

Seed growing of beet at drip irrigation in the South of Ukraine

Goal. Optimize the main elements of the technology of cultivating royal and seed plants of beet dining in the conditions of drip irrigation in the south of Ukraine. **Methods.** Field, laboratory, mathematical, statistical. **Results** The highest yield of mother stock - 57.1 t / ha was obtained for sowing in the 2nd decade of June, bringing the estimated dose of mineral fertilizers (N120P80K80) and the density of plants standing 400 thousand pcs. / Ha. The highest seed yield - 2.13 t / ha - was obtained for 90 + 50 cm planting plots with a diameter of 41 - 60 mm, a plant density of 42.6 thousand pounds per hectare and an estimated fertilizer dose (N120P90K90). **Conclusions** In the conditions of southern Ukraine, for drops irrigation, seedlings, planting patterns, maturity and seedlings, and the use of fertilizers have a significant effect on the yield of mother-to-be root crops and table beet seed. On the seed quality of the seeds, the scheme of planting, fertilizing and the density of cultivation of seedlings does not significantly affect. The obtained seed meets the requirements of DSTU 7160: 2010.

Key words: dill beet, seeds, timing of sowing, schemes of planting, stocking-stekling, fertilization, plant density.

A key factor in increasing the production of vegetable products is to provide producers with high quality seeds. Grain and seed are the most effective means of intensifying agricultural production and the cheapest leverage to influence its stabilization and increase the productivity of agricultural crops. Nowadays, seed production of vegetable crops in Ukraine is virtually non-existent or does not meet modern requirements [5, 7, 8]. Every year, beet seed crops in Ukraine occupy an area of 40-45 thousand hectares, the gross harvest of root and fruit is 550-700 thousand tons [12, 13]. In order to provide the seed material of the commodity producers and seed farms of Ukraine, the reproductive seed (RN1) requires 631 tons, elite (EN) - 13.3, original seed (OH) - 1.48 tons [11]. According to the results of many scientists, the yield and quality of the root crops are largely dependent on the density of plants standing. The maximum yield of high quality products is achieved only at the optimal feeding area [2 - 4, 14, 15]. In order to grow uterine root crop, beet table to increase the yield of broodstones per unit area, it is recommended to use the method of shootings, which makes it possible to significantly reduce the area under the stomachs and in 2,5 to 4 times reduce the storage of root crops [1, 9, 10].

According to climatic conditions, the southern region is favorable for seedlings of beet dining, therefore, research on the improvement of the elements of the technology of cultivating mothers and seedlings of this crop using drip irrigation systems is relevant from the point of view of science and practice.

The purpose of the research is to optimize the main elements of the technology of growing beet dumplings of the mother and seed plants to ensure high productivity in the conditions of drip irrigation in the south of Ukraine.

Materials and methods of research. The research was conducted on irrigated lands of the Institute of Irrigated Agriculture of NAAS during 2011-2014. The soil of the experimental field is dark chestnut medium soup with contents in arable (0-30 cm) layer of humus 2.3%, total nitrogen - 0.18%, mobile phosphorus - 49 mg / kg, exchangeable potassium - 320 mg / kg of absolutely dry soil, pH of water extraction - 7.2. The lowest moisture content of the soil layer is 0 - 50 cm - 23.2%, the layer 0-100 cm - 22.0; humidity of wilting - 9,7%, density of composition - 1,45 g / cm³.

The study of the influence of the terms of sowing, fertilizer and plant density on the production processes of moths was carried out in a 3-factor field experiment according to the scheme: factor A - the sowing lines: 1. II decade of June. 2. And the decade of July; factor B - fertilizer dose: 1. No fertilizer (control), 2.

Recommended N90R60K60, 3. Estimated N120P80 K 80; factor C - plant density: 400 thousand pcs. / ha, 500 thousand pcs / ha.

Investigation of the effect of the planting scheme, fertilizer and plant densities on the seed production processes was carried out according to the scheme: factor A - the layout of the mother plantings: 1. 90 + 50 cm, 2. 160 + 50 cm; factor B - dose of fertilizer: 1. Without fertilizers (control).

2. Recommended N90R60K60. 3. Estimated N120R90 K90; factor C - density of seedlings standing: 28.4 thousand pcs. / ha, 42.6 thousand pcs / ha. The experiments were laid by split plot method in a 4-time repetition. The total area of the plot is 14 m², the accounting area is 10 m². Grain of beet dining - Bordeaux in Kharkov. The ammonia nitrate was planted under sowing, before planting in a furrow - nitro-amphoscope, for polypropylene fertilization, polyfeed drip (N20P20K20 + Mg + micronutrients) and (N9P10K38 + Mg + microelements) for fertilization.

