

## Contesting Corporate Transgenic Crops in a Semi-peripheral Context: The Case of the Anti-GM Movement in India<sup>1</sup>

Devparna Roy

University of Puget Sound

[droy@pugetsound.edu](mailto:droy@pugetsound.edu)

### Abstract

*Market penetration by the hegemonic core state's agricultural biotechnology firms has been preceded and accompanied by a vigorous anti-genetically modified seeds (anti-GM) movement in semi-peripheral India. To understand the extent of anti-imperialism and anti-capitalism exhibited by the Indian state, it is useful to investigate the character of democratizing forces—such as the anti-GM movement—which interact with and shape the state. I use primary and secondary data sources to analyze the anti-GM movement in India and argue that the movement is anti-corporate without being anti-capitalist. Further, it is counter-hegemonic but not anti-systemic. These four traits reflect the strengths and weaknesses of exemplary coalition-building between right-wing nationalists, centrists, and left activists. The Indian anti-GM movement suffered an early failure when the Indian state commercialized Bt cotton seeds in 2002, following the entry of unauthorized Bt cotton seeds and lobbying by farmers' groups for legalization of Bt cotton seeds. However, an effective coalition between the right-wing, centrist, and left elements was built by about 2006. This was followed by a most significant victory for the anti-GM movement in February 2010, when the Indian state placed an indefinite moratorium on the commercialization of Bt brinjal seeds. A second, more qualified, victory was achieved by the anti-GM movement when the Indian state placed a hold on field trials of GM crops in July 2014. The anti-GM coalition has been successful in pressing ideologically different political parties to take steps against the multinational seed firms based in core states. Further, it has enabled the Indian state to move from a sub-imperialist to an anti-imperialist role regarding GM seeds. But until the anti-GM coalition in India resolves its inner contradictions and becomes resolutely anti-capitalist and anti-systemic, it will not be able to effectively challenge the anti-imperialist Indian state's pro-capitalist stance regarding GM seeds and industrial agriculture.*

**Keywords:** anti-GM movement, India, anti-corporate, coalition politics

---

<sup>1</sup> I would like to thank Mangala Subramaniam for her helpful input on an earlier version of this paper and the anonymous reviewers for their comments and suggestions. All errors and omissions are the responsibility of the author alone.

Much of the debate around genetically modified (or GM) seeds and crops has focused on the local or national regulatory systems and the potential adverse effects of the products of agricultural genetic engineering on health and the environment. I will address some of these debates from the angle of world-systems analysis, because such an approach explains why contemporary issues related to GM seeds cannot be successfully addressed at the level of the individual state, but rather must be resolved at the world-system level. I argue that at the current stage of its evolution, the Indian anti-GM movement is anti-corporate without being anti-capitalist. Further, it is counter-hegemonic but not anti-systemic. Finally, the anti-GM movement has enabled the Indian state to move from a sub-imperialist to an anti-imperialist role when it comes to GM seeds.

Genetic engineering has emerged as a leading industry of the core states of the modern world-system (Wallerstein 2004; Chase-Dunn 2006). Seeds are the delivery system of agricultural genetic engineering. GM seeds are a leading product of multinational firms based mostly in core states, and certain multinational biotechnology firms have made attempts to penetrate markets in semi-peripheral countries such as India. Some of these firms have met with notable success. For example, Bt cotton seed, a kind of transgenic or genetically engineered or GM cotton seed, was commercialized in India in 2002.<sup>2</sup> Bt cotton seeds quickly captured the Indian cotton market between 2002 and 2012. It has been estimated that over 92 percent of the cotton grown in India in 2012 was Bt. Writing in the prestigious international journal *Nature*, K.S. Jayaraman (2012) claimed that the vast majority (97 percent) of the Bt cotton in India was sold or licensed by the U.S.-based agricultural biotechnology firm Monsanto. There are at least two problems with Monsanto's GM hybrid seeds for Indian farmers. These seeds are expensive for the farmers and, like other hybrid seeds, they lose vigor after one generation (ibid). Thus, farmers must buy new stocks every year, which for many results in a never-ending cycle of market dependency.<sup>3</sup>

During the course of my research, I found that many Indian farmers had joined anti-GM activists—right-wing nationalists, centrists, and leftists—in protesting against transgenic seeds and Monsanto's dominance in the Indian market. Market penetration by biotechnology firms such as Monsanto was preceded and accompanied by a vigorous anti-GM movement in India, as well as the simultaneous creation of various pro-GM groups.

This paper is divided into eight sections. Following the introduction, I give some background information about India. Next, I provide a theoretical discussion of quasi-monopolies and semi-peripheral actors. Following a section on data and methods, I discuss the early phase (1998-2005) and mature phase (2006-present) of the Indian mobilization against GM seeds and an analysis of the movement. In the concluding section, I reflect on the successes of the Indian anti-GM movement and its future challenges.

---

<sup>2</sup> Transgenic or GM seeds are created by scientists by introducing foreign gene(s) into a host genome. For example, Bt crops are created by introducing gene(s) from the soil bacterium *Bacillus thuringiensis* into the crop genome. Scientists introduce genes from *B. thuringiensis* into the cotton genome to create Bt cotton plants. These Bt cotton plants produce pesticide-like substance that make these GM cotton plants resistant to certain lepidopteran pests. Similarly, the Bt brinjal plants produce pesticide-like substances that make these transgenic brinjal plants resistant to specific pests. The vegetable 'brinjal' (*Solanum melongena*) is also known as 'eggplant.'

<sup>3</sup> GM or genetically engineered seeds are available either as hybrids or varieties. GM hybrid seeds have to be replaced every year to get maximum yield, and they are costlier than GM varieties. GM varieties can be saved and re-used by the farmer for several years. GM hybrids generally give better yields compared with GM varieties.

### Setting the Context

To better understand the Indian anti-GM movement, it is useful to briefly analyze how its main interlocutor, the Indian state, operates. Following independence from British colonial rule in 1947, the Indian state has travelled through two major phases of *democratic developmentalism*: (i) the mixed economy era, the period 1947 to 1990, characterized by long periods of rule by one political party—the Indian National Congress and (ii) the neoliberal globalization era, 1991 to the present, characterized by rule of various political parties.<sup>4</sup> By using the term *democratic developmentalism*, I mean to acknowledge that the Indian state actors operate in a democratic context, and they continue to prioritize the role of seed markets in meeting certain social and developmental needs, such as addressing the livelihood concerns of small and marginal peasants, rather than a focus on just creating profits for seed firms. Elsewhere, I have argued that the contemporary Indian state is a hybrid formation—pursuing neoliberal policies in some sectors of the economy, such as the information technology industry, but exhibiting a strong “democratic developmental” impulse in others, such as the seed sector (Roy 2014).

It is also important to keep in mind that India is one of the very few non-core countries to have built up a robust tradition of formal democracy. Since its inception, the Indian state has played a crucial role in industrializing the country and helping support a modern democracy and civil society in India. Observers will broadly agree that a vibrant civil society flourishes in India today. Along with the state, different civil society groups are playing a vital role in deepening democracy in India.

