuk fazilatiki, u kishilarda o'zaro muloqotga extiyoj tug'diradi. Har bir shaxs o'z xayoti va taqdirini boshqalarsiz tasavvur eta olmasligi xam ma'naviyatdir [4;18-b].

Ta'lim-tarbiya jarayonida ajdodlarimiz yaratgan bebaxo ma'naviy pedagogik merosdan foydalanish va ularni yoshlar ongiga singdirish bugungi kun pedagogidan katta mahorat talab etadi [8;23-b].

Mutaffakkirlarimiz yaratgan ma'naviy meros yosh avlodni har tomonlama tarbiyalashda eng muxim vosita bo'lib xizmat qiladi. Ijtimoiy borliqda yuz bergan o'zgarishlar bo'layotgan voqea va xodisalar, tushunchalarni tadqiqot ob'ektiga aylanishiga sabab bo'ladi. Ijtimoiy borlikdagi o'zgarishlar va ularni anglash jarayonlari bir-biriga bog'lik xodisalar sifatida yangi tushunchalarni tadqiqot ob'ektiga aylantiradi.

Xususan “qadr” “qadrlash”, “qadr-qimmat” “qadrshunoslik”, “qadriyat” tushunchalarining tadqiqotlar ob'ektiga aylanganini ana shunday extiyojlar bilan izoxlash mumkin. Har bir qadriyatning negizida, mohiyati va axamiyatida tabiat, jamiyat va ruhiy olam xodisalarini bilish, ilmiy umumlashtirish, ijtimoiy va ma'naviy taraqqiyotga ta'sir etish imkoniyatlari yotadi [8, 16].



Yangi qadriyatlarning yuzaga kelishi esa insonning ob'ektiv olam, ma'naviyat borasidagi bilimlari vorislik asosida davom etayotganining ifodasidir. Qadriyatlar inson ma'naviy kamolatga ta'sir etuvchi muhim omil hamdir. Har bir millat rivojlanishidagi tarixiy voqealar, unga ijobiy xissa qushgan shaxslarning tajribalari xam milliy qadriyatlar jumlasiga kiradi [4;46-b].

Antik davr mutafakkirlari "qadriyat", "qadr", "qadrlash", tushunchalarini ijtimoiy borlik, inson faoliyatining baxosi, baxolanishi, boshqalar tomonidan ma'lum bir normalar asosida qadrlanishi tarzida tushunganlar. Qadriyatlar bilan bog'lik masalalar xayotning eng asosiy mavzulari bo'lib xisoblanadi. Qadriyatlarni aksiologiya fani o'rganadi. U keng tarqalgan falsafiy fanlardan biridir. Xozirgi davrda qadriyatlarni o'rganishga oid falsafa, sotsiologiya, madaniyatshunoslik, siyosatshunoslik, psixologiya, antropologiya, pedagogika fanlarida turli izlanishlar olib borilmoqda [5;14-b].

Bu ijobiy hol, albatta. Lekin, shu bilan birga, qadriyatlarni klassifikatsiyalash masalasi chalkashib, xatto, ularni xech qanday asossiz boshqa ijtimoiy voqea va xodisalar bilan bir xillashtirib yuborish xam yuzaga kelmoqda.

Aristotel donishmandlikni, bilimga intilishni "o'z tabiatiga ko'ra eng ko'proq qadrli" narsalar qatoriga kiritadi. U qadrli narsalar, qadriyatlar rang-barangligini, bir individga muvofiq kelgan qadriyatlar boshqa individga to'g'ri kelmasligini, ijtimoiy voqea va xodisalarni har kim qiziqishi va maqsadlariga muvofiq baxolashini, qadrlashini qayd etadi. Ammo, ezgu amallar xammaga birdek qadrli ekanini uqtiradi [1;13-b].

Eng muximi, Aristotel falsafada qaror topgan va barcha aksiologik ta'limotlar asosini belgilab bergan konsepsiyani ilgari surgan. Mazkur konsepsiya uning quyidagi goyasida o'z ifodasini topgan: "Qancha imkoni balsa, shuncha yuqoriga ko'tarilish lozim va barcha narsani, o'zingdagi eng oliy narsa - xayot uchun qilish darkor; agar u o'z ko'lamiga ko'ra oz miqdorda bo'lsada, o'zining quvvati va qadriga ko'ra, u xamma narsadan yuqoridir". Demak, barcha xatti-xarakatlar, amallar xayotga xizmat qilishi, uni e'zozlashi, ulug'lashiga muvofiq qadrlidir.

Qadriyatlar falsafasining shakllanishiga I.Kant katta xissa qo'shgan. Uning "har qanday ongli mavjudot o'zi o'ziga maqsaddir" degan g'oyasi negizida insonga vosita emas, oliy qadriyat sifatida qarash zarur, degan fikr yotadi. Qolgan barcha narsalar, inson mayli, istagi, qiziqishi tufayli "nisbiy qadrga egadir", Nisbiy qadrga ega bo'lgani uchun ular narsalar deb ataladi va inson extiyojlarini kondiruvchi vositalardir. Ongli mavjudotlar shaxslar deb ataladi, chunki ular sub'ektiv



kadriyatlarga egadir. Shu bilan Kant falsafaga “absolyut kadriyat” kategoriyasini xam olib kirdi [8;47-b]

Shu ma’nodan milliy urf - odat va an’analarni yoshlar ongiga singdirish xar qanday millat uchun uz taraqqiyotning maqsad va vazifasi bo’lib qolgan. Mustaqillik yillarida milliy urf - odat va an’analarni tiklash, zamon extiyojlari asosida boyitish va yangilarini shakllantirish borasida katta ishlar amalga oshirildi. Shuning bilan birga ularni yoshlar ongiga singdirish borasida xam sezilarli ishlar amalga oshirildi. Jumladan, to’y va boshqa marosimlarni o’tkazish an’analari tiklandi, ota-onalar bilan farzand o’rtasida avlod-ajdodlarimizdan meros bo’lib kelgan munosabatlarni: ota-onaning oiladagi roli, farzandning ular oldidagi burchlarini anglash kabi an’analarga e’tibor oshdi. Aynan shuning uchun xam ayrim tadqiqotchilar umuminsoniy va milliy qadriyatlar urtasidagi dialektik bog’liqlikni sivilizatsion yondashuv orqali ochib berishga xarakat qiladilar. Chunki sivilizatsiya bugun mintaqalar va elatlarni, xalqlarni birlashtiruvchi, yaqinlashtiruvchi ular o’rtasidagi integratsiyani kengaytiruvchi omil sifatida ko’rsatilmoqda. Shu nuqtai nazardan ular umuminsoniy qadriyatlar tizimining shakllanishini kosmogen sivilizatsiya, texnogen sivilizatsiya, antropogen sivilizatsiyalarga guruxlab o’rganishga intiladilar. Bu esa, shaxs ma’naviyatiga xam ushbu sivilizatsiyaga xos belgilarni shakllantirish nuqtai nazaridan yondashishiga undaydi. “Ba’zilar,-deb yozadi M.Imomnazarov din va ma’naviyat o’rtasidagi farqni topish niyatida,-din va ma’naviyatni bir narsa deb qarashga moyil bo’lishadi. Bu unchalik to’g’ri emas. Har bir insonning o’z dini bo’lmaydi. Dunyoda dinlar ko’p, lekin ular muayyan.

Din-iloxy kitoblar orqali nozil etilgan aloxida qonun-qoidalarni bildiradi. Ma’naviyat qat’iy qonun qoidalar tarzida tasavvur qilinmaydi. Har bir shaxsning ma’naviyati o’ziga xos, har bir o’z ma’naviy olami mavjud”. Tadqiqotchilar fikriga ko’ra, ijtimoiy fazilatlarga bog’langan qadriyat asosan insoniyat va jamiyat manfaatlariga qaratilgan ezgu niyatlar asosida kelib chiqadi [2;15-b].

Ma’lumki, qadriyatlar ijtimoiy xususiyatlarga ega bo’lib, kishilarning xayotiy, kasbiy faoliyati jarayonida kishilarning turli soxalaridagi, avvalo, ishlab chiqarish, mexnat soxasidagi faoliyati uchun foyda keltiradigan narsa va xodisalar majmui bevosita bog’lik ravishda paydo bo’ladi va rivojlanadi. Qadriyat tushunchasiga bir qator ta’riflar keltirilgan. Har bir xalqning milliy qadriyatlarini uning tarixi, ma’naviyati, madaniyati, o’ziga xos urf-odatlarini, an’analarisiz tasavvur qilish qiyin. “Qadriyat deyilganda inson va insoniyat uchun axamiyatli bulgan millat, elat va ijtimoiy guruxlarning manfaatlarini va maqsadlariga xizmat qiladigan va ular



tomonidan baxolanib, qadrlanadigan tabiat va jamiyat ne'matlari, xodisalari majmuini tushunmog'imiz lozim" [1, 48].

Qadriyat-voqelikdagi muayyan xodisalarning umuminsoniy, ijtimoiy axloqiy, madaniy-ma'naviy axamiyatini ko'rsatish uchun qo'llanadigan tushuncha. "Qadriyat inson va jamiyat ma'naviyatining tarkibiy qismi, olamdagi voqealar, xodisalar, jarayonlar, xolatlar, sifatlar, talab va tartiblarning qadriini ifodalash uchun ishlatiladigan tushuncha "Qadriyatlar - jamiyatda kishilar o'rtasida obro'ga, e'tiborga, xurmatga, nufuzga ega kishilar, munosabatlar, xolatlar, moddiy narsalar va ma'naviy boyliklar majmuasi" [3;40-b].

Uning fikricha, qadriyatshunoslik asosan qadriyatlar, ularning namoyon bo'lish shakllari, qadrlash xissi, qadrlash tuyg'usi, realikka qadriyatli munosabat va aksiologik yondashuv, ijtimoiy taraqqiyot jarayonida qadriyatlar soxasidagi o'zgarishlar, qadrlash va qadrsizlanish muammolari, tarixni aksiologik tushunish, qadriyat tizimlarining amal qilish xususiyatlari to'g'risidagi masalalarni o'rganadi.

T.Abdullaev "Turmush soxasida milliy va umuminsoniy qadriyatlarining dialektikasi" nomli doktorlik dissertatsiyasida milliy va baynalminallik munosabatlar bilan bog'lik qadriyatlarni o'rgangan. Qadriyatlar ijtimoiy xususiyatga ega bo'lib, kishilarning barcha faoliyatlari jarayonida paydo bo'ladi. Qadriyatlar insonning turli soxadagi faoliyati uchun zarur bo'lgan va foydali narsalar, xodisalar va ma'naviy jarayonlar majmui bilan bog'lik ravishda yuzaga keladi [3;25-b].

Qadriyatlar falsafasining tarixi uzoq bo'lsada, bu to'gridagi fan aksiologiya o'tgan asrning o'rtalarida shakllandi. Bu atama ilmiy bilimlar soxasiga o'tgan asrning ikkinchi yarmida nemis aksiologi E.Gartman va fransuz olimi P.Lapi tomonidan kiritilgan. Aksiologiyani qadriyatlar to'g'risidagi fan yoki to'g'ridan-to'g'ri qadriyatshunoslik, deb atash mumkin. Har bir fanga o'z nomini bergan asosiy tushunchalar bo'lgani kabi qadriyat tushunchasi xam qadrshunoslik atamasi uchun shunday asos rolini bajaradi. G'arbda ba atama grekcha "axio" (qadriyat) va "logos" (fan, ta'limot tushinchalariga asoslanadi [1;63-b].

Har qanday fanni ilmiy bilimlarning maxsus soxasi sifatida qarash ana shu fanga xos mavzular, funksiyalar, tushunchalar, qonunlar, kategoriyalar borligini xam e'tirof etishni zaruriyatga aylantiradi. Aksiologiya ijtimoiy-falsafiy bilimlarning maxsus soxasi sifatida qarash xam bundan istisno emas. Unda xam bu soxadagi fanlarga xos bo'lgan xamma xususiyatlarni kuzatish mumkin. Qadriyashunoslik aksiologik ong, qadrlash tuyg'usi, aksiologik bilish, qadriyatli



yondashuv va boshqalar asosida to'plangan qadriyatlar to'g'risidagi bilimlar sistemasidir [4;12].

Jaxon ilm-fan taraqqiyoti rivojiga beqiyos xissa qo'shgan qutlug' ona diyorumizdan ilm-fanning barcha soxalari, jumladan, islomiy ilmlarda xam jaxonga dong taratgan buyuk allomalar yetishib chiqqan. Vatanimiz tarixining uchmas saxifalari ana shunday buyuk va mo'tabar zotlarning xayotlari bilan chambarchas bog'likdir. Shu bois vatanimizning "O'zbekiston - buyuk allomalar yurti" deya atalishi ayni xaqiqatdir. Sharqu G'arbni o'zaro bog'lagan, buyuk sivilizatsiyalar tutashgan yurtimiz xududida ilm-fan, madaniyat azaldan rivojlangan [8;36].

Aksiologik yondashuv asosida boshlang'ich sinf o'quvchilarida falsafiy tushunchalarni takomillashtirishning, nazariy asoslarini, ijtimoiy pedagogik zaruratini yoritib berish uchun aksiologik yondashuvning mazmunini ochib berish kerak. Bir qator tadqiqotchilarning ilmiy izlanishlarda aksiologiya fani, aksiologik yondashuv bo'yicha tadqiqotlar olib borilgan. Aksiologiya fani qadriyatshunoslik deb tarjima qilinadi. Inson nimaniki qadriga yetsa, o'sha uning uchun qadriyatga aylanadi. Bir narsaning kadriga yetish uchun uning moxiyatini anglab yetish lozim. Inson avvalo uzligini anglashga urinadi. Odam bolasi o'zligini anglab yeta borgan sari shaxsga aylanib boradi. Demak, inson ma'naviyatiga oid tushunchalar markazida shaxs turadi. Shaxs — o'zligini anglab yetgan, o'z qadrini bilgan insondir.

Inson jamiyat va insoniyatning yangi marralariga chiqqani yoki chiqayotganini aniqlash, o'lchash zarurati madaniyatga qarashning yangi yo'nalishi vujudga kelishiga zamin bo'ladi. Bizningcha, aksiologik yondashuv shunga urinish sifatida vujudga kelgan bulib, unda yaratilgan boyliklarni muayyan saralash xarakati mavjud. Agar qadriyat deganda "jamiyat, inson va insoniyat uchun axamiyatli bo'lgan barcha narsa, xodisa va voqealar» nazarda tutilishiga e'tibor berilsa, xozirgacha mustahkam pozitsiyani egallagan mazkur yondashuv nisbiy ekanligi, madaniyatni to'liq qamrab ololmasligi ayon bo'ladi. Qadriyatshunoslik asosan qadriyatlar, ularning namoyon bulish shakllari, qadrlash xissi, qadrlash tuyg'usi, reallikka qadriyatli munosabat va aksiologik yondashuv, ijtimoiy taraqqiyot jarayonida qadriyatlar soxasidagi o'zgarishlar, qadrlash va qadrsizlanish muammolari, tarixni aksiologik tushunish, qadriyat tizimlarining amal qilish xususiyatlari to'grisidagi masalalarni o'rganadi. Aksiologik yondashuv keng o'rganilgan. Masalan, V.A.Slasyonin pedagogik jarayonni va uning sub'ektlari bilan o'zaro ta'sirini, aksiologik yondashuvlardan foydalanishning ijobiy jixatlarni o'rgangan [12, 14].



Voqelikni o'rganishda ilmiy bilishning boshqa usullari bilan birga aksiologik yondashuv xam katta axamiyat kasb etadi. Ilmiy bilishda olam, undagi narsa, voqea, xodisa va boshqalar qadriyatning inson ongida aks etishi, kadriyatni anglashning reallikka mos kelish qonunlari, daraja va imkoniyatlari, uning me'yor va mezonlarini aniqlash nixoyatda muhim. Bunga umumiy bilish nazariyasi (gnoseologiya) bilan bir qatorda ijtimoiy va tabiiy fanlarning ma'lumotlariga, ayniqsa, oliy nerv sistemasining fiziologiyasi, xissiyot organlari va aqliy faoliyatning dalillariga, mantik, tilshunoslik kabi fanlarning yutuklariga tayaniladi.

Qozoqboy Yo'ldosh va Muxayyo Yo'ldoshning fikricha odamning qadriyatlar dunyosida adashib yurmasligiga xizmat qilish borasida adabiyot ulkan imkoniyatlarga ega. Sababki, odam badiiy asar bilan tanishayotganidayok, xissiy muvozanatdan chiqib, o'zi xam bilmagan xolda, tasvirlanayotgan adabiy qahramonlar xatti-xarakatlarini baxolay boshlaydi. Ya'ni adabiyot ihlosmandida o'z-o'zidan tabiiy ravishda baxolash-aksiologik tajriba shakllaia boradi. To'g'ri, inson axloq, din, siyosat, ishlab chiqarish, tijorat, ta'lim-tarbiya va boshqa xil son-sanoqsiz nobadiiy faoliyat yechimida xam aksiologik yondashuvlar qurshovida bo'ladi

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**TILLARNING MORFOLOGIK (TIPOLOGIK) TASNIFI
MORPHOLOGICAL (TYPOLOGICAL) CLASSIFICATION OF
LANGUAGES
МОРФОЛОГИЧЕСКАЯ (ТИПОЛОГИЧЕСКАЯ) КЛАССИФИКАЦИЯ
ЯЗЫКОВ**

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208- guruh talabasi **Najmiddinova Namunaxon Zaynobiddin qizi**

Annotatsiya: Ushbu maqola orqali tillarning tipologik tasnifi bilan tanishamiz. Bu tasnif orqali ularning xususiyatlarini va shu xususiyatlar orqali guruhlariga ajratishni o'rganamiz.

Abstract: Through this article, we will learn about the typological classification of languages. Through this classification, we will learn about their characteristics and how to divide them into groups based on these characteristics.

Аннотация: Благодаря этой статье мы познакомимся с типологической классификацией языков. Благодаря этой классификации мы узнаем их характеристики и то, как разделить их на группы по этим характеристикам.

Kalit so'zlar: amorf, flektiv, sintetik, analitik, agglyutativ, fleksiya, inkorporativ, polisintetik, izorillashgan, intonatsiya.

Keywords: amorphous, inflectional, synthetic, analytic, agglutinative, inflection, incorporative, polysynthetic, isorylated, intonation.

Ключевые слова: аморфный, флективный, синтетический, аналитический, агглютинативный, флективный, инкорпоративный, полисинтетический, изорилизованный, интонация.

KIRISH

Tillarning gramatik, aniqrog'i, morfologik yoki tipologik tasnifi asosida ularning grammatik strukturasiidagi o'xshashliklar aniqlanadi. Tillarning tipologik tasnifini birinchi bo'lib nemis olimlari aka-uka Shlegellar taklif etgan. Keyincha u XIX asr oxirida boshqa nemis olimi V.fon Gumboldt tomonidan tuzatilgan. U asosan uch belgiga e'tibor bergan: 1) ma'noga aloqador usullarga, 2) gap tuzilishiga, 3) tovush shakliga. Gumboldt ana shu belgilariga ko'ra tillarning to'rt guruhga ajratadi: 1) izolirlashgan, 2) agglyutativ, 3) flektiv 4) inkorporativ tillar. Keyinchalik bu tasnifga A.Shleyxer, F.F.Fortunatov kabi olimlar o'zgartirishlar kiritdilar. A. Shleyxer inkorporativ tillar borligini tan olmadi. F.F.Fortunatov esa,



so'zning morfologik tasnifiga ko'ra izolirlashgan, agglyutinatív, flektiv, inkorporativ yoki polisintetik tillarni farqladi. Ularning izohi quyidagicha tavsiflanadi.

Flektiv tillarda (lotincha "flexio" – o'tish, bukulish) morfemalar fonetik sharoitiga bog'liq bo'lmagan holda o'zgarishlarga uchraydi. Bu tillarda so'zning o'zagi ichki fleksiya natijasida o'zgaradi. Masalan, ingliz tilida sit-sat-o'tirmoq, catch-cought-ushlamoq, man-men-erkak kishilar va hakazo. Flektiv tillarda morfemalarni ajratish ancha mushkulroq bo'lib, so'zlarga qo'shilgan affikslar bir yo'la bir necha ma'nolarni ifodalashi mumkin. Flektiv tillarda qaysi vositalar grammatik ma'no ifodalashda ko'proq qo'llanishiga ko'ra analitik va sintetik turlarga bo'linadi. Analitik tillar- grammatik ma'nolar(so'z munosabati) shakl yasovchi affikslar yordamida emas, balki yordamchi so'zlar, so'z tartibi va intonatsiya vositasida ifodalanadi. Ingliz, fransuz, ispan, yangi fors tillari Analitik tillar hisoblanadi. Shuningdek, hind-yevropa oilasidagi boshqa tillarda ham ularning alomatlari mavjud. Amorf tillar(yunoncha. "amorphous" – shaklsiz) – affikslar bilan so'z yasalishi va so'z o'zgarishi bo'lmagan tillar. So'zlararo grammatik aloqa bitishuv yoki yordamchi so'zlar vositasida yuzaga chiqadi. Amalda amorf tillar kamchilikni tashkil etadi, ammo barcha tillarda unga xos unsurlar uchraydi (masalan, hind-yevropa, turkiy, fin-ugor va boshqalar). Amorf tillarga eng yaqin tillar- Xitoy, Vyetnam, Eve va boshqa Amorf tillarda mustaqil so'zlar yordamchi so'z vazifasida ham keladi. Masalan, xitoy tilida ge (arava), shong (ust), so'zlari qo'shilib – geshong (aravaning usti yoki arava ustida) hosil boladi. Mana shunday holatlarda amorf tillar namoyon bo'ladi.

Sintetik tillar (yunoncha. Synthetikos-qo'shiluvchi, birikuvchi) - tillarning tipologik sinfi; bunda bir so'z tarkibida bir qancha morfemalar (leksik , so'z yasovchi va so'z o'zgartiruvchi), binobarin, leksik va grammatik ma'nolar birlashadigan, qo'shiladigan tildir. Ularda sintetizmni – so'z ichidagi grammatikani ifodalovchi usullarga ichki fleksiya, affiksatsiya, so'z takrori so'z qo'shish va urg'uni kiritish mumkin. Masalan, o'zbek tilidagi "ishchilarga" so'z shakli sintetik holatda bo'lib, unda ham leksik (ish va chi), ham grammatik (lar va ga) ma'nolar ifodalanadi. Flektiv tillarga xos bo'lgan umumiy xususiyatlar quyidagicha:

1. Bir fleksiya bir nechta ma'no anglatishi mumkin. Masalan, rus tilidagi *виж-* y so'ziga qoshiladigan *-y* fleksiyasi bir vaqtning o'zida shaxs, son, zamoni ko'rsatadi.

2. Bir fleksiya bir nechta variantga ega bo'lishi mumkin. Masalan, rus tilida otlarda ko'plik –и, –ы, –а, –я kabi qo'shimchalar yordamida yasaladi: столы, стулья, дома, книги.
3. O'zakka va negizga fleksiya qo'shilganda tovushlar almashinuvi kuzatilishi: бежат – бегу, писать – пишу.
4. O'zak va negiz, negiz va Grammatik fleksiyalar o'rtasidagi chegarani aniqlash ko'p qiyinchilik tug'dirishi ham mumkin: мыться – моюус, пить – пью.
5. Ichki fleksiyalarga boy: masalan, arab tilida:
kitab – kitob
kutub – kitoblar
tiktib – u (jenskiy rod) yozyapti
jiktib – u (mujskoj rod) yozyapti
uktib – men yozyapman.
6. Gramatik shakllari suppletiv yo'l bilan yasaladigan so'zlar ko'p uchrashi. Masalan, rus tilida: ходить – шел, я – меня. Nemis tilida esa: sein, bin, ist, war va boshqalar misol bo'ladi.

Agglyutinativ (lotincha. agglutinare – ulamoq) tillarda so'zlarning o'zaro munosabati so'z yasash va so'z o'zgartirish affikslari orqali ifodalanadi. Afflyutinativ tillarga turkiy, fin-ugor, yapon, koreys, dravid, bantu tillari kiradi. Bu tillarning asosiy xususiyatlari quyidagilardan iborat:

1. Affikslarga boy, gapda so'zlarni bir-biriga bog'lash uchun asosan ana shu qo'shimchalardan foydalaniladi.
2. Bir affiks bir gramatik ma'no ifodalaydi, shu xususiyati bilan agglyutinativ tildagi affikslar fleksiyalarda farq qiladi.
3. Affikslar asosan bir xil ko'rinishga ega bo'lib, variantlari deyarli yo'q. Masalan: o'zbek tilida ko'plik faqat -lar qo'shilishi orqali yasaladi; kelishik qo'shimchalarining deyarli hamamsi o'z ko'rinishiga ega; variantlari bor qo'shimchalar esa (masalan, -m, -im, -ng, -ing, -ka, -ga, -qa kabilar), so'zlarning fonetik tuzilishi bilan bog'liq hisoblanadi.
4. O'zak, negiz, gramatik affikslar orasidagi chegara doimo aniq, masalan: ish – chi – lar – dan, dars – lik – lar – ni.
5. So'zlarning grammatik shakllarini yasashda suppletiv hodisasi deyarli uchramaydi.
6. Ko'pchilik agglyutinativ tillarda so'z tartibi nisbatan qat'iy. Lekin bu qat'iylik analitik flektiv tillardagi sabablar bilan tushuntirilmaydi. So'z



tartibining buzulishi hamma vaqt ham soʻz funksiyasining oʻzgarishiga olib kelmaydi; qatʼiy soʻz tartibi koʻproq til anʼanasi bilan bogʻliq. Masalan, oʻzbek tilida oddiy gaplardagi soʻz tartibi quyidagicha: ega – toʻdiruvchi - kesim.

7. Soʻzlarga qoʻshiladigan affikslar oʻzakka maʼlum tartib asosida qoʻshiladi.
8. Agglyutinativ tillar affikslarning oʻzakdan oldin yoki keyin turishiga koʻra prefiksial agglyutinativ tillar va postfiksial agglyutinativ tillarga boʻlinadi. Turkiy tillar postfiksial agglyutinativ tillardir. Afrikadagi suaxili tili esa prefiksial til hisoblanadi. Masalan: anamataka soʻzida uchta prefiksdan keyin oʻzak oʻrin olgan, yaʼni a – na – m – ataka (u buni xohlaydi).

Oʻzak (ajratuvchi) tillar. Tilshunoslikda bu ikki atama ham uchraydi. Bu tillarga asosan xitoy-tibet tillari (xitoy, tibet, tay, vietnam va boshqalar) kiradi. Ularning asosiy xususiyatlari soʻzlari koʻproq bir boʻgʻiniligi, affikslar, fleksiyalar yoʻq yoki deyarli yoʻqligi, gapda soʻzlar orasida sintaktik bogʻlanish asosan soʻz tartibi va ohang orqali amalga oshirilishidir. Bu tillar “amorf”, yaʼni “formasiz” tillar deb ham yuritiladi.

Mujassamlashtiruvchi (polisintetik) tillar. Polisintetik (grekcha polys – koʻp, synthesis - qoʻshish) bu tillarga amerikalik hindular va Rossiyadagi chukot, koryak tillari kiradi. Bu tillar koʻp jihatdan hali oʻrganilmagan. Hozirgi kunda maʼlum boʻlgan manbalarga qaraganda, bu tillarda soʻz tushunchasi nisbiydir. Chunki bu tillardagi soʻz boshqa tillardagi ayrim tovushlarga toʻgʻri kelib, oʻzining uzil-kesil maʼnosini faqat gap tarkibidagina kashf etadi. Odatda, bu soʻz-gapda elementlar bir –biriga qoʻshilib yoziladi. Bu tillardagi gaplar boshqa tillardagi soʻzga toʻgʻri keladi.

Inkorporatsiya (lotincha incorporare – qoʻshmoq) qoʻshma feʼl yasashning bir usuli hisoblanadi. Masalan, naua yoki antek tilida ni-ki-qwa in naka – tl - “Men (hozir) goʻsht yemoqdaman) gapida ni – feʼl prefiksi, 1-shaxs birlikda, k- jonsiz narsa bilan moslashuvda qoʻllanuvchi prefix, qwa – “yemoq”, oʻzak, in – aniq artikl, naka – “goʻsht”, ozal, tl – asosiy kelishik affiksi. Bu feʼlning shakli, Yaʼni soʻz “Men goʻsht yeyman“ degan gapga teng keladi va bu oʻziga xos inkorporatsiya hodisasidir.

XULOSA

Xulosa qilib aytganda, tillarning morfologik (tipologik) tasnifi toʻgrisida hech bir til oʻz xususiyatlari bilan boshqa tilga mutlaq mos kelmasligini aytib oʻtishimiz oʻrinli. Demak, tipologiya mutlaq, yaʼni absolyut emas, nisbiydir. Tillar oʻzlarining koʻproq xususiyatlari bilan u yoki bu turga mansub boʻlishi mumkin. Har bir tilda



flektiv, agglyutinativ va boshqa elementlar bo'lishi tabiiy hol bilan salanadi. Tillarning u yoki bu turga kiritishda ularning qaysi xususiyatlari ko'proqligiga qarab guruhlariga ajratamiz.

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Xujayra fiziologiyasi va o`simlik hujayrasining o`ziga xos xususiyatlari

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Annotatsiya

O`simliklar fiziologiyasi-bu o`simliklarning hayotiy jarayonlari, ularning tarkibiy tuzilishi va muhit bilan o`zaro aloqalari haqida ilmiy soha. O`simliklar fiziologiyasining asosiy yo`nalishlari quyidagilarni o`z ichiga oladi: fotosintez, suv almashinuvi, minerallar va oziq moddalarning o`simliklar tomonidan so`rilishi, hamda o`simliklarning o`sish va rivijlanish jarayonlari

Abstract: Plant physiology is a scientific field about the life processes of plants, their structural structure and their interactions with the environment. The main areas of plant physiology include: photosynthesis, respiration, water exchange, absorption, water exchange, absorption of minerals and nutrients by plants, and processes of plant growth and development.

