

SEEDS OF DISEMPOWERMENT: Bt COTTON AND ACCUMULATION BY
DISPOSSESSION IN THE STATES OF MAHARASHTRA,
TELANGANA, AND ANDHRA PRADESH IN INDIA

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In 1991, India adopted neoliberalism, a system of political economic practices that promotes private property and free trade, as its political and economic system to promote development in their country. India's neoliberal reform has created issues surrounding human development, resource accumulation, and power struggles. Eleven years later, in 2002, Bt cotton was introduced to the Indian agricultural sector. This research examines how the genetically modified organism Bt cotton is being used to commodify nature in the context of agriculture under neoliberalism. The research focuses on the dispossession of the rural farmers through the commodification of agriculture using Bt cotton. Dispossession of the rural farmers happen through the implications that arise from the commodification of nature. Through Marxist theory of primitive accumulation, this research analyzes accumulation by dispossession and how it neglects the working class and its struggle in rural India. Through this examination, the research will argue alternatives to the dispossession of the working class and the commodification of nature through Bt cotton. Dispossession, in this research, is examined both through working class, but also through the dispossession of biodiversity. Through the loss of biodiversity, the rural farmers are becoming dispossessed from a more sustainable environment. Along with these goals, the research will also incorporate themes of food security through changing landscape of agriculture due to the incorporation of Bt cotton. This research argues the contradictions that are presented through the commodification of agriculture under neoliberalism and provide a contribution to social justice literature, and our understanding of the relationship between technology and the commodification of nature.

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By

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CHAPTER 1

THE CASE FOR INDIA

1.1 Introduction

The role of genetically modified (GM) crops in the agricultural sector of the world economy has increased rapidly over the past eighteen years (Bello 2009). This research examines the role of the GM crop, *Bacillus thuringiensis* (Bt) cotton, in the commodification and commercialization of agriculture in the states Maharashtra, Telangana, and Andhra Pradesh in India. The research examines if the introduction and cultivation of Bt cotton has created dispossession of the rural small farmers through their accumulation of debt. This research analyzes how corporations are using Bt cotton to cause rural farmers to acquire debt, and how this debt affects the lives of the farmers and the impact it has on rural communities.

When human beings recognize nature to have functional value, nature acquires the status of a resource which society then tends to exploit. Capitalism, over the course of history, has repeatedly transformed nature into resources and in turn into commodities. Karl Marx defines a commodity as “an external object, a thing which through its qualities satisfies human needs of whatever kind” (1990, 125). The basis of capitalism is “the so-called primitive accumulation” which is “nothing else than the historical process of divorcing the producer from the means of production” (Marx, 1990, 874-975). Primitive accumulation is present in Indian agriculture because the rural small farmers are being dispossessed from their land and their seeds. The farmers of India experienced primitive accumulation when they were forced into the circuit of capitalism by British imperialism, during 1757 to 1947 (Davis 2017). After the independence of India from Britain the farmers continued to produce under the capitalist system, but there existed common property. These commons were the exchange of seeds, and biodiversity of seeds and plants (Shiva

1991). Then in 1991, with the forceful expansion of the capitalism, under the regime of neoliberalism, the Indian farmers became trapped in an intensified circuit of capitalism. Neoliberalism, as a circuit of capitalism, has caused exploitation to penetrate and adversely impact the rural Indian farmers in their everyday lives. The farmers then have to sell their labor or purchase their seeds every year, and thus completely divorcing the small farmers of their means of production, land, and seeds. The separation of Indian rural small farmers from their means of production allows for the process of commodification to begin. Commodification is the process of privatizing various forms of property rights, the appropriation of assets “(including natural resources); monetization of exchange and taxation,” and the use of credit systems (Harvey 2007, 34-35). Commodification is only possible when a resource is present, and in this research, the commodity is Bt cotton seeds and land.

This research will examine the relationships between commodification, acquisition of debts by farmers, and accumulation by dispossession (Harvey 2003). Accumulation by dispossession is a theory that builds upon the theory of primitive accumulation, and is characterized by the forceful expulsion of the peasant population by privatization of land and the conversion of property rights into private property rights (Harvey 2003). There are two problems that need to be addressed by this research to confront the implications constructed by the commodification of nature and accumulation by dispossession. The questions posed by this research are the following:

1. How is Bt cotton used to commodify agriculture under neoliberalism and how does this cause dispossession of farmers?
2. What is the nature of dispossession, regarding farmer's debt, in Maharashtra, Telangana, and Andhra Pradesh and how does this affect social relations in these regions?

The first question addresses how Bt cotton has become an agent of capitalism to open a new avenue of capital accumulation, agriculture, and examines how accumulation causes farmers to be dispossessed from the means of production. The second question examines how the commodification of agriculture coincides with a number of rural small farmers that are dispossessed from their means of production, and how this affects their social space within the study regions. Through the processes of commodification, corporations seek to sever the producer, rural small farmers, from their means of production by the use of patented Bt cotton seeds. This causes dispossession of the rural small farmers from their means of production, yearly saved seeds, because they are using Bt cotton seeds which must be purchased from a corporation every year.

The research questions address the implications behind the use of Bt cotton in the commodification of agriculture, and how this constructs accumulation by dispossession. Accumulation by dispossession is characterized by the change in various property rights into exclusively private property rights (Harvey 2003). This is evident in the Indian agricultural sector with the conversion from indigenous cotton seeds to Mahyco-Monsanto's Bt cotton seeds. While examining these implications, it is important to be inclusive of the other issues that are a result of the commodification of nature. These other issues that emerge during the commodification of agriculture are categorized within the social, economic, and political dimensions around agriculture. These three factors are incorporated into the research to provide an in-depth understanding of the influence each provides to agriculture. The social factors surrounding agriculture encompass the small farmers and their communities. The economic factors involved manifest via production costs, corporations, and technology. Political factors influence agriculture through the state government and local government; they consist of the political practices and laws

involved in allowing for the cultivation of Bt cotton in India. These three factors have individual significance to different areas of this research, and the agglomeration of these allow for a holistic understanding of the space that agriculture represents in the economy.

These research questions are to discern if the rural small farmers, of Maharashtra, Telangana, and Andhra Pradesh, are experiencing exploitation at the hands of corporations. This exploitation appears in the form of divorcing rural small farmers from their means of production, and in this case, the means of production are the control over seeds, land, and technology. Technology, in agriculture, is related to irrigation, insecticides, and pesticides, and most important the genetic make-up of cotton seeds. Through the lens of seeds, land, and technology this research contributes to better understanding the issues of commodification and accumulation by dispossession and their contexts in India. This research comprehensively examines Bt cotton and its effect on the rural small farmers to address exploitation. This examination is important because "around 60 per cent of the workforce still obtains its livelihood from this [agriculture] sector" (Ghosh 2012, 49). There is a high percentage of the Indian population that still relies on the agriculture sector to provide for them. The ability to address the research questions and provide a better understanding of exploitation allows this research to address the problem of exploitation as it exists within rural Indian society. This will allow for a better understanding of how commodification empowers accumulation by dispossession, and how this creates exploitation that affects the lives of the rural farmers. The research will present how the commodification of agriculture and accumulation by dispossession are coupled in creating new spaces of capital accumulation with Bt cotton. This research examines the problems that arise for the local population when neoliberal policies allow corporations to commodify nature. Noel Castree (2010) addresses the need for a synthesis to be produced on research between capitalism and the

environment. This need is due to the large body of work that researchers have produced and to properly understand the previous research the synthesis is necessary to understand “why, how and with what effects nature has been neoliberalized in recent years” (Castree 2010, 1726). The conceptual framework of this research is based off substantial previous literature that will be synthesized in two themes.

1.2 Conceptual Framework

There exists an extensive amount of literature on the subjects of the commodification of nature and accumulation by dispossession. Within the existing literature, there have been very few studies that examine how Bt cotton is used to commodify agriculture and create accumulation by dispossession. These themes are crucial to understanding how accumulation by dispossession is allowing the rural small farmers to be exploited through their acquisition of debt. This situation requires contextualizing the rural small farmers in an era of neoliberalism and GM crops. It is important to define and understand the meaning of the preminent concepts that are employed in my research, neoliberalism and accumulation by dispossession. According to David Harvey "neoliberalism is a theory of political economic practices proposing that human well-being can best be advanced by the maximization of entrepreneurial freedoms within an institutional framework characterized by private property rights, individual liberty, unencumbered markets, and free trade" (2007, 22). This understanding shows neoliberalism as a theory and not one in practice. I intend to use this theory as the understanding of neoliberalism in my research, but in a practical application, that means neoliberalism is a system of political economic practices that promote free trade, privatization, and free markets. This allows for an examination of the application of neoliberalism, and how it is used in regards to agriculture. The commensurate concept of

neoliberalism is accumulation by dispossession, and again I borrow the understanding from David Harvey. Accumulation by dispossession is characterized by the "privatization of land and forceful expulsion of peasant populations; the conversion of various forms of property rights (common, collective, state, etc.) into exclusive private property rights." (Harvey 2003, 145). The processes of accumulation by dispossession are playing out in India's agricultural sector. This is because Mahyco-Monsanto is accumulating wealth through their Bt cotton seeds, and the rural small farmers are being dispossessed from their indigenous cotton seeds and acquiring vast amounts of debt. The process of accumulation by dispossession is the increase and perpetuation of the primitive accumulation that Marx had defined during the advancement of capitalism (Harvey 2007). Accumulation by dispossession manifests itself in different stages of capitalism but has seen new prominence in our neoliberal era.

Existing literature on the subject can be divided into two major themes, the first is the commodification of agriculture, and the second is accumulation by dispossession. My conceptual framework will open with a discussion on accumulation by dispossession. Neoliberalism is an integral part of this research and the research questions, because in 1991, India instituted new economic policies to lift the state out of the economic crisis (Ahmed 2010). This new economic policy involved adopting neoliberalism and restructuring the Indian economy to push neoliberal policies on the economic sectors (Ahmed 2010). The introduction of neoliberalism allowed for privatization and foreign direct investment to begin. Eleven years later, in 2002, India permitted the commercial introduction and cultivation of a GM crop called Bt cotton that was created by Monsanto (Gandhi & Namboodiri 2006, 1). At the time of neoliberalism's introduction, it was heralded as the stimulus to allow for higher economic growth (Ghosh 2012). Ghosh and other scholars argue that the economic growth, brought by neoliberalism, could be beneficial to India by

contributing to alleviating poverty, increasing human rights, and creating a more secure economy in the agricultural sector (Ghosh, 2005, 2012; Patnaik, 2007; Sen, 2004, 2005). Peet and Hartwick outline the definition of development as “how society grants to individuals the capacity for taking part in creating their own livelihoods, governing their own affairs, and participating in self-government” (Peet & Hartwick, 2009, 3). This notion of development is supposed to bring freedom and allow for an individual’s own choices to make their lives. Patnaik examines official state data from 2004 to 2005 -- she argues that the government data claims that since the introduction of neoliberalism, in 1991, to the time of the data being recorded, 2004 to 2005, the overall poverty in India has decreased (2007). Patnaik's analysis of the poverty level, however, provides evidence that the poverty level for rural states has increased dramatically (Patnaik, 2007). Dreze (2004) and Ghosh (2012) examine human development in India through the lens of agriculture. They argue that the Indian state should take more action to control and disperse development. This would allow the Indian state to disperse the positive effects of development to different areas of the country, and prevent the positive effects from being limited to the urban areas (Dreze, 2004; Ghosh, 2012). Dreze argues that the Indian government is responsible for ensuring the right to food for its society, and this food security can be obtained through bolstering education, employment, and health access to the entirety of the Indian population (2004, 1729). Ghosh points out that there are three major areas that the Indian government should address to contribute to human development: are education, health, and employment (2012, 63).

The other literature incorporated into this theme assesses if there has been a decrease in the lower class, examine the ideas around commons versus commodities, explores how nature is an avenue of capital accumulation, and tells how neoliberalism can act as a new form of colonization (Ahmed, 2008; Bakker, 2007; Harvey, 2007; Misra, 2016; Pal & Ghosh, 2007; Smith, 1980, 2007,

2008; Walker 2008). Misra examines peasant rights in Bangladesh, and this work focuses on how peasants have become marginalized due to the introduction of neoliberalism (2016). Misra (2016) argues that the majority of the peasants had access to state programs that would improve their lives, but these government programs trapped the peasants in a cycle that forced the peasants to rely on the government for financial support. The social programs were used by the government to prevent “any rupture in the process of capital accumulation.” (Misra 2016, 15). To keep the proletariat intact, the government of Bangladesh used state programs to keep “small peasants on life support,” allowing for the agriculture sector to continue accumulating excess capital (Misra 2016, 15).

The use of state programs to ensure a labor source is a direct implication of the capitalist system in the agricultural sector because the government has provided the needed labor, by entrapping peasants with state programs, to allow for capital to be accumulated by corporations. The government of Bangladesh instituted these policies in order to provide the peasants with land and decrease land dispossession among them. Through this protection, the government is uplifting the peasants by providing them with private property rights, but is disenfranchising the peasants because the peasants "generally own less than an acre of land." (Misra 2016, 13). This land distribution favored large landholders, leaving disenfranchised peasants to seek alternative income, by selling their labor to large landholders and allowing for the exploitation of the peasant class. This exploitation is present because "the state has created a dual economy in which market imperatives dominate the upstream and downstream of farming, while the actual act of production is carried out predominately by small peasant producers under the compulsion of meeting their subsistence needs." (Misra 2016, 13). The government of Bangladesh through their state programs and land distribution efforts has marginalized the peasants even more, and to survive the peasants

must rely on state programs or selling their labor. The marginalization of peasant populations in the agricultural sector of Bangladesh relates to India, because the two countries share historical ties. Misra's (2016) study of Bangladesh is similar to an earlier study conducted by Banerjee in 2009 in India. Banerjee (2009) examines the peasant class under neoliberalism, and presents how it has caused an increase in farm indebtedness. This indebtedness is related to the decrease in formal credit institutions and increase in informal credit sources provided by private players (Banerjee 2009). The study suggests that debt relief policy in the current administration is failing to keep the farmers from falling further into debt (Banerjee 2009). Banerjee (2009) performed a class analysis of Andhra Pradesh and West Bengal, and found that lower peasant classes are suffering a large depression in their incomes that require a comprehensive debt relief policy. The study is similar to Misra (2016) because it examines the peasant class and failure of the state. Banerjee (2009) is different from Misra because it presents that the difference between Indian and Bangladeshi agricultural producers is that the latter are exploited through state programs, and the former is exploited through the private sector and this is intensified by the lack of state programs or policy. Though similar and different in their findings, both provide a better understanding of the failure of state programs and policies to address rural farmer conditions. Banerjee (2009) informs this research of the failure of state policy in India to protect a vital producer group.

I will now address the ideas behind commons versus commodities. The interactions of society and nature are transformative to nature and society, and social effects on nature through its economic policies, political policies, and regulation of nature (Bakker 2007). The commons versus commodity idea is relevant in much of the literature that examines the impacts of neoliberalism. This is due to neoliberalism's need to seek out new avenues of accumulation, and this occurs through the realization and usurpation of new resources that nature provides. The local

communities, generally, are the communities that are profoundly affected by the negative consequences of neoliberalism. Ahmed argues in favor of this and shows that indigenous communities become marginalized when neoliberalism allows governments to use capitalist logic to acquire land through their projects (2008). Ahmed specifically uses the example of how dams were constructed and because of these dams and the reservoirs they created, that the indigenous communities not only were marginalized physically by forcing them to move into a smaller area of land, but the communities also lost part of their culture and intellectual property.

