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Cultivation of Alfalfa as Possible Plant for Plant Nutrition and Soil Conditioners

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Abstract

The primary use of alfalfa is in feeding livestock in a fresh state and the preparation of canned feed. Unfortunately, the reduction of livestock causes the producer to lose interest in its further cultivation. However, the advantages achieved by growing alfalfa make this plant species one of the most important cultivated plant species. The paper examined some parameters of alfalfa biomass that would be used in plant nutrition as an organic fertilizer. The terrain on which the research was conducted was the atar of the Banatsko Novo Selo settlement with a carbonate chernozem type soil on a loess terrace. Research was carried out in the period from 2018 to 2023 with alfalfa plants of different growing ages. During the research, the content of total nitrogen (N) and its easily accessible forms (NH_4-N and NO_3-N), as well as the C:N ratio, were measured. Plants need nitrogen (N) for rapid growth and development. Plants adopt it in ammonia (NH_4) and nitrate (NO_3) form. The ratio of carbon to nitrogen, gives information about the decomposition of fresh organic matter in the soil. The overall average values for all analyzed plants, that is, their above-ground masses, had values of total nitrogen (N) in the interval from 2.1 to 3.7%. NH_4-N content varied from 105.6 to 392.4 mg/kg, while NO_3-N content ranged from 10.7 to 21.6 mg/kg. The C:N ratio had values in the interval from 13:1 to 23:1, which represents a good ratio of carbon to nitrogen (in the range of 25 to 35) for them to remain active and decompose fresh organic matter. The obtained results create a good basis for the use of alfalfa above-ground biomass as organic fertilizer in the form of pellets, briquettes, compost or as green manure with the aim of substituting synthetic nitrogen fertilizers.

Key words: alfalfa, cultivation, plant nutrition products, plant conditioners

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