

Agricultural expansion in the Sinop area of Mato Grosso state, Brazil

BACKGROUND

Commercial agriculture is spreading into the Brazilian Amazon, driving deforestation. This particularly affects the states of Rondonia and Mato Grosso. It is predicted that by 2020 70% of forests will be destroyed to provide land for crops in this area.

Information on forest clearing methods, the crops grown, crop rotations and tillage operations are needed to enable scientists to predict the future impacts of agricultural expansion on greenhouse gas emissions and to estimate the sustainability of the land management systems being introduced.

A preliminary visit to Sinop, Mato Grosso, Brazil was carried out to investigate the cropping systems being used following deforestation and to plan a research program to collect more information in the future.

STUDY AREA

The study took place in the area surrounding Sinop a frontier city approximately 400 miles north of Cuiabá, the capital of the state of Mato Grosso, the largest soybean producing state in Brazil. Sinop lies in the Southwest Amazon and has one of the highest grain productivity rates in the world.

Farms we visited varied in size from relatively small 200 ha to 20,000 ha. At each farm farmers were interviewed to determine the cropping systems they are using and associated inputs.



Cattle grazing on *Brachiaria brizantha* as part of an integrated livestock system at an Embrapa test site, Sinop, Mato Grosso, Brazil.



Grain storage buildings at a large (>40,000 ha) farm, Sinop, Brazil

RESULTS

All the farms we studied were initially set up to grow soybean, as a monoculture. Small and medium farms now grow rice or soybean with a second crop (either corn or millet). The larger farms appeared to have moved away from growing just a single crop towards crop-livestock integration systems involving different crops and rotations.

All of the farms were heavily mechanised, in contrast to the small scale slash and burn agriculture used 30 years ago.

Management practices employed by the small (> 500 ha) farms differed markedly from those employed by medium (> 500 ha) and large (> 10,000 ha) farms which has implications for nitrogen cycling and greenhouse gas emissions from soils.

These preliminary finding suggests that farm size will have to be considered when computer models are used to estimate how deforestation in this area will affect greenhouse gas emissions in the future.

PROJECT PARTNERS