Another key feature of neoliberalism as mentioned before is the unique need to seek out new avenues of accumulation. Neil Smith (2007) engages with how neoliberalism pushes production of nature because society is in constant need of new avenues of capital accumulation. Neoliberalism can continue to create these avenues through the methods of privatization and technology. Smith argues, “the real subsumption of nature is orchestrated through the explosion of intellectual property rights, for example, which, on the back of capital, have bored into nature via the core of scientific discovery and invention (biological and otherwise), buttressing evolving claims concerning artistic and cultural commodity production” (2007, 31). This argument encompasses Bt cotton and presents that corporations with vast amounts of capital have the right to privatize seeds because they have introduced new components to the seeds. This practice allows neoliberalism to bring new avenues of accumulation into the economy, and technology allows new methods to extract resources and continue exploitation (Smith 2007). The control of corporations is such that should "GM seed [be] blown free to reproduce in neighboring...fields – it should be hunted down, re-commodified, privatized, certainly brought to court to determine the ownership of that nature, and, should its ownership be found unsanctioned, killed" (Smith 2007, 27). The arguments that Smith employs to express the power of a corporation in our current neoliberal

period. In similar fashion, Harvey examines how neoliberalism has changed the face of imperialism from one of actual colonization to an imperialism of control (2003). This control is acquired through the usurpation and exploitation of new labor sources and new resources. This new form of capitalism creates a new form of colonization. This form of colonization does not take place in the physical sense of armies and wars, but in the form of labor, resources, and location (Harvey 2003). This is allowed due to the compression of time and space that allows a company to be in the United States, but outsource labor to other countries because of increased communication and to transportation methods that distribute commodities anywhere on the globe (Harvey 1999). This colonization and imperialism are inherent to neoliberalism as the main effect of neoliberalism has been a destructive property and not a generative one (Harvey 2007). The purpose of accumulation by dispossession within neoliberalism is to "transfer assets and channel wealth and income either from the mass of the population toward the upper class or from vulnerable to richer countries" (Harvey 2007, 34). Accumulation by dispossession has created this reality within the agriculture sector of India through the introduction of Bt cotton. This has allowed the transfer of wealth from the masses, rural small farmers, to the upper class, corporations, and their executives. This allows the new colonization or imperialism to occur because corporations like Monsanto, are located within the U.S., but they sell their products globally, and because of this, corporations are able to alter the transfer of assets and wealth globally (Harvey 2007). This is occurring in India because the corporations are transferring assets and wealth from the mass of the population, farmers, to themselves through the sale of Bt cotton seeds. Partially owing to time-space compression, neoliberalism grants corporations unparalleled power to colonize different forms of nature, such as a cotton seed, by bioengineering it and then securing the intellectual property rights to these seeds. These seeds are then used by corporations to create a new avenue

of capital accumulation. This avenue of capital accumulation is difficult to discontinue because Bt cotton seeds do not produce seeds when they reach maturity (University of Montana, 2013). This requires the farmers to purchase seeds every year, and this continues in a cyclical motion of constant payments to corporations to use their seeds. Through this cycle, the corporations amass large amounts of capital at the expense of the farmers. This provides a new form of imperialism, as the farmers are not able to break the cycle. This new model of imperialism is seen in India because of the introduction of Bt cotton, creating a new avenue of capital, and this new avenue of capital has been provided a labor source, the rural small farmers. Pal and Ghosh (2007), and Walker (2008) examine the patterns of poverty that have affected the Indian population since neoliberalism's induction in 1991. This theme is important to the research because it provides definitions of concepts, and the studies address and provide ideas that are similar to my research. Pal and Ghosh argue that the macroeconomic policies, brought by neoliberalism, have opened India to more foreign and domestic investment. This has allowed corporations to invest in the agriculture sector with new products, such as Bt cotton (2007). The process of neoliberalizing India's economy left the agricultural sector vulnerable to foreign investment that could be damaging to the economy. The people that are employed in the agricultural sector lost many of the subsidies and support they relied on to provide for them, and have been opened to exploitation by corporations around the world (Pal and Ghosh 2007). Walker argues that due to neoliberalism the agrarian class has seen an intensified crisis and conflict between the rural elites and rural poor (2009). At the center of this conflict is the question of land redistribution (Walker 2008). Walker concludes that the struggle of the poor to obtain land, is not because of caste-based struggles, but because of the economic issues and the agrarian crisis created by India's turn to neoliberalism (2008). This struggle exemplifies how neoliberalism affects local populations. The struggle for

land is important to farmers because it provides them with their livelihood. The foreign investment of Bt cotton could have been sought to alleviate the land struggle issues because it would allow rural small farmers the ability to provide for themselves, and produce competitive goods for sale in a global marketplace.

The other previous work examines economic liberalization, capitalist agriculture, globalization and agriculture policy, economic and social effects of finance liberalization, and how agriculture and the global market become coupled (Bello 2009; Bhalla & Chadha 1982a, 1982b; Bhalla 1995; Bhalla & Singh 2009; Gandhi & Namboodiri 2006; Ghosh & Chandrasekhar 2009; Ghosh 2010, 2015 Harvey 2003). Before continuing, it is important to provide an understanding of how the economic aspect of globalization is understood in this research. The economic aspect of globalization is the emergence of a world market that allows for the economic integration of states, free trade through decreasing trade barriers, and free movement of capital (Martin & King, 1990). Jayati Ghosh argues that the global market and agriculture have become tied together due to speculation on food prices and the global recession of 2007-2008 (2010). Ghosh argues that imperialism has not disappeared but has changed its look due to technology, loss of colonial powers, and national liberation movements (2015). Ghosh notes that the loss of colonial powers pushed for an increase in technology which allowed production, factories, to be relocated and this created a push for globalization. Utsa Patnaik examines how globalization has affected the agricultural policies in India (1971). Patnaik argues that land productivity and output are a better indicator of the small farmer's socio-economic status than the size of their landholdings (1971). Patnaik argues from a Marxist economist perspective, analyzing how globalization and the green revolution are allowing capitalism to insert itself into the agriculture sector. Through advances in technology, capitalism was incorporated into the agricultural sector as a new avenue of capital

accumulation. Patnaik states “there has undoubtedly emerged a tendency towards profit-oriented production and investment by a section,” in regard to the emergence of capitalism taking precedent in agriculture (Patnaik 1971, A-123). Patnaik attributes the green revolution, 1960s to 1980s, to be the agent that brought about capitalism in agriculture in India.

Walden Bello’s *The Food Wars* discusses the protests in 2006 to 2008 that occurred in the global south due to the imbalance of basic commodities (2009). In the global north, there is an abundance of fresh food due to globalization and fresh produce is available year-round in most areas of the global north. Bello's book discusses how the shock from rising food prices in main rice, vegetable oils, and wheat decreased global south states ability to import enough to satisfy the basic demands of their society (Bello 2009). Nations, such as Mexico, have lost purchasing power in the global market because of the increase in food prices and this was one factor that led to protests in these nations (Bello 2009). This caused many states to rethink their policies regarding agriculture.

Bhalla examines the steps that the Indian government needs to take to address issues such as poverty, economic liberalization, and government programs that need to remain in place to create development (1995). Bhalla examines how the economic liberalization will cause a decrease in government programs, and how the benefits of neoliberalism have not reached the rural regions of India (1995). These government programs will be privatized under neoliberalism, and this causes the concentration of these programs in urban areas. Adversely, the rural regions of India have seen a decrease in government programs, because of the concentration of these in the urban areas. Bhalla argues that benefits of neoliberalism are concentrated in the urban areas and their populations, and this will cause an increased gap between the poor and the rich. Finally, Bhalla and Singh performed a statewide analysis of the performance of agriculture and the impacts of

economic liberalization on agriculture in periods of post-reform (2009). They argue that there is a decrease in the productivity during the post-reform years and concludes that cotton and oilseed cultivation has increased due to the introduction of capitalism into agriculture (2009). Bhalla's study in 1995 echoes the study done by Bhalla and Chadha in which the authors examine the effects the green revolution had on the income distribution of farmers in Punjab, India (1982). Bhalla and Chadha examine factors of the farmer's socio-economic well-being and concludes that green revolution has alleviated some of the pressure on farmers by providing a mechanism to absorb the increase in labor force, but to keep agriculture growing, there needs to be policy instituted to create an economic transformation (Bhalla & Chadha 1982).

These two themes are important to contextualize the research and provide the basis for the research. The sources present the diversity of work on capitalism, neoliberalism, development, and agriculture. The gap in the research is apparent in the previous literature. There is no previous literature that has researched the use of Bt cotton to commodify agriculture and how this creates accumulation by dispossession. Another scholar, Flachs, examines organic and GM cotton in Telangana, India (2016). Flachs found that the organic farms had more cash crops than the GM farms (Flachs 2016). The previous literature has employed research methods that include, discourse analysis, statistics, and ethnographic fieldwork using interviews, and observations. The outcomes of these studies have shown there is a large demand for this kind of research. The previous research presents the contradiction that government and official documents state that human rights have increased since the implementation of neoliberalism, but the many academic reports present that the government and official documents are wrong.

1.3 Database and Methodology

To answer the research questions, I will use a variety of data sources. The first thing that needs to be addressed is the study areas. The three states that are the study areas of this research are Maharashtra, Telangana, and Andhra Pradesh. Maharashtra is a state on the West coast of India and is bordered by the Arabian Sea. Maharashtra was chosen because it has the largest area under cotton cultivation, at 4,192,000 hectares, in India (India Agricultural Survey, 2015). Maharashtra is also the second most populated state in India (India Census, 2010-2011). Maharashtra, Telangana, and Andhra Pradesh all share a similar climate. They all have a typical monsoon climate with a rainy and dry season (World Public Library, n.d.). Included below is a map of India with the study area represented within the entirety of India. Telangana is included because until 2014 Telangana and Andhra were one state and have since separated into two states, but they share a capital city (BBC 2014). Telangana is a state in the southern central area of India, and it is included in this research because the data would be skewed. The agricultural survey, also, combines the statistics of Andhra Pradesh and Telangana in their reports (India Agricultural Survey, 2015). Andhra Pradesh is a state on the East coast of India that borders the Bay of Bengal and was chosen because it has the third most area under cotton cultivation, at 2,540,000 hectares, of all Indian states (India Agricultural Survey 2015). The state also has a typical monsoon climate with a rainy and dry season, and the temperature ranges from twenty degrees Celsius and forty-one degrees Celsius in the rainy season (World Public Library, n.d.). In the dry season, the temperature ranges from twelve degrees Celsius to thirty degrees Celsius (World Public Library, n.d.). These states were chosen because when Bt cotton was approved for commercial cultivation Maharashtra and Andhra Pradesh were “two of the six states that had been granted permission to commercially cultivate Bt Cotton” (Sahai & Rahman 2003, 3139). At the time Telangana was still

part of the state of Andhra Pradesh, and it has since split. The next part of this covers the database and methodology that I used to complete the report.

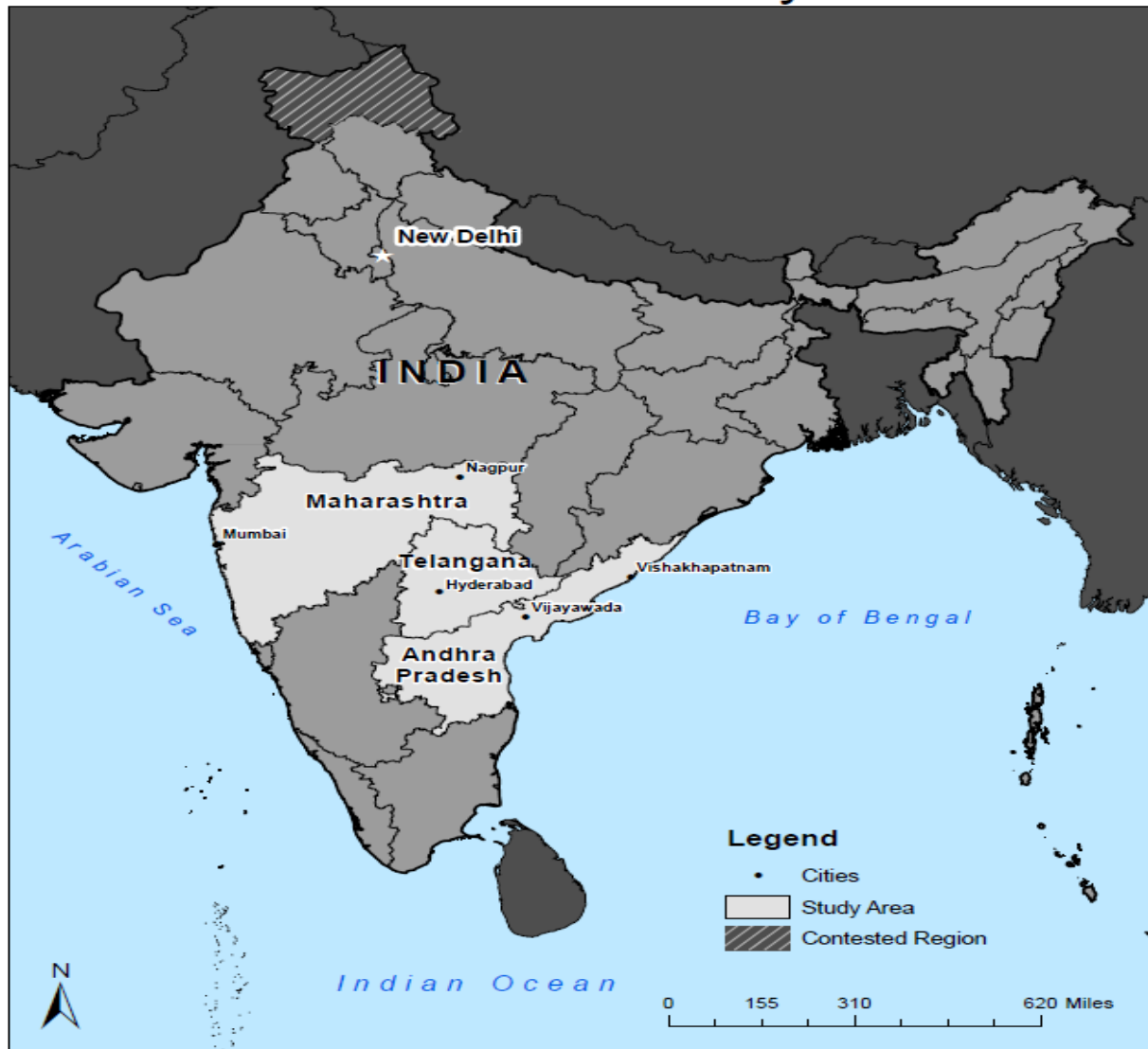


Figure 1: Map of Study Area

In this research, dispossession is understood as debt, and debt is understood in regards to landholdings and income. This understanding of dispossession will construct how debt is producing poverty and inequality for the rural small farmers. The secondary data for quantitative analysis were collected from the International Monetary Fund, World Bank, access world news

database, and the Indian government. Economic reports will be used in the analysis and discussion sections of the thesis. The use of these in the analysis will allow the research to show how the data has been analyzed. They will be used as evidence in the discussion section to support my claims and present how dispossession is occurring. I have gathered economic reports from the Indian government, and the United Nations Human development reports. The methods that I employed on the economic reports and census data will involve central tendency analysis and descriptive statistics. This will allow me to construct an understanding of the debt that affects the farmers.

