

CROP RESIDUES MANAGEMENT AS ONE OF THE MAIN FACTORS OF CONSERVATION AGRICULTURE

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Abstract

Crop remains represent not only valuable resource of many organic compounds in soil, but also represent medium for different and very complex aspects of soil/crop/environment relations. Today exists different approach to crop residue management: Historical (traditional) aspect which presume that crop residues represent all useless agricultural plant waste that disturbs agricultural areas and prevents the smooth implementation of agricultural field works and Contemporary (modern) aspect with definition that crop residues represent all agricultural high-value plant material, with potential economic and agroecological value.

Nowadays, crop residues are one of the most important factors of Conservation Agriculture (CA) as measure of adaptation to Climate change, with many benefits for the both, soil and environment. CA is based on three basic principles: a) minimal soil disturbance, b) permanent soil surface cover (with crop residues) and c) crop diversification (crop rotation). All three basic principles are interconnected by crop residues on different ways and levels, as it: way and intensity of soil tillage, mass and type of crop residue, type of crops, biological yields, harvesting quality, activity of soil

biology, soil chemical and physical quality, agroecological conditions, etc. The field experiment with different conservation tillage systems, different fertilization and soil conditioners, and different crops in rotation was conducted in 2021 in Čačinci and Križevci. Tillage treatments were: ST (plowing), CTD (conservation deep, loosening up to 30 cm with a minimum of 30% of crop residues on the surface) and CTS (conservation shallow, tillage up to 10 cm with a minimum 50% of crop residues on the surface). Method for estimation of residue cover (in %) was line-transect method, and it was performed after all soil tillage operations and after sowing next crop. After first three years of research (maize was grown in first, soybean in second and winter wheat in third year) percentage of crop residue was higher than is expected, but in expected distribution. Higher soil covering was in Križevci than in Čačinci and according treatments as follows: CTS>CTD>ST. Basic paradigm in CA, related to crop residues, are in facts that CA is more efficient as higher amount (percentage) of soil surface is covered by crop residues.

Key words: crop residue management, conservation agriculture, climate change, residues estimation

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