

PECULIARITIES OF GROWTH AND DEVELOPMENT OF ALFALFA-GRASSES MIXTURES DEPENDING ON SPECIES COMPOSITION AND FERTILIZING

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Abstract. *The results of research on the influence of grass species composition, fertilizer level, and Fumar growth stimulator on plant density and botanical composition are presented.*

The experimental part of the work was performed in the scientific laboratories of the Department of Forage Production, Land Reclamation and Meteorology in the production unit of the National University of Life and Environmental Sciences of Ukraine "Agronomic Research Station". The territory of the research station is located in the Right-Bank Forest-Steppe and is a part of Bila Tserkva agro-soil district. The experimental plots were laid on typical low-humus chernozems, coarse-grained light loam in terms of mechanical composition, which are characterized by a high content of gross and mobile forms of nutrients. The climate of the region is characterized by unstable humidity and moderate temperatures. The average annual air temperature is 6-8 ° C. The annual amount of precipitation reaches 562 mm, during the growing season - 354-394 mm (63-70% of the annual norm), which fall unevenly throughout the year.

The purpose of the study is to establish patterns of high productivity formation of sown perennial grasses with alfalfa using various grasses, fertilizers, and growth stimulant Fumar on typical low-humus chernozems of the Right-Bank Forest-Steppe.

According to the obtained data about the density of the studied grass stands on average for 2014–2016, the total number of shoots on alfalfa, alfalfa-grass, and grass stands fluctuated in the range of 686–1250 pieces/m²). Alfalfa-grass and grasses were characterized by a higher density of 372–541 shoots per 1 m² in comparison with single-species sowing of alfalfa. According to the total number of shoots per 1 m², a

large difference between the options for fertilizing alfalfa and grasses was not observed according to the averaged data. However, these grasses were slightly denser against the background of $N_{60}P_{60}K_{90}$ + growth stimulator Fumar, or 41-66 shoots more than without fertilizers. Alfalfa-grass mixtures were also denser with the participation of cock's foot and English bluegrass. With the additional application to $P_{60}K_{90}$ of nitrogen at a dose of N_{60} , there was a tendency to decrease the density of alfalfa and alfalfa-grass mixtures by 29–84 shoots per 1 m^2 and increase - on grasses.

As a result of research on the botanical composition of grasslands, it was found that on average in 2014-2016, in the single-species sowings by the yield alfalfa dominated with a share of 88-94%. The rest were grasses with a share of 5–12%.

In alfalfa-grasses mixtures, the share of alfalfa was lower and ranged from 41 to 50%. Among alfalfa-grasses stands, the smallest amount was observed in the mixture of alfalfa + meadow fescue + meadow bonfire. The total share of cereals in alfalfa-grass stands ranged from 47 to 52%, which was on a par with the share of alfalfa. A slightly larger total share of cereals in alfalfa-cereal mixtures was found in the same mixture (alfalfa + meadow fescue + reed fescue), where the share of alfalfa was the largest.

Based on the research, it was found that sown grasses was formed with a density of 686–1250 shoots per 1 m^2 and a height of 58–148 cm. Alfalfa-grasses and grasses are denser than alfalfa. During the period from the 1st to the 3rd year of grassland use, the density of alfalfa shoots decreases, while orchard grass and smooth brome grass increase, moreover, and more significant on the backgrounds of N_{60} application.

During the first three years of use, grasslands are formed with the dominance of sown components with the share of alfalfa in single-species sowing 85–98%, in alfalfa-grasses mixtures - 30–58%. During the period from the 1st to the 3rd year of alfalfa-grasses stands using, the share of alfalfa decreases by 11–24%, and more significantly on backgrounds with N_{60} application. Also between the two kinds of grass components, there is a change of co-dominant - from meadow fescue to reed fescue, reed fescue to

orchard grass, English bluegrass to smooth brome grass, while, as in grasses, reed fescue to smooth brome grass. English bluegrass in the 3rd year of use is much liquefied, reducing the share of participation to 5-14%.

Keywords: alfalfa, grasses cover, shoot density, botanical composition, fertilizers.