Table 1: Quantitative Database on India

Variables (at the scale of State and Federal Government in India)	Data Source
Bt Cotton Production Inputs (Seed cost, pesticides, etc.)	<i>Price Control on Bt cotton Seeds in India: Impact on Seed Providers</i> (Arora & Bansal 2012). <i>Bija Swaraj, not Bt Raj.</i> (Shiva 2015).
Economy (cotton yields, cotton sales, and costs, etc.)	Annual issues of the Government of India's Economic Surveys (2014-2015); Annual issues of the Government of India's Agricultural Survey (2014-2015); Various economic reports from corporations and cotton interest groups.
Social Inequality & Land holdings	The government of India: Ministry of Agriculture The government of India: Ministry of Statistics and Program implementation

Creating this understanding will help support the qualitative analysis of the role of corporations in the commodification of agriculture. It will also allow me to create an understanding of how the socioeconomic factors have changed over time. The data is presented in tables and graphs that will then be discussed in the following paragraphs to reinforce the data. The data has been processed and transformed from the original sources into my figures and tables present in this paper. This was done using Microsoft Excel 2013 to process the tables and create new figures and tables. These data sources will bring forward spatial disparities in income and wealth which will help

increase the understanding dispossession caused by debt. Table 1 represents the variables I seek to provide a better understanding of through the use of quantitative methods.

Table 2: Qualitative Database on India

Variables (at the scales of State and Federal Government territory in India)	Data Source
Federal Government Policy on GMO's	Indian Genetic Engineering Approval Committee (Indian Government Ministry of Environment, Forest, and Climate Change)
Role of Neoliberal Discourses	Document reports by the World Bank and International Monetary Fund (IMF); World Trade Organization Documents; United Nations Human Development Report 2016
Role of Monsanto	NGO archives; International Newspapers; Indian Newspapers & Journals (i.e. <i>The Hindu</i> , <i>Financial Times of India</i> , <i>The Times of India</i> , and <i>Economic and Political Weekly</i>), Monsanto website; A total of 15 years of archival data was collected, January 2002 through May 2017.
Role of NGO's and Civil Society	NGO archives, newspapers (<i>The Hindu</i> , Reuters, <i>Economic</i> , and <i>Political Weekly</i> , <i>The Financial Times of India</i> , and <i>The Times of India</i> , etc. drawn from access world news database)

The quantitative methods that I will use include central tendency analysis, descriptive statistics, analysis of trends presented by the economic survey graphs, and interpretation of tables of economic data. Statistical methods, such as central tendency, will be used to provide more analysis. I have analyzed the economic trends to show any changes in the yield, growth or decline, for Bt cotton production. This will also examine the costs of buying Bt cotton seeds and the prices at which Bt cotton is sold. This analysis will be performed to understand the performance of Bt cotton in economic terms, and to understand how much cotton produced is Bt cotton. I will examine tables to look for changes in cotton over the years of 2001-2002 to 2014-2015. Land

ownership is used to understand the states of India and look at the marginal and small farmers. This is because India's agriculture sector has both land owning farmers, and land leasing farmers. The caste, lastly, is important to understand in order to see how the population's social class has been affected by the emergence of cultivation of Bt cotton in India. This will allow for creating tables and graphs to show any trends that may emerge during the research. The quantitative data and resulting analysis will be used to inform the qualitative analysis. The second part of my methodology is based on qualitative elements. Table 2 presents the qualitative variables and their data sources. Below the table is the methodology for the qualitative data.

The main source of data, government reports, newspapers from January 2002 to May 2017, and historical texts and with these sources, I will employ discourse analysis. I will do this to show how certain texts excerpts and remarks create qualifications and alternatives to the hegemonic ideologies, discourses, and political perspectives of the agents involved. Through this, I will present how these different agents impact the introduction and cultivation of Bt cotton, and how they impact one another. This analysis will be performed to create an understanding of the discourse of neoliberal policies and power. Power, in neoliberalism, refers to the monetary value of the Bt cotton produced by the rural small farmers. This discourse analysis will focus on how Bt cotton was supposed to empower the rural small farmers because Bt cotton was expected to produce better quality and yields than the indigenous cotton seeds. The better quality and yields would have allowed rural small farmers to increase their share of power through wealth. This research presents that Bt cotton has done the opposite and disempowered the rural small farmers, thus decreasing their wealth and power simultaneously. This analysis will be performed to create an understanding of the discourse of neoliberal policies and power. This will be used to understand how neoliberalism is affecting the rural small farmer's power because of Mahyco-Monsanto's Bt

cotton. The monetary value of Bt cotton is a direct reflection of rural small farmer's wealth or position within neoliberalism. Small rural farmers rely on Bt cotton to produce their power through the monetary value of cotton in a global market. The analysis will investigate the previous literature to create a holistic framework from the ones that were employed in the previous literature. Articles will be used through the examination of their content and arguments. These articles will be used to provide arguments and alternatives to the issues that are affecting the rural farmers. Historical discourse analysis will be employed to create an understanding of the events that led up to the implementation of neoliberalism in India and to follow the effects of neoliberalism up to the present day. This displays the shift in crop production took place and the dispossession of the farmers from the means of production that occurred. The examination of history will allow me to illustrate the shifts in inequality and poverty that have occurred over the timeline.

The final part of the methodology textual and content analysis. My content analysis will be used to construct an understanding around the NGO's and the newspapers. This content analysis will provide key themes in the archives of NGO's, newspapers, and journals from India. This allows me to create an understanding of the nature of Bt cotton. Content analysis will focus on looking at how the agriculture power is portrayed by the media.

The methods that this research will use are to provide the most holistic perspective on the issues. These data sources and methods will provide information, arguments, and alternatives to the issues and allow the research to provide a deeper understanding of the issues. The final section of this chapter is the conclusion and significance.

1.4 Conclusion

The introduction of Bt cotton into India has created a growth in the agriculture field, but the consequences of Bt cotton have not been fully flushed out. The complicated and obscure nature of neoliberalism has allowed Monsanto to enter the Indian agriculture sector with competing goods, Bt cotton seeds, against the indigenous seeds. The deconstruction of agriculture sector is aided through examination of agriculture as a commodity, and the ideas presented by accumulation by dispossession. The commodification of agriculture produces new avenues for exploitation of labor, nature, and resources to occur. If the problem of accumulation and commodification is not addressed for these local farmers there will be many untold effects and consequences for the region. This will cause ripple effects that will create consequences for India as well. Once the effects of this have reached the national stage in India it will create consequences on the global scale due to India's status of one of the world's largest cotton producing states (Gandhi & Namboodiri 2006). The commodification of agriculture and accumulation by dispossession occurring in Maharashtra, Telangana, and Andhra Pradesh, India can be used to create an example that corporations are able and allowed to privatize a resource and create a commodity of it to accumulate capital and sever people's ties to the means of production. The commodification of nature to create resources has broad effects and attempts to slow this process are unyielding to the ever-growing power of capital in the neoliberal market system.

CHAPTER 2

THE CURIOUS DEMONSTRATION OF ACCUMULATION

BY DISPOSSESSION IN INDIA

2.1 Introduction

This chapter begins by examining how Bt cotton is used to commodify agriculture under a new form of capitalism, neoliberalism, and how it causes dispossession of farmers. The second part of this chapter examines the nature of dispossession, experienced by farmers in Maharashtra, Telangana, and Andhra Pradesh, India. The need for examining commodification of agriculture, particularly under neoliberalism, is important because we have entered an era of increasing relation. This relation, present in all modes of production, has intensified under neoliberalism as the intersection of technology, economics, society, and nature create new commodities. Technology is prevalent in agriculture systems today because of the high use of pesticides, herbicides, industrial irrigation, and GM seeds. The promotion of industrial scale commercial agricultural practices propels agriculture into the economic system, because it creates a method for the production of resources. The policies and economics of neoliberalism, intertwine with agriculture because of neoliberalism's need to incorporate new avenues of capital accumulation (Smith 2007). Society has been related to agriculture since the demographic transition that was spurred by the agricultural revolution. This allowed society to establish cities and large agricultural practices, and because of this food supply increased. The increase in food supply established a relationship between food supply and humankind that allows for the advancement of society. From the beginning of modern society, dating back to the cultural hearths, some of which are more than 7000 years old, surpluses have played a major role in spatial transformation. The relationship between humankind and agricultural surplus has also created a relation between food security and

humankind. Lastly, nature is tied into this research because without the means of production appropriated from nature, agricultural systems would not have arisen and allowed for the expansion of human population. Throughout history, human society has transformed nature, and in return, nature has transformed human society (Marx 1990). In this chapter, I will examine the modern history of agriculture in India, how Bt cotton is being used to commodify nature, and what is the nature of dispossession evident in India's agricultural systems.

The importance of nature to Indian society is often overlooked and disregarded by capitalist policies and economic practice. In modern times, this neglect of nature stems from the use of money as a means of exchange. The ambiguous essence of money has created a disconnect between society and nature, and this can be seen within the Global North through the buying of agricultural goods at grocery stores and in our sense of nature as external (Harvey 1996). According to the Harvey, "money is *the* means whereby we all, in daily practice value significant and very widespread aspects of our environment" (1996, 150). This is because we, as consumers, purchase commodities that are abstracted from the environment. The abstraction of commodities from nature comes from our money values assigned to natural resources and environmental features that are used in the production, exchange, and consumption of these commodities (Harvey 1996). The ability of money to act as a "universal yardstick" against which we measure the values of commodities in relation to labor and nature allows for further abstraction from the environmental issues (Harvey 1996, 150). Through assigning a value to commodities, we assign a value to resources, and then to nature, but often the value of a commodity is dictated by the value of what society will pay for it and does not act towards the value of nature. The abstraction of value, from the streams of production, enables commodities in the market to be arbitrarily assigned value based on the market conditions of the commodity (Harvey 1996). These values are then tied

to commodities and the market, not to the literal value of nature or natural resources. This causes massive fluctuations in the value of commodities based on market conditions and behaviors (Harvey 1996). Consumers are then the recipients of either increased value or decreased value of commodities and have the ability to evaluate and change consumption habits based on values. The other side of the market, the producers, often have little choice in how to sell their commodity, and thus are limited to the values that the market places on raw resources. These values translate to the money that is earned by the producers of resources for the production of the commodities. This is problematic because through every stage of a commodities' production, the capitalist will pay less for the commodity in order to retain surplus. Through these levels of abstraction, the producers of raw resources are paid less for their wages and products than the level above them. The processes of globalization have further abstracted valuation of commodities and resources because of the integration of economic practices from the local scale to the global scale.

India has been propelled into capitalism during three different paradigms. The historical process of implementing and adapting agriculture to a commodity in India is well recorded and pertains to this research. The three distinct regimes of accumulation, under capitalism, created accumulation by dispossession in three different manifestations. These distinct regimes of accumulation occurred during the British colonial rule of India, the Green Revolution during the 1960s to 1980s, and now in the late twentieth and twenty-first century. The approach to accumulation by dispossession is different in each period, but the historical examples provide context to the current events in India. They all suggest that India has been exploited as a producer of resources for the capitalist world market. This is important to understanding money and value because "money valuations presume a certain structure to time as well as to space" (Harvey 1996, 153). This chapter will explain these historical examples, and connect them to the modern case of

the corporatized cultivation of Bt cotton. It will also explain the commodification of the agricultural system, and how this constructs accumulation by dispossession in India. Later in the chapter, I will provide the explanation to how this dispossession affects the social relations in these regions, and this will draw heavily on the understandings of nature as a commodity to show that dispossession has the effect of economically disempowering Indian farmers.

2.2 Indian Agriculture under British Colonial Occupation

Though the theory of accumulation by dispossession, relatively, is a new idea proposed by Harvey in his literature, it is merely an expansion of Marx's concept of primitive accumulation to meet the needs of an evolved capitalism (Harvey 2003; Marx 1990). The processes of primitive accumulation and accumulation by dispossession, both in theory and praxis, are only different due to the time periods that they exist. The idea of primitive accumulation is the separation of the laborer from the means of production conceptually (Marx 1990). The focus of this section is to examine how the privatization of these previously open property rights have been used by corporations to accumulate wealth while dispossessing the Indian farmers of their biodiversity and capital. To begin this section, we will discuss the evidence of primitive accumulation during part of India's colonial rule, during 1757 to 1947, by the British Empire (Davis 2017).

According to Davis “If the history of British rule in India were to be condensed to a single fact, it is this: there was no increase in India’s per capita income from 1757 to 1947” (2000, 329). The colonization of India, by the British, began with the East India Company gaining a foothold on the continent (Wolpert 2008). Thus began a long and travailing effort by the British to implement commercial agricultural systems in India. In 1853 the Cotton Supply association – a branch of the Manchester Chamber of Commerce selected the Berar province and neighboring

Nagpur district to promote a monoculture of agriculture production (Davis 2017). This caused a dispossession of Indian elites from control over the social production, which incorporated irrigation and cotton weaving, of the agricultural production systems (Davis 2017). This was done in order to eliminate the *balutedari* social system, in favor of the British created a system of sharecropping called the *khatedari* system (Davis 2017). The change in social structures from a traditional village system was done to eliminate the Indian elites from owning social control over the agricultural system, without owning any of the actual land (Davis 2017). The British did this in order to divorce the Indian elites from their control, but also in an effort to produce land as a private property.

The arrival of the British advanced the idea of land as private property in India due to the “interpretation of classical Hindu law by judges of the British Empire” (Mitra 2017, 36). This interpretation was combined with “English common law to determine property relationships, the British ironically laid the grounds for recognition of private property rights in India” (Mitra 2017, 37). This process of divorcing producers from their land allowed the government to become the landlord and the peasants to become the tenants (Davis 2017). Through the creation of land as a private resource, the British had promoted the "privatization of land" and this, in turn, caused the "forceful expulsion of peasant population;" though this expulsion did not occur in the literal sense of removing the peasant population, it occurred in the restriction of land ownership to the wealthy portion of the population (Harvey 2003, 145). It did divorce the Indian village society of their common and collective property rights, mainly in regard to land and crop choice. These peasant populations of India were caught in a debt trap because the cultivator had no way of regulating the market price for their product (Davis 2017). This is exclusion from the means of production and the market system constitute a form of dispossession and exploitation. This dispossession

materializes as the lack of access to land and the lack of crop choices, primarily being made to produce cotton and wheat crops (Davis 2017). Producing a "contingent workforce for the [Cotton Supply] Association," which further removed the Indian population from their access to the market because the Cotton Supply Association "had no intention of ever allowing them to wield any autonomous bargaining power within the international cotton market" (Davis 2017, 332). This presents the historical divorcing of laborers, the provincial Indian population, from their land. Through this process, the disempowerment of the Indian population occurred and allowed British corporations to appropriate vast sums of wealth while causing untold misery to India.

