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# Effect of nitrogen rate on nitrate concentration in vegetative parts of wheat

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Article Full-text available**EFFECT OF NITROGEN RATE ON NITRATE CONCENTRATION IN VEGETATIVE PARTS OF WHEAT**


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The goal of this paper is to choose wheat genotypes which are capable to absorb nitrogen and use it from the soil more efficiently, and at the same time to accumulate nitrates in the least possible amount. Genotypes originated from SCG, Slovakia and Switzerland. The experiment was conducted using the randomized block design with two replications and three rates of N fertilizer (0-control, 75,100), at the experiment field of the Institute of Field and Vegetable Crops, Novi Sad. The nitrate concentration, at the heading stage was determined spectrophotometrically ( $\text{mgNO}_3\text{-/g dry matter}$ ). ANOVA for nitrate concentration showed highly significant differences between all sources of variability. This trait was mostly influenced by the rate of the fertilizer (78.5%), genotype (17.4%), and in the smallest amount by the genotype/rate interaction (4.1%). Petrana, originated from Slovakia, is significantly the most efficient genotype in absorption of nitrate (634), while Pobeda (1448) was the most efficient of our genotypes. These genotypes could be used as parents in crossings, with regard to nitrate concentration. Nevesinjka was the genotype with the highest nitrate concentration (2006). The nitrate concentration was the lowest at the control rate, while it was the highest at the rate of 100. These results should be used in breeding of high yielding wheat cultivars.

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Hotel "Palisad" (Zlatibor), 16-20. maja 2006.

## UTICAJ DOZE AZOTA NA SADRŽAJ NITRATA U VEGETATIVNIM DELOVIMA PŠENICE

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Cilj ovog rada je da se odaberu genotipovi pšenice, koji su sposobni da usvoje i koriste azot iz zemljišta što efikasnije i da pri tome nakupljaju što manje nitrata. Genotipovi su bili poreklom iz SCG, Slovačke i Švajcarske. Ogled je postavljen po slučajnom blok sistemu u 2 ponavljanja, sa tri doze N đubrenja (0-kontrola, 75, 100), na oglednom polju Naučnog instituta za ratarstvo i povrtarstvo u Novom Sadu. Sadržaj nitrata u fazi klasanja određen je fotometrijski ( $\mu\text{gNO}_3/\text{g}$  suve materije). ANOVA za sadržaj nitrata u fazi klasanja je pokazala visoko značajne razlike za sve izvore varijacije. Ovo svojstvo u najvećoj meri uslovljeno dozom đubriva (78.5%), genotipom (17.4%), a u najmanjoj meri interakcijom genotip/doza (4.1%). Značajno najefikasniji genotip u usvajanju nitrata je Petrana, (634) poreklom iz Slovačke, a od naših Pobeda (1448). Ovi genotipovi bi se mogli koristiti kao roditelji u ukrštanjima, obzirom na sadržaj nitrata. Genotip sa najvećim sadržajem nitrata bila je Nevesinjka (2006). Sadržaj nitrata bio je najniži kod kontrole, a najveći pri dozi od 100. Rezultati bi trebalo da posluže u cilju oplemenjivanja novih visokoprinosnih sorti pšenice.

## EFFECT OF NITROGEN RATE ON NITRATE CONCENTRATION IN VEGETATIVE PARTS OF WHEAT

The goal of this paper is to choose wheat genotypes which are capable to absorb nitrogen and use it from the soil more efficiently, and at the same time to accumulate nitrates in the least possible amount. Genotypes originated from SCG, Slovakia and Switzerland. The experiment was conducted using the randomized block design with two replications and three rates of N fertilizer (0-control, 75,100), at the experiment field of the Institute of Field and Vegetable Crops, Novi Sad. The nitrate concentration, at the heading stage was determined spectrophotometrically ( $\mu\text{gNO}_3/\text{g}$  dry matter). ANOVA for nitrate concentration showed highly significant differences between all sources of variability. This trait was mostly influenced by the rate of the fertilizer (78.5%), genotype (17.4%), and in the smallest amount by the genotype/rate interaction (4.1%). Petrana, originated from Slovakia, is significantly the most efficient genotype in absorption of nitrate (634), while Pobeda (1448) was the most efficient of our genotypes. These genotypes could be used as parents in crossings, with regard to nitrate concentration. Nevesinjka was the genotype with the highest nitrate concentration (2006). The nitrate concentration was the lowest at the control rate, while it was the highest at the rate of 100. These results should be used in breeding of high yielding wheat cultivars.

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