As McMichael (2013) comments, India has long been part of a countertrend of sorts to the *globalization project*,<sup>5</sup> as the Indian state has never completely accepted neoliberal principles because of compelling social and ecological reasons. In response to the globalization project, the Indian state has initiated many welfare measures for rural citizens. This Indian form of twenty-first-century development finds resonance with recent Latin American initiatives to bring markets under social control (McMichael 2013).

Though certain states are fast urbanizing, India continues to be an agricultural society, with possibly the largest contingent of peasant-farmers in the world, most of whom are smallholders owning less than two hectares of land per household. Most Indian farmers continue to self-provision seeds, planting them from the previous year’s harvest and exchanging seeds among themselves. However, there are also thousands of farmers in India who buy seeds from the market. Should most Indian farmers be somehow convinced to buy hybrids and transgenic hybrids from the market instead of self-provisioning seeds, the Indian commercial seed market would become immensely profitable for private seed firms.

There were few indigenous seeds firms existing in India prior to the 1970s. There was an exponential increase in the number of private seed firms since the late 1980s, coinciding with economic liberalization. Foreign seed firms have entered India since the late 1980s, with 100 percent foreign equity allowed in the seed industry since 1991. In terms of seed technology, it should be noted that the Green Revolution seeds were based on imported technology that Indian

---

<sup>4</sup> ‘Neoliberalism’ is the dominant economic ideology in the world since the 1980s, and under its influence, many national governments (including that of India) have deregulated, privatized, and restructured national economies so to become more internationally competitive. ‘Globalization’ is characterized by the extension of production and consumption activities across national boundaries, under a global neoliberal economic regime.

<sup>5</sup> McMichael (2000: 259) defines the globalization project as “an emerging vision of the world and its resources as a globally organized and managed free trade/free enterprise economy pursued by a largely unaccountable political and economic elite.” For a brief breakdown of its components, see McMichael (2000: 187).

public sector scientists adapted to local conditions. Further, during the Green Revolution era, which had marked the beginning of industrial agriculture in many regions of India in the 1960s, seed markets in India were dominated by public sector firms. Today, in the Gene Revolution era, which began in 2002, seed markets in India are dominated by private firms.

As Ramamurthy (2011) notes, the entire cotton chain, from seed to fiber to fabric and apparel, is a global chain. Cottonseed production in India is at the center of the investment strategies of the biggest multinational seed companies in the world. Companies such as Monsanto, Bayer, and Dow have operated in India since 2001, when the Government of India promulgated an act to protect their intellectual property. These foreign corporations have been eagerly buying Indian seed companies and investing in them. The Indian market, already twice the size of the U.S. market in 2010, is expected to grow even further by 2020. Indian hybrid cottonseed is at the core of multinational seed company strategies for the extended reproduction of capital (Ramamurthy 2011).

Market concentration in the world's seed industry has been growing over the years. In 1995, before the commercial release of transgenic seeds, the world's top ten seed companies controlled 37 percent of the world's commercial seed sales (Shand 2012). In 2009, the top ten companies accounted for 73 percent of the commercial seed market. The three largest seed firms—Monsanto, DuPont, Syngenta—accounted for 53 percent of the proprietary seed market globally in 2009, and the same three corporations accounted for nearly three quarters of all U.S. patents issued for crop cultivars between 1982 and 2007 (Shand 2012).

The vast majority of farmers in developing countries are self-provisioning in seed, and they represent the seed industry's biggest competition. In 2006, seeds from the public sector accounted for 11 percent of the global seed market value, while farmer-saved seeds accounted for 21 percent and proprietary seeds accounted for 68 percent (Shand 2012). Currently, the domestic seed market in India is one of the largest in the world. It is worth about U.S. \$1.3 billion, and has been growing at a compounded annual growth rate of about 15 percent, according to a report in a major Indian financial daily, *The Economic Times* (2012).

In 2007, Monsanto's GM biotechnology traits accounted for about 85 percent of all area (trait-acres) devoted to commercial GM crops in 13 countries where GM crops were planted (Shand 2012). Only five firms, Monsanto, DuPont, Syngenta, Bayer, and Dow Agrosiences, accounted for 98 percent of all biotech trait-acres in 2007 (Shand 2012). It should be noted that all five firms are based in core countries. According to Shand (2012), the world's six largest seed/agro-chemical/biotechnology firms, which are BASF, Bayer, Dow Agrosiences, DuPont, Monsanto, and Syngenta have a 'dangerous chokehold' on the global agricultural research agenda. In the perception of many activists with whom I have spoken, these 'Big Six' corporations constitute what may be termed the 'GM cartel.' Whether or not the 'GM cartel' has been intentionally formed by the six corporations, the evidence is that the Big Six corporations have agreed to cross-license proprietary germplasm and technologies, consolidate R&D efforts, and terminate costly patent litigation battles.

### **Theoretical Background**

According to Schumpeter (1941), the success of capitalism could be measured in terms of technological innovation and 'avalanches of consumer goods.' Capitalism was driven by repeated examples of 'creative destruction' in the course of which new technologies, products,

materials, organizational methods, and markets destroyed old institutions and practices and replaced them with new ones (Schumpeter 1941: 83). Further, this unsteady dynamism of the capitalist economy was increasingly the work of big business. Monopoly and oligopoly protected innovators, and kept their rivals out of the marketplace. According to Schumpeter's analysis, the individual entrepreneur was becoming redundant as research teams took over. The entrepreneur's sense of personal ownership of the business declined as large corporations became limited companies with shareholders.

Building on Schumpeter's narrative of capitalism, Wallerstein (1984) argues that the capitalist world-economy, which came into existence in Europe in the sixteenth century, is a network of integrated production processes united in a single division of labor. The basic economic imperative of this world-economy is the ceaseless accumulation of capital, made possible by the continuous appropriation of surplus-value, which is centralized via primitive accumulation, the concentration of capital, and the mechanisms of unequal exchange (Wallerstein 1984). Further, the political superstructure of the world-economy is the interstate system composed of 'states.' The zones under the jurisdiction of these states have never been economically autonomous, since they have always been integrated into a larger division of labor—that of the world-economy.

To better understand competing conceptualizations of the current phase of globalization by world-systems theorists, let us turn to the work of Hopkins and Wallerstein (1986), who use global commodity chain analysis to argue that globalization is not a new process and that capitalism as a world-system has been spatially expanding since the seventeenth century. The competing conceptualization of globalization (by theorists such as Peter Dickens, Miguel Korzeniewicz, and Gary Gereffi) argues that whereas the *internationalization* of bygone eras also involved the extension of business activities beyond national borders, it was a simple quantitative process; *globalization* instead involves the functional integration of production, or a qualitative process of change (Ramamurthy 2004). Dickens and other theorists shift the scale of analysis from national to multinational corporations ('drivers' or 'leading firms'), which now increasingly control the process of integration of production. In their work, they demonstrate how multinational corporations are able to overcome the nation-state's protectionist measures and enhance their competitive advantage by lowering labor costs and increasing industrial flexibility (Ramamurthy 2004).

