**Title**: The effect of N fertilizer placement and timing on uptake of nitrogen, phosphorus and potassium by spring wheat (Triticum aestivum, Cv. Spectrum) at different phenological stages on leached chernozem.

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## Abstract

A study was carried out to determine the effect of N fertilizer placement and timing on accumulations of nitrogen, phosphorus and potassium in the aboveground wheat biomass at Krasnodar Agricultural Research Institute in Krasnodar County (45°5'N, 38°50'E, >400 m elev.) in Eastern Europe. The experiment was designed as Randomized Complete Block with four replicates, which were subjected to N fertilizer treatments. Spring wheat was grown under rainfed conditions with six treatments. In both seasons, results shows that T4 plots recorded the highest N accumulations (177.4 and 156.6 kg ha-1) in the plant biomass during the early growth stages of wheat (tillering and heading). In the post-heading period, highest N build-ups switched to T3 plots where a peak of 271.4 and 258.6 kg ha-1 for the first and second seasons, respectively were attained at mature stage. Single split application of N into N45P90K60 applied as incorporated basal fertilizers before planting and N45 applied at tillering stage by broadcasting method, supported comparatively higher build-ups of nitrogen, phosphorus and potassium in the plant biomass in almost all the phenological stages of spring wheat in both years of the study. Triple split applications of N fertilizer in the T4 plots did not significantly improve nutrient accumulations in wheat tops compared with those in T2 plots (184.2 and 186.0 kg ha-1) where pre-planting single basal N90P90K60 was applied. Split application of N fertilizers in early stages of growth and development of spring wheat, which coincides with the onset of the most rapid phase of biomass accumulations dramatically amplifies the content of nitrogen, phosphorus and potassium in the aboveground plant parts.