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The 21st International Grassland Congress / 8th International Rangeland Congress took place in Hohhot, China from June 29 through July 5, 2008.

Proceedings edited by Organizing Committee of 2008 IGC/IRC Conference

Published by Guangdong People's Publishing House

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Syndrome of death of marandugrass in the Western Brazilian Amazon

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Key words : *Brachiaria brizantha*, disease, low permeability soils, palisadegrass, pasture degradation, waterlogging

Introduction *Brachiaria brizantha* cv. Marandu (marandugrass) is well adapted to deep and well drained soils with medium to high fertility. Since its release in 1984, the high speed of establishment, resistance to spittlebug, vigorous plant regrowth, high forage yield and quality led to rapid adoption of this grass by farmers throughout Latin America. This resulted in over 60 million hectares of marandugrass pastures in Brazil, with more than 50% in the Legal Brazilian Amazon. In 1994, farmers of Acre began to observe the death of marandugrass plants in some pastures (Valentim et al., 2000). The problem has also been reported in other regions of Brazil (Teixeira Neto et al., 2000). Since 2000, the seriousness of the problem led the Brazilian Agricultural Research Corporation (Embrapa) to establish a multidisciplinary research task force to identify the causes and develop solutions for this problem. In this paper we describe the results of these studies.

Materials and methods During 2000 research specialists from Embrapa in the areas of soils, pastures, plant pests and diseases conducted several field expeditions in the Brazilian Amazon to diagnose the Syndrome of Death of Marandugrass-SDM. These studies were conducted in healthy and unhealthy pastures and consisted of: 1) soil physical and chemical characterization; 2) evaluation of root distribution and biomass in the soil profile; 3) investigation of possible plant pests and pathogens; and 4) evaluation of nutrient content in aboveground biomass. Besides that, greenhouse studies were conducted in order to evaluate physiological and morphological responses of this grass to flooding (Dias-Filho & Carvalho, 2000) and to some phytopathogenic fungi isolated from diseased marandugrass plants (Duarte et al., 2007).

Results and discussion Low soil fertility and pest problems were not involved with the syndrome. Field and greenhouse studies confirmed that the lack of adaptation of marandugrass to waterlogged soils is the triggering factor of the SDM, predisposing the plants to attack by soil phytopathogenic fungi of the genus *Rhizoctonia*, *Fusarium* and *Pythium* (Andrade & Valentim, 2007). The solution for this problem has been the use of other grass and legume cultivars adapted to low permeability or waterlogged soils and resistant to the pathogens involved with the syndrome. The association of the SDM with poorly drained soils allowed the zoning of the risk of death of marandugrass in the State of Acre (Amaral et al., 2008). Simple and low cost methods has been developed to reclaim degraded marandugrass pastures (Andrade & Valentim, 2008).

Conclusions The syndrome of death of marandugrass occurs when this cultivar is established in low permeability soils, a condition which affects plant physiology, morphology and metabolism and predisposes the stressed plants to the attack of soil phytopathogenic fungi.

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