This forceful expulsion of the Indian population from land rights allowed the British to establish a monoculture of cotton production. Through the production of cotton, Berar's cotton productivity increased dramatically, and "by 1867 Berar alone was sending as much cotton to Manchester as all of Egypt, and cultivated acreage probably double by 1890" (Davis 2017, 332). The production of cotton, spurred through infrastructure development by the Cotton Association, allowed this cotton to be exported to and then manufactured in Britain (Davis 2017). These manufactured goods, textiles, were then imported back to India and sold for a lower price than their Indian counterparts (Davis 2017). The British had gained power over the Indian population of Berar, under the economic system, and caused a shift from the traditional Indian economic system to a system under capitalist neoclassical economics at this time.

During British colonial rule, it is evident that the famines during the latter half of the nineteenth century, and their deadly effects were not strictly environmental (Davis 2017). The transformation of India's agricultural sector from traditional farming methods to commercialized agriculture had a drastic effect on the environment and the people (Davis 2017). These manifest as famines and the death of India's people. These famines were caused by a combination of social

policy with economic policy, and with climatic events (Davis 2017). The forceful integration of India into capitalist production caused a decline in food storage, due to the cultivation and export of cash crops – cotton and wheat (Davis 2017). This increased the Indian population's reliance on wages to support themselves (Davis 2017). When this decline in production is coupled with extreme climatic events that cause famines that resulted in the deaths of millions of Indians (Davis 2017). To address and alleviate climatic event's effects on the population, a proper socio-economic policy is required to overcome losses of agricultural production that occurs when drought strikes. A proper socio-economic policy to address the social development of human capital was drastically low during British rule of India in which "one penny per person or 4 percent of all expenditures," was invested (Davis 2017, 342). The lack of socio-economic policy, and "by making the revenue demand too high and inflexibly fixing them to the estimated average production of the land with scant regard for climate variation," allowed the British to ensure the exploitation of the Indian population (Davis 2017, 342-343). This exploitation came from this design to extract wealth from India, and not reinvest wealth into the development of human capital or proper infrastructure (Davis 2017). This system of exploitation made it possible for the British to make sure that a particular amount of people would lose their land titles every year (Davis 2017). Thus ensuring that British and Indian elites would be able to accumulate more land by dispossessing it from the Indian peasant population. Through this, the disempowerment of the Indian peasant population began in the agricultural systems. The promotion of a monoculture cash crop agriculture system, under neoclassical economics, constructed the first example of commercialization, and primitive accumulation of Indian agriculture systems and transformed Indian agriculture from subsistence agriculture to commercial agriculture (Davis 2017).

The act of accumulation by dispossession is clear in the example of India under colonial rule, and as Shiva writes “colonialism had dispossessed peasants throughout the Third World of their entitlements to land and to a full participation in agricultural production.” (Shiva 1991, 47). The proper use of socio-economic policy would allow for the population to have proper food supplies and capital to alleviate the immediate effects of drought and famine. These policies would allow for the development of human capital and agricultural infrastructure. The promotion of a monoculture of crop production and the forceful readjustment of the Indian population into capitalism formed a vast amount of issues. These are echoed by the later adjustments to Indian agriculture brought about by the green revolution and the introduction of hybrid and GM crops in the twentieth and twenty-first centuries. In the next section of this section, we will discuss the implementation and effects of the Green Revolution in India.

2.3 The Green Revolution and India

The Green Revolution was a prominent period, between the 1930s and late 1960s, in agricultural history that resulted in the advancement of agricultural technologies and the creation of hybridized crops (Hazell 2009). This advancement of agriculture was based on a scientific transformation of nature that was supposed to help the global south. The Green Revolution in India was implemented and transformed the agricultural system under a period of economic and state policy categorized as state-managed capitalism. India adopted the Green Revolution in 1961 through a transition from the community development program to the implementation of the Intensive Agricultural Development Program (Shiva 1991). The Green Revolution, was deemed a success by "technocrats who [were] fairly optimistic about the spread of new cultivation techniques and the use of new inputs," saw the yields produced by the agricultural system in the 1960s as

"excellent" (Patnaik 1972, 15). The success of the Green Revolution allowed agriculture to expand at unprecedented rates, both in land under cultivation and in the population of farmers. The case of India and Punjab, in particular, was viewed as a triumph for the Global North. This triumph emerged out of the Green Revolution as a "political and technological achievement, unprecedented in human history. It was designed as a strategy for peace through the creation of abundance," the creation of new crops and agricultural practices, therefore was a political victory for the Global North that would allow for the social development of humankind because it would eliminate food scarcity, and promote proper nutritional support for untold numbers of people (Shiva 1991, 20). This triumph was constructed by the capitalists and implemented in India with the consent of the fledgling government of India.

The positive aspects of the Green Revolution have created a rising doubt in many people, and this manifests in the impact on income distribution and living conditions of tenant farmers, small and marginal farmers (Bhalla 1982a). The integration of economics with agriculture brings new weight to the political agenda of the Green Revolution. When the political agenda is concealed by economic interactions and acts of social control, the use of science by governments and corporations alike can often lead to a negative use of technology. The political agenda of the Green Revolution revolved around incorporating Indian agriculture to the American model of agriculture, focusing on high input requirements and the use of capital (Shiva 1991). This was done to promote a new avenue of capital accumulation, one that relies on nature and human transformation. The avenue was realized through the commercialization of various inputs of agricultural production, and promotion of it as a better agriculture. This is evident in the Green Revolution because the creation and implementation of these new technologies took place under capitalist modes of production.

The implementation of new agricultural technologies and practices, under capitalism, intensified issues that were prevalent in India's Punjab province in the 1980s that eventually erupted into conflicts (Shiva 1991). These new technologies and practices, however, are not entirely to blame for the conflicts, but much like Shiva, I contend that they advanced the issues to the point of conflict. As noted by Shiva, "where Indian agriculture was less productive it was not due to primitive principles or inferior practices, but due to interruptions in the flow of resource that made productivity possible" (1991, 26). These resources were alienation from land, the preservation of India's forests, and the large increase in cash crop agriculture, which all began and continued under British colonial rule (Davis 2017; Shiva 1991). The major two issues of land alienation and large cash crop cultivation present that dispossession occurred in a multitude of forms during the Green Revolution in India.

This dispossession is coupled with accumulation, and many of the new technological innovations of the Green Revolution required capital to procure. This perpetuation of dispossession began with the devaluation of Indian currency in the mid-1960s, instituted by the World Bank, to promote the development of an intensive agricultural model in an already economically disadvantaged nation (Shiva 1991). The accumulation by dispossession that took place, under the Green Revolution, has built upon the processes and results of the penetration of capitalism, by the British, into a pre-capitalist society, India. The dispossession of Indian farmers from their land through privatization occurred during the colonial period when the ideas and laws, of the British, promoted a system of private property, and the privatization and creation of land as a commodity drove the processes of accumulation by dispossession. The dispossession faced by Indian people was not limited to the loss of land but includes the biodiversity and traditional and indigenous knowledge that existed in the communal or collective rights of the Indian people. Through the

promotion of commercial cash crop cultivation, Indian farmers were dispossessed, over the generations, of indigenous knowledge of environmental resources and farming practices. The dispossession of biodiversity began when it was recognized that "the problem with indigenous seeds was that they could not be used to consume high doses of chemicals" (Shiva 1991, 36). This led to the use of hybrid seeds, produced by the Green Revolution, that were constructed to grow in agricultural systems that employed intensive chemical uses (Shiva 1991). These hybrid seeds and their resulting crops were much better suited to the intensive agricultural practices implemented during the Green Revolution. Hybrid seeds were chosen because they fit better with the modern system of agriculture than the indigenous seeds. Thus the shift from an indigenous agriculture system, caused by agents outside India, to an intensive commercial agriculture system promoted the use of new seeds. This caused a replacement of the large crop and variety diversity to a narrow genetic base that formed a monoculture revolving around these hybrid seeds (Shiva 1991).

The government of India like many of other newly independent Asian countries were met with an increasingly large amount of peasant unrest (Shiva 1991). Because of the rising unrest of the peasants, the government of India searched for ways to address this social unrest, and the New Agricultural Strategy (NAS) was their solution. The accumulation that comes from dispossession, during the Green Revolution, was the spurred by the implementation of the NAS, in India (Shiva 1991). NAS, implemented in 1966, focused on promoting the use of Borlaug's dwarf wheat and later implemented dwarf rice (Shiva 1991). The culture of agricultural crops within India began to shift away from a variety of indigenous seeds and crops, most of which were self-renewable and provided a genetic diversity, to the use of hybrid seeds and crops, which were non-renewable and uniform in their genetic traits (Shiva 1991). The Green Revolution promoted a change in farmer's

and humankind's perception of nature. This change in perception promoted that technology was the answer to nature's scarcity and presented Green Revolution technology as a method to dominate nature and create abundance through technology (Shiva 1991). In truth, the Green Revolution benefited the wealthy farmers and landowners who had the ability to purchase the required inputs for each growing season. Dispossessing the economically disadvantaged farmers of their, biodiversity and capital, through the cycle of exploitation, which required the constant purchase of chemical pesticides, herbicides, and fertilizers (Shiva 1991). Accumulation, during the Green revolution, allowed corporations to gain vast amounts of capital through a cyclical debt trap that produced a constant need for Indian farmer to purchase their inputs, from the corporations that promoted their own technology as superior to the indigenous technology.

The transition from indigenous crop variety to Green Revolution's hybrid varieties involved a shift in the agricultural systems. This transition was characterized by removing peasant control from the agricultural system and shifting the control to seed corporations, international agricultural research institutions, and agrichemical corporations (Shiva 1991). This transition made the Indian agricultural system become further entrenched in the capitalist model of consumption.

2.4 Creation of Indian Farmers as Consumers

Indian rural farmers, because of the British colonization and the Green Revolution already have an environment for the production of agricultural commodities. This is the agricultural system of India. The construction of this system of capital and commodities has created consumers of the Indian rural farmers. The creation of Indian rural farmers as commodity producers started with the British colonial system and was continued by the Green Revolution. Not only did the exploitation

of farmers occur through the forced introduction to capitalism, but the Green Revolution brought new science and technology to the commercial agricultural systems that were implemented by the British.

The Green Revolution was an advancement of agricultural technology, but it was also a construction of the capitalist system to promote consumption of agricultural input commodities in the Global South. The creation of agricultural input commodities and the exploitation of the agricultural system created a system of exploitation through two issues in the mode of production and means of production. Accumulation by dispossession existed in India since the implementation of private property laws that forced the peasant populations from their land, during British colonial rule. Complemented by the British implementation of a monoculture of either wheat or cotton (primarily for export) created the second facet of dispossession to manifest. This came in the loss of 10,000 years of agricultural history that promoted an agricultural system based on environmental protection and ecological preservation (Shiva 1991). India's history of indigenous knowledge is shown through their knowledge and use of more than 9,000 species of plants (Sahai, Kumar, Ahmed 2005). The transition of the agricultural system and the privatization of forests, implemented by the British, concentrated agricultural knowledge to a few species and reduced the gene pool of plant species to narrow linear paths (Davis 2017; Shiva 1991).

Colonialism and the Green Revolution had four main effects on the agricultural systems in India. These are the privatization of land property rights, privatization of common and collective rights to nature, the creation of India's rural farmers as a consumer and labor force, and the dispossession of the Indian population from their biodiversity. In the next section, we will examine how neoliberalism has continued this cycle of accumulation by dispossession within the Indian agricultural system.

2.5 Neoliberalism and Bt Cotton in India

In 1991-1992, India had economic crises that resulted from a balance of payments deficit that was intensified by the implementation of a new economic system, called neoliberalism (Ahmed 2009). Harvey classifies neoliberalism as “a theory of political economic practices proposing that human well-being can best be advanced by the maximization of entrepreneurial freedoms within an institutional framework characterized by private property rights, individual liberty, unencumbered markets, and free trade” (2007, 22). When referring to neoliberalism, I intend to use this theory as the understanding of neoliberalism in my research, but in application in this paper, neoliberalism is a system of political economic practices that promote free trade, privatization, and free markets. The adoption of neoliberalism and its policies was partially due to the global monetary institutions, particularly the IMF and World Bank (Ahmed 2010). India, because of economic crisis, was forced into accepting the terms put forth by these institutions in order to avoid a balance of payment crisis, and these terms included the structural adjustment policies to promote a neoliberal India (Ahmed 2009).

The implementation of neoliberal policy in India required that India’s markets be open to foreign investments (Ahmed 2010). This resulted in a global competition to invest in this new market. This competition was promoted by the government of India “beginning in the 1980s, a more private-capital friendly government withdrew important constraints on the expansion of big business and encourage them to enter areas hitherto reserved for the public sector” (Ahmed 2009, 43). This coupled with economic crisis resulting from the balance of payments deficit prompted India to accept a “‘Structural Adjustment loan’ of \$500 million in December 1991” (Ahmed, Kundu, & Peet, 2010 45). India's balance of payment crisis was manipulated by the IMF and World Bank to create favorable conditions for them, under which India would be loaned money in 1991

and in the future. One part of these conditions was that "India would ensure macroeconomic stability" (Ahmed, Kundu, & Peet 2010, 45). The IMF provided the finer points to this broad condition by adding that India should reduce their budget deficits through reducing spending, even if this spending was to promote vital and strategic industries, or producing development in India (Ahmed, Kundu, & Peet 2010, 45). The combination of neoliberal policies that propelled India even further into the global market by promoting privatization, free trade, and foreign investment has had mixed results in India's economic growth over the past twenty-seven years.

In the agricultural system, these policies can be seen through the introduction and cultivation of Mahyco-Monsanto Biotech's (MMB) Bt cotton seeds which have further promoted a loss of biodiversity and continued a cycle of exploitation trapping rural farmers in a cycle of debt. In March of 2002, eleven years after the introduction of neoliberalism, India's first GM crop was approved by the Genetic Engineering Approval Committee (GEAC) for commercial cultivation (Arora & Bansal 2012).

The need for an understanding of the effects that Bt cotton seed sale and production, within circuits of capital, described above, is of vital importance. This is done in order to understand the following questions:

1. How is Bt cotton used to commodify agriculture under neoliberalism and how does this cause dispossession of farmers?
2. What is the nature of dispossession, regarding farmer's debt, in Maharashtra, Telangana, and Andhra Pradesh and how does this affect social relations in these regions?

In the previous section, I had diverged from discussing Maharashtra, Telangana, and Andhra Pradesh to establish my understanding of a historical process of accumulation by dispossession since the introduction of capitalism in India and to create a framework for

understanding how capital is used to exploit the rural countryside of India. First, I will start with some background on Bt cotton.

Bt cotton is a transgenic GM crop that is made through the coupling of genes from the bacterium *Bacillus thuringiensis*, and cotton (University of Montana 2013). This was created by Monsanto to provide a crop with internal mechanisms to repel or kill the major pest problems that devastated cotton during its growth cycle (University of Montana 2013). Bt toxins, which were introduced to cotton genes, are insecticidal to the larvae of cotton bollworms, the major pest, as well as moths, beetles, and butterflies (University of Montana 2013). Cotton bollworms are particularly destructive to cotton because they burrow into the cotton bolls and squares (the actual cotton and stem, not the root system of the plant) and damage the plant both during its growth and the overall crop (University of Montana 2013). Bt cotton was supposed to reduce pesticides inputs by adding this genetic trait to the cotton plants (University of Montana 2013). In Maharashtra, Telangana, and Andhra Pradesh cotton is planted starting June/July and continued through August depending on the onset of monsoons (Cotton Corporation of India n. d.). The harvest of cotton occurs in October to February (Cotton Corporation of India, n.d.)

