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Agricultural potential for Crop-Livestock-Forestry integration system in the Matopiba region, Brazil

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In this paper, it is presented the agricultural potential for integrated production systems for the Matopiba region, which covers approximately 73 million hectares and represents an important frontier for the expansion of agricultural production in Brazil. In soil and climate studies, the main limitations to agricultural land use have been identified, complemented by field campaigns to validate interpretations. The agricultural potential of the land for the adoption of Crop-Livestock-Forest integration systems (CLFi) considered the high technological level for crops, and medium and high for silviculture and planted pasture. The evaluation is presented in map compatible with the 1:500,000 scale. Mixed systems of agricultural production, based on the spatial and temporal integration of agricultural components (annual and perennial crops), forestry (silviculture) and livestock (pasture) were considered. The systems used for sustainable intensification of land include: crop-livestock-forest system or CLFi: integrating agricultural, livestock and forestry components in rotation, consortium or succession in the same area. They include the forest-agriculture systems or crop-forest integration with emphasis on crop-forestry systems; crop-livestock systems or Crop-Livestock integration (CLi): integrating agricultural components (annual crops) and livestock in rotation, consortium or succession, in the same area and in the same agricultural year or for multiple years. They include inadequate areas for the implantation of forest species; forest-livestock systems or Livestock-Forest integration (Lfi): integrating livestock (pasture and animal) and forestry components into a consortium. They include areas that are unsuitable for planting; and, pastoral systems - exclusively for livestock component in areas not suitable for crops or forestry. They include the recovery of degraded pastures and management techniques that guarantee high productivity and pasture support capacity. A wide range of soils occur under varying climatic conditions, reflecting distinct qualities and vulnerabilities for agricultural land use. Soils with great potential for agriculture, such as Argissolos and Latossolos, are noticed. On the other hand, soils with a high vulnerability to degradation, with high sand content (Neossolos Quartzarênicos), gravel (Plintossolos Pétricos) and strong drainage restrictions (Plintossolos Argilúvicos and Háplicos, Gleissolos and Planossolos) are frequent.

Keywords: soil, agricultural suitability, environmental planning, integrated production systems

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