Agricultural Production and Forest Preservation in the Brazilian Amazon

Felipe de Figueiredo Silva  
*University of Nebraska-Lincoln*

Richard K. Perrin  
*University of Nebraska-Lincoln*

Lilyan E. Fulginiti  
*University of Nebraska-Lincoln*

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The results of our study are reported in “Tradeoff between agriculture and forest preservation in the Brazilian Amazon”3. This research identifies the agricultural income foregone as a result of preserving one hectare of forest rather than converting it to agriculture. We found that on average across the region, $796.81/hectare ($323/acre) in agricultural income would have to be given up every year to keep one hectare preserved in forest. This agricultural income foregone translates to about $16.42 per ton of CO2 that would remain sequestered in the forest rather than released into the atmosphere. These cost estimates vary across the Amazon (Figure 2), and are highest in the state of Mato Grosso, located at the southern portion of the region. This highly productive state produced 27% of Brazilian soybeans in 2016, and was also responsible for 34% of Legal Amazon deforestation from 1990 to 2016.

Could agricultural innovations help to decrease deforestation in this region?

This study reports that agricultural innovations have led to an ability to increase total agricultural production at the rate of 4.9% a year, with no additional inputs, while simultaneously decreasing deforestation at the same rate. There are three implications. First, these innovations contributed to forest preservation. Second, by boosting agricultural productivity these innovations are also increasing the opportunity cost to preserve the forest, since more agricultural production must be foregone. Third, this rate of productivity gain will mean that Brazil's competitiveness as a soybean producer will continue to grow. Soybean yields almost doubled between 1990 and 2015, from 26 bu/ac to 45 bu/ac, while in the US yield increased from 34 to 48 bu/ac.

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3Details of this research are reported in "Tradeoff between agriculture and forest preservation in the Brazilian Amazon", at http://www.locus.ufv.br/handle/123456789/10580.