The introduction of Bt cotton started with the approval by the GEAC, and Maharashtra and Andhra Pradesh were two of six states that received permission to commercially cultivate the crop (Sahai & Rahman 2003). This type of cotton was made to combat insects that had been building a resistance to pesticides, and provided a crop that, supposedly, would reduce pesticide inputs and alleviate the insect issues that Indian farmers had been experiencing. This was done through creating Bt cotton seeds with genetic resistance to the insects, which are a major problem in India (University of Montana 2013). Bt cotton was produced through the movement of capital in order to develop this variety of cotton. This transfer of capital allowed the creation of Bt cotton in the

tertiary circuit, and then transferred the Bt cotton seeds from the tertiary back to the primary circuit in the form of a commodity. From the primary circuit the Bt cotton seeds were purchased by the labors, Indian farmers, and transferred to the fixed environment of the secondary circuit. This movement of capital created Bt cotton, as an agent, of capital under the neoliberal system. From its arrival in the fixed environment of the Indian agricultural system; the area under Bt cotton expanded rapidly from its introduction in 2002 to 2014 Figure 2 represents the total cotton production and total cotton export of India during the time period of 2000 to 2015. This figure was derived from annual statistical reports created by the Ministry of Economics and Statistics, and published by the Government of India.

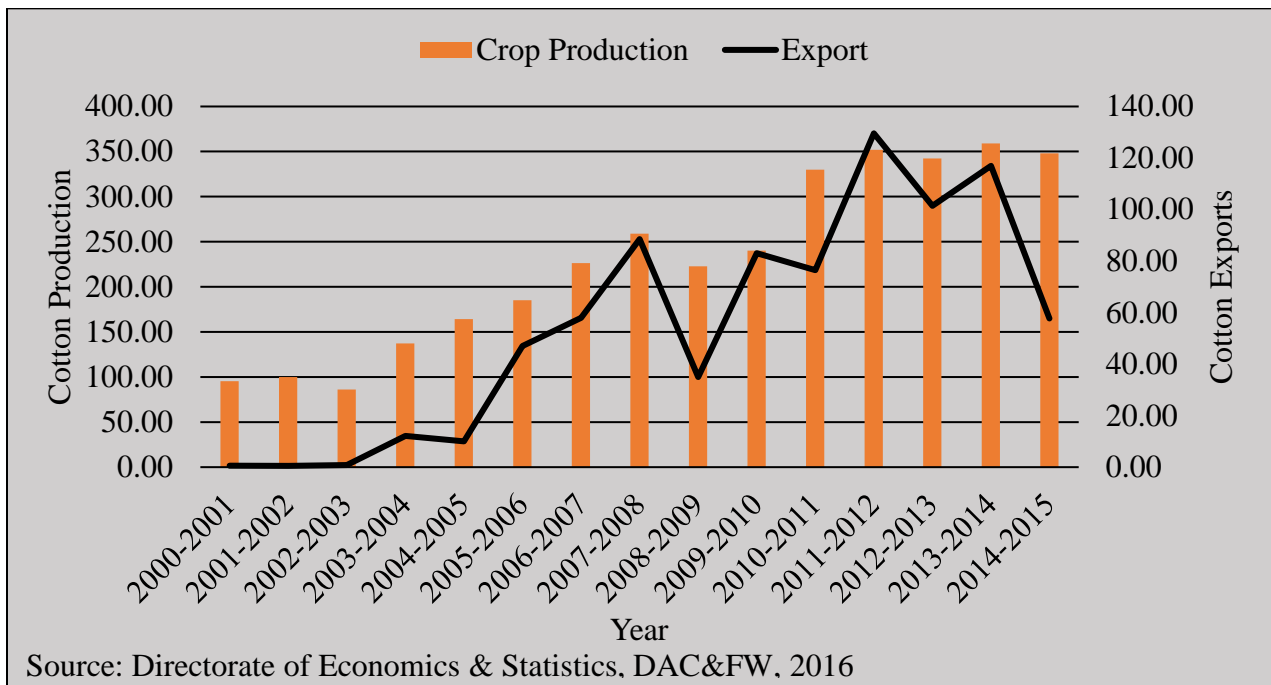


Figure 2: India Cotton Production and Export, 2000 to 2014, in Hundred Thousand Bales

The use of Bt cotton increased drastically in the first six years of official commercial cultivation. This increase can be seen in Figure 1 and represents an investment from the primary circuit into the tertiary circuit to create new technologies to expand the production capacity of agricultural land. The quick adoption of Bt cotton by farmers, was partially because of MMB

claiming "farmers growing Bollgard 164 cotton seeds would not have to spray any pesticide and that the cotton seeds itself would fight the green and mixed coloured pests" (*Times of India* 2003). Claims like this one and others were made by MMB to promote their new Bt cotton seeds for cultivation among the labors and consumers, Indian rural farmers. Figure 2 also presents that total crop production of Bt cotton increased exponentially allowing India a surplus of cotton after their own mill consumption for textile production. The total crop production of cotton in India rose from 100.0 hundred thousand bales, in 2001-2002, to 348.0 hundred thousand bales in 2014-2015. While simultaneously increasing cotton exports from 0.50 hundred thousand bales, in 2001-2002, to a high of 129.6 hundred thousand bales in 2011-2012. The increase in production of Bt cotton comes from the increased area that has adopted it for cultivation. As the production capacity was expanded by the introduction of Bt cotton. The area under Bt cotton cultivation increased as well. Figures 3, 4 and 5 present this rise in Bt cotton production area related to the total area of cotton and the yield of cotton. It is derived from the Ministry of Economics and Statistics and published by the Government of India.

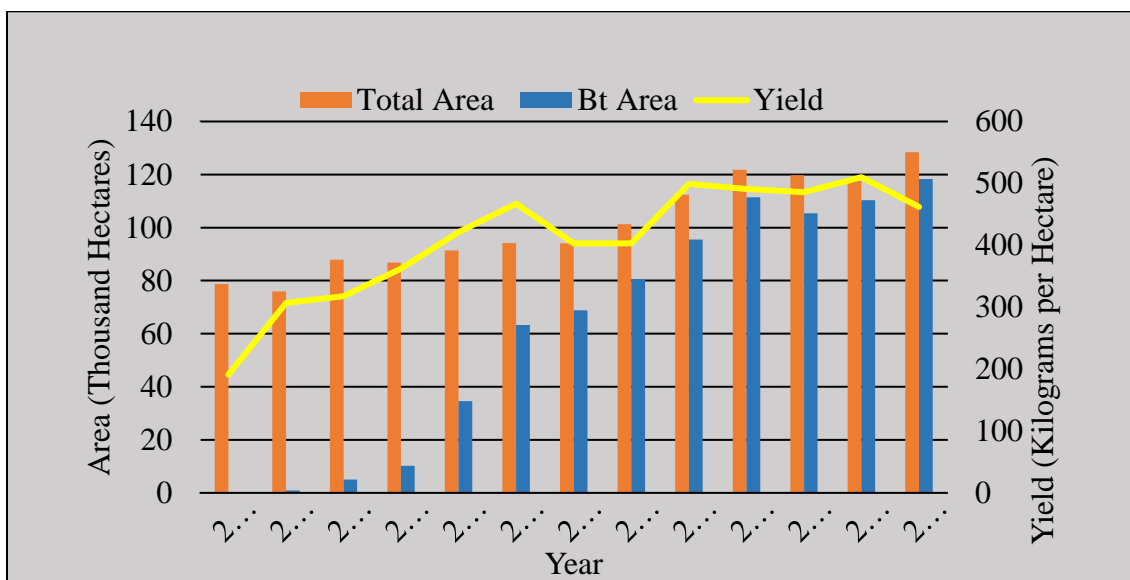


Figure 3: Area of Cotton and Bt Cotton with Yield in India, 2002 to 2014 (Source: Directorate of Economic & Statistics, DAC&FW, 2014 & 2016)

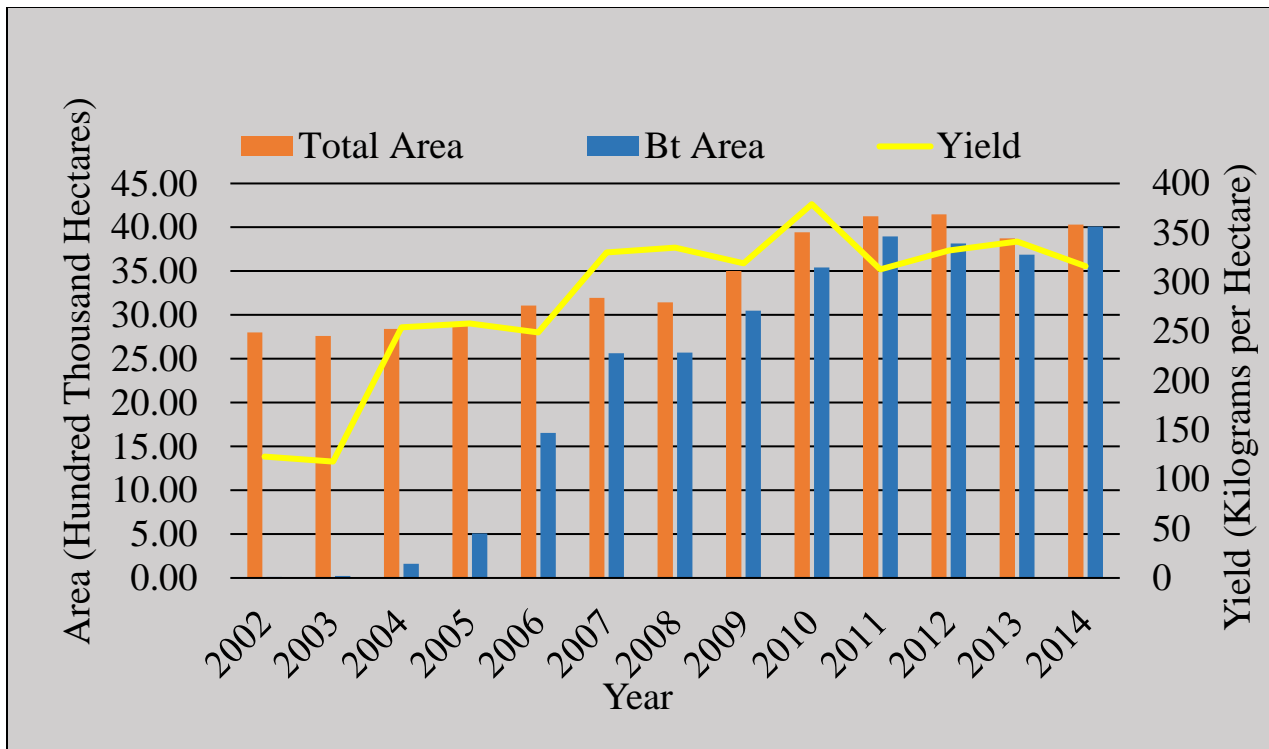


Figure 4: Area of Cotton and Bt Cotton with Yield in Maharashtra, 2002 to 2014 (Source: Directorate of Economic & Statistics, DAC&FW, 2014 & 2016)

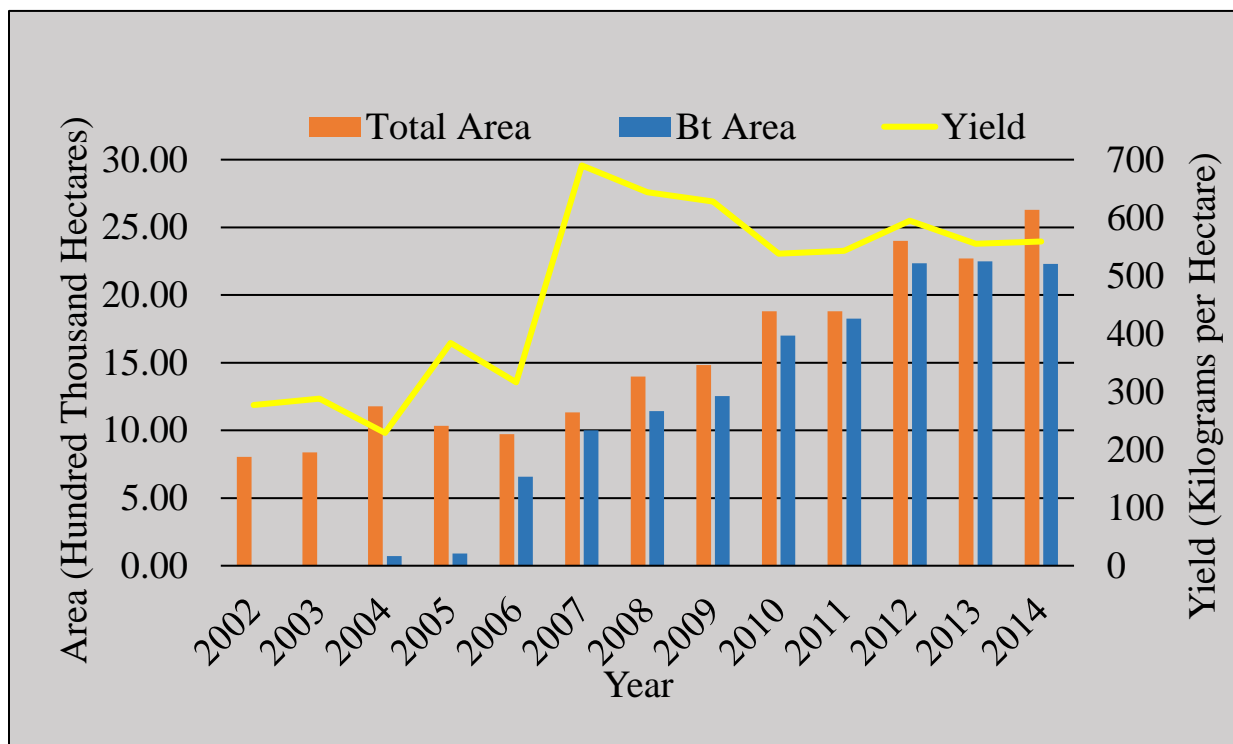


Figure 5: Area of Cotton and Bt Cotton with Yield in Andhra Pradesh, 2002 to 2014 (Source: Directorate of Economic & Statistics, DAC&FW, 2014 & 2016)

The area under Bt cotton went from 29,400 hectares during the 2002 growing season, 0.38 percent of the total, to 118.35 hundred thousand hectares in the 2014 growing season, about 92 percent of the total area. This increase was due to the claims, and increasing yields of Bt cotton that were observed during the initial introduction. Figure 3 presents that the yield of cotton in 2002 was 191 kilograms per hectare and increased to a high of 510 kilograms per hectare in 2013. The increase in productivity relates to the increase in the number of varieties of Bt cotton available. This is attributed to the rise of Bt cotton seed hybrids produced by Indian biotech corporations, and agricultural research institutions (Kranthi 2012). After the initial success of MMB's Bt cotton (using Bollgard I technology), MMB released the second stage of Bt cotton (using Bollgard II technology) in 2006, which incorporated two Bt genes to combat moths and cotton bollworms (Arora & Bansal 2012). The increase in Bt cotton cultivation in India echoes the use of HYV crops in India during the Green Revolution. The use of Bt cotton in India as many farmers rushed to gain access to the seeds, accumulating more surplus cotton in the primary circuit that was then reinvested in the tertiary circuit by MMB and a wide variety of other biotech corporations in order to capture a share of the market (Arora & Bansal 2012; Kranthi 2012).

