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## Definition of indicators for rangeland health in the Pantanal , Brazil

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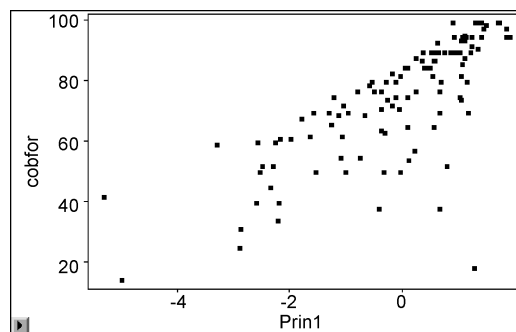
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**Key words :** *Axonopus* , beef cattle , grasses , plant cover , sustainable management

**Introduction** The Pantanal is a vast floodplain that presents edaphic and hydrological heterogeneity , with several landscapes that vary spatially and temporally . In these landscapes , there are several grassland types , generally dominated by one or more forage species . Currently there is a need to understand and know the optimal state of each type of pasture to define appropriate management strategies . The objective of this study is to evaluate a methodology to select indicators for natural pasture of the Pantanal , Mato Grosso do Sul state , Brazil .

**Materials and methods** The study took place in the Nhumirim farm , Nhecolândia sub-region , Pantanal , in natural pastures with dominance of *Axonopus purpusii* , located around ponds , in seasonally flooded areas , during the dry period , in August 2007 . Seven different pasture states were evaluated , ranging from pastures in optimal state to dominated by non-wanted grasses species such as *A . bicornis* or shrubs such as *Vernonia scabra* ) . First , a principal component analysis was used to define the gradient in according to Gibson e Bosch (1996) . The following step was to evaluate the associations among percentages of plant species cover within the gradient and the direction for all states and for each state , through non-parametric methods . Data were analyzed using SAS (2004) .

**Results** The five determinant variables of the gradient direction were : plant cover , soil cover , average height , percentage of dead matter and *Axonopus purpusii* cover . All variables were positively correlated with gradient direction . From 44 identified plant species , only five were considered indicators for monitoring and evaluation of this grassland type . Besides plants species , other variables such as forage cover ( Figure 1 ) , weed cover , forage number , weed number and leguminous number were considered indicators .



**Figure 1** Response curve of Forage cover along states gradient (principal component first) .

**Conclusions** This methodology was adequate for the determination of indicators and it could be used in other types of pastures of the Pantanal .

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