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GEOTECHNOLOGIES APPLIED TO THE CHARACTERIZATION OF COFFEE ENVIRONMENTS AND ASSESSMENT OF LAND-USE CHANGE IN MINAS GERAIS.

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Land-use and land-cover change (LUCC) is a major cause of environmental transformation. Distant drivers of local land use changes, often associated with emerging markets for specific products, are now considered one of the principal factors of LUCC and are gaining attention in land change science. Consumers show an increasing interest in local and quality food certified for its origin and/or its environmental production standards. A kind of agricultural product certification, Geographical Indications (GIs), identifies a product as originating from a specific region where a given quality, reputation or characteristic is attributed to its geographical origin. GIs create a price premium to protect traditional practices from being standardized and to compensate for higher production costs, allowing producers to compete with non-differentiated markets. Sustainable land use is potentially an indirect effect of GIs because a better management is required to preserve the natural factors (the *terroirs)*, associated with the unique characteristics of the product. The Brazilian government has created two types of GIs: Origin Indication (IP) and Origin Denomination (DO), and coffee is one of the prime products to benefit from these two kinds of protection. Historically, coffee has been strategic for Brazilian exports. The product has ensured the country's first position as a producer and exporter and second position as a consumer in the international market. However, even though Brazil is the largest coffee producer worldwide, its coffees are still perceived as regular, cheap, flat and as possessing prominent astringency, which leads to its being traded mainly as a commodity. Brazilian coffee has undergone cycles of rise and fall that impact primarily the family farms in mountain regions of Minas Gerais, the country's main producing state. In this mountainous landscape, the region of "Mantiqueira de Minas", considered one of the most important regions of specialty coffees in the country and which have been gaining recognition in the international market, stands out for the high sensory quality of its coffees. In order for the Mantiqueira de Minas to benefit from this new perspective of adding value, which would make its coffee more competitive and sustainable, new technical and scientific information linking the factors that determine coffee quality are required. Geotechnology can have a significant contribution in filling this gap. Mapping the distribution of quality coffee, with the delimitation of the *terroirs*, subsidizes the formulation of public policies aimed at stimulating competitiveness and sustainability for the coffee farmers in the 25 municipalities that make up the region.