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"Bridging the gap between increasing knowledge and decreasing resources"

Integrated Crop-Livestock-Forestry Systems: A Brazilian Experience for Sustainable Farming

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Abstract

Agroforestry, silvo-pastoralism, and agro-silvo-pastoralism are seen and promoted as means to increase food production while simultaneously providing valuable ecosystem services. It is claimed that such systems halt and even revert widespread land degradation, improve and diversify the range of farm products, and safeguard local and regional biodiversity. Brazil in its turn has pioneered some important agricultural technologies in the world, as the no-tillage system, which allows two harvests a year in many parts of the country. Intending to contribute with information regarding such integrated systems, a publication was produced by the Brazilian Agricultural Research Corporation – Embrapa. Titled "Integrated Crop-Livestock-Forestry Systems" it is a richly illustrated, 282 page book, with 20 chapters involving many scientists from different institutions, approaching the major themes related to the subject, addressing technologies available and their potential for further improvement and expansion. Brazilian integrated systems are somehow unique in the way they operate, especially regarding component's rotation time and investments payback capability. They have been showing to be a great alternative for soils recuperation/improvement in transition areas not apt for regular cash crops, but too expensive for simple extensive cattle systems. One of the important features is to provide revenues diversification, thus helping to stabilise farmer's finances.

The Brazilian model, using *Brachiaria* or *Panicum* grasses, soybeans and maize as crops and eucalyptus as tree component can run a full cycle in periods as short as four years. Besides soil improvement, annual crops and cattle sales provide constant cash flow to the farm, while timber brings high financial returns at the end of the cycle, i.e. allowing future investments with farmer's own funds. The Brazilian integrated systems are still under development in several aspects and substantial research has been carried out to study the behaviour of the different components when integrated. However, they can be considered mature enough to be presented and tested as an alternative for sustainable farming in other areas especially of Latin America and in sub-Saharan Africa.

Keywords: Crop-livestock-forestry, revenue diversification, soil improvement

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