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Modifying Argentina: GM soy and socio-environmental change

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ABSTRACT

This paper examines Argentina's agro-export strategy for socioeconomic development based on the adoption and expansion of genetically modified (GM) soy. The *modelo sojero* a model based on large scale mechanized production of GM soy, is widely praised at home and abroad and used as an example of "success" for other poor countries on the brink of adopting GM biotechnologies for socio-economic development. In this work I interrogate and contextualize this dominant representation of the success associated with Argentina's soy boom. Indeed, in terms of economic growth Argentina's transition to GM soy has been a success. However the GM-induced soybean boom is illusory when other factors are taken into consideration, most importantly its impact on socioenvironmental dynamics. Thus, I argue that there is a fundamental conflict between the narrative of "success" of the Argentinean GM soy boom and socio-ecological sustainability. After an introduction, section two looks at the historical context of GM soy adoption in Argentina and shows the trend of expansion of production since the adoption of the new GM biotechnology. Section three explores the socio-environmental impact of the GM soy-based agrarian transformation in Argentina. Section four looks at the current context of the Argentinean soybean boom. Thus, it focuses on Argentina's current domestic political economy, particularly the Kirchners' National-Popular model. I argue that the GM soy-based agro-export model as currently configured in Argentina is a socially and ecologically unsustainable model of national development.

1. Introduction

Soy is the goose that lays the golden eggs in Argentina. After the 2001 crisis that sent half of Argentines into poverty, foreign income from soy exports helped revive a near-dead economy (Newell, 2009; Teubal, 2006, 2008). Since then, Argentina's economy has been fueled by the growth of commodity exports, rising on average 8.6% a year for eight of the last nine years.[1] Indeed, since genetically modified (GM) soybeans were introduced in 1996, production has spiked: Argentina is today the third largest global grower and exporter of soybeans,[2] all of which are genetically modified (James, 2010). This *modelo sojero*, a model based on large scale mechanized production of GM soy, is widely praised at home and abroad and used as an example of "success" for encouraging other poor countries to adopt GM technologies as a means of boosting socio-economic development (Newell, 2009).

Argentina has fully embraced GM seeds alongside a model of industrial agricultural soy production for export. Today it is the government's main economic strategy and farmers continue expanding the agricultural frontier, while most of the scientific community and mainstream media celebrate the benefits of the biotechnology. It is not unusual to read headlines in mainstream newspapers praising GM biotechnology and the model's success, extolling "Only biotechnology can save the world" or "Soy, 21st century manna."[3]

GM soybean in Argentina was adopted as part of the neoliberal agro-export strategy for socio-economic development. Agro-industrialism and neoliberalism have been tied in Argentina as in most the Global South (McMichael, 2007; Otero, 2008). Under this paradigm, maintaining high rates of economic growth became the measure of the model's success, and as such, Argentina's transition to GM soy has been a boom: continuous expansion of production, record harvests, and record profits from agro-exports have been nearly constant, harvest after harvest, year after year.[4] Argentina's

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[1] Average GDP annual percentage growth rate 2003–2011, excluding 2009. World Bank Indicators, GDP Growth (annual %). http://data.worldbank.org/. Accessed 8/16/12.

[2] After the United States and Brazil. USDA, United States Department of Agriculture. USDA-FAS, Production, Supply and Distribution (PS&D) database. http://www.fas.usda.gov/psdonline/psdHome.aspx. Accessed 4/21/12.

[3] "Sólo la biotecnología salvará al mundo," *Clarín,* January 29, 2001; "Soja, el maná del siglo XXI," *Clarín,* December 30, 2006.

[4] "La soja impulsó un récord de las exportaciones," *Clarín,* May 31, 2004; "La soja alcanzó el precio más alto en dos años y medio," *La Nación,* November 7, 2006; "La soja no tiene freno: llegó a los $ 900," *La Nación*, December 27, 2007; "La soja volverá a ser la reina en la campaña agrícola 2010/11," *Clarín,* August 30, 2010; "La soja continúa en pleno ascenso," *La Nación,* April 21, 2012.

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GDP continues to grow (by 9.2% in 2010 and 8.9% in 2011), despite the global economic crisis.[5]

These remarkable results have prompted supporters of the technology to present Argentina's soybean model as an example for other poor countries to follow (Chudnovsky, 2006; Trigo and Cap, 2003; Qaim, 2005). In Latin America in particular, Argentina's pro-biotech stand is prominent: the country is the earliest GM crop adopter and the main promoter of GM biotechnology in the region. As GM soy expands from Argentina to the rest of the region, many questions arise: can the model be implemented in other countries with similar results? On what terms is "success" understood? Are increased yields and profits the best measure of a model's success? Based on these questions, the aim of this work is to interrogate and contextualize the dominant representation of the success associated with Argentina's soy boom. The analysis has three strands. First, I consider the historical context of GM soy adoption in Argentina and critically evaluate the trend of expansion of production since the adoption of the new GM biotechnology. Recent studies critically investigating triumphant narratives of GM biotechnology's expansion into the Global South suggest that the *context of adoption* of agricultural technologies is crucial to evaluating claims of success (Glover, 2010; Schnurr, 2012). This research similarly aims to consider the historical, political, economic, social, and environmental settings of GM soy adoption in order to analyze the full impacts of Argentina's embrace of agricultural biotechnology. In common with other studies (Glover, 2010; Schnurr, 2012), I conclude that the success of the GM soy model in Argentina is contingent on the context in which the technology was applied.

