CULTIVATION OF CHUFA PLANT (CYPERUS ESCULENTUS L.) IN UZBEKISTAN

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Annotatsiya. *Bugungi kunga kelib mamlakatimizda moyli ekinlarga katta e'tibor qaratilmoqda. Mamlakatimizda oziq – ovqat ishlab chiqarishni ko'paytirish ustuvor vazifalardan bo'lib, ushbu ilmiy ishda yangi moyli o'simlik – chufani mahalliy sharoitga moslashtirish texnologiyasini ishlab chiqish, fermer xo'jaliklarga joriy etish, aholini to'yimli o'simlik moyi bilan ta'minlash maqsad qilib olingan.*

Kalit so'z: *Moyli ekinlar, oziq – ovqat, ko'paytirish, moslashtirish texnologiyasini, kimyoviy tarkibi.*

Аннотация. *На сегодняшний день в нашей стране большое внимание уделяется масличным культурам. Увеличение производства продуктов питания в нашей стране является одной из приоритетных задач, и эта научная работа направлена на разработку технологии адаптации нового масличного растения – чуфы к местным условиям, внедрение уего в хозяйствах, обеспечение населения питательным растительным маслом.*

Ключевые слова: *масличные культуры, продукты питания, размножение, технология адаптации, химический состав.*

Abstract. *To date, attention is being paid to oil crops. From the production of food products in our country, in this scientific work, the production of a new oil plant - chufa, adapted to the conditions, its introduction to farms, and the taste of the population with nutritious vegetable oil is intended to provide.*

Keywords: *oilseeds, food, reproduction, adaptation technology, chemical composition.*

Enter. Today, a lot of attention is paid to oil crops in our country. Increasing the production of food in our country is one of the priority tasks, and in this scientific work, the development of the technology of adapting a new oil plant - chufa to local conditions, introducing it to farms, feeding the population with nutritious vegetable oil is intended to provide.

There are problems in our republic in fully supplying the population with vegetable oil. For this reason, the chufa plant, which is completely alien to our region, is being introduced to the list of oil plants grown in local conditions, which gives valuable oil.

Chufa or ground almond (Cyperus esculentus L.) is a plant belonging to the family of perennial herbs. The chufa plant once formed the basis of plants called zinjanthrops, which lived on earth about 2 million years ago. In addition, it was actively cultivated by the ancient Egyptians because it had the most important nutritional value.

This is confirmed by the archeological findings of Chufa found in tombs of II-III millennia BC near the capital of Ancient Egypt. We know that chufa has been a staple food for North Americans for thousands of years, like rice for Asian peoples or wheat for Europe [2]. In general, chufa has been used for food since ancient times. Chufa is a subtropical plant. But from the African countries of its historical homeland (Mediterranean and North Africa), chufa is grown the most in Egypt, Mali, Nigeria, Ivory Coast and Ghana. For local people, chufa excels as a source of dietary protein. It is grown on an industrial scale in some European countries, including the Netherlands, Switzerland, Germany, Poland, and Hungary, and can be found in almost all countries of the world.

Chemical composition Chufa is high-calorie, and its tubers contain vitamins A, B, C and E, starch, fat, sugar, proteins and a set of important trace elements: potassium, sodium, iodine, selenium, copper, iron, contains phosphorus, zinc. They contain 20-27% oil, which is close to olive in quality. (it is non-drying, contains oleic acid). In terms of taste, chufa is not inferior to either peanuts or almonds and serves as an excellent substitute for them in confectionery. Chufa products contain a rich set of vitamins and minerals. Chufa is a warm and moisture-loving plant, but excess moisture in the soil reduces yield and quality. Considering that Chufa is a thermophilic plant, the minimum temperature for the emergence of seedlings is 10 °C, and the optimum temperature is 17 °C. Chufa should be planted after the danger of frost has passed. To accelerate germination, tubers are soaked in water before planting (Fig. 1). This is especially effective in dry spring.



