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Reclamative efficiency of defecate on organic component of typical black earth

Objective. To study the effect of meliorant on changes in the content of total humus and its fractions in a weakly acid chernozem typical. Methods. Physico-chemical and agrochemical analysis of soil and plant samples and phenological observations on growth and development of plants have been carried out. Results The use of a defecate in the same norm of CaCO3, calculated on the basis of the hydrolytic acidity of the soil (4.9 t / ha in physical weight), combined with mineral fertilizers (N90P60K90) in the autumn under discarding of the stubble with subsequent stacking, increased the total humus content to 3.5% , Total carbon - up to 2.02% for the content of humic acids 0.49% of the weight of soil for the indicators in the control variants of the experiment: 3.3%; 1.91; 0.49% respectively. Conclusions The introduction of defecet obtained by the new technology contributes to the restoration of the processes of melioration and humification of organic matter in a weakly acid chernozem typical.

Key words: humus, liming, organic matter, chemical reclamation, chernozem typical.

In conditions of the Central Forest-steppe of Ukraine the soils with low and average content of general humus prevail. Soils with high and high content of humus have almost no. Regarding the slightly acidic chernozem typical of the extracted, the content of total humus is low - 2.5 - 3%. Previous studies have established the significant effect of liming on the humus soil. The introduction of calcium amylorants prevents the loss of humus in the lower layers, provides more favorable conditions for the decomposition of plant residues and their humification, which improves the quality of humus and slows down the process of its mineralization. It has been established that lime and calcium metabolism contribute to the preservation of humus substances in the form of calcium humates and other more complex organo-mineral compounds. An example can be highly humus sod-carbonate soils, which formed on carbonate moraine in the zone of distribution of podzolic soils. Sometimes the soils rich in lime are of little humus; Examples are sulfur, where, due to the intensive activity of microorganisms, not only organic residues but also humus substances are minerals [3]. What is important is the result, which uzhodzhuyet- be the theoretical justification for the impact of calcium carbonate mineralization and humification processes of biomass it experimental proof positive of its impact on the processes of decomposition, governors mousse-accumulation in soils of arable land. It has been established that calcium carbonate in acidic medium contributes to accelerating the humification and mineralization of the crude organic mass, which dramatically slows down the process of mineralization of humus. And even in the acute shortage of fresh organic matter, lime contributes to a 1.4-fold decrease in the rate of humus mineralization [5, 6]. Lime sod-podzolic soils (systematic application of defecet, calcium carbonate) reduced the rate of humus mineralization. Adding defekatu manure into the soil under sugar beets helps pidvyschen- nude general contents of humus in the plow layer of soil at 0.58% and a positive impact on the overall on- kopychennya humus with an additional intake of organic matter from defe- executioner (12 - 15%). At the same time, the qualitative composition of humus is optimized. As part of humic acid, an increase in calcium humates and a decrease in the fractions of mobile humic and fulvic acids occurs as the ratio of carbonic humic acids to carbon of fulvic acids increases [7, 8].

1. Influence of introduction of defecate received on the basis of new technology on the content of total humus in low acidic chernozem typical discharged non-humus (average for 2011 - 2013),%

The purpose of the research is to study the effect of melanorand (defecate obtained by the new technology - dry, purified from the dwelling) on changes in the content of the total humus and its fractions in weakly acidic chernozem to a typical low humus release. Materials and methods of research. The research was carried out during 2011 - 2013 in the Uladovo-Lyulinetsky Research and Selection Station of the Institute of Bioenergetic Cultivars and Sugar Beet NAN, located in the conditions of the Central Forest-Steppe of Ukraine. Field experiments were carried out in grain-bury crop rotation on a weakly acid black soil for a typical excavation. The area of the land plot is 100 m2, the registration area is 50 m2. The agrochemical characteristics of the arable soil layer are as follows: humus - 3.3%, total nitrogen - 0.28%, mobile phosphorus forms - 160.3 mg / kg, exchangeable potassium - 80.4 mg / kg soil, pNsol - 5.3, Nhydr - 3.96 mg equivalents per 100 g of soil. In order to determine the doses of melionate, the content in the dry defecation was taken into account: CaCO3 + MgCO3 - 84.5%; N 0.6 - 0.8%; P2O5 0.7-0.9%; K2O - 0.7 - 1.0%; Organic substances - 13 - 15%; Humidity - 3,2%. The meliorant was introduced in the autumn under a stalk distillation with subsequent darting in doses calculated for hydrolytic acidity and an indicator of soil pH. For physico-chemical and agrochemical analogous liziv conducted sampling of soil and plant phenological observations made and the growth and development of plants according to CCW Research metody- tall sugar beet [6]. Research results. The basis for cal- dyuchosti total content of soil is humus, the character of accumulation is determined by the level of intensification of grain and beet rotation. Humus - the main indicator of potential soil fertility, it accumulates solar energy-hiyu and a source of support for the biochemical processes that cause rruntotvorennya. In our research on the action of de fekatu received the new technology (dry cleaned of impurities) and introduced in autumn after harvesting winter wheat under stubble and then disking pryoryuvan- tion for weakly acidic black soil humus typical vyluhuvanomu, set a positive impact on its organic complexity Niki of the investigated soil (table 1, rice). Yes, without option of including meliorants and fertilizers, influenced only si- vozminnoho factor humus content remained on an upward level and amounted to 3.3%, as in making a complete fertilizer.

