

## *Annotation*

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### *Influence of the basic soil tillage methods and sideline products of the predecessor on the bulk density in a crop rotation*

*One of the main indicators of the physical condition of the plowing layer which is regulated by the basic tillage is the bulk density. The main factors that lead to compaction are atmospheric precipitates, movement of tillage sowing and harvesting machinery in the field, technical equipment for growing and harvesting of crops and transport, as well as negative balance of organic matter. Under the influence of these factors the soil compaction is limited by the depth of moisture penetration and the root system which consequently adversely affects the growth and development of crops.*

*In this regard, the purpose of our research was to determine the impact of basic tillage methods and sideline products of the predecessor on the bulk density and crop yield under conditions of Forest-Steppe of Ukraine.*

*Studies on the impact of the basic tillage methods and location of main sideline products of the predecessor in the rotation were carried out followed by alternating crops – winter wheat – maize – barley – 10.8 t/ ha of organic mass of the predecessor and  $N_{77}R_{60}K_{70}$  kg/ ha of the crop rotation area.*

*Placement of post-harvest residues in 0-10 cm of the arable layer has a positive effect on the physical condition of the soil, increases its water capacity, water permeability and aeration. Incorporating plant residues into the lower part of the arable layer to the depth of 10-30 cm their impact on the physical condition of the soil is hardly noticeable as compared with their localization in 0-10 cm layer.*

*It was found that the impact of a method of the basic soil cultivation in particular on the distribution and localization of sideline products of the predecessor is due to the application of tools, particularly in plowing and subsurface soil tillage. Volumes of supplies and localization of layer by layer organic matter of the predecessor determine preservation of the optimal agrophysical properties of the soil.*

***Key words:** bulk density, gray forest soil, basic soil tillage, predecessor, crop rotation, sideline products, maize for grain, summer barley.*