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Winter wheat yield and yield components as affected by soil tillage systems

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Abstract: Eight different soil tillage systems (TS) for winter wheat after soybean crop production were compared at the chernozem soil type in Croatian Baranya region in a 4-year period (2001/2002, 2002/2003, 2003/2004, 2004/2005). Tillage systems were: CT) conventional tillage, based on autumn mouldboard ploughing; DH) autumn disc harrowing; CH) autumn disc harrowing + chiselling; NT) No-tillage; CSDW) DH for winter wheat, alternated with CT for previous crop soybean; CWDS) CT for wheat, DH for soybean; CsNw) NT for wheat, CT for soybean; and CwNs) CT for wheat, NT for soybean. The dry conditions experienced in 2002/2003 decreased at half winter wheat grain yield at treatments NT and CwNs. The most stable grain yields were obtained by CT, CH, and CSDW in the third of 4 experimental years. CsNw, DH and CWDS did not result in significant crop yield reduction when compared to CT. There was no striking regularity regarding applied TS at the grain yield components. The strongest effects on yield and yield components for winter wheat were due to the climate conditions. TS had a significant effect on the grain yield and crop population in the earing stage in all 4 experimental years. The biggest difference in stem height was determined between CWDS and CsNw. Mass of plant, number of grains per spike, and hectolitre mass were greater under CT than under other TS. Coefficient of tillering and mass of 1000 grains had approximate values for all applied TS. In conclusion, CH, CSDW, and CsNw produced similar or slightly better quality properties than CT and these systems could be presented as an even-handed replacement for soil tillage.

Key words: Grain yield component, reduced soil tillage, winter wheat

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