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FORMATION OF POTATO YIELD CAPACITY DEPENDING ON SIZE OF SEED TUBERS UNDER CONDITIONS OF THE WESTERN FOREST-STEPPE OF UKRAINE

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Problem setting. Nowadays, in Ukraine, one can see discrepancy between the norms of potato planting and its yield capacity. Norms of planting material fluctuate from 30 to 50 hwt/ha, and yield capacity constitutes only 110-160 hat/ha, depending on the year. Thus, the correlation between the yield capacity and seeding norm, or a reproduction ratio, constitutes only 2,5-3,0. Under such ratio, growing of the crop is economically non-beneficial direction. An appropriate choice of the size of a seed tuber and scientifically argued planting density is a crucial factor for the problem solution.

Main material. Field experiments were carried out on the fields of the Department of Technologies in Crop Production of Lviv National Agrarian University on dark grey podzolic soils.

The experiments were made with two medium ripe varieties of Slava and Duzha. Before planting, the seeding material was divided into three fractions: tubers of 25-50 g, 51-80 g, 81-120 g. According to the variants of the experiment, the average consumption of seeding material constituted: 1 – under planting of the tubers of 25-50 g – 21 hwt/ha; 2 – under planting of the tubers of 51-80 g – 37 hwt/ha; 3 – under planting of the tubers of 81-120 g – 55 hwt/ha. The experiment was repeated three times. The control land parcel took the area of 25,2 m².

In the experiments, the authors of the article studied dependence of stem-forming ability of Slava and Duzha varieties of potato on seed tubers size.

Results of the research prove that number of stems of one bush increased in case of planting of large seed tubers. The highest stem-forming ability of Slava variety was in the third variant of the experiment, where large tubers were planted, i.e. 4,1 stems per a bush, that was by 1,0 stem per a bush more, as compared to the control and by 0,5 stem per a bush more than in the case of planting of medium-size tubers (51-80 g).

For two years of the experiment, the highest average number of stems in a bush of Duzha variety was in the variant of planting of large tubers of 81–120 g (4,5 stems per one bush), that was by 1,9 stems per a bush, or by 73,1% more than the control (in case of planting of small tubers), and by 1,0 stem per a bush, or by 38,5% more than by planting of medium-size tubers.

Total number of stems on the area determines the level of yield capacity. Thus, the recommendations concerning potato growing define that number of stems per a unit of area is a criterion for obtaining of secured yields and tubers of a definite size.

Our data proves that plant stand of potato directly depends on the number of stems per a bush, because the researchers planted the same number of plants per 1 ha – 55 thousand, but the plants, which fell out during vegetation or were sorted out in the process of phytosanitary weeding. Thus, all regulations concerning the number of stems per one bush coincide in the case.

Thus, stem-forming ability of potato substantially depends on the size of seed tubers. The larger tubers are planted, the larger number of stems they produce.

Yield capacity is the most important characteristics of a crop. Increase of the weight of seed tubers makes a substantial impact on yield capacity of potato. The highest average yield of tubers of Slava variety for the three years of the experiment was obtained in the third variant (weight of seed tubers was 81–120 g) – 292 hwt/ha, that was by 43 hwt/ha more than the control, or by 17,3%. A high yield was obtained in the variant, where medium-size tubers were planted, i.e. 276 hwt/ha, that was by 27 hwt/ha more, comparing to the yield in the control variant and only by 16 less than in the third variant of the research. The lowest yield was obtained on the land parcel, where small tubers of 25–50 g were planted. It constituted 249 hwt/ha.

For the three years of growing of Duzha variety of potato, the highest yield was obtained in the variant of the experiment, where large tubers were planted in the amount 330 hwt/ha, that was by 52 hwt/ha more, as compared to the control, or by 18,7%. Planting of medium-size tubers secured the yield at the level of 313 hwt/ha, that was by 35 hwt/ha more, comparing to the yield in the control variant and only by 17 hwt/ha less than in the variant of planting of large tubers. The least yield was supplied by planting of large tubers. The yield constituted 278 hwt/ha.

However, speaking about the growth of yield of large tuber planting, it is necessary to mention about consumption of planting material. The difference of consumption of seed tubers between the second and the third variants makes 19 hwt/ha, and the growth of yield constitutes 16–17 hwt/ha. Thus, increase of planting material consumption was larger than growth of the obtained yield.

Comparing yield capacity of Slava and Duzha varieties of potato by the years of the experiment and calculating the average figure for the three years, it is necessary to mark that Duzha variety demonstrates higher yield capacity than Slava variety.

Conclusions. The carried research demonstrates that growing Slava and Duzha varieties, the highest yield is secured by planting of large tubers of 81–120 g. However, it is reasonable to plant medium-size tubers, i.e. 51–80 g, because growth of the yield does not cover the increased consumption of planting material.

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