



Stem Characteristics

The stem of *O. tyttanthum* G reaches 20–60(90) cm, has a tetracyclic structure, and is often branched. Stems may have fine violet-colored pubescence. Cross-section shows primary epidermis, vascular tissue, and pith clearly.

Leaf Characteristics

Leaves are opposite, 1–5 cm long and 1–3 cm wide, with small serrations. The upper surface is usually green, while the lower surface is light or grayish-green. Amphistomatic leaves have stomata on both upper and lower epidermis.

Seed-Propagated Plant Growth

Seedlings sown in autumn during the first year exhibited stem lengths from 3.26 cm to 14.84 cm during the virginal growth period. During the immaturity stage, stem lengths reached 26.8–27.0 cm with diameters of 0.44–0.46 cm. Growth was more pronounced in the second year, with stem diameter significantly larger in autumn plantings compared to spring.

Leaf number and size varied depending on growth stages and planting schemes. In autumn plantings at 90×30 cm, the number of leaves during the first year ranged from 4.8 to 22.9, slightly lower in spring plantings. Leaf growth correlated with plant size, reflecting biomorphological parameters at different developmental stages.

First-Year Vegetation Dynamics

During the first vegetative year (2020), the dynamics of leaf number in seed-propagated *O. tyttanthum* G were studied (virginal ontogenesis period). Analysis of biomorphological traits and growth dynamics enhances understanding of the plant’s ecological and practical significance. Results allow identification of optimal growth conditions, enable efficient use as a medicinal resource, and show that sowing timing and schemes significantly affect plant development, which is important for developing future intensive cultivation agro-technologies.

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CYPERUS ESCULENTUS LATIVUM ИНТРОДУКЦИЯСИНИ АГРОЭКОСИСТЕМАДАГИ АХАМИЯТИ

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Annotatsiya: Ushbu maqolada dorivor chufa (*Cyperus esculentus* Lativum) o‘simligining aholi turmush darajasini oshirishda va ijtimoiy-iqtisodiy muammolarini xal etishdagi ahamiyati tahlil qilinadi. O‘zbekistonda (*Cyperus esculentus* Lativum) — yangi moyli o‘simlik sifatida katta e‘tiborga berilmoqda. Ushbu tadqiqotning asosiy maqsadi — chufani mahalliy sharoitga moslashtirish, uni fermerlarga joriy etish va aholinni to‘yinli o‘simlik moyi bilan ta‘minlashdir. Bu sohadagi rivojlanish qishloq xo‘jaligi salohiyatini kuchaytirish va aholi salomatligi uchun katta ahamiyat kasb etadi. O‘simlikning bioekologik xususiyatlari va qishloq xo‘jaligida ekologik xavfsiz usullar bilan foydalanish imkoniyatlari ko‘rib chiqiladi.

Kalit so‘zlar: dorivor chufa, *Cyperus esculentus*, tuproq unumdorligi, organik modda, bioekologiya, qishloq xo‘jaligi, ekologik xavfsizlik

ЗНАЧЕНИЕ ИНТРОДУКЦИИ CYPERUS ESCULENTUS LATIVUM В АГРОЭКОСИСТЕМЕ



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Аннотация: В данной статье анализируется значение лекарственного растения чува (*Cyperus esculentus Lativum*) в повышении уровня жизни населения и решении социально-экономических проблем. В Узбекистане *Cyperus esculentus Lativum* привлекает большое внимание как новое масличное растение. Основная цель данного исследования — адаптировать чува к местным условиям, внедрить его в фермерские хозяйства и обеспечить население полноценным растительным маслом. Развитие этой отрасли имеет большое значение для укрепления аграрного потенциала и улучшения здоровья населения. Также рассматриваются биоэкологические особенности растения и возможности его применения в сельском хозяйстве экологически безопасными методами.