Soyut

Bitki fiziologiyasi, bitkilerin, yashash sureclerini, yapisal yapilarini va cevreyle olan etkilesimlerini konu alan bilimsel bir alandır. Bitki fiziologiyasining ana alanlari sunlardir: fotosintez, solunum, su degisimi, minerallerin va besin maddelerinin bitkiler tarafidan emilmesi va bitki buyume va gelisme surecleri.

Kalit so`zlar: hujayra fiziologiyasi, plastid vakuola, metabolizm, o`sish va rivojlanish, nuklein kislotalar, plastid, fotosintez.

Kirish:

Hujayra fiziologiyasi biologiyaning asosiy yo`nalishlaridan biri bo`lib, u hujayralarning tuzilishi, funksiyalari va ular o`rtasidagi o`zaro ta`sirlarni o`rganadi. O`simlik hujayralari esa o`ziga xos tuzilishga va biologik jarayonlarga ega bo`lib ular o`simliklarning hayotiy faoliyatini ta`minlash uchun muhim rol o`ynaydi. O`simlik hujayrasining o`ziga xos xususiyatlari uning tirik organizmlarga xos asosiy jarayonlarni o`z ichiga oladi, masalan fotosintez, hujayra devoir mavjudligi va plastidlar faoliyati.

1. Hujayra tuzilishi:

Hujayra membranasi: O`simlik hujayralarida membrana atrof-muhit bilan aloqa, moddalarni tanlab o`tkazish, himoya va metabolitik jarayonlarni boshqaradi.

Hujayra devoiri: O`simlik hujayralarining eng muhim xususiyatlaridan biri bu ularning hujayra devoriga ega bo`lishidir. Hujayra devoiri, asosan, selluloza, pektin

va boshqa polimerlardan tashkil topgan bo`lib, hujayraga shakl beradi va mexanik kuchlarga qarshilik ko`rsatadi.

Plastidalar: O`simlik hujayrasining plastidalari, xususan xloroplastlar, fotosintez jarayonini amalga oshiradi. Xloroplastlar quyosh nurlarini yutib, ularni kimyoviy energiyaga aylantiradi, bu o`simliklar uchun hayotiy ahamiyatga ega bo`lgan jarayon. Xloroplastlar shaklan disksimon, linzasimon, donador bo`lib tashqi tomondan qo`sh qavat membrana bilan o`raglan bo`lib pardalarida mayda teshiklar bo`ladi. Ular yordamida xloroplastlar sitoplazmadagi endoplazmatik to`r bilan o`ralgan bo`ladi.

Vakuolalar: O`simlik hujayralarida katta va suyuqlik bilan to`la bo`lgan vakuolalar mavjud. Ular suv, minerallar, oqsillar va boshqalarni saqlaydi hamda osmotik balansni ta`minlaydi.

2. Metabolizm va energetika:

Fotosintez: O`simlik hujayralarida fotosintez jarayoni amalga oshadi, bunda xloroplastlar yordamida karbonat angidrid (CO_2) va suv (H_2O) quyosh nuri yordamida organik moddalarga, asosan glukoza ($C_6H_{12}O_6$) va kislorodga (O_2) aylanadi. Bu jarayon o`simliklarning energiya ishlab chiqarishning asosiy manbai hisoblanadi. Fotosintez ekosistemada muhim ahamiyatga ega, chunki o`simliklar tomonidan ishlab chiqarilgan kislorod boshqa jonivorlar tomonidan nafas olishda foydalaniladi. Shuningdek, o`simliklar bu jarayon orqali oziq-ovqat zanjirining asosini tashkil qilib, energiya ishlab chiqaradi.

Respiratsiya: Fotosintezdan keyin o`simliklar o`z ehtiyojlari uchun ishlab chiqarilgan organik moddalarni nafas olish jarayoni orqali metabolizatsiya qiladi, bu esa energiya hosil bo`lishini ta`minlaydi.

3. O`sish va rivojlanish:

Meristemalar: O`simlik hujayralarida o`sish va rivojlanishni boshqaruvchi meristematik hujayralar mavjud. Bu hujayralar bo`linib, yangi hujayralar va to`qimalar hosil qiladi. O`simliklar o`zining o`sishi nuqtalarini (apikal meristemalar va lateral meristemalar) boshqaradi.

Hujayra bo`linishi: O`simlik hujayralari bo`linish orqali yangi hujayralar hosil qiladi. Bu jarayon interfaza, profaza, metafaza, anafaza va telofazani o`z ichiga oladi. O`simlik hujayralari, odatda, mitoz jarayoni orqali bo`linadi, ammo ba`zan meyoza ham ro`y beradi. Meyoza tufayli bir organizmning jinsiy hujayralari genetik jihatdan o`ta farqlanuvchi xususiyatlarga ega bo`ladi. Shunday qilib, gametalar genetik strukturasining xususiyati jinsiy yo`l bilan ko`payuvchi organizm avlodi belgilarning rang-barangligini ta`minlaydi.



4. O`simlik hujayrasining boshqa xususiyatlari:

O`simlik hujayralarining qattiq hujayra qobig`I, plastidalar va vakuolalarning mavjudligi o`simliklarni o`zgartiruvchi va mustahkam tuzilma bilan ta`minlaydi. Bu xususiyatlar o`simliklarga tashqi muhit sharoitlariga moslashish imkoniyatini beradi.

Gormonlar va signalizatsiya: O`simlik hujayralari gormonlar orqali o`zaro signal beradi, masalan, auxin, gibberelin va sitokinlarning mavjudligi o`simliklar o`shini boshqaradi.

Xulosa:

K.A.Timiryazev o`simliklar fiziologiyasining maqsadi o`simlik tanasidagi hayotiy hodisalarni o`rganish va tushunish xamda shu yo`l bilan o`simlik organizmi kishi xoxishiga qarab o`zgarishi, undagi xodisalarni to`xtata olish yoki aksincha, ro`y berishga majbur qilish, xullas, o`simlikni kishi ixtiyoriga bo`ysundirishdan iborat, deb yozgan edi. Darxaqiqat, o`simlik hujayralari o`zining tuzilishi, energetik jarayonlari va rivojlanishiga xos xususiyatlar bilan o`zga hujayralardan farq qiladi. O`simlik hujayralarining o`ziga xos xususiyatlari ularning yashash muhitida yashashi, ko`payishi va o`shini uchun zarur shartlarni yaratadi. O`simlik hujayralarining fiziologiyasi va xususiyatlarini o`rganish nafaqat biologiya fanlari uchun, balki qishloq xo`jaligi va ekologiya sohalarida ham katta ahamiyatga ega.

Foydalanilgan manbalar:

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3.T. Rajabov- O`simliklar fiziologiyasi va ekologiyasi bo`yichadarsliklar muallifi bo`lib, u o`simlik hujayralarning fiziologik jarayonlarini va o`simliklarning muhitga moslashuvini o`rganishga bag`ishlangan ishlar yaratgan.



Hujayra organoidlari- mitoxondriya va plastidalar

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Annotatsiya: Ushbu tezisdagi hujayra organoidlaridan bo'lgan mitoxondriya va plastidalarining tuzilishi, vazifasi, xilma-xilligi, xususiyatlari, haqida umumiy ma'lumotlar taqdim etilgan. Ularning vazifalari va tuzilishi haqida so'z boradi.

Abstract: This thesis provides general information about the structure, function, variety, and characteristics of mitochondria and plastids, which are one of the cell organelles. Their tasks and structure are discussed.

Аннотация: В данной диссертации представлены общие сведения о строении, функциях, разнообразии и характеристиках митохондрий и пластид, которые являются клеточными органоидами. Обсуждаются их задачи и структура

Kalit so'z: Mitoxondriya, plastida, membrana, xloroplast, xromoplast, leykoplast, lamella, stroma, krista, qobiq.

Keywords: Митохондрии, пластида, мембрана, хлоропласт, хромопласт, лейкопласт, пластинка, строма, криста, оболочка.

Ключевые слова: Организм, развитие, клетка, ген, прокариот, эукариот, молекулярный процесс, цитоплазма, ядро, мембрана, мейоз, митоз, генетика.

Mitoxondriya nomi (mitos - ip, chondros - dona) birinchi marta 1898-yilda Benda tomonidan berilgan. Mitoxondriya shakli o'zgaruvchan bo'lib, ko'pincha, ipcha yoki donacha holda ko'rinadi. Mitoxondriyalarning asosiy vazifasi hujayraning nafas olishida qatnashish, ya'ni qand va yog'larning oksidlanishidan hosil bo'ladigan energiya hisobiga ATF sintezlashdir. Shuning uchun ularni hujayraning energetik stansiyalari deb ham ataydilar. Hujayralarda mitoxondriyalarning soni bir necha yuz bo'lishi mumkin. Ularning shakli va kattaligi esa o'zgaruvchan bo'ladi. Tirik hujayralarda mitoxondriya o'z o'rnini o'zgartirishi, o'zaro qo'shilishi, bo'linishi mumkin.

So'nggi vaqtlarda mitoxondriyalar ichki membranasida zamburug'simon yana bir nozik komponent topilgan bo'lib, u dumaloq zarracha va krista bilan tutashuvchi oyoqchadan iborat bo'ladi.[3,4]

Plastidalar - (plastidos - hosil qiluvchi) o'simlik hujayralarining asosiy organoidlaridan biri bo'lib, ularda fotosintez jarayoni amalga oshadi. Ular ikki qavat membrana bilan o'ralgan. Plastidalar shakli, tuzilishi, o'lchami, funksiyalari va rangiga ko'ra xilma-xil bo'ladi: yashil - xloroplastlar, qizil, to'q sariq, sariq - xromoplastlar, rangsiz - leykoplastlar. Plastidalar kelib chiqishi jihatdan bir-biriga bog'liq bo'lib, ontogenez davomida biri ikkinchisiga aylanishi mumkin.[1,2]

Xloroplastlar – nozik tuzilishli, juda murakkab bo'lib mitoxondriya kabi ikki qavat membranadan tashkil topgan, pardalarida mayda teshiklar bo'ladi. Tashqi membrana qobiq vazifasini o'taydi, ichki membrana ichkariga o'sib kirib, granalar hosil qiladi. Buning bir qavat membranasini tillakoid deyiladi. U grana tarkibida bo'lgani uchun grana tillakoidi deyiladi. Granalar orasidagi bo'shliq stroma deyiladi. Xloroplastlar yashil plastidalar o'simliklarning yashil qismlarida, po'stloq parenxima hujayralarida bo'ladi. Xloroplastlar shaklan disksimon, donador bo'ladi. [1,3].

Xromoplastlar stromasida karotinoidlarga mansub bo'lgan qizil pigment - karotin va sariq pigment – ksantofill bo'ladi. Xromoplastlar shakldan uch qirrali, yulduzsimon va shunga o'xshash shaklda bo'ladi. Xromoplastlar o'simliklarning vegetativ organlarida ildizmevasida, gultojibarglarida va pishgan mevalarda ularga rang berish va hayvonlarni jalb etish, va changlantirish protsesslarida katta ro'l o'ynaydi.[1,4]

Leykoplastlar rangsiz plastidalar, stromasida rang beruvchi pigmenti yo'q. Shakli sharsimon bo'lib, o'simliklarning o'sish nuqtasida (meristema to'qimalarida), yer osti qismida, urug'ida to'planadi. Leykoplastlar zapas kraxmal to'plash vazifasini bajaradi. Ular turlicha: amiloplastlar, proteoplastlar, oleoplastlar bo'ladi.

Xloroplastlarning mitoxondriyalardan asosiy farqi shundaki, ularning ichki membranasini kristallarni hosil qilmay, yassi tolali lamellalar va membranali tillakoidlar hosil qiladi. Lamellalar yassi naychalar bo'lib, stromada o'zaro parallel joylashadi, ammo o'zaro birlashmaydi. Xloroplastlar ham mitoxondriyalarga



o'xshab, avtonom oqsil sintezlovchi apparat, ya'ni DNK, RNK, ribosomalar, fermentlarga ega. Xloroplastlarda yorug'lik energiyasi ta'siridagi reaksiyalar natijasida fotosintez jarayoni amalga oshadi, energiyaga boy birikma ATF sintezlanadi, CO₂ uglevodlarga aylanadi.[3,4]

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**HUJAYRA SHAKILLARI VA EVOLUTSIYASI
CELL FORMS AND EVOLUTION
КЛЕТОЧНЫЕ ФОРМЫ И ЭВОЛЮЦИЯ**

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Annotatsiya: Mazkur maqola hujayra shakllarining xilma-xilligi va ularning evolyutsion jarayonlardagi ahamiyatini o'rganishga bag'ishlangan. Unda hujayra shakllarining funksiyaga bog'liq moslashuvchanligi, prokariot va eukariot hujayralar o'rtasidagi farqlar, ko'p hujayralilikning rivojlanishi va hujayra shaklining atrof-muhit sharoitlariga moslashishi kabi masalalar ko'rib chiqilgan. Shuningdek, parazit hujayralar evolyutsiyasi va ularning shakllaridagi o'ziga xosliklar ham tahlil qilingan. Tadqiqot natijalari hujayra biologiyasi, evolyutsiya nazariyasi va ularning amaliy sohalarda qo'llanilishiga oid qimmatli ma'lumotlarni taqdim etadi.

Abstract: This article is devoted to the study of the diversity of cell forms and their importance in evolutionary processes. It examines the functional flexibility of cell forms, the differences between prokaryotic and eukaryotic cells, the development of multicellularity, and the adaptation of cell form to environmental conditions. The evolution of parasitic cells and peculiarities in their forms were also analyzed. The results of the research provide valuable information on cell biology, evolutionary theory and their application in practical fields.

Аннотация: Данная статья посвящена изучению разнообразия форм клеток и их значения в эволюционных процессах. Он исследует функциональную гибкость клеточных форм, различия между прокариотическими и эукариотическими клетками, развитие многоклеточности и адаптацию клеточных форм к условиям окружающей среды. Также проанализирована эволюция паразитических клеток и особенности их формы. Результаты исследования предоставляют ценную информацию по клеточной биологии, эволюционной теории и их применению в практических областях.

Kalit so'zlar: hujayra shakli, evolyutsiya, prokariot, eukariot, moslashuvchanlik, ko'p hujayralilik, parazit hujayralar, tabiiy tanlanish.



Key words: cell shape, evolution, prokaryote, eukaryote, adaptation, multicellularity, parasitic cells, natural selection.

Ключевые слова: форма клетки, эволюция, прокариот, эукариот, адаптация, многоклеточность, паразитические клетки, естественный отбор.

Hujayra – barcha tirik organizmlarning eng kichik tarkibiy, funksional va tuzilmaviy birligi hisoblanadi. U mustaqil ravishda hayotiy jarayonlarni amalga oshira oladi. Hujayra tiriklikning asosiy xususiyatlarini, ya'ni o'sish, ko'payish, modda almashinuv va tashqi muhitga moslashish qobiliyatini o'zida mujassam etgan. Hujayra barcha tirik organizmlarning asosiy tarkibiy qismi hisoblanadi. Uning shakli, tuzilishi va funksiyasi organizmning moslashuvchanligi va evolyutsion jarayonlarning natijasi sifatida shakllanadi. Hujayralarning xilma-xilligi hayotning ko'p qirraliligini ta'minlashda muhim rol o'ynaydi. Ushbu maqolada hujayralarning shakllari va ularning evolyutsion ahamiyati ko'rib chiqiladi.

Hujayra shakllari

Hujayralarning shakllari ularning vazifalariga moslashgan holda turlicha bo'ladi. Shakllarning xilma-xilligi hujayralarning maxsus funksiyalarni bajarish imkoniyatini oshiradi:

1. Sferik shakldagi hujayralar – Masalan, qonning qizil tanachalari (eritrotsitlar) yumaloq shaklga ega bo'lib, bu ularning kislorod tashishda samaradorligini oshiradi.

2. Cho'zilgan shakldagi hujayralar – Mushak hujayralari kabi tolalarga o'xshash shakl kuchli qisqarish va cho'zilishga imkon beradi.

3. Noaniq shaklli hujayralar – Oqsillarni parchalovchi va immunitetni ta'minlaydigan fagotsitlar noaniq shaklga ega bo'lib, bu ularga harakatlanish va begona moddalarni o'zlashtirishga yordam beradi.

4. O'tkazuvchi shakldagi hujayralar – Neyronlar uzun va tarmoqlangan shaklga ega bo'lib, bu nerv impulslarini uzatish uchun qulaylik yaratadi.

Hujayra shakllarining evolyutsiyasi

Hujayra evolyutsiya nazariyasi hujayralarning paydo bo'lishi, rivojlanishi va murakkablashish jarayonlarini tushuntiradi. Bu nazariya tiriklikning dastlabki shakllaridan tortib, murakkab ko'p hujayrali organizmlargacha bo'lgan evolyutsion yo'lni yoritadi. Hujayralarning shakli va tuzilishidagi o'zgarishlar tabiiy tanlanish va moslashuvchanlik jarayonlarida yuzaga keladi. Quyida hujayra shakllarining evolyutsion jihatlari tahlil qilinadi:

1. Prokariotlardan eukariotlarga o'tish

Hujayralar evolyutsiyasining muhim bosqichlaridan biri prokariotlardan murakkabroq eukariot hujayralarga o'tishdir. Bu jarayonni tushuntiruvchi asosiy nazariya endosimbioz nazariyasi deb ataladi. Dastlabki prokariot hujayralar oddiy shaklga ega bo'lib, atrof-muhitning o'zgaruvchan sharoitlariga moslashgan. Ammo eukariot hujayralarning shakllari va ichki tuzilmalari ko'proq kompleks bo'lib, organellalar hosil bo'lishiga olib kelgan. Bu esa energiya ishlab chiqarish, oziqlanish va harakatlanishda samaradorlikni oshirgan.

2. Ko'p hujayralilikka o'tish

Ko'p hujayralilik jarayonida hujayralar orasida o'ziga xoslik vujudga kelgan. Masalan, o'simlik hujayralari mustahkam hujayra devoriga ega bo'lsa, hayvon hujayralari elastik membrana bilan ajralib turadi. Bu farqlar hujayralarning turli muhitlarda yashashi uchun muhim ahamiyat kasb etgan. Bir hujayrali organizmlardan ko'p hujayrali organizmlarga o'tish evolyutsion rivojlanishning muhim bosqichidir. Ushbu jarayon quyidagi bosqichlarda sodir bo'lgan: Bir hujayrali organizmlar koloniyalar hosil qilgan. Koloniyalarda hujayralar o'zaro taqsimlanib, maxsus funksiyalarni bajara boshlagan. Ko'p hujayralilik rivojlanib, organizmlar kompleks tuzilishga ega bo'lgan. Ko'p hujayralilikning paydo bo'lishi organizmlar o'lchamining kattalashishi va murakkablashishini ta'minladi. Bu moslashuvchanlikni oshirib, evolyutsiyada ustunlik berdi.

3. Moslashuvchanlik va maxsus funksiyalar

Evolutsion jarayonda hujayralarning o'lchami va shakli atrof-muhit sharoitlariga moslashgan. Masalan, baland daraxtlarning ildiz hujayralari suvni samarali so'rish uchun kengaygan yuzaga ega, suvda yashovchi organizmlarning hujayralari esa silliq shakl bilan oson harakatlanadi.

4. Parazit hujayralar evolyutsiyasi

Parazit organizmlar hujayralarining shakllari ularning xo'jayin organizmda yashashiga moslashgan. Masalan, malyariyani chaqiruvchi plazmodiy hujayralari murakkab ko'p bosqichli rivojlanish sikliga ega.

Hujayra tiriklikning asosi bo'lib, u organizmlar uchun hayotiy jarayonlarni amalga oshirish imkoniyatini yaratadi. Organizmning sog'lom ishlashi har bir hujayraning normal funksiyasiga bog'liq. Shu sababli hujayra biologiyasi fanida hujayraning tuzilishi va faoliyatini o'rganish muhim ahamiyatga ega. Hujayra atrof-muhit sharoitlariga moslashish qobiliyatiga ega. Masalan, bakteriyalar ekstremal muhitlarda ham yashashga moslashgan. Hujayralar bo'linish yo'li bilan o'zini ko'paytira oladi. Bu jarayon prokariotlarda ikki bo'linish orqali, eukariotlarda esa



mitoz yoki meyoza orqali amalga oshadi. Hujayra moddalar almashinuvi, energiya ishlab chiqarish, sintez jarayonlari va tashqi muhit bilan o'zaro ta'sirni ta'minlaydi.

Xulosa: Hujayra shakllari va ularning evolyutsiyasi hayotning xilma-xilligini va moslashuvchanligini ta'minlaydi. Bu jarayonlar hujayralarning genetik o'zgarishlari, tabiiy tanlanish va muhit bilan o'zaro ta'sir natijasida shakllangan. Hujayralar shakli va funksiyasining o'rganilishi biologiyaning asosiy maqsadlaridan biri bo'lib, bu kelajakda biotexnologiya va tibbiyot sohalarida yangi yechimlar yaratishga yordam beradi. Hujayra tirik organizmlarning asosiy birliklaridan biri bo'lib, uning tuzilishi va funksiyalari hayotning barcha ko'rinishlarida muhim o'rin tutadi. Hujayraning evolyutsiyasi – hayotning paydo bo'lishi va rivojlanishini tushuntiruvchi asosiy jarayonlardan biri. Bu jarayon kimyoviy evolyutsiyadan boshlab ko'p hujayralilik va murakkab organizmlar paydo bo'lishigacha davom etgan. Hujayraning evolyutsion jarayonlarini o'rganish biologiya, genetika va tibbiyot sohalarida muhim nazariy va amaliy ahamiyatga ega.

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TIRIK ORGANIZMLARNING KOPAYISH XILLARI GAMETALAR

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Annotatsiya

Maqolada tirik organizmlarning ko'payish turlari, shu jumladan gametalarning roli haqida batafsil ma'lumot berilgan. Gametalar organizmlarning jinsiy ko'payish jarayonida ishtirok etadi, ular o'zgaruvchanlikni ta'minlab, avlodning genetik xilmaxilligini oshiradi. Ushbu maqolada ko'payishning ikkita asosiy turi — jinsiy va jinsiy bo'lmagan ko'payish turlari haqida, shuningdek, gametalar va ularning organizmlarda ko'payishdagi o'rni haqida tahlil qilinadi. Gametalarning jinsiy ko'payishdagi roli, ularning o'zgaruvchanlikka ta'siri va organizmning genetik merosida qanday ahamiyatga ega ekanligi xususida ilmiy nuqtai nazar orqali fikrlar keltiriladi.

Abstrakt:

The article details the types of reproduction in living organisms, including the role of gametes. Gametes participate in the progress of sexual reproduction of organisms, they provide variation and increase the genetic diversity of the offspring. This article analyzes the two main types of reproduction, sexual and asexual reproduction, as well as gametes and their role in reproduction in organisms. The role of gametes in sexual reproduction, their influence on variation the secret and its significance in the genetic inheritance of the organism are presented from a scientific point of view

Turk

Makale, gametlerin roli de dahil olmak üzere canlı organizmalardaki üremetürlerini ayrıntılarıyla anlatıyor. Gametler organizmaların eşeyli üremes sürecine katılır, çeşitlilik sağlar ve yavruların genetik çeşitliliği artırırarttırır. Bu makale, ikki ana üreme türünü, eşeyli ve eşeysiz üremenin yanı sıra gametleri ve bunların organizmalardaki üremedeki rolünü analiz etmektedir. Gametlerin eşeyli üremedeki rolü, varyasyon üzerindeki etkisi ve bunun genetik kalıtımdaki önemi. Organizma bilimsel bir bakış açısıyla sunulmaktadır.

Kalit so'zlar

- Tirik organizmlar
- Ko'payish

- Gametalar
- Jinsiy ko'payish
- Jinsiy bo'lmagan ko'payish
- Genetik xilma-xillik
- Genetik meros

Kirish

Tirik organizmlar uchun ko'payish hayotning davomiyligini ta'minlovchi eng muhim jarayonlardan biridir. Ko'payishning asosiy maqsadi — avlod yaratish va ularni tirik tutishdir. Tirik organizmlar turli usullar orqali ko'payishadi, ulardan eng asosiysi jinsiy va jinsiy bo'lmagan ko'payishdir. Gametalar, ya'ni tuxum hujayra va spermatozoid, jinsiy ko'payishning ajralmas qismlaridan biri bo'lib, ularning o'zaro birlashishi orqali yangi individlar paydo bo'ladi. Jinsiy ko'payish genetik xilma-xillikni ta'minlaydi, bu esa organizmlarning yashash uchun zarur bo'lgan moslashuvchanlikni oshiradi. Ushbu maqolada, ko'payishning turli xillari va gametalar roli haqida muhokama qilinadi.

Tahlil va Muhokama

Ko'payishning turlari

Tirik organizmlarning ko'payishi ikki asosiy turga bo'linadi: jinsiy va jinsiy bo'lmagan ko'payish.

Jinsiy ko'payish — bu jarayonda ikki turli jinsdagi gametalarning birlashishi orqali yangi organizm hosil bo'ladi. Jinsiy ko'payishning eng katta afzalligi shundaki, bu jarayon organizmning genetik xilma-xilligini ta'minlaydi. Gametalar, tuxum hujayra (femina) va spermatozoid (erkak), genetik ma'lumotni birlashtirib, yangi organizmning xususiyatlarini shakllantiradi. Buning natijasida avlodlar orasida yangi xususiyatlar va turli xil genetik kombinatsiyalar paydo bo'ladi, bu esa ularning muhitga moslashishini yaxshilaydi.

Jinsiy bo'lmagan ko'payish esa bitta organizm orqali yangi individlar hosil bo'lishini ta'minlaydi. Bu ko'payish jarayonida genetik o'zgarishlar yuz bermaydi, ya'ni yangi paydo bo'lgan organizm aslida ota-ona organizmi bilan bir xil genetik tuzilishga ega bo'ladi. Jinsiy bo'lmagan ko'payish oddiy sharoitda tez rivojlanish imkonini beradi va organizmning yashash muhitida katta o'zgarishlar yuzaga kelmasdan ko'payishiga yordam beradi. Masalan, bakteriyalarning bo'linishi yoki o'simliklarning vegetativ ko'payishi jinsiy bo'lmagan ko'payishning misollaridir.

Gametalar va ularning roli

Gametalar — jinsiy ko'payishda ishtirok etadigan maxsus hujayralardir. Tuxum hujayra va spermatozoid, har biri o'ziga xos genetik materialga ega bo'lib, ular

birlashganda yangi organizmning genetik tuzilmasi shakllanadi. Gametalar, organizmlarning evolyutsion jarayonida o'zgaras va doimiy bo'lib qolmaydi, balki muhitga moslashish jarayonida doimiy ravishda o'zgaradi. Shuning uchun gametalar organizmlar uchun genetik xilma-xillikni yaratishda muhim ahamiyatga ega.

Gametalar, shuningdek, organizmlarda o'zgaruvchanlikning asosiy manbai bo'lib xizmat qiladi. Odatda, har bir gameta bir nechta xususiyatlarni — genetik materialni va boshqa fizikalaviy, biokimyoviy xususiyatlarni o'zida mujassamlashtiradi. Bu o'zgaruvchanlik, organizmlar uchun yangi sharoitlarga moslashish imkoniyatini yaratadi.

Jinsiy ko'payish va genetik xilma-xillik

Jinsiy ko'payishning eng katta afzalligi — genetik xilma-xillikni yaratishdir. Yangi gametalar birlashishi natijasida har bir yangi individ yangi genetik kombinatsiyaga ega bo'ladi. Bu esa organizmlar orasidagi genetik xilma-xillikni oshiradi, bu omil esa ekologik sharoitlar o'zgariganida muhim rol o'ynaydi. Misol uchun, iqlim o'zgarishi yoki boshqa ekologik stress holatlari paytida, genetik xilma-xillik organizmlarga yangi sharoitlarga moslashish imkoniyatini beradi.

Gametalar va evolyutsiya

Gametalar evolyutsiyaning muhim qismlaridan biridir. Jinsiy ko'payish natijasida gametalar birlashganda, yangi organizmning genetik xususiyatlari o'zgaradi. Bu o'zgarishlar organizmlarning hayotiy salohiyatini yaxshilaydi, ularga yangi sharoitlarga moslashish imkonini yaratadi. Shuningdek, gametalar turlar o'rtasida genetik materialning almashinuvi va evolyutsiyaning tezlashishiga yordam beradi.

Xulosa

Tirik organizmlarning ko'payishi hayotning davomiyligini ta'minlash uchun zarur bo'lgan jarayondir. Jinsiy ko'payish gametalar yordamida amalga oshiriladi va bu jarayon organizmlar orasidagi genetik xilma-xillikni oshiradi. Gametalar o'zaro birlashish natijasida yangi organizmning genetik tuzilmasi shakllanadi. Jinsiy bo'lmagan ko'payish esa o'ziga xos xususiyatlarga ega bo'lib, tez ko'payish imkoniyatini beradi, ammo genetik o'zgarishlarni ta'minlamaydi. Ko'payishning har ikki turi ham organizmlarning hayotiy salohiyatini oshiradi va ular uchun yashash sharoitlariga moslashish imkonini beradi.



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HUJAYRALARNING BO'LINISHI: MITOZ VA MEYOZ

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Annotatsiya:

Mazkur maqolada hujayralarning bo'linish jarayonlari, jumladan, mitoz va meyozi jarayonlarining biologik ahamiyati, bosqichlari va ularning organizm rivojlanishidagi o'rni tahlil qilinadi. Hujayra bo'linishining genetik axborotni saqlash, organizmlarning o'sishi va ko'payishi jarayonlaridagi muhimligi o'rganilgan.

Abstract:

This article analyzes the biological significance and stages of cell division processes, including mitosis, and meiosis, and their role in the development of the organism. The importance of cell division in the storage of genetic information, the growth and reproduction of organisms has been studied.

Türk

Bu makale, mitoz ve meyozi da dahil olmak üzere hücre bölünmesi süreçlerinin biyolojik önemini ve aşamalarını ve bunların organizmanın gelişimindeki rolünü analiz etmektedir. Genetik bilginin depolanmasında, organizmaların büyümesinde ve çoğalmasında hücre bölünmesinin önemi araştırılmıştır.

