

Synthesis of the II Seminar on Large-Scale Sustainable Agriculture (SAGE II)

The II Seminar on Large-Scale Sustainable Agriculture (SAGE II) took place on November 19th 2015, at the Windsor Plaza Hotel, in Brasília. The main objective of the seminar was to present and discuss recent advances in research on sustainability of the national agriculture to a selected audience composed of experts from academia, government, productive sector and NGOs.

About 60 participants from the sectors above attended the eight talks given by experts on the field. Two thematic sessions discussed livestock and soybeans in Brazil (land use, diagnostic productivity, intensification and response to climate change), and public policies on intensification of agriculture, reducing emissions, land use and land management. The results of the project were presented and participants discussed the implication of these results for the sustainability of Brazilian agriculture on a large scale.

There was intense debate on the intensification of national livestock, agriculture and livestock response to climate change and reducing emissions of greenhouse gases in response to the intensification of agriculture and land management.

The main conclusions of the seminar were:

- (1) There are strong and consistent historical patterns of land use change in Brazil, especially conversion of natural vegetation to agriculture. Extensification of the Brazilian agricultural lands was the predominant mechanism until 1985. Although extensification still exists in Amazonia and Cerrado, the rates are lower, and a shift towards intensification was detected since then. The extensive deforestation is having profound and ongoing consequences for regional climate, which may intensify in the future if deforestation trends continue.
- (2) Assuming likely scenarios for future deforestation in the Amazon and Cerrado, there will be large scale changes in the Amazon's climate, and negatively influencing the productivity of key agricultural crops (e.g. soya) in southern Amazonia and MATOPIBA, including an increase in the climate risk to double cropping systems;
- (3) The Brazilian conservation community is ill-prepared to deal with the effects of large scale climate-induced changes in Amazonian ecosystems.
- (4) The most effective integrated policy for avoiding changes to the Amazon's bioclimatic equilibrium is to reduce or halt deforestation while increasing agricultural production.
- (5) Agricultural production could potentially be increased by closing yield gaps (intensification). This is particularly true for the livestock farming sector, which has in general low productivity, high yield gaps, and for this reason, is one of the major drivers of conversion of natural habitats.
- (6) With respect to soybean and maize cultivation, the main recommendations are for an increased focus on adaptation to the changing climate by: (1) technological investment in the initial stages of soybean cycle, especially in early cultivars when water deficit will be larger; (2) genetic breeding of new short-cycle and highly productive soybean and maize cultivars (100-110 days cycle each); (3) development and implementation of a new agro-ecological zoning system to avoid major losses in soybean productivity.
- (7) Specific recommendations to close the yield gaps of the livestock farming include: (i) convert natural pastures to planted pastures; (ii) implement mechanisms to recover pasture acidity and fertility; (iii) better integrate crop and livestock farming; (iv) avoid the use of fire for pasture management; (v) focus on areas of intermediate productivity (35-90% of peak productivity); (vi) facilitate nucleation of the most productive areas, leaving the transfer of technology to occur naturally.