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THE EFFECT OF PLANTING PATTERNS AND TIMING OF RICE VARIETIES ON GRAIN YIELD

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Abstract
When calculating the yield of rice, it was determined that the yield increased by 3.3-5.9 t/ha in the variant of the planting scheme with a planting rate of 999 thousand seedlings per hectare in the 30x10x3 scheme. Experimental data showed that from the seedling stage to the ripening stage, the stem height and root length of the plant developed rapidly, and the accumulation of dry mass was also observed to vary according to each planting scheme and timing. In the studies, there was no significant difference between the planting dates. However, differences were noted in the planting schemes and the number of seedlings per 1m2.

Keywords: Planting scheme, Rice seedlings, Rice varieties, Growth; development, Productivity, Number of seedlings, Rice agrotechnics.

Introduction

The Decree of the Republic of Uzbekistan No. PF-4947 dated February 7, 2017 “On the Strategy of Actions for the Further Development of the Republic of Uzbekistan” for 2017-2021, states that “3.3...consistent development of agricultural production, further strengthening of the country's food security, expansion of the production of environmentally friendly products, optimization of arable land and their layout, and introduction of advanced agrotechnologies that save water and resources” are among the important strategic tasks.

In order to implement the tasks set out in the Decree of the President of the Republic of Uzbekistan No. 5303 “On measures to further ensure the country's food security” dated January 16, 2018 and other regulatory legal acts, the results of the research described above were prepared based on information from scientific literature and scientific sources, conclusions and recommendations were developed, and this information is intended for agricultural specialists, cluster and farm managers, as well as individual farmers engaged in rice cultivation, and is of certain practical use. To obtain high yields from rice, it is first necessary to fully understand the agrotechnics of its cultivation and the recommendations for each variety being planted.

The growth periods of rice plants, namely, tillering, tillering, tillering, wax ripening and full ripening, were measured for stem height, root length and dry mass accumulation. When rice plants are planted as a repeated crop, the planting dates and planting schemes, and the number of seedlings are of great importance in its stem height and dry mass accumulation. Because, the better the plant is provided with light, heat, moisture, nutrients and water, the higher the development of its vegetative organs. As the vegetation period of the plant shortens, it tries to form more generative organs intensively in order to leave offspring.

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Each agrotechnical measure used should be applied in accordance with the passage of each phase, only then the crop elements will develop well and the yield will be at a high level. The degree of development of the above-ground and underground mass of plants will certainly affect its yield, of course. It also depends on the natural climatic conditions of the growing area, planting dates and methods.

In order to determine the yield of each variety in the experiment, each yield of each variant was collected separately and the average of the sum of the yields was calculated as the yield of this variant.

The research revealed that when growing rice as a repeat crop after winter wheat, two different varieties of rice - the early ripening "Guljakhon" and the mid-ripening "Iskandar" varieties, three different planting dates (June 25, July 5, and July 15), three different planting patterns (30x10x1, 30x10x2, 30x10x3), and the number of seedlings (333,000, 666,000, and 999,000 seedlings per hectare) had an impact on yield. In the first control variant, where 30-day-old seedlings of the "Guljaxon" variety were planted in the third decade of June at a rate of 333 thousand units/ha, i.e., in a 30x10x1 scheme, the yield was 65.3 t/ha, and in the second variant, where seedlings were planted in a 30x10x2 scheme, the yield was 69.1 t/ha, and in the third variant, where 999 thousand seedlings were planted per hectare, the yield was 66.8 t/ha.

