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GROWTH, DEVELOPMENT AND PRODUCTIVITY IN VARIOUS VARIETIES OF ARTICHOKE (CYNARA SCOLYMUS L) IN THE CONDITIONS OF THE TASHKENT REGION

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ABSTRACT

The article presents the results of research on the cultivation of artichoke prickly (Cynara Scolymus L.) in the conditions of the Tashkent region. It is established that morphobiological and economically valuable characteristics largely depend on the variety and method of sowing. As shown, in studies in the conditions of the Tashkent region, a reduction in the growing season, an increase in the height of plants and the number of stems, an increase in the average weight and number of inflorescences and yield occurs in the second year of plant life. It was revealed that the potential productivity of artichoke prickly plants in the conditions of the Tashkent region is high. The yield of the Overseas delicacy variety in the second year of life is 38.0 t / ha, in the Maikop 41 variety-41.0 t / ha.

KEYWORDS: *Signs, Inflorescences, Vegetation Period, Plant Height, Prickly Artichoke, Cynarin, Phenolic Acid.*

INTRODUCTION

The birthplace of the artichoke seed, or prickly, is the Mediterranean, where its ancestor grows-cardon, or Spanish artichoke (C. cardunculus). Both species are cultivated as a vegetable, mainly in Southern Europe.

The thickened bases of scales and fleshy florets of young inflorescences are used for food. The juicy bases of the outer leaves of the wrapper, as well as the bottom of the head, contain a lot of carbohydrates and special aromatic substances that give the product a pleasant taste. The fleshy bloom of a young artichoke, when raw, resembles a fresh, unripe walnut.

The healing properties of artichoke have been known since ancient times. Ancient healers used artichoke leaf juice as a diuretic and digestive aid. [4]

Artichoke leaves contain cinarin, phenolic acids (chlorogenic, coffee, etc.), flavonoids, polysaccharides, proteins, trace elements, vitamins; in inflorescences, carbohydrates in the form of polymers with a low molecular weight, called fructooligosaccharides. The inflorescences of artichokes of the annual crop contain: dry matter 15-27%, sugar up to 15, proteins-2.5, ascorbic acid-2-3, 8%, carotene 0.2 mg%. In addition, inulin and the glycoside dinarin can be found in them [2].

Artichokes contain the chemical cynarin, which in most people disrupts the taste sensation, increasing the sensitivity of the papillae of the tongue to sweetness. In addition, it spoils the taste of the wine. Therefore, it is better to drink cold water with artichoke, which at the same time acquires a pleasant sweet taste.

The artichoke flower contains: 2.5-3% protein, 7-15% carbohydrates, 3-11 mg % vitamin C, 0.4 mg% carotene, vitamins A, B 1 and B 2, PP, 86-88% water. Its seeds contain about 30% fat and are used for poultry feed.

The flower also contains: 2.5% nitrogenous substances, 1% sugars, 2% dextrin, 1.3% fiber, polysaccharide, inulin, carotene, vegetable fats, mineral salts (especially a lot of potassium and iron). Moreover, potassium and sodium salts have a significant alkaline property, which makes artichoke useful for people suffering from high acidity of gastric juice. In the fleshy (lower) parts of the scales, the sugar content is higher (2.2%).

Artichoke is used as a forage (for green food and for silage) and an ornamental plant. It can be used as a source of electricity when burning its bio-raw materials.

It is also used for diabetes, liver and kidney diseases. It is useful for the elderly, as it has a complex of medicinal properties. The energy value of artichoke is quite significant – 290 kJ per 100 g of the raw mass of the plant. It is practically free of lead and mercury, even if it grows in soil with a high content of them.

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According to the researchers [1] according to the FAO [6] for 2013, the cultivated area of artichoke in the world amounted to 0.131 million hectares, the average yield – 13.72 t / ha, and the volume of gross production reached 1.793 million tons. Major artichoke producers: Italy-0.548 million tons, Egypt-0.391 million tons, Spain-0.200 million tons, Peru-0.113 million tons, Argentina-0.106 million tons [3]. The highest yield was recorded in Argentina (24.93 t / ha), Egypt (24.10 t/ha), Cyprus (20.60 t/ha), Kazakhstan (20.0 t/ha), Peru (19.30 t/ha). The main producer of artichoke in the United States is the state of California.

Material and methods of research. In 2017-2018, in the experimental section of the Tashkent State Agrarian University (Uzbekistan).

The object of research was the varieties Overseas delicacy and Maikop 41. The seeds were sown in February 2017 and 2018 in the open ground. Seedlings were planted in the phase of 5-6 real leaves in the first decade of February. The landing scheme is 100x80 cm. During the growing season, phenological observations, morphological description of plants, and crop accounting were carried out according to the methods [3, 5].

Results and discussion. We found that the natural and climatic conditions of the Tashkent region are the closest to the conditions for growing various varieties of artichoke prickly. Literature data have shown that for the successful development of artichoke prickly requires fertile soils with a predominance of carbonates of alkaline and alkaline earth metals, air temperature in the range of 20-26 °C abundant watering. These conditions favor a high yield of the plant [2].

Phenological observations were made for annual plants in the vegetative phase of growth, two plants in the generative phase. The terms and duration of the phenophases for the generative shoots of the first and second year of the plant's life are given in Table 1.

