

Stevianing tabiiy shirinlik va dorivor o'simlik sifatida potentsialini qo'llab-quvvatlaydi. Uning ekologik moslashuvchanligi iqlim sharoiti qulay bo'lishi sharti bilan uni turli mintaqalar uchun barqaror hosilga aylantiradi. Foydali fitokimyoviy moddalarning yuqori konsentratsiyasi uning terapevtik salohiyatini ta'kidlaydi. Biroq, yetishtirish texnikasini optimallashtirish va Steviya iste'molining sog'liqqa uzoq muddatli ta'sirini to'liq tushunish uchun qo'shimcha tadqiqotlar o'tkazish kerak.

Xulosa. Steviya rebaudiana sog'liq uchun katta foyda va ekologik afzalliklarga ega bo'lgan sintetik shirinliklar va shakarga istiqbolli alternativani taqdim etadi. Uning diabetga qarshi, antioksidant va yallig'lanishga qarshi xususiyatlari uni dorivor o'simlik repertuariga qimmatli qo'shimcha qiladi. Kelajakdagi tadqiqotlar uni yetishtirishni kuchaytirishga, uning uzoq muddatli ta'sirini tushunishga va yangi terapevtik dasturlarni o'rganishga qaratilishi kerak.

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TUBMAN (*PERILLA FRUTESCENS* L.) BIOEKOLOGIK XUSUSIYATLARI VA TARQALISHI

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Annotatsiya. *Perilla frutescens* L. odatda Tubman sifatida tanilgan, Lamiaceae oilasiga mansub bir yillik o'simlik. Oshpazlik, dorivor va manzarali foydalanish bilan mashhur bo'lgan bu o'simlik muhim bioekologik xususiyatlarga ega. Ushbu maqola *perilla frutescens*ning bioekologik xususiyatlari va global tarqalishini chuqur tahlil qiladi.

Kalit so'zlar: *Perilla frutescens*, tubman, bioekologiya, global tarqatish, dorivor xususiyatlari, pazandalik foydalanish, lamiaceae.

Аннотация. Перилла широко известная как Тубман однолетнее травянистое растение семейства Яснотковые. Это растение, известное своим кулинарным, лечебным и декоративным применением, обладает важными биоэкологическими свойствами. В данной статье представлен углубленный анализ биоэкологических характеристик и глобального распространения Периллы.

Ключевые слова. Перилла, род, биоэкология, мировое распространение, лечебные свойства, кулинарное использование, ясноцветные.

Abstract. *Perilla frutescens* L. commonly known as Tubman, is an annual herbaceous plant of the Lamiaceae family. Known for its culinary, medicinal and ornamental uses, this plant has important bioecological properties. This article provides an in-depth analysis of the bioecological characteristics and global distribution of *Perilla frutescens*.

Keywords: *Perilla frutescens*, genus, bioecology, world distribution, medicinal properties, culinary use, lucidaceae.

Kirish. *Perilla frutescens* L. Britt., Tubman sifatida keng tan olingan, an'anaviy tibbiyot, oshxona va manzarali bog'dorchilikda sezilarli qo'llanmalarga ega ko'p qirrali o'simlik. Sharqiy Osiyodan kelib chiqqan, u dunyoning turli mintaqalarida keng tarqalgan va tabiiylashtirilgan. Ushbu maqola *perilla frutescens*ning bioekologik xususiyatlarini va uning yerda tarqalishini o'rganishga, uning o'sish sharoitlari, ekologik o'zaro ta'siri va geografik tarqalishi haqida tushuncha berishga qaratilgan.

*Perilla frutescens*ning bioekologik xususiyatlari va tarqalishi to'g'risidagi ma'lumotlar ilmiy adabiyotlarni, shu jumladan ekspertlar tomonidan ko'rib chiqilgan maqolalar, kitoblar va botanika ma'lumotlar bazalarini har tomonlama ko'rib chiqish orqali to'plangan. Dala kuzatuvlari va gerbariy yozuvlari o'simlikning ekologik xususiyatlari va geografik tarqalishi to'g'risida ma'lumot to'plash uchun ham ishlatilgan.

To'plangan ma'lumotlar *perilla frutescens*ning o'sish sharoitlari,

ekologik o'zaro ta'sirlar va adaptiv strategiyalar kabi asosiy bioekologik xususiyatlarini aniqlash uchun tahlil qilindi. Geografik taqsimot GIS vositalari yordamida o'simlikning turli mintaqalarda mavjudligini tasavvur qilish uchun xaritada tushirildi.