Kalit so'zlar: hujayra bo'linishi, mitoz, meyozi, genetik axborot, organizm rivojlanishi, biologik jarayonlar.

Kirish

Hujayra bo'linishi barcha tirik organizmlar hayot faoliyatining asosi bo'lib, u genetik axborotni keyingi avlodlarga uzatish, organizmning o'sishi va ko'payishini ta'minlashda muhim rol o'ynaydi. Hujayralar ikki asosiy yo'l bilan bo'linadi: mitoz va meyozi. Mitoz somatik hujayralarning bo'linishida ishtirok etsa, meyozi jinsiy hujayralarning paydo bo'lishida ishtirok etadi. Ushbu maqolada har ikki jarayonning bosqichlari va biologik ahamiyati chuqur tahlil qilinadi.

Tahlil va muhokama

1. Mitoz bo'linish



Mitoz bu – somatik hujayralarning bo‘linishi bo‘lib, unda ona hujayraning genetik materiali to‘liq saqlanadi va ikki qiz hujayraga bo‘linadi. Bu jarayon organizmning o‘sishi, to‘qimalarning tiklanishi va regeneratsiyasini ta‘minlaydi.

Mitozning bosqichlari:

1. **Interfaza:** Hujayra bo‘linishiga tayyorgarlik ko‘riladi. DNK ikki barobariga ko‘payadi.
2. **Profaz:** Xromosomalar zichlashadi, yadroviy qobiq eriydi va hujayraning bo‘linish shpindelini hosil bo‘ladi.
3. **Metafaz:** Xromosomalar hujayra markaziga joylashadi.
4. **Anafaz:** Xromosomalar yarmi (xromatidalar) qarama-qarshi qutblarga tortiladi.
5. **Telofaz:** Yangi yadrolar shakllanadi, xromosomalar yana diffuz holatga o‘tadi.
6. **Sitokinez:** Hujayra tsitoplazmasi bo‘linadi va ikki qiz hujayra hosil bo‘ladi.

Mitoz jarayonida hujayralar genetik jihatdan bir xil bo‘lib, bu organizmning genetik barqarorligini ta‘minlaydi.

Biologik ahamiyati:

- Organizmning o‘sishi va rivojlanishi.
- Jarohatlangan to‘qimalarni tiklash.
- Bir hujayrali organizmlarda ko‘payish jarayoni.

2. Meyoz bo‘linish

Meyoz bu – jinsiy hujayralarning bo‘linish jarayoni bo‘lib, bunda ona hujayradan to‘rt genetik jihatdan turlicha qiz hujayralar hosil bo‘ladi. Meyoz organizmlarda genetik xilma-xillikni ta‘minlaydi.

Meyozning bosqichlari:

Meyoz ikkita ketma-ket bo‘linishni o‘z ichiga oladi: meyozi I va meyozi II.

Meyoz I:

- **Profaz I:** Xromosomalar zichlashadi va gomologik xromosomalar juftlashadi (sinapsis). Xromosomalar orasida genetik material almashinuvi (krossingover) sodir bo‘ladi.
- **Metafaz I:** Xromosomalar juftlari hujayra markaziga joylashadi.
- **Anafaz I:** Gomologik xromosomalar qarama-qarshi qutblarga ajraladi.
- **Telofaz I va sitokinez:** Hujayra bo‘linadi va ikki qiz hujayra hosil bo‘ladi.

Meyoz II:



Bu jarayon mitozga o'xshash kechadi, lekin bunda xromosomalar soni ikki barobar kamaygan bo'ladi. Natijada to'rtta haploid (n) jinsiy hujayralar hosil bo'ladi.

Biologik ahamiyati:

1. Genetik xilma-xillikni ta'minlaydi.
2. Jinsiy ko'payishda organizmning moslashuvchanligini oshiradi.
3. Haploid jinsiy hujayralarni hosil qiladi.

Hujayralarning bo'linish jarayonlarining ahamiyati

Hujayralarning bo'linishi tirik organizmlar uchun eng muhim jarayonlardan biridir. Bu jarayon o'sish, rivojlanish va organizmning funksional tizimlarini tiklashni ta'minlaydi. Hujayra bo'linishining asosiy turlari – mitoz va meyoza – har biri turli biologik jarayonlarga xizmat qiladi va har xil natijalar bilan yakunlanadi. Mitoz bo'linish, asosan, barqarorlikni ta'minlashga qaratilgan bo'lsa, meyoza evolyutsion xilma-xillik va moslashuvchanlikni oshiradi.

Mitozning ijtimoiy va tibbiy ahamiyati

Mitoz jarayoni somatik hujayralarning yangi nusxalarini yaratib, organizm o'sishini ta'minlaydi. Shuningdek, u hujayralar qariyb ketganida yoki zararlanganda ularni tiklashga xizmat qiladi. Masalan:

- **Jarohatlarning bitishi:** Teri va boshqa to'qimalardagi hujayralar mitoz orqali tez tiklanadi.
- **Yoshga bog'liq o'zgarishlar:** Mitozning samaradorligi pasayganda qarish jarayoni tezlashadi, bu esa qariyalar orasida o'rganish uchun muhim tibbiy muammo hisoblanadi.
- **Onkologiya (Saraton kasalligi):** Mitozning nazoratsiz davom etishi saraton hujayralarining ko'payishiga olib keladi. Bu jarayonni o'rganish tibbiyotda samarali davolash usullarini ishlab chiqishga yordam beradi.

Meyozning genetik xilma-xillikni ta'minlashdagi roli

Meyoz organizmlarda genetik xilma-xillikni ta'minlashda asosiy omildir. Krossingover va genlarning qayta kombinatsiyasi tufayli turli genotiplarga ega bo'lgan jinsiy hujayralar paydo bo'ladi. Bu jarayon quyidagi biologik afzalliklarni ta'minlaydi:

- **Moslashuvchanlikni oshiradi:** Atrof-muhit sharoitlari o'zgarishiga qarab organizmlarning moslashish qobiliyatini yaxshilaydi.



- **Kasalliklarga chidamlilik:** Genetik xilma-xillik populyatsiyalarda kasalliklarga qarshi turg'unlikni oshiradi.

- **Ko'payish samaradorligi:** Jinsiy ko'payish orqali tur davomiyligi ta'minlanadi.

Mitoz va meyozi o'rtasidagi mexanik farqlar

Mitoz va meyozi jarayonlari mexanik jihatdan bir-biridan farq qiladi. Mitozning asosiy maqsadi – ona hujayra bilan identik qiz hujayralarni hosil qilish. Bu jarayon barqarorlikni saqlaydi va hujayra tsikli doimiy ravishda amalga oshiriladi. Meyozda esa xromosomalar soni ikki barobarga kamayadi. Bu jarayon haploid jinsiy hujayralarni yaratib, genetik xilma-xillikni ta'minlaydi.

Genetik materialning uzatilishi

Mitozda xromosomalar nusxalanib, ikki teng bo'lakka bo'linadi va har bir qiz hujayra bir xil genetik axborot oladi. Shu sababli, mitoz jarayonida mutatsiyalar juda kam uchraydi. Meyozda esa genetik materialning qayta kombinatsiyasi tufayli genlar o'rtasida turlicha o'zgarishlar yuz beradi. Bu biologik evolyutsiyani ta'minlashning asosiy omillaridan biridir.

Hujayra bo'linishi va atrof-muhit omillari

Atrof-muhit omillari, masalan, oziqlanish, harorat va kimyoviy moddalar, hujayra bo'linish jarayonlariga ta'sir ko'rsatadi. Masalan:

- **Radiatsiya va toksinlar** mitoz va meyozi jarayonlarini buzishi mumkin, bu esa genetik mutatsiyalarga va irsiy kasalliklarga olib keladi.

- **Oziqlanishning yetishmasligi** hujayra tsiklining buzilishiga olib keladi, bu o'sish va rivojlanishga salbiy ta'sir qiladi.

Mitoz va meyozi evolyutsion ahamiyati

Evolyutsiya jarayonida mitoz va meyozi muhim rol o'ynaydi. Mitoz barqarorlik va hayot davomiyligini ta'minlagan bo'lsa, meyozi genetik xilma-xillikni yaratgan. Ushbu ikki jarayon birgalikda biologik xilma-xillikni va ko'p hujayrali organizmlarning shakllanishini ta'minlagan.

Zamonaviy tadqiqotlar va hujayra bo'linishidan foydalanish

Hujayra bo'linishini o'rganish genetik manipulyatsiyalar, gen terapiyasi va regenerativ tibbiyotda yangi imkoniyatlar yaratmoqda.

- **Stvol hujayralar:** Mitoz orqali ko'payish xususiyatiga ega bo'lgan stvol hujayralar regenerativ tibbiyotda keng qo'llanilmoqda.

- **Gen muhandisligi:** Meyoz jarayonini boshqarish orqali organizmlarning irsiy xususiyatlarini o'zgartirish imkoniyatlari yaratilmoqda.



Xulosa

Hujayralarning bo‘linishi tirik organizmlar hayot faoliyatining muhim qismi hisoblanadi. Mitoz organizmning o‘sishi va to‘qimalarning tiklanishini ta’minlasa, meyoj jinsiy ko‘payishda genetik xilma-xillikni yaratadi. Ushbu jarayonlarning o‘rganilishi biologiya, genetika va tibbiyot sohalarida katta ahamiyatga ega bo‘lib, ularning mexanizmlarini chuqur bilish kelgusida kasalliklarni davolash va genetik manipulyatsiya jarayonlarini rivojlantirish uchun muhimdir.

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МОТИВАЦИЯ УЧЕБНОЙ ДЕЯТЕЛЬНОСТИ У УЧАЩИХСЯ НАЧАЛЬНЫХ КЛАССОВ

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Ключевые слова: мотивация, учебная деятельность, младшие школьники, внутренняя мотивация, внешняя мотивация, социальная мотивация, учитель, методы обучения, игровые технологии, познавательная активность, эмоциональный фон, образовательный процесс.

Аннотация: Статья посвящена исследованию мотивации учебной деятельности у учащихся начальных классов. Рассматриваются основные виды мотивации, такие как внешняя, внутренняя и социальная, а также их влияние на успешность обучения. Особое внимание уделяется роли учителя в формировании устойчивой мотивации, а также практическим рекомендациям для педагогов, направленным на стимулирование интереса детей к учебному процессу.

Мотивация играет ключевую роль в процессе обучения, особенно у детей младшего школьного возраста. Успешность учебной деятельности зависит не только от знаний и умений ученика, но и от его внутреннего желания учиться, которое формируется через разнообразные стимулы и методы воздействия со стороны учителя.

Мотивация - это процесс, который побуждает человека к определенному действию. В контексте обучения мотивация определяет, насколько заинтересован ученик в процессе познания, насколько он готов прилагать усилия для освоения новых знаний и умений. Важно отметить, что мотивация у детей младшего школьного возраста отличается от мотивации у взрослых: она более эмоциональна, зависима от внешних факторов и часто строится на основе интересов и потребностей ребенка.



Для школьников начальной школы характерны несколько типов мотивации:

1. Внешняя мотивация — стремление к получению внешних поощрений, таких как похвала, награды или оценка.

2. Внутренняя мотивация — желание учиться ради самого процесса, интерес к познанию и развитию.

3. Социальная мотивация — стремление удовлетворить ожидания родителей, учителей или сверстников.

Для того чтобы учебная деятельность была успешной, важно гармонично сочетать все виды мотивации, помогая ребенку развивать внутреннюю мотивацию.

Учитель играет центральную роль в формировании мотивации учащихся. Используя разнообразные методы работы, такие как игровая форма обучения, элементы соревнования и стимулирование интереса, педагог создает положительное отношение к учебному процессу. Учитывая особенности возраста детей, учителю важно вовремя менять подходы, чтобы поддерживать интерес и развивать познавательную активность учеников.

Использование игровых методов обучения: Игры, как в учебной, так и в игровой форме, способствуют вовлечению детей в процесс обучения и повышают их мотивацию. Постановка достижимых целей: Когда ребенок понимает, что он может достичь успеха, его мотивация возрастает.

Создание положительного эмоционального фона: Похвала, поддержка, внимание к успехам ребенка делают его деятельность более осмысленной и значимой.

Интеграция личных интересов ученика: Если ученик видит связь между тем, что он изучает, и тем, что ему интересно, его мотивация значительно возрастает.



Заключение. Мотивация учащихся начальных классов — это не только система внешних стимулов, но и важнейший аспект личного развития ребенка. Формирование устойчивой мотивации к обучению помогает детям стать активными участниками образовательного процесса, развивает их самостоятельность и ответственность. Для этого важно учитывать индивидуальные особенности каждого ученика, применять разнообразные методы и подходы в обучении.

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СУЩНОСТЬ И ОСОБЕННОСТИ ИНТЕГРИРОВАННОГО ОБУЧЕНИЯ В НАЧАЛЬНОЙ ШКОЛЕ

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Ключевые слова: интеграция, интеграция в образовании, интегрированные уроки, особенности организации интегрированных уроков, начальная школа.

Аннотация: В статье рассматриваются понятие и виды интегрированных уроков, особенности и требования организации интегрированных уроков в начальной школе, отличия интегрированных уроков от традиционных, цели и задачи интегрированных уроков в начальной школе.

Основной формой организации процесса интеграции предметов в начальной школе является интегрированный урок, особенностью которого выступает то, что его могут вести два или три, а может быть и больше педагогов. С психолого-педагогической точки зрения интегрированный урок способствует активизации познавательной деятельности школьников, стимулирует их познавательную активность, является условием успешного усвоения учебного материала.

Интегрированный урок – особый тип урока, объединяющий в себе обучение одновременно по нескольким дисциплинам при изучении одного понятия, темы или явления.

Интегрированный урок можно характеризовать по следующим признакам:

- наличие основания для интеграции (проблема, теория, метод или объект изучения);
- интегрированный подход к отбору содержания образования: знаний, умений, ценностных ориентаций на основе разных форм постижения действительности;
- выбор адекватной формы проведения урока, обеспечивающей развитие разных сфер личности школьников.



Понятие "интеграция" Л.Н.Бахарева, раскрывает как "процесс сближения и связи наук". Этот процесс представляет собой высокую форму воплощения межпредметных связей на качественно новой ступени обучения. Интеграция не отрицает предметной системы обучения. Она является возможным путем ее совершенствования, преодоления недостатков и направлена на углубление взаимосвязей и взаимозависимости между предметами.

Ю.М.Колягин считает, что применительно к системе обучения понятие "интеграция" может принимать два значения:

1) как цель обучения она должна дать ученику те знания, которые могут научить ребенка с первых шагов обучения представлять мир как единое целое, где все элементы взаимосвязаны.

2) как средство обучения направлена на развитие эрудиции обучающегося, на обновление существующей узкой специализации в обучении.

Интеграция выступает как естественная взаимосвязь наук, учебных дисциплин, разделов и тем разных учебных предметов на основе ведущей идеи и ведущих положений. На современном этапе различают три формы интеграции: полную, частичную и блоковую.

Полная - слияние учебного материала в едином курсе.

Частичная - слияние большей части учебного материала с выделением специфических глав.

Блоковая - построение автономных блоков с самостоятельными программами или разделами общей программы.

Целесообразнее осуществление интеграции начинать с блоковой, рассчитанной на четверть, полугодие или год.

А.Я.Данилюк считает, что интеграция представляется как инновационный прием, способный решить многие из проблем образования. Интеграция в сфере воспитания и образования может осуществляться на любом этапе педагогического процесса, являясь универсальным путем его преобразования.

Ю.М.Колягин считает, что в начальной школе интеграцию целесообразно строить на объединении достаточно близких областей знаний. Л.Н.Бахарева высказывает свое мнение, что в основе интегрированных уроков лежит близость содержания ведущих тем разных предметов и их логической взаимосвязи.



Для интеграции в начальном обучении и воспитании существуют как благоприятные, так и неблагоприятные факторы. Они во многом определяют тактику интеграции. К позитивным факторам относится интеллект ребенка. К негативным факторам относится ограниченное число учебных предметов, необходимость формирования чрезвычайно важных навыков чтения, письма и счета. Это требует предметного обучения.

Традиционный опыт обучения чтению и математике свидетельствует о широких интеграционных возможностях, которые можно еще и усилить. Однако не всякое объединение различных дисциплин становится интегрированным обучением. Обучение должно быть направлено на межпредметную интеграцию знаний учащихся и способов их действия.

Различают три уровня интеграции.

Внутрипредметная интеграция. Она подразумевает, что ясно уже из названия, связь преподаваемой темы с прежними, которые уже были преподааны раньше, то есть в этом виде интеграции предлагается синтез предыдущих фактов, понятий, принципов двух и более тем. Здесь можно сказать, что предмет, изучаемый на уроке, может стать логическим продолжением предыдущей темы. Учитель, раскрывая предмет изучения на уроке, проводит параллели с прежде изученными темами. Это даёт возможность для воспроизведения в сознании ученика прежнего урока и закрепляет его в сознании. Это означает что ученик не только усваивает новый урок и повторит предыдущий, а это поможет сделать уровень его знаний глубже.

Межпредметная интеграция-это синтез фактов, понятий, принципов двух или более дисциплин. По сравнению с прежним, вышеописанным методом, этот метод даёт преподавателю более широкие возможности для воплощения в жизнь задумок, приготовленных на время урока. Условием для данного метода обучения являются одинаковые или близкие методы исследования. Такие уроки строятся на общих закономерностях и теоретических концепциях.

Транспредметный метод обучения подразумевает применение одинаковых фактов, методов при изучении различных дисциплин, преподаваемых в общеобразовательных учреждениях типа школа. Нужно особо отметить то обстоятельство, что не всякое объединение различных дисциплин в одном уроке можно назвать интегрированным уроком. Для этого нужно чтобы совпали несколько факторов, и один из них-наличие ведущей



идеи, реализация которой обеспечивает неразрывную связь, целостность данного урока.

Возможности интеграционной технологии велики, так как раскрывают новые возможности и для ученика, и для учителя. Благодаря этой технологии центральное место в системе “учитель — ученик” занимает учащийся, который выполняет задание в тот отрезок времени и с той степенью понимания, осмысления и запоминания, которая соответствует его индивидуальным возможностям. Осознание учащимися личностной значимости изучаемого и потребности в достижении определенных учебных результатов мотивируется четким описанием комплексной качественной цели, которой может ученик достичь по завершении урока, критериев уровней усвоения и методической обеспеченностью в их достижении каждым учеником, реальный же результат всецело зависит от самого ученика.

Мотивация обучения повышает интерес к предмету, занятость каждого ученика исключает нарушения дисциплины. Потребность в самореализации удовлетворяется, во-первых, возможностью с помощью интегрированного урока учиться всегда успешно и, во-вторых, свободой выбора творческой деятельности и нестандартных заданий. Задания, которые подготовил учитель, предполагают работу ученика с текстами учебника, хрестоматии, художественной, научно-популярной литературы; наблюдения; экспериментальную работу. При выполнении заданий школьник может проверить и оценить себя, посоветоваться с товарищем, если нужно поспорить с ним, попросить помощи, проконсультироваться с учителем. Всё это отличает модульное обучение от традиционного обучения.

Предметом анализа в интегрированном уроке выступают многоплановые объекты, информация о сущности которых содержится в различных учебных дисциплинах. Это ведет к появлению качественно нового типа знаний, находящего выражение в общенаучных понятиях, категориях, подходах.

Участие учителей смежных дисциплин в организации интегрированных уроков решает психологическую проблему, позволяющую ребятам легко включаться в новый блок информации, способствует росту уровня общей и профессиональной культуры педагога, развитию ценностных ориентаций школьников с позиций глобального образования.



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MITOZ VA MEYOZ

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Annotatsiya: Ushbu maqolada hujayraning bo'linishi, mitoz, mitoz jarayonining davrlari, meyozi, meyozi bo'linish davrlari haqida so'z yuritiladi.

Kalit so'zlar: hujayraning bo'linishi, mitoz, profaza, metafaza, anafaza, telofaza meyozi, geterotip, gomeotip

Абстрактный: В этой статье говорится о делении клеток, митозе, циклах митоза, мейозе, циклах мейоза.

Ключевые слова: деление клеток, митоз, профазы, метафазы, анафазы, телофазы, мейоз, гетеротип, гомеотип.

Abstract: This article discusses cell division, mitosis, stages of the mitosis process, meiosis, stages of meiosis.

Key words: cell division, mitosis, prophase, metaphase, anaphase, telophase meiosis, heterotype, homeotype

KIRISH. Hujayra asosan mitoz (yunoncha mitos - ip) yoki kariokinez (yunoncha karion - yadro, kinezis — harakat) usulda bo'linadi.

Mitozning biologik ahamiyati shundan iboratki, hujayraning bo'linishi natijasida hosil bo'lgan ikkita yangi hujayralarda xromosomalar qat'iy bir tekisda taq-simlanadi, bu, har bir bo'lingan yosh hujayraning irsiy axborotini to'liq o'tishini ta'minlaydi.

Mitoz jarayoni bir necha davrlarga (bosqichlarga) — profaza, metafaza, anafaza va telofazaga bo'linadi

Profaza (yunoncha prof — dastlabki) — mitozning birinchi bo'linish davrida xromosomalar spiral bo'lib o'raladi, zichlashadi va yorug'lik mikroskopida yaxshi ko'rinadigan bo'lib qoladi. Yadrocha va yadro pardasi asta-sekin erib ketadi. Natijada nukleoplazma gialoplazma bilan qo'shib, xromosomalarda birlamchi tortma (bo'linish) chizig'i paydo bo'ladi. Xromosomalarning har bir ipi spiralsimon o'ralgan ikkita xromatidlar hosil qiladi. Ular xujayralarning qutblaridagi gialoplazmada qalpoqchaga o'xshab sentriolalar yoki bo'linish urug'iga aylanadi.

Metafaza (yunoncha myeta - keyin) mitozning ikkinchi bosqichi bo'lib, xromosomalar ekvator bo'ylab joy oladi va xromosoma plastinkasini hosil qiladi. Xromatidlar urchuq iplariga birikib bo'lgandan keyin, xromatidlar qarama-qarshi qutblarga tortiladi. Metafazada xromosomalarni hisoblash mumkin. (Masalan,

piyozda -16, makkajo‘xorida-20, yumshoq bug‘doyda-42, qarag‘ayda-14, qirqbo‘g‘imda-108),

Anafaza (yunoncha ana - yuqoriga, fazis - ko‘rinish) - mitozning uchinchi bosqichi bo‘lib, unda xromosomalarning ikkitadan xromatidlari ajralib, asta-sekin qutblarga qarab tarqaladi.

Telofaza (yunoncha tyelos - oxirgi) — mitozning so‘nggi bosqichi bo‘lib, xromosomalar spiralsizlanadi, ya‘ni uzun iplar shakliga kiradi. Yadro, yadrocha, hujayra po‘sti shakllanadi va xuddi profazaga o‘xshab qoladi.

Telofazaning profazadan farqi shundaki, har qaysi tashkil topgan yangi xromosoma faqat bitta xromosomadan iborat bo‘lib unda, DNKning soni ikki barobar kamdir. Xromosomadagi xromatinlarning ikkinchi bo‘lagi yanterfazada DNK dan reduplikatsiya (lotincha ikki barobar)lanish yo‘li bilan tiklanadi. Telofaza bosqichida si-toplazma ham bo‘linadi, natijada ikkita yosh hujayra bir-biridan ajraladi. Hujayraning mitoz bo‘linishi 1-2 soatgacha davom etadi.

Meyoz (yunoncha meyozis — kamayish, ozayish) hujayraning murakkab bo‘linish shakllaridan biri bo‘lib, unda reduksiya jarayoni yuz beradi. Meyoz vaqtida hujayrada xromosomalar soni ikki marta kamayadi. Shuning uchun ham bu jarayonni reduksion bo‘linish deb ataladi.

Meyoz jarayonni ilk bor rus olimi Belyaev, Strasburger va nihoyat Flemmin tomonlaridan o‘rganilgan. Bu jarayon hamma jinsiy hujayralarda ko‘rinadi.

Masalan, tuban o‘simliklarning jinsiy ko‘payishi gametalar (izogamiya, geterogamiya, oogamiya) vositasida sodir bo‘ladi. Gematalarning qo‘shilishi natijasida dip-loid zigota hosil bo‘ladi. Biroz vaqt o‘tgandan so‘ng zigotaning diploid yadrosi reduksion bo‘linadi va gaploid sporalari vujudga keladi.

Gulli o‘simliklarning mikrosporalari (changchilari)-changdon ichida (mikrosgyurogenez), makrosporalari urug‘-murtak (megasporogenez) vaqtida reduksion bo‘linish natijasida hosil bo‘ladi.

Meyoz ikki marta bo‘linish jarayonidan iborat bo‘lib, yadroning birinchi bo‘linishi, ikkinchi bo‘linishi bilan tugallanadi. Har ikki bo‘linishda ham har to‘rt davr (pro-faza, metafaza, anafaza va telofazalar) takrorlanadi. Birinchi bo‘linish (reduksion)da xromosomalarning soni ikki barobar kamayadi, ikkinchi bo‘linish-ekvatsion (lotincha ekvalisteng, baravar) bo‘linishda xromosomalar teng ikkiga bo‘linadi; bu mitoz bo‘linish yo‘li bilan bo‘ladi. Umuman bo‘linishlar birinchi va ikkinchi bo‘linish davrlari deb aytiladi.

Meyozning birinchi bo‘linishi geterotip (yunoncha geteros-har xil), ikkinchisi gomeotip (yunoncha gomoyos - bir xil) deb ataladi. Birinchi bo‘linishda xromosoma



qayta tuziladi, pirovardida ikkita yosh gaploid yadro vujudga keladi.

Meyozning birinchi bo‘linishida profaza uzoq davom etadi, chunki bu davrda gomologik xromosoma juft bo‘lib konyugatsiyalanadi, irsiy belgilari almashinadi. Birinchi bo‘linishning anafazasida gomologik xromosoma ajralib, gaploid shaklga aylanadi va qarama-qarshi qutblarga tarqaladi.

Profazaning birinchi bo‘linishi besh bosqichdan iborat. Bu davrda yadro po‘sti va yadrocha yo‘qoladi. Profaza I ning birinchi bosqichi leptonema (yunoncha Lyepto-nozik; nyema-ip)ning boshlanishida gaploid - gomologik xromosoma juda nozik iplar shakliga aylanadi va parallel joylashishga chog‘lanadi. Leptonemadan keyin zigonema bosqichi keladi. Har ikkala bosqich oralig‘ida maxsus bosqich bo‘lib unga sinapsis deb ataladi. Bunda xromosom iplar qisilib, zichlashib tugun hosil qiladi.

Zigonema yoki konyugatsiya davri. Bunda gomologik (erkak va urg‘ochi) xromosomalar juft-juft bo‘lib bir-biriga parallel joylashadi. Bu davrning oxirida hamma gomologik xromosomalar bir-biriga yaqinlashib birlashadi va bivalentlar hosil qiladi. Har bir bivalentda ikkita gomologik (erkak va urg‘ochi) xromosomalar bo‘ladi.

Paxinema (yunoncha paxis-yo‘g‘on, nema-ip) yoki yo‘g‘on iplar davri. Bu davrda har qaysi gomologik xromosomalar asta-sekin yo‘g‘onlashadi, keyinchalik buralib bir-biri bilan konyugatsiya etilishi kuzatiladi. Natijada bivalent (juft) xromosomalarning umumiy soni ikki barobar kamayadi. Ba‘zan bivalent xromosomalar buralib, qalinlashgan tuguncha hosil qiladi, bunga krossingover deyiladi. Shu davrda gomologik xromosoma xromatidlarining bir-biriga o‘tishi namoyon bo‘ladi. Bu hodisa kelajak avlodning turli-tuman genetik xususiyatlarini ta‘minlovchi omillardandir.

Diplonema (yunoncha di - ikki, nyema - ip) yo‘g‘on iplar yoki to‘rtta xromatid davri. Bu davrda bivalentlik gomologik xromosoma ikkita xromatidga ajraladi, natijada har bir juft xromosoma to‘rttadan xromatidga ega bo‘lib, ayrim uchlari birikadi. Ikki xil xromosomalarning birlashgan joyiga xiazma (yunoncha xiasmos - ko‘ndalang kesib o‘tgan joy) deb ataladi. Bu davrda xromosomalar qancha uzun bo‘lsa, xiazmalar shuncha ko‘p bo‘ladi. Xiazma xromatidlar joyini almashishiga imkon yaratadi.

Dikenez (yunoncha di - ikki, ken - teng)da yo‘g‘onlashgan juft xromosomalar yadrocha va yadro atrofida to‘planadi.

Metafaza I da gomologik xromosomalar ikki qavatli plastinka hosil qiladi. Anafaza I da gomologik xromosomalar ajraladi, ya‘ni reduksion yoriq bo‘ylab

bo'lina-di. Ajralgan xromosomalarning har biri ikki xroma-tiddan tashkil topadi va qutblarga tarqaladi.

Telofaza I da qutblardagi xromosomalar bo'linib ikkitadan xromatidlarga ega bo'ladi. Shundan so'ngi n-tyerfaza boshlanadi, unda ikkita yadro takomillashadi. Meyozning ikkinchi bo'linishi juda ham tez o'tadi. Profaza II da urchuklar hosil bo'ladi va metafaza II boshlanadi. Bu davrda xromosomalar ikkiga bo'lingan xromatidlar-dan iborat bo'lib, urchuqpar ekvator atrofidan joy oladi, ularning soni ikki baravar kam bo'ladi.

Anafaza II da ilgari bo'lingan ikki juft xromatidlar qutblarga tarqaladi va gaploid xromosomaga hamda po'stga ega bo'lgan, yadro va yadrocha paydo bo'lib, xromosomalar spiralini ochadi va hujayra membranasi shakllanadi, shundan so'ng diploid ona hujayradan to'rtta gaploid yadro hosil bo'ladi. Ularning atrofi sitoplazma bilan o'ralib to'rtta yosh hujayra yoki tetrada (spora) vujudga keladi. Bu sporalari gaploidli bo'ladi.

Meyoz jarayoni ba'zi o'simliklarning jinsiy hujayralarida sodir bo'lmasligi mumkin. Shundan so'ng diploid ona hujayradan to'rtta gaploid yadro hosil bo'ladi. Ularning atrofida sitoplazma bilan o'ralib to'rtta yosh hujayra yoki tetrada (spora) vujudga keladi. Bu sporalari gaploidli bo'ladi.

