European Journal of Agricultural and Rural Education (EJARE)
Available Online at: https://www.scholarzest.com
Vol. 5 No. 10 October 2024
ISSN: 2660-5643

DEVELOPMENT OF OPTIMAL NUTRIENT STANDARDS FOR THE CULTIVATION OF SWEET PEPPER SEEDLINGS UNDER CLOSED CONDITIONS

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Article history:

Received: 11th July 2024
Accepted: 10th August 2024

Abstract:

In this article, the results of the application of different nutrient standards and the development of optimal standards for seedlings of sweet pepper (Capsicum annuum L.) medium-ripening varieties in laboratory conditions are presented. As a result of the experiment, it is intended to provide healthy, high-quality and marketable sweet pepper plants for cultivation and production.

Keywords: Planting, treated field, peat, pH, neutral environment, fertilizer standard, Bella Vista F1, Dar Tashkent

INTRODUCTION

Seedling cultivation method and its importance. The essence of plants grown through seedlings is that they are grown in the first period of their life, in a small feeding area, with sufficient nutrients and moisture, in artificial climate conditions, and then transplanted to open or protected soil structures. consists of a fragment.

A seedling is a young seedling (grass) intended for transplanting to a place of permanent growth, but fruit-bearing organs have not yet formed. Since it is not possible to grow it in the open field due to the heat regime, it is grown in a sheltered place. Seedlings are planted on more than half of open field vegetable crops and about 90 percent of protected lands. It is advisable to use the seedling method at the end of the growing season for crops that require a large feeding area and, if necessary, for an early harvest.

The seedling method has a number of advantages over the usual method of sowing seeds directly into the ground. Seedlings are usually grown for 30-80 days. Advances in plant development allow early harvest. Selling early harvest at higher prices brings additional income. Thanks in advance, the seedling method allows you to extend the growing season. This increases the productivity of plants and allows growing heat-loving crops and enriching vegetable varieties in the northern regions where the vegetation is long, but there is not enough heat, and there are no conditions for harvesting from seeds. . The seedling method reduces the need for land at the beginning of the plant's life. Better supply of plants with food, moisture, heat, light and other factors, better protection of still weak seedlings from pests, diseases and weeds will help to reduce labor costs in the fight against them. In the seedling method, the consumption of seeds is reduced by 3-7 times compared to planting in a permanent place. Cultivation of plants through seedlings in protected ground conditions extends the period of production and provides an opportunity to economically use artificial lighting sources.

Despite the high cost, the seedling method is economically justified and is widely used in vegetable growing, and in some cases it is impossible to grow vegetables. The methods and techniques of seedling cultivation, intellectually correct selection of methods of cultivation with or without seedlings are important for the economy of vegetable growing [1].

The purpose of the study: to determine the effect of peat on the growth and development of vegetable crops in greenhouses using Bella Vista, Kalota, Dar-Toshkenta sweet pepper varieties.

In accordance with the purpose of the study, the following tasks were set:

1. Analysis of scientific and methodological literature on the effect of peat and the productivity of vegetable crops.
2. Determining the effect of peat on soil properties.
3. Determination of the effect on the growth and development of sweet pepper varieties.
4. Determination of norms and methods of peat application affecting the growth and development of sweet pepper.

The following methods were used in solving problems: study of scientific literature, observation and experiment, as well as the following methods: comparison, proof, generalization, analysis.

The relevance and novelty of the selected topic is based on:

Peat is used for two purposes: for agricultural purposes (using peat as an organic fertilizer) and as fuel in boilers.