Sellers who are best located within a given market always prefer a monopoly because this allows them to create a relatively wide margin between the production costs and the sales price, and thus realize high rates of profit (Wallerstein 2004). Marginal firms prefer competition. Perfect monopolies are difficult to create, and therefore rare, but quasi-monopolies are not. The normal situation for so-called leading products (that is, products that are both new and have an important share of the overall world market for commodities) is an oligopoly rather than an absolute monopoly (Wallerstein 2004). This observation by Wallerstein holds true for the global market for seeds, especially for GM seeds, as I discussed above.

As Wallerstein (2004: 26) comments, states can create quasi-monopolies through patents, and other protectionist measures. Quasi-monopolies depend on the patronage of strong states, and so the firms creating quasi-monopolies are largely located—juridically, physically, and in terms of ownership—within strong states. Strong states can use their power to prevent weaker states from creating counter-protectionist measures. The medium-strong semi-peripheral Indian state is not in a position to either prevent core states and their leading firms from selling their transgenic technologies to Indian firms or to prevent the flow of technology fees from Indian

farmers to the core bourgeoisie. This was especially the case once the Indian state approved the commercialization of a particular kind of GM seed. I argue that the Indian Bt cotton seed market can be said to be a quasi-monopoly of Monsanto for at least three reasons. First, in India, the Bt cotton seed market is currently in the hands of about fifty private players, most of whom are domestic firms who license the gene constructs from one multinational firm—Monsanto (calculated by the author from IGMORIS data<sup>6</sup>). Second, Indian farmers pay annual technology fees to Monsanto amounting to millions of Indian rupees (about one hundred million US dollars, according to Pray and Nagarajan [2010]). This amounts to a transfer of wealth from the semi-peripheral peasantry to the semi-peripheral and core bourgeoisie. Third, the Indian public sector is not yet in a position to challenge the quasi-monopoly of Monsanto within India. Even though the Indian state created a public sector with R&D investments in transgenic seed technology in the 1980s, the Indian public sector has so far released and later, withdrawn only one variety of GM seed (for details of this case see Roy 2013).

In such a situation, I argue that the role of the national anti-GM movement in the public debates over GM seeds in India becomes especially salient for the Indian state. As noted by Subramaniam (2015) in her introductory essay to this issue, the state has played a pivotal role in implementing and sometimes resisting neoliberal practices that have constituted the global capitalist system. In this article, I will consider how the Indian anti-GM movement has enabled the Indian state to move from a sub-imperialist role to an anti-imperialist role when it comes to GM seeds.<sup>7</sup>

But before I discuss the anti-GM movement in India and its interactions with the Indian state, I will briefly consider the features of semi-peripheral states, of which India is one. Some states have a near even mix of core-like and peripheral processes; they may be called semi-peripheral states. These semi-peripheral states have unique political properties: they apply pressure on peripheral states and they are under pressure from the core (Wallerstein 2004). Their crucial problem is not to slide into the peripheral category as well as to do what they can to propel themselves toward the core. Both goals require considerable state interference with the world market (Wallerstein 2004). In the twenty-first century, semi-peripheral countries such as South Korea, Brazil, and India have strong firms that export products (such as automobiles, pharmaceuticals, and steel) to peripheral zones, but they also connect to core zones as importers of more “advanced” products (Wallerstein 2004).

According to Chase-Dunn’s structural theory of the world-system (1990), the most important feature of the semi-peripheries is that fascinating political movements are more likely to emerge there than in core states or peripheries. Concurring with Goldfrank (1978), Chase-Dunn (1990) argues that movements of both the right and the left have often found fertile ground in semi-peripheral and second-tier core states. The contradictory location of semi-peripheral areas in the larger world-systems is the reason for this political fertility. More stratified semi-peripheries are likely to produce social revolutions which challenge the logic of capitalism, while relatively less stratified and politically liberal semi-peripheries are likely to achieve the degree of class harmony necessary for upward mobility within the capitalist world-economy (Chase-Dunn 1990). In my analysis, contemporary India may be classified as a politically liberal but socially stratified semi-periphery with a low degree of class harmony. The liberal political environment

---

<sup>6</sup> IGMORIS is a government of India service available at: [igmoris.nic.in/Files2/YearWise\\_List\\_2002\\_May2012.pdf](http://igmoris.nic.in/Files2/YearWise_List_2002_May2012.pdf)

<sup>7</sup> For reasons of space, in this paper, I am not going to discuss the linkages between the Indian anti-GM movement and other national and/or continental anti-GM movements. However, I will argue that the Indian anti-GM movement is not anti-systemic in nature, and thus, it is not part of the family of anti-systemic movements spanning the globe.

and working democracy dissipates some of the tensions created by the class structure of Indian society, leading to a situation where groups across the political spectrum—right-wing nationalists, centrists, and left activists—can operate in various states of India today, meeting with differing levels of success in different regions.

For Chase-Dunn (1990: 25), both the ‘workerist’ (Marx’s notion that socialism will most effectively be built by the action of core proletariat) and the ‘Third Worldist’ (Samir Amin’s contention that agents of socialism are most heavily concentrated in the periphery) positions have important elements of truth, but he suggests an alternative: the semi-peripheral areas are the weak link of the modern world-system. For him, semi-peripheral areas, especially those where the territorial stage is large, have sufficient resources to be able to stave off core attempts at overthrow and to provide some protection to socialist institutions if the political conditions for their emergence should arise. While core exploitation of the periphery creates and sustains alliances among classes in both the core and the periphery, the most important experiments with socialism have emerged in semi-peripheral states, and there is reason to believe that semi-peripheral areas will continue to produce powerful challenges to the capitalist mode of production in the future. Chase-Dunn (1990) cautions that semi-peripheral revolutions and movements are not always socialist in character (e.g. Iran in 1979), but when socialist intentions are present, they are greater possibilities for real transformation than in the core or the periphery. Such semi-peripheral revolutions may transform the character of the capitalist world-system.

The BRICS countries—Brazil, Russia, India, China and South Africa, or emerging economies—are an important sub-group of semi-peripheral states. According to Wallerstein (2013), the BRICS states have emerged both as anti-imperialist agents—if anti-imperialism is defined as opposing the hegemony of the United States—and as sub-imperialist agents of the core. Further, he argues that BRICS states have demonstrated little capacity to resist and transform capitalism. Thus, unlike Chase-Dunn (1990), Wallerstein (2013) is not optimistic about the possibilities of the larger semi-peripheral states or a BRICS nation such as India emerging as both authentic anti-imperialist and anti-capitalist agents. When it comes to a leading product such as GM seeds, is the semi-peripheral Indian state generating authentic anti-imperialist resistance by restricting the quasi-monopolies of leading firms based in core states? Is it supporting real anti-capitalist movement and hastening the demise of the capitalist world-system? I will speak to this unfolding key debate on the role of semi-peripheral countries later in this article.

