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INFLUENCE OF SURFACE IMPROVEMENT ON PRODUCTIVITY AND ACCUMULATION OF ROOT MASS OF DIFFERENT AGE PHYTOCENOSES

The aim of our research is study the peculiarities of surface improvement on productivity and accumulation of root mass of different age grassland. Experimental work was conducted at the Institute of Agriculture of Carpathian Region of NAAS in conditions of long-term stationary experiment. The old sown agrophytochenosis was grassing in 2001 with grass mixture such structure: ryegrass perennial, red fescue, timothy meadow, clover creeping. In 1974 the long-term sward was grassing with cereal grass mixture: ryegrass perennial, timothy meadow, red fescue. For many years the distribution of nitrogen fertilizers and their impact on productivity of different age grasslands were studied. We are currently studying the following doses of nitrogen on the background of $P_{60}K_{90}$: $N_{60(40+10+10)}$; $N_{60(20+20+20)}$; $N_{60(0+20+40)}$ on old grasses and $N_{90(40+30+20)}$; $N_{90(30+30+30)}$; $N_{90(0\ 40+50)}$ for a long time.

The lowest yield of different-aged meadow agrophytocenoses was noted in variants without fertilization – 3,25; 3,95 t/ha of hay. With the use of phosphoric-potassium fertilizers ($P_{60}K_{90}$), the productivity of swards increased from 0,79 to 1,08 t/ha of dry weight compared to control. On a long-term grassland for the regular distribution of nitrogen fertilizer at a dose of $N_{90(30+30+30)}$ on the background of $P_{60}K_{90}$ fertilizers yield increased to 10,43 t/ha. With the exception of the early spring feeding $N_{90(0+40+50)}$, the productivity decreased to 10,12 t/ha of hay. The same regularity was preserved also in the old sown agrophytocenosis with the application of slightly lower doses of nitrogen (N_{60}).

Feeding of old sown sward herb with nitrogen fertilizer at dose of N_{60} (in N_{20} during the first three cycles of mowing) contributed to an increase in dry mass of roots up to 18,1 t/ha, respectively the ratio of above-ground mass to the underground one was 1:2,1. For uniform distribution of nitrogen on long-term herbage in layer of soil 0–20 cm of dry mass of roots accumulated up to 20,6 t/ha, which is explained by formation of solid turf during many years of use.

In the different-aged grass stands, the highest compaction density was found on the control (without fertilizers) – 1,23–1,13 g/cm³, respectively the porosity of soil decreased and amounted to 51,0–53,2 %.