XULOSA. Ba'zi o'simliklarning jinsiy hujayralarida meyozi jarayoni sodir bo'lmasligi mumkin. Oqibatda, hujayradagi xromosomalar diploid holatda saqlanib qoladi. Natijada urug'lanish sodir bo'lgandan so'ng hosil bo'lgan hamma hujayralarda xromosomalar soni uch baravar ortadi. Bu hodisaga poliploidiya yoki ko'p xromosomalanish deb ataladi. Xromosomalanishni sun'iy yo'l bilan hosil qilish mumkin. Masalan, meyozi mavjud bo'lgan hujayraga tashqi omillar (rentgen nurlari va har xil kimyoviy moddalar) ta'sirida meyozi buziladi. Oqibatda, xromosomalar soni ortadi. Bunday hujayralar tez o'sib yiriklashib ketadi (makkajo'xori, bug'doy, pomidor va boshqalar). Bu usul bilan yangi, serhosil navlar yaratib, qishloq xo'jalik mahsulotlari hosildorligini oshirishda qo'llanilmoqda.

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Annotatsiya: Har qanday jamiyat to'plangan tajribani saqlab qolish va uzatishdan manfaatdor, aks holda nafaqat uning rivojlanishi, balki mavjudligi ham mumkin emas. Ushbu tajribaning saqlanishi ko'p jihatdan tarbiya va ta'lim tizimiga bog'liq bo'lib, u o'z navbatida ma'lum bir jamiyatning dunyoqarashi va ijtimoiy-madaniy rivojlanishining o'ziga xos xususiyatlarini hisobga olgan holda shakllanadi. Xalq og'zaki ijodi namunalari yosh avlodni har tomonlama yetuk va barkamol bo'lib yetishishlari uchun xizmat qiladi. Ushbu maqolada boshlang'ich sinf o'quvchilariga xalq og'zaki ijodini o'rgatish masalalari haqida mulohaza yuritilgan.

Kalit so'zlar: xalq og'zaki ijodi, tarix, urf-odat, vatan, til, maktab, o'quvchi, o'qish, nutq, ijod, adabiyot.

Yangi avlodning ma'naviy-axloqiy shakllanishi, bolalar va yoshlarni mustaqil hayotga tayyorlash O'zbekiston rivojlanishining eng muhim shartidir. Axloqiy tarbiya muammolarini hal qilish eng samarali usullarni topishni yoki allaqachon ma'lum bo'lganlarini qayta ko'rib chiqishni talab qiladi. O'zbek xalq og'zaki ijodi o'ziga xos va o'ziga mosdir. Qadim zamonlarda paydo bo'lgan, hozir ham o'z ahamiyatini yo'qotmagan, jamiyatning barcha qatlamlari va san'atning barcha turlariga doimo o'zgarib, ta'sir ko'rsatib, yashashda davom etmoqda. Xalq og'zaki ijodi haqidagi bilimlar umuminsoniy madaniyatni sezilarli darajada boyitadi va oshiradi, odamlarning murakkab, ba'zan qarama-qarshi ruhiga kirib borishga, ularning o'z-o'zini anglashi va orzularning ijodiy tabiatini ko'rishga, ularning ichki fikrlarini bilishga imkon beradi.

O'z xalqining tarixi va urf-odatlarini bilmasdan, o'quvchini o'zi tug'ilib o'sgan va yashayotgan yurtning xalq madaniyati bilan yaqindan tanishtirmasdan turib, Vatanga munosib fuqaroni tarbiyalab bo'lmaydi. Yangi zamon fuqarosini shakllantirish jarayonini Vatanga muhabbat tarbiyasidan boshlash kerak.



Bolalarning yoshligidanoq uy, ota va ona, aka va opa, bobo-buvi, qarindosh-urugʻ, avlodlar va oʻzaro oilaviy munosabatlar, tabiatga, barcha tirik mavjudotlarga hurmat kabi tushunchalarni oʻzlashtirishini taʼminlash zarur.

Xalq ogʻzaki ijodi boshqa sanʼat turlari orasida alohida oʻrin tutadi. Sanʼatning turlari bir-biridan badiiy asar yaratishda turli materiallardan foydalanishi bilan farq qiladi: haykaltaroshlik - marmar, tosh, yogʻoch, rangtaʼsvir - boʻyoqlar, adabiyot - soʻz. Sanʼatning har bir turi oʻziga xos tasviriy va ifodali vositalarga ega. Musiqada tovushlarning almashinishi va uygʻunligi, xoreografiyada - harakatlarning plastikligi, adabiyotda - soʻzning vizual va ifodali imkoniyatlari qoʻllaniladi.

Xalq ogʻzaki ijodi asarlarda oʻz aksini topgan dunyoqarash, qadriyatlar yosh avlodni har tomonlama bilimli, maʼnaviy jihatdan yetuk etib tarbiyalashda muhim oʻrin tutadi. Zero, xalq ogʻzaki ijodi maʼnaviy taraqqiyotning asosiy tarixiy ildizlaridandir. Har bir xalqning ogʻzaki ijodi oʻsha xalqning feʼl-atvori, estetik didi, ruhiyati, urf-odat va anʼanalari, orzu-intilishlari, geografik sharoiti va tabiatini aks ettiruvchi oʻziga xos koʻzgudir. Biz ana shu koʻzgu vositasida olamshumul ezgu niyatlar, insoniy fazilatlar, yovuzlik, zulm, adolatsizlikka qarshi nafrat tuygʻularini koʻramiz. Shunday ekan, xalqimizning qalb qoʻri, yuksak aql-zakovati bilan asrlar davomida yaratilib, avloddan-avlodga oʻtkazib kelingan folklor namunalari ham oʻrganish muhim ahamiyatga ega. Uning boy va rang-barang, tarkibiy va xilma-xil shakllari zamonaviy atrof-muhit uchun bitmas-tuganmas ijodiy ilhom beradi.

Xalq adabiyoti hisobi qoʻshimcha ravishda xalq adabiyotining asosiy tarkibiy qismlarini qoʻllash orqali matn tuygʻusini shakllantiradi. Bola shaxsi shakllanishida boshlangʻich sinf davri eng muhim davr hisoblanadi. Boshlangʻich sinf oʻquvchilari ishonuvchan, tashqi taʼsirga beriluvchan boʻladilar. Ularda ijobiy hissiyotlar, fazilatlarini tarkib toptirish, yuksak axloqiy meʼyorlarni shakllantirishda asosiy masʼuliyat boshlangʻich sinf oʻqituvchisining zimmasiga tushadi. Lekin xalq ogʻzaki ijodi va uning mif, ertak, doston kabi janrlari zamiriga yashiringan koʻplab hikmatlar hali toʻla oʻrganilmagan. Oʻrganilganlari ham kishilik jamiyatining maʼlum bir davrida qayta tahlil va ilmiy izlanishni talab qiladi. Tilni burish, tilni burish va tez-tez soʻzlash oʻquvchilarning toʻgʻri sof nutqini shakllantirish va rivojlantirishga yordam beradi, toʻgʻri va ravon oʻqish kabi fazilatlarini yaxshilashga yordam beradi. Tilni burish, tilni burish va tez-tez soʻz birikmalari bilan ishlash tarkibni oʻzlashtirish va alohida tovushlarni yoki ularning birikmalarini toʻgʻri talaffuz qilish xususiyatiga ega. Ulardan oʻqish va yozishni oʻrganish davrida tovushlarni oʻrganishda foydalanish mumkin. Maqol va matallar azaldan muhim didaktik vazifani bajarib kelgan. Ular ishonarli va sodda tarzda odamlarga qanday yashash



va ishlashni o'rgatadi, ularni tabiat hodisalarini uzoq vaqt davomida kuzatish natijalari bilan tanishtiradi, muayyan vaziyatda qanday harakat qilish kerakligi haqida oqilona maslahat beradi. Mehnat faoliyatining asosiy qoidalari va axloqiy-estetik me'yorlari aniq shakllantirilgan bu janrdagi asarlar hayot darsligiga aylandi.

Topishmoq bolaning aqliy faoliyatini rag'batlantiradi, aqliy mehnatga qiziqish uyg'otadi, nafaqat zukkolikni yaxshilashga hissa qo'shadi, balki umuman dunyoni tushunishni sezilarli darajada kengaytiradi. Og'zaki san'at asari bo'lgan topishmoq bolalarning ufqlarini kengaytirish bilan bir vaqtda atrof-muhitni badiiy idrok etishni rivojlantiradi va rus tilining metaforik boyligini ochib beradi.

Xalq og'zaki ijodi bugungi kunda ham rivojlanishda davom etmoqda. Shunday qilib, folklorshunoslik muammolari diqqatga sazovor bo'lib, kichik folklor shakllaridan boshlang'ich sinf darslarida foydalanish dolzarb va istiqbolli hisoblanadi.

Zamonaviy boshlang'ich maktabda o'qish ko'nikmalarini to'liq egallash vazifasi bilan bir qatorda o'qituvchi oldida maktab o'quvchilarining adabiy rivojlanishi vazifasi turibdi. Ushbu muammoni har qanday o'qish materialida hal qilish mumkin va kerak.

Folklor janrlarining yana bir bo'linishi mavjud bo'lib, u asar hajmiga bog'liq. Demak, ertaklar, rivoyatlar, dostonlar, tarixiy qo'shiqlar, xalq teatri yirik folklor janrlariga, jumboqlar, topishmoqlar, matallar, kichik janrlarga mansub.

Ko'pgina maqollarning mazmuni nafaqat gramatik qoidalarni o'rganish uchun material bo'lib xizmat qiladi, balki axloqiy fazilatlarni tarbiyalash manbai bo'lib xizmat qiladi: tabiatga, Vatanga, mehnatga muhabbat, ularni mehribon va hamdard bo'lishga o'rgatadi. Kichik yoshdagi o'quvchilarning ona tili va o'qish savodxonligi darslarida maqol va maqollar ustida ishlash savodxonlikni o'rgatishda muhim o'rin tutadi va o'quvchilarning fikrlash va nutqini rivojlantirish uchun ajoyib manba hisoblanadi.

Tez-tez so'zlash o'quvchilarning to'g'ri sof nutqini shakllantirish va rivojlantirishga yordam beradi, to'g'ri va ravon o'qish kabi fazilatlarni yaxshilashga yordam beradi. Tez-tez so'z birikmalari bilan ishlash tarkibni o'zlashtirish va alohida tovushlarni yoki ularning birikmalarini to'g'ri talaffuz qilish xususiyatiga ega. Ulardan savod o'rgatish davrida tovushlarni o'rganishda foydalanish mumkin.

Uzoq vaqt davomida maqol va matallar muhim didaktik vazifani bajarib kelmoqda. Ular ishonarli va sodda tarzda odamlarga qanday yashash va ishlashni o'rgatadi, ularni tabiat hodisalarini uzoq vaqt davomida kuzatish natijalari bilan tanishtiradi, muayyan vaziyatda qanday harakat qilish kerakligi haqida oqilona

maslahat beradi. Mehnat faoliyatining asosiy qoidalari va axloqiy-estetik me'yorlari aniq shakllantirilgan bu janrdagi asarlar hayot darsligiga aylandi.

Boshlang'ich maktabda o'rganiladigan folklor janrlari ancha keng tarqalgan. Janrlarning har biri o'ziga xos funktsiyani bajaradi: u tarixiy voqealarning xalq talqinini beradi, shaxsni shakllantirish uchun zarur bo'lgan axloqiy salohiyatni o'z ichiga oladi, insonning dunyoqarashini kengaytiruvchi ma'lumotlarni o'z ichiga oladi va zarur hissiy kayfiyatni yaratadi. Xalqning boy hayotiy tajribasi, ularning axloqiy, ijtimoiy, oilaviy, maishiy, diniy qarashlari haqida ko'plab ma'lumotlarni Surhondaryo va Qashqadaryo viloyatida mavjud bo'lgan folklor janrlarida topish mumkin: maqollar, matallar, topishmoqlar, ertaklar. "Ular ajdodlarimizning son-sanoqsiz avlodlarining donoligi va tajribasini, o'zbek kishisi fe'l-atvorining eng yaxshi fazilatlarini jamlangan shaklda aks ettirdi: mehnatsevarlik, mehribonlik, jasorat, saxiylik, qo'shniga, vatanga, o'z yurtiga muhabbat. Shunday qilib, kichik folklor janrlaridan faol foydalanish natijasida bolalarning ta'lim va kognitiv imkoniyatlari ortadi; bolalar yanada ifodali gapirishga o'rganadilar, o'z fikrlarini chuqurroq ifodalaydilar, bu boshqa darslarda aks etadi; ko'ngilochar vazifalar bolalarning fikrlash mantig'ini, fazoviy tasavvurlarini va irodasini rivojlantirishga, ularning ufqlarini kengaytirishga va atrofdagi dunyo haqida umumiy tushunchaga yordam beradi.

Bolalarni tarbiyalashda xalq og'zaki ijodi muhim o'rin tutadi. Uni janrlarga bo'lish ma'lum yoshda bolaning ma'naviy dunyosini boyitish, vatanparvarlik, o'z xalqining o'tmishiga hurmat, uning an'alarini o'rganish, jamiyatda axloqiy-tarbiya, xulq-atvor me'yorlarini o'zlashtirishga imkon beradi.

Xalq og'zaki ijodi bolaning og'zaki nutqini rivojlantiradi, uning ma'naviy rivojlanishiga, tasavvuriga ta'sir qiladi. Bolalar folklorining har bir janri muayyan axloqiy me'yorlarni o'rgatadi. Maqol va matallar bolalarga asrlar davomida sinovdan o'tgan va bizning davrimizda ham o'z ahamiyatini yo'qotmagan xalq donoligini o'rgatadi. Topishmoqlar kichik yoshdagi o'quvchilarga mantiqiy fikrlashni, tasavvurni rivojlantirishga yordam beradi.

Tez aytishlar o'quvchilarga nutq nuqsonlarini bartaraf etish, og'zaki nutqni rivojlantirish, mantiqiy to'g'ri gaplar qurish imkonini beradi. Xalq og'zaki ijodining kichik shakllari yordamida nutqni rivojlantirish metodikasining deyarli barcha muammolarini hal qilish mumkin va bu xalq og'zaki ijodining eng boy materialidan foydalanish kerak. Shunday qilib, bolani xalq madaniyati bilan tanishtirish bolalikdan boshlanishi kerak, degan xulosaga kelishimiz mumkin, chunki asosiy



tushunchalar va xulq-atvor namunalari o'sha paytda qo'yiladi. Madaniy meros avloddan-avlodga o'tib, bola dunyosini rivojlantiradi va boyitadi.

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BOSHLANG‘ICH SINFLARDA ONA TILINI O‘RGATISHNING MAZMUNI VA VAZIFALARI

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Annotatsiya: Ta‘limning asosiy vazifalari shaxsni ilmiy bilimlar, ko‘nikma va malakalar bilan qurollantirishdan iborat. Ta‘lim inson faoliyatining bir turi sifatida bir necha ma‘noni bildiradi. Ya‘ni ta‘lim oluvchilarda bilim, ko‘nikma va malakalar hosil qilish ularda dunyoqarash, fikr va e‘tiqodlarni shakllantirish hamda ularning qobiliyatlarini o‘stirishdir. Ona tilini o‘rganishda boshlang‘ich ta‘limning o‘rni alohida va u keyingi ta‘limning asosi hisoblanadi. Ushbu maqolada boshlang‘ich sinflarda ona tilini o‘rgatishning mazmuni va vazifalari, o‘qitish usullari haqida malumot berilgan.

Kalit so‘zlar: belgi, yozuv, tovush, boshlang‘ich sinf, ona tili, ta‘lim, metod, savod, o‘qish, yozish, o‘quvchi, imlo, nutq.

Maktablarda ona tili o‘rgatishning mazmuni jamiyat rivojlanishining hozirgi bosqichida davlatimizning maktab oldiga qo‘ygan vazifasiga moslangan. Bu vazifalar qo‘p qirrali bo‘lib, ularni bajarish o‘quvchilar ongini o‘stirishga, ularga g‘oyaviy-siyosiy, axloqiy, estetik va mehnat tarbiyasini berishga yo‘naltirilgan. Ona tilini o‘rgatish natijasida o‘quvchilarda o‘z fikrini grammatik to‘g‘ri, uslubiy aniq, mazmunli, ohangga rioya qilib ifodalay olish va uni imloviy to‘g‘ri yoza olish ko‘nikmalari shakllantiriladi. Bu vazifa o‘quv predmeti sifatida o‘zbek tilining o‘ziga xos xususiyati bo‘lib, o‘quvchini shaxs sifatida shakllantirishga yo‘naltirilgan umumta‘lim vazifalari bilan bog‘liq holda amalga oshiriladi.

Ona tili kursida beriladigan bilimlar mazmunini quyidagi bilimlar tashkil etadi:

- o‘zbek tilining tovush tuzilishi va yozma nutqda tovushlarni ifodalash usullari haqidagi (fonetik va grafik);
- so‘zlarning o‘zgarishi va gapda so‘zlarning bog‘lanishi haqidagi (grammatik, ya‘ni morfologik va sintaktik);



- soʻzning morfemik tarkibi va soʻz yasash usullari haqidagi (soʻz yasashga doir);
- soʻzlarning leksik-semantik guruhi haqidagi (leksikologik);
- oʻzbek tilining toʻgʻri yozuv tamoyillari va tinish belgilarining ishlatilishi haqidagi (orfografik va punktuatsion).

Bu bilimlar, birinchidan, grammatik, fonetik, soʻz yasashga oid tushunchalarda, ikkinchidan, grafik, orfografik, punktuatsion qoidalarda namoyon boʻladi. Bundan tashqari, oʻzbek tili kursi fonetik, grafik, morfologik, sintaktik va boshqa koʻnikma va malakalarni ham oʻz ichiga oladi.

Tilni oʻrganish jarayonida oʻquvchilarda boshqa koʻpgina oʻquv predmetlari uchun umumiy boʻlgan koʻnikmalar (predmetlararo koʻnikmalar)ni hosil qilish ustida ham ish olib boriladi. Pedagogikada bunday predmetlararo koʻnikmalarga analiz, sintez, abstraktlashtirish (til hodisalarini fikran tasavvur etish), umumlashtirish, guruhlash, taqqoslash kabilar kiradi. Ushbu koʻnikmalarni oʻquvchilarda shakllantirish ustida maqsadga muvofiq ishlash ularning oʻquv faoliyatini faollashtirishga, bilimlarini muvaffaqiyatli egallashlariga imkoniyat yaratadi. Ona tili kursidan hosil qilinadigan maxsus koʻnikmalar bilan predmetlararo koʻnikmalar, bir-biridan ajratilmagan holda oʻquv-tarbiyaviy jarayonda shakllantiriladi.

Beriladigan bilim va oʻquvchilarda hosil qilinadigan maxsus koʻnikmalar maktab dasturlari va davlat taʼlim standartida qayd etilgan.

Boshlangʻich sinflarda oʻrganish uchun tilni ongli egallashga va oʻquvchilarda grafik va imloviy malakalarni shakllantirishga zamin boʻladigan bilimlar tanlangan. Fonetika va grafika sohasida oʻquvchilar soʻzning tovush tarkibini, unli va undosh tovushlarning oʻziga xos xususiyatlarini, soʻzda tovushning maʼnoni farqlashdagi ahamiyatini toʻgʻri tushunishga imkon beradigan bilimlarni oʻzlashtiradilar, shuningdek, ularga soʻzning tovush va grafik shakli oʻrtasidagi nisbat (bogʻlanish)ni ongli aniqlash, soʻzni toʻgʻri yozish imkoniyati yaratiladi. Morfologiya sohasidan ham soʻzni ongli oʻzlashtirish, uni toʻgʻri ishlatish uchun katta amaliy ahamiyatga ega boʻlgan bilimlar tanlangan. Boshlangʻich sinf oʻquvchilari I sinfdan boshlab soʻz turkumlari (ot, sifat, son, olmosh, feʼl)ni har xil saviyada oʻrganadilar.

Sintaksidan dasturga nutq birligi sifatida gap haqidagi, gapda soʻzlarning bogʻlanishi, bosh va ikkinchi darajali boʻlaklar haqidagi bilimlar kiritilgan. Soʻzning morfemik tarkibi yuzasidan har bir morfemaning muhim belgilarini, ularning ahamiyati va soʻzda bir-biriga taʼsirini boshlangʻich sinf oʻquvchilari tushunadigan



va soʻzlarni toʻgʻri yozishda foydalanishlari uchun zarur boʻlgan hajmda maʼlumot berilgan.

Dasturda “Leksika” boʻlimi alohida berilmagan, ammo oʻquvchilar soʻzlarning leksik-semantik guruhlarini (sinonimlar, antonimlar) haqida, ularning leksik maʼnolari haqida soʻz turkumlari va soʻz tarkibini oʻrganish jarayonida maʼlumot oladilar.

Boshlangʻich sinflar ona tili kursi 1-4-sinflarda tilning hamma tomonlari oʻzaro bogʻliq holda oʻrganilishi hisobga olinib tuzilgan, har bir sinfda fonetika, leksika, grammatika va soʻz yasalihi haqida elementar bilim beriladi. Kursning bunday qurilishi tilning barcha tomonlarini bir-biriga oʻzaro taʼsir etadigan bir butun hodisa sifatida oʻrganishni taqozo etadi. Tilni oʻrganishga bunday yondashish taʼlim jarayonini oʻquvchilar nutqini oʻstirish vazifasini hal etishga yoʻnaltirish imkonini beradi.

Dasturning “Grammatika, imlo va nutq oʻstirish” boʻlimi har bir sinfda quyidagicha qismlarni oʻz ichiga oladi: “Tovushlar va harflar”, “Soʻz”, “Gap”, “Bogʻlanishli nutq”. Asosiy mavzular bosqichli izchillik tamoyiliga asoslanib, har toʻrt sinfda oʻrganiladi. Har bir sinfda yetakchi mavzular ajratiladi. 1-sinfda fonetika va grafikaga oid mavzularni oʻrganishga katta oʻrin beriladi, chunki oʻquvchilar oʻqish va yozish jarayonini egallaydilar. 3- sinfda soʻzning morfemik tarkibi va gapni oʻrganish muhim hisoblanadi. Soʻz yasalihi doir bilimlar asosida oʻquvchilarda soʻzning leksik maʼnosiga, undan nutqda foydalanishga ongli munosabat oʻsadi. 4-sinfda soʻz turkumlarini oʻrganish birinchi oʻringa qoʻyiladi (morfologik bilim chuqurlashtiriladi, otlarning egalik va kelishik qoʻshimchalarini, feʼllarning tuslovchi qoʻshimchalarini toʻgʻri yozish malakalari shakllantiriladi).

Bogʻlanishli nutq ustida toʻrt yil davomida grammatik va orfografik materiallarni oʻrganish bilan bogʻliq holda reja asosida ish olib boriladi.

Ona tili darslarida til hodisalari maʼnosi (semantikasi), qurilishi, vazifasi jihatidan oʻrganiladi.

Oʻzbekiston Respublikasi mustaqillikka erishgan kundan boshlab jamiyatni isloh qilish siyosatini kun tartibiga qoʻydi. Barcha sohalaridagi kabi taʼlim sohasini isloh qilish siyosati ham izchillik bilan amalga oshirila boshlandi.

Boshlangʻich taʼlim boʻyicha Yangi tahrirdagi Davlat taʼlim standarti ham mustaqillik davridagi tajribalar natijasi sifatida maydonga keldi. U boshlangʻich taʼlim darsliklari va metodik qoʻllanmalarining yangi avlodini yaratishda dasturulamal vazifasini oʻtamoqda.

Boshlang'ich ta'lim Davlat ta'lim standartining "Kirish" qismida *"Boshlang'ich ta'lim jarayoni bolaning mantiqiy tafakkur qila olish salohiyati, aqliy rivojlanishi, dunyoqarashi, kommunikativ savodxonligi va o'z-o'zini anglash salohiyatini shakllantirishga, jismonan sog'lom bo'lishga, moddiy borliq go'zalliklarini his eta olishga, go'zallik va nafosatdan zavqlana olish, milliy urf-odatlarini o'zida singdirish va ardoqlash, ularga rioya qilishga o'rgatadi"*, – deb alohida ta'kidlangan.

Boshlang'ich ta'lim oldiga qo'yilgan bu kabi talablarni amalga oshirish ta'lim mazmunini aniq belgilab olishni, o'qitishga yangicha yondashuvni taqozo etadi.

Davlat ta'lim standartida ta'kidlanganidek, "Boshlang'ich ta'lim bosqichida davlat va jamiyat tomonidan qo'yiladigan talab"da ta'lim sohalari bo'yicha o'zaro muvofiqlik, mutanosiblik, uyg'unlik to'la ta'minlangan bo'lmog'i kerak. SHu jihatdan boshlang'ich ta'lim standartini belgilash ta'lim jarayonining tarkibini va xuddi shu tarkib komponentlarining mazmunini modernizatsiyalash, boshlang'ich ta'lim jarayonida yangi, zamonaviy pedagogik texnologiyani qo'llash imkonini beradi. Boshlang'ich sinflarda ona tili ta'limi mazmuni mazkur bosqichiga qo'yilgan talablardan kelib chiqib belgilanadi.

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O‘QUVCHILARNI TOVUSHLAR VA HARFLAR, UNLI VA UNDOSH TOVUSHLARNING XUSUSIYATLARI BILAN TANISHTIRISH

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Annotatsiya: Bugungi kunda yurtimizda amalga oshirilayotgan islohotlar natijasida ta‘lim tizimi ham tubdan yangilanmoqda, unga yangi texnologiyalar, o‘qitishning zamonaviy usullari kirib kelmoqda. Ta‘limning asosiy ustuni hisoblangan boshlang‘ich ta‘lim ham yangi metodikalar bilan boyib bormoqda. Boshlang‘ich ta‘limda o‘quvchilarga savod o‘rgatish asosiy hisoblanadi. Ushbu maqolada o‘quvchilarni tovushlar va harflar, unli va undosh tovushlarning xususiyatlari bilan tanishtirish masalalari haqida so‘z yuritilgan.

Kalit so‘zlar: savod, fonetika, bilim, harf, tovush, unli, undosh, o‘qish, tarbiya, yozuv, maktab, so‘z, bo‘g‘in.

Kichik yoshdagi o‘quvchilarning og‘zaki va yozma nutqni egallashlarida fonetikadan olgan bilimlarining ahamiyati katta:

a) fonetik bilimga asoslangan holda I sinf o‘quvchilari savod o‘rganish davrida o‘qishni va yozishni bilib oladilar;

b) fonetik bilim so‘zni to‘g‘ri talaffuz qilish (tovushlarni to‘g‘ri talaffuz qilish, urg‘uli bo‘g‘inni ajratish, orfoepik me‘yorga rioya qilish) asosini tashkil etadi;

v) fonetik bilim morfologik va so‘z yasalishiga oid bilimlar bilan birga o‘quvchilarda qator imloviy malakalar (jarangsiz va jarangli undoshlarning yozilishi) shakllantirish uchun zamin bo‘ladi;

g) fonetik bilim gapni ohangiga ko‘ra to‘g‘ri aytish, logik urg‘u va gap qurilishidagi to‘xtamlarga rioya qilish uchun zarur;

d) so‘zning tovush tomonini bilish uning ma‘nosini tushunish va nutqda ongli qo‘llash uchun muhimdir; hózir va hozúr, átlas va atlás so‘zlari ma‘nosidagi farq faqat urg‘u orqali ajratiladi. So‘zning tovush tomonini tasavvur qilish so‘zlarni talaffuzda farqlash, ayrim so‘zlarni to‘g‘ri talaffuz qilish va qo‘llash uchun zarur.

O'qituvchi boshlang'ich sinflarda o'qitiladigan barcha fanlarga oid darslarda so'zni aniq va to'g'ri talaffuz qilish ustida doimiy ishlab boradi, shu maqsadda ko'pincha so'zni tovush tomondan tahlil qilishdan foydalanadi.

Maktab dasturiga muvofiq, boshlang'ich sinf o'quvchilari fonetik-grafik ko'nikmalar tizimini hosil qiladilar: tovushlar va harflar, unli va undosh tovushlar, jufti bor jarangli va jarangsiz undoshlar, jufti yo'q jarangli va jufti yo'q jarangsiz undoshlar; so'zni bo'g'inlarga bo'lish, urg'uli bo'g'inni ajratish ko'nikmalariga ega bo'ladilar.

Bolalar maktabga kelgunga qadar ham nutqning tovush qurilishini amaliy o'zlashtiradilar, ammo ular maxsus o'qigunlariga qadar so'zni bo'g'inlarga bo'lishni, so'zdagi tovushlarni izchil talaffuz qilishni bilmaydilar.

I sinf o'quvchilarida so'zni to'g'ri talaffuz qilish, bo'g'inlarga bo'lish, undagi har bir tovushni tartibi bilan aniq aytish ko'nikmasini shakllantirish ustida maqsadga muvofiq ishlash, o'z navbatida, analiz, sintez, taqqoslash, guruhlash kabi aqliy mashqlarni bilib olishga, shuningdek, tovushlarning tabiati, so'z tarkibida bir-biriga ta'siri kabi ayrim elementar bilimlarni o'zlashtirishga imkon beradi.

I sinfda fonetika va grafikani o'rganishga katta o'rin beriladi, chunki o'quvchilar o'qish va yozish jarayonini shu sinfda egallaydilar. Bu bilimlar keyingi sinflarda mustahkamlanadi, takomillashtiriladi.

Tovush murakkab tushuncha bo'lgani uchun boshlang'ich sinflarda unga ta'rif berilmaydi. SHunga qaramay, bolalarda tovush haqida to'g'ri ilmiy tasavvur amaliy mashqlar yordamida hosil qilinadi. Bunda yetakchi usul so'zdagi tovushlarning talaffuzi hamda so'zning leksik ma'nosi so'zdagi tovushlarning tarkibiga bog'liqligi ustida kuzatish hisoblanadi. Masalan, *aka, uka, opa, ona, ota, kul, gul, qora, qara* kabi bir unli yoki bir undosh bilan farqlanadigan so'zlar har xil lug'aviy ma'noni ifodalaydi.