### **Data and Methods**

Empirical material presented in this article builds on the insights gathered during intermittent fieldwork over twenty-two months carried out in various parts of India between 2000 and 2014. During my fieldwork, I extensively interviewed farmers, farmers’ leaders, activists, politicians, social movement leaders, media persons, and natural scientists. For this paper, I conducted semi-structured formal and informal telephone interviews in 2014 and 2015 with fifteen key actors based in India, including anti-GM activists and intellectuals, journalists, and scholars. Some key informants were interviewed two or more times in order to clarify their opinions and views. While the interviews were being carried out, I took notes based on their answers to my questions. Direct quotes from their interviews were later scrutinized by the informants for accuracy. I also draw upon archival documents such as scholarly articles, newspaper articles, activist organization publications and websites.

### **Indian Mobilization against GM Seeds: The Early Phase (1998-2005)**

In 1995, the Government of India granted permission MAHYCO, a large domestic seed firm, to import Bt cotton seeds from Monsanto. Imported Bt cotton seeds were used by MAHYCO for backcrossing into Indian cultivars. In 1996-98, MAHYCO was granted permission by the Indian government to conduct field trials on these Bt cotton hybrids. I argue that in the 1990s, the Government of India acted as a sub-imperialist agent of the core for two reasons. First, it permitted MAHYCO to bring Monsanto's proprietary Bt gene construct into India. Second, the central government's economic policies in 1991 allowed for one hundred percent foreign direct investments (FDI) in the seed sector, thus creating the opportunity for multinational firms to enter and significantly influence the Indian seed sector.

All these developments were taking place away from public attention. However, the 'terminator seeds' controversy brought the debate about GM crops to the national media attention for the first time in 1998 (Scoones 2008). Monsanto was suspected of trying to release products with a terminator gene—a gene which would prevent replanting and make farmers reliant on annual purchases from seed companies. Monsanto released a series of press advertisements to counter the notion that it was releasing products containing the terminator gene. Non-governmental organizations (NGOs) concurrently launched the 'Monsanto Quit India' campaign to heighten public awareness about GM crops.

Although it was well known that field trials of Bt cotton had been established, details of trial sites became public only in November 1998 (Scoones 2008). The *Karnataka Rajya Raitha Sangha* (KRRS), an influential farmers' group based in the southern state of Karnataka, announced the 'Cremate Monsanto' campaign at once. The leader of the KRRS, the late Professor M.D. Nanjundaswamy, identified a series of anti-GM slogans and gave notice that all field trial sites in Karnataka would be burned, in front of the media.

The GM crops debate continued in the national media at a high pitch throughout 1999 and 2000, with the anti-GM NGOs in various parts of the country continuing to garner significant press attention. Scoones (2008) notes that there were a number of workshops and consultations on transgenic crops, and more concerted counter-moves by the pro-GM groups, with interventions by non-resident Indian and foreign scientists, other farmers' leaders (such as Sharad Joshi of Maharashtra), and industry commentators, including a Monsanto-commissioned public opinion survey which claimed to show Indian farmers' support for biotechnology.

Legal actions or public interest litigations were undertaken by the anti-globalization activist Vandana Shiva's organization, Research Foundation for Science, Technology, and Ecology (RFSTE), and the geneticist-activist Suman Sahai's organization, Gene Campaign, against both Monsanto and the state. Besides public interest litigations, direct protests also occurred during this time. The KRRS was active in crop-burning media events, and argued for a five-year moratorium on GM seeds. There were regular rallies and demonstrations at Monsanto's former India research headquarters at the Indian Institute of Science in Bangalore (Scoones 2008). Events such as citizens' juries in Karnataka in 2000 and in Andhra Pradesh in 2001 created platforms for activists to discredit GM crops and industrial agriculture (Scoones 2008). Media interest in GM issues remained high, with industry and NGO websites providing alternative views on the Indian scene.

Despite elaborate tests, the Indian government refused MAHYCO permission to commercialize Bt cotton in June 2001. MAHYCO was asked to conduct further tests. Thus, in June 2001, it was unclear how long it would be before the Indian government approved the commercialization of Bt cotton. But the situation changed within a few months with a discovery of unauthorized Bt cotton growing on hundreds of hectares in Gujarat (a western state of India) in September-October 2001.<sup>8</sup> Following this discovery, in March 2002, the Indian government approved the commercial release of Bt cotton seed produced by a private company, MAHYCO Monsanto Biotech Limited or MMB. How do we understand this change of mind of the Indian government? According to Ramanna (2006), the reasons for the decision moving from *de facto* to *de jure* acceptance of Bt cotton must be understood in terms of a powerful story line of 'GM as farmers' choice,' which emerged following the events in Gujarat and which posed a challenge to the discourse of the anti-GM civil society groups. News of farmers growing Bt cotton in Gujarat and other states prior to the central government's approval led to a shift in the way transgenic crops were portrayed in the media and policy-making circles. The rationale was then put forward that if farmers want the technology, what right does the national government have to deny them transgenic seeds?

The anti-GM civil society groups could not refute this powerful logic. If they opposed Bt cotton, it made them appear indifferent to the real interests of the farmers they were supposed to represent. The pro-GM lobby presented Indian farmers as decision-makers and voters for Bt cotton, which trumped the portrayal of Indian farmers as hapless victims of globalization—a picture which had been put forth by the anti-GM lobby and which had garnered widespread attention because of Indian farmers' suicides. The pro-GM lobby's strategy following the Gujarat incident was not to stress the intellectual property rights violation caused by the unauthorized Bt cotton seeds, but to emphasize the issue of farmer's choice (Ramanna 2006). Pro-GM farmers' groups such as Sharad Joshi's *Shetkari Sangathana* demanded the rapid approval of Bt cotton. The discourse of farmer's choice essentially blurred the distinction between unauthorized seeds and MMB Bt cotton, when it came to the Bt cotton hybrid's success.<sup>9</sup>

Scoones (2008) notes that the legal introduction of Bt cotton in 2002 led to more protests. Gene Campaign held a high-profile conference in Delhi that argued for an overhaul of the regulatory system. Greenpeace, with its India office located in Bangalore, geared up for consumer-based protests in shopping malls, and caught the attention of the media with its protests around regulatory discussions. However, the KRRS protests became muted because of the failing health of Nanjundaswamy prior to his death in February 2004.

Around 2004, many campaign-based NGOs had begun to see the anti-GM campaign as inherently limiting, and they were eager to develop a narrative about possible alternatives to GM crops and industrial agriculture (Scoones 2008). A lot of attention was infused by anti-GM NGOs into providing alternative evidence of the limits of Bt cotton technology just in time for the three-year-review of Bt cotton results in 2005 (Scoones 2008). In addition to discussing the problems with Bt cotton technology, the anti-GM NGOs also began to seriously develop the

---

<sup>8</sup> The unauthorized Bt cotton seeds in Gujarat was called 'Navbharat 151' which was marketed by a small Indian seed company as a hybrid but was in reality an unlicensed Bt cotton hybrid. Although the Navbharat 151 seed contained the same Bt toxin gene as the MMB Bt cotton, it was crossed with a different parent. It is unclear how the MMB gene construct got into Navbharat 151.

