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Studying the Effect of Growing Rice Varieties in Different Water Thicknesses on the Amount of Amylase, Starch and Protein in Grain in the Conditions of Uzbekistan

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Abstract: In this article, taking into account the biological characteristics of regionalized early-early "Guljahan", "Ilgor", "Iskandar" late-ripening "Mustaqillik", "Lazurniy", "UzROS-7/13" rice varieties in different water thicknesses under the conditions of grassland-swamp soils of Tashkent region amylase, starch and protein content of cultivated rice grains were determined. Rice varieties 5; 10; When grown in water thicknesses of 15 and 20 cm, the amylase content of "Lazurnyy" variety is 21.4%, starch content is 69.9%, and protein content is 11.2%, which is higher than other varieties.

Keywords: ORIZA SATIVA, rice, grain, amylase, starch and protein.

Introduction. Rice differs from other food products due to its nutritional value and fast and complete digestion in the human body. Rice grain contains protein, fat, starch, ash, fiber and phytin, and 1 kilogram of rice contains 4000 calories.

Among agricultural crops, rice is the only crop with a wide range of distribution, from 300 north latitude to 300 south latitude. It is also distinguished by its high demand for specific climatic conditions, especially water. The transpiration coefficient of a rice plant is 450-550. 2021 of the President of the Republic of Uzbekistan in order to form a unified system of rice cultivation and purchase, rational use of land and water resources, as well as to fill the domestic consumer market with high-quality products

On February 2, the decision PQ-4973 "On measures for the further development of rice cultivation" provides for the widespread use of water-saving technologies in rice cultivation,

20% of rice fields are planted by seedling method, 50% of rice fields are to be leveled using laser equipment, and 30% of rice fields are to be planted with rice. tasks of planting seeds in modern seeders are defined [1].

P.S. Erigin's [2; 5-10-b], the rice crop belongs to the Monocotyledons class, Poaceae (Gramineae) family, and 28 species are included in the Oryza family. Two of them are Oryza sativa and Oryza glaberrima Stead. cultivated. Oryza sativa species is grown in Southeast Asia, Far East, Europe, Africa, America and Australia. Oryza glaberrima species of rice is a wild plant.

F. Dow [3; 77-b] showed that the mechanical composition of the soil and water thickness have a significant effect on the grain yield of rice varieties. It was found that the yield was significantly higher in continuously flooded variants than in intermittently irrigated variants, 46% higher rice grain yield and water thickness in heavy clay soils than in average sandy soil, Cocodrie rice variety in continuously flooded variants compared to Rondoniki rice variety. observed that the furrows were longer, the number of grains was 29% more. As a result, cultivar selection and soil type are important factors in deciding which water management option to use.

Chuan Chi Lin (2005) [4; 169-173-b] stated that the amount of amylase in the grain is an important indicator of the technological characteristics of rice varieties. It is stated in many scientific sources that 15-35% amylase is present in rice grain. The higher the amount of amylose in the grain, the higher the vitreousness [5; 36-b].

Sultana's [6; 211-220-b], the endosperm of rice grain is usually vitreous, but also semi-vitreous or floury. The center of the semi-vitreous grain consists of the flour-like endosperm. The pulpiness is from 16.5% to 25%. The color of the grain is silvery, white to yellow brown and even black. The endosperm is the main part of the grain. It is located behind the seed coat and the outer part is composed of aleurone layer and endosperm cells. There is a lot of protein in the outer layer.

The endosperm is filled with starch, its content reaches 86.4% to 88.9% in most common varieties of rice. The amount of protein in rice endosperm is relatively low, 7.6-12.6%, and it is mainly distributed in the peripheral parts of the grain [7; 68-73 p].

H.N. Otaboeva, B.M. Halikov (2003) [8; 10-11, pp. 54-55.] say that rice differs sharply from other cereals in that it contains a lot of starch and a small amount of protein. According to scientific data, rice consists of 76.1% starch, 2.6% protein, 3.9% sugar, 1.8% dextrin, 1% fat, 1.4% ash and 0.2% fiber, and is the most important in this composition. diet is food [9; 41, 52-54-b].

In our field experiments, when early-ripening "Guljahan", mid-ripening "Ilgor", Iskandar" and late-ripening "Independence", "Lazurniy", "UzROS 7/13" varieties of rice are grown in water depths of 5, 10, 15 and 20 cm, amylase, starch and the effect on the change of protein content was studied.

Field experiments were conducted in 2014-2016 at the experimental farm of the Rice Research Institute.

