EFFECT OF FERTILIZERS ON THE CONTENT OF MINERAL NUTRITION ELEMENTS IN WINTER AND SPRING WHEAT PLANT

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The influence of systematic application of mineral fertilizers, on the background of the after-effect of 30 t / ha of manure, on the content of nutrients in spring wheat plants of “Myronivska Yara” regional variety and winter wheat plants of “Myronivska 61” variety, and on nutrients removal by plants, during cultivation on Meadow-Chernozemic Carbonate Soil, was studied. The obtained results indicate that in the process of plant growth and development the nutrients are absorbed in the quantities necessary for the formation of high yields of winter and spring wheat with, respectively, high quality of wheat grain. This is achieved through the use of fertilizers, the rates of which vary depending on soil and climatic conditions, biological characteristics of wheat nutrition and technology of its cultivation. Systematic application of fertilizers in crop rotation causes changes in the nutrients content in winter and spring wheat plants during the growing season of plants and affects nutrients removal with the harvest. The results of research show, that the highest content of total nitrogen, phosphorus and potassium in winter wheat plants was observed in the variant, where 1.5 rate of mineral fertilizers was applied with the background of 30 t / ha of manure, in the tillering phase and was 4.86; 2.17; 3.48 %, respectively, what is almost 2 times higher, than the control. The lowest nitrogen content was observed in the variant, where only mineral fertilizers were applied. During the growing season, nutrients content in all variants decreased,

because during this period no more nutrients come from the soil, and there is a partial leaching of nutrients from wheat plants by precipitation, which is abundant in this period.

The same pattern was observed in plants of spring wheat. The maximum nutrients content was recorded in all variants in the phase of spring tillering, and also was recorded significant reduction in their adsorption from the soil and using by plants during the growing season. The content of total nitrogen in spring wheat plants in the tillering phase fluctuated in fertilized variants in the range of 2.21-2.51 %, compared with the control – 2.10 %; phosphorus – in the range of 1.20-1.47 %, compared with the content on the control – 1.04 %; potassium – 1.88-3.08 %, in the control, respectively – 1.68 %. As spring wheat plants grew, the content of total nitrogen in the vegetative organs decreased, what is due to its transition to the generative organs. As the nitrogen content in wheat grain increases, its content in the vegetative organs decreases. The results indicate, that the intensive supply of phosphorus to spring wheat plants is observed from the phase of spring tillering to the flowering phase, then the content of total phosphorus in spring wheat plants decreases due to the formation of generative organs of wheat plants. The supply of potassium to spring wheat plants in the phase of full maturity also decreases. Because during this period no more nutrients come from the soil, and there is a partial leaching of potassium from wheat plants.

As for the removal of nutrients from the harvest of winter and spring wheat, the most removed is nitrogen and potassium, less – phosphorus. The obtained results indicate, that in the fertilized variants the removal of the main nutrients by winter wheat was 121.7–210.9 kg / ha of nitrogen, 74.2–122.1 kg / ha of phosphorus, and 87.5–157.9 kg / ha of potassium, with the corresponding value of NPK removal in the control – 86.3, 48.2, 57.8 kg / ha. The removal of the main nutrients by spring wheat plants in the fertilized variants ranged for nitrogen from 68.5 to 119.1 kg / ha, for phosphorus – from 39.2 to 66.4 kg / ha, and for potassium from 47.2 to 85.4 kg / ha. The removal of nitrogen, phosphorus and potassium in the control was respectively – 46.6, 26.5, 32.8 kg / ha. One ton of spring wheat grain with the

corresponding by-products amount in the control variant remove from the soil 22.6 kg of nitrogen, 12.8 kg of phosphorus, and 15.9 kg of potassium. In turn, this indicator is closely correlated with the grain yield of winter and spring wheat: N (r = + 0.96), P_2O_5 (r = + 0.98), K_2O (r = + 0.96) – for winter wheat, N (r = + 0.99), P_2O_5 (r = + 0.97), K_2O (r = + 0.98) – for spring wheat.