

**FORAGE DRY MATTER ACCUMULATION AND TILLER POPULATION
DENSITY OF GUINEAGRASS FERTILIZED WITH DIFFERENT POTASSIUM
SOURCES**

Stefany Thayssiane Da Silva (stefany.thayssiane@ufms.br)

Ewerton Cavalcante Massena (ewerton.massena@ufms.br)

João Antonio Rosa Ferreira Pinto (joao_a@ufms.br)

Brayan Alexi Torres Roa (brayanalexitorresroa@gmail.com)

Juliana Prado De Almeida (prado.juliana@ufms.br)

Luís Carlos Vinhas Itavo (luis.itavo@ufms.br)

Gelson Dos Santos Difante (gelson.difante@ufms.br)

Cid Naudi Silva Campos (cid.campos@ufms.br)

Paulo Eduardo Teodoro (paulo.teodoro@ufms.br)

Vanessa Zirondi Longhini (vanessa.longhini@ufms.br)

Panicum maximum 'BRS Quênia' is a highly productive tropical forage grass whose establishment and development depend heavily on soil nutrient availability. Among the essential macronutrients for plant growth, potassium (K) plays a vital role in several physiological processes. In this context, the search for alternative fertilization sources, such as organic fertilizers and natural minerals, has emerged as a strategic approach to improving nutrient-use

efficiency and the sustainability of pasture production systems. Therefore, this study aimed to evaluate the effects of different K sources on forage dry matter accumulation (FDMA) and tiller population density (TPD) of Quênia guineagrass (*Panicum maximum* 'BRS Quênia'). The experiment was conducted using a randomized complete block design with five replicates, in which pots containing 4 dm³ of soil served as the experimental units. Three K sources were evaluated: potassium chloride (KCl), natural potassium-bearing rock (KMC), and organic fertilizer. The soil used was a typical dystrophic Red Oxisol. Lime and basal fertilizer were applied 40 d before sowing. Potassium sources were applied at sowing, and the sowing was performed by distributing 32 seeds per pot. Micronutrient solutions were applied weekly, and nitrogen was supplied at sowing and after each harvest. Thinning was carried out to maintain two plants per pot. Evaluations were conducted every 28 days after a uniformity cut, totaling four evaluation cycles. The FDMA was determined at each harvest at a residual height of 20 cm, and the TPD was obtained by counting the total number of tillers per pot. Data were analyzed using the MIXED procedure of SAS statistical software, blocks were treated as random effects, whereas potassium sources, evaluation cycles, and their interaction were treated as fixed effects. When significant, treatment means were compared using the LSD test at a 5% significance level. Potassium fertilizer sources significantly affected FDMA ($P = 0.046$). The organic fertilizer provided the highest FDMA (3.2 ± 0.16 g DM/pot), whereas KCl and KMC produced similar values (averaged 2.7 ± 0.16 g DM/pot). The use of organic fertilizer increased FDMA by 14% compared with the other K sources. In contrast, no significant differences in TPD were observed across K sources (averaged of 14 ± 0.6 tillers/pot). In conclusion, organic fertilizer promotes greater FDMA in Quênia guineagrass compared to KCl and KMC, represents a viable alternative potassium source for this forage species, although the different K sources do not affect TPD.

Palavras-chave: organic fertilizer; *panicum maximum*; tillering.