According to the results of agrochemical analysis of the experimental field, the amount of humus in the plow layer is 1.92%, nitrogen is 22.31 kg/kg, phosphorus is 59.2 mg/kg, and potassium is 158 mg/kg. is

The natural climatic conditions of the Tashkent region are sharply continental and dry, and the average number of sunny days in the summer months is 295-390 hours. Summer is hot and dry, July is the hottest month. The growth and development of agricultural crops definitely depends on the air temperature. The amount of annual precipitation is 432-377 mm.

5; 10; When the content of amylase, starch and protein content of rice varieties grown in water thicknesses of 15 and 20 cm was studied, amylase was 17.9%, starch was 68.9%, protein was 8.6%, and protein was 8.6% in 5 cm water depth in the early "Guljahan" rice variety. amylase

18.9%, starch 69.3%, protein 9.0%, amylase 19.0% in 15 cm., starch 69.1%, protein 9.6%, amylase 19.0 in 20 cm. %, starch 69.0%, protein 9.3%;

in medium-ripe rice variety "Ilgor" at 5 cm of water depth amylase 17.9%, starch 69.2%, protein 8.9%, at 10 cm. amylase 19.0%, starch 69.6%, protein 9.3%, 15 cm. amylase 19.1%, starch 69.8%, protein 9.6%, 20 cm. amylase 19.2%, starch 70.4%, protein 9.6%;

"Independence" variety of evening rice has amylase 20.2%, starch 69.8%, protein 9.6% in 5 cm water thickness, amylase 20.9%, starch 70.9%, protein 9.9% in 10 cm. amylase 21.0%, starch 70.9%, protein 10.3% in 15 cm. amylase 21.0%, starch 70.9%, protein 10.3% in 20 cm.

in medium-ripe rice variety "Iskandar" in 5 cm of water, amylase 18.6%, starch 69.9%, protein 9.9%, amylase 19.2%, starch 70.8%, protein 9.9% in 10 cm. 15 cm. amylase 9.9%, starch 19.1%, protein 71.0%, 20 cm. amylase 19.1%, starch 69.8%, protein 9.9%;

In the evening rice variety "Lazurniy" amylase 20.9%, starch 68.6%, protein 10.6% in 5 cm water thickness, amylase 21.4%, starch 70.3%, protein 11.2% in 10 cm. in 15 cm. amylase 21.3%, starch 70.0%, protein 11.2%, in 20 cm. amylase 21.0%, starch 70.9%, protein 10.3%;

amylase 20.0%, starch 69.8%, protein 9.2% at a depth of 5 cm of water in evening rice variety "UzROS 7/13", amylase 20.7%, starch 20.7%, protein 9 at 10 cm. 6%, amylase 20.5%, starch 70.3%, protein 9.3% in 15 cm, amylase 21.6%, starch 70.8%, protein 9.4% in 20 cm.

Table 1. Amounts of rice grain, amylase, starch and protein at different water thicknesses

Varieties	Amounts of different water thicknesses, cm and contents, %											
	5 cm			10 см			15 см			20 см		
	amylase	starch	protein	amylase	starch	protein	amylase	starch	protein	amylase	starch	protein
“Guljahon”	17,9	68,9	8,6	18,9	69,3	9,0	19,0	69,0	9,3	19,0	69,1	9,6
“Ilg’or”	17,9	69,2	8,9	19,0	69,6	9,3	19,2	70,4	9,6	19,1	69,8	9,6
“Iskandar”	18,6	69,9	9,9	19,2	70,8	9,9	19,1	69,8	9,9	19,1	71,0	9,6
“Lazurniy”	20,9	68,6	10,6	21,4	70,3	11,2	21,4	69,9	11,2	21,3	70,0	11,2
“Mustaqillik”	20,2	69,8	9,6	20,9	70,9	9,9	21,0	70,9	10,3	20,9	70,9	9,9
“UzROC 7-13”	20,0	69,8	9,2	20,7	70,3	9,6	20,6	70,8	9,4	20,5	70,3	9,3

CONCLUSION

It is necessary not to allow the thickness of irrigation of the rice plant to exceed the norm. Otherwise, it will reduce the grain quality and productivity of the plant. From the above data, it can be concluded that "Guljahan", "Ilgor", "Iskander", "Lazurniy", "Independence" of rice in different water thicknesses. "UzROS 7-13", compared to all studied rice varieties, the amount of protein, starch, and amylase was 10.3%, starch 70.9%, and amylase 21.0% in "Independence" variety. The amylase starch protein content of Ortapishar "Ilgor" rice variety was 19.2%, 70.4%, and 9.6% when the water thickness was 15 cm in the fields planted with rice. Among the varieties of rice, it was noted that the amount of amylase starch protein was 21.4%, 69.9%, and 11.2% higher in the "Lazurny" variety compared to other varieties.

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