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INDICATORS OF VALUABLE AGRONOMIC TRAITS OF RICE VARIETAL SAMPLES IN A COLLECTION NURSERY

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ABSTRACT

This article analyzes the indicators of valuable agronomic traits in rice varietal samples grown in a collection nursery. Traits such as plant height, panicle length, number of panicles per plant, number of grains per panicle, 1000-grain weight, and productivity per plant were assessed. Varietal samples such as D-111 d/z b/ost., D-123 b/ost. d/z, D-135 ost d/z, and D-120 (D-135) 42-92-1 were identified as having superior characteristics.

Keywords: Rice, varietal sample, plant height, panicle length, number of panicles per plant, number of grains per panicle, 1000-grain weight, plant productivity
UO'K:631.52+633.18+631.527+631.527.8

KOLLEKSION KO'CHATZORDA SHOLI NAV NAMUNALARINI F QIMMATLI XO'JALIK BELGILARI BO'YICHA KO'RSATKICHLARI

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ANNOTATSIYA

Maqolada, kolleksion ko'chatzorda sholi nav-namunalari qimmatli xo'jalik belgilari bo'yicha ko'rsatkichlari tahlil qilingan. O'simlik bo'yi, boshoq uzunligi, bir tupdagi boshoq soni, bir boshoqdagi don boshoqdagi don, 1000 dona don vazni va bir tup o'simlikdagi mahsuldorlik bo'yicha D-111 d/z b/ost., D-123 b/ost. d/z, D-135 ost d/z, D-120 (D-135) 42-92-1 kabi nav namunalar ajratib olingan.

Kalit so'zlar: sholi, nav namuna, o'simlik bo'yi, boshoq uzunligi, bir tupdagi boshoq soni, bir boshoqdagi don boshoqdagi don, 1000 dona don vazni va bir tup o'simlikdagi mahsuldorlik

INTRODUCTION

Ensuring global food security has become a pressing global issue, in which cereal crops — particularly rice — play a strategically important role. Rice serves as a primary food source for the global population. According to FAO (2023), although global rice production continues to increase annually, stress factors such as climate change, water scarcity, and soil salinity have a seriously negative impact on productivity. Global statistics show that more than 780 million tons of rice were produced worldwide in 2022, yet a significant portion was lost due to these stress factors.

Expanding the scope of breeding programs to develop rice varieties that fully meet modern requirements heavily depends on the collection of global varietal samples. Currently, more than 7,500 forms of rice varietal samples from the world collection are preserved at the

Scientific Research Institute of Genetic Resources of Uzbekistan. This collection is enriched annually by breeders.

Rice varieties differ significantly in their origin and vegetative period, in the emergence of numerous qualitative traits, growth dynamics, stem length and strength, leaf color and shape, leaf angle relative to the stem, panicle length, grain density within panicles, grain shape and size, husk splitting, general rice yield, total polished rice output, culinary properties, and aromatic qualities. These traits are known to exhibit modification variability depending on external environmental influences.

Rice varieties possess diverse plant characteristics, and studies based on their unique features and agrobiological phases hold great significance. Understanding the differences between varieties, their growth periods, and resulting traits helps in coordinating agrotechnical practices, thus enabling maximum productivity.

RESEARCH RESULTS

When analyzing the valuable agronomic traits of early-maturing rice varietal samples, several key indicators were studied, including the vegetation period, plant height, tillering coefficient, number of grains per panicle, panicle weight, 1000-grain weight, and the total weight per plant. According to the findings, varieties with vegetation periods ranging from 88 to 100 days were identified. The shortest vegetation period (88 days) was observed in the varieties 65-06-5 and “20-11-2”, which matched the standard variety Sanam (88 days). The longest vegetation period among the studied samples was found in the variety 78-05-2, which lasted 100 days.

In terms of plant height, the tallest variety was “20-11-2”, reaching 109 cm. In contrast, the shortest height was recorded in the “78-05-2” variety, measuring 81.4 cm, which was equal to the standard variety Guliston (81.4 cm). The tillering coefficient among the studied collection samples ranged from 4.0 in the 78-05-2 variety to 4.5 in the 412-17 d/z variety.

