

**CROP YIELDS OF WINTER WHEAT AND SPRING BARLEY DEPENDING  
ON THE APPLICATION OF PLANT GROWTH REGULATORS AND  
MICROFERTILIZER ON DIFFERENT BACKGROUNDS NUTRITION**

**Yu. Ye. Ogurtsov,**

*Plant Production Institute named after V. Ya. Yuriev NAAS*

*The results of studies on the use of plant growth regulators and microfertilizer in the cultivation of winter wheat and spring barley on different backgrounds mineral nutrition. It is established that the application of growth regulators and microfertilizer increased the yield of winter wheat on 0.22–0.29 t/ha or by 4–5 %, and spring barley on 0.22–0.31 t/ha or 6–10 %. The application of mineral fertilizers  $N_{30}P_{30}K_{30}$  increased the yield of spring barley on 0.59–0.69 t/ha or at 17–20 %.*

**Key words:** *winter wheat, spring barley, backgrounds nutrition, plant growth regulators, microfertilizer, crop yield.*

The modern trend of increase crop yields and improve of the quality of crop production in the world is based on introduction of agricultural production of energy-saving technologies with application of plant growth regulators and microfertilizer that allow insignificant capital investments to get more yield.

**The aim** of the research 2011–2013 years to study the impact of modern plant growth regulators and microfertilizer on the crop yield of the varieties of winter wheat and spring barley on different backgrounds mineral nutrition.

**Materials and methods research.** Research conducted in the fields of laboratory seedproduction and seedmaintenance Plant Production Institute named after V.Ya. Yuriev NAAS on the winter wheat varieties Rozkishna and Doskonala and spring barley Viklik and Parnas. The predecessor of winter wheat was fallow and

spring barley – peas, sowing at the optimum time, solid range way with a seeding rate of 4.5 million units per 1 ha.

Applied plant growth regulators: Radostim, Regoplant, Stimpo, Deimos, Vimpel K, microfertilizer Quantum-grain, seed protectant Vitavaks 200 FF, herbicide Gradil maxi and mineral fertilizer Nitroamofoska.

**Results.** Years of research were generally favorable for the development of winter wheat plants. The varieties of Rozkishna in the background without fertilizers the most effective preparation for presowing treatment of seeds and dual use, on average, for three years, was Stimpo increase on 0.29 t/ha or 5 %.

When growing of winter wheat varieties Doskonala most effective if pre-treatment of seeds obtained from the use of preparations Regoplant and Vimpel K, to increase on 0.22–0.23 t/ha, while the double use of preparations Deimos and Vimpel K in combination with microfertilizers Quantum-grain, to increase on 0.28 t/ha.

The effectiveness of plant growth regulators and microfertilizers on fertilized background power was lower compared to the background without fertilizers. The greatest increase in the yield of winter wheat varieties in seed treatment obtained when using preparations Regoplant and Stimpo – on 0.26–0.28 t/ha the variety of Rozkishna and 0.12–0.14 t/ha the variety of Doskonala. On variants with double application of plant growth regulators on variety of Rozkishna most effective was the use of the preparation Vimpel K to the increase on 0.25 t/ha, and for varieties of Doskonala spraying preparations Regoplant and Deimos, increase on 0.17–0.19 t/ha.

By analyzing the obtained variants of experience in the grain yield of barley Viklik it should be noted that the most effective pre-treatment, as on the background without fertilizer and fertilized background power is the preparation of Stimpo, the increase on 0.15–0.16 t/ha.

Presowing treatment of seed protectant Vitavaks 200 FF, followed by spraying of plant growth regulators and microfertilizer were more effective. Thus, on the background without fertilizers, spraying of plants at tillering stage the mixture the

plant growth regulator Regoplant with microfertilizers Quantum-grain provided an increase 0.31 t/ha, and spraying the microfertilizers Quantum-grain on phase flag leaf – 0.26 t/ha.

On fertilized background power is also the most effective was mixture of preparations Regoplant and Quantum-grain at the tillering stage, as well as individual use of preparations Regoplant or Quantum-grain on the phase flag leaf, increase on 0.23–0.26 t/ha.

For spring barley varieties Parnas on the background without fertilizers are most effective for presowing treatment of seeds is the preparation Regoplan, the increase on 0.15 t/ha, and fertilized background power Radostin and Regioplan increase on 0.11 to 0.15 t/ha.

When spraying plants varieties Parnas found that in the background without fertilization is the most effective mixture of preparation Radostim and Quantum-grain at the tillering stage, as well as individual preparation use Quantum-grain in phase flag leaf, the increase is of 0.26–0.28 t/ha. For fertilized background power is also the most effective is mixture of preparation Radostim and Quantum-grain at the tillering stage, as well the use of the preparation Radostim in phase flag leaf, the increase on 0.25–0.26 t/ha.

It should be noted that spraying plants of spring barley in phase flag leaf preparations Radhostem, Regulant or quantum-grain is more efficient (increase on 0,21–0.26 t/ha for variety Viklik and 0.16–0.28 t/ha for variety Parnas) compared to with spraying at the tillering stage (increase on 0.11–0.19 t/ha for variety Viklik and of 0.12–0.23 t/ha for variety Parnas).

Dual use of the drug Radostim for seed treatment and spraying of plants in the phase of the flag leaf was also more effective than spraying plants at the tillering stage.

The application of mineral fertilizers  $N_{30}P_{30}K_{30}$  increased the grain yield of spring barley varieties Viklik on 0.69 t/ha and varieties of Parnas by 0.59 t/ha and

application of plant growth regulators and microfertilizers on fertilized background power contributed to a further increase in the yield of barley: varieties Viklik on 0.95–0.98 t/ha and variety Parnas on 0.84–0.85 t/ha.

Increase the yield of winter wheat and spring barley on options for use of plant growth regulators and microfertilizers derived primarily due to the increase in the number of productive stems, number of kernels spike and weight of 1000 seeds.

### **Conclusions**

1. When growing varieties Rozkishna mandatory element must be pre-sowing seed treatment and spraying of plants by drug Stimo (increase on 0.29 t/ha or 5 %). When cultivated varieties are Doskonala must use the drug Regoplant for seed treatment (increase on 0.22 t/ha or 4 %), or Deimos in combination with microfertilizers quantum-grain for dual use (increase on 0.28 t/ha or 5 %).

2. The most effective way of increasing the yield of spring barley is the application of mineral fertilizer dose  $N_{30}P_{30}K_{30}$ , increase on 0.59–0.69 t/ha, and application of plant growth regulators and microfertilizer, increase on 0.08–0.31 t/ha. For varieties Viklik must be applied by spraying the plants tank mixture of preparations Regoplant and Quantum-grain at the tillering stage, or preparation Regoplant, Quantum-grain in phase flag leaf (increase on 0.23–0.31 t/ha or 6–10 %), as for varieties Parnas spraying plants tank mixture of preparations Radostim and Quantum-grain at the tillering stage and preparation Radostim or Quantum-grain in phase flag leaf (increase on 0.22–0.28 t/ha or 6–8 %).

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