<sup>9</sup> See Roy (2006) and Roy, Herring and Geisler (2007) for a discussion of how the unauthorized GM hybrid seeds (namely Navbharat 151) performed better than MMB's Bt cotton hybrids for many farmers interviewed in Gujarat during the years 2002-2004.

story of a possible alternative to industrial agriculture. Thus, in the move from what I call a ‘constrained narrative,’ which centered around anti-GM campaigns in which GM seeds were painted as being harmful for the farmers, consumers, environment, economy, and society, to what I call a powerful ‘counter-hegemonic narrative’ which subsumed the earlier narrative, questioned not just GM seeds but the entire model of industrial agriculture itself. It focused on alternatives to the paradigms of industrial agriculture and GM seeds; the anti-GM civil society groups were able to raise the debate on GMOs to a higher and more-encompassing level. Pro-GM groups argued that the debate should be restricted to the single issue of whether GM seeds were advantageous for various social groups and the economy, but anti-GM groups brought in the larger issues of choice of agricultural paradigms—agro-ecological or industrial—and choice of development strategies—corporate-led or state-led—and the implications of such choices for Indian democracy.<sup>10</sup>

### **Indian Mobilization against GM Seeds: The Mature Phase (2006-present)**

Efforts were made since 2003 in India to launch a second transgenic crop, Bt brinjal. Brinjal is a very popular vegetable in India, consumed by the rich and poor alike. When it comes to brinjal, Indian farmers cultivate both hybrids and open pollinated varieties (OPVs). This market segmentation facilitated collaboration between the public sector and the private sector, beginning in 2003 (Herring and Shotkoski 2011). MAHYCO shared its biotechnology (which it had developed in collaboration with Monsanto) with Indian public institutions for development of Bt brinjal. These public institutions developed Bt brinjal varieties with technology donated by MAHYCO, while MAHYCO itself continued to concentrate on Bt hybrids, assuming that many farmers would eventually favor them for their yield advantage.

In contrast to the Bt cotton story where hundreds of private sector hybrids have been released from 2002 onwards, and only one public sector variety was released, more brinjal OPVs from the public sector than hybrids from the private sector were planned for release. This would give Indian farmers a choice between two types of GM cultivars: the lower-cost and save-able seeds of Bt brinjal varieties and the higher-yielding and more expensive hybrid seeds. The central government’s Genetic Engineering Approval Committee (GEAC)’s Expert Committee concluded in October 2009 that the technological trait in brinjal was effective in controlling target pests, safe to the environment and humans, and had the potential to benefit farmers. Given the approval by the GEAC, one would assume that the stage had been set for Bt brinjal to be legally introduced in India. However, that was not to be.

In a serious attempt to solicit opinions from the public about developing human-centered policies regarding Bt brinjal, the then Minister for Environment and Forests, Jairam Ramesh, announced that he would not accept the GEAC recommendations for commercial release of Bt brinjal, but would instead open public consultations on a tour of seven Indian cities. In January 2010, he toured far-flung cities within India: Kolkata and Bhubaneswar in the eastern states, Ahmedabad and Nagpur in the western states, Hyderabad and Bangalore in the south, and Chandigarh in the north. There was a massive outpouring of letters and other documents from

---

<sup>10</sup> For further discussion, see Roy (2014). Moreover, while GM seeds are often associated with the paradigm of industrial agriculture, this need not be the case for all farmers. See Roy (2010, 2012) for reasons why self-identified organic farmers in Gujarat (India) chose to cultivate Bt cotton and why their attitudes toward GM seeds changed (or did not change) over time.

scientists, agriculture experts, farmers' organizations, NGOs, consumer groups and people from all walks of life. These publicly available documents run into hundreds of pages and are written in many languages by many different individuals and groups, both pro-GM and anti-GM. After the consultations, in February 2010, Minister Ramesh placed an indefinite moratorium on the commercialization of Bt brinjal until independent scientific studies established the safety of the product in terms of its long-range impact on human health and the environment (including the rich biodiversity existing in brinjal in India).

Which factors led to this unprecedented opening up of the debates regarding GM crops and the future of Indian agriculture in January 2010? The anti-GM civil society groups played a major role in launching public awareness campaigns about the problems with Bt brinjal, mobilizing public opinion in January 2010 to get citizens to respond to Minister Ramesh's public consultations. But the demonstrated efficacy of anti-GM civil society groups was not the only reason why the February 2010 indefinite moratorium came into being. Roy (2014) notes four other reasons that led to the 2010 moratorium on Bt brinjal. The first is the lack of release of unauthorized Bt brinjal seeds to farmers at that point in time and the second is the difficulty of mobilizing brinjal-producing farmers to rally in support of Bt brinjal. The third reason is the lack of scientific consensus on the issue of Bt brinjal. Unlike in the case of Bt cotton where few Indian scientists joined the anti-GM groups, the GM food crop Bt brinjal saw a divided scientific community. The fourth reason is the opposition by many powerful regional/state governments to Bt brinjal. Minister Ramesh's announcement of the indefinite moratorium on Bt brinjal's commercial release continues to this day and is the first major victory for the anti-GM civil society groups in India. The salience of this major victory of the anti-GM coalition over corporate transgenic seeds needs to be emphasized. The noted food and trade policy analyst Devinder Sharma told me, "The February 2010 government decision to announce an indefinite moratorium on the commercialization of Bt brinjal was the *most* significant victory achieved by movements arising from within the Indian civil society in the last forty years." Given India's numerous social/environmental movements, some of which are globally renowned, this assessment by Sharma should give the reader pause for thought.

Just before the national elections in summer 2014, the GEAC of the environment ministry of the ruling United Progressive Alliance (UPA) government approved field trials of some fifteen GM crops. In June 2014, a new government was formed by the right-wing *Bharatiya Janata Party* (BJP) in New Delhi. There was some fear among anti-GM activists that the new government would continue with the previous government's stance on field trials of GM crops. However, due to pressure from the right-wing organizations such as the *Swadeshi Jagaran Manch* (SJM)<sup>11</sup> and the *Bharatiya Kisan Sangh* (BKS), the new government placed a hold in July 2014 on the field trials of fifteen GM crops. This decision by the New Delhi government was sought to be overturned by some states. For example, Maharashtra has just allowed open field trials for five GM crops, including Bt brinjal. Nevertheless, many other states including Gujarat, the home state of Prime Minister Narendra Modi are not allowing field trials of GM food crops, at least for the present. The earlier decision by the central government to place a hold on the field trials of GM crops can be counted as a qualified success for the anti-GM movement, however

---

<sup>11</sup> The *Swadeshi Jagaran Manch* or SJM (Forum for National Awakening) is associated with the BJP, and is an organization devoted to both economic and cultural nationalism. The *Bharatiya Kisan Sangh* or BKS (Indian Farmers' Union) is also associated with the BJP, and is a nationwide farmers' organization. Both SJM and BKS are part of the right-wing '*Sangh Parivar*' (the Family of Organizations associated with the politically and culturally influential civil society group *Rashtriya Swayamsevak Sangh* or 'National Association of Volunteers').

short-lived it may have been. But even if the central government in New Delhi were to approve of field trials of GM crops in the future, the state governments would have the last word on whether field trials of GM crops would be permitted in their respective states. Biotechnology is decided at the level of the central government, but agriculture ultimately falls under the administrative ambit of the state.