Fig. Influence of defecet obtained by the new technology on the content of total humus in weakly acidic chernozem by the typical extracted non-humus (0-30 cm),%

For the use of defecet in the same norm by the index of hydrolytic acidity (Ng) (4.9 t / ha in fp.) And in one norm for pNsol (3.7 t / ha in fp.), This indicator was 3, 25 and 3.30% respectively. Due to the introduction of methylorand with mineral fertilizers in these norms (N90P60K60), the humus content increased to 3.50 and 3.40%, which is by 0.20 and 0.10% more compared to the control variant. The maximum increase in the total humus content of 3.50% was determined for the application of reclamation in one norm of CaCO3, calculated for Ng of the studied soil (4.9 t / ha in fp.), In combination with full mineral fertilizers (N90P60K90). By 0.20% is greater than the control variant. The explanation for this is that, under the action of a nutrient, the microbiological state of the soil is restored and the gumification of the raw organic mass is accumulated and not mineralized in the soil for a long time. It has been established by studies that under the action of defecet in weakly acid black soil, a typical low humus leaching tendency is observed to increase the total carbon, in particular, for introducing a melanorand in the same norm of CaCO3 for Ng (4.9 t / ha in fp.), In combination with Mineral fertilizers (N90P60K90). The index of total carbon content in this variant is 2.02% (Table 2). The use of reclamation in 1.0 norm of CaCO3, calculated on the basis of the indicator of pNsol (3.7 t / ha in fp.) Separately and with the mineral fertilizer (N90P60K90), did not contribute to the increase of the total carbon content in the soil under study, was At the level of control and variant with mineral fertilizers - 1.91 and 1.97%. The introduction of defecet has positively influenced the stability of the humus group. Chemical melioration contributed to the growth of humic acid fractions in the humus and to the reduction of the fraction of fulvic acids. The IGC / SFC ratio increased from 1.58 in the non-fertilized version to 1.64-1.67 in the variants where defectate was added. The introduction of defecet in the normal, calculated on the hydrolytic acidity, had a more stable effect on the composition of the humus than the removal of the norms of the reclamation calculated on the basis of the pNsol indicator. The use of mineral fertilizers without reclamation measures reduced the humus content. In the humus, the fraction of fulvic acids grew, which led to the formation of a humate-fulvant type of rubber with a CQC / SFC ratio equal to 1.18, which was, compared to the non-fertilizer variant, lower by 0.40. With the combined introduction of mineral fertilizers and defecet, the negative effect of fertilizers on the group composition of humus decreased. The CHA / SQ ratio in the indicated variants was 1.33-1.36, which was 0.22-0.25 lower than in the control version and 0.15-

0.18 higher than that for mineral fertilizers In the normal N90P60K90. Consequently, the introduction of defecet contributed to the formation of more stable humus substances with an increase in the proportion of humic acids in their composition.

2. Influence of defecet obtained on the basis of the new technology introduced for plowing on the carbon content of the main groups of humus in weakly acidic chernozem, typical of the extracted non-humus in the layer 0-30 cm (average for 2011-2013),% of the earth's mass

Conclusions

According to the results of research carried out in 2011-2013 under the conditions of the Central Forest-Steppe of Ukraine, it was established that the introduction of defecet obtained in the grain crop rotation using the new technology (dry, purified from impurities) contributes to the restoration of the processes of mineralization and humification of organic matter in weakly acid chernozem A typical low-humus extracted. For the application of reclamation in a single norm, calculated on the basis of the index of hydrolytic acidity of the soil (4.9 t / ha in physical weight), in combination with mineral fertilizers (N90P60K90) in the autumn, the discarding of stubble with subsequent plowing the total humus content in the soil increased to 3.5% , Which is by 0.2% more compared to the control variant. In the impregnated soil, the total carbon content increased to 1.97 - 2.02%. With the introduction of one norm of ameliorant (4.9 t / ha in f.v.) with mineral fertilizers (N90P60K90), the technology resulted in the content of total carbon increased to 2.02%, which is 0.11% higher than in the control version. The content of humic acids increased to 0.50 - 0.54% of the soil mass, and the ratio of CFC / SFC was 1.64-1.67.

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