

Section 1. «Innovative technologies for growing and processing vegetable products»

УДК 633.4

CELERY IS A PROMISING CROP

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Celery (*Apium graveolens* L.) is a biennial plant of the umbelliform family. In the first year, it forms a root and a rosette of dark green shiny leaves, and in the second year of life it produces a flower arrow and seeds. There are several varieties of celery: root celery, which forms large root crops weighing 400-800 g of off-white color with loose flesh; petiole (salad) celery, which has large leaves of light green or dark green color, with tender petioles that are used for food; leaf celery, which forms well-developed leaf blades used to prepare various dishes.

Celery is one of the most valuable root crops. This spicy vegetable has a pleasant taste and a specific spicy aroma. The culture of celery cultivation dates back at least 3–4 millennia. Celery originated in the Mediterranean, and was grown as an ornamental and medicinal plant in Ancient Egypt, Greece and Rome.

The world's cultivation area is about 0.7 million hectares, of which 0.2 are leafy and 0.5 are root. In Ukraine, this figure is much lower due to the long growing season, amounting to about 80 hectares, mainly concentrated in the south of the country, due to the efficiency of irrigation in this region.

The predecessors of celery are plants under which a large amount of rotted manure and compost was applied, namely cucumbers, tomatoes, peppers, and cabbage. Good neighbors: early cabbage (a classic combination), lettuce, onions, tomatoes, beans, leeks, and winter wheat is also a good predecessor for celery.

Celery is best sown in well-manured soil after cabbage or potatoes or other crops. First, seedlings are prepared; root celery is sown for seedlings in February. They are sown in boxes or pots with a nutrient mixture of 1 part turf and 1 part humus with a little sand. Before sowing, the seeds are vernalized: soaked in warm water for 3 days, then dried to flowability. 1-1.5 g of seeds are used per 1 m², burying them to a depth of 0.2 cm. Before emergence, the temperature of celery cultivation should be +20 - +25 °C. Then it is gradually reduced to +14 - +16 °C. After 1-2 true leaves have appeared, check the density of the seedlings and thin them out if necessary so that the plants are strong and do not stretch out. Then the seedlings are dived at a distance of 4-5 cm from one plant to another so that 1/2 of the stem is submerged in the soil. 2 weeks after the dive, fertilization is

carried out with a solution of mineral fertilizers (1 teaspoon of nitrophoska per 1 liter of water) at the rate of 2 tablespoons per 1 seedling. The seedlings should be 8–10 weeks old by the time they are planted outdoors. Before planting, the seedlings are hardened at a temperature not exceeding 15 °C, leaving them outdoors overnight.

In the open ground, root celery seedlings are planted at the same depth as they grew to prevent additional roots from forming on the roots. The distance between plants in a row is 20-25 cm, between rows - 35 cm, thus, the feeding area of root celery should be 40x40 cm or 50x50 cm.

1–2 days before planting the seedlings, watering is carried out at a small rate of 100-150 m/ha. Immediately before planting, cultivation should be carried out to a depth of 8-10 cm, with harrowing and rolling to level and lightly compact the soil. To increase labor productivity in machine operations, furrows are cut before planting seedlings with a combined APO-5.4 unit.

Celery is not afraid of abundant watering, but it is not a crop that needs to be watered a lot - rather, moderately and often. The best option is drip irrigation. Celery grows quite quickly after transplanting, and expels a large vegetative mass of leaves, which should be cut off from the sides, leaving only the central leaves. At the root of the celery, the soil is raked away, but there is a simpler technology - you just need to mulch it with straw during the period of active growth. This will allow you to do without cutting the lateral thin roots - they simply will not develop as actively in the straw mulch. It responds quite well to fertilizing with plant extracts and biocompost.

During the growing season, the soil is regularly loosened, watered, and the first fertilization with mineral fertilizers is carried out 2 weeks after planting. Subsequent fertilization is repeated every 2 weeks, so there should be 2-3 fertilization during the growing season. Constant watering, loosening, and mulching of row spacing are required all summer long.

For use in autumn and winter, celery is harvested before severe frosts, in areas with a warm climate - in November, in colder autumn - in early October. Frozen celery roots lose their ability to be stored for a long time. Root celery is dug up in dry weather, cut off the petioles to 1 cm, trim the roots and store at a temperature of 1-2 °C, sprinkled with sand. To do this, the root is cut off and the temperature is maintained at 0 - +1 °C. Under these conditions, the plants are stored for 3–4 months.

Celery is a promising crop, as it is easy to grow and very useful for humans. Every year, the cultivation area is growing, which is confirmed by information from seed companies, which benefit from the constant growth in demand for celery seeds. The growth in production is driven by increased demand from canneries, as the growth rate of demand for celery in the fresh market is much lower due to the lack of a culture of cooking this product in Ukraine.

Referenses

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UDK 631.81:[635.262:631.879]

PRODUCTIVITY OF WINTER GARLIC USING MIXTURES OF DIGESTATE AND WOOD ASH

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Garlic (*Allium sativum* L.) is one of the most popular vegetable crops. It is used fresh, in the meat and vegetable canning industry. The popularity of garlic is due to its bactericidal and antioxidant properties.

To obtain high and stable yields, garlic requires an optimal supply of various factors for growth and development – in particular, nutrients. In production, various types of fertilizers for garlic are recommended, both in the main application and in top dressing [1-3].

In biogas and wood cogeneration plants, a large number of biological by-products, including digestate and wood ash, are generated during the production process; therefore, it is important to identify the possible sectors of economy where they can be effectively applied. By-products of biological production can be reused, for example, for soil improvement, as they contain the nutrients required for plant growth and development. In agriculture, the above substances are currently used separately as soil fertility improvers. Digestate is rich in nutrients, can provide the majority of nutrients the plant needs during the growing season, as well as improves the soil structure. Approximately 35-81% of the total nitrogen content in the digestate is ammonia (NH₄) or nitrogen in a plant-available form.

Wood ash contains a small amount of phosphorus and potassium, and is strongly alkaline (pH 8-12) due to oxides. Wood ash contains mainly calcium carbonate which, when solidified, turns into CaCO₃, so the ash can be used to regulate soil pH. In agriculture practice, digestate and wood ash are most often used separately to improve soil