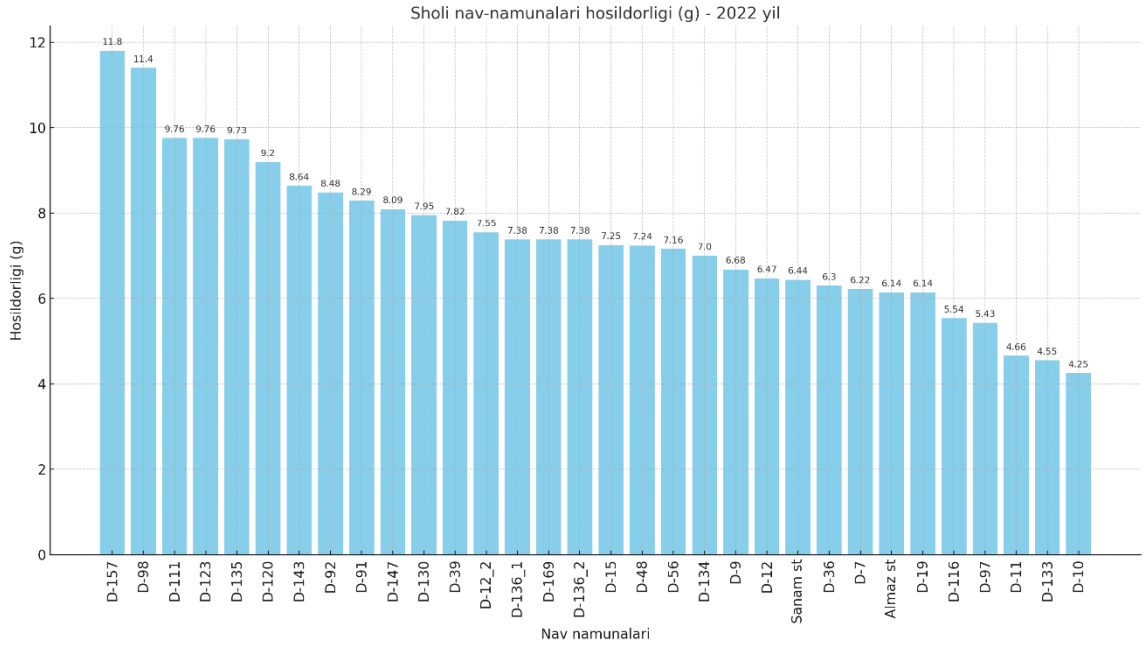

Figure 1. Indicators of Valuable Agronomic Traits of Rice Varietal Samples in the Collection Nursery, 2022

The tillering coefficient ranged from 4.0 to 4.5 among the studied varieties, and the highest value was recorded in the standard variety "Sanam" (4.7), with the other samples showing results 0.7–0.2% lower. In terms of the number of grains per panicle, the highest grain count was observed in the “20-11-2” variety, with 121 grains. All studied samples demonstrated superior results in this trait compared to the standard variety Sanam (86 grains), showing differences ranging from 2 to 36 additional grains.

Panicle weight among the rice varieties ranged from 2.88 g (2-00-3) to 4.8 g (78-05-2), with the highest value recorded in the 78-05-2 variety. Furthermore, the 1000-grain weight varied from 29.2 g (A-48-01-3) to 35.4 g (20-11-2), with the maximum value observed in “20-11-2”. The standard varieties Sanam and Guliston showed 1000-grain weights of 30.1 g and 31.0 g, respectively. Except for the A-48-01-3 variety, all other samples either matched or exceeded the standard level.

Among the studied rice varietal samples, the total grain weight per plant ranged from 13.2 g (2-00-3) to 19.2 g (78-05-2), with the highest yield recorded in the very early-maturing variety “65-06-5” (19.2 g). These results demonstrate that very early-maturing rice varieties differ significantly in terms of yield, grain quality, and physiological traits.

The varietal samples D-111 d/z b/ost., D-123 b/ost. d/z, D-135 ost d/z, and D-120 (D-135) 42-92-1 exhibited superior productivity per plant compared to other samples, showing results of 9.76 g/plant, 9.76 g/plant, 9.73 g/plant, and 9.20 g/plant, respectively.

CONCLUSION

In summary, the analysis of valuable agronomic traits in rice varietal samples in the collection nursery revealed significant differences in plant height, panicle length, number of panicles per plant, number of grains per panicle, 1000-grain weight, and total productivity per plant. Among the studied samples, the varieties D-111 d/z b/ost., D-123 b/ost. d/z, D-135 ost d/z, and D-120 (D-135) 42-92-1 were identified as promising for their superior characteristics.

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