

Zoning of risk of death of *Brachiaria brizantha* in the State of Acre , Brazil

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Introduction The establishment of cultivated pastures is the main cause of deforestation in the Brazilian Amazon . In Acre , cultivated pastures represent 82.5% of the total area deforested (ACRE , 2006) . Since 1994 , farmers in the Brazilian Amazon started to observe the death of marandugrass (*Brachiaria brizantha*) in some pastures under poorly-drained soils , a process that have caused widespread degradation of pastures in the region (Andrade & Valentim , 2007) . The objective of this study was to define zones of risks of death of marandugrass as a support decision tool for policymakers and farmers in dealing with this problem in the Brazilian Amazon .

Materials and methods In 2006 the Government of Acre concluded the State's Ecologic and Economic Zoning (ZEE Acre) in the 1:250,000 scale integrating studies of natural resources , socioeconomic , cultural and policy aspects (ACRE , 2006) . The soil's data bank of ZEE Acre was structured based on 230 soil profiles containing morphologic , physical , chemical and mineralogical attributes . This data bank associated with the map of soils of Acre was used as the basis for the zoning of edaphic risk of death of marandugrass . Previous studies indicated that this syndrome was associated with plintic soils with low permeability (Valentim et al . , 2000) . Therefore , the following soil attributes that contribute to low permeability and hidromorphism conditions were selected to define zones of risk of death of marandugrass : plintite , drainage , depth of horizon A , depth of solum , silte content in horizon A , clay activity in horizon A , carbon content in horizon A , content of iron oxides in horizon A , content of iron oxides in horizon B and clay activity in horizon B . These parameters were treated within the same mapping unit with a ponderated mean and were reclassified to generate the map of indexes of risk of death of marandugrass . In order to improve visual comprehension of the results , this map was reclassified in the following categories : extremely low risk ; low risk ; moderate risk ; high risk ; very high risk ; and extremely high risk . Field validation of the map was carried out during the rainy season by crossing the different categories of the map of risk with visual evaluation of marandugrass in the different soil mapping units .

Results and discussion The results indicate that the State of Acre has the following proportions of its territory in the different categories of risk of death of marandugrass : 3.1% with extremely low risk ; 3.5% with low risk ; 46.6% with moderate risk ; 23.8% with high risk ; 5.6% with very high risk and 17.5% with extremely high risk . Field validation of the resulting map of risk confirmed that all areas classified with moderate risk or above presented symptoms of the syndrome of death of marandugrass .

Conclusions Soil attributes that contribute to low permeability can be effectively used to identify areas suitable or unsuitable for the establishment of marandugrass pastures or areas already established with this grass cultivar which are under moderate to extremely high risk of degradation . The zoning of risk of death of marandugrass is an excellent support decision tool to help policymakers and farmers in dealing with this problem in the Brazilian Amazon .

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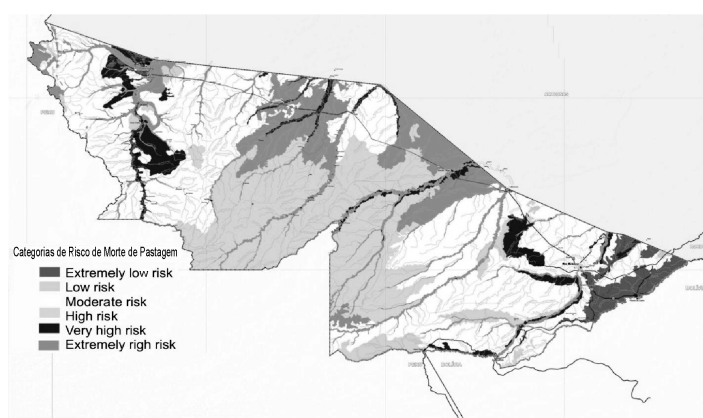


Figure 1 Syndrome of death of marandugrass risk map for the State of Acre , Brazil (scale 1 : 250,000) .