So'zning tovush tarkibi ustida ishlash savod o'rgatish davridanoq boshlanadi. Bolalar bu davrda talaffuz qilingan yoki eshitilgan so'z tovushlardan tuzilishini bilib oladilar. Ular so'zni tovush tomonidan tahlil qilishga o'rganadilar, ya'ni so'zni bo'g'inlarga bo'ladilar, so'zdagi tovushlarni tartibi bilan aytadilar. Bunda tovush tomondan tahlilni harf tomondan tahlil bilan aralashtirmaslikka alohida ahamiyat beriladi.

So'zning tovush tarkibini to'g'ri tasavvur etish undagi harflarni tushirib qoldirmay yoki o'rnini almashtirmay yozish malakasini shakllantirish uchun ham, so'zni to'g'ri talaffuz qilish uchun ham katta ahamiyatga ega. SHuning uchun savod o'rgatishdan so'ng ham so'zni tovush tomondan tahlil qilish mashqlari yordamida

soʻzdagi tovushlar tarkibini aniqlash koʻnikmasini takomillashtirish ustida ishlab borish zarur.

Maʼlumki, nutq tovushlari ikki katta guruhga boʻlinadi: *unli tovushlar* va *undosh tovushlar*. Buni oʻquvchilarga tushuntirishda ularning quyidagi belgilari hisobga olinadi:

1) talaffuz qilinish usuli (unli tovush talaffuz qilinganda havo oqimi ogʻiz boʻshligʻidan erkin ravishda oʻtadi, undosh tovush talaffuz qilinganda, havo ogʻiz boʻshligʻida toʻsiqqa uchraydi);

2) ovoz va shovqinning ishtiroki (unli tovushlar faqat ovozdan iborat, undosh tovushlar talaffuz qilinganda shovqin eshitiladi, baʼzan shovqin va qisman ovoz eshitiladi);

3) boʻgʻin hosil qilish xususiyati (unli tovushlar boʻgʻin hosil qiladi, undosh tovushlar boʻgʻin hosil qilmaydi).

Oʻquvchilar bu belgilarni yodlab olishlariga yoʻl qoʻymaslik, aksincha, 1-sinfanoq bolalarda tovushni talaffuz qilganda, ovoz yoki shovqin eshitilganda nutq aʼzolarining vaziyatini kuzatish koʻnikmasini oʻstirib borish lozim. Bunday kuzatishlar IV sinfda davom ettiriladi va umumlashtiriladi.

Tovushlarni oʻzlashtirishga bunday yondashish, unli va undosh tovushlarni puxta oʻzlashtirishga imkon berishi bilan birga, oʻquvchilarning aqliy qobiliyatini oʻstirish vazifasini ham bajaradi; xususan, bolalar kuzatilgan hodisaning bir necha belgilarini taqqoslashga, umumlashtirishga oʻrganadilar.

Oʻzbek tili yozuvi tovush yozuvi hisoblanadi, chunki tovush yozuvda harflar bilan ifodalanadi. 1-sinf oʻquvchilari quyidagilarni bilib olishlari lozim:

- a) tovushni talaffuz qilamiz va eshitamiz;
- b) harfni koʻramiz, oʻqiymiz va yozamiz;
- v) harf – tovushning yozuvda ifodalanadigan belgisi.

Oʻquvchilar koʻpincha tovush bilan harfni aralashtirib, xatoga yoʻl qoʻyadilar. Ularda grafik malakani shakllantirish uchun quyidagilarni oʻrgatish zarur:

1) bir undosh harf yozuvda ikki undosh tovushni ifodalashi mumkin (masalan, *maktab* soʻzidagi *b* harfi *p* tovushini, *maktabim* soʻzidagi *b* harfi *b* tovushini ifodalaydi);

2) *joʻja*, *jajji* soʻzlaridagi *j* tovushi (jarangli, portlovchi) ham, *jurnal*, *vijdon* soʻzlaridagi *j* tovushi (jarangli, sirgʻaluvchi) ham bitta *j* harfi bilan ifodalanadi;

3) *tong*, *keng* soʻzlaridagi uchinchi jarangli undosh tovush (*ng*) ikki harf birikmasi (*ng*) bilan ifodalanadi;

4) *sh*, *ch* harf birikmalari ham bir tovushni ifodalaydi (shamol, choy).



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**Parrandachilik korxonasi oqova suvlarini eyxorniya (*Eichhornia crassipes*
Solms) ta`sirida tozalashning ekologik asoslari.**

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Annotatsiya. Ushbu maqolada Xorazm viloyati sharoitidagi parrandachilik korxonasi oqova suvlarida laboratoriya muxitida eyxorniya (*Eichhornia crassipes* Solms)ni ko'paytirish va suvni biologik tozalashda foydalanishning afzalliklari haqidagi ma'lumotlar bayon qilingan.

Kalit so'zlar: qalin yaltiroq barglar, tik suzuvchi, pistiya, ryaska, eyxorniya, azolla, biomassa, ekotizim.

Абстрактный. В данной статье изложена информация о преимуществах разведения эйхорнии (*Eichhornia crassipes* Solms) в сточных водах птицеводческого предприятия Хорезмской области и использования ее в биологической очистке воды.

Ключевые слова: толстые блестящие листья, вертикально плавающие, пистия, ряска, эйхорния, азолла, биомасса, экосистема.

Abstract. In this article, information about the advantages of breeding eichhornia (*Eichhornia crassipes* Solms) in the wastewater of a poultry enterprise in Khorezm region and using it in biological water purification is described.

Key words: thick shiny leaves, upright floating, pistia, ryaska, eichhornia, azolla, biomass, ecosystem.

Turli ishlab chiqarish korxonalari, tabiiy va sun'iy suv havzalariga aholi turar joylaridan, sanoat va qishloq xo'jalik korxonalaridan chiqadigan suvlar tozalanmasdan bevosita oqova suvlarga aylanib bormoqda. Shu boisdan, chiqindi suvlarni tozalash usullarini yanada takomillashtirish hamda bunday suvlardan



samarali va oqilona foydalanishni ilmiy asoslarini yaratish muhim ilmiy-amaliy ahamiyat kasb etadi. Yuksak suv o`simliklari ta`sirida biologik tozalash jarayoni oqova suvlarni tozalashning samarali va barqaror usuli hisoblanadi. Ushbu jarayon ifloslantiruvchi moddalarni suvdan olib tashlash uchun o`simliklarning tabiiy vazifalaridan foydalanishni o`z ichiga oladi. Ushbu yondashuv nafaqat an'anaviy oqava suvlarni tozalash inshootidagi stressni kamaytiradi, balki obodonlashtirishga, suv sifatini yaxshilashga va ekotizimlarni tiklashga yordam beradi. Oqova suvlarda yuksak o`simliklardan pistiya, ryaska eyxorniya, azolla kabi o`simliklarni o`stirish davomida baliqlar va boshqa suv hayvonlari uchun ozuqa va makon ya`ni tuxum qo`yish va ko`payish uchun makon yaratiladi.

Chorvachilikning asosiy soxalari qoramolchilik, qo`ychilik, cho`chqachilik, mo`ynachilik, yilqichilik, quyunchilik soxalarida asosiy ozuqa birligiga ega bo`lgan pistiya, azolla, eyxorniya o`simliklarining biomassasidan foydalaniladi.

Tozalangan oqova suvlardan qishloq ekinlari (g`oza, bug`doy, sholi) sug`orish va yuqori hosil olish imkoniyati yaratiladi, shuningdek qishloq xo`jaligida sarflanadigan suvlar tejaladi.

Eyxorniya o`simligi biofiltatsiya jarayonida katta ustunlikga ega.

Tabiiy tarqalishi. Eyxorniya avlodi Vatani Janubiy Amerikaning tropik mintaqalari bo`lib, suvga yarim botib o`svuvchi suvda qalqib yuruvchi o`simliklardir. Bu suv o`simligi birinchi bo`lib 1960-yillarda Janubiy Amerikadagi Nyasa ko`lida topilgan bo`lib, bugungi kunda dunyoning ko`pchilik tropik, subtropik mintaqalari suv havzalarida tabiiy holda o`sadi. Ayrim manbalarda bu o`simlikning kelib chiqishi Amazonka daryosiga borib taqalishi aytilgan. U 19-asr oxirida AQSh, Janubi-Sharqiy Osiyo va Janubiy Afrikaga manzarali tur sifatida kiritilgan va hozirda ko`pchilik tropik va subtropik mintaqalarida madaniylashtirilgan [1].

Morfologik xususiyatlari. Hozirda uning olimlar tomonidan turli tabiiy suv havzalarida tabiiy holda o`sadigan 11 turi borligi aniqlangan. Hozirda bu o`simlikning dunyoda juda ko`p akvarium navlari yaratilgan. Eyxorniya avlodi



o'simliklarining tanasi 10-20 santimetr balandlikda o'sadi, ba'zan qulay sharoitda 1 metrga yetishi mumkin [3]. Suvga yarim botib, tik suzuvchi ko'p yillik suv o'simligidir. Qalin yaltiroq barglari kengligi 12-15 santimetr, uzunligi 30-50 sm gacha yetishi mumkin. Ildizlarining uzunligi 50-60 sm va undan ham ortishi mumkin. Eng ko'p tarqalgan turi qalin poyali eyxorniya (*E. crassipes* Solms) dir [1]. Tajribalar eyxorniya avlodining shu turi bilan olib borildi.

Biologik xususiyatlari.. Eyxorniya yorug'likni yaxshi ko'radi, 12 soatli quyosh nuri, suniy yorug'lik 0,7 Vt / L lyumen bo'lishi kerak. Bu o'simlik zararkunanda xashoratlar ta'siriga chidamli. Eyxorniyaning ko'payishi va o'sishi eng yaxshi harorati +20 dan + 30 ° S gacha, harorati +22 dan + 36 ° S gacha bo'lgan suv qulay muxitdir.

Bu o'simlik tabiiy sharoitda suvdagi kislorod va mineral moddalar hisobiga oziqlanadi. Bahor kelib kunlar qizishi bilan tez o'sa boshlaydi, quyosh nuri etarli bo'lsa bir sutkada 2-3 sm o'sishi mumkin. Xarorat 14°C ga etganda eyxorniya rivojlana boshlaydi.

Yaxshi o'sib rivojlanishi uchun 18-27°C, gullash davrida 28-32°C xarorat kerak. Suvning ishqoriylik muxiti pH 6-6,9 qulay xisoblanadi. Bu o'simlik vegetativ usulda tez bo'linib ko'payadi. Idizpoyadan xosil bo'lgan novdadan 3-4 barg xosil bo'ladi va etuk o'simlikga aylanadi. Bunday vaziyatda yangi tanani ona poyadan ajratib boshqa joyga o'tkazish mumkin. Giatsint (eyxorniya) generativ usulda ham ko'payadi. Gullaydigan poyalari tekis, 8-12 santimetrga etishi mumkin. To'pguli boshhoqsimon to'pgulida 7-50 gul, ba'zida 60 dan ortiq gul bo'ladi. Gul zigomorf, 3-6 santimetr. ko'k yoki oq, bo'laklari tuxumsimon, uzunligi 13-25 mm, qirralari xiralashgan, markaziy bo'lak to'q ko'k rangda, pastki qismida esa sariq nuqta bor. Meva uzunligi 1,5-2,6 millimetr va eni 0,3-0,9 millimetr bo'lgan 10-13 qanotli urug' bor. Urug'idan ham ko'payadi, juda ko'p urug' xosil qiladi. Urug'lari 3 bo'lakli bo'lib, etilgandan keyin suv tagiga tushib, qulay sharoitda rivojlanib, suv yuziga



chiqadi va suzib yurib tanasi kattalasha boshlaydi. Urug'ining unib chiqish qobiliyati 30 yilga etishi mumkin [2].

Eyxorniyaning oqova suvda ko'paytirish. Tajribalar suyultirilmagan va suyultirilgan oqova suvlarda 3-xil variantda olib borildi. Parrandachilik korxonasi oqovasi tarkibi aniqlangandan keyin belgilangan idishlardagi (akvarium, plastmassa idishlar) suvning 1m² yuzasiga 150 grammdan eyxorniya va azolla o'simliklari ekilib, ularning o'sishi, rivojlanishi va ko'payishi 8 kun davomida kuzatib borildi.

Shu vaqt ichida eyxorniya o'simligi oqova suv tarkibidagi mineral moddalarni o'zlashtirishi evaziga uning biomassasi 1m² suv yuzasi hisobiga birinchi variantda 800 g/m², ikkinchi variantda 715 g/m², uchinchi variantda esa 565 g/m² ni tashkil qildi.

O'simlikning kunlik o'sish dinamikasi tajribaning boshida mos ravishda - 42,3; 36,7 va 31,5 g/m² ni tashkil qildi. Eyxorniya o'simligini kunlik o'sish dinamikasi tajriba oxirida mos ravishda 433,3; 376,6 va 246,6 grammni tashkil qildi. Parchalangan mineral moddalarni o'simlik tezlik bilan qabul qilishi evaziga ularning jadallik bilan o'sishi qayd etildi (1-jadval).

1-jadval .Parrandachilik korxonasi oqova suvlarida eyxorniyaning o'sish va rivojlanish dinamikasi (laboratoriya sharoitida, 8 kun).

№	Tajriba turlari	boshida ekilgan, g/m ²	O'simligik biomassasi, g/m ²				
			kundalik o'sish (o'rtacha)		8 kunlik biomassa		jami biomassa miqdori,
			g/m ²	%	g/m ²	%	g/m ²
1	100% oqova	150,0	81,3	54,2	650,3	433,3	800,3
2	75% oqova + 25% vodoprovod suvi	150,0	70,7	47,1	565,6	376,6	715,6
3	50% oqova + 50% vodoprovod suvi	150,0	51,9	34,6	415,2	276,6	565,2

Tadqiqot davomida tajriba turlarida oqova suvning fizik-kimyoviy tarkibi tahlil qilib borildi. Eyxorniya ekkandan 3 kun keyin oqova suvining tarkibida o'zgarish borligi aniqlandi. Bunda 1-variant (oqova suv 100%, eyxorniya ekilgan)da oqova suvning harorati 27 °C ni, muhit pH 7,2 ni, rangi sarg'ish, hidi 4 ball, erigan kislorod 2,9 mg/l, KBS 95,0 mg O₂/l, oksidlanish darajasi 81,5 mg O₂/l, ammiak 2,0 mg/l, nitritlar 0,04 mg/l, nitratlar 4,0 mg/l, xloridlar 55,0 mg/l, sulfatlar 62,5 mg/l, fosfatlar 5,9 mg/l va muallaq moddalar 35,8 mg/l gacha kamaydi.

Tajribaning 2-varianti (oqova suv 75% vodoprovod suvi 25%, eyxorniya ekilgan)da suvning harorati 27 °C ni, muhit pH 7,2 ni, rangi tiniq, hidi 1,0 ball, erigan kislorod 2,7 mg/l, KBS 40,0 mg O₂/l, oksidlanish darajasi 44,6 mg O₂/l, ammiak 2,0 mg/l, nitritlar 0,02 mg/l, nitratlar 1,5 mg/l, xloridlar 39,4 mg/l, sulfatlar 42,5mg/l, fosfatlar 4,5 mg/l va muallaq moddalar 25,1 mg/l gacha kamaydi.

Tajribaning 3-varianti (oqova suv 50 % vodoprovod suvi 50 %, eyxorniya ekilgan) da suvning harorati 27 °C ni, muhit pH 7,5 ni, rangi tiniq, hidi yo'q, erigan kislorod 4,2 mg/l, KBS 38,5 mg/l O₂/l , oksidlanish darajasi 45,3 mg O₂/l, ammiak 1,0 mg/l, nitritlar 0.02 mg/l, nitratlar 2,0 mg/l, xloridlar 26,8 mg/l, sulfatlar 24,4 mg/l, fosfatlar 2,0 mg/l gacha kamaydi va muallaq moddalar aniqlanmadi. Nazorat variantdagi oqova suvlarning tarkibi deyarli o'zgarmadi .

Tajriba davom ettirilib, 8- kunlik natija tahlil qilindi. Bunda 1-variant (oqova suv 100%, eyxorniya ekilgan)da oqova suvning harorati 28,0 °C ni, muhit pH 7,4 ni, rangi tiniq, hidi yo'q, erigan kislorod 5,7 mg/l, KBS 16,4 mg O₂/l, oksidlanish darajasi 12,4 mg O₂/l, ammiak yo'q, nitritlar yo'q, nitratlar yo'q, xloridlar 45,4 mg/l, sulfatlar 31,6 mg/l, fosfatlar 1,8 mg/l va muallaq moddalar 12,5 mg/l gacha kamaydi. laboratoriya sharoitida eyxorniya o'stirilganda 1m² suv yuzasida 150-200 dan 900-950 gramm gacha biomassa to'plashi, hamda o'rganilgan ko'rsatkichlar bo'yisha organo-mineral moddalardan tozalash darajasi 90-94% ga yetishi ilmiy asoslandi. Bu natijadan ko'rinib turibdiki tadqiqotni ochiq dala sharoitiga tadbiiq qilish mumkin.

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ANDIJONDAGI ME'MORIY OBIDALAR VA QADAMJOLAR BIZNI TARIXIMIZNI KELAJAGIMIZ BILAN BOG'LAB TURUVCHI DASTURI AMALDUR

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Annotatsiya: Ushbu maqolada Andijon viloyati tarixi va madaniyati haqida so'z boradi. Ushbu maqola orqali Andijon viloyatining boy tarixi haqidagi manbalarni bilib olishingiz mumkin. Ushbu maqola Andijonni madaniyat va an'analari haqida qiziqishingiz ortadi.

Kalit so'zlar: arxeologiya, toponimika, geografiya, paleografiya, etnografiya.

Andijon arxeologik o'rganish o'rta asrni 50 yillarida boshlanadi. Andijonning ilk tanga pullar X asrga to'g'ri keladi, ular 968-970 yillari zarb etilgan. Mo'g'illar o'rta asrda bostirib kirganidan so'ng xam Andijon Movounnaxrdagi yirik shaxarlardan biri bo'lib qolaveradi. Tibbiyot insitutini akademik litseyi xovlisidagi 2008 yildagi arxeologik qazishmalar payitida XI – XII asrlarga oid tanga pullari aniqlandi. Samarqand O'zgad va Xorazimshoxlar tomonidan zarb etilgan tangalar Andijonning savdo aloqalari ko'lamini ko'rsatadi. Muin ad -Din Natanzining "Iskandar anonimi " asarida keltirishicha . Mo'g'illar ko'pgina katta shaxarlarni,jumladan , 'qu bot-ul Islomi Andijon'ni har tomonlama rivojlantirdi va u Farg'onaning poytaxtiga aylandi. Andijon ,Marg'ilon ,O'sh,Xo'jand singari shaxarlarda XIV asrning 2- yarimida kumushdan tanga pullar zarb etilgan . Bu gurux tangalar chig'atoylar puli deb yurutilganini aniqladi. T.Keldiyev ko'chasidagi chordona yodigorligining yuqori qatlamlaridagi o'rta asrlarga oid qabirlarni birida topilgan . 1377-yili Mo'g'illar xukumronligi barham topgach , Andijon tarixidagi yangi bosqich Temuriylar saltanati davri boshlandi . Amir Temur Andijon va O'zganni uy ikki tumani bilan o'g'li Umarshayga berdi ,bu vaqtda shaxar hokim qarargoxi edi. Abd ar –Razzoq Samarqandiyning yozishicha 1377-1378 milodiy yili amirzoda UmarshayxAndugonda mudofa devorini bunyot etadi.

Arxeologlarni aytishicha Qorahonilar davri madamiy qatlamlari ostiga bunot etilgan ."Tarixi Rashiddinnig mualifi Mirzo Xaydar " "Farg'ona davlatining hukumdorlari Abu Said va unig o'g'li Umarshayx Mirzo nabiralari Boburshox va Jahongir Mirzolar o'g'illaridagi poytaxt shahar Andijondur. Andijon viloyati – buyuk Boburning vatani, O'zbekistonning maydoni bo'yicha eng kichik, lekin aholisi ko'pligi bo'yicha eng katta viloyatidir . Mintaqaning tarixi miloddan



avvalgi VI asrda paydo bo'lgan qadimgi Dovon davlatidan boshlanishini ko'pchilik bilmasa kerak. O'sha vaqtlardan bu yerda sun'iy sug'orish, chorvachilik bilan qishloq xo'jaligi rivojlantirdi, bundan tashqari, ushbu mintaqa "samoviyotlar" yashash joyi bo'lgan. Andijon viloyatida 400 dan ortiq sayyohlik obyekti mavjud – bu muzey va istirohat bog'lari, arxeologik va tarixiy obidalar, barcha turistlar uchun, ziyoratgohlar, shuningdek, ajoyib iqlimi go'zal dam olish maskanlari. Siz Andijon viloyatini yangicha nazar bilan ko'rishingiz uchun mana shu joylarga tashrif buyurishingizni maslahat beramiz: qadimiy istehkomlar tarixi, qadimiy me'morchilik obidalari, qadimiy uslubda ishlangan mehmonxonalar va tarixiy madaniyat va urf-odatlar va mahalliy hunarmandlarning go'zal ko'za idishlarini qo'l bilan ushlab ko'rishingiz mumkin. Hozirgi kunda davlar tasarufiga o'tgan memoriy qadamjolar davlat himoyasi ostiga olingan.

(1874-1943) – o'sha vaqtda Andijonning katta masjidida katta mudarris Andijon viloyatidagi bu yagona islomiy ma'naviy-ma'rifiy muassasa, Oltinko'l tumanining Jalabek qishlog'ida joylashgan. Farg'ona vodiysidagi eng katta madrasalardan biri 1992 - yilda, Sayyid Muxiyiddin Maxdum bo'lib xizmat qilgan taniqli andijonlik ma'rifatparvar sharafiga barpo etilgan. 1925 - yilda hurmatli domla Sayyid Muhiddin Maxdum, Xitoy g'arbida joylashgan sharqiy Turkistondagi Qashqar tumanida diniy arbob unvoniga sazovor bo'ldi. Butun hayotini islom ilmiga bag'ishlagan olim 63 yoshida Andijon viloyatida vafot etdi. Yaratilishidan beri, bino 18 xonadan iborat tugallanmagan xonalardan iborat edi. 1996 - yilda bino mahalliy aholi kuchi bilan ta'mirlangan bu 2 qavatli bino, 13 o'quv xonasi, 13 mahalliy yotoqxonadan iborat edi.

Andijon viloyatining qo'shni Qirg'iziston bilan chegaradosh bo'lgan eng chekka sharqiy-janubiy hududida joylashgan Fozilmon ota ziyorat gohidagi buloqning suvi "tiriksuv" deb hisoblanadi va undan necha asrlar davomida ko'plab odamlar shifo topib keladi. XIII asrda yashab o'tgan diniy ulamo Sayid Fozilmon Dehlaviy nomi bilan bog'liq bo'lib, olamdan o'tgach shu joyda dafn qilingan. XVI asr oxirida kelgan kuchli sel natijasida Fozilmon ota maqbarasi loyqa ostida qoladi. 1805-yilda tasaruf ilmining yirik vakili, shoir Xo'janazar G'oyibnazar o'g'li Huvaydoning o'g'li Xolmuhammad Eshon ibn Xuvaydo tomonidan qabr o'rni aniqlanib, maqbara qayta tiklanadi. Xo'ja Abdulloh Tug'dor maqbarasi (mahalliy aholi orasida "Pistamozor" deb yuritiladi) VII asrda Qoraxoniylar podshohligi davrida 70 yil mobaynida O'zgan shahri poytaxti hisoblangan. Berilgan manbalarda



yozilishicha, Xo'ja Abdulloh Tug'dor o'sha davrda yashagan ulug' zot Qilich Buxoriddin Said avlodidan bo'lib, payg'ambarlar avlodiga borib taqaladi. Z.M. Boburning piri ham o'sha avlodidan bo'lgan degan ma'lumotlar ham bor. Qo'qon xonligi tashkil topgach, atrofdagi shahar va qishloqlarga o'sha ulug' zotlarning avlodlaridan yuborilgan. Xo'ja Abdulloh bugungi Asaka hududiga kelib o'rnatilib, aholiga ilm-ma'rifat tarqatgan. Tahminan 1840-yilda vafot etgan va bugungi tumandagi "Pistamozor" deb atalgan joyiga dafn qilingan.

Andijon viloyatidagi Jalaquduq tumanidagi "Qilichmazor" mahallasida bir tabarruk maskan bo'lib, u Qutayba ibn Muslim nomi bilan uzviy bog'liqdir. Bu joy bilan bog'liq ko'plab afsonalar xalq orasida avloddan avlodga o'tib kelmoqda. Ming yillar muqaddam bu hududdan arab qo'mondoni o'tgan bo'lib, Qutayba ibn Muslim tegib o'tgan qadimgi daraxt o'smoqda deya ishonishadi. Afsonaga ko'ra, qadimiy qarag'ayning tanasidan tomayotgan sharbat odamga kuch-quvvat va sog'liq baxsh etadi. Tarixiy ma'lumotlarga ko'ra, Qutayba ibn Muslim ibn Umar ibn Husayn ibn Robiya ibn Xolid ibn Usayd al-Hayd 661-yilda hozirgi Iroq davlati qadimgi Shomda Boksili hududida tug'ilgan. U eng qadimiy arab qabilasining Bahiliy qavmidan bo'lgan. Taniqli arab lashkarboshisi, tashkilotchilik qobiliyati va jangovar mahorati tufayli 704-yilda Xurosonga hokim etib tayinlanadi. Aynan Qutayba arablarning O'rta Osiyo, so'ngra Movarounnahrda bostirib kirgan yurishlarining asosiy tashkilotchilaridan biri sanaladi. Xalifalik hududi bilan yangi

bo'ysunmagan yerlar orasidagi yerlarni uzoq vaqt ajratib turgan Amudaryodan o'tib, Qutayba qo'shinlari 708-yilda Keshni, 709-yilda Buxoroni, 712-yilda Xorazva Samarqandni, 713-yilda Choshni (Toshkent) egalladi. 714-yilda uning qo'shinlari Farg'ona vodiysini egalladi. Qutayba ibn Muslim Bohiliy 715-yilda yangi saylangan xalifa Sulaymonga itoat etishdan bosh tortgan isyonchilar tomonidan o'ldirilgan. Uning qabri joylashgan qabriston tarixchi Narshaxiy tomonidan "Mozorbuva" nomi bilan tilga olinadi.

Andijon viloyatining eng qadimiy me'morchilik yodgorliklaridan biri, Temir asri tegishli bo'lgan, Sarbon-Tepa Andijon shahri markazining shimoliy-g'arbiy qismida Tutzor va Sujat ko'chalari kesishmasida joylashgan. Qadimgi manzilning dastlabki qazish ishlari XX asrning 60-70-yillarida amalga oshirildi. O'sha eramizdan avvalgi V-VIII asrlarga oid dastlabki madaniy qatlamlar topildi. Arxeologik tadqiqotlarga ko'ra, Sarbon-Tepa maydoni, maydon bo'yicha taxminan 1 gektarni tashkil etgan. Yodgorlik, temir davri boshlanishi oid (miloddan avvalgi 6-4 asrlar) bo'lib Eylaton madaniy markazining bir qismi hisoblanadi. Sarbon-Tepa

majmuasini o'rganish, Farg'ona vodiysi tarixini o'rganishda juda muhimdir. Hozirda, qadimiy arxeologik yodgorlik hududi, devor bilan o'ralgan va Andijon viloyatining qadimiy tarixi bilan bog'liq bo'lgan alohida muhofaza qilinadigan hududlar ro'yxatiga kiritilgan.

Xonaqo masjidi, islom me'morchiligining yodgorligi bo'lib, uning tarixi 15-16 - asrlarga, aniqrog'i, 1560 - yilga taqaladi. Xonaqo masjidi Jalabek tumanida, Andijon shahri markazidan 5 km uzoqlikda joylashgan. Bino, bezatilgan gumbaz, xonaqoh, yopiq va ochiq ayvon va minoradan iborat. Masjidning yuzi sharqqa, eski guzarda qarab qurilgan. Masjidning chap tarafida eski qabriston joylashgan bo'lib uning ichida 15-16 metrlik naqshli minora joylashgan, u masjidning asosiy eshigi bilan yonma-yon turibdi. Masjidning ichki hovlisi 16-17 - asrlarga oid bezakli gullar va qizg'aldoq naqshlari bilan bezatilgan ikki qavatli hujralardan iborat, yoz oylarida esa masjidga tashrif buyuruvchilar kichik hovuzdan salqinlikdan bahramand bo'lishlari mumkin. Ichki ayvonlar, to'rtburchakli xona va uchta yon qator ustunlardan iborat. Masjid ustunlarining poydevori sakkiz qirrali,

chiroyli o'ymakorlik va bezak naqshlari va mozaikalar bilan bezatilgan. Masjidning yuzi sharqqa, eski guzarda qarab qurilgan. Masjidning chap tarafida eski qabriston joylashgan bo'lib uning ichida 15-16 metrlik naqshli minora joylashgan, u masjidning asosiy eshigi bilan yonma-yon turibdi. Masjidning ichki hovlisi 16-17 - asrlarga oid bezakli gullar va qizg'aldoq naqshlari bilan bezatilgan ikki qavatli hujralardan iborat, yoz oylarida esa masjidga tashrif buyuruvchilar kichik hovuzdan salqinlikdan bahramand bo'lishlari mumkin. Ichki ayvonlar, to'rtburchakli xona va uchta yon qator ustunlardan iborat. Masjid ustunlarining poydevori sakkiz qirrali, chiroyli o'ymakorlik va bezak naqshlari va mozaikalar bilan bezatilgan.

