



## **Enabling conditions for integrated crop and livestock systems in the United States, Brazil, and New Zealand: A comparative analysis of incentives and barriers across three regions.**

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### **Introduction**

In this study we examine the institutional environment for sustainable agriculture in the United States, Brazil, and New Zealand. In particular we ask whether or not the overall policy context is enabling or inhibitory of integrated crop and livestock systems (ICLS) and which policy changes are likely to have the most enabling influence on the adoption of ICLS.

### **Material and Methods**

We use the existing literature and expert interviews to construct an accounting matrix that illuminates current tradeoffs between economic and ecological outcomes of five different agricultural practices in each country: 1) specialized corn production with synthetic fertilizers, 2) specialized beef cattle production using pasture only, 3) corn production using liquid manure as fertilizer, 4) beef cattle production using crops and crop byproducts as feed, and 5) a fully integrated crop and beef production system with a rotation of the area under pasture, and crops, but no additional use of manure and crop products on the farm. We then undertake a thorough review of all existing agricultural, environmental, labor, food safety, and energy policies relevant for agricultural management in these three countries and quantify the impact of each of these policies on economic and ecological outcomes associated with the five different agricultural systems. Finally, we assess the quantitative impact of changes from the current policy conditions on the economic and ecological outcomes associated with each system.

### **Results and Conclusions**

[PRELIMINARY!] We find that existing federal policies are more conducive to integrated crop and livestock systems in Brazil and New Zealand than in the United States. Further financial support for the investment costs associated with transitions to integrated systems in the form of low interest loans coupled with insurance on those loans would substantially help farmers transition to integrated systems in these countries, given the absence of other policy barriers. In the United States insurance programs and a lack of water quality regulations are the largest policy barriers associated with integration, since the returns to specialized systems with insurance are higher than the returns of integrated systems. Changes in the insurance programs and water quality regulations would go a long way toward improving the economic competitiveness of integrated systems in the United States.

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