

**PR-106**  
**NANOPARTICLES OF SOME ELEMENTS DURING THE INITIAL PERIOD OF**  
**SPRING WHEAT**

**Timofeev V. N.**

*Scientific Research Institute of Agriculture for Northern Trans-Ural Region - Branch of Tyumen Scientific Centre of Siberian Branch of the Russian Academy of Sciences, 625501, Russia, Moskovskiy, Tyumen region*

**Abstract.** The use of chemical plant protection products reduces the number of affected plants, but at the same time has a regulatory effect on the culture, leveling the negative impact of which is possible with the use of micronutrients, which also have a difference in the direction of stimulation.1 Reducing the volume of the substance to nanoparticles improves the penetration and delivery of the necessary substances into plants,2 the effect of some drugs is possible by inhibiting processes and phytotoxic properties on plants.3 The positive effect of preparations based on nanoparticles of macro and microelements in the initial period of development of spring wheat was studied. In laboratory studies, the results of positive, neutral and negative effects of the use of drugs containing nanoparticles from 10-40 nm of macro and microelements were obtained. Initially, the positive effect of seed treatment was checked, and then the effect of drugs was checked by treating an already sprouted seed during the day with rudimentary roots and a sprout. The reaction of plants to an overdose was expressed by swelling of the roots, and then lagging growth. When analyzed on day 7, the length of the sprout in the experimental variants ranged from 9 to 15 cm, while an increase was observed for preparations containing Mn, Ca, Mo, Titanium M, biogenic Fe, Boron, Potassium (6-25%), of which the variants with the use of Boron, Potassium with an increase in the mass of the sprout by 6-8% had a significant effect.

**Tabl. 2.** Plant growth on day 7 when processing daily seedlings

№	Option	Total sprout length / normally developed plants, cm	The mass of the sprout in terms of 100 plants, g
4	Mn 3	12,27/13,31	9,73
5	Ca 5	13,59	10,43
7	Biogenic Fe	13,58	9,88
8	Titan M	12,5/13,38	9,63
13	Boron 4	13,74-14,11	9,55
17	Kalium	14,33/15,96	9,62
19	Control	12,74 (+0,9)	9,0 (+0,15)

As a result, the use of nanoparticles of macro and microelements that have shown a positive effect is possible both for pre-sowing seed treatment and during the growing season, but having previously studied the full cycle of vegetation of the crop.

### References

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