### **Analysis of the Anti-GM Movement in India**

In this section, I will make five points. First, in the early phase (1998-2005), the anti-GM movement did not score any notable victories because of its inability to develop an effective coalition between right-wing nationalists, centrists, and left activists between 1998 and 2001. A further problem was created by the entry of unauthorized Bt cotton seeds unnoticed by the Indian state and civil society groups, a fact which was discovered only in fall 2001. In the case of Bt cotton, the pro-GM corporate interests were able to outmaneuver the anti-GM groups and state actors due to the alignment of powerful cotton farmers' interests with Monsanto's interests in the wake of the discovery of unauthorized Bt cotton.

Second, in the mature phase (2006-present), the anti-GM movement was finally able to build an effective coalition comprising of right-wing, centrist, and left-wing groups. Each component built links with their respective political parties, parliamentarians and policymakers in both state-level (regional-level) and central governments, as well as scientists, media persons, urban consumers' groups, and farmers' groups sympathetic to their ideologies.

Scoones (2008) notes that the GM debate in India was characterized by the strategic development of alliances and the linking of actors and organizations in new, often fragile coalitions. However, I will argue that the fragility of the civil society coalitions in the area of GM crops became a thing of the past by about 2006. Despite the ideological differences and the contrasts in personalities and work styles, Indian activists were able to form nationwide loosely-knit yet robust networks such as the Coalition for GM-Free India. This Coalition nurtured an energetic and wide-ranging campaign against GM crops in India from about 2006. Different actors fought on different fronts across the country. Thousands of activists throughout the country worked with peasants to mobilize support against Bt brinjal. Though longstanding activists such as Devinder Sharma, Suman Sahai, and Vandana Shiva were also present in this struggle, new activists had begun to play a larger role.

Many strands of activism came together to form the anti-GM movement in India from the early 1990s onward. There were activist organizations that had been long tackling the negative side effects of industrial agriculture in the Green Revolution areas. Such environmental groups felt that not only had Indians overlooked the old dangers associated with Green Revolution technologies, they were inviting new dangers by welcoming plants releasing pesticide-like substances into the environment. Other groups worried about the biosafety implications of transgenic crops; after viewing the chaos surrounding Bt cotton, they fought for a stronger regulatory system that would effectively monitor GM crops from the lab to the field.

Further, there were centrist and left wing organizations that focused on the negative impacts of contemporary capitalism, including the WTO's trade-related intellectual property rights (TRIPS). These civil society groups concentrated on localization and developing community-based self-reliance in all matters, including food. Such groups created local and village-level seed banks to maintain seed diversity and farmers' autonomy, they promoted

organic and sustainable agriculture among farmers, and they educated the non-farming public on why they should buy and eat organic, GM-free food and use GM-free fiber. Additionally, there were individuals and groups that mobilized different constituencies: women (seen as providers of food to families and as seed guardians), consumers (who could vote with their wallets), and farmers. Also, there were groups that had a rights-based approach to food and farming.

There were right-wing groups that fought against the idea of cultural and economic imperialism by non-indigenous technology and foreign firms while seeking to preserve native economies and cultures. There were left groups that sought to resist the same types of imperialism but with the goal of creating a socialist economy. Thus, a heterogeneous medley of individuals and groups with very different interests and representing various constituencies cobbled together the Coalition for GM-Free India by 2006.

Third, I argue that the anti-GM Indian movement is anti-corporate and anti-imperialist. Let me illustrate with examples. On January 30, 2010, the day that Minister Ramesh held the public consultations in the northern city of Chandigarh city, more than a hundred thousand Indians across the country, organized by the anti-GM movement, went on a fast to deliver the message that the independence won by the country through the freedom struggle and through the leadership of non-violent (*ahimsa*) non-cooperation (*satyagraha*) offered by Mahatma Gandhi cannot be lost to GM crops such as Bt brinjal (Dutta 2012). The protestors drew on Gandhi's concept of *Hind Swaraj* (sovereign self-rule) and noted that the agricultural economy cannot be turned into a source of exploitation by foreign seed firms. They used the slogan: 'Remember the Mahatma, Stop Bt Brinjal, and Protect India's Seed & Food Sovereignty.'

The 'Monsanto Quit India' day continues to be organized as a site of protests against the power of the global agribusiness in shaping the Indian farming landscape, corporatizing farming, and undermining the food sovereignty and food security of local grassroots farmers (Kuruganti 2011, quoted in Dutta 2012). On this day, protests were organized by farming communities all across India. On August 9, 2011, farmers gave voice to their resistance to the commoditization and privatization of agriculture in the form of four key claims made to the Indian government: (a) no collaborative research projects and partnerships with Monsanto or other similar food corporations in state-owned agricultural universities or within the national agricultural research system; (b) no commissioned projects under GM crop trials in these institutions and no GM crop trials; (c) no public-private partnerships in the name of improving food productivity, particularly for crops such as rice and maize that pose serious concerns of food security and food sovereignty; and (d) setting up sustainable grassroots systems of seed self-reliance that respect the local knowledge and technology of farmers, and simultaneously seek to support institution building and infrastructure around self-reliant systems (Dutta 2012). The "Monsanto Quit India" movement draws its cultural relevance from the 1942 Gandhi-led 'Quit India' movement.

On the 'Monsanto Quit India' day of August 8, 2013, farmers from twenty Indian states gathered in New Delhi for a day-long *dharna* (sit-in) to demand freeing the country from GM organisms and the withdrawal of lopsided provisions in the Biotechnology Regulatory Authority of India (BRAI) Bill, 2013, which allows ease of release of GM crops in India (Sood 2013). The farmers presented a national flag made from non-Bt-organic cotton to Prime Minister Manmohan Singh for unfurling on the Independence Day. Pankaj Bhushan, co-convener of Coalition for a GM-Free India, told the audience,

It is a shame that cotton and *khadi*,<sup>12</sup> the symbols of our fight for Independence, are today controlled by an American MNC<sup>13</sup> because of our indifference and inaction. Ninety-three per cent of Indian cotton seed has the proprietary technology of Monsanto. On this Independence Day we will hoist non-Bt organic cotton national flags in all the 20 states from where people have joined this *dharna*; this is a symbolic beginning to regaining our seed sovereignty. We also request the Prime Minister to hoist this flag from the ramparts of the Red Fort this year. (Sood 2013)

The Indian anti-GM NGOs have been dismissed as “agents of the state” in some quarters, but the events of February 2010 and July 2014 raise the question of who drives whom: does the semi-peripheral state use social movements for its own gains or do social movements successfully press the semi-peripheral state to accept their goals? I would argue that the state’s decisions in February 2010 showed the power of the centrist and left-of-center elements within the anti-GM coalition to force the Indian state—when the governing party also subscribed to a left-of-center ideology—to cede to their demands, while the central state’s decision in July 2014 showed the power of right-wing elements within the anti-GM coalition to coax the right-wing governing party in New Delhi to agree with their demands.

