



EFFECTS OF FOLIAR FEEDING ON RICE YIELD

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Abstract. In this paper, a study was conducted to investigate the effect of foliar feeding on rice plants. Advantages of using microfertilizers in foliar feeding have been found in rice cultivation. Experience shows that the yield of rice varieties "Lazer" and "Iskandar" is more than 4-5 centners per hectare, and the growing season is reduced by 10-11 days with foliar feeding.

Key words: rice, variety, seedling, seed, Lazer, Iskandar

Introduction. Rice is the staple food of many peoples of the world. Almost half of humanity eats its grain. Rice groats take one of the first places among all types of cereals in terms of color, ease of digestion and nutritional properties. In terms of calories, it is slightly lower than wheat. Rice, as a hygrophyte, is of great agro-ameliorative value, because with its help, saline and swampy lands are exploited for agriculture, where other crops cannot be grown.

In the territory of the Republic of Uzbekistan, rice is mainly planted in the early and main periods in dry soil dried or in seeds pre-soaked in water, as a repeated culture, and later, dry by the seedling method. As a result, each of the planting methods has its pros and cons. Rice farmers take advantage of every opportunity, use one of the methods of rice cultivation. It should be noted that out of all the methods, the seedling method is the most economical, where seeds, fertilizers, herbicides and fuel are significantly saved.

General information about literary sources; Literature review. Rice is one of the most important agricultural crops. According to statistics, rice is the staple food for 50 percent of the world's population and accounts for the majority of calories consumed by 3.5 billion people worldwide. According to FAOSTAT data in 2012, rice ranks third among agricultural raw materials in terms of production.[1] According to S. A. Kurbanov, the high efficiency of fertilizers is ensured only when they are used taking into account specific soil-climatic conditions, nutritional properties of certain crops and rotation in crop rotation, agrotechnology, fertilizer properties and many other factors.

The annual rate of fertilizer for individual crops can be applied at different times and in different ways. Fertilizer application timings and methods should provide the best conditions for plant nutrition throughout the growing season and maximize nutrient returns by the crop. There are three ways to apply fertilizers: before planting (or main), with planting (in rows, nests, holes) and after planting (or top dressing during the growing season). [2]

Biotechnology of waste treatment based on active microbial associations allows obtaining highly effective microbial transformed fertilizers, which have been successfully tested in field and vegetative experiments in local practice. Their positive effect on soil properties and plant productivity has been proven, and their quality is significantly higher than using an equivalent dose of mineral fertilizers, liquid manure, chicken manure, etc. [3]

Research location and methods. The experiments were conducted in 2018-2019 at the Experimental Base of the Rice Research Institute of Uzbekistan. The soil of the experimental site is a meadow-swamp with close groundwater. The former is a shadow. In the experiment, "Lazer" and "Iskandar" varieties of rice were tested. Research included phenological observations, biometric measurements, and statistical variance analysis of survey results. "Methods of state variety testing of agricultural plants" (1985), "Methods of field experiment" (Dospekhov B.A., 1985), "Methods of field research" (UzPITI, 2007) were used.

Research results. The seeds of rice varieties were sown in cassettes on April 28 and planted in special greenhouses for seedling growth. Before sowing the rice seeds in the cassette, the soil brought from the experimental field is passed through a 2-3 mm sieve to remove coarse impurities. Then the sifted soil is mixed with rotted manure in a ratio of 1:5, and 30 g of mineral fertilizer ammophos is placed in each cassette, and then 170 g of rice seeds of suitable varieties are placed in each cassette. With soil with rotted manure 0.5 cm thick.

The soil is moistened, then filled with water in a layer of 1 cm. By the end of April, all this is covered with a simple film that opens during the day with the appearance of the sun. Seedlings appear in 12-13 days, they are always under a layer of water. On the 25th day, they are fed with nitrogen fertilizer at the rate of 5% of the annual feed.

In the area prepared for planting, the soil is treated with water using mechanisms adapted to these conditions.

Table 1

Effect of microfertilizers on stand density and number of productive stems

Options	Sowing method	Number of plants pcs/m ²		Preservation of plants before harvesting, %	Coefficient tillering %	The number of productive stems, pcs/m ²
		Sowing term	Before cleaning			
Variety Lazer						
100% NPK	Seedling manually	78	75	96,6	3,49	262
	Seedling mechanism	83	81	98,0	3,40	275
	Sowing seeds	279	162	57,9	1,80	291
75% NPK crystal	Seedling manually	78	75	96,2	3,57	268
	Seedling mechanism	83	81	97,2	3,45	280
	Sowing seeds	280	164	58,5	1,82	297



75%NPK Logopuser	Seedling manually	78	75	96,2	3,59	270
	Seedling mechanis m	84	81	96,8	3,45	280
	Sowing seeds	281	162	57,7	1,84	298
Variety Iskandar						
100% NPK	Seedling manually	78	75	95,7	3,46	259
	Seedling mechanis m	83	81	97,6	3,33	269
	Sowing seeds	280	161	57,9	1,71	275
75% NPK crystal	Seedling manually	78	75	96,2	3,52	264
	Seedling mechanis m	82	81	98,4	3,38	274
	Sowing seeds	279	162	58,1	1,78	288
75%NPK Logopuse r	Seedling manually	77	75	97,0	3,54	265
	Seedling mechanis m	83	81	97,6	3,42	277
	Sowing seeds	276	162	58,3	1,77	288