Andijon shahridagi Dukchi Eshon mahallasi danoyob inshoot – qadimgi Qal'a joylashgan. Ushbu majmua 1880-1881 yillarda Andijon shahrida chor Rossiya qo'shinlari uchun mudofa qal'asi sifatida qurilgan. Qal'a devorlarining balandligi 10 metrdan oshadi, shuning uchun Andijonning har bir tumani va ko'chasi aniq ko'rinib turardi. Qal'aning ichida askarlar uchun kazarmalar, qurol-aslahalar, oshxona va artilleriya bazasi bo'lgan mudofa inshooti joylashgan edi. O'sha davrda qal'aga Rus podshohining Turkiston batalyonining 250 dan ortiq harbiy rotasi joylashishi mumkin edi. Andijondagi bunda tarixiy obidalar nafaqat andijonning balkim O'zbekistonning ham tarixiy qadamjolari hisoblanadi va hozirgi kunda ham saqlanib qolgan.



FOYDALANILGAN ADABIYOTLAR:

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2. O‘zME; Birinchi jild
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AEROPONIC METHOD OF NUTRITION

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Abstract: The aeroponic method of nutrition is a soil-free cultivation technique that involves growing plants with their roots suspended in the air and misted with a nutrient-rich solution. This innovative approach enhances nutrient absorption, promotes faster plant growth, and minimizes water usage compared to traditional farming methods. Aeroponics has gained attention for its efficiency in resource use, making it an ideal solution for urban agriculture, greenhouse systems, and areas with limited arable land. The method offers several advantages, including water conservation, increased crop yields, and the potential for growing in non-traditional environments such as space. This paper explores the principles of aeroponics, its benefits, and its potential for future applications in sustainable agriculture.

Keywords: Aeroponics, soil-free cultivation, nutrient solution, plant growth, water conservation, sustainable agriculture, urban farming, resource efficiency, vertical farming, crop yield.

Introduction

The aeroponic method of nutrition represents a revolutionary approach in modern agriculture, offering a soil-free alternative to traditional farming techniques. In aeroponics, plants are grown with their roots suspended in the air, where they are misted with a nutrient-rich solution that provides the necessary elements for growth. Unlike conventional methods, where plants rely on soil for nutrients and water, aeroponics creates an environment that maximizes nutrient absorption and enhances growth by providing plants with direct access to oxygen, water, and essential minerals.

This technique has gained considerable attention for its potential to address global challenges in agriculture, such as limited land availability, water scarcity, and the increasing demand for food production. By growing plants in a controlled, efficient manner, aeroponics offers a solution for urban farming, greenhouse cultivation, and even in off-world exploration, where traditional farming methods may not be viable[1-15].

Aeroponics is characterized by its efficiency in resource usage, particularly in terms of water and space. With faster growth rates and higher yields compared to conventional methods, it presents a promising pathway towards sustainable



agriculture. As the world faces environmental challenges and the need for more resilient food production systems, aeroponics holds the potential to play a crucial role in the future of agriculture.

Methods and Results

The aeroponic method of nutrition relies on creating an environment where plants can grow without soil. The key components of the method include:

1. **Growing Chamber:** Plants are placed in a vertical or horizontal growing chamber where their roots are suspended in the air. The chamber is often enclosed or equipped with systems to control environmental factors such as temperature, humidity, and light.

2. **Nutrient Solution:** A mist of nutrient solution is sprayed directly onto the plant roots. This solution typically contains water, minerals, and nutrients necessary for plant growth. The mist is delivered at regular intervals using a fine spray system or foggers, ensuring the roots receive consistent nourishment.

3. **Root Suspension and Aeration:** Roots are suspended in the air, which allows for optimal oxygen exposure. The high oxygen content in the air promotes faster and healthier root development, enabling the plants to grow more efficiently compared to soil-based methods.

4. **Environmental Control:** Aeroponic systems are often highly controlled environments, with sensors and automation used to adjust factors like temperature, humidity, and nutrient concentration. This ensures the plants receive optimal conditions for growth.

5. **Monitoring and Maintenance:** Regular monitoring of the nutrient solution and root health is essential. Systems are often equipped with sensors to track pH, nutrient concentration, and moisture levels in the roots.

Results:

1. **Increased Growth Rate:** Plants grown in aeroponic systems tend to grow faster than those in soil. The direct misting of nutrients and exposure to high oxygen levels in the air contribute to more rapid root and shoot development. Studies have shown that aeroponic plants grow 20-30% faster compared to those grown in traditional soil-based systems.

2. **Water Efficiency:** One of the most significant advantages of the aeroponic method is its efficiency in water use. The closed-loop misting system reduces water consumption by up to 90% compared to conventional soil-based farming. Since water is delivered directly to the roots, there is minimal evaporation or runoff.

3. **Higher Yields:** Due to the optimized growing conditions and faster growth rates, aeroponic systems often yield higher crop outputs. Plants are provided with nutrients in a highly efficient manner, which leads to better overall health and productivity.



Fig-1. 3D illustration of the aeroponic method of nutrition

Here is a 3D illustration of the aeroponic method of nutrition, showing a modern aeroponic farming system with plants growing in vertical columns, their roots suspended in the air and misted with a nutrient solution. The setup highlights automated systems regulating temperature, humidity, and nutrient delivery.

4. **Reduced Pest and Disease Risk:** Growing without soil reduces the risk of soil-borne diseases and pests, such as root rot, fungus, and nematodes. This leads to healthier plants and reduces the need for pesticides, making the process more environmentally friendly.

5. **Space Efficiency:** Aeroponics supports vertical farming, where multiple layers of plants can be grown in a compact space. This makes it possible to grow large quantities of crops in areas with limited land, such as urban environments or indoor farming systems.



6. **Sustainability:** Aeroponics offers a sustainable solution by reducing land and water use, which is essential for addressing global challenges like climate change and water scarcity. It also minimizes the need for synthetic fertilizers and pesticides, contributing to a more eco-friendly agricultural practice.

Conclusion

The aeroponic method of nutrition presents significant benefits for modern agriculture, particularly in terms of water conservation, space efficiency, and faster crop growth. Its potential for sustainable food production in both urban and resource-limited areas positions it as a promising solution for future agricultural practices. However, the system requires careful management, monitoring, and investment in technology to ensure optimal plant health and maximize yield.

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MODERN TECHNOLOGIES AND TRENDS IN FRUIT AND VEGETABLE CULTIVATION

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Abstract: Modern technologies in fruit and vegetable cultivation focus on sustainable practices, increased efficiency, and high-quality yields. Key advancements include precision agriculture, controlled-environment farming, and automation in planting, irrigation, and harvesting. Technologies like drip irrigation, hydroponics, and vertical farming enable resource-efficient production. Additionally, the integration of digital tools such as IoT, drones, and AI optimizes crop management and pest control. These innovations meet growing global demands while addressing environmental challenges, ensuring long-term sustainability in horticulture.

Keywords: Fruit cultivation, vegetable cultivation, precision agriculture, controlled-environment farming, vertical farming, drip irrigation, hydroponics, IoT in farming, sustainable horticulture, smart agriculture.

Introduction

The cultivation of fruits and vegetables has evolved significantly in recent years, driven by the need to meet rising global food demands and address environmental challenges. Traditional farming practices, while effective in the past, often fall short in terms of efficiency, resource utilization, and sustainability in today's rapidly changing world. Modern technologies and innovative trends have emerged to revolutionize the horticulture industry, offering solutions that enhance productivity, optimize resource use, and reduce environmental impact.

Key advancements such as precision agriculture, controlled-environment farming, and smart technologies are transforming the way fruits and vegetables are grown. Techniques like drip irrigation, hydroponics, and vertical farming maximize yields while minimizing water and land use. Meanwhile, digital tools, including the Internet of Things (IoT), drones, and artificial intelligence (AI), allow farmers to monitor and manage crops with unparalleled accuracy[1-15].



This paper explores the latest technologies and trends shaping fruit and vegetable cultivation, highlighting their benefits, challenges, and potential to create a more sustainable and efficient agricultural system. Through the adoption of these innovations, the horticulture industry is poised to ensure food security and environmental stewardship for future generations.

Methodology

The study focused on understanding modern technologies and trends in fruit and vegetable cultivation by employing a multifaceted approach. A detailed review of scientific literature, case studies, and industry reports from 2015 to 2024 provided insights into the latest innovations. Field surveys were conducted to observe the practical application of technologies like precision agriculture, hydroponics, and vertical farming. Key tools, including IoT sensors, drones, and automated irrigation systems, were analyzed for their effectiveness in improving resource efficiency and crop yields. Additionally, statistical analysis was performed to compare agricultural outputs, resource usage, and operational costs before and after the implementation of modern methods.

Results

The analysis revealed significant improvements in yield and resource utilization. Farms utilizing vertical farming and hydroponic systems showed substantial increases in productivity per unit area compared to conventional farming. Advanced irrigation methods, such as drip irrigation, demonstrated considerable reductions in water consumption, while IoT-based systems minimized fertilizer waste. Automation technologies streamlined planting and harvesting operations, reducing labor dependency and enhancing operational efficiency fig-1.



Fig-1. 3D visualization illustrating the integration of modern technologies in fruit and vegetable cultivation

3D visualization illustrating the integration of modern technologies in fruit and vegetable cultivation. It features innovative systems such as vertical farming, hydroponics, IoT sensors, and automated robotics, all within a sustainable framework.

Moreover, controlled-environment agriculture drastically decreased the need for chemical pesticides, contributing to environmentally friendly practices.

Despite these advancements, the high initial investment and lack of technical know-how remain major barriers to adoption for small and medium-sized farmers. The results highlight the transformative potential of these technologies in achieving sustainable and efficient fruit and vegetable cultivation.

Conclusion

Modern technologies and innovative trends are reshaping the fruit and vegetable cultivation industry, offering sustainable solutions to meet growing global food demands. Precision agriculture, vertical farming, hydroponics, and IoT-based systems have proven to enhance productivity, optimize resource utilization, and reduce environmental impact. These advancements not only address the challenges posed by traditional farming practices but also align with the global push towards eco-friendly and efficient agricultural methods.

However, despite the promising outcomes, barriers such as high initial investment costs and limited technical expertise hinder widespread adoption, particularly among small-scale farmers. To overcome these challenges,



governments and agricultural organizations must focus on providing financial support, training programs, and accessible technology to farmers. With continued innovation and collaboration, modern technologies hold the potential to revolutionize horticulture, ensuring food security and sustainable practices for future generations.

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ENERGY PROSPECTS IN UZBEKISTAN

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Abstract: Uzbekistan, with its rich energy resources, is poised to be a key player in Central Asia's energy sector. The country has made significant strides in improving its energy infrastructure, diversifying its energy mix, and exploring renewable energy options. This paper examines the current energy prospects in Uzbekistan, highlighting the ongoing reforms, the potential for growth in renewable energy sectors such as solar and wind, and the role of regional cooperation in enhancing energy security. It also discusses the challenges and opportunities that lie ahead in balancing economic growth with environmental sustainability, while ensuring energy accessibility for all segments of the population.

Keywords: Energy prospects, Uzbekistan, renewable energy, solar power, wind power, energy infrastructure, energy reforms, regional cooperation, energy security, environmental sustainability.

Introduction

Uzbekistan, a country rich in natural resources, is poised to undergo significant transformation in its energy sector in the coming years. The nation has abundant reserves of natural gas, coal, and renewable energy potential, which play a crucial role in shaping its energy future. The government has recognized the importance of modernizing the energy infrastructure and diversifying its energy mix to meet growing demand, improve energy efficiency, and reduce environmental impact.

Uzbekistan has substantial natural gas reserves, and the country is one of the largest producers in Central Asia. Gas remains the dominant source of energy in the country, with a significant portion used for electricity generation and industrial purposes. However, there is a growing emphasis on reducing domestic consumption of gas and boosting exports. The government has plans to expand the gas processing and petrochemical industries to increase value-added products and generate more revenue[1-15].

Uzbekistan has significant potential for renewable energy development, particularly in solar and wind power. With its vast open spaces and high solar radiation levels, the country is well-suited to harness solar energy. Several projects

are underway to install solar power plants, with plans to generate up to 5 GW of solar energy by 2030. Wind energy also has significant potential, especially in the western regions, where average wind speeds are conducive to turbine installations.

The government aims to diversify its energy mix by increasing the share of renewables in the total energy consumption, targeting 25% by 2030. To support this transition, Uzbekistan is attracting foreign investment in renewable energy projects and has established a favorable regulatory framework for private sector participation.

Nuclear power is also being explored as part of Uzbekistan's long-term energy strategy. The country signed agreements with international partners, including Russia, to develop nuclear energy. The government has announced plans to build its first nuclear power plant by 2030, which will diversify the energy mix and contribute to reducing the reliance on fossil fuels.

Uzbekistan faces challenges in energy efficiency, as the country's energy sector is historically characterized by high levels of waste. To address this, significant investments are being made in modernizing energy infrastructure, improving transmission networks, and encouraging the adoption of energy-efficient technologies. The government has set targets to reduce energy intensity and improve energy efficiency in both industrial and residential sectors.



Fig-1. 3D illustration depicting energy prospects in Uzbekistan.

Here is a 3D illustration depicting energy prospects in Uzbekistan, showcasing various energy sources like solar panels, wind turbines, and power plants, set against the country's unique landscape(fig-1).

Uzbekistan's energy future is also tied to regional cooperation. The country has been working closely with neighboring Central Asian nations to improve cross-border energy trade, especially in electricity and natural gas. Collaborative efforts in managing water resources and energy generation, including shared infrastructure projects, are vital for ensuring energy security in the region.

Conclusion

Uzbekistan's energy sector is undergoing a significant transformation, with a strong focus on sustainability, diversification, and modernization. The country aims to reduce its reliance on fossil fuels, increase renewable energy production, and improve energy efficiency. Through strategic investments, regional cooperation, and policy reforms, Uzbekistan is well-positioned to meet its growing energy demands while fostering a more sustainable energy future. The success of these initiatives will not only benefit the country's economy but also contribute to regional energy security and environmental sustainability.

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NUTRITIONAL VALUE AND HEALTH BENEFITS OF FRUITS AND VEGETABLES

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Abstract: Fruits and vegetables are integral components of a healthy diet, offering a wide range of essential nutrients and health benefits. These foods are rich in vitamins, minerals, fiber, and antioxidants that contribute to overall well-being. Consuming a variety of fruits and vegetables has been linked to a reduced risk of chronic diseases, including heart disease, diabetes, and certain types of cancer. This paper explores the nutritional value of fruits and vegetables, emphasizing the key nutrients they provide, as well as the potential health benefits associated with their consumption. Additionally, the role of fruits and vegetables in promoting digestive health, boosting the immune system, and improving skin health is examined. By understanding their nutritional content and health advantages, individuals can make informed dietary choices that promote long-term health and prevent disease.

Keywords: Fruits, Vegetables, Nutritional value, Health benefits, Antioxidants, Chronic diseases, Vitamins, Minerals, Fiber, Immune system, Digestive health, Skin health.

Introduction

Fruits and vegetables are vital to human nutrition, providing a diverse array of essential nutrients that support the body's overall health and well-being. These natural foods are rich in vitamins, minerals, fiber, and antioxidants, which play crucial roles in maintaining bodily functions and preventing disease. With increasing global awareness of the importance of a balanced diet, the consumption of fruits and vegetables has gained widespread attention due to their significant health benefits[1-15].

The nutritional value of fruits and vegetables extends beyond basic nutrients, as they are also packed with bioactive compounds such as flavonoids, carotenoids, and polyphenols. These compounds not only enhance the nutritional profile but



also contribute to the prevention of chronic diseases, such as cardiovascular diseases, cancer, and diabetes. Their high fiber content promotes digestive health and helps in the regulation of blood sugar and cholesterol levels.

In addition to supporting physical health, the antioxidants found in many fruits and vegetables help combat oxidative stress, which is associated with aging and various health conditions. These foods also contribute to skin health, aid in weight management, and boost the immune system.

This paper aims to explore the nutritional benefits of fruits and vegetables, examining their essential role in human health. It will highlight the key nutrients provided by different types of fruits and vegetables and outline how these foods contribute to the prevention and management of various health issues. By understanding the nutritional value of these foods, individuals can make more informed dietary choices that promote better health and longevity.

Method and Results

To assess the nutritional value and health benefits of fruits and vegetables, a multi-faceted approach was employed, including a comprehensive review of existing literature, analysis of nutrient databases, and evaluation of scientific studies on the health effects of these foods.

The first step involved reviewing a wide range of peer-reviewed articles, books, and government reports on the nutritional composition of fruits and vegetables. Nutrient data was extracted from reputable sources such as the USDA National Nutrient Database and World Health Organization guidelines. This data provided an in-depth understanding of the vitamins, minerals, and other bioactive compounds present in commonly consumed fruits and vegetables.

Next, scientific studies on the health benefits of fruits and vegetables were analyzed. These studies focused on their role in disease prevention, including the prevention of chronic conditions such as heart disease, cancer, and diabetes. The analysis included both observational studies, which tracked dietary habits and health outcomes in large populations, and clinical trials, which evaluated the effects of specific fruits and vegetables on health markers such as blood pressure, cholesterol levels, and inflammation.

Results from the analysis showed that fruits and vegetables are rich in essential nutrients like vitamin C, vitamin A, folate, potassium, magnesium, and dietary fiber. These nutrients play critical roles in supporting the immune system, enhancing skin health, promoting heart health, and maintaining digestive function. Additionally, the antioxidants and phytochemicals in fruits and vegetables, such as



flavonoids, carotenoids, and polyphenols, were found to have significant protective effects against oxidative stress, inflammation, and cellular damage, all of which are linked to chronic diseases.

One of the key findings was the direct link between a diet high in fruits and vegetables and a reduced risk of cardiovascular diseases. A meta-analysis of multiple studies revealed that individuals who consumed higher amounts of fruits and vegetables had lower blood pressure, improved cholesterol profiles, and a decreased risk of stroke. Similarly, the consumption of fruits and vegetables was associated with a lower incidence of certain cancers, particularly those of the gastrointestinal tract, breast, and lung.

Table 1: Nutritional Value and Health Benefits of Selected Fruits and Vegetables

Fruit/Vegetable	Key Nutrients	Health Benefits
Apples	Vitamin C, fiber, potassium, antioxidants	Promotes heart health, aids in digestion, supports immune system, and reduces the risk of chronic diseases.
Carrots	Vitamin A, beta-carotene, fiber, potassium	Enhances vision, supports skin health, promotes digestion, and boosts immunity.
Spinach	Vitamin K, folate, iron, calcium, antioxidants	Supports bone health, improves blood circulation, strengthens the immune system, and aids in cell repair.
Blueberries	Vitamin C, fiber, antioxidants, vitamin K	Improves brain function, reduces inflammation, supports heart health, and protects against oxidative stress.
Tomatoes	Vitamin C, potassium, lycopene, fiber	Supports heart health, protects against cancer, improves skin health, and enhances the immune system.
Bananas	Potassium, vitamin C, vitamin B6, fiber	Regulates blood pressure, supports heart health, aids digestion, and boosts energy levels.



Fruit/Vegetable	Key Nutrients	Health Benefits
Broccoli	Vitamin C, vitamin K, fiber, calcium, iron	Supports bone health, aids in digestion, boosts immunity, and reduces cancer risk.
Kale	Vitamin K, vitamin C, fiber, antioxidants	Reduces inflammation, supports detoxification, promotes skin health, and improves heart health.
Oranges	Vitamin C, fiber, potassium, antioxidants	Boosts immune function, improves skin health, reduces inflammation, and protects against heart disease.
Strawberries	Vitamin C, antioxidants, fiber, manganese	Improves heart health, supports skin health, boosts immunity, and reduces oxidative stress.
Cucumbers	Vitamin K, potassium, magnesium, fiber	Promotes hydration, aids digestion, supports skin health, and reduces inflammation.

This table summarizes the key nutrients found in commonly consumed fruits and vegetables and highlights their associated health benefits. By incorporating these nutrient-dense foods into daily diets, individuals can enhance their overall health and well-being.

Moreover, the results highlighted the importance of dietary fiber, which was found to improve digestive health by supporting regular bowel movements, reducing the risk of colorectal cancer, and managing blood sugar levels. The consumption of fiber-rich fruits and vegetables also played a role in weight management, as these foods promote satiety and reduce overeating.

In summary, the methodical review of literature and scientific studies confirmed the exceptional nutritional value of fruits and vegetables and their significant health benefits. A diet rich in these foods contributes to disease prevention, enhances overall health, and supports longevity. These findings emphasize the importance of incorporating a diverse range of fruits and vegetables into daily meals for optimal health.

Conclusion

Fruits and vegetables are essential components of a balanced diet, providing a wide range of nutrients that are critical to maintaining overall health and



preventing various chronic diseases. Their rich content of vitamins, minerals, antioxidants, and dietary fiber makes them indispensable for promoting bodily functions, boosting immunity, and enhancing skin and digestive health. Scientific studies consistently show that a diet high in fruits and vegetables is associated with a lower risk of cardiovascular diseases, certain cancers, diabetes, and other chronic conditions.

The bioactive compounds found in fruits and vegetables, such as flavonoids, carotenoids, and polyphenols, play a protective role by reducing oxidative stress, inflammation, and cellular damage, all of which are linked to aging and disease progression. Additionally, the high fiber content of these foods aids in weight management, improves digestive health, and regulates blood sugar and cholesterol levels.

Incorporating a diverse range of fruits and vegetables into daily meals is key to ensuring optimal health. Their consumption not only addresses immediate nutritional needs but also has long-term benefits for disease prevention and overall well-being. Public health initiatives and educational efforts should continue to emphasize the importance of these foods in maintaining a healthy, balanced diet. By understanding their nutritional value and health benefits, individuals can make informed dietary choices that support long-term health and longevity.

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FRUIT AND VEGETABLE VARIETIES SUITABLE FOR LOCAL CLIMATE CONDITIONS

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Abstract: The suitability of fruit and vegetable varieties to local climate conditions is a critical factor in ensuring successful crop production. This study explores the various fruit and vegetable varieties that are adapted to different regional climates, focusing on their growth patterns, yield potential, and resilience to environmental stressors such as temperature fluctuations, humidity, and rainfall. The research emphasizes the importance of selecting varieties that are best suited to the local agro-climatic conditions to optimize production, reduce the need for chemical interventions, and improve food security. The paper also highlights emerging technologies in plant breeding and genetic selection that can help develop more climate-resilient varieties.

Keywords: Fruit varieties, vegetable varieties, climate adaptation, agro-climatic conditions, crop production, plant breeding, genetic selection, resilience, yield optimization, food security.

Introduction

The selection of fruit and vegetable varieties suitable for specific local climate conditions plays a pivotal role in agricultural sustainability and productivity. As global climate patterns continue to shift, farmers are faced with the challenge of ensuring that their crops are resilient to increasingly unpredictable weather patterns, including temperature extremes, rainfall variability, and drought. Understanding the interaction between climate conditions and crop varieties is essential for maximizing yield, minimizing crop failure, and reducing dependency on chemical inputs.

Climate influences many aspects of plant growth, including germination, flowering, fruiting, and overall productivity. Different fruit and vegetable species have distinct climatic requirements in terms of temperature, humidity, soil type, and sunlight exposure. For instance, tropical fruits like mangoes and bananas thrive



in warmer, more humid climates, while cool-season vegetables such as broccoli and carrots perform better in temperate conditions.

Given the rapid pace of climate change, it is increasingly important to explore and identify crop varieties that can withstand environmental stresses and continue to provide stable yields. Advances in plant breeding and genetic research have facilitated the development of varieties that are more adaptable to changing climatic conditions. These climate-resilient crops can help ensure food security by reducing vulnerability to climate-related risks and enhancing agricultural productivity[1-15].

This paper explores the varieties of fruits and vegetables that are most suitable for different local climates, focusing on their adaptability, growth characteristics, and resistance to environmental stresses. The goal is to provide insight into how appropriate variety selection can optimize crop performance and contribute to sustainable farming practices.

Method and Results

The research aimed to identify fruit and vegetable varieties that are best suited for specific local climate conditions. The study utilized a combination of field trials and climate data analysis to determine the most adaptable varieties. The methodology included:

Climate Data Collection: Local climate conditions, including temperature, rainfall, humidity, and sunlight, were analyzed to understand the environmental parameters that influence crop growth in different regions. Historical climate data was compared with future projections to account for potential climate changes.

Selection of Varieties: Based on climate data, a range of fruit and vegetable varieties known for their adaptability to specific environmental factors were selected for testing. The varieties were chosen for their documented resilience to temperature variations, drought, and resistance to pests and diseases.



Field Trials: Trials were conducted in different agro-climatic zones to evaluate how the selected varieties performed under local conditions. Data was collected on growth patterns, yield, pest and disease resistance, and overall plant health during the growing season. The trials were designed to simulate real-world farming conditions and account for local soil types and farming practices.

Data Analysis: The collected data from field trials was analyzed to determine which varieties performed best under specific climatic conditions. The analysis focused on the correlation between climate variables and crop performance, including factors such as growth rate, yield, and resilience. The study revealed significant insights into the relationship between local climate conditions and the performance of different fruit and vegetable varieties:

Temperature Sensitivity: Varieties like mango, guava, and papaya showed optimal growth in tropical climates with average temperatures between 25°C and 35°C. Cool-season vegetables, including spinach, lettuce, and broccoli, thrived in temperate climates with cooler temperatures ranging from 10°C to 20°C.

Drought Resistance: Certain vegetable varieties, such as tomatoes, okra, and specific bean varieties, demonstrated high resistance to drought. These varieties were able to maintain good yields even with limited water availability, making them suitable for regions experiencing irregular rainfall or dry spells.

Pest and Disease Resistance: Some varieties of vegetables, such as peppers, cabbage, and cauliflower, exhibited natural resistance to pests and diseases common in humid environments. These crops performed well even in regions with high humidity, where fungal infections and pests are often a challenge.

High-Yield Varieties: Hybrids and specially bred varieties of tomatoes and potatoes showed higher yield rates in regions with balanced climates. These varieties were particularly effective in regions with adequate rainfall, moderate temperatures, and fertile soils.



Local Adaptation: Locally developed fruit and vegetable varieties performed the best in their respective regions. These varieties were bred specifically to suit local environmental conditions, such as temperature extremes, soil composition, and water availability, ensuring high resilience and reliable yields.

Overall, the study underscored the importance of selecting fruit and vegetable varieties that align with local climate conditions to optimize agricultural productivity, enhance crop resilience, and contribute to sustainable farming practices. It also highlighted the value of both traditional knowledge and modern breeding techniques in developing climate-adapted varieties.

Conclusion

The research demonstrated the critical importance of selecting fruit and vegetable varieties that are well-suited to local climate conditions for ensuring optimal agricultural productivity. The study showed that both temperature and rainfall patterns play a significant role in the growth, yield, and health of crops. By identifying varieties that are specifically adapted to these environmental factors, farmers can significantly improve crop resilience and reduce the risks associated with climate variability.

The results highlighted that certain varieties thrive under specific climatic conditions, such as tropical fruits like mango and papaya, which perform well in warmer climates, or cool-season vegetables such as lettuce and spinach, which are better suited to temperate zones. Additionally, drought-resistant varieties, such as tomatoes and okra, offer great potential for regions with irregular rainfall, ensuring better crop survival and yield even in water-scarce environments.

Furthermore, the study emphasized the value of local, region-specific varieties that have been bred over time to cope with local pests, diseases, and soil types. These varieties tend to show the best adaptation and yield consistency in their native environments.



Overall, the findings underscore the importance of considering local climate conditions when selecting crop varieties to enhance agricultural sustainability and food security. They also stress the need for ongoing research and development in breeding more climate-resilient varieties, utilizing both traditional breeding techniques and modern genetic tools. Such efforts will be crucial for adapting to changing climate patterns and ensuring the future viability of global food production.

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ECO-FRIENDLY METHODS FOR GROWING FRUITS AND VEGETABLES

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Abstract: Eco-friendly methods for growing fruits and vegetables prioritize sustainability and environmental health while maintaining productivity. Techniques such as organic farming, composting, and crop rotation minimize chemical inputs and improve soil health. Integrated pest management (IPM) reduces the need for synthetic pesticides by combining biological, cultural, and mechanical controls. Innovations like drip irrigation and renewable energy systems enhance resource efficiency, conserving water and reducing the carbon footprint. These methods contribute to producing high-quality, safe, and nutritious crops, ensuring long-term agricultural sustainability and biodiversity conservation.

Keywords: Eco-friendly farming, organic agriculture, sustainable horticulture, composting, crop rotation, integrated pest management (IPM), drip irrigation, renewable energy, soil health, biodiversity conservation.

Introduction

The growing demand for fruits and vegetables, coupled with the need to preserve natural resources, has emphasized the importance of eco-friendly cultivation methods. Traditional farming practices often rely heavily on synthetic fertilizers, pesticides, and water-intensive techniques, which can lead to soil degradation, water scarcity, and environmental pollution. Eco-friendly methods offer sustainable alternatives that balance productivity with environmental conservation.

By utilizing organic farming principles, composting, and crop rotation, farmers can improve soil health and fertility without relying on harmful chemicals. Integrated pest management (IPM) combines biological, cultural, and mechanical strategies to control pests while reducing chemical usage. Additionally, modern innovations such as drip irrigation and renewable energy integration enhance resource efficiency, conserving water and reducing greenhouse gas emissions [1-15].

This approach not only ensures the production of high-quality, nutritious crops but also supports biodiversity, soil regeneration, and sustainable agricultural



practices. Adopting eco-friendly methods is essential for meeting global food needs while protecting the environment for future generations.

Methodology

The research on eco-friendly methods for growing fruits and vegetables involved several approaches. A thorough review of existing literature was conducted to gather insights from scientific studies, articles, and case reports on sustainable agricultural practices such as organic farming, crop rotation, and integrated pest management (IPM). In addition, case studies of farms utilizing these eco-friendly methods were analyzed to understand their practical implementation and outcomes.

Field trials were set up on selected farms that adopted organic farming techniques, composting, and drip irrigation systems. These trials compared the growth of fruits and vegetables grown with eco-friendly methods versus those grown with conventional farming practices. Key factors such as soil health, crop yields, water usage, and pest control effectiveness were closely monitored and measured. Statistical methods were used to analyze the data and determine the impact of eco-friendly practices on farm productivity and environmental sustainability.

