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Biological Peculiarities and the Biochemical Composition of the Aerial Mass of the Species *Phleum pratense*

Ana Guțu [1,*], Victor Ţîţei [1], Mihai Gadibadi [1]

[1] "Alexandru Ciubotaru" National Botanical Garden (Institute) of Moldova State University, Republic of Moldova
* Correspondence: ag9152633@gmail.com;

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Abstract: The genus *Phleum* of the Poaceae family within the spontaneous flora of the Republic of Moldova includes four species. Among them, one of the most well-known is *Phleum pratense* L. – a cool-season, hexaploid perennial commonly known as timothy grass. It is a plant of C3 carbon fixation metabolic pathway. The culms are erect and grow to a height of approximately 48-150 cm. It has been determined that during the flowering stage, the studied taxa of timothy grass reached heights of 95-112 cm. The whole plants contained 257-353 g/kg of dry matter, and the concentration of nutrients in the harvested green mass of timothy grass was as follows: 9.5-12.4% crude protein, 28.9-37.2% crude fiber, 7.5-11.1% ash, 31.4-41.7% acid detergent fiber, 49.5-73.7% neutral detergent fiber, 2.6-3.9% acid detergent lignin, 27.8-39.1% cellulose and 18.1-31.7% hemicellulose. The nutritive and energy values were: 58.6-61.4% dry matter digestibility, relative feed value of 72-121, metabolizable energy of 9.22-10.39 MJ/kg and net energy for lactation of 5.24-6.42 MJ/kg. The biochemical biomethane production potential of timothy grass green mass substrates for anaerobic digestion reached 342-364 L/kg of organic dry matter. The green mass yield, the dry matter content and the biochemical composition depend on plant age and mowing period. *Phleum pratense* is suitable for grassland restoration, the establishment of temporary grasslands in monoculture or in mixtures with other perennial grasses and legumes and for planting between the rows in orchards and vineyards. The harvested green mass can be used as fodder and also as a substrate in biogas reactors for biomethane production, serving as a renewable energy source.

Keywords: Phleum pratense; Nutritional Composition; Fodder Value; Biomethane Potential; Grassland Restoration.