Fig. 1. Preparation of Chufa fruit for planting

Research materials and method. The depth of planting seeds and the methods of planting are of great importance. The best method of sowing was row sowing from SUPN-8 seeders. This method gives good results if it is used in well-prepared, weed-free, fertile soil. 2-3 seeds were planted 3-4 cm deep in one nest, 60x20 scheme was used. Roots begin to form 35-40 days after emergence. From 200 to 1000 fruits develop under one bush.



Fig. 2. Clumping of Chufa seedlings.

Khilma - linear nodes of different shapes depending on the variety - elongated oval, ovoid or round. Chufa nodes appear in 10-13 days in seedlings planted on the first ten days of April 5 (Fig. 2) [3]. Chufa is used directly as food, and in the canning industry, medicine, perfumery, and also as a lubricant for precise mechanical tools. In confectionery factories, chufa is added to chocolate, cocoa, sweets, and halva is made from it. Sugar, starch or alcohol are extracted from the fruits of Chufa. In addition, chufa tubers are used raw, boiled or fried as a delicacy. It is an excellent confectionery raw material for the special preparation of cookies and cakes, sweets and other sweets [4]. A diet drink similar to coffee can be obtained from well-dried knots. For example,

dried chufa fruits make a cool drink - "almond milk", which is especially useful for people suffering from gastrointestinal diseases. This plant contains a lot of fat and starch, high die and has healing properties. In industry, cosmetology, cosmetology and agriculture, or the plant is in high demand, and you can be.

Analysis and Results. According to the research data, chufa is grown as an annual plant, tubers planted on April 6, harvested on August 23, typical gray soil, microelements in fruit were determined from chufa plant harvest (table 1).

Table 1.

Name	Na	Mg	K	Ca	Al	Cu	Fe	Zn	Si
Quantity/mg	17.80	61.08	285.9	57.54	2.94	3.25	14.92	4.23	1.98

The experiment used an Avio 200 ICP-OES spectrometer. For food production and processing, 200 ICP-OES spectrometer experiments were conducted to determine the amount of components of food products, including micronutrients, from the point of view of safety and quality, Figure 3 shows the process of micronutrient analysis.

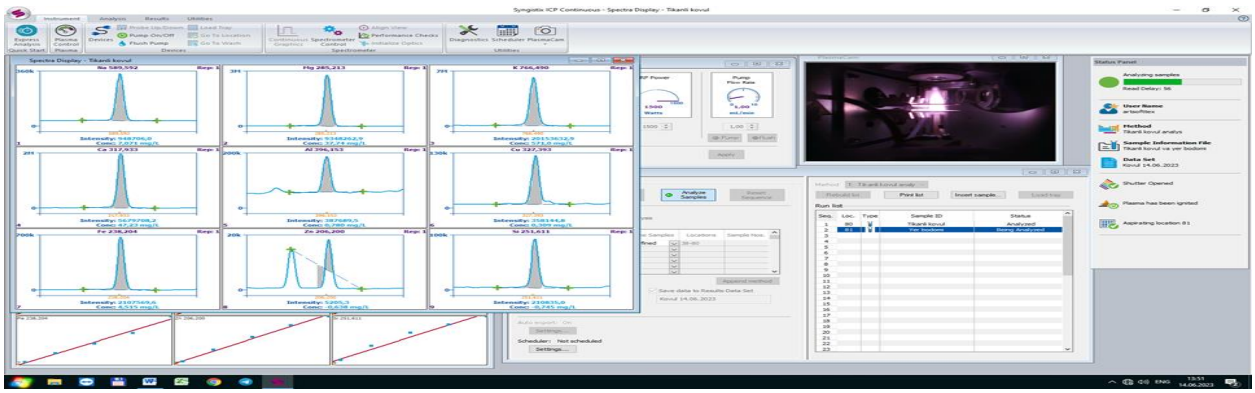


Figure 3. From the trace element analysis process on the Avio 200 ICP-OES device.

Summary. Summarizing the conducted experiments, the spectrometer experiments revealed the presence of more than 10 main microelements. It should be noted that the amount of biometals such as K, Mg, Cu, B, Fe, Ca, Na, Zn is sufficiently high. presence increases its healing properties and improves biochemical processes in the body.

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