

# Social Exclusion and Transgenic Technology: The Case of Brazilian Agriculture

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**ABSTRACT.** Many argue that transgenic technology will have wide-ranging implications for farmers in developing nations. A key concern is that competencies may be destroyed by predominantly foreign multinational transgenic technologies, exacerbating problems of social exclusion in the case of subsistence farmers. Conversely, those that fail to adopt the technology may become uncompetitive, particularly in commodity-based export markets. Drawing on interview data conducted in Brazil and supporting data collected in North America, Europe and China, we found that the impact of transgenic technology varies. It has less impact on farmers that adapt the products to their crop systems and environment, and greater negative implications for less formally educated subsistence farmers in consequence of both complexity and compatibility. Earlier attempts at industrializing agriculture through technological innovation led to vastly improved agricultural output and exports, but the benefits of productivity was not equitably distributed [D. Lee: 2005, *American Journal of Agricultural Economics* 87(5), 1325–1334], nor was it designed to meet specific local environmental and socioeconomic farmer conditions, exacerbating social exclusion. Multinationals attempting to introduce transgenic technology without considering the broader social and ethical implications will invite resistance. We discuss the implications for policy makers, multinationals and small-scale farmers.

**KEY WORDS:** Brazilian agriculture, social exclusion, technology management, transgenics

## Introduction

Many have argued that the introduction of transgenic technology in agriculture will have wide ranging economic, social and environmental implications, both positive and negative. A specific area of concern is the impact on farmers in developing

nations. Agriculture plays a major economic and social role in these countries, for domestic consumption, employment and acquisition of foreign exchange through exports. Countries that fail to adopt the technology may become uncompetitive in international markets. Conversely, traditional breeding competencies, ecosystem diversity and crop knowledge may be destroyed by predominantly foreign transgenic technologies, thus widening the gap between developed and developing nations. These technologies may also encourage large-scale, capital intensive agriculture, providing fewer opportunities for informally trained and often illiterate subsistence farmers. Such dynamics may exacerbate poverty, destitution and the cycle of social exclusion, the denial of equal access to opportunities of certain groups of society (Behrman et al., 2003; Buvinic et al., 2004; Commins, 1993). For example, the industrialization of agriculture, the so-called Green Revolution during the 1960–1970s in Brazil and elsewhere, vastly improved agricultural output and exports, but the benefits of agricultural productivity was not equitably distributed (Lee, 2005), nor was it designed to meet specific local environmental and socioeconomic conditions of farmers (Aerni, 2002). In Brazil millions of subsistence farmers were dislocated, many of whom migrated to major urban centres seeking other opportunities, but ended up destitute in *favelas*, or shantytowns (Ferraz, 1999). These squatter communities are famous for their crime rates and other social ills, creating counter-productive economic and social dynamics in many Brazilian cities. The technological benefits of the Green Revolution tend to overshadow the social downside, and there is a fear among many Brazilians that transgenics will follow a similar path.

A key challenge for companies promoting transgenic technology is to recognize socioeconomic