Second, I propose to assess the model's success on broader terms, beyond yields and profits. Argentina's soybean model could be deemed successful within the confines of neoliberalism insatiable quest for growth. However, the benefits of GM-induced soybean expansion become less certain when other criteria – particularly socio-environmental considerations such as the protection of livelihoods, social equity, and ecological integrity – are taken into account (Agyeman et al., 2003; Daly, 1996; Redclift, 1992). As authors within the critical strand of environmental sociology argue, there is a "conflict" (Schnaiberg and Gould, 1994) or "contradiction" (O'Connor, 1998) between sustained growth overtime and the environment. In this manner, I argue that there is a fundamental conflict between the narrative of "success" of the Argentinean GM soy boom and socio-ecological sustainability.[6] This work therefore builds on a small but growing literature that aims to critically assess the *modelo sojero* (Giarracca and Teubal, 2005, 2010; Gras and Hernandez, 2009a; Newell, 2009; Pengue, 2005, 2009; Teubal, 2006, 2008), as I explore the consequences of the GM soy boom in detail; in particular its impact on socio-ecological dynamics.

Third, I look at the current context of the Argentinean soybean boom, with a focus on Argentina's domestic political economy. Argentina's soybean boom was propelled by particular political economic conditions that supported the expansion of biotechnology in various ways. In his article "Bio-Hegemony: The Political Economy of Agricultural Biotechnology in Argentina," Newell (2009) examines some of these factors, focusing in particular on the role of business. Newell investigates corporate strategies to secure power over the desirability of an agro-export model based on the production of GM soy in Argentina – to create and maintain what he refers to as "bio-hegemony". Building on Newell (2009), in this article I look into other aspects of the domestic political economic context of GM biotech adoption and expansion, particularly the political strategies of the Kirchners' administrations, in order to assess how changes in the current domestic political context have impacted on the GM soy model and its consequences. Most significantly, under the Kirchners', a fraction of foreign income generated by soy exports is appropriated by the government to fund projects for social development. I argue that these measures, as they are sustained on soy exports, are partial and limited solutions to improve livelihoods; not least because the model cannot be sustained over time, as it gradually exhausts the natural base on which it relies. The conclusion summarizes this conflict between Argentina's GM soy-based developmental agenda and socio-ecological sustainability, the central argument I advance in this paper.[7]

2. GM soy production in Argentina: historical context

The introduction of the GM biotech package and neoliberalism have gone hand in hand in Latin America, as in many nations of the Global South; but nowhere to the extent as it has in Argentina (Otero, 2008). In the 1990s, neoliberalism, also known as the "Washington Consensus," became Latin America's official model of development. The model proposed a re-organization of the international political economy based on the principles of free trade and comparative advantage (meaning, for Latin America, the end of subsidies and tariffs, privatization, deregulation, unrestricted foreign investment, and specialization in a few commodities produced for export), on the belief that economic growth will create social wellbeing (Harvey, 2005).

The core of the neoliberal program for many Latin American countries is referred to as *Non-Traditional Agro-Export production* (NTAE) and it is based on specialization in a few commodities for the export market. In order to increase agricultural production, a "modernization" of agricultural techniques was advised. International financial organizations, like the World Bank and the International Monetary Fund, gave conditional credits to governments that would "encourage" their farmers to invest in new foreign technology, taking credits to buy machinery and seeds (McMichael, 2007; Shiva, 2000).

Neoliberal economic restructuring gave the necessary institutional and ideological framework for the introduction of GM seeds in Argentina. In 1991, the Deregulation Decree – signed by President Menem and Minister of Economy Cavallo as part of their Convertibility Plan to end hyperinflation and promote growth – gave the final neoliberal twist to Argentine political economy, as it ended regulations that protected domestic economic activity, such as import and export sectors of goods, services, and capital, and foreign direct investment (Carranza, 2005; Ferrer, 2004). This decree also wiped out all the boards that had regulated agricultural activities since 1930 (Barsky and Gelman, 2001; Teubal, 2008). The Convertibility Plan became the backbone of Argentina's neoliberal era. The Convertibility Law was the core of the Plan, a new currency scheme that pegged the Argentine peso to the US dollar at a fixed exchange rate of one-to-one (Ps1:1US$). With a cheap dollar

[5] World Bank Indicators, GDP Growth (annual %). http://data.worldbank.org/. Accessed 8/16/12.

[6] *Sustainability* is a highly contested term (see Gould and Lewis, 2009; Redclift, 1992). In here I use the broad but basic notions of sustainability introduced by the World Commission on Environment and Development report (1987). Those are, the need to discuss the role of the environment in development debates, and two, the need to protect the environment for future generations. Thus a model is "unsustainable" when it will not be able to provide the same level of social wellbeing over time, for future generations.

[7] A note on methods: For this work, I draw on data gathered from archival research, quantitative analysis of micro and macro-data from statistical databases, and ethnographic fieldwork, consisting of participant observation and interviews with peasants, rural workers, small, medium and large producers, rural contractors, and members and employees of agribusinesses, as well as with rural inhabitants who do not profit directly from soy production. I carried out 40 formal interviews between 2009 and 2012, 27 in the Pampas region (in the provinces of Buenos Aires, Córdoba, and Santa Fe) and 13 in the North (in Santiago del Estero and Chaco).

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