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**DYNAMICS OF CALCIUM CARBANATES AND SOIL ACIDITY AS  
EFFECTED BY DIFFERENT TILLAGE AND FERTILIZERS**

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*Abstract.* The paper was dedicated to the influence of different technologies of crops and fertilization on the soil reaction ( $\text{pH}_{\text{KCl}}$ ) and depth of carbonates in typical chernozem. It is established, that the using of V-Blade tillage reduce acidity caused soil solution and intensively raising carbonates during the growing season, as compared to plowing. The fertilizer application is increased a soil acidification and reducing line reaction of carbonates, particularly for the use of green manure and straw on a background of mineral fertilizers, where they fell to 80-95 cm by V-Blade tillage. On the stationary plots without boiling carbonate fertilizer line is closest to the surface of shallow cultivation. In virgin lands carbonates are situated more deeply, than in stationary plots without fertilizers and their seasonal dynamics had the same pattern as the culture agrocenosis.

**Topicality.** Significant impact on physical and chemical properties of the soil has a mode of free carbonates. There are primary carbonates contained in rruntoutvoryuyuchyh rocks and secondary accumulated in soil profiles of carbonate in the soil. Carbonates lead to slightly alkaline reaction medium, connecting the mobile forms of phosphorus and other elements indicate the drying of the soil profile. Participation carbonates in physical-chemical, chemical and biological transformations in soils depends on the genetic characteristics of the soil and leads to a certain extent, the capacity of biological cycle of calcium and carbon dioxide [1].

The depth of carbonates in the soil is an important indicator not only because it affects the pH, but that has to do with ostrukturenosti soil, the formation of complexes with organic matter. Carbonates influence the processes of humification and consolidation of humic substances, composition and amount of exchange cations in the soil, availability of micronutrients. Therefore, it is important to study the

occurrence of free carbonates in the profile of a typical black soil for long-term use of resource saving technologies of agricultural products compared with traditional and their dynamics during the growing season. Studies have shown that the dynamics of carbonates in soil profiles significantly affect hydro conditions during the growing season crops and tillage systems and fertilization.

**The aim of research** was to study the impact of resource saving technologies of cultivation of crops and minimizing tillage farming biologization the reaction of the soil environment and the depth of the black soil carbonates typical serednosuhlynkovoho Right-Bank Forest.

**Results.** The results showed that fertilization contributed to a slight acidification of soil. Bezpolytsevi exchange cultivation have increased acidity of the soil, as compared to plowing, especially on shallow soil bezpolytsevoho where the top layer of soil  $pH_{KCl}$  ponyzhuvavsya by 0.26 units. At the option of using traditional organic-mineral fertilizer system pH salt extraction decreased in the layer 0-15 cm by 0.24 units for plowing and 0,27-0,33 per unit bezpolytsevyh cultivation, and where as organic fertilizer used straw during decomposition which is funded many acidic foods acidification of soil environment was more significant, especially for plowing. During the growing season was marked by such general dynamics reaction of soil environment from the beginning of vegetation until mid-summer, the gradual decrease of the exchange acidity, followed by an increase to the end of the growing season. Fertilization and tillage system influences the dynamics of carbonates in the upper part of the profile of a typical black soil. Without boiling carbonate fertilizer line is closest to the surface bezpolytsevoho shallow cultivation. Our research has shown that in a systematic implementation bezpolytsevyh soil depth varies  $CaCO_3$  profile of a typical black soil. For resource saving technologies was marked improvement of the occurrence of free carbonates, especially bezpolytsevoho shallow cultivation. This affects the boiling line carbonates and they rose to 0-15 cm layer in th driest growing season to 15 cm in version bezpolytsevoho shallow soil without fertilizer. In the layer 10-15 cm noticeable faint crackling, and with a depth of 20 cm was rapid boiling carbonates. The zone of increased mobility of carbonates

was 30-60 cm. For this cultivation on all variants of fertilization boiling carbonates line was much closer to the soil surface than other cultivation. There was intense evaporation of capillary moisture in the soil in the warm season and dissolved calcium carbonate moved up to the surface. This was also due to the smallest density horizons than 0-30 cm layer. For riznohlybynnoho bezpolytsevoho systematic cultivation of boiling 10% HCl ies happened to a depth of 15-20 cm from the surface of black soil. Maximum carbonates concentrated in the thick of 30-70 cm. In terms of the systematic execution of plowing line boiling carbonates rose only 25 cm, but mostly ranged from 50-80 cm from the soil surface. In terms of plowing reinforced soil drought conditions conducive to sustainable forms of carbonates formed. In embodiments of the application of organic and physiologically acidic fertilizers that cause slight acidification of soil solution in the treated layer was lowering the line bedding carbonates compared to controls. This particularly affected the embodiment of straw and green manure on a background of mineral fertilizers due pidkyslyuyuchiy action newly formed organic matter. Carbonates sank to a depth of 95 cm for polytsevoyi plowing. The presence on the field surface layer of mulch also helped to reduce the intensity of warm soil strata in the warm season. In perelozhi bulk carbonate contained in the layer of 50-60 cm. Seasonal dynamics has the same pattern as that of the field areas, but due to dense shelter soil surface plants and saturation of the upper layer of plant roots and root remnants, evaporation occurs in fewer and raising line carbonates occurrence is low.

**Conclusions.** The results showed that the use bezpolytsevyyh cultivation led to intensive migration forms carbonate raising the profile of a typical black soil during the growing season, as compared to plowing and increased exchange acidity. Fertilizer contributed to a slight acidification of soil and reduce line boiling carbonates, particularly for the use of green manure and straw on a background of mineral fertilizers, where they fell to 80-95 cm by plowing polytsevoyi. In perelozhi carbonates zalyahaly more deeply than in variants without fertilization, and their seasonal dynamics had the same pattern as the culture agrocenosis, although manifested less.