The Influence of Soil Tillage System and Crop Rotation on Variable Characteristic of Soil and Wheat Production

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Abstract

The research have been conducted during 4 years on a vertic preluvosol, during a field crop rotation, having the following crop structure: autumn wheat (undersewn trefoil)- clover- autumn wheat- maize. The soil tillage systems have been as follows: v1- conventional soil tillage based on ploughing + disc harrow; v2-paraplow and rotary harrow; v3-tillage with chisel and rotary harrow; v4-rotary harrow.

The soil tillage systems associated with a 4 year crop rotation had an impact on the physical and chemical characteristics of the vertic preluvosol, with different results from one year to the other. Consequently, the humus content went up by 0.17 units (the aslope is about 16-18%). The high value of the humus content is being explained by the usage of the conservative systems which hindered the soil erosion and favoured the vegetal remnants to remain on the soil in a proportion of 45 to 63%. As far as the ploughing variant is concerned, in the same crop structure, the humus content went down by 3.22%.

The level of the wheat production remains practically equal, the difference of 0.75 up to 0.94 q/ha, except for the variant 2 and 3 are insignificant, the only variant in which a difference of 1.13 q/ha is obtained, statistically assessed as negative remains the variant in which the tillage has been made with rotary harrow.

The soil tillage system based on paraplow, chisel and rotary harrow influence in various ways the soil characteristics, from one year to another, depending on the plant which is being cultivated.

Key words: soil tillage, crop rotation, wheat production

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