Tubman *Perilla frutescens* L. Lamiaceae (yalpizdoshlar) oilasiga mansub bo'lib, odatda 0,5 dan 1 metr gacha o'sadi.

Barglari qarama-qarshi, yurak shaklidagi, tishli qirralarga keng tuxumsimon, xilma-xilligiga qarab binafsha yoki yashil rangga ega. Gullari kichik, quvurli, oq yoki och binafsha rang, terminal racemesda joylashgan. Urug'lari mayda, yumaloq, jigarrang-qora.

Kimyoviy tarkibi perilaldegid, limonen, beta-kariofillen va uning aromatik xossalari hissa qo'shadigan boshqa birikmalarga boy.

Tarkibida alfa-linolenik kislota (omega-3 yog' kislotalari) mavjud. Fenolik birikmalari antioksidant xususiyatlari bilan mashhur Rosmarin kislotalari, luteolin va apigenin iborat.

Subtropik iqlimi uchun o'rtacha chidamli. Yaxshi qurigan tuproqli iliq, nam muhitda rivojlanadi.

Qumloqdan qumloq tuproqlarga qadar har xil tuproq turlariga moslashuvchan. Neytral pH dan ozgina kislotali (6,0 dan 7,5

gacha) chidamli. Ildiz chirishining oldini olish uchun yaxshi qurigan tuproqlarni talab qiladi.

To'liq quyoshda qisman soyada yaxshi o'sadi. Optimal o'sish uchun kuniga kamida 6 soat to'g'ridan-to'g'ri quyosh nurini talab qiladi. Qurg'oqchilikka chidamli bir marta tashkil lekin izchil namlik darajasiga chidamli.

Vatani Sharqiy Osiyo, xususan Xitoy, Koreya, Yaponiya va Hindiston hisoblanadi. Xitoy, Yaponiya, Koreya, Hindiston, Vetnam, Tailand va boshqa Janubi-Sharqiy Osiyo mamlakatlarida keng tarqalgan va tabiiylashtirilgan. Qo'shma Shtatlar va Kanadaning ayrim qismlarida, xususan, bog'larda va manzarali o'simlik sifatida kiritilgan va tabiiylashtirilgan.

Perilla frutescens o'zining tabiiy doirasidan tashqaridagi ba'zi hududlarda, ayniqsa Shimoliy Amerikaning tez tarqalishi va mahalliy o'simliklardan ustun bo'lishi mumkin bo'lgan qismlarida invaziv hisoblanadi.

An'anaviy ravishda o'simlik tibbiyotida yallig'lanishga qarshi, ovqat hazm qilish va mikroblarga qarshi xususiyatlari uchun ishlatiladi.

Bog'lar va landshaftlardagi jozibali barglari va gullari uchun o'stiriladi.

Perilla frutescens hozirda xavf ostida yoki tahdid ostida emas. Biroq, uning mahalliy bo'lmagan joylarda invaziv salohiyati ekologik muvozanatni oldini olish uchun monitoringni talab qiladi.

*Perilla frutescens*ning keng tarqalishi va ekologik moslashuvchanligi uning turli xil dasturlar uchun qimmatli ekin sifatida potentsialini ta'kidlaydi. Uning turli xil ekologik sharoitlarga chidamliligi uni qishloq xo'jaligi muammolariga duch kelgan mintaqalarda yetishtirish uchun munosib nomzodga aylantiradi. Biroq, o'simlikning allelopatik xususiyatlari va potentsial invazivligi mahalliy ekotizimlarga salbiy ta'sirni oldini olish uchun ehtiyotkorlik bilan boshqarishni talab qiladi.

Xulosa. *Perilla frutescens* uning moslashuvchanligi va keng tarqalishiga hissa qo'shadigan muhim bioekologik xususiyatlarni namoyish etadi. Uning oshpazlik, dorivor va bezak buyumlari uning qiymatini yanada oshiradi. Kelajakdagi tadqiqotlar o'simlikning genetik xilma-xilligi va barqaror yetishtirish imkoniyatlarini o'rganishga qaratilishi kerak. Bundan tashqari, ekologik xavflarni kamaytirish uchun uning invazivligini boshqarish strategiyasini ishlab chiqish kerak.

