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Humus content determines soil fertility as well as affecting crop yield. Natural formation of humus is important, but this is a long and slow process. This process could be improved by applying different organic fertilizers. The humic fertilizer 'Turbo Grass' containing 9.7% of organic acids was applied at different rates to improve the feeding value of grass on dairy farms. The objective was to evaluate the impact of humic fertilizers (up to 32 l ha⁻¹) on grass chemical composition, yield, metabolisable energy (ME), net energy (NEL) and digestibility of intensively managed sown pastures in combination with different rates of mineral fertilization. Rates of humic and complex fertilizers had different effects on recorded parameters.

Keywords: fertilizing, grass, yield, feeding value

Materials and methods. Field trials were performed at O. Baltrušaitienė farm, Kauno distr. Lithuania in 2006-2007 on a sandy moraine, loam humic horizon of Calcarey Epiphyggetic Luvisol. The sward (10% red clover 'Liepsna', 10% timothy 'Gintaras', 10% blue grass 'Lanka', 15% white clover 'Atoliai', 15% lucerne 'Brūtė', 15% perennial ryegrass 'Žvilgė', 25% meadow fescue 'Dotnuvos 1') was sown (25 kg ha⁻¹) in 2005. The area of each treatment plots was 2 m x 5 m (net area 2 m x 3 m). Complex fertilizers at 300 kg ha⁻¹ were applied early in spring, and 150 and 100 kg ha⁻¹ NH₄NO₃ of supplementary fertilizers were applied after the 1st and 2nd cuts respectively. The experimental site was not grazed, but used only for fresh herbage production. Four mineral fertilizer treatments (N8P20K30, N8P20K30 + M (microelement), N8P13K24, N8P24K24) were combined with five TG rates including an unfertilized control (Control (0), 8, 16, 24 and 32 l ha⁻¹) which were applied as early as possible in spring (Fig. 1). The 2-cut system was applied manually at the beginning of the flowering stage. Chemical content of the sward was determined at Kiel University. Botanical composition, dry matter, crude protein (CP) and crude fibre (CF) were determined according to the commonly used Wende forage analyses. Metabolisable energy (ME, MJ kg⁻¹) and net energy of lactation (NEL, MJ kg⁻¹) of grasses were calculated by the formula of Nauman and Bassler (1993).

Conclusions. Fertilizer application using NBP20K30+M without humic fertilizer TG stimulated the highest digestibility, metabolisable energy and net lactation energy. Tests have proven different impacts of the TG humic fertilizer, and its rates of application, on the effectiveness of complex fertilizers in changing various feed value indices. The highest Turbo Grass effectiveness was evaluated only in combination with the NPK rate most suitable for grass (NBP20K30), TG rates of 8-16 l stimulated formation of the highest protein content, digestibility, ME and NEL. NPK with lower K rates decreased the efficiency of humic fertilizer and grass value. Low rates of Turbo Grass (8-16 l) in combination with NBP20K30 may substitute analogous microelement fertilizers and improve the main indices of feed value.

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