Research results. During the vegetation of plants in a layer of soil 0-50 cm, the moisture content of 80% of HB in maturity crops and 70% of HB in semen were maintained. During the vegetation of the litter plants in 2011, 14 irrigation was carried out, the irrigation rate was 2820 m³ / ha, the total water consumption - 2839 m³ / ha; in 2012 - respectively 13 irrigation, 2610 and 2856.5 m³ / ha; 2013 - 11 irrigation, 2230 and 2587 m³ / ha; 2014 - 10 irrigation, 2010 and 2361.2 m³ / ha.

According to the researches, the yield of mother liquor crops according to the experimental variants in 2011 was within the range of 43.6 - 60.6 t / ha, in 2012 - 36.5 - 63.2, in 2013 - 21.9 - 48,9, in 2014 - 33,0 - 57,1 t / ha (Table 1).

The lines of sowing significantly influenced the yield of root crops, beet dining. Average for In 2011 - 2014, for sowing in the 2nd decade of June, the root crop yield was 49.3 t / ha, which is 9 t / ha, or 22.3% higher than sowing in the first decade of July. The introduction of the estimated fertilizer dose (N120R80K80) contributed to a significant increase in the yield of root crops by 5.5 t / ha (13.5%) compared to the recommended dose and by 10.4 t / ha (26.3%) compared with the control (without fertilizers) - 39.5 t / ha. The increase in plant density from 400 to 500 thousand pounds per hectare significantly reduced the yield of root crops from 47.0 to 42.6 t / ha (10.3%) due to the reduction of the yield of large mother plant root (diameter 61-100 mm) and an increase in the number of shoots (diameter 41 - 60 mm) by 35.3 thousand pcs. / ha (32.6%).

The largest yield of root crops - 57.1 tons / ha was obtained for sowing in the 2nd decade of June, bringing the estimated dose of mineral fertilizers and the plant density of 400 thousand pcs. / Ha.

Correlation and regression analysis of experimental data showed the existence of a correlation between the productivity of beet table and the investigated factors. The dependence of the yield of mother-of-breed root crops on the timing of sowing (the sum of active temperatures for vegetation of plants), the dose of fertilization and the density of plant standing is expressed by the regression equation:

$$Y=14,6x_1+0,0594x_2+0,001x_3+0,0014x_4-46,8x_5+32,1,$$

where Y - yield of mother liquor, t / ha; x₁ is the sum of active temperatures for vegetation, ths. ° C; x₂ - dose of nitrogen fertilizer, kg / ha dp .; x₃ - dose of phosphorus additive, kg / ha dp; x₄ - dose of the introduction of potassium fertilizers, kg / ha ds .; x₅ - density of plant standing, thousand pcs / ha.

During vegetation of seed plants in 2012, 7 irrigation was carried out, the irrigation norm of the plant was 1350 m³ / ha, total water consumption - 1801.2 m³ / ha; 2013 - respectively, 8 irrigation, 1500 and 1972 m³ / ha; in 2014 - 10 irrigation, 2200 and 2640 m³ / ha.

The yield of seed beet dining in the average years of research was 1.29 - 2.13 t / ha, while under the schemes of 90 + 50 cm - 1,77 t / ha, 160 + 50 cm - 1,64 t / ha, which is lower by 7.9% (Table 2).

Carrying out the calculated dose of fertilizers N120R90K90 and increasing the density of seed plants from 28.4 to 42.6 thousand pcs. / Ha contributed to an increase in seed yield of 0.42 t / ha (28.4%) and 0.17 t / ha (10.5%).

The highest seed yield - 2.13 t / ha - was obtained for 90 + 50 cm seedlings, the estimated fertilizer dose and plant density were 42.6 thousand pounds / ha, which exceeded the control version by 0.58 t / ha (37.4%). On the seed quality of the seeds, the scheme of planting, deportation Fertilizers and the density of seedlings' standing were not significantly affected. The received seed has a mass of 1000 native 19.2 - 20.7 g, germination energy - 69.5 - 75.3%, similarity - 88.8 - 96.5% and complies with the requirements of DSTU

7160: 2010. Seeds of agricultural crops. Varietal and sowing qualities for the first reproduction of beet seeds (RH1 = 80%).

Conclusions

It was established that in conditions of southern Ukraine for drip irrigation, seedlings, planting patterns, density of mother and seed plants, and the use of fertilizers have a significant effect on the yield of mother stock and seed of beet seed. The highest yield of mother stock - 57.1 t / ha was obtained for sowing in the 2nd decade of June, bringing the estimated dose of mineral fertilizers (N120P80K80) and the density of plants standing 400 thousand pcs. / Ha. The highest seed yield - 2.13 t / ha - was obtained for 90 + 50 cm planting plots with a diameter of 41-60 mm, planting density 42.6 thousand pounds per hectare and introduction of a calculation dose of fertilizers (N120P90K90). On the seed quality of seed, the scheme of planting, fertilizing and the density of seedling cultivation did not significantly affect. The obtained seed meets the requirements of DSTU 7160: 2010. Seeds of agricultural crops. Varietal and sowing qualities [7].

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