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Environmental survey of rural properties in Goiás: The use of remote sensing as a governance instrument

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Abstract

Environmental monitoring is a strategy for managing rural properties. The Federation of Agriculture and Livestock of the State of Goiás uses remote sensing technologies to identify evidence of infractions. This approach detects deforestation, fires, and irregular land use conversions, strengthening the adoption of preventive and corrective measures.

In this context, the objective of this research is to analyse the possibilities and limitations of using MapBioma to support producers. It was identified that the use of geoprocessing tools as integral parts of governance practices, thus, through literature and documentary review, in light of Elinor Ostrom's idea of shared protection of the commons. Data collection, organisation, and interpretation were carried out, highlighting the contribution of this technology in supporting environmental regularisation and monitoring.

The experience originated from demands from producers seeking clarification on the environmental situation on their properties, often impacted by denials in financing processes or obstacles in commercial transactions. Thus, FAEG began offering environmental surveys using MapBiomias in 2025. The procedure begins with the delimitation of the area of interest, based on the provision of the Rural Environmental Registry or the geographic coordinates of the property.

Filters are applied in the system for the period from 2008 to 2025, in order to identify deforestation alerts and changes in vegetation cover. These alerts are cross-referenced with CAR data, IBAMA and SEMAD-GO records, in order to verify the existence of embargoes or infraction notices. Afterwards, validation is carried out with Google Earth Pro images, confirming or discarding the occurrences. Each validated case is recorded, containing the alert code, coordinates, affected area and whether or not an infraction has been issued.

The results showed that approximately 65 % of alerts in private areas corresponded to unauthorised interventions, some in Legal Reserve and Permanent Preservation Areas.

It is concluded that the use of MapBiomias is efficient in screening and can support environmental governance, being replicable in different regions. As a limitation, the dependence on secondary data and remote validation stands out, which may restrict accuracy and require supplementation with field verifications.

Keywords: Environmental compliance, geospatial analysis, land use monitoring, rural consultancy, rural consulting services

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