Peat is used in various fields of agriculture. In particular, peat has been used as a nutrient substrate in vegetable growing, that is, in the cultivation of sweet pepper seedlings in a weakly acidic or neutral environment. The pH level of this substrate is 5.5-6.2, the ash content is up to 8%, and the humidity is 50-60%. Based on the needs of sweet pepper, dolomite flour and lime flour should be added to the peat in this form. The reaction of the soil environment (pH) for nitrogen uptake by plants is 5-6 (5 for nitrate and 7 for ammonia), 6.25-7 for phosphorus, 6-8.5 for potassium and sulfur, 7-8.5 for magnesium and molybdenum , 4.5. -6 iron and manganese, 5-7 boron, copper and zinc are the most favorable environment for good absorption by plants. Since peat is 96-97% porous in structure, seedling roots are fully supplied with water and air. Peat contains various degrees of decomposed plant residues in the form of humus. The chemical composition contains 50-60% carbohydrates, 5-6.5% hydrogen, 30-40% oxygen, 1-3% nitrogen, 0.1-1.5% sulfur. Peat production continues to this day. Peat serves an important ecological function by sequestering photosynthetic products and thereby sequestering atmospheric carbon.

After dumping the peat deposit, the active activity of aerobic microorganisms begins due to the introduction of oxygen into the peat, which breaks down its organic matter. This process is called mineralization, during which carbon dioxide is released at a rate greater than the rate at which it accumulates in an intact wetland.

MATERIALS AND METHODS

The effect of peat on the growth and development of vegetable seedlings, the doses and methods of its application were studied in sweet pepper medium-ripening varieties (Bella Vista, Dar Tashkenta, Kalota).

Experiment 1. Effect of peat on the growth and development of sweet pepper.

Experience opportunities:

1. Control substrate: soil
2. Experimental substrate: soil + peat

In this case, the seedlings of both variants were fed with complex fertilizers containing N-18%: P-18%: K-18% and appropriate trace elements in 20 amounts per 10 l of distilled water.

In all variants of experiments, agrochemical analyzes of substrates were carried out in the laboratory of the Faculty of Biology, of NUU.

The soil used in the laboratory study was a typical old irrigated gray soil with a humus content of 1.05%, total nitrogen content of 0.088%, phosphorus (0.14%) and total potassium (1.32%). is 23.0 mg/kg of mobile phosphorus and 180.6 mg/kg of exchangeable potassium are provided. pH: 7.1.

The content of peat fertilizer: nitrogen compounds - 800 mg/100 g; potassium compounds - 800 mg/100 g; phosphorus compounds - 900 mg/100 g of peat. Acidity, pH: 5.5-6.5.

The following notes and observations were made during the work:

1. phenological: planting, starting dates for fruit crops are noted.
2. height and joint spacing of biometric plants, number of leaves, leaf surface, mass of the above-ground part of the plant, length, size, mass of the root.

RESULTS AND DISCUSSION

Agrotechnology of growing sweet pepper seedlings.

Sweet pepper has a long growing season. In varieties, the ripening of crop elements occurs after 110-120 days after mass germination.

Step 1. Selected seeds of Bella Vista, Dar Tashkenta, Kalota varieties of sweet pepper were placed in a sterilized petri dish, 20 of them on a cloth moistened with water. Labels representing the names of the cultivars were attached to the Petri dish and placed in a thermostat for germination at 25 °C.

Step 2. A special microclimate was created for planting the seeds collected in the thermostat. Sowing seeds in polyethylene containers is carried out on February 1-5. A place for the seeds of the same depth (1 cm) was made in a filled container moistened with water 70%. The seeds collected in the thermostat were sown 1 piece at a time. All containers were supplied with the same amount of water. The top of the dish was covered with polythene wrap and cloth, completely protected from light. This coating is also important because it provides the seeds with uniform heat.

Step 3. Covers were removed over the dish for 2 hours for aeration. Germinated seeds were counted. The coverings on the pot were completely removed after the tender sprouts had germinated.

