

The effect of year and different agricultural measures on the yield and quality of winter wheat grain

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The effect of year and different soil tillage (CT = conventional with ploughing to 0.22 m vs. RT = reduced to 0.1 m) and different intensity of plant nutrition and protection on the yield and grain quality of winter wheat grown after peas (2001-03) and after spring barley (2003-05) was studied in the field experiments, in Prague-Ruzynì, beet production area, altitude 340 m, annual precipitation 472 mm, annual average temp. 7,9 °C, Orthic Luvisol. Intensity of cultivation : CTI and RTI: lower intensity of nitrogen fertilization (100 kg N.ha⁻¹, 2005 = 110 kg N.ha⁻¹) in 3 doses, without fungicides and growth regulator. CTII and RTII: higher intensity of nitrogen fertilization (150 kg N.ha⁻¹, 2005 = 160 kg N.ha⁻¹) in 3 doses, with 2 fungicides and growth regulator. In years 2002 - 2003 the unfavourable course of winter and above all very warm and dry month June caused low average grain yields (4,9 t.ha⁻¹) in comparison year 2002 (8,3 t.ha⁻¹), year 2004 (9,3 t.ha⁻¹), year 2005 (7,5 t.ha⁻¹) of the cultivars. The decisive, for grain yield, was not at this site damage of plants during winter freezing period but their reaction to low soil moisture and high air temperature in month June at the flowering and grain filling period, over 30 °C (in June - 7 days with tropical temperatures). The unfavourable weather influenced mostly short stalk cultivars Rapsodia, Sarka, Bill and Clever, drying of leaf area began soon after the phase of flowering. On the contrary, cultivars Samanta and Ebi with longer stalk attained the highest yields. The length of stalk was only one of many factors which could influence tolerance of cultivars to stress of drought and high temperatures. The results of four year trials (2001-2005) obtained from field experiments in Praha - Ruzynì with winter wheat showed that in years 2002 and 2004 higher yields were achieved at most cultivars at reduced soil tillage than in ploughing. In the year 2003 there were no substantial differences of grain yield between reduced soil tillage and ploughing nor among intensities of plant nutrition and protection. In both systems of soil tillage higher grain yields were observed at higher intensity of plant nutrition and protection. The lower grain yields after reduced tillage in the year 2005 were incurred, among others problems, by great quantity of postharvest residues of spring barley (forecrop). The intensity of plant nutrition and protection had bigger influence on quality of grains of winter wheat than soil tillage.

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