Bt cotton continued to rise in acreage and in production and has resulted in a total of 95 percent of the total cotton cultivation in India (ISAAA 2016, 25). This increase in cotton growth has created a cotton production of 39 million bales in 2014-2015 (ISAA, 2016, 25). The increase in cotton has provided a large market for national and international biotech corporations to create different varieties of Bt cotton to disperse among the entire agricultural production system in India. In 2013, there were more than thirty Bt cotton hybrids in the market (CICR Annual Report 2012-2013). In Maharashtra, Telangana and Andhra Pradesh, this has caused vast consequences that arise out of the circuits of capital. Figure 4 represents the growth of Bt Cotton in Maharashtra

during the time period of 2001-2002 to 2014-2015. In Maharashtra in 2002, the area under cotton was 28 hundred thousand hectares and increased to 40.3 hundred thousand hectares in 2014. Bt cotton increased from 12,000 hectares in 2002 to 40.1 hundred thousand hectares in 2014. Bt cotton in 2002 was 0.42 percent of the total cotton crop and this increased to 99 percent in 2014 for Maharashtra. During 2002 to 2014, the yields more than doubled from 123 kilograms per hectare to 316 kilograms per hectares. Figure 5 represents the growth of Bt cotton in Andhra Pradesh during the same time. In Andhra Pradesh in 2002, total cotton area was 8.03 hundred thousand hectares and increased to 26.3 hundred thousand hectares in 2014. Bt cotton in 2002 accounted for 4,000 hectares and increased to 22.3 hundred thousand hectares in 2014. During 2002 to 2014, Bt cotton increased from 0.5 percent of the total area under cotton to 85 percent of the total area. Simultaneously, the yields slightly more than doubled from 277 kilograms per hectare to 559 kilograms per hectare. The increase in area and yield represents that the farmers were willing to use and wanted to use Bt cotton to produce a better life for themselves and their families. Maharashtra and Andhra Pradesh both rely on pest control measures accounting for a large use of pesticide inputs, despite the high use of Bt cotton which is supposed to control pests with its introduced genetic traits (Singh, Barik, & Gautam 2009). The growth of Bt cotton has occurred all over India at an alarming rate, similar to the growth of wheat during the Green Revolution and has infiltrated all farm size categories. The marginal farmers cultivate cotton and other crops on zero to one hectare of land (Deshpande 2017). While small farmers cultivate on one to two hectares of land (Deshpande 2017). Figure 6 represents this change, in percentages.

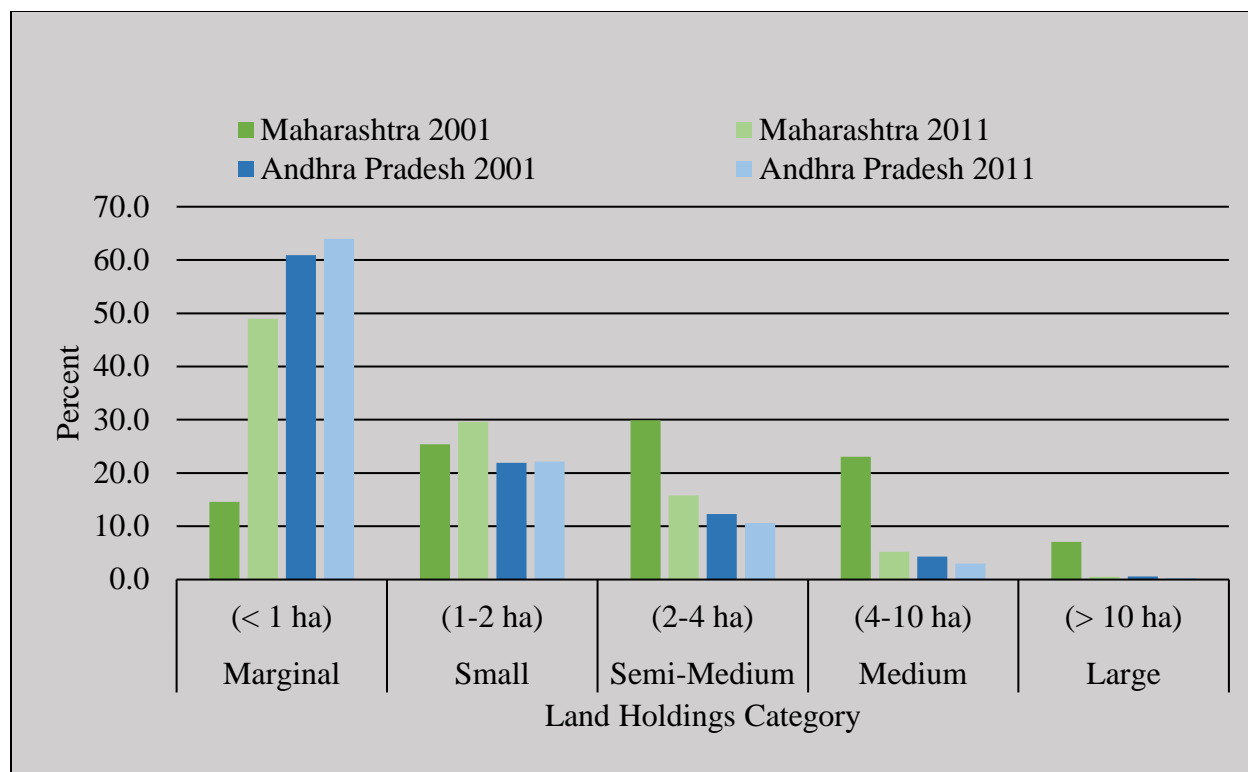


Figure 6: Percent of Land Holdings by Land Holdings Category in Maharashtra & Andhra Pradesh, 2001 to 2011 (Source: Government of India, Ministry of Agricultural Statistics 2010 and Deshpande, 2017)

In 2000-2001, the marginal and small farmers made up forty percent of the total farming acreage in Maharashtra (Government of India: Ministry of Agricultural Statistics 2010). During the same time period, they covered 8.3 million hectares of land (Government of India: Ministry of Agricultural Statistics 2010). In 2010-2011 they constitute seventy-nine percent of the total land holdings in Maharashtra (Deshpande, 2017, 17). The marginal land holdings category saw a growth from about fifteen to forty-nine percent over these ten years. These farmers occupied 10.7 million hectares of land in 2011. The rise in land holdings by the marginal farmers and the decrease seen in the semi-medium and medium categories relate to the downward movement of farmers in terms of land holdings. The marginal and small farmers in Andhra Pradesh in 2000-2001, constituted eighty-three percent of the total farming acreage (Government of India: Ministry of

Agricultural Statistics 2010). They had a combined total of about 6.7 million hectares of land in 2000-2001 (Government of India: Ministry of Agricultural Statistics 2010). In Andhra Pradesh, these same groups constitute eighty-six percent of total land holdings, in 2010-2011 (Deshpande, 2017, 17). In 2010-2011, the marginal and small farmers held about 11.3 hectares of land (Deshpande, 2017, 17). The increase of both groups represents that over these ten years the number of landholdings of two or less hectares increased. This is because over this time the total area of all landholdings in Maharashtra only increased by 3.3 percent and in Andhra Pradesh it increased by 14 percent. The small increases in areas under cultivation relate to the farmers being marginalized off of their larger land holdings because they had increasing debt from the high cost of agricultural inputs. This is further strengthened by the loss in semi-medium, medium, and large land holdings that are about the same number as the increase in the marginal land holdings category. The costs of being a farmer has created a marginalization of land holdings that results in the majority of land holdings being under one hectare. While the growth of the marginal and small land holding was increasing; the amount of land holdings lost from semi-medium, medium, and large categories was decreasing and the decrease is representative of the incorporation of more farmers into marginal or small land holdings category (Government of India: Ministry of Agricultural Statistics 2010; Deshpande, 2017). This growth in the marginal and rural small farmers land holdings in Maharashtra and Andhra Pradesh is synonymous with most of India because “86% of landholdings are less than 2 acres” (Deshpande 2017, 1). The marginal and small farmers also rely on informal credit solutions to maintain their production cycle and much like the U.S. credit is needed to maintain a farm due to the high cost of input. This credit is made available to farmers through middle-men, often the bullock capitalist’s created by land reform in the 1950s (Sainath 2005; Singh, 2009; Deshpande 2010; Hindustan Times 2012). In recent times, “informal

sources of credit constitute 40% of loans” (Deshpande 2017, 1). In the next section I go in depth and discuss the research questions more thoroughly.

2.6 Content Analysis

The magnitude of Bt cotton adoption and use in India is difficult to describe and completely articulate. To articulate the effects of Bt cotton on the agricultural sector of the Indian economy I have begun with creating an understanding of the area and production of Bt cotton. In this section, these ideas will be expressed more thoroughly through the use of discourse analysis. The beginning of the discourse analysis will discuss the content analysis of archival data.

A content analysis was performed on 1,256 archival newspapers collected over a total of fourteen years from January 2001 to December 2015. These articles come from major Indian newspapers, such as *The Hindu*, *The Times of India*, *Economic Times*, *Financial Express*, *Hindu Business Line*, *The Statesman*, *Indian Express*, *Hindustan Times*, and many others. After the data was collected it was processed using Nvivo 11 to code the articles into nodes with similar themes and word usage. During the coding, I ran a word frequency analysis with synonyms in order to narrow the database to articles that relate to Maharashtra, Telangana and Andhra Pradesh. This resulted in a total of 458 articles directly mentioning or discussing the study area. These articles were then removed from the total database and recoded in Nvivo using a word frequency analysis with synonyms. These articles produced eight nodes, which were biodiversity, Bt cotton, Monsanto, farmers, Maharashtra, Andhra Pradesh (including articles about Telangana in 2014-2015), Seeds, Price, and State. Each of these nodes has forty to sixty articles that represent the nodes. A cluster analysis, using Pearson's correlation coefficient, of these articles was run that produced three distinct clusters among the articles. The articles range from +0.60 to +0.90

correlation meaning that the relationship between articles was a moderate to strong. The cluster analysis looked for word frequency and similarity. Figure 7 presents a cluster analysis that represents the major clusters of the articles when within all 458 newspapers.



Figure 7: Cluster Analysis of Nodes based on Word Frequency and Similarity

As presented by the word frequency and similarity analysis, state, biodiversity, and farmers comprise of the first cluster or relationship. Biodiversity and farmers have a +0.90 Pearson's correlation coefficient. Presenting a strong upward relationship between newspaper articles that discuss both issues, and state has a +0.70 correlation presenting a strong relationship with biodiversity and farmer's newspaper articles. The second relationship cluster that presents itself is between Monsanto, Maharashtra, Andhra Pradesh and seeds. They present similar correlations with the strongest being between Andhra Pradesh and seeds at +0.82, and declining gradually towards Monsanto at +0.80, all presenting a strong relationship between the articles. Lastly, the third relationship cluster is comprised of Bt cotton and Price, which has a +0.62 relationship meaning these articles fall to between a moderate and strong relationship. Though no clusters that present a perfect correlation, the moderate to strong relationships between the articles present that there is a strong relationship between articles in each cluster and each cluster themselves.

The content analysis in this research was used to create a thematic landscape of how the media discussed the topics related to one another. This content analysis was used to identify how the articles were related based on word frequency, word frequency similarity, and content

similarity. This allowed the articles to be grouped into clusters that reflect different articles that relate to one another through their similarities. Through this data processing the articles and their corresponding groups were created into three clusters. The first cluster is State, Biodiversity, and Farmers. The second cluster is Monsanto, Maharashtra, Andhra Pradesh, and Seeds. The third cluster is between Bt cotton and Price. These clusters and their articles were used to identify key themes within the cluster to form the thematic landscape. The media, overall, presents the issues surrounding Bt cotton both positively and negatively. In 2002, many articles revolved around how Bt cotton was praised by farmers and how it should be allowed for cultivation, and during this time there were articles discussing how Bt cotton would produce negative effects on the environment (Machhan 2002; *Times of India* 2002a). Articles that discussed Bt cotton and how it would provide more opportunities for the agricultural sector tended to be positive in their tone. Other articles that discussed the impacts that Bt cotton would have on the farmers and their environment tend to present a negative tone. These newspaper articles represent that the media presents Bt cotton as both uplifting and oppressive. The bewildering amount of articles surrounding the introduction and use of Bt cotton, and their opposing tones present that this issue is still heavily contested in the media and science involved with it. The cluster analysis was performed in order to identify the key themes within each cluster, and then how these themes exist between all of the articles in that cluster. This was done within each cluster and then the themes were used to examine how each cluster is related to the others through the themes that are present. My perspective on the situation of Bt cotton in India is that the overall impacts have been negative to the producers, Indian farmers. The media lends a critique to the situation that I seek to further and I do not critique the media. I am critiquing Monsanto's production of Bt cotton as an artificial nature produced in order to provide new avenues for capital accumulation. The use of Bt cotton by Monsanto and other

corporations has revealed vast contradictions to neoliberal theory and damaging consequences for the producers. The most notable consequence is the total exploitation of Indian farmers because of the constant need to purchase their means of production. Through the use of discourse analysis, the issues of increasing debt, loss of land holdings, dispossession of biodiversity manifest and are driven by the use of Bt cotton seeds and production in India. The discourse analysis will interact between the quantitative and qualitative data in the next section.

2.7 Thirteen Years of Bt Cotton in India

In 1947, India, a fledgling nation, was faced with massive peasant unrest and in order to quell this unrest in the 1950s, the central government (center) implemented a series of land reforms through the constitution (Constitution of India 1955, 287-314). This was the first wave of land reforms for the rural countryside. These reforms were focused on eroding the class structure put in place by the Jajmani systems, and providing land to formerly landless lower castes. The Jajmani system was an economic system in which the lower castes would perform would have to perform services for the higher castes, and in return, they would receive grain or capital (Bodly 2011). The land reforms had nominal success but did eliminate the intermediaries, "the quasi-feudal landlord class known as zamindars and *jagirdars*, which stood between the state and cultivator by acting as revenue agents and performing some local government functions" (Rudolph & Rudolph 1987, 50).

This erosion of intermediaries had two effects on the agricultural system. The first is that it allowed the state government's direct access to the cultivating farmers, and the second is that it created two distinct class groups within the rural. The first group is the landlord who had blocked or evaded land ceilings and rented their land to sharecroppers or tenants, or employed labor to work their farms (Rudolph & Rudolph 1987). This group has become the agricultural elite class,

which is able to engage in capital-intensive, industrialized, agricultural practices. The second group was deemed "bullock capitalists" and are "small to medium-sized self-employed independent agricultural producers" (Rudolph & Rudolph 1987, 50). The group benefitted directly from the elimination of intermediaries because they no longer had independent revenue agents above them, and now deal directly with the state government. Bullock capitalists will be used in the remainder of the paper to discuss the issues that have appeared through neoliberalism and Bt cotton, and in the next paragraph, I provide a detailed description of what they are based on Rudolph and Rudolph's definition from *In Pursuit of Lakshmi*.

