Synthesis of the I International Seminar on Large-Scale Sustainable Agriculture

The I International Seminar on Large-Scale Sustainable Agriculture (SAGE I), that took place on March 12th and 13th 2014 at the Auditorium of the Central Library of the Federal University of Viçosa, in Viçosa, Minas Gerais, Brazil. The main purpose of this seminar was to have high level discussions on the future of sustainable agriculture and provoke policy debates about large-scale aspects of sustainable agriculture and the future of the Amazon.

About 150 participants attended the 21 talks given by national and international experts during the two days of the event. Among the specialists present, we highlight the presence of the Secretary for Special Programs at the Brazilian Ministry of Science, Technology and Innovation (MCTI) – Dr. Carlos A. Nobre; the former Secretary for Climate Change and Environmental Quality at the Ministry of the Environment (MMA) and researcher at EMBRAPA – Dr. Eduardo Assad; the former Director of Thematic Policies and Programs at MCTI, Dr. Mercedes Bustamante; the coordinator of the Third National Communication of Brazil to United Nations Framework Convention on Climate Change (UNFCCC) – Dr. Márcio Rojas da Cruz; along with six other international speakers from the United States and Europe. The complete scientific program is in the Appendix A of this report.

Four thematic sessions discussed global food demand and global food security; greenhouse gases emissions by agricultural activities; climate change effects on agriculture; expansion of the agricultural frontier and feedbacks between agricultural expansion and the regional climate. A summary of the sessions is available in Appendix B.

The seminar started by describing the global panorama for 2050: about 9.6 billion people to feed, increase in food demand by about 100-110% from 2005 to 2050, the Millennium Development Goal to eradicate extreme poverty and hunger by 2050, the understanding that no sustainable agriculture can exist under continuous deforestation, and the need to adapt to and mitigate climate change.

Two important points that were discussed are: (i) how much will Brazil contribute to the needed increase in global food production, and (ii) whether it will be done sustainably. More specifically, other topics for discussion were: (a) By how much can Brazil increase its agriculture output without expanding its agriculture frontier? (b) Can Brazil intensify its agriculture without causing additional environmental damage? (c) Will Brazil´s agriculture be adapted to climate change? (d) Will Brazil´s agriculture contribute to mitigate climate change?

Although not all of these questions were fully answered, the overall conclusions of the seminar can be summarized by the six points below:

1. Sustainable intensification of agriculture is the new path global agriculture should take in the 21st century; specific strategies include halting agricultural expansion, closing 'yield gaps' on underperforming lands, increasing crop efficiency, shifting diets and reducing waste.
2. Halting agriculture expansion in Brazil (zero deforestation) is a possible scenario, to be achieved in the minimum time frame of 10-20 years.
3. Although Brazil´s revised forest code allows for about 90 million ha of legal deforestation, studies presented at the seminar indicate that global markets may demand only 20-40 million ha of additional agriculture land in Brazil (by 2050); coupled agro-economic, crop, land use and climate models are the tool to answer this question more precisely.
4. Brazil´s agriculture is dynamic, and investments in agriculture research are regular, so Brazil´s agriculture may adapt itself to climate change. However, the geography of agriculture in Brazil may change substantially in the next decades, as a result of climate change.
5. With the reduction of emissions by deforestation, agriculture has already become the sector responsible for most of Brazil´s GHG emissions. Although agriculture emissions are growing less than the baseline scenario adopted by the National Policy of Climate Change, and although the plan ABC to reduce agriculture emissions is over-performing, it is clear that additional measures to reduce agriculture emissions in Brazil are needed.
6. Finally, it was pointed that the intense period of Amazon deforestation from 1990 until 2005 was probably a result of the bovine spongiform encephalopathy ("mad cow") disease in the late 1980s, and the consequent increased demand of soybeans for animal feed and rise in protein price. Brazil took almost 20 years to respond to this external shock in demand.

Preventive actions to anticipate future demand/supply shocks are essential for a successful plan to halt agriculture expansion in Brazil. Two possible shocks that were anticipated are (i) the shortening of the rainy season in southern Amazonia (due to agriculture expansion or climate change) that would make double cropping unfeasible in the region, reducing local grain supply; (ii) the possible drying of the Ogallala aquifer in the Great Plains in the United States, an important grain producing region, which may also reduce global grain supply. These and other possible shocks must be studied ahead of time, and strategies for dealing effectively with them should be prepared in advance, by a mix of academia, NGOs and government.