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Applying the “Ecological Footprint Method” to Evaluate Beef Cattle Production Systems in Central-Brazil

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Abstract

The work compares productive space appropriation efficiency for different cattle raising systems in central Brazil. Cattle industry is one of the major economical forces in the area. With a population of 11.5 million people and a herd of 56 million head, there is a growing debate about the environmental sustainability of the different production systems.

Environmental impacts are difficult to evaluate. A method called ecological footprint, evaluates the area of land needed to sustain the consumption and waste absorption for a given population. Consumption depends on production. In areas with high agricultural production and small population, like Central Brazil, the overall footprint balance would be positive. But in a smaller scale, comparing various production systems by relating their appropriated land area to their outputs, agricultural production systems may show large differences in relation to their environmental impacts, i.e. ecological footprints. The method here developed is a derivation of the original ecological footprint concept. It converts production inputs and waste absorption into land area and then analyses their efficiency by dividing total production by total land area appropriated. The method has the advantage of generating a single measuring unit, allowing direct comparisons among systems.

For this study, data was collected from two significant kinds of cattle systems in central Brazil: (1) extensive grazing on pastures; (2) intensive in feedlots. Results show that the grazing systems need 1.36 hectares to produce 100 kg of meat per year while the intensive systems need 0.40 hectares to produce the same amount of meat in a year. Although this kind of study does not specify where and how environmental impact happens, when considering rain forest devastation, it can be inferred that a system that is more efficient on land appropriation has better chances to be environmentally friendlier and become sustainable.

Keywords: Agricultural systems, beef cattle, Brazil, ecological footprint, intensification