The bullock capitalist class are comprised of farmers that own their means of production, provide the labor, and manage a small group of employees, generally family labor, themselves. They are self-employed and self-funded, meaning that they work their land and produce a capital surplus to continue production year after year. They operate on an area of around two and a half acres to fifteen acres and are traditionally what is referred to as "middle peasants" (Rudolph & Rudolph 1987, 53). Since my measurements above are in hectares, the bullock capitalists farm on an area of about one to six hectares, and based on figure 3, the bullock capitalists of the neoliberal era are found in the small to partially the medium farmers. Marginal farmers, from figure 3, generally account for wage labor or sharecropping and tenant farmers (Rudolph & Rudolph 1987; Deshpande 2017). The bullock capitalists are intermixed with "capitalist, preindustrial, and noncapitalist features" that are the means for economic output (Rudolph & Rudolph 1987, 53). Bullock capitalists are a class of Indian farmers that benefit from their own labor and production but rely on capital to participate in the markets to secure commodities and family needs that they cannot produce themselves (Rudolph & Rudolph 1987). They have the ideological propensity for "familial and communitarian rather than state collectivist or capitalist" (Rudolph & Rudolph 1987,

53). The ideology of bullock capitalists provides a foundation for class structure and relations within the agricultural sector, and their ideology does not necessitate an antagonistic relationship with the other agricultural classes. The bullock capitalists pursue profit for their family wellbeing and independence from the other classes. Bullock capitalists comprise a large percentage of the Indian farmers in the rural and are important because they are in a better position than other rural classes to produce change through the political structures of India. This would allow them to make alliances with other political groups in India to create a hegemonic system for the agricultural sector and appeal for the common interests of all agrarian producers (Rudolph and Rudolph, 1987).

The notions and class of bullock capitalists have persisted and exist within rural India to this day, and have the relations and size of all agricultural producer classes have been impacted by neoliberalism and globalization drive to create new avenues for capital accumulation. Based on this understanding, the discourse analysis focused on the second question. What is the nature of dispossession, regarding farmer's debt, in Maharashtra, Telangana, and Andhra Pradesh, and how does this affect the social relations in these regions. I will now begin with the discourse analysis.

Bt cotton was approved for commercial cultivation on March 26, 2002, by the GEAC (*Economic Times* 2002). The day after Bt cotton was approved the stock shares of the Monsanto Corporation rose seven and a half percent on the British Stock Exchange (*Economic Times* 2002). Across the states of India, farmers praised the decision to allow Bt cotton use, because farmers were more concerned with their survival and not the debate of genetic modification (Machhan 2002). Andhra Pradesh is one state that welcomed the use of Bt cotton, and the "Andhra Pradesh Cotton Association president Gorantla Punnaiah Chowdary said that introduction of Bt seed is expected to be a boon for farmers" (Machhan 2002). Other states warned of "mass civil disobedience" if the GEAC did not allow for the legal cultivation of Bt cotton (*Times of India*

2002c). Their survival, as cotton farmers, in the past had been endangered because of pest attacks, such as the notorious bollworms. The GEAC stipulated the conditions for Bt cotton growth for the first three years, "April 2002 – March 2005" in their ruling to allow commercial use of the crop (Ministry of Environment & Forests 2002). Among the conditions, they stipulate that Bt cotton must have a twenty percent buffer of non-Bt cotton varieties around the Bt cotton crop, each package should have labeling and description of Bt cotton and detailed instructions for cotton sowing, agro-climate conditions, and pest management, a list of conditionality that Mahyco must distribute and monitor the seeds, and monitor the Bt cotton crops growth and susceptibility to bollworms. The conditionality of the agreement by the central government of India moved oversight and control of seeds and crop growth to the private sector by making Mahyco responsible for monitoring the effects of Bt cotton in India. The twenty percent buffer zone around Bt cotton crops disadvantages small farmers because they cannot "afford to leave 20 per cent of his field to 'non-productive use'" (*Times of India* 2002a). Small farmers need to use all of their lands on productive uses to produce capital in order to be able to afford the inputs of next year's crop. This shift in control on the agricultural inputs was established by neoliberal practices which caused the deregulation of the Indian market. This allowed Monsanto to infiltrate the market through their artificially created nature, Bt cotton seeds. Monsanto was able to construct control of the Indian agricultural sector by controlling the means of production, and because of this they were able to couple Indian agriculture with the market imperatives that dominate both upstream and downstream processes (Misra 2016). The approval of Bt cotton seeds created another avenue for capital accumulation and adversely affected the bullock capitalists that controlled their own means of production. The bullock capitalists now had to purchase the Bt cotton seeds every year to continue their agricultural production. The extraction of capital through Bt cotton is possible

because the Bt cotton crops do not produce seeds and lose vitality after the first generation of crops (University of Montana 2013). Table 3 presents the input costs associated with non-Bt and Bt cotton.

Table 3: Agricultural Input Costs

Item No.	Particular	Before Bt	After Bt	
1	Seeds	Quantity (Kg/acre)	1.52	0.79
		Cost (Rs/acre)	926	1922
2	No. of pesticide sprays	7.4	4.3	
3	Fertilizers	Quantity (Kg/acre)	106	230
		Cost (Rs/acre)	636	3418
4	Yield (Kg/acre)	415	632	

Source: Central Institute for Cotton Research Annual Report, 2012-2013

The farmers needed less Bt cotton seeds, but because of the “whopping MRP [maximum retail price] of Rs. 1,800 per 450-gram pack” with a “high ‘trait value’” or royalty collected from farmers by Mahyco Monsanto Biotech Private Limited at Rs. 1,250” (*Hindu* 2005a). The royalty is in addition to the base price of Rs. 350 to Rs. 450 per packet and is about three to three and a half times the cost of the base price alone. The high royalty above the price of Rs. 350 to Rs 450 per packet relates to an increase in surplus capital extracted by MMB, but it also disadvantages farmers because they now have to pay for the Bt cotton seed packet and the royalty on top of it. The government of India provided feedback on the price of pack stating “Rs. 350 to Rs. 450 itself is on the high side since 450 grams of seeds [one packet] costs only Rs. 250 to Rs. 300” while the trait value allows MMB to collect more capital without adding any other properties to the seeds themselves (*Hindu* 2005a). MMB is accumulating wealth while dispossessing farmer, especially bullock capitalists, of their wealth and making them incur debt to continue the cycle. Not only is it causing debt to the bullock capitalists, but it has dispossessed these independent farmers from

one of their primary means of production, seeds. The dispossession of farmers from their common and collective rights to seed choices, and seed saving and sharing had consequences in the land holdings of farmers. The increase in seed prices and the disempowerment of the government, because of neoliberal policies, has led to a desperate situation. This situation is embodied by the notion that Indian farmers have to sell their land because “the government is not helping [them]. Marginal farmers... don’t get loan from the banks,” and this is because of the large amount of documents required to get a formal loan, and prompts farmers to opt for private loans because “it is better to take loan from private lenders” (Aravind 2012). These loans put pressure on the farmers to repay them, and cause farmers to consider “if [they] get a good price, [they] may sell so that [their] future is secured” (Aravind 2012).

In Maharashtra, the state government engaged in a cotton monopoly procurement scheme to purchase cotton from the farmers in the state, in a no profit-no loss model that produced the state of Maharashtra and the Cotton Corporation of India as the only two agencies that could purchase cotton (*Times of India* 2002c). The state also removed states tax on Bt cotton seeds to give relief to farmers and encourage the use of Bt cotton seeds (*Times of India* 2002c). These policies reflect the bullock capitalists' promotion of price remuneration and low input costs in centrist policy in the 1980s (Rudolph & Rudolph 1987). This monopoly by the state of Maharashtra should have allowed them to support the farmers, but in 2005 the state, and particularly the Vidarbha region in eastern Maharashtra was experiencing a farm crisis. Bringing the impact of dispossession from Bt cotton prices to the forefront of national news. This was characterized by farmers not seeking medical assistance, seeing doctors or purchasing medicine, because "it's all too costly" (Sainath 2005). One family that was met by political leaders during the year leading up 2005 and the political leaders met again but encountered a widowed wife who "has lost all

sanity" (Sainath 2005). This family had lost their father, to failing health, and a son to suicide, while the mother had withdrawn from the public and the daughter was unable to marry because of the social ramifications that come from their "family's bankruptcy during the farm crisis" (Sainath 2005). The promises of better production and yields, had been met through the use of Bt cotton seeds, but the high demand for purchase inputs, such as fertilizers, and the high cost of Bt cotton seeds has driven many families of the bullock capitalist group to limit and reducing the family's abilities to provide for themselves.

During 2005, the introduction of more Bt cotton varieties by Indian corporations entered the market. The corporation Nuziveedu Seeds launched two Bt cotton varieties called "Bunny and Mallika" and the corporation had entered a pact with MMB to use the Bt technology. The introduction of new Bt cotton seed varieties, according to Mr. Rao the managing director of Nuziveedu, "would increase competition among Bt seed companies, resulting in a drop in prices" (*Hindu Business Line* 2005a). This competition, from Nuziveedu, along with ten other Bt cotton hybrid varieties all with licenses to use MMB's Bt genes put a total of twelve Bt cotton hybrid varieties on the market in the Maharashtra, and nine Bt cotton hybrids in Andhra Pradesh (*Hindu Business Line* 2005a). Nuziveedu's Bt cotton seeds were later banned in Andhra Pradesh in 2010 because of a failure in protein testing (*Hindu* 2010). This competition, otherwise, promoted the exploitation and dispossession of farmer from their wealth because the farmers were "lured by private companies and exploited by money lenders," and these private lenders, Bt cotton and low production "combine to virtually strangulate the cotton farmer" (*The Statesman* 2007) The diffusion of Bt cotton seeds was done through the licensing of Bt genes from MMB to Indian corporations to promote new varieties of Bt cotton, all while MMB collected fees on licenses and was able to continue accumulating wealth indirectly through other corporations. Despite the GEAC

denying use of Bt cotton seeds, Mech-162 and Mech-184 in Andhra Pradesh the banned seeds are “freely available all over the district,” referring to the Gunter district (*Hindu Business Line* 2005b; *Hindu* 2005c). Presenting the MMB was able to accumulate capital directly from their own seeds while “farmers had incurred loss in cultivating these varieties and Mahyco had allegedly failed to honour its assurance to compensate them” (*Hindu Business Line* 2005a).

The large scale failure of Bt cotton to provide benefits to farmers has been noted as early as 2006 by studies in regions comparing Bt cotton to non-Bt cotton. The report confirmed that over a nine-month study with a sample of 180 farmers, the cost per acre "stood at Rs 9,689 where as non-Bt farmers incurred Rs. 8,074" and the net returns were "Rs 2,279 per acre while others (non-pesticide type) earned Rs. 3,089 per acre" (*Hindu* 2006a). The disparity between Bt and non-Bt cotton is tremendous because with net profits of Rs. 2,279 per acre at a cost of Rs. 1,800 to Rs. 1,922 per acre for the seeds alone, only creates a net surplus of Rs. 479 to Rs. 357 on the two prices of seeds above, respectively. This meager surplus does not allow marginal farmers or bullock capitalists enough to cover the next year's cost of cultivation. When the cost of fertilizer is added to the equation, using the prices in figure 3, the cost of cultivation per acre is Rs 5,340, and this does not include pesticides. The cost of cultivation per acre is more than double the net profits that the farmers are accumulating.

The model of Bt cotton farming is not renewable because of the purchase of all production inputs by the farmers, causing a decrease in upward mobility, as seen in the decrease in semi-medium, medium, and large farm categories in figure 3. This relates to a huge increase in marginal farmers during the same time period of 2001 to 2011. This makes many farmers turn to credit to provide financing for their agricultural production. The increase in Bt cotton production area and yields, has occurred largely without the intervention of state or center government to set a

maximum retail price. This was the case until 2008, when the state government of Maharashtra, with Gujarat, and Madhya Pradesh set a MRP of “Rs 650 a packet for BG-I hybrids and Rs 750 for BG-II packets, while Andhra Pradesh has mandated a uniform Rs 750” (*Hindu Business Line* 2008). While simultaneously, the trait value imposed by MMB reportedly decreased to “Rs 140-150 a packet” (*Hindu Business Line* 2008). This is a direct intervention into a market by governments is directly against the concepts of neoliberalism proposed earlier. The government sought to help their population by directly challenging and Transnational Corporation (TNC) and fixing the market price of their commodity. This action by the government supports the position of bullock capitalists to keep agricultural input prices low, putting sectoral politics and not class politics in the spotlight. This action also provided some relief to the exploited bullock capitalists, and marginal farmers. These seed prices were not regulated through state government legislation, but through state government action to promote access to Bt cotton to a wider audience. The sectoral politics of Maharashtra and Andhra Pradesh, along with others, to set retail prices for the commodity is important because in Maharashtra, the most “dangerous aspect is that cotton crop in the distressed, suicide-hit area of western Vidarbha is not covered by national crop insurance policy” (Bhagwat 2009). The use of sectoral politics over class politics here provides some assistance to the marginal farmers, and bullock capitalist through limiting how much capital their inputs cost. The increase in the bullock capitalists and marginal farmers, put pressure on the government to set price limits for their most important agricultural input, Bt cotton seeds. This pressure relates to the growing number of farmer suicides in the Vidarbha region because as Vidarbha Rajya Andolan Samiti (VJAS), a socio-political movement, the president states "a majority of over 10,000 Indian farmers in Vidarbha, who opted for Bt cotton seed, committed suicide" (*Times of India* 2010). The rising numbers of farmer suicides in this region can be related

to the high dependence of Bt cotton in a majorly unirrigated area and that it is "well known that the dryland conditions are not suited to it [Bt cotton]" (Bhagwat 2009). The conditions of the major Bt cotton producer in Maharashtra, Vidarbha, were not ideal for the production of Bt cotton, and the high costs of inputs and resulting debt cycle have created social consequences.

The most striking social consequence of the domination of nature comes in the form of an epidemic of farmer suicides. The "increase in suicides by farmers, which in 1995-2009 amounted to more than 200,000 recorded cases across India" (Ghosh 2012, 52). This is likely an underestimate due to state government's unwillingness to recognize and acknowledge this tragedy, and the difficulties in measuring these cases due to the extent of India's rural area and population (Ghosh 2012). To some these suicides is a genocide that is a "result of deliberate policy imposed by the World Trade Organisation and implemented by the Government. It is designed to destroy small farmers and transform Indian agriculture into large-scale corporate industrial farming." (Hindu 2006b). These suicides are the system's signal that we are creating a transformation of nature that is unsustainable with the extent of chemicals and agricultural production. The farmer's suicides affect the relationship social relations between the politics and society. This can be seen with the rising movement against the use of Bt cotton and the promotion of an indigenous variety of cotton for commercial production (Shiva 2015; *Times of India* 2010). These exacerbated case of Bt cotton in neoliberalism has produced a domination of nature through a massive increase in productive capacity of the fixed environment that has resulted in environmental degradation through the toxicity of chemical pesticides, herbicides, and fertilizers that are crucial for the intensive agricultural production. Lastly, the loss of biodiversity that comes with the narrowing of the gene pool of crops that have one common genetic structure (Sahai, Kumar, and Ahmed 2005; Shiva 1991, 2015b). The loss of biodiversity is also found through the use of chemicals to maintain

the productivity of the fixed environment, and this can cause the loss of other plants and animals native to India (CICR Annual Report 2012-2013; *Hindu* 2007).