By cobbling together an umbrella-like organization, the Coalition for GM-Free India has provided space for right wing, centrist, and left wing NGOs and activists to interact and promote the ‘national’ interest. Further, the Coalition for GM-Free India has proved that a loosely knit yet robust network of NGOs subscribing to a wide range of ideologies has its organizational advantages. It remains nimble and pragmatic enough in being able to achieve its goal of creating a GM-free India, whether a left-of-center or a right-wing political coalition is in power. The right-wing NGOs in the anti-GM movement have conduits to the right-wing BJP, while the centrist and left-wing NGOs in the anti-GM movement have connections with the Congress party and left parties.

Fourth, this analysis of the anti-GM movement supports Chase-Dunn’s claim that for the world-system analysts, the most fascinating political movements arise in the semi-peripheral countries. As Chase-Dunn argues, movements of the left and right have both emerged in semi-peripheral countries. However, to my knowledge, the Indian anti-GM movement is probably the first case of right, centrist and left elements together building an effective coalition to thwart the ambitions of core states and leading firms based in core states to create more quasi-monopolistic situations with regards to GM seeds. The successful and exemplary Indian anti-GM coalition may trigger similar coalition-building activities in other non-core states.

Fifth, this analysis partly supports Wallerstein’s argument that semi-peripheral states play the dual roles of anti-imperialism; by opposing the hegemonic core state and its leading firms, and sub-agents of imperialist core. During the 1990s, the Indian state acted as a sub-imperialist agent. But by 2010, the visible pressure created by the anti-GM coalition on the Indian state emboldened the state to act as an anti-imperialist agent in the realm of GM food crops, if anti-imperialism is defined as opposing the hegemony of the United States. But until policies that uphold and further capitalism in agriculture are jettisoned by the Indian state, it is possible that the Indian state will act to develop capitalism in the agriculture sector in other non-core regions. For example, the legal researcher and policy analyst Shalini Bhutani believes that the February

---

<sup>12</sup> *Khadi* is handspun cloth, the creation of which was popularized by Gandhi as a means of winning back the economic independence of India.

<sup>13</sup> MNC is the acronym for ‘multinational corporation.’

2010 decision of Minister Ramesh was actually undertaken to buy time for the Indian public sector which is after all carrying out R&D work on GM crops, including GM brinjal. Bhutani informed me, “After all, if you carefully read Jairam Ramesh’s statement on why he announced an indefinite moratorium on Bt brinjal, you will see that he did not announce a blanket ban on GM crops.” According to Bhutani, India is one of the few countries where the state is seeking to respond to the issue of seed pricing in the sector of agricultural biotechnology by developing its own public sector transgenic seeds, the belief being that if you have competition in the market, it will offer more choices to the farmers, that is more Bt varieties to choose from—foreign brands versus “made in India” brands, and also keep prices of GM seeds in check.

The Indian anti-GM coalition is currently divided on the issue of public sector transgenic seeds. For example, Dr. Vijoo Krishnan, the joint secretary of the All-India Kisan Sabha (AIKS)—a civil society group which has over twenty million members, all of whom are small farmers—told me,

We are for scientific innovation. The issue of who controls our seeds is important. Monopolies in seeds should not be encouraged, especially if these monopolies rest with private seed firms. Public sector seed firms should be encouraged. Participatory plant breeding and participatory seed development leading to public sector seeds should be encouraged by the government. These processes build on interface between scientific fraternity, agricultural research institutions, and farmers. Research on GM crops must be through the public sector research institutions and must be allowed only after putting in place a stringent regulatory mechanism for ensuring bio-safety concerns are effectively addressed. Field trials can only be allowed after such a process and until then there must be a moratorium.

### Concluding Reflections

The February 2010 moratorium on Bt brinjal and the July 2014 hold on field trials of GM crops signal the coming of age of the Indian anti-GM movement. The moratorium on Bt brinjal is an especially important milestone in the Indian citizenry’s participation in human-centered policy approaches. The two policy decisions also opened up debates about the different paths to development that Indians can adopt. Though the interactions of state actors with civil society actors remain something of a ‘black box’ for investigators, it is possible to speculate that the Indian state moved from a sub-imperialist role in the 1990s to an anti-imperialist role by 2010, because counter-hegemonic actors still existing within the state can play a role in contesting the power of core-based firms, provided the semi-peripheral state faces sufficient pressures from domestic civil society.

Nevertheless, I discern three problems with the Indian anti-GM movement. First, as Bello (2002) points out in a different context, normal corporate behavior is construed by some activists as abnormal. The assumption they make is that the problems associated with certain multinational firms can be ‘solved’ by removing those corporations from the capitalist system. They do not realize that the problem is really with the way the capitalist system functions as a whole. They do not realize that ‘reforming’ the capitalist system by excising certain firms may be out of question because new firms behaving in ‘old’ ways will emerge to replace the excised firms.

Second, as I have already noted, the Indian anti-GM coalition is currently divided on the issue of public sector transgenic seeds. I argue that the anti-GM coalition will have to soon reach a consensus on the desirability of public sector transgenic seeds so that it can become more than a pawn in the game between the hegemonic core state, multinational firms, and the anti-imperialist Indian state.

Third, Bt brinjal has been legally introduced in neighboring Bangladesh in January 2014, and may be cultivated in open-air field trials in Maharashtra in the near future. The prospects of Bt brinjal seeds travelling across the porous Indo-Bangladeshi borders or the borders between Maharashtra and other Indian states is acknowledged as a problem by activists, scientists and state actors who fear a repetition of the Bt cotton story. If unauthorized Bt brinjal seeds reach Indian farmers, then the Indian debates about alternative pathways to development—which are premised on not seeing entry into the core region as the endpoint of semi-peripheral development—and the experiments in democratic decision-making about GM seeds will be short-circuited.

The Indian state has been transformed from a sub-imperialist agent of the core to an anti-imperialist agent because of the pressure created by the anti-GM Indian coalition. If unauthorized Bt brinjal seeds do not reach Indian farmers, if the anti-GM Indian coalition becomes resolutely anti-capitalist (not just anti-corporate), and if it also takes a stand against public-sector GM seeds, then it will possibly influence the semi-peripheral Indian state to move in an anti-capitalist direction. My reading of the anti-GM Indian movement supports Chase-Dunn (1990)'s optimism about the possibilities of larger semi-peripheral states such as India, in conjunction with the anti-GM movement, to emerge as agents that will transform the character of the capitalist world-system. Wallerstein (2013) has claimed that BRICS states have demonstrated little capacity to resist and transform capitalism. However, as I have shown in this paper, through an exemplary coalition-building between right-wing, centrist, and left elements, the Indian anti-GM movement has influenced the Indian semi-peripheral state to resist those multinational capitalist firms which seek to further capitalist accumulation through the creation of monopolies of GM seeds and GM crops. Whether, and to what extent, the Indian state will seek to transform capitalism within and outside its boundaries depends to a large extent on the Indian anti-GM movement's capacity to resolve its inner contradictions and press the Indian state to do likewise.

