

Impact on productivity and income from milk production due to increased investment in exploration technology of the pastures

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The average land productivity observed in the principal brazilian regions of milk production, still remains significantly lower of its potential productivity, in case that the current technologies of pasture management were applied. The objective of this study was to estimate the impact on the production and on the economic results on milk activity when crescent levels of technology are introduced for intensification on the pasture use. In this study degraded pasture were considered, using soils of the Cerrado biome, which could represent typical pastures of the principal regions of milk production in Brazil. Were simulated the following technological levels: I - conventional pasture of Brachiaria decumbens without any technological intervention; II - level I with soil acidity correction; III – level II with phosphorus corrective applied in total area; IV – level III incremented fertilization with N and K; V - level IV using rotational pasture management; VI level V with strategical irrigation; VII - level VI with substitution of the B. decumbens for Cynodon spp; VIII – level VII with substitution of a cow with production potential of 7.5 L for a cow with 12.0 L day⁻¹. For each level were estimated production variables (carring pasture capacity, milk production per cow and milk production per area) and economic indicators (capital for implantation, economic cost, gross income, net income and opportunity cost of land). The technical coefficients used in the estimates were based on literature. The prices of inputs and services were based on averages prevailing on the market. The main results are summarized below and refer to the lowest (level I) to the highest intensification (level VIII). The annual pasture productivity, expressed as milk production, increased from 383 to 17,520 L ha⁻¹. The necessary capital to implement the different levels of intensification increased from R\$ 647.00 to R\$ 9,519.00 ha⁻¹, while the gross income increased from R\$ 460.00 to R\$ 21,024.00 ha⁻¹. Considering the capital depreciation (calculated according with useful life of each component of the initial investment) and the opportunity cost (referenced in an annual interest rate of 4.0%), the annualized cost levels of intensification ranged from R\$ 0.00 ha⁻¹ for level I (when not made any investment in technology) to R\$ 2,767.00 ha⁻¹ in the level VIII (when greater technologic investment was made). On the other hand, increased from R\$ 460.00 to R\$ 18,257.00 ha⁻¹ year⁻¹ the net income obtained from pasture (from sale of milk and surplus animals) available to pay the labor and other production factors (except costs related to pasture previously paid). From minimum to maximum intensification of use of the pasture, the opportunity capital cost invested in land decreased from R\$ 125.24 to R\$ 2.28 for each 100 L of milk. The results indicated that in Brazil the relative cost of the land, under the conditions of this study, for the moment should not represent a severe limitation for a sustainable milk production with herds managed on pasture. To avoid this situation, however, it is necessary that the pasture is exploited with the use of the adequate technologies already offered by research. The basic technical coefficients used in this study need to be validated and checked in real experiments.

Keywords: costs, income, land, opportunity cost, investment