Despite the different calendar dates of sowing and planting seedlings, later dates of sowing in the open ground, vegetating individuals of the first year of life were compared in development by the end of the growing season. In subsequent years, the method of sowing did not significantly affect the biology of plant development.

Despite the lower germination rate and greater dependence on the meteorological conditions of young plants, when sown in the ground, their greater viability was observed, in comparison with seedlings grown in a greenhouse. There was a significant loss of seedlings when transferred to the open ground - up to 35-42 % in different years. In the first year of life, the plants formed one shortened vegetative shoot in the form of a basal rosette.

TABLE 1 GROWTH AND DEVELOPMENT OF PRICKLY ARTICHOKE IN THE CONDITIONS OF THE TASHKENT REGION (2017-2018)

Variety	Plant height, cm	Number of branches, pcs	Number of inflorescences (baskets), pcs	Weight of the inflorescence (basket) in technical ripeness, g	Plant productivity, kg / plant
First year of life					
Zamorskiydelikates	116	2-2,5	12-30	96-100	1,96-1,98
Maykopskiy 41	119	2,5-3,0	13-28	98-110	1,98-2,05

Second year o flife					
Zamorskiydelikates	219	2,5-5,0	38-70	125-128	3,10-3,80
Maykopskiy 41	221	2,6-3,2	20-40	215-218	3,50-4,10

In the second year of life, at the end of March, the sprinkled plants were loosened, and the same agro technical work was carried out that had previously been carried out with seedlings.

In the second year of life, with the beginning of the growing season, the plants resumed the rosette of leaves, and the stem began to grow in height (the stem phase). This phase began from the second half of April to the first decade of May. The active growth of the stem in height continued until the beginning of flowering of the baskets of the first order, after which their height practically did not change. The stemming phase was quickly followed by the budding phase, during which the stem continued to grow.

Mass flowering of artichoke plants of the Overseas Delicacy variety in the first year of life occurs on June 29, and in the second-on May 22. In the second year of life, the onset of this phase occurs 40 days earlier, compared to the first year.

Mass flowering of artichoke plants of the Maikop 41 variety in the first year of life occurs on July 8, and in the second-on May 26. In the second year of life, the onset of this phase occurs 48 days earlier, compared to the first year.

The period from mass germination to the beginning of biological ripeness, depending on the variety, in the first year of life is 238-242 days, and in the second year – 148-157 – is reduced by 94-100 days.

The most significant differences were also in the number of inflorescences (baskets). So, plants of the Overseas Delicacy variety form from 12 to 30 inflorescences in the first year of life, and from 38 to 70 in the second. The number of inflorescences on the plant in the Maikopsky 41 variety is significantly less than in the Overseas Delicacy variety. In the Maikopsky 41 variety, in the first year of life, the plants formed 13-28 inflorescences, and in the second – 20-40. The most important indicator that ultimately determines the yield is the average mass of inflorescences. So, in the variety Overseas delicacy in the first year of life, the average mass of inflorescences in the phase of technical ripeness was 96-100 g, and in the second-125-128 g. These indicators for the Maikopsky 41 variety were 215 and 218 g, respectively. In the second year of life, the plants formed larger inflorescences. Depending on the age of the plants, the yield of artichoke was different. Thus, the productivity of plants of the Overseas Delicacy variety in the first year of life was 1.96-1.98 kg, which in terms of an ideal hectare is 19.6-19.6 t/ha. The same indicators in the second year of life were 3.10-3.80 kg/ha and 31.0-38.0 t/ha, respectively. The productivity of plants of the Maikopsky 41 variety in the first year of life was 2.05 kg, which in terms of an ideal hectare is 20.5 t/ha. In the second year of life, the same indicators were 4.10 kg / rast. and 41.0 t / ha.

CONCLUSIONS

It is established that it is advisable to sow unstratified seeds in the ground in the first half of the ferval. The largest raw material mass (leaves) of the prickly artichoke is in the first and second

year of cultivation. After the first year of vegetation, it is necessary to cover the rosettes for the winter period.

It was found that the main part of the biomass of artichoke prickly is made up of basal leaves. The collection of leaves in the autumn period after the fruiting of the baskets for plants of the second year of life provides a yield of up to 410 c / ha.

Recommended dates for collecting artichoke prickly leaves: from plants of the first year of life in the fall; plants of the second life also in the fall, after fruiting the bulk of the baskets.

REFERENCES

1. Aramov M. Kh., Aliev B. Kh. «Morphobiological features and productivity of artichoke in the conditions of Southern Uzbekistan". Journal: Vegetables of Russia No. 4 2020. P-102-105.

2. Kornienko C., "Artichoke-a delicacy vegetable". Journal: Vegetable growing and greenhouse farming No. 04. 2011. P-19-25.

3. Methods of conducting tests for distinctness, uniformity and stability. Artichoke(Supagacardunculus L., subsp. scolumus (L.),Nauek).

4. Mirrakhimova T. A., Yunuskhodzhaev A. N. "Prickly artichoke-a promising medicinal plant". Publishing and printing creative house named after Chulpan. Tashkent-2015. P-206.

5. Guidelines for testing agricultural crops. Volume V. Vegetable crops and fodder root crops. Moscow. Leningrad. 1948.p. 222-224.FAOSTAT. 1993, 2013. hppt://www. faostat 3. fao. org