Step 4. A week before planting, the soil is covered with a polyethylene film so that the soil warms up well. Seedlings On February 22-25, polyethylene cups with a size of 140 m2 (diameter -7; height - 20 cm) were selected, soil for the control option, soil and peat for the soil+peat option in a 1:1 ratio, seedlings were planted. Planted during the 4-6 harvest period. Laboratory studies were conducted in 3 replicates of 6 variants. Biometric measurements and phenological observations were carried out based on current recommendations.

Effect of peat on the growth and development of sweet pepper. At the first stage of the work, it is intended to grow pepper in a ready-made soil + peat mixture.

Soil was taken as a control option.

Experience opportunities:

1. Control substrate: soil
2. Experimental substrate soil + peat

Before starting the experiment, an agrochemical analysis of the initial soil mixture and peat acidity was carried out (Table 1).

Table 1
Agrochemical properties of the initial mixture and peat

№	Experimental options	pH	Substrate environment
1	Soil	7,1	Weakly alkaline
2	Peat	5,5-6,5	Weakly acidic

Germination occurred in 8-10 days in all experimental variants. Phenological observations revealed differences in the transition of pheno-phases according to experimental options (Table 2).

Table 2
Phenological observations during growth and development of sweet pepper seedlings planted from seed

№	Experiment options	Number of days after sowing		
		Ripening	Full Ripening	The true phase
Bella Vista				
1	Control	5	12	17
2	Soil+peat	9	15	18
Kalota				
3	Control	3	10	15
4	Soil+peat	9	16	18
Dar Tashkenta				
5	Control	8	13	18
6	Soil+peat	10	15	18

According to the results of biometric observations conducted at the end of the planting period, a positive linear relationship was established between the amount of peat in the substrate, the height of plants and the number of leaves. (Table 3).

Table 3
Biometric characteristics recorded at the end of the seedling period

№	Experiment options	Plant height, cm	Number of leaves, units	Leaf level, cm2
Bella Vista				
1	Control	7,25	6,01	85,64
2	Soil+peat	8,50	7,03	100,17
Kalota				
3	Control	7,90	5,02	72,79
4	Soil+peat	9,50	7,04	102,08
Dar Tashkenta				
5	Control	9,50	6,04	92,11
6	Soil+peat	11,60	8,06	122,91

The analysis of growth rates of the vegetative part shows that the greatest intensity of the growth of the leaf surface was observed in the cultivation of seedlings in the experimental plot. The high content of peat contributed to the intensive growth of the vegetative mass.

At the end of the planting season, we found that the plant height and the number of leaves were slightly higher under the influence of peat compared to the control option. The content of peat in the substrate for sweet pepper seedlings improves the formation of vegetative organs.

In this case, we found early formation of vegetative organs due to the positive effect of peat. Therefore, the use of peat in the cultivation of sweet pepper not only stimulated active growth processes, but also the development of plants.

CONCLUSION

1. Studies have shown that the presence of peat in the soil creates an intensive development of vegetative organs. Therefore, the use of peat in the cultivation of sweet pepper not only stimulated active growth processes, but also the development of plants.

2. It was observed that medium-ripening varieties of sweet pepper have a number of biometric advantages in seedlings compared to the control when planted in soil+peat substrate in laboratory conditions.

For example, the plant height of Dar-Tashkenta grown in the control option was 9.50 cm, the number of leaves was 6.04, and the leaf area was 92.11 cm2, compared to the control, soil + peat In the used variant, the height of the plant is 2.10 cm, the number of leaves is 2.02, and the level of the leaf is 30.80 cm2. Also, the plant height of the control variant Bella Vista is 7.25 cm, the number of leaves is 6.01, and the leaf area is 85.64 cm2, compared to the

control, the plant height is 1.25 cm. the number of leaves is 1.02, and the leaf area is 14.53 cm2. It is noted that the Kalota variety is in the range of the above two varieties according to all biometric indicators.

It can be seen from the figures given above that it has a positive effect on the growth and development of seedlings planted on the soil+peat substrate, as well as provides an opportunity to provide healthy, high-quality and cheap seedlings.

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