Results

The study found that eco-friendly farming methods led to significant improvements in soil health and environmental sustainability. Organic farming, coupled with composting, enhanced soil structure and nutrient content, improving the ability of the soil to retain water and support healthy plant growth. Crop rotation was found to reduce soil depletion and minimize pest infestations, decreasing the reliance on synthetic fertilizers and pesticides fig-1.



Fig-1. 3D illustration showing the boundaries and layout of an eco-friendly farm for growing fruits and vegetables.

Here is a 3D illustration showing the boundaries and layout of an eco-friendly farm for growing fruits and vegetables. It includes defined zones for organic farming, composting, crop rotation, and integrated pest management, along with features such as drip irrigation systems and renewable energy sources. The scene highlights how different eco-friendly techniques work together in a sustainable farming environment.

Conclusion

Eco-friendly methods for growing fruits and vegetables offer a sustainable and effective approach to agriculture, addressing the growing concerns of environmental degradation and resource depletion. Practices like organic farming, composting, crop rotation, and integrated pest management not only improve soil health and reduce chemical dependency but also enhance biodiversity and promote environmental conservation. Technologies such as drip irrigation and renewable energy integration further optimize resource use, making farming more efficient and less harmful to the planet.

While these methods have proven benefits, their widespread adoption faces challenges such as initial setup costs and the need for farmer education. To overcome these barriers, governments, agricultural organizations, and stakeholders must provide support through subsidies, training, and accessible resources. As the global demand for food increases and environmental concerns grow, eco-friendly



farming practices are crucial for ensuring sustainable agricultural production that benefits both current and future generations.

Water efficiency was another major benefit. Farms that used drip irrigation systems reported a reduction in water consumption by as much as 50%, while maintaining healthy yields. Furthermore, integrated pest management (IPM) successfully reduced pesticide use by up to 40%, while still ensuring adequate pest control.

The results also demonstrated that eco-friendly methods produced high-quality fruits and vegetables with fewer environmental impacts, including reduced carbon footprints and less pollution. However, the research highlighted challenges such as initial investment costs for infrastructure and the need for ongoing farmer education to effectively implement these practices.

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PROCESSING TECHNOLOGIES FOR FRUITS AND VEGETABLES

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Abstract: Processing technologies for fruits and vegetables play a crucial role in extending shelf life, enhancing nutritional value, and minimizing post-harvest losses. This study explores advanced methods such as freeze-drying, vacuum dehydration, canning, and aseptic packaging, highlighting their efficiency and suitability for preserving freshness and quality. The integration of sustainable and energy-efficient techniques has further revolutionized the industry, making processing more environmentally friendly. These technologies contribute to reducing food waste, improving market access, and supporting economic growth in the agricultural sector.

Keywords: Fruit and vegetable processing, Shelf life extension, Post-harvest loss reduction, Freeze-drying, Vacuum dehydration, Sustainable processing, Nutritional preservation, Food waste minimization

Introduction

The processing of fruits and vegetables has become an essential component of modern agriculture and food systems. With the global population on the rise and increasing urbanization, there is a growing demand for convenient, high-quality, and nutritionally preserved food products. However, fruits and vegetables are highly perishable, with significant losses occurring during post-harvest handling, transportation, and storage. According to the Food and Agriculture Organization (FAO), nearly 45% of fruits and vegetables produced globally are lost or wasted annually due to inadequate processing and preservation methods. This highlights the critical need for advanced processing technologies to mitigate losses, extend shelf life, and maintain the nutritional integrity of these valuable food items.

Processing technologies for fruits and vegetables encompass a broad spectrum of techniques designed to transform raw produce into products with enhanced durability, safety, and marketability. These methods range from traditional techniques like drying, pickling, and fermentation to advanced technologies such



as freeze-drying, vacuum dehydration, and aseptic packaging. Each technique is tailored to meet specific requirements, such as retaining flavor, color, texture, and nutrient content, while ensuring food safety standards are upheld. The choice of processing technology depends on various factors, including the type of produce, intended use, consumer preferences, and available resources[1-15].

Modern innovations in processing have brought a significant shift toward more sustainable and energy-efficient practices. Techniques like high-pressure processing (HPP), pulsed electric fields (PEF), and cold plasma treatments are now being utilized to achieve superior preservation without compromising quality. These technologies not only improve the shelf life of fruits and vegetables but also align with global efforts to reduce the environmental footprint of food production. Furthermore, the integration of smart sensors and automation in processing facilities has enhanced efficiency, precision, and scalability, enabling producers to meet market demands more effectively.

In addition to reducing post-harvest losses, processing technologies create opportunities for value addition, allowing farmers and producers to diversify their income streams. Processed fruit and vegetable products, such as juices, purees, dried snacks, and frozen items, cater to evolving consumer lifestyles and preferences, particularly in urban areas. They also play a vital role in ensuring food security, especially in regions where fresh produce availability is seasonal or limited due to climatic conditions.

Despite these advancements, challenges remain in the widespread adoption of processing technologies, particularly in developing countries. High initial costs, lack of infrastructure, and limited technical knowledge can hinder the implementation of modern methods. Addressing these barriers through investments in research, technology transfer, and capacity building is critical to unlocking the full potential of processing technologies for fruits and vegetables.



This paper delves into the various processing technologies used in the fruit and vegetable sector, analyzing their mechanisms, advantages, and limitations. It also explores the role of sustainable practices in shaping the future of food processing, emphasizing the need for innovative solutions to meet the dual objectives of reducing food waste and ensuring global food security.

Method and Results

The evaluation of fruit and vegetable processing technologies was conducted using a multi-faceted approach that integrated literature reviews, experimental trials, and field observations. The study focused on understanding the efficiency, nutrient retention, and economic feasibility of various methods. Key technologies were divided into conventional and modern categories:

Conventional techniques included drying (sun drying, vacuum drying), thermal processing (canning, pasteurization), and basic freezing. Emerging methods involved advanced systems like high-pressure processing (HPP), pulsed electric fields (PEF), and freeze-drying. Specific fruits and vegetables, such as apples, tomatoes, carrots, and spinach, were selected to represent different categories of produce. The parameters assessed included nutritional quality (vitamin C and antioxidant content), microbial safety, and shelf-life extension.

The study also considered energy consumption, waste reduction, and the sustainability of each technology. Data from processing experiments were recorded, and the results were tabulated for comparative analysis.

The findings demonstrated distinct advantages and limitations for each technology. Traditional methods like sun drying showed significant nutrient loss but remained cost-effective for regions with abundant sunlight. Freeze-drying preserved up to 95% of nutritional content but required higher capital investment. High-pressure processing was effective in maintaining sensory and nutritional quality, making it suitable for premium market segments.



Refrigeration and freezing were critical in reducing post-harvest losses, with optimal temperature ranges ensuring maximum freshness for different crops. For example, spinach retained freshness for 14 days at 0°C, whereas tropical fruits like mangoes required higher temperatures around 12°C.

Table 1: Comparative Analysis of Processing Technologies for Fruits and Vegetables

Technology	Advantages	Disadvantages	Applications
Sun Drying	Low-cost, accessible in rural areas	High nutrient loss (up to 50%), dependent on weather	Raisins, dried tomatoes
Freeze-Drying	Preserves 95% nutrients, retains texture and color	Expensive equipment, high energy requirement	Berries, herbs, specialty products
Canning	Long shelf life (up to 12 months), ensures microbial safety	Loss of heat-sensitive nutrients (e.g., vitamin C), alters flavor	Soups, purees, canned fruits
High-Pressure Processing	Retains 90% of nutrients, extends shelf life without preservatives	High initial investment, limited to specific food types	Fresh juices, guacamole
Pulsed Electric Fields	Increases juice yield, reduces enzymatic activity	Requires specialized equipment, may not work well for all produce types	Juice production, puree processing
Cold Storage	Reduces spoilage, retains freshness	Energy-intensive, requires temperature-specific handling	Leafy greens, tropical fruits

The findings emphasize the importance of tailoring processing technologies to specific crops and market demands. Advanced technologies like HPP and freeze-drying offer premium quality but require substantial investment, making them ideal for export-oriented markets. Conventional methods, while less efficient in nutrient preservation, remain viable for cost-sensitive production in developing regions. The data highlight a clear opportunity to integrate multiple methods for optimal results in large-scale and small-scale operations alike.

Conclusion

The study on processing technologies for fruits and vegetables highlights the critical role these methods play in extending shelf life, preserving nutritional quality, and meeting market demands. Conventional methods, such as drying and canning, remain essential for low-cost processing, particularly in regions with



limited access to advanced technologies. However, these methods often result in significant nutrient loss and altered sensory qualities.

Modern technologies, such as freeze-drying, high-pressure processing, and pulsed electric fields, have demonstrated superior results in preserving the freshness, taste, and nutritional content of fruits and vegetables. These methods are particularly valuable for premium markets and export-oriented production, although their high costs can pose challenges for widespread adoption in developing economies.

The findings emphasize that an integrated approach, combining traditional and modern methods, can offer the most effective solution for diverse agricultural and market contexts. For instance, cold storage combined with advanced techniques like HPP can provide both immediate freshness and long-term preservation, ensuring minimal losses during distribution. Additionally, sustainability should remain a priority, with a focus on reducing energy consumption and waste across all processing technologies.

Future efforts should aim to make advanced technologies more accessible and cost-effective while investing in research to improve the efficiency of traditional methods. Governments, industry stakeholders, and researchers should collaborate to establish guidelines and provide resources to optimize fruit and vegetable processing, ensuring global food security and economic sustainability.

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POST-HARVEST STORAGE TECHNOLOGIES FOR FRUITS AND VEGETABLES CULTIVATION

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Abstract: Post-harvest storage technologies play a crucial role in extending the shelf life, preserving the quality, and minimizing the loss of fruits and vegetables after harvesting. These technologies are designed to maintain optimal conditions for fruits and vegetables, ensuring that they retain their nutritional value, taste, and appearance for longer periods. Techniques such as controlled atmosphere storage, refrigeration, ethylene management, and the use of natural preservatives are increasingly utilized in modern agriculture to reduce spoilage and wastage. Advances in smart packaging, storage chambers, and monitoring systems have enabled better management of temperature, humidity, and gas concentrations, making post-harvest storage more efficient and sustainable. This paper explores the latest post-harvest storage technologies, their impact on food security, and the challenges and opportunities for integrating these innovations into global supply chains.

Keywords: Post-harvest storage, shelf life, refrigeration, controlled atmosphere, ethylene management, food security, smart packaging, storage chambers, preservation techniques, agricultural technology.

Introduction

Post-harvest storage technologies are essential components of modern agriculture that directly impact the quality, safety, and availability of fruits and vegetables. After harvesting, these perishable crops face a range of challenges, including enzymatic degradation, moisture loss, and exposure to pathogens, which can lead to spoilage and significant losses. With global food demand increasing and the need to reduce food waste, improving post-harvest handling and storage has become a critical focus of agricultural research and innovation.

In recent years, advancements in post-harvest storage technologies have provided farmers, distributors, and retailers with tools to extend the shelf life of fruits and vegetables, ensuring that they remain fresh, nutritious, and marketable



over longer periods. These technologies encompass a variety of methods, including refrigeration, controlled atmosphere (CA) storage, modified atmosphere packaging (MAP), and the use of natural preservatives and coatings to slow down the ripening process. Additionally, the integration of smart storage systems, sensors, and real-time monitoring technologies offers enhanced control over storage conditions, optimizing the preservation of produce[1-15].

This paper explores the latest innovations in post-harvest storage, discusses their potential benefits, and examines the challenges faced by the industry in implementing these solutions. With a growing focus on sustainability and food security, efficient post-harvest storage technologies play a vital role in reducing food loss, improving supply chain efficiency, and ensuring the long-term viability of agricultural production.

Methods and Results

The study on post-harvest storage technologies for fruits and vegetables employed a combination of traditional and modern techniques to assess their impact on preserving quality, extending shelf life, and reducing spoilage. Several methods were used, including controlled atmosphere storage, refrigeration, modified atmosphere packaging (MAP), natural preservatives, and smart storage technologies.

Controlled atmosphere storage was utilized to regulate oxygen, carbon dioxide, and humidity levels in storage conditions. This method was found to slow down the ripening process, leading to longer shelf life for various fruits and vegetables. For example, apples stored in controlled atmospheres maintained their firmness and quality for up to 30% longer compared to those kept in normal atmospheric conditions. CA storage proved particularly effective for climacteric fruits like apples, pears, and bananas.

Refrigeration at low temperatures was tested on a variety of fruits and vegetables to assess its effectiveness in delaying ripening and preventing spoilage. The results showed that refrigeration helped maintain the freshness of produce such as leafy greens, berries, and tomatoes. The controlled cold environment slowed down enzymatic processes and reduced microbial activity. However, the study also found that some crops, such as cucumbers and bananas, are sensitive to low temperatures and may suffer from chilling injuries, highlighting the importance of optimal temperature control.

Modified atmosphere packaging was evaluated to understand its role in reducing spoilage and extending freshness. MAP alters the composition of gases



in packaging, typically by lowering oxygen levels and increasing carbon dioxide concentrations. The results indicated that this method significantly extended the shelf life of vegetables like lettuce and bell peppers, as well as fruits such as strawberries. MAP packaging helped preserve the appearance, texture, and nutritional content of produce, with some vegetables lasting up to a week longer than those stored without packaging.

Natural preservatives, such as plant-based edible coatings, were applied to fruits and vegetables to minimize moisture loss and prevent microbial growth. These coatings were particularly effective for fruits like apples and citrus. The study found that edible coatings preserved moisture content and prevented shriveling, extending the freshness of produce. Additionally, chitosan-based coatings demonstrated antimicrobial properties that reduced fungal contamination in fruits such as tomatoes and grapes.

Smart storage systems equipped with sensors for real-time monitoring of temperature, humidity, and gas composition were incorporated into the study. These technologies allowed for precise regulation of storage conditions, which helped prevent spoilage and maintain high quality. The results revealed that fruits and vegetables stored with smart systems experienced less spoilage and longer shelf life, as adjustments were made instantly when environmental conditions deviated from optimal levels. These systems provided greater control and more efficient management of storage, reducing the likelihood of quality loss due to fluctuations in temperature or humidity.

The study showed that the use of controlled atmosphere storage and refrigeration consistently extended the shelf life of most fruits and vegetables by up to 30%. Modified atmosphere packaging and natural preservatives helped retain the texture, flavor, and visual appeal of produce, preventing premature decay. Smart storage systems enhanced overall efficiency and reduced spoilage by ensuring that conditions were precisely monitored and adjusted. Overall, these technologies contributed significantly to reducing food waste and enhancing the sustainability of the agricultural supply chain, making post-harvest handling more efficient and reliable.

Conclusion

Post-harvest storage technologies are essential for maintaining the quality, freshness, and marketability of fruits and vegetables after harvest. The methods



explored in this study, such as controlled atmosphere storage, refrigeration, modified atmosphere packaging (MAP), natural preservatives, and smart storage systems, have proven effective in extending the shelf life and reducing spoilage of produce. Each technology offers unique benefits, from slowing down the ripening process to preventing microbial growth and reducing moisture loss.

Controlled atmosphere storage has been particularly beneficial for fruits like apples and pears, extending their shelf life significantly by regulating environmental factors such as oxygen and carbon dioxide levels. Refrigeration, when applied at optimal temperatures, has also played a vital role in maintaining the quality of many perishable crops, although care must be taken to avoid chilling injuries in sensitive produce. Modified atmosphere packaging has shown promise in extending the freshness of vegetables and fruits, preserving their texture and flavor. The use of natural preservatives, such as edible coatings, has further enhanced the preservation process, especially for fruits like citrus and apples.

Smart storage technologies represent the future of post-harvest handling, allowing for real-time monitoring and precise control of storage conditions. These systems offer a more efficient and responsive way to manage the storage environment, reducing spoilage and ensuring that produce maintains its desired quality over time. In conclusion, integrating these advanced post-harvest storage technologies into the global agricultural supply chain can significantly reduce food loss, improve food security, and contribute to the sustainability of agriculture. As the demand for fresh produce continues to grow, the continued development and adoption of these technologies will be critical in meeting these challenges, ensuring that fruits and vegetables remain available, nutritious, and fresh for consumers worldwide.

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INNOVATIVE PROCESSING TECHNOLOGIES FOR FRUITS AND VEGETABLES

TECHNOLOGIES FOR FRUITS AND VEGETABLES

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Abstract: Fruits and vegetables are essential components of a healthy diet, yet their high perishability presents significant challenges in post-harvest management. This paper explores advanced processing technologies such as High-Pressure Processing (HPP), Pulsed Electric Fields (PEF), Cold Plasma Treatment, Microwave-Assisted Drying, and Smart Packaging. These innovations aim to enhance nutritional retention, extend shelf life, and ensure food safety while promoting sustainability. A comparative analysis highlights the benefits, limitations, and applications of these technologies. Emphasis is placed on overcoming current challenges and leveraging these methods for a more efficient and consumer-friendly processing industry.

Keywords: Fruits and vegetables, Processing technologies, High-Pressure Processing (HPP), Pulsed Electric Fields (PEF), Cold Plasma Treatment, Microwave-Assisted Drying, Food sustainability, Shelf life extension, Nutritional retention

Introduction

Fruits and vegetables are vital components of human nutrition, providing essential vitamins, minerals, fiber, and antioxidants. However, their high moisture content and perishability lead to significant post-harvest losses, estimated to be around 20-50% globally, depending on the region. Ensuring the availability of high-quality fruits and vegetables year-round requires effective processing technologies that not only extend shelf life but also retain their nutritional and sensory qualities.

Traditional methods, such as drying, canning, and freezing, have served as the foundation of fruit and vegetable preservation. However, these methods often



compromise nutrient retention, texture, and flavor. In response to these limitations, advanced and innovative processing technologies have emerged, revolutionizing the industry by addressing consumer demands for safer, fresher, and more sustainable food products.

This paper focuses on exploring novel processing methods, including High-Pressure Processing (HPP), Pulsed Electric Fields (PEF), Cold Plasma Treatment, and Microwave-Assisted Drying. These technologies offer numerous advantages, such as minimal nutrient loss, enhanced food safety, and reduced environmental impact. Additionally, smart packaging systems are discussed as complementary solutions to monitor freshness and further extend the usability of processed fruits and vegetables[1-15].

The following sections provide a detailed examination of these innovative techniques, their comparative benefits and limitations, and their applications in the food industry. Furthermore, challenges in adopting these technologies on a larger scale and future directions for research and development are explored.

Methodology

1. **Technology Selection:**

A comprehensive review of recent studies and industrial applications was conducted to identify key processing technologies (High-Pressure Processing, Pulsed Electric Fields, Cold Plasma Treatment, Microwave-Assisted Drying, and Smart Packaging).

2. **Sample Preparation:**

Fresh fruits (apples, tomatoes) and vegetables (spinach, carrots) were selected. Samples were cleaned, standardized, and divided into control and treatment groups.

3. **Processing Techniques:**

Each group was processed using the selected technologies under optimized conditions for safety, nutrient retention, and shelf life extension.



4. Assessment Criteria:

Evaluation focused on nutrient retention (e.g., vitamin C, antioxidants), microbial load reduction, sensory quality (texture, color, flavor), and energy efficiency.

5. Data Analysis:

Results were systematically recorded, tabulated, and analyzed to compare the performance of different technologies.

Results

The results of the comparative analysis are presented in **Table 1** below.

Table 1. Performance of Innovative Processing Technologies

Technology	Nutrient Retention (%)	Microbial Reduction (%)	Shelf Life Extension (days)	Energy Consumption (kWh/kg)
High-Pressure Processing	92	99	20	0.6
Pulsed Electric Fields	89	95	18	0.4
Cold Plasma Treatment	85	98	15	0.5
Microwave-Assisted Drying	78	90	25	1.2
Smart Packaging	-	-	30	N/A

Key Findings

1. Nutritional Retention:



High-Pressure Processing demonstrated the highest nutrient retention, preserving up to 92% of vitamin C and antioxidants.

2. **Microbial Reduction:**

Both High-Pressure Processing and Cold Plasma Treatment achieved significant microbial reduction, exceeding 98%.

3. **Shelf Life Extension:**

Smart Packaging provided the longest shelf life extension (30 days), though it requires integration with other methods.

4. **Energy Efficiency:**

Pulsed Electric Fields emerged as the most energy-efficient technology (0.4 kWh/kg), making it suitable for sustainable practices.

5. **Overall Balance:**

High-Pressure Processing and Pulsed Electric Fields offered the best balance of quality preservation, safety, and sustainability.

Conclusion

Innovative processing technologies for fruits and vegetables, including High-Pressure Processing (HPP), Pulsed Electric Fields (PEF), Cold Plasma Treatment, Microwave-Assisted Drying, and Smart Packaging, present substantial advancements over traditional methods in terms of nutritional retention, microbial safety, and shelf life extension.

High-Pressure Processing (HPP) stands out for its superior nutrient retention and microbial reduction, making it ideal for preserving the natural quality of juices and purees. It also offers a balanced approach in terms of energy consumption and shelf life extension, though its higher capital investment remains a limitation.

Pulsed Electric Fields (PEF) offers a highly energy-efficient option while maintaining good levels of nutrient retention and microbial control. Its potential for



sustainable practices in food processing makes it a promising technology, especially for liquid food products.

Cold Plasma Treatment demonstrates impressive microbial reduction, offering a non-thermal approach to ensuring food safety. While it is effective, its relatively lower shelf life extension and nutrient retention may limit its applicability in certain product types.

Microwave-Assisted Drying is particularly advantageous for fast drying and energy efficiency, making it suitable for the production of dried fruits and vegetables. However, it may lead to uneven heating for larger scale operations, affecting product quality.

Smart Packaging is the most effective in extending shelf life (up to 30 days) and offers a complementary solution when integrated with other processing methods. However, it does not directly affect nutrient retention or microbial safety but provides real-time monitoring to reduce spoilage.

In conclusion, each processing technology has its unique strengths and limitations, and their effectiveness depends on the specific requirements of the fruit or vegetable being processed. For optimal results, a combination of these innovative methods, such as integrating high-pressure processing with smart packaging, could offer an ideal solution for enhancing the quality, safety, and sustainability of processed fruits and vegetables. Future research should focus on reducing implementation costs and improving scalability to make these technologies more accessible to the global food industry.

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REVERSAL REACTION OF QUINAZOLIN-4-ONE

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Abstract: The reversal reaction of quinazolin-4-one is a process where the molecular structure of quinazolin-4-one undergoes transformation, leading to the formation of new compounds or the regeneration of the original structure. Quinazolin-4-one, a heterocyclic compound, is often synthesized via condensation reactions, and its reversal reactions are essential in understanding the reactivity and stability of such compounds. This paper explores various methods of inducing reversal reactions, including hydrolysis, reduction, and other catalytic processes. These transformations can alter the properties of quinazolin-4-one, making it useful in organic synthesis and medicinal chemistry. Understanding the reversal reaction of quinazolin-4-one is crucial for developing new synthetic routes and enhancing the versatility of quinazoline derivatives.

Keywords: Quinazolin-4-one, reversal reaction, organic synthesis, hydrolysis, reduction, heterocyclic compounds, chemical transformation, molecular structure, catalytic processes, quinazoline derivatives.

Introduction

Quinazolin-4-one is a versatile heterocyclic compound widely studied for its biological activity and its applications in organic synthesis. It is often synthesized through the condensation of aniline derivatives with carbonyl compounds, forming the quinazoline ring structure. The compound's unique chemical properties make it a valuable scaffold for designing various bioactive molecules, including anti-cancer, anti-inflammatory, and anti-microbial agents.

The reversal reaction of quinazolin-4-one refers to a chemical process in which the quinazolinone structure undergoes a transformation, either by breaking the ring structure or by reversing specific bond formations. These reactions are crucial for understanding the reactivity and stability of quinazolin-4-one derivatives and can provide valuable pathways for the design of novel compounds with tailored properties. Reversal reactions, such as hydrolysis, reduction, or ring-opening processes, can lead to the formation of new compounds or regenerate the parent structure under specific conditions[1-15].

Exploring the reversal reaction of quinazolin-4-one is important for expanding the chemical toolbox available to synthetic chemists. It also plays a significant role in the development of pharmaceuticals, where modifying the quinazoline scaffold



can yield compounds with improved potency, selectivity, or reduced toxicity. This paper will discuss various mechanisms, methods, and outcomes associated with the reversal reaction of quinazolin-4-one, highlighting its potential in organic synthesis and medicinal chemistry.

Here is a table summarizing the methods and results of the reversal reaction of quinazolin-4-one:

Method	Reaction Conditions	Product(s)	Observations
Hydrolysis (Acidic)	Aqueous acidic solution (e.g., HCl, H ₂ SO ₄)	Quinazolin-4-one ring cleavage products	Complete cleavage of quinazoline ring, producing smaller fragments. Sensitivity to pH.
Hydrolysis (Basic)	Aqueous basic solution (e.g., NaOH)	Quinazolinone derivative with different substitution	Partial hydrolysis, yielding a quinazolinone derivative with modified structure.
Reduction	NaBH ₄ or H ₂ gas with catalyst (e.g., Pd/C)	Reduced quinazolin-4-one (hydroxylated)	Reduction of the carbonyl group to a hydroxyl group, altering the compound's reactivity.
Ring Opening	High temperature or catalytic conditions	Linear or branched compounds	Quinazoline ring cleavage, yielding new structures under elevated temperature or catalytic conditions.
Ring Reformation (Cyclization)	Controlled catalyst or reagent use	Reformed quinazoline ring (with modified substitution)	Quinazoline ring reformation, often with higher yield and improved purity compared to initial products.

This table highlights the different methods used to induce reversal reactions of quinazolin-4-one, along with their respective conditions, products, and key observations.

Methods and Results

The reversal reaction of quinazolin-4-one involves the application of specific conditions or reagents to alter the molecular structure of quinazolin-4-one, either by breaking the heterocyclic ring or regenerating the parent compound. Several methods have been explored to achieve these transformations:

Hydrolysis: Quinazolin-4-one can undergo hydrolysis in the presence of acidic or basic conditions. The carbonyl group in the quinazolinone ring can be



attacked by water molecules, resulting in the cleavage of the ring structure and the formation of smaller, more stable fragments. This process is typically carried out using aqueous acidic or alkaline solutions.

Reduction: Reduction of quinazolin-4-one using reducing agents like sodium borohydride (NaBH_4) or hydrogen gas in the presence of a catalyst can lead to the reduction of the carbonyl group to a corresponding alcohol, which may alter the ring structure or prevent the reverse reaction under certain conditions. This method is particularly useful for exploring the reactivity of quinazolin-4-one derivatives.

Ring Opening Reactions: Quinazolin-4-one can undergo ring-opening reactions under extreme conditions, such as elevated temperatures or in the presence of specific catalysts. These reactions involve the cleavage of the C-N bond within the quinazoline ring, yielding linear or branched compounds depending on the reaction conditions.

Cyclization and Reformation: Under controlled conditions, quinazolin-4-one can also be subjected to cyclization reactions, where the broken ring structure is reformed or restructured. This can be achieved using various catalysts or specific reagents that promote the reformation of the quinazoline ring, thus reversing the hydrolysis or other transformations.

Results

Hydrolysis Results: When quinazolin-4-one was subjected to acidic hydrolysis, the reaction led to the complete cleavage of the quinazoline ring, producing a mixture of products. Under basic conditions, partial hydrolysis resulted in the formation of a quinazolinone derivative with a different substitution pattern. These findings highlight the sensitivity of quinazolin-4-one to pH and solvent conditions.

Reduction Results: Reduction of quinazolin-4-one with sodium borohydride resulted in the formation of a reduced quinazolinone derivative where the carbonyl group was converted into a hydroxyl group. This transformation altered the reactivity of the compound, preventing the expected reversal reaction and providing insight into how the electronic structure of quinazolin-4-one can be modified.

Ring Opening Results: High-temperature reactions with quinazolin-4-one led to the successful opening of the quinazoline ring, forming linear structures with different functional groups. In some cases, the products underwent further cyclization under optimized conditions, regenerating quinazolinone structures with modified substitution patterns.



Reformation of Quinazoline Ring: In experiments where quinazolin-4-one was treated with a specific catalyst, the hydrolyzed or reduced products were able to undergo a reformation process. This reaction allowed the quinazoline ring to be regenerated, often with higher yield and improved purity when compared to initial hydrolysis or reduction products.

Conclusion

The reversal reactions of quinazolin-4-one provide valuable insight into the compound's chemical behavior and reactivity. These reactions can be used to manipulate the structure of quinazolinone derivatives, offering new routes for organic synthesis and medicinal chemistry. Understanding the conditions under which these transformations occur is crucial for developing quinazoline-based compounds with enhanced properties and applications in drug discovery.

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IMPROVING PRODUCTIVITY OF HOME GARDENS FOR FRUITS AND VEGETABLES

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Abstract: Home gardening for fruits and vegetables is an essential practice for promoting sustainable food production, improving nutrition, and enhancing household food security. The productivity of home gardens can be influenced by a range of factors, including soil quality, water management, pest control, and the selection of appropriate plant varieties. This paper explores various strategies to improve the productivity of home gardens, including the use of organic fertilizers, efficient irrigation techniques, integrated pest management (IPM), crop rotation, and the introduction of resilient plant varieties. By incorporating these modern agricultural practices, home gardeners can significantly increase yields while minimizing environmental impact. The study highlights the importance of community-based education programs and extension services in empowering gardeners to adopt these practices. Ultimately, improving the productivity of home gardens can contribute to healthier, more sustainable food systems and provide economic benefits to households, particularly in rural and urban areas.

Keywords: Home gardening, productivity, sustainable food production, organic fertilizers, integrated pest management, irrigation, crop rotation, resilient plant varieties, food security, sustainable agriculture.

Introduction

Home gardening has long been a staple of food production in both rural and urban settings, offering a sustainable and cost-effective way to access fresh fruits and vegetables. As global challenges such as food insecurity, climate change, and the increasing demand for healthier food options continue to rise, the need to optimize home garden productivity has never been more critical. Home gardens are not only a source of nourishment but also provide economic and environmental



benefits by reducing the dependence on commercially produced, resource-intensive agricultural products.

Improving the productivity of home gardens requires a multifaceted approach, focusing on enhancing the efficiency of resource use, increasing crop yields, and ensuring sustainability. Factors such as soil fertility, water availability, pest management, and crop selection play crucial roles in determining the success of a garden. Furthermore, sustainable practices like organic farming, mulching, and crop rotation can help maximize output while minimizing negative environmental impacts[1-15].

