

THE PARTICULARITIES OF ROOT SYSTEM DEVELOPMENT IN WINTER WHEAT GROWN ON CARBONATE CHERNOZEM

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Abstract

Detailed information regarding the growth and development of crops root system, towards the soil agrophysical properties under various technological systems are necessary, as they allow to highlight the positive aspects of the applied system, expressed by agrophysics modeling, but allow to highlight the causes, risks that limit the development of root system. This will lead to optimal technological interventions in agroecosystem.

The paper exposes the particularities of the winter wheat root system development in a long-term crop rotation with 5 fields, grown on carbonate chernozem in conventional (plowing) and conservative (no-tillage) systems. The research took place at the Didactic Station "Chetrosu" of the State Agrarian University of Moldova, located in the South-East side of the Central Moldavian Plateau. There were established the regularities of roots' architectural spreading dependence of soil genetic characteristics, carbonate chernozem agrophysical parameters and of some technological elements applied to winter wheat cultivation. Data shows a double number of winter wheat agrocoenoses roots on No-tillage variant, compared with plowing variant, determined on 0.5 m² of the soil profile section. The research of soil moisture on 1.2 m profile confirm the ability of conservation soil tillage system to keep water in the soil. The soil compaction found in penetration resistance and bulk density data, restricted water consumption in flowering and ripening phases, which affected the winter wheat productivity, being similar on both researched variants (No-tillage and plowing). It's required detailed monitoring of the root system development, depending on the stage of crop and it's rate on yield formation.

Key words: agroecosystem, carbonate chernozem, winter wheat, root system.