Ключевые слова: лекарственная чува, *Cyperus esculentus*, плодородие почвы, органические вещества, биоэкология, сельское хозяйство, экологическая безопасность

THE IMPORTANCE OF CYPERUS ESCULENTUS LATIVUM INTRODUCTION IN THE AGROECOSYSTEM

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Abstract: This article analyzes the importance of the medicinal plant chufa (*Cyperus esculentus Lativum*) in improving the standard of living and solving socio-economic problems. In Uzbekistan, *Cyperus esculentus Lativum* is receiving great attention as a new oil-producing crop. The main goal of this study is to adapt chufa to local conditions, introduce it to farmers, and provide the population with nutritious vegetable oil. The development of this sector is of great importance for strengthening agricultural potential and improving public health. The bioecological characteristics of the plant and the possibilities of using it in agriculture through environmentally safe methods are also considered.

Keywords: medicinal chufa, *Cyperus esculentus*, soil fertility, organic matter, bioecology, agriculture, environmental safety

Globally, the organization of healthy nutrition is considered one of the most important factors influencing human lifespan. Consequently, the search for new food sources and their utilization has become a pressing issue. One such source is the ancient plant *Cyperus esculentus Lativum* (tigernut).[1]

In recent years, worldwide networks supplying organic natural products derived from unique medicinal plants — such as flour, jelly, tea, balms, and natural beverages — have been actively developing. The *Cyperus esculentus Lativum* plant not only satisfies food needs but also enhances soil fertility. Its tubers can be used to feed poultry, while green biomass and plant residues serve as effective fodder for livestock.[3]

Tigernuts are rich in fats, carbohydrates, and proteins, making them valuable not only as a food source but also for industrial and medicinal applications. Products derived from tigernuts, such as flour, oils, and beverages, provide additional income opportunities for farmers.[5]

Tigernuts are considered highly promising for food and industrial uses; they can be processed into drinks, milk or yogurt, flour, jams, beer, chocolate, feed, edible oils, and even soap (Achoribo & Ong, 2017). Moreover, tigernuts possess numerous medicinal properties. Due to their valuable oil content, as well as the presence of starch, glucose, proteins, and minerals, they can reduce the risk of colon cancer, function as a cardiac stimulant, and act as effective diagnostic and antidiarrheal agents.[2]

Additionally, tigernuts are rich in minerals such as phosphorus, potassium, calcium, magnesium, and iron [1]. The high content of vitamins E, C, and B1 contributes to the stabilization of the central nervous system and helps manage stress.[4]

Recent analyses of global scientific research highlight several key conclusions. Studies in Ghana and other African countries indicate that tigernut products — processed into milk, flour, oil, and snacks — are marketed both locally and internationally, increasing income and economic activity while providing valuable and environmentally friendly products.



In Spain, tigernut-based beverages are widely known as “horchata de chufa,” which holds significant economic importance. Annually, approximately 50 million liters are produced, generating around 60 million euros in revenue. About 1,200 hectares are dedicated to tigernut cultivation, with an average yield of 10 tons per hectare. Product diversification includes chocolate, jelly, beer, liqueurs, fermented products, and yogurt, providing additional income opportunities.[5]



Cyperus esculentus utilizes the C₄ photosynthetic mechanism and grows efficiently under high temperatures, water scarcity, or intense sunlight, making it suitable for cultivation in diverse agricultural conditions. It thrives in a wide range of soils, tolerates drought, waterlogging, and temperatures as low as –5°C. Propagation through tubers further expands its potential for agricultural production across various soil and climatic zones.

The development and cultivation of *Cyperus esculentus* Lativum can serve as an additional crop in household plots, providing employment for women and contributing to family income. This approach supports poverty alleviation and promotes economic independence for rural women through productive use of fallow land.

Cultivation of tigernuts also allows investment in processing industries, the expansion of new markets and the support and skill development of women working with tigernut-based products.

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MAKTABGACHA TA’LIM YOSHDAGI BOLALARDA MADANIY QADRIYATLARGA HURMAT HISSINI SHAKLLANTIRISH

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