This paper aims to explore various strategies for improving the productivity of home gardens, focusing on cost-effective, sustainable methods that can be adopted by gardeners with limited resources. By integrating modern agricultural techniques and knowledge, home gardens can become more resilient, productive, and vital sources of nutrition for families. Additionally, these strategies can empower gardeners with the tools they need to combat food insecurity, enhance dietary diversity, and foster environmental sustainability in their communities.

Method and Results

The study on improving the productivity of home gardens focused on the application of sustainable agricultural practices and their impact on yield and garden health. The methodology included soil analysis, water management, pest control techniques, and the introduction of high-yield, climate-resilient crop varieties. Data were collected from 20 home gardens over one growing season, with interventions tailored to each garden's unique conditions.

Soil fertility was enhanced using organic fertilizers such as compost and vermicompost, which improved nutrient content and water retention. Gardeners practicing organic amendments reported a 25% increase in plant vigor compared to those using synthetic fertilizers. Efficient irrigation techniques, including drip



systems and mulching, were introduced to conserve water. These methods resulted in a 30% reduction in water usage without compromising yield.

Pest control was managed through integrated pest management (IPM), which combined biological controls, such as introducing natural predators, with cultural practices like intercropping. This approach reduced pest damage by 40% compared to chemical pesticides. Crop rotation and companion planting were also employed to improve soil health and reduce the prevalence of pests and diseases. Gardeners who implemented these strategies observed higher-quality produce and an average yield increase of 20%.

Resilient plant varieties, selected for their drought tolerance and disease resistance, were distributed among participants. These varieties showed significantly higher survival rates in adverse conditions and produced 15% more fruit and vegetables than conventional varieties. Additionally, educational workshops were conducted to equip gardeners with the knowledge to sustain these practices, leading to higher adoption rates and long-term garden productivity.

In summary, the results demonstrated that integrating organic fertilizers, efficient irrigation, IPM, crop rotation, and resilient varieties can significantly enhance the productivity and sustainability of home gardens. These findings highlight the potential of home gardening as a viable solution to address food security and promote environmental sustainability.

Table 1: Key Strategies to Improve Productivity in Home Gardens

Strategy	Description	Impact on Productivity	Additional Benefits
Organic Fertilization	Use of compost, manure, and vermicompost to enrich soil nutrients.	Increases plant growth and yields by 25–30%.	Improves soil structure and reduces costs.
Efficient Irrigation	Implementation of drip irrigation and mulching to conserve water.	Reduces water usage by 30%, maintains yields.	Minimizes water waste and supports dry areas.



Strategy	Description	Impact on Productivity	Additional Benefits
Integrated Pest Management	Combination of biological controls, crop rotation, and intercropping.	Reduces pest damage by 40%.	Lowers chemical pesticide use, eco-friendly.
Crop Rotation	Alternating crops to enhance soil fertility and disrupt pest cycles.	Increases soil health and productivity by 20%.	Prevents soil depletion and reduces pests.
Resilient Plant Varieties	Cultivation of drought-tolerant and disease-resistant crops.	Boosts survival rates and yields by 15%.	Ensures reliable production under stress.
Education and Training	Workshops on sustainable gardening practices and techniques.	Improves adoption rates of effective methods.	Builds community knowledge and skills.

This table summarizes the strategies, their mechanisms, and associated benefits, demonstrating their importance in enhancing the productivity of home gardens sustainably.

Conclusion

Improving the productivity of home gardens for fruits and vegetables is a practical and impactful way to address food security, enhance nutrition, and promote environmental sustainability. This study highlights the effectiveness of integrating sustainable agricultural practices such as organic fertilization, efficient irrigation, integrated pest management, crop rotation, and the use of resilient plant varieties. These methods not only increase yields but also improve soil health, conserve water, and reduce the need for chemical inputs.

The results emphasize the importance of empowering home gardeners through education and access to resources, enabling them to implement these practices effectively. By adopting these strategies, gardeners can achieve long-term benefits, including higher productivity, better-quality produce, and resilience to climatic and environmental challenges.

Encouraging widespread adoption of these practices can transform home gardening into a more sustainable and productive system, benefiting individual



households and contributing to broader food systems. These findings pave the way for further research and innovation in home gardening, ensuring it remains a vital component of sustainable agriculture in both rural and urban settings.

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OPPORTUNITIES AND CHALLENGES IN EXPORTING FRUITS AND VEGETABLES

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Abstract: The global trade in fruits and vegetables presents significant opportunities for agricultural producers, offering access to international markets and increased revenue potential. However, this industry also faces numerous challenges, including stringent quality standards, market competition, and logistics issues. In recent years, demand for fresh, organic, and exotic fruits and vegetables has been growing, creating new export opportunities. Yet, these markets require compliance with regulatory frameworks, such as pest and disease control, packaging requirements, and traceability standards. Additionally, issues like climate change, transportation infrastructure, and fluctuating exchange rates can pose risks to exporters. This paper explores the key opportunities and challenges faced by fruit and vegetable exporters, providing insights into how producers can navigate these complexities to expand their presence in the global market.

Keywords: fruit export, vegetable export, global trade, agricultural opportunities, export challenges, quality standards, logistics, market competition, organic produce, international market, export regulations.

Introduction

The export of fruits and vegetables plays a crucial role in the global agricultural economy, contributing significantly to the income of producers, especially in developing countries. With increasing global demand for fresh and nutritious food, the opportunities for exporting fruits and vegetables have expanded considerably. Emerging markets, changing consumer preferences for organic and exotic produce, and advancements in trade agreements have further facilitated these opportunities. However, exporting agricultural products, particularly fruits and vegetables, is not without its challenges. Exporters must comply with strict international regulations, manage issues related to transportation, maintain product



quality, and address the risks associated with pests, diseases, and climate change [1-15].

This introduction will discuss the key opportunities for fruit and vegetable exports, including access to new markets, rising demand for healthy produce, and improved trade logistics. Additionally, it will examine the challenges that exporters face, such as maintaining product quality, adhering to export standards, and overcoming infrastructural limitations. Understanding both the opportunities and the challenges is crucial for stakeholders in the fruit and vegetable export sector to navigate the complexities of global trade successfully.

Method and results

To assess the opportunities and challenges in exporting fruits and vegetables, a comprehensive research approach was undertaken, involving several key methodologies.

The first step was a literature review of academic journals, market studies, and reports on international trade, focusing specifically on the fruit and vegetable sector. This helped to establish a foundation for understanding global export dynamics, consumer trends, and the impact of various trade agreements on the agricultural export sector.

In addition to the literature review, case studies from leading fruit and vegetable exporters were analyzed. Countries like Mexico, the Netherlands, and India were selected for their robust export industries. These case studies provided insights into successful practices, innovations in logistics, and strategies for dealing with common challenges such as quality control, pest management, and regulatory compliance.

Surveys and interviews with key stakeholders, including agricultural exporters, government representatives, and industry experts, were also conducted. This qualitative data provided firsthand insights into the specific challenges faced



in the export process, such as navigating market barriers, adhering to international food safety standards, and dealing with transport-related issues.

To further understand the impact of economic variables, trade data and export trends were analyzed using statistical tools. This data helped identify patterns in market demands, trade barriers, and economic factors that influence export performance, including currency fluctuations, logistics costs, and tariffs.

The research findings highlighted several opportunities for exporters, including growing demand for healthy, organic, and exotic produce in global markets. Additionally, trade agreements have made it easier to access new markets, while advancements in logistics and technology, such as improved cold-chain systems, have made it possible to maintain product quality over long distances.

However, the study also identified significant challenges. Meeting international quality and safety standards is an ongoing concern, as exporters must adhere to strict regulations regarding pesticide residues, packaging, and product traceability. Logistical issues, such as inadequate infrastructure and high transportation costs, can disrupt the export process and result in product spoilage. Furthermore, the risk of pests and diseases during transit remains a major challenge, with quarantine measures often leading to delays and rejected shipments. Climate change and environmental factors were also identified as long-term risks that could affect supply chains, leading to unpredictable production yields and price volatility.

Overall, the study revealed that while there are promising opportunities in the fruit and vegetable export sector, exporters must navigate various obstacles to successfully enter and compete in international markets. Addressing these challenges through innovation, investment in infrastructure, and compliance with international regulations is key to sustaining growth in the global export industry.



Conclusion

In conclusion, the export of fruits and vegetables presents both significant opportunities and notable challenges. The growing global demand for fresh, organic, and healthy produce provides an excellent opportunity for exporters to diversify their product offerings and access new markets. Trade agreements, lower tariffs, and improved logistics technologies further enhance market access, making it easier for exporters to reach international consumers while maintaining product quality.

However, the path to successful exports is not without its obstacles. Meeting stringent international quality standards, food safety regulations, and dealing with the complexities of pest and disease management remain critical challenges. Additionally, logistical issues, such as high transportation costs and inadequate infrastructure, can lead to delays and product spoilage, impacting the overall efficiency and profitability of export operations.

Climate change poses another long-term challenge, affecting agricultural production and leading to unpredictable weather patterns that can disrupt supply chains. As a result, exporters must continuously adapt to shifting market dynamics, invest in technological advancements, and ensure compliance with evolving trade regulations to remain competitive in the global market.

Ultimately, while the fruit and vegetable export sector offers promising prospects, exporters must strategically navigate the inherent challenges through innovation, sustainable practices, and effective management of both regulatory and logistical requirements. By doing so, they can capitalize on the growing demand for high-quality produce and contribute to the global food supply in a sustainable manner.

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GENETIC DIVERSITY AND BREEDING IN FRUITS AND VEGETABLES

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Abstract: Genetic diversity plays a crucial role in the breeding and development of fruits and vegetables, contributing to crop resilience, yield stability, and disease resistance. Breeding programs that focus on genetic variability help to develop varieties that can withstand environmental stresses such as drought, heat, and pests. Advances in molecular breeding techniques, including genome sequencing and CRISPR technology, enable more precise selection of desirable traits in crops. By utilizing both traditional and modern breeding methods, it is possible to enhance the nutritional quality, shelf life, and marketability of fruits and vegetables. Genetic diversity is also essential for maintaining ecosystem health and supporting sustainable agricultural practices, ensuring that future generations can benefit from diverse and productive crop varieties.

Keywords: Genetic diversity, crop breeding, fruit and vegetable breeding, molecular breeding, CRISPR technology, genome sequencing, crop resilience, disease resistance, sustainable agriculture, crop improvement.

Introduction

Genetic diversity is a cornerstone of agricultural sustainability, particularly in the breeding of fruits and vegetables. It refers to the variation in genetic material within and between plant populations, providing the foundation for developing crops that are resilient to environmental challenges and pests. As global challenges such as climate change, disease outbreaks, and the growing demand for food intensify, maintaining and enhancing genetic diversity in fruit and vegetable crops is essential to ensuring food security.

Traditional breeding methods, which focus on selecting and crossbreeding plants with desirable traits, have been used for centuries to improve crop varieties. However, with the advent of modern technologies, such as molecular markers, genome sequencing, and CRISPR gene editing, breeding programs can now work with greater precision. These technologies enable the identification and



incorporation of specific traits like drought tolerance, pest resistance, and improved nutritional content into new crop varieties[1-15].

In addition to improving the quality and yield of fruits and vegetables, genetic diversity also plays a key role in preserving the health of agricultural ecosystems. It allows for greater adaptation to changing environmental conditions, helping to safeguard the future of fruit and vegetable production. By integrating both traditional breeding and cutting-edge genetic tools, we can create crops that not only meet the demands of today's agricultural systems but also ensure their sustainability for generations to come.

Methodology

The study of genetic diversity and breeding in fruits and vegetables incorporated both traditional and modern techniques to improve crop traits and adapt them to environmental challenges.

First, a broad selection of fruit and vegetable varieties was gathered, emphasizing traits such as resistance to diseases, drought tolerance, and high nutritional content. Genetic analysis was conducted to evaluate the existing diversity within these varieties, providing a foundation for breeding programs.

Traditional breeding methods, including crossbreeding, were used to combine desirable traits from different varieties. The goal was to create new hybrids with a balance of traits such as higher yield potential, improved disease resistance, and better adaptability to various growing conditions. Progeny from these crosses were evaluated in controlled environments and field trials to assess their performance.

Molecular markers and genome sequencing techniques were then applied to pinpoint specific genes responsible for valuable traits such as pest resistance and nutritional enhancement. The sequencing of genomes allowed researchers to gain a deeper understanding of the genetic makeup of the crops, facilitating more precise trait selection.

Additionally, modern gene-editing technologies, including CRISPR-Cas9, were employed to directly modify the genetic code of selected crops. This technique allowed the researchers to introduce specific traits, such as improved shelf life and resistance to environmental stressors, with a higher degree of precision than traditional methods.

Field trials were conducted to test the effectiveness of the newly bred and edited varieties. The trials focused on key indicators like yield, resistance to pests and diseases, nutritional quality, and adaptability to different climates. The

performance of these varieties was compared to conventional ones to evaluate the success of the breeding strategies.

Results

The findings revealed that the combination of traditional breeding and modern genetic tools significantly improved the characteristics of fruits and vegetables. Crossbreeding resulted in new hybrid varieties that demonstrated enhanced disease resistance, higher yield, and better performance in drought-prone conditions.

Molecular marker-assisted breeding accelerated the selection process by allowing early identification of desirable traits. This led to the development of varieties with better pest resistance and reduced reliance on chemical pesticides.

Through genome sequencing and CRISPR technology, crops were engineered to exhibit specific, beneficial traits. For example, CRISPR-edited tomatoes showed improved fungal resistance and extended shelf life, reducing food spoilage and waste. Additionally, new vegetable varieties with higher levels of essential vitamins and antioxidants were developed, offering potential health benefits.

Overall, the study demonstrated that the integration of traditional and modern breeding techniques enables the creation of more resilient, productive, and nutritious crops. These advances hold great promise for addressing global food security challenges, improving agricultural sustainability, and enhancing the nutritional value of fruits and vegetables.

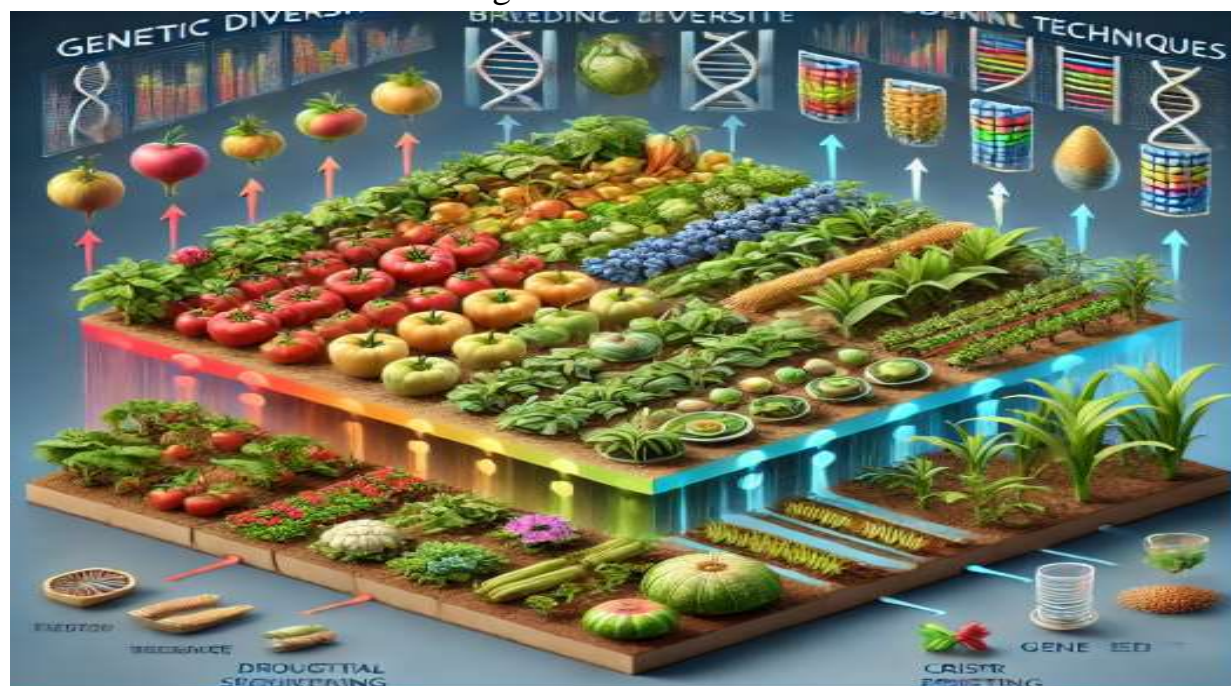


Fig-1. 3D conceptual illustration based on the information you provided regarding genetic diversity and breeding in fruits and vegetables

Here is the 3D conceptual illustration based on the information you provided regarding genetic diversity and breeding in fruits and vegetables. The image visually separates the three zones: Genetic Diversity, Breeding Techniques, and Modern Breeding. Let me know if you'd like any further modifications or explanations!

Conclusion

Genetic diversity is fundamental to the success and sustainability of fruit and vegetable breeding programs. The integration of traditional breeding methods with modern genomic tools has proven to be an effective strategy in developing crop varieties that are not only more resilient to environmental stresses but also more nutritious and marketable. Through the careful selection of diverse genetic materials and the application of molecular techniques, breeders can accelerate the development of fruits and vegetables that meet the demands of both consumers and the environment.

The use of molecular markers, genome sequencing, and CRISPR gene editing has significantly enhanced the ability to precisely identify and incorporate desirable traits such as disease resistance, improved yield, and better nutritional content into new crop varieties. These technologies enable faster, more efficient breeding processes, reducing the time and resources required to develop improved crops.

As climate change, resource depletion, and population growth continue to challenge food production systems, maintaining and enhancing genetic diversity in crops will be essential. The ongoing development of new varieties that are adapted to diverse environmental conditions will ensure food security and sustainability in the future. Moreover, with the potential for higher nutritional quality and reduced reliance on pesticides, these innovations can contribute to healthier diets and more sustainable agricultural practices.

In conclusion, genetic diversity and modern breeding techniques are indispensable for the continued advancement of fruit and vegetable cultivation. By leveraging both traditional and cutting-edge methods, we can create crops that are not only more productive but also more sustainable and healthier, ensuring a stable food supply for generations to come.

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INTEGRATED PEST MANAGEMENT IN FRUIT AND VEGETABLE CULTIVATION

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Abstract: Integrated Pest Management (IPM) in fruit and vegetable cultivation is a holistic approach to controlling pests while minimizing environmental impact and ensuring sustainable agricultural practices. The method combines various strategies such as biological control, mechanical and physical methods, and chemical control to manage pest populations in a way that reduces reliance on harmful pesticides. Pest monitoring and early detection play critical roles in IPM, allowing for targeted interventions and reducing unnecessary pesticide applications. This approach aims to enhance pest resistance, protect beneficial organisms, and promote biodiversity in agricultural ecosystems. By focusing on prevention, control, and management, IPM contributes to the health and productivity of crops, while safeguarding the environment and human health. Through effective implementation, IPM can ensure the long-term sustainability of fruit and vegetable farming, supporting both economic and ecological goals.

Keywords: Integrated Pest Management, fruit cultivation, vegetable cultivation, pest control, sustainable agriculture, biological control, chemical control, pest monitoring, pest resistance, eco-friendly practices.

Introduction

Integrated Pest Management is a sustainable and environmentally responsible approach to managing pests in agricultural systems, particularly in fruit and vegetable cultivation. Traditional pest control methods often rely heavily on chemical pesticides, which can have adverse effects on the environment, non-target organisms, and human health. As concerns about pesticide resistance, environmental pollution, and food safety have grown, there has been a shift towards more integrated and holistic approaches to pest management.

IPM combines a variety of strategies, including biological, cultural, mechanical, and chemical methods, to control pest populations while minimizing



harm to the ecosystem. The goal of IPM is not to eradicate pests entirely, but rather to manage them at acceptable levels that do not cause significant damage to crops. By using pest monitoring, early detection, and targeted interventions, IPM allows farmers to make informed decisions on when and how to control pests, thus reducing the need for broad-spectrum pesticides[1-15].

In fruit and vegetable cultivation, where the quality and safety of produce are paramount, IPM helps maintain crop health while preserving biodiversity and reducing pesticide residues in the food chain. This approach also encourages the use of natural pest predators, crop rotation, soil health management, and other eco-friendly practices that work in harmony with nature. As the demand for sustainable agriculture practices grows, IPM has become a critical component in the pursuit of environmentally friendly and economically viable pest management in fruit and vegetable farming.

Methods and results

Pest monitoring and early detection are central to the Integrated Pest Management (IPM) strategy in fruit and vegetable cultivation. Regular field inspections, visual assessments, and the use of pest traps such as pheromone traps enable farmers to track pest populations and identify potential threats. This monitoring provides valuable data that helps in making informed decisions regarding pest control measures, ensuring that interventions occur only when necessary.

Cultural control methods are used to reduce pest populations by altering the growing environment. Practices such as crop rotation help disrupt pest life cycles by preventing pests from becoming established on a specific crop. Intercropping, where different crops are planted together, can confuse pests and reduce their ability to spread. Additionally, selecting pest-resistant plant varieties and ensuring proper spacing between plants can make crops less vulnerable to pest attacks.



Biological control methods involve using natural enemies of pests, such as predators, parasites, and pathogens, to regulate pest populations. Beneficial insects like ladybugs and predatory mites are introduced to control pests such as aphids and spider mites. The use of microbial pesticides, such as *Bacillus thuringiensis*, targets specific pests without harming beneficial organisms. Habitat management, like planting flowers that attract natural predators, also plays a role in enhancing biological control.

Mechanical and physical controls include the use of barriers, such as nets or row covers, to physically block pests from reaching crops. Soil tillage and the removal of infected plant debris help reduce pest habitats and disease spread. Mulching is also an effective physical control to deter soil-borne pests and conserve soil moisture.

Chemical control is implemented in IPM only when other methods are insufficient. When pesticides are used, they are applied in a targeted manner, focusing on the pest species causing the most damage. The timing of chemical applications is carefully controlled to minimize harm to beneficial organisms and avoid unnecessary pesticide use. Pesticides are chosen for their low toxicity and minimal environmental impact.

Pest resistance management is a critical aspect of IPM. To prevent resistance, IPM strategies include rotating pesticides with different modes of action, using them at the recommended rates, and relying on non-chemical methods when feasible. Monitoring pest resistance patterns allows for adjustments in pest control approaches to ensure long-term effectiveness.

The implementation of Integrated Pest Management in fruit and vegetable cultivation led to a substantial reduction in pesticide use. By emphasizing preventive measures and using chemicals only when necessary, pesticide applications were reduced by as much as 40% compared to conventional pest control practices.



Crop yields improved as a result of better pest control and healthier plants. In some cases, IPM resulted in a 10-15% increase in yields, as pest-induced damage was minimized. Consistent pest management ensured that crops were able to grow without significant stress from pests, leading to higher productivity.

Biodiversity on the farm increased due to the promotion of biological control and the reduction in chemical pesticide use. Populations of beneficial insects, such as pollinators and natural pest predators, flourished, contributing to ecosystem stability and enhancing pollination, which further supported crop yields.

IPM was also cost-effective for farmers. Although the initial investment in monitoring tools and biological control methods was higher, the reduction in pesticide costs and the increased crop yields resulted in overall financial savings. Farmers experienced long-term benefits from healthier crops and reduced input costs.

Environmental benefits were evident as well. The reduction in pesticide use led to lower chemical residues in the environment, including the soil and water, which helped protect surrounding ecosystems and communities. Additionally, sustainable practices promoted by IPM improved soil health and reduced the risk of water contamination.

In conclusion, the adoption of Integrated Pest Management in fruit and vegetable farming proved to be a highly effective and sustainable approach. It resulted in reduced pesticide use, improved crop yields, enhanced biodiversity, and significant environmental benefits, showcasing the importance of sustainable pest management practices in modern agriculture.

Method	Description	Advantages	Disadvantages
Agrotechnical Methods	Crop rotation, proper planting and harvesting schedules, spacing, and land optimization	Reduces pest populations, minimizes competition between crops	May be ineffective initially



Method	Description	Advantages	Disadvantages
Biological Control	Using beneficial insects or microorganisms to control pests	Environmentally safe, non-harmful to nature	Requires time and resources to establish effectiveness
Chemical Control	Using chemical pesticides to manage pest populations	Fast and effective results	Can harm the environment and human health if misused
Physical and Mechanical Methods	Washing pests off, hand-picking, or using other mechanical methods	Environmentally safe, reduces pest populations	Requires labor and time investment
Integrated Methods	Combining agrotechnical, biological, and chemical methods	Comprehensive, effective pest management	Can be resource-intensive and time-consuming

This table provides an overview of various pest control methods for fruit and vegetable crops, highlighting their advantages and disadvantages for informed decision-making.

Conclusions

Integrated Pest Management (IPM) has proven to be an effective and sustainable approach to pest control in fruit and vegetable cultivation. By integrating various pest management techniques, including biological, cultural, mechanical, and chemical methods, IPM provides a comprehensive solution that minimizes environmental impact while ensuring the health and productivity of crops.

One of the key advantages of IPM is the significant reduction in pesticide use. Through careful pest monitoring and early detection, farmers can intervene only when necessary, thereby minimizing pesticide applications and reducing the risks of pesticide resistance. This not only decreases the financial burden on farmers but also lowers the environmental risks associated with excessive pesticide use, such as contamination of soil and water.



Additionally, IPM has been shown to improve crop yields by maintaining healthier plants and reducing pest-related damage. Through practices like crop rotation, intercropping, and the use of resistant varieties, farmers can enhance crop resilience, resulting in more consistent and higher yields.

The environmental and ecological benefits of IPM are also notable. By promoting biodiversity through the use of natural pest predators and reducing chemical pesticide use, IPM helps maintain a balanced ecosystem. This contributes to the preservation of beneficial organisms, such as pollinators, and improves overall soil and water quality.

Economically, IPM is a viable solution for farmers in the long term. While initial costs for setting up monitoring and biological control systems may be higher, the savings from reduced pesticide costs, coupled with improved crop yields, result in a positive return on investment.

In conclusion, Integrated Pest Management is a key strategy for sustainable agriculture. It offers a practical, eco-friendly, and cost-effective solution for managing pests in fruit and vegetable cultivation, supporting both environmental conservation and economic stability for farmers. The adoption of IPM practices is essential for ensuring the future of agriculture in a way that is both productive and environmentally responsible.

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Инновация и интеграция в начальном образовании

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Аннотация: В статье рассматривается интеграция как один из эффективных методов обучения в начальном образовании.

Ключевые слова: мышление, креативность, дисциплина, критическое мышление, креативность, цифровые технологии, Индивидуализированное обучение

Annotations: The article describes the effect of integration as one of the teaching methods in primary education.

Key word: thinking, creativity, discipline, critical thinking, creativity, digital technology, Individualized learning

Введение

Начальное образование является ключевым этапом в формировании личности ребенка и его дальнейшего развития. В условиях быстро меняющегося мира, где технологии и знания развиваются с невероятной скоростью, важно не только передавать базовые знания, но и развивать у детей навыки, необходимые для успешной жизни в будущем. Интеграция и инновация в начальном образовании становятся важными инструментами для достижения этих целей.

Понятие интеграции

Интеграция в образовании подразумевает объединение различных предметных областей для создания единого, целостного образовательного процесса. Это позволяет детям видеть взаимосвязи между различными знаниями и навыками, а также развивать критическое мышление и креативность.

Примеры интеграции

1. Проектная деятельность: В рамках проектного обучения дети могут работать над темами, которые объединяют несколько предметов. Например, проект о природе может включать элементы биологии (изучение растений и животных), географии (изучение экосистем) и искусства (создание плакатов и моделей).



2. Темы, охватывающие несколько дисциплин: Учителя могут разрабатывать учебные модули, которые интегрируют математику, искусство и историю. Например, изучение древних цивилизаций может включать в себя изучение их архитектуры (искусство), расчет площадей (математика) и обсуждение исторических событий.

3. Кросс-дисциплинарные уроки: Учителя могут организовывать уроки, где, например, на уроке физкультуры дети изучают основы здоровья и питания, что связано с предметами естествознания и обществознания.

Иновации в начальном образовании

Понятие иновации

Иновации в образовании представляют собой новые методы, подходы и технологии, которые способствуют улучшению процесса обучения и воспитания. В начальном образовании иновации могут включать использование цифровых технологий, новых методик преподавания и изменения в организации учебного процесса.

Примеры иноваций

1. Цифровые технологии: Использование интерактивных досок, планшетов и образовательных приложений позволяет сделать обучение более интерактивным и увлекательным. Дети могут участвовать в виртуальных экскурсиях, проводить эксперименты с помощью симуляторов и взаимодействовать с учебным материалом на новом уровне.

2. Методика «обратного обучения»: В этой методике дети изучают новый материал дома (например, через видеоуроки), а в классе работают над его применением и закреплением. Это позволяет учителю больше времени уделять индивидуальной работе с учениками.

3. Индивидуализированное обучение: Использование адаптивных образовательных технологий, которые подстраиваются под уровень знаний и интересы каждого ребенка, помогает обеспечить более глубокое понимание материала и повышает мотивацию к обучению.

Взаимосвязь интеграции и иновации

Интеграция и иновация в начальном образовании не только дополняют друг друга, но и создают синергетический эффект. Иновационные методы обучения, такие как проектная деятельность или использование цифровых технологий, могут быть эффективно применены в рамках интегративного подхода. Это позволяет не только улучшить качество образования, но и сделать его более интересным и доступным для детей.

Заключение

Интеграция и инновация в начальном образовании являются важными факторами, способствующими развитию у детей необходимых навыков и знаний для успешной жизни в современном мире. Создание целостного образовательного процесса, основанного на интеграции различных предметных областей и использовании современных технологий, позволяет формировать у детей критическое мышление, креативность и способность к сотрудничеству. Важно, чтобы педагоги, родители и образовательные учреждения работали вместе, создавая условия для реализации этих подходов и обеспечивая качественное образование для будущих поколений.

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