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Yield and uptake of bahiagrass under flooded environment as affected by nitrogen fertilization

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ABSTRACT

Bahiagrass (*Paspalum notatum*) is one of the most important forage grasses in subtropical region of USA and other tropical regions of the world. Although tolerant to short term flooding, bahiagrass is classified as a facultative upland (FACU+) species that suggest yield and plant persistence might be reduced under periods of extended waterlogging. The objective of this greenhouse study (2008-2009) was to determine the effect of nitrogen fertilization (0, 100, and 200 kg N ha⁻¹) on yield (DMY), crude protein content (CPC), and nitrogen uptake (NUP) of bahiagrass under varying flooded conditions (0, 14, 28, 56, and 84 days). Results disclosed an overwhelming effect of N application on yield and uptake component of bahiagrass. Averaged across flooding duration, results showed that DMY ($R^2 = 0.91^{**}$), CPC ($R^2 = 0.96^{**}$), and NUP ($R^2 = 0.99^{**}$) were linearly related to increasing levels of N fertilization. Plants without N fertilization that were submerged between 14 to 84 days had significantly lower amount of DMY when compared with plants that were fertilized with 100 or 200 kg N ha⁻¹. Comparable DMY and NUP were obtained between plants fertilized with 200 kg N ha⁻¹ at 0 day of flooding ($11.7 \pm 5.0 \text{ ton} \cdot \text{ha}^{-1}$) and plants fertilized with 200 kg N ha⁻¹ at 84 days of flooding ($9.8 \pm 2.7 \text{ ton} \cdot \text{ha}^{-1}$). The practical implication of this study is that waterlogging may hamper yield and uptake while nitrogen fertilization could improve yield and uptake of bahiagrass under waterlogged condition.

KEYWORDS

Bahiagrass; Flooding; Nitrogen Uptake; Dry Matter Yield; Nitrogen

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