Assessing the potential of the savannas of Colombia and Venezuela (Llanos) to sequester carbon in soils

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As a product of a long term investment in research in the Colombian Llanos done by CIAT and CORPOICA over a period of 30 years, and a collaboration with several Institutions in Venezuela, at the end of last year, a study was concluded to estimate the amount of carbon that could be accumulated in soils from the Llanos of the two countries under various scenarios of projected development for the region. The map of current land use in the Colombian Llanos shows that in Colombia, still the dominant land use is native savanna vegetation but improved pastures are increasing markedly. The total area cultivated with crops is still modest in Colombia. This contrasts with the situation in the Venezuelan Llanos where more than half of the area is already being used for pastures, crops and forest plantations.

As a whole, the Llanos, which cover a total area of nearly 50 million hectares, could potentially increase C stocks in soils in the order of 1 Pg C. Establishment of silvopastoral systems were found to be the most beneficial option regarding carbon storages as they combine high carbon uptake in soils by introducing deep rooted grasses and C accumulation in the biomass of trees.

Given current and projected national development plans, it is expected that around 10 million hectares of savannas will be converted into agricultural uses in the next two decades in Colombia and Venezuela and this could result in a net C sequestration in soil in the order of 160 Tg C. Implementation of carbon trading projects through the emerging CDM of the Kyoto protocol aimed at mitigating climate change could help for the advancement of environmentally sound agricultural expansion in the tropical savannas of Colombia and Venezuela.

Potential to capture atmospheric carbon in soils and biomass from different land management alternatives in the Llanos

Land cover	Accumulated Carbon: t C $ha^{-1}y^{-1}$			Potential Value from CERs US$ $ha^{-1}y^{-1}$
	Soils	Biomass	Total	
Native savanna	0	0	0	0
No-tillage crops	1	0	1	12
Agroforestry systems	0.5	1.5	2	24
Forest plantations	0.2	2.5	2.7	32
Improved grass-legume pastures	3	0	3	36
Silvopastoral systems	2.5	1.5	4	48

CER = Certificate of emission reduction, the minimum tradable unit on Carbon markets, according to the definitions of the Kyoto protocol.