



# GLOBAL AGENDA FOR SUSTAINABLE LIVESTOCK

GOOD PRACTICE GUIDELINE

## Natural Regeneration of Native Trees For The Implementation of Silvopastoral System

### KEY MESSAGES:

1. It is possible to combine livestock production and environment conservation without economical losses
2. Silvopastoral systems with native trees increases biodiversity

# Natural regeneration of native trees for the implementation of silvopastoral system

---

## Overview of practice

---

Our objective is the development of sustainable livestock production in the state of Maranhao/Brazil using natural regeneration of native trees for implementation of silvopastoral system.

Already regeneration has occurred on around 500-700 hectares and is adding value to the livestock system. This natural regeneration process is applicable to small or big scale operations according to the capability of the farmer.



## Approach

---

Following deforestation and pasture seeding and establishment, different types of trees or bushes regenerate from seedbanks that remain in the soil after deforestation or even through wind or animal seed spreading. There are several trees and also bushes that can grow together with grasses. Essentially the success of this natural regeneration process depends on the shape and density of the canopy. If the canopy does not intercept all of the sun light (less than 50%), the resulting mix can be useful for the grass. Therefore, the first step to start this system, is to identify those trees species that allow for an open canopy. Secondly, a change in the pasture management is required to allow growth of young trees and bushes. Normal practice is for farmers to cut all of the young trees and bushes to leave the grass as a monoculture. After some years, selective cutting of some trees or bushes in densely planted areas is often necessary.

## Benefits of the Practice

---

Since we adopted silvopastoral practices, the profit from the livestock system has steadily increased in comparison with traditional monoculture systems based exclusively on Brachiaria. The resulting high biodiversity, fauna and flora,

resulting from silvopastoral practices has positively changed the farm landscape, which has enhanced soil conservation and animal comfort. These are the facts that push us for the silvopastoral practices direction.

**Social** – one important point is related to the happiness and enthusiasm of the farmworker due to the higher biomass produced in the silvopastoral system which gives security for cattle nutrition, an important value.

The better income promoted by the silvopastoral system also gives financial stability to the farmer and consequently to the farmworkers which promotes a better social security.

**Economic** – if we have a system that promotes greater biomass production throughout the year, the economic stability is improved and also the profits. In practical terms silvopastoral system allows higher stocking rates and more beef production per hectare compared to monoculture forage system. This system can provide opportunities for economic diversification (e.g. wood, carbon and also tourism).

**Environment** – the environment benefits generated by silvopastoral system are related to: higher biodiversity that provides the service of increased biological control of insects (e.g. spittlebugs) and enrichment of fauna and flora; and



increased carbon sequestration by trees. In addition the shade from the trees provides a reduction in temperature (3-4 degrees lower on the tree shade) which is important for animal welfare allowing thermal cattle comfort in the tropics. Trees also provide a natural source of fertiliser (e.g. organic matter, phosphorus and potassium) which reduces the need to use chemical fertiliser for grasses. These environmental services could be quantified to inform policy in development of payments for economic services.

---

## Key Characteristics required for success

---

Analysis that demonstrates the economic gains to be accessed through this system

Knowledge of the tree and bush species that confer most value and grazing guidelines from establishment onwards.

We need more scientific work on this type of system and policies which support and incentivise farmers to adopt this system.

The Good Practice Guidelines intend to provide practical operational information related to the Global Agenda for Sustainable Livestock Focus Area 2: Restoring Value to Grasslands. The information has been drawn from a global inventory of pilot sites connected to FA2. This guideline aligns with FA2 Theme 4 Resource Management. Please visit [www.livestockdialogue.org](http://www.livestockdialogue.org) for more information.

#### CONTACT INFORMATION

[rogeriomaucio@ufsj.edu.br](mailto:rogeriomaucio@ufsj.edu.br)

Acknowledgments: Mauroni A. Cangussu (farmer), CBPS, CNPq, FAPEMIG

#### FURTHER READING

[SOUSA, Luciano Fernandes](#) ; [Maurício, Rogério Martins](#) ; [MOREIRA, Guilherme Rocha](#) ; [GONÇALVES, Lúcio Carlos](#) ; [BORGES, Iran](#) ; [PEREIRA, Luiz Gustavo Ribeiro](#) . Nutritional evaluation of Braquiarião grass in association with Aroeira trees in a silvopastoral system. *Agroforestry Systems* (Print) **JCR**, p. -, 2010.

[Mauricio, Rogerio Martins](#). Comment to Pasture shade and farm management effects on cow productivity in the tropics by Justin A.W. Ainsworth, Stein R. Moe, C. Skarpe [*Agric. Ecosyst. Environ.* 155 (2012) 105-110]. *Agriculture, Ecosystems & Environment* (Print) **JCR**, v. 161, p. 78-79, 2012.

[PASCIUOLO, D. C.](#) ; [MORENZ, M. J. F.](#) ; [Gomide, Carlos Augusto de Miranda](#) ; [Pires, M.F](#) ; [Maurício, R.M.](#) . Sward characteristics and performance of dairy cows in organic grass-legume pastures shaded by tropical trees. *Animal* (Cambridge. Online) **JCR**, v. 4, p. 1-8, 2014.

[REIS, Guilherme Lanna](#) ; [LANA, Ângela Maria Quintão](#) ; [MAURÍCIO, R. M.](#) ; [Lana, Regina Maria Quintão](#) ; [Machado, Rodrigo Matta](#) ; [BORGES, Iran](#) ; [Neto, Talmir Quinzeiro](#) . Influence of trees on soil nutrient pools in a silvopastoral system in the Brazilian Savannah. *Plant and Soil* (Print) **JCR**, p. 111-117, 2009.

[VIANA, V. M.](#) ; [MAURÍCIO, R. M.](#) ; [MATTA-MACHADO, Rodrigo](#) ; [PIMENTA, I. A. S.](#) . Manejo de la regeneración natural de especies arbóreas nativas para la formación de sistemas silvopastoriles en la zonas de bosques secos del sureste

#### AUTHORS

Federal University of São João del-Rei (UFSJ) Rogério Martins Mauricio is a Lecturer/researcher in the Bioengineering Department, Brasil. His research is centred on animal science, silvopastoral systems, methane emissions from enteric fermentation, and forage evaluation with a focus on livestock systems in the tropics.

#### DISCLAIMER

The views expressed in this brief are those of the authors and are not necessarily endorsed by or representative of GASL or of the cosponsoring or supporting organizations.

#### DATE PUBLISHED

June 2016