Thus, in each of them, they are achieved by keeping the water layer at the level of 1-3 cm. When the seedlings reach 15-20 cm in size, they are planted in the main area. Seedlings are planted with a South Korean PF-455 special machine according to the scheme of 30-12 cm, 3-4 seedlings are planted in each pit. 20x20 cm hole by hand according to the scheme 2-3 seedlings. Sowing with seeds was carried out at a rate of 200 kg of seeds per hectare, moistened with water the day before planting. Thus, rice planting was done in three ways: seedlings, machinery, manual and seeds in dry soil. All records and observations were made according to the common methods used. One of the methods of productivity is plant stand density, which mainly depends on the norm of seed material, their quality and field germination. With the agrotechnics of rice in the seedling method, these abilities are preserved, but the main thing to increase the yield with this method is their processing ability, and with their high coefficient, a high yield is recorded. The yield of rice at high density is determined by stem yield, which is one of the main indicators of rice yield in seedling method. In agriculture, it is known that among cereal grains, the field germination rate of rice plants is lower than that of other cereal crops, but the productivity of rice plants is known to be higher

than that of other cereal crops. It is known that standing density has a significant effect on plant height and yield.

Our research has shown that the pre-harvest safety of rice plants depends on the yield of the stem, the biological characteristics of the variety and the effect of micronutrient fertilizers. It was found that the number of fertile stems in seed or seedling planting has a significant effect on the growth and development of rice plant productivity.

However, the safety of plants in the studied varieties "Lazer" and "Iskandar" differs in all variants, for example, the safety of seedlings is 92.7-96.0%, and when planted with seeds, this indicator is 63.6- It is 67.0%. The safety of plants mainly depends on planting methods (seedlings, seeds) and foliar feeding with micro-mineral fertilizers. In the 2-3 options of seedling method and foliar feeding, the safety of plants was higher compared to the control option without top dressing.

Fertility tillage should be abundant, ensuring the plasticity of the plant. In rice plants, the leaves are studied, divided into 3 layers. The middle layer ensures the growth and development of the cone, and on this basis spikelets are formed in the panicles. These leaves in plants affect the transition from the vegetative state to the generative state. With the destruction of 5-6 leaves, the productivity of rice decreased by 35%. The leaf surface area of rice plants depends on environmental conditions as well as the method of planting and foliar feeding. In the experiments, methods of planting on the leaf surface of "Iskander" and "Lazurniy" rice varieties and the effect of leaf feeding were studied.

The highest values on the surface of the leaf were in the "Lazurniy" variety, 75% + in the variant of Kristalon micro-fertilizer.

Table 2

Effects of planting methods and foliar feeding
on the leaf surface of rice plants

Option	Sowing method	Leaf surface of one plant, cm ²			
		Tillering	Bulging	Dairy ripeness	Yield
Variety Lazer					
100% NPK	Seedling manually	195,5	287,5	178,5	78,0
	Seedling mechanism	198,1	300	185,9	80,2
	Sowing seeds	197,6	311,8	193,9	75,6
NPK 75% crystal	Seedling manually	185,4	276,9	170,4	80,6
	Seedling mechanism	185,9	282,6	180,3	82,5
	Sowing seeds	188,8	291,5	192,7	78,8
NPK 75% Logopuse	Seedling manually	174,4	256,4	162,6	82,8
	Seedling	175,6	267,4	172,2	83,8

r	mechanism				
	Sowing seeds	179	277,6	182,9	79,9
	HCP ₀₅				2.45 s/ha
	HCP				3,4%
Variety Iskandar					
100%NP K	Seedling manually	193,9	286,3	177,9	84,5
	Seedling mechanism	195,8	298,7	183,2	87,2
	Sowing seeds	197,7	311,6	192,1	78,6
NPK 75% кристалло н	Seedling manually	182,6	276	167,1	88,0
	Seedling mechanism	184,9	283,7	176,8	90,2
	Sowing seeds	187,7	290	187,4	83,2
NPK 75% Logopuse r	Seedling manually	171,7	253,6	161,1	88,3
	Seedling mechanism	173,6	266,5	171,7	92,3
	Sowing seeds	177,3	278	184,1	82,7
	HCP ₀₅				2,63 s/ha
	HCP				3,5 %

At the tillage stage, the difference between the rice leaf surface indicators is small, and at the later stages of development, it is significant, i.e. in the stage of milk ripening, Iskandar variety 161.1-187.4 cm², Lazurni variety 162.6-193.9 cm², in the heading stage of Iskandar variety 253.6-311.6 cm², Lazurni variety 256.4-311, 8 cm².

In an experiment, foliar feeding with complex microfertilizers increased the yield of rice varieties. When using complex microfertilizers Kristallon, higher additional productivity compared to the control is 2.3-3.2 s/ha for the Lazurni variety, 3.0-4.6 s/ha for the Iskandar variety, 3.6-4 for the Lazurni variety ,8 s/ha. 3.8-5.1 centners of grain per hectare were grown in "Iskandar" variety when using "logopusher".

Planting methods: manual and mechanical planting of seedlings also has a positive effect on productivity, in these methods, compared to the control variety, the "Lazurniy" variety is 3.7-4.6 s/ha, and the "Iskander" variety is 7, Yields 0-9.6 s/ha more.

CONCLUSIONS:

1. "Lazer" and "Iskandar" varieties ripened 9-11 days earlier compared to the control option, and with foliar feeding with microfertilizer, compared to planting seeds in treated soil, determined by the seedling method. without top dressing, the crop ripens 2-3 days earlier.
2. It was noted that the height of the plants without top dressing was 4-6 cm higher in the leaf-feeding option compared to the control option.

3. In "Iskandar" and "Lazer" varieties, the high yield was 82.5 and 90.2 centners/ha in seedlings with mechanism and 75% + Crystallon, and in the variants without fertilizer, the yield was 4-5 times lower. hectare and centner.

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