When analyzing the planting schemes, it was found that the yield of the variety planted in the 30x10x2 scheme was 2.3-3.8 t/ha higher than that of the variants planted in the 30x10x1 and 30x10x3 schemes. In the experiment, 30-day-old seedlings of the mid-season "Iskandar" variety in the third decade of June yielded 333 thousand units/ha, i.e., in the fourth variant planted in the 30x10x1 scheme, the yield was 65.4 t/ha, and in the fifth variant planted in the 30x10x2 scheme, the yield was 70.2 t/ha. In the sixth variant of the 30x10x3 scheme, where 999 thousand seedlings were planted per hectare, the yield was 68.4 t/ha. In the seventh variant, where 30-day-old seedlings were planted in the first decade of July, the yield was 72.5 t/ha. In the eighth variant, where 666 thousand seedlings were planted per hectare, that is, in the 30x10x2 scheme, the yield was 77.6 t/ha. In the ninth variant, where 999 thousand seedlings were planted per hectare, the yield was 74.3 t/ha. In the second decade of July, the tenth variant, planted with 30-day-old seedlings at a density of 333 thousand units/ha, i.e., in a 30x10x1 scheme, the yield was 68.7 tons/ha, while the eleventh variant, planted with seedlings at a density of 666 thousand units/ha, i.e., in a 30x10x2 scheme, the yield was 71.7 tons/ha. The twelfth variant, with a 30x10x3 scheme of 999 thousand seedlings per hectare, yielded 70.1 t/ha. When analyzing the planting schemes and dates of the experiment for the mid-season "Iskandar" variety, it was found that the variant planted in the 30x10x2 scheme in the first decade of July had the highest yield of 77.6 t/ha, which was 11.5 t/ha higher than the control variant.

It was found from the experimental data that the later the plant is planted, the faster the plant tries to reproduce and the shorter the development period to 5-7 days, and as a result, the lower the stem height, the lower the dry mass accumulation, and the shorter the root length. It was found that the rice variety "Iskandar" planted in the second decade of July (15.07) had a stem height of 2.2 cm, a dry mass accumulation of 1.3 g/plant, and a root length of 1.6 cm, a dry mass accumulation of 1.1 g/plant, compared to the variants planted in the first decade of July (5.07).

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There was no significant difference between the planting dates in the studies. However, differences were noted in the planting schemes and the number of seedlings per 1 m2. According to the data obtained, the leaf area of the Iskandar rice variety during the tillering period was 2.1-5 cm2 higher in the variants with 333 thousand plants per hectare, i.e. 30x10x1, compared to the variants with 666 thousand plants per hectare, i.e. 30x10x2 and 999 thousand plants per hectare, i.e. 30x10x3. Because the yield of rice is determined not by the number of seedlings per unit area, but by the number of productive stems per unit area, and this indicator is one of the main factors determining the yield in the seedling method of rice cultivation.

During the experiments, it was found that planting schemes and timing had a significant impact on the formation of rice crop elements, that is, an increase in the number of seedlings per 1 m2 led to a decrease in the formation of crop elements, their degree of maturation, and as a result, the yield decreased by 6.8-7.4 t/ha.

Conclusion

1. When calculating the yield of rice grain and corresponding straw, it was found that the planting scheme 30x10x1, i.e., 333 thousand bushes per hectare, was less, and in the variant with the planting rate of 999 thousand bushes per hectare, the stem yield increased by 3.3-5.9 t/ha.
2. It was found that there is a correlation between the yield of rice and straw yield of agricultural activities, and it was found that r=0.928. It was found that the planting date of the “Guljaxon” variety seedlings was the third decade of June (25.06), and the highest yield was 69.1 t/ha in the 30x10x2 planting scheme. The planting date of the “Iskandar” variety was the first decade of July (5.07), and the highest yield was 77.6 t/ha in the 30x10x2 planting scheme, which means that an additional yield of 8.5 t/ha was obtained compared to the control variant and a conditional net profit of 2,753,600 to 3,158,000 soums was obtained.
3. From the seedling stage to the ripening stage, the stem height and root length of the plant developed rapidly, and the accumulation of dry mass also varied according to each planting scheme and timing.
4. There was no significant difference between the planting dates in the studies. However, there were significant differences in planting patterns and the number of seedlings per m^2.

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