The effects of Bt cotton on the population of India have spurred a large debate on the safety and use of GM crops throughout the country but have also resulted in a debate over the legality and promises made by MMB that Bt cotton would not require pesticide usage. As presented in Table 3 the pesticide usage did fall from 7.4 sprays to 4.3 sprays in Maharashtra and have seen similar results in Andhra Pradesh. A roundtable meeting of the Chief Justice of the High Court of Andhra Pradesh and judges from the high courts of Karnataka and Kerala, along with farmers from each state has yielded that "Bt cotton was introduced with a false promise of no pesticide use and farmers were duped into cultivating it without proper information" (*Hindu* 2011; *Times of India* 2010). The effects of Bt cotton on the environment has produced "large-scale crop loss" and "adversely affected cultivation of traditional cotton, caused loss of cattle and had had adverse impact on groundwater" (*Hindu* 2011). Not only has Bt cotton caused Indian farmers to be dispossessed of their capital through extortionate agricultural production inputs, but it has caused environmental degradation. This environmental degradation and the runoff of pesticides by rains relate to the dire destruction of the native plant species that are not able to handle the pesticides chemicals. It has also caused the death of cattle, which to say the least hold a high importance to traditional Hindu culture (CICR Annual Report 2012-2013; *Hindu* 2007; *Hindustan Times* 2007).

The social and environmental consequences that are related to Bt cotton have prompted protests over the treatment of farmers in the Indian agricultural system. The first reason for protests is the opening of the Indian economy and the deregulation of the markets caused by the forceful expansion of neoliberalism into India in 1991. The opening of the Indian economy presented an opportunity for MMB to partner with Mahyco in the 1990s to create a bid for field trials of Bt

Cotton (Monsanto 2018). Then in 2002, Bt cotton of Bollgard I variety, was released for commercial cultivation. The barriers for the introduction of Bt cotton were eradicated by neoliberal policies imposed on India by the World Bank and IMF through the conditionality of the loans. The deregulation of the Indian economy allowed MMB to charge immense royalty payments, three to three and half times the price of Rs. 450 a packet of seeds, built into the Bt cotton seed price which extracted more capital from the Indian farmers. The deregulation reduced state power to control of agricultural production input prices, and promote ruminative prices for agricultural goods. These policies had been enacted by the Janata controlled center government in the 1980s when agrarian interests were the senior partner to the government (Rudolph & Rudolph 1987). This is because the price of cotton after production was tied to the global market for cotton. These devastated India's rural agricultural producers and caused them to enter a debt trap cycle (*Hindu* 2006b).

The policies enacted under neoliberalism relate to the downward movement of Indian farmers from 2001 to 2011, seen in Figure 6, and marginalized the farmers by forcing them onto smaller land holdings because they could not maintain their larger land holdings. The erosion of the bullock capitalists into farmers on marginal landholdings is a direct contradiction of neoliberalism. This is because neoliberalism is supposed to promote the well-being of humankind through the expansion of free markets, and privatization. The real outcomes that resulted from the use of Bt cotton have not promoted this well-being of humankind in rural India and have devastated countless lives. The rise of marginal and small land holdings in Maharashtra increased from forty percent to seventy-nine percent from 2001 to 2011. In Andhra Pradesh and Telangana, the rise of marginal and small land holdings increased from eighty-three percent to eighty-six percent in 2001 to 2011. The rise in marginal and small land holdings in both states has led to social consequences

from 2002 to 2015 and beyond. In the next part, I will examine the rising resistance to Bt cotton that has increased quickly since 2015.

Neoliberalism ushered in a new era of expansion based on technology and free markets that allowed for a globalization to take precedence in the economy. The economic aspect of globalization is the emergence of a world market that allows for the economic integration of states, free trade through decreasing trade barriers, and free movement of capital (Martin & King, 1990). For the purpose of this chapter, Globalization is the agent that carries out neoliberalism, which is the structure, globalization is used to create new markets from previously closed ones, free movement of commodities and capital, and the promotion of private property rights. This chapter analyzes the emergence of resistance to Monsanto's GM crop Bt cotton, in India.

Resistance emerges because of the exploitation of a select group of people, and the use of Bt cotton under neoliberalism has created the exploitation of bullock capitalists and marginal farmers in rural India. This group of people becomes the marginalized group, and the only way to break a vicious cycle of exploitation and marginalization is through resistance. Resistance allows marginalized groups to construct a voice for themselves in hopes of producing systemic change. The recent increase in technology has allowed for the global society to become a hyper-capitalist society, one in which marginalization does not occur to just small minority groups, but possibly to the majority of the population. The agricultural sector of India is not exempt from marginalization and exploitation that is entwined with globalization. I propose to understand the emergence of resistance through the definition of militant particularism, which is:

Working-class self-organization tries to connect particular struggles to a general movement for social justice. These particular struggles, termed 'militant particularism', set out as a movement to make real a somewhat extraordinary claim—that the defense and advancement of certain particular interest, brought properly together, are in fact in the general interest of the working class or the marginalized. (Ahmed 2011, 2)

Through this understanding of militant particularism, this discourse analyzes the emergence of new resistance to Bt cotton in India. This analyzation is performed to offer a better understanding of the emergence of resistance and how it is affected by governments.

The implementation of Bt cotton into India has produced a new avenue of capital accumulation, based off Harvey's accumulation by dispossession. Accumulation by dispossession is the "privatization of land and forceful expulsion of peasant populations; the conversion of various forms of property rights (common, collective, state, etc.) into exclusive private property rights." (Harvey 2003, 145). This is occurring in the Indian agriculture sector due to the creation of patents on the seeds that Mahyco-Monsanto has. The problem with Monsanto's patent on Bt cotton is that "India's laws do not permit patents on seeds and in agriculture. But this hasn't stopped Mahyco-Monsanto from collecting close to USD 900 million from small farmers in India, pushing them into crushing debt." (Shiva 2015a). Accumulation by dispossession is occurring because Mahyco-Monsanto has the private property rights to the Bt cotton seeds, and pushed them onto farmers in India causing these farmers to no longer plant indigenous seeds, and because of the Bt cotton seeds sterility there is not a solution for the small farmers to have access to the property they had before (Shiva 2015a; Monsanto 2017). MMB is accumulating capital through the dispossession of Indian farmer's from their means of production and rights to seeds, and this is resulting in a debt cycle trapping farmers. The most vocal proponents of this resistance movement are found in the Indian states of Punjab, Haryana, and Karnataka

In 2015, the Indian states of Punjab and Haryana were affected drastically by pest infestations on their cotton crops. In 2010 Monsanto had accepted that their Bt cotton crop had failed pest control tests (*Times of India* 2010). Whiteflies, the pests, were reported to have attacked the Bt cotton without any resistance, and the recent drought before the infestation encouraged the

spread of whiteflies (Jadhav & Nair 2015). The combination of drought and whiteflies decimated the cotton crops in these two states. The effects of this combination were reported to produce a decrease in the national output of cotton by “1.5 percent” (Jadhav & Nair 2015). Kavita Gupta, the textile commissioner, says “despite the whitefly attack, farmers in northern India are still interested in cotton, but they are moving to the desi (indigenous) variety.” (Bhardwaj & Jadhav 2016). The attack on the cotton crops did not make the Indian farmers abandon the cultivation of cotton altogether, but have refocused their sight on the use of indigenous cotton seeds, sparking the resistance movement away from Bt cotton. This resistance was born from the devastation the Indian farmers from high Bt cotton seed prices and the continued need to use pesticides to protect Bt cotton crops that trapped farmers in a cycle of debt accumulation. This prompted the NGO Navdanya to promote the use of indigenous seeds. In January 2016, Navdanya began increasing their voice to promote the necessity to change from Bt cotton to indigenous cotton seeds (Shiva 2015b). The support of Navdanya and the local farmer's protest has created a movement that is causing Indian government to start looking into viable alternatives to Bt cotton.

The discourse analysis focused on tracing the resistance movement back to the original source of how it began, and to present the main organizer behind it. The strategy that I employed while performing discourse analysis was political discourse analysis. I decided to employ political discourse analysis because I was examining newspaper articles that referenced government policies and officials, and NGOs. I then followed the policies to find them in order to understand them, and I followed the newspaper references to the NGOs and discovered that Navdanya was very active and helpful in producing a mindset for change in the farmers. Navdanya's articles and reports on Bt cotton and farmers led me to the "Karnataka Transgenic and Genetically Modified Cotton Seeds (Fixation of Sale Price and Payment of Compensation) Bill, 2015." (Government of

Karnataka 2015, 5). This bill was proposed in 2015 and this bill is a proposal from the state government in Karnataka and is proposed to the national Government of India (Government of Karnataka 2015). This bill is still awaiting legislation at the central government. The action against the use of Bt cotton seeds began through the involvement of NGOs and farmers occurred before the involvement of the government. The government at the state level is working on producing fair pricing for GM crop seeds, and the central government has received a bill from the Government of Karnataka for this purpose.

In the analysis, there was a clear evolution in the timeline and policies taken to combat Bt cotton. This section will start with a discussion on militant particularism, provide empirical data for the exploitation of working-class farmers, and finally discuss the government's involvement with the resistance. Resistance to Bt cotton, I contend does constitute a resistance based in militant particularism, and this is because the beginning of this resistance movement was created by working-class farmers after the devastation agricultural system due to pests and due to the exploitation of them by Mahyco-Monsanto (Jadhav & Nair 2015; Shiva 2015a&b). The devastation of crops by pests is an environmental hazard, and because it was not bollworms, which Bt cotton is engineered to resist, I view this as the catalytic factor in forming this resistance. Though there have been activists during the entire fifteen years of Bt cotton cultivation in India, there was not organized protests by the working class because they were too busy cultivating their crops. Exploitation of the working class has been occurring throughout the production of Bt cotton in India, and this has created a rise in Indian working class farmers' suicides. Figures 3, 4 and 5 present the Bt cotton by hectare between 2002 and 2014. These figures present that the area under Bt cotton cultivation has risen tremendously over both time periods, and they present that in 2014 around ninety-five percent of cotton produced in India was Bt cotton. Maharashtra has seen an

increase in Bt cotton area from 0.4 percent of to 99 percent of the total cotton cultivation, and the suicide rate increased in 132 percent. This shows a significant increase in farmer's suicides along with a significant increase in hectares of land being cultivated with Bt cotton. The exploitation of working-class farmers in India is affected by two factors, insecticide usage, and seed prices, and both of these will be referred to as purchase inputs when discussed together.

The working class farmers in India are affected by globalization due to Mahyco-Monsanto's investment of Bt cotton seeds in the Indian agriculture market. This exploitation is occurring because of Mahyco-Monsanto's need to accumulate capital and is disposing the farmer from their collective property rights to cotton seeds. The costs of Bt cotton seeds "in 2004 Bt hybrids cost \$19 more per acre compared to non-Bt hybrids." (Arora & Bansal 2012, 2). The cost of Bt cotton seeds "in 2006 was around Rs 1600 per packet of 450 gram, which was around four times the price of non-Bt hybrid. Out of the seed price of Rs 1600, Rs 1250 was charged by MMB as a trait value." (Arora & Bansal 2012, 2). These values in U.S. dollars are \$34, and \$27.23. This means that Mahyco-Monsanto was collecting a royalty rate of around 78 percent per packet of seed. This cost of Bt cotton seeds is high for working class farmers that do not produce over hectares and are generally working small acreage land tracts (Bhardwaj & Jadhav 2016). Exploitation of the working class farmers is occurring because of the extraordinarily high cost of purchase inputs required to cultivate Bt cotton and shows the low net income per acre for the farmers (Shiva 2015b). Resistance was born because of this blatant exploitation that many have claimed to be illegal under India's national laws (Shiva 2015a). The recent whitefly infestations required higher inputs of pesticides and destroyed crops sparking the resistance to Bt cotton to gain more foothold. This resistance emerged because of the activism of the NGO Navdanya and farmers for several years, but over 2015 to 2017 has gained national and international attention (Jadhav &

Nair 2015). This resistance to Bt cotton has "set out, as a movement, to make real what is, at first sight, the extraordinary claim that the defense and advancement of certain particular interests, properly brought together, is in the face the general interest." (Williams 1989 245; 115). This resistance movement fits the theoretical concept of militant particularism through the evolution of the movement. Resistance to Bt cotton is in the general interest of the working class in India, because "agriculture continues to account for around 60 per cent of the workforce, even though its share of GDP is now less than 20 per cent." (Ghosh 2012, 44). The majority of the Indian working class is found in the agriculture sector, and this resistance to movement, though it starts locally can contribute to the national level, because it can unite the farmers of different states in India, who all have unique particulars, under the banner of a general resistance movement. This general resistance movement would be the transition from Bt cotton to indigenous seeds, and the transition would potentially stem some of the unique particulars in the states. This movement has already jumped scales to the state level through the involvement of the Government of Karnataka proposing that the state fix the sale price of Bt cotton seeds and also protect the farmers through compensation if there is a failure of Bt cotton crop (Ahmed 2011; Government of Karnataka 2015). Karnataka is proposing that the responsibility of compensating the farmers is assigned to the producer of the seeds, and in this case, it would be Mahyco-Monsanto Biotech which is the subsidiary of the transnational corporation Monsanto (Government of Karnataka 2015). This law is needed to protect the agricultural sector of the Indian economy and the majority of the working population, and the law is proposed because there are no currently existing laws with adequate provisions that would allow for the compensation of farmer's for their failed Bt cotton crops (Government of Karnataka 2015). The scale of this resistance movement jumped again when Karnataka sent this proposal to the national government, and the national government has not

decided on the proposed bill because it was sent back to Karnataka for revisions (Government of India 2016; Government of Karnataka 2017). This resistance is facing "systematic obstacles which [are standing] in the way" of the proposed bill becoming law, not at the local or state level, but at the national level. This could prevent the resistance from gaining more momentum, but because the content analysis that I performed presents other findings. The content analysis was performed on newspaper articles in which there were interviews with the farmers. Whenever cotton was presented in the articles without Monsanto the farmers, and articles presented it in positive connotations and contexts. The articles used positive words to refer to cotton farming and farmers in India, and these words were positive, optimistic, and promising, as well as many others. When they were discussing Monsanto and cotton, the connotation and context changed to negative, and negative words such as devastating, damage, lethal, and fake were used to describe Monsanto and cotton. This is because they were discussing Bt cotton and the promises made by Monsanto about the Bt cotton crops producing higher yields, better quality, and resistance to pests (Monsanto; Shiva 2015a, 2015b). The farmers in northern India, even the ones affected by whitefly infestation, as Kavita Gupta, the textile commissioner, said "'are still interested in cotton, but they are moving to the desi (indigenous) variety.'" (Bhardwaj & Jadhav 2016). The Indian farmer's resistance to Bt cotton represents