

Economic analysis of crop-livestock-forest system: the case of Embrapa Cattle Southeast

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Introduction The more effective use of land and other resources through livestock production systems integrated with forestry and/or crop production has been a sustainable alternative to recover degraded pastures and increase system productivity. The economic analysis of these systems plays an important role in order to ensure its sustainability and to foster its adoption. This study aims to estimate the economic viability of a crop-livestock-forest system carried out in the experimental area of Embrapa Southeast Livestock in São Carlos, SP.

Material and Methods

The crop-livestock-forest system comprises an area of 6 ha. The schedule of activities was: April 2011 - planting of eucalyptus *Urograndis* (2000 trees); season 2011/2012 - planting of corn crop for silage concomitant with sowing of the *Urochloa brizantha* (capim-piatã); season 2012/2013 - fattening of calves; season 2013/2014 - planting of corn crop for silage concomitant with sowing of the *Urochloa brizantha* in 1/3 of area and fattening of steers in 2/3 of area; November 2014 - estimation of eucalyptus harvesting for firewood and selling of animals. The cash flow was structured with income and expenses of the production system over the 2011 to 2014 financial years. The indicators for economic viability, net present value and Internal Rate of Return, were estimated.

Results and Conclusions

Table 1. Cash flow of the crop-livestock-forest system, São Carlos, SP (R\$/ha).

Description	2011	2012	2013	2014
Input**	1.864,15	40,09	1.009,86	445,77
Hired labour	425,63	169,65	252,54	290,32
Mechanized operations	151,34	201,45	100,92	88,85
Other expenses	122,06	20,56	68,17	41,25
Purchase of animals		1.881,33	2.570,00	
Infrastructure***		2.675,97	480,00	
Total expenses	2.563,18	4.989,05	4.481,48	866,18
Silage income		1.757,80		466,86
Livestock income			2.715,67	4.605,00*
Forest income				2.618,00*
Total income	0,00	1.757,80	2.715,67	7.689,86
Infrastructure (residual value)				2.524,77
Cash flow	-2.563,18	-3.271,68	-1.846,75	9.147,82
Internal Rate of Return	9%			
Net present value	365,50			
Attractiveness rate	6%			

* Estimated data; **Animal health and feed, seeds/seedlings, fertilizers/pesticides; *** Fence, trough and access to water.

The net present value is positive and the internal rate of return is higher than the attractiveness rate (Table 1), suggesting the project acceptance and that the invested amount will be recovered and there will be earnings in the period of analysis.

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