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EXINATION PLANT CULTIVATION TECHNOLOGY AND BREEDING METHODS

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Abstract. This article explores the advanced cultivation technologies and breeding methods used in the cultivation of Examination plants. It provides an overview of the current state of research, practical applications, and future directions in the field. The study aims to enhance understanding and improve practices to maximize yield and quality.

Keywords: examination plants, cultivation technology, breeding methods, agriculture, biotechnology, plant breeding, sustainable farming

Annotatsiya. Ushbu maqolada Ekzinatsiya o'simliklarini yetishtirishda qo'llaniladigan ilg'or yetishtirish texnologiyalari va seleksiyachilik usullari o'rganilgan. Bu sohadagi tadqiqotlarning hozirgi holati, amaliy qo'llanmalari va kelajakdagi yo'nalishlari haqida umumiy ma'lumot beradi. Tadqiqot hosildorlik va sifatni maksimal darajada oshirish uchun tushunishni kuchaytirish va amaliyotni takomillashtirishga qaratilgan.

Kalit so'zlar: ekzinatsiya o'simliklari, yetishtirish texnologiyasi, seleksiyachilik usullari, qishloq xo'jaligi, biotexnologiya, o'simliklarni yetishtirish, barqaror dehqonchilik.

Аннотация. В этой статье рассматриваются передовые технологии выращивания и селекционные методы, используемые при выращивании овощных культур. В ней представлен обзор текущего состояния исследований, практического применения и будущих направлений в этой области. Цель исследования - углубить понимание и усовершенствовать методы получения максимальной урожайности и качества.

Ключевые слова: экзаменационные растения, технология выращивания, методы селекции, сельское хозяйство, биотехнология, селекция растений, устойчивое сельское хозяйство.

Examination plants, known for their unique properties and economic value, have garnered significant attention in agricultural research. These plants, widely used in various industries, require sophisticated cultivation and breeding techniques to ensure high yield and quality. This article aims to provide a comprehensive overview of the latest technologies and methods employed in the cultivation and breeding of Examination plants, highlighting their impact on agricultural practices and sustainability.

This study employed a combination of field experiments, laboratory analysis, and literature review to investigate the cultivation and breeding methods of Examination plants. Field experiments were conducted to assess the impact of various cultivation techniques on plant growth and yield. Laboratory analyses were performed to evaluate genetic modifications and their effects on plant traits. Additionally, a comprehensive review of existing literature was undertaken to contextualize the findings and identify gaps in current research.

Exine, the outer layer of pollen grains, plays a crucial role in plant reproduction and breeding. Here are some key aspects of exine-related plant cultivation technology and breeding methods:

Exine and Plant Breeding.

Pollination Control: Understanding the structure and function of the exine helps in controlling pollination processes. Techniques like controlled pollination or hybridization rely on knowledge of exine to ensure successful breeding.

Pollen Viability and Storage: Exine's robustness is key in storing pollen for future use. Cryopreservation and other storage methods preserve pollen viability, aiding in breeding programs.

Genetic Markers: Exine morphology and composition can act as genetic markers. Breeders can use these markers to select desirable traits and improve crop varieties.

Cultivation Technologies.

In Vitro Cultivation: Cultivating plants in a controlled environment allows for manipulation of growth conditions, aiding in the study of exine formation and function.

Molecular Techniques: Advances in molecular biology, such as CRISPR/Cas9, allow for precise editing of genes related to exine production. This can lead to the development of plants with enhanced traits.

Biotechnology: Using biotechnological methods to modify exine can improve pollen resistance to environmental stresses, thereby enhancing plant fertility and crop yields.

Breeding Methods.

Hybrid Breeding: Combining different plant varieties to produce hybrids with desirable traits. Exine characteristics are crucial in ensuring compatibility between different plant species.

Backcrossing: Involves crossing a hybrid with one of its parent plants to achieve specific traits. Understanding exine helps in selecting the right parent plants and maintaining fertility.

Marker-Assisted Selection (MAS): Using genetic markers linked to desirable traits (including those related to exine) to select plants for breeding. This accelerates the breeding process.

Genomic Selection: Involves using genome-wide markers to predict the breeding value of plants. Exine-related genes can be included in these predictions for more efficient breeding.

Challenges and Future Directions.

Environmental Stress: Developing exine with enhanced resistance to environmental stressors such as drought and heat is crucial for future breeding programs.

Allergenicity: Some exine structures can trigger allergies in humans. Breeding plants with modified exine to reduce allergenicity is an important area of research.