Estimation of Permanent Preservation Areas and grasslands in livestock regions in the Zona da Mata, Minas Gerais State, Brazil

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The objective of this study was to segment the topography and delineate some categories of Permanent Preservation Areas (APP, acronym used in Brazil) for natural regeneration of semideciduous forests in the Zona da Mata region, Minas Gerais State, Brazil. Thereby, it was possible to establish the impact of the deployment of APP over grassland areas. We extracted morphological and morphometrical data to segment the topography from the DEM (Digital Elevation Model) altimetry data, generating polygons of hills and mountains, and APP estimates. We used SRTM (Shuttle Radar Topography Mission) data to process the topographic segmentation through numeric method available in the GIS tools, and we used MODIS (Moderate Resolution Imaging Spectroradiometer) imagery of 2010 to extract the grassland areas from the NDVI vegetation index database, allowing intersection with the estimated APP. In this segmentation method, the relief is processed such as numeric surface, in which the mountains are inverse basins and, its edges of polygons among mountains are considered saddle points, major discussion point about the subject, in reference to APP of hill top. In a linear or deterministic scenario of deployment of APP over grasslands, there would be a necessary removing around of 21.5% of the grassland areas in Zona da Mata region. Considering the current grazing area of the Zona da Mata of 1.2 million hectares, about of 258,000 hectares should be replaced by natural forests. However, despite the environmental importance of the semideciduous seasonal forest, it is important to maintain a balance between conservation of natural resources, land suitability and demand for food, especially for dairy in these regions, which provide inputs for the dairy industry. The topographic segmentation method worked effectively for relief of this region, extremely mountainous, allowing the delineation of the mountains, besides the saddle points and, APP estimates. These results will support the decision making in the planning and management in farm production systems as well as the adoption of public policies for natural resources conservation.

Keywords: Grasslands, Permanent Preservation Areas, production systems, remote sensing.