## References

- Bello, Walden. 2002. "Towards a Deglobalized World." Pp. 292-295, in *Global Backlash: Citizen Initiatives for a Just World Economy*, edited by Robin Broad. New York: Rowman & Littlefield.
- Chase-Dunn, Christopher. 1990. "Resistance to Imperialism: Semiperipheral Actors." *Review* 13 (1): 1-31.
- \_\_\_\_\_. 2006. "Globalization: A World-Systems Perspective." Pp. 79-105, in *Global Social Change: Historical and Comparative Perspectives*, edited by Christopher Chase-Dunn and Salvatore J. Babones. Baltimore, MD: The Johns Hopkins University Press.
- Dutta, Mohan J. 2012. *Voices of Resistance: Communication and Social Change*. West Lafayette, IN: Purdue University Press.

- Goldfrank, Walter. 1978. "Fascism and World-Economy." Pp. 75-120, in *Social Change in the Capitalist World-Economy*, edited by Barbara H. Kaplan. Beverly Hills: Sage Publications.
- Herring, Ronald J. and Frank Shotkoski. 2011. "Eggplant Surprise: The Puzzle of India's First Transgenic Vegetable." *Scientific American Worldview*. Retrieved March 10, 2015 (<http://www.saworldview.com/archive/2011/download-the-2011-issue/>).
- Hopkins, Terence K. and Immanuel Wallerstein. 1986. "Commodity Chains in the World Economy Prior to 1800." *Review* 10(1):157-170.
- Jayaraman, K.S. 2012. "India Investigates Bt Cotton Claims." *Nature*, February 15, Retrieved March 9, 2015 (<http://www.nature.com/news/india-investigates-bt-cotton-claims-1.10015>).
- Kuruganti, Kavitha. 2011. "'Monsanto Quit India' Day Marked Across the Country." *Alliance for Holistic and Sustainable Agriculture*. Retrieved March 10, 2015 (<http://www.kisanswaraj.in/2011/12/13/monsanto-quit-india-day-marked-across-the-country/>).
- McMichael, Philip D. 2000. *Development and Social Change: A Global Perspective*, 3rd ed., Thousand Oaks, CA: Sage Publications.
- \_\_\_\_\_. 2013. "Globalization: A Project in Crisis." Pp. 75-87 in *Global Political Economy: Contemporary Theories*, 2nd ed., edited by Ronen Palan. New York: Routledge.
- Pray, Carl E. and Latha Nagarajan. 2010. "Price Controls and Biotechnology Innovation: Are State Government Policies Reducing Research and Innovation by the Ag Biotech Industry in India?" *AgBioForum* 13(4): 297-307.
- Ramamurthy, Priti. 2004. "Why Is Buying A 'Madras' Cotton Shirt A Political Act? A Feminist Commodity Chain Analysis." *Feminist Studies* 30(3):734-769.
- \_\_\_\_\_. 2011. "Rearticulating Caste: The Global Cottonseed Commodity Chain and the Paradox of Smallholder Capitalism in South India." *Environment and Planning A*, 43: 1035-1056.
- Ramanna, Anitha. 2006. *India's Policy on Genetically Modified Crops*, Asia Research Center Working Paper 15. London: Asia Research Center (ARC), London School of Economics & Political Science.
- Roy, Devparna. 2006. *Farming "White Gold": Early Experiences with Genetically Engineered Cotton Production in Gujarat, India*, PhD. thesis, Cornell University. USA.
- \_\_\_\_\_. 2010. "Of Choices and Dilemmas: Bt Cotton and Self-Identified Organic Cotton Farmers in Gujarat." *Asian Biotechnology and Development Review* 12(1):51-79.
- \_\_\_\_\_. 2012. "Cultivating Bt Cotton in Gujarat (India): Self-Identified Organic Cotton Farmers Revisited." *Asian Biotechnology and Development Review* 14(2):67-92.
- \_\_\_\_\_. 2013. "Toward Genetic Democracy? Seed Sovereignty, Neoliberal Food Regime, and Transgenic Crops in India." *Food Sovereignty: A Critical Dialogue*. Yale University Conference Paper #64, Retrieved March 10, 2015 ([http://www.yale.edu/agrarianstudies/foodsovereignty/pprs/64\\_Roy\\_2013.pdf](http://www.yale.edu/agrarianstudies/foodsovereignty/pprs/64_Roy_2013.pdf)).
- \_\_\_\_\_. 2014. "To Bt or Not to Bt? State, Civil Society, and Firms Debate Transgenic Seeds in Democratic India." Pp. 153-169 in *The Neoliberal Regime in the Agri-Food Sector: Crisis, Resilience, and Restructuring*, edited by Steven A. Wolf and Alessandro Bonanno. New York: Routledge.
- Roy, Devparna, Ronald J. Herring, and Charles C. Geisler. 2007. "Naturalizing Transgenics: Loose Seeds, Official Seeds, and Risk in the Decision Matrix of Gujarati Cotton Farmers." *Journal of Development Studies* 43(1):158-176.

- Schumpeter, Joseph A. [1941] 1976. *Capitalism, Socialism and Democracy*, Reprint, New York: Harper & Row.
- Scoones, Ian. 2008. "Mobilizing Against GM Crops in India, South Africa and Brazil." Pp. 147-175 in *Transnational Agrarian Movements Confronting Globalization*, edited by Saturnino M. Borras Jr., Marc Edelman and Cristobal Kay. Malden, MA: Wiley-Blackwell.
- Shand, Hope. 2012. "The Big Six: A Profile of Corporate Power in Seeds, Agrochemicals & Biotech." Pages 10-15 in *The Heritage Farm Companion* (summer). Seed Savers Exchange. Retrieved on March 10, 2015 ([http://www.seedsavers.org/site/pdf/HeritageFarmCompanion\\_BigSix.pdf](http://www.seedsavers.org/site/pdf/HeritageFarmCompanion_BigSix.pdf)).
- Sood, Jyotika. 2013. "Monsanto Told to Quit India." *Down to Earth*, August 8. Retrieved on March 9, 2015 (<http://www.downtoearth.org.in/content/quit-monsanto-protest-near-parliament>).
- Subramaniam, Mangala. 2015. "Introduction: States and Social Movements in the Modern World-System." *Journal of World Systems Research*.
- The Economic Times. 2012. "India's Seed Industry to Grow by 53 % by 2015: Assocham." Retrieved on March 10, 2015 ([http://articles.economictimes.indiatimes.com/2012-12-09/news/35705464\\_1\\_hybrid-seeds-quality-seeds-high-yielding-varieties](http://articles.economictimes.indiatimes.com/2012-12-09/news/35705464_1_hybrid-seeds-quality-seeds-high-yielding-varieties)).
- Wallerstein, Immanuel. 1984. *The Politics of the World-Economy: The States, the Movements, and the Civilizations*. New York: Cambridge University Press.
- \_\_\_\_\_. 2004. *World-Systems Analysis: An Introduction*. Durham, NC: Duke University Press.
- \_\_\_\_\_. 2013. "Whose Interests are Served by the BRICS?" Commentary No. 352, May 1. Retrieved on March 9, 2015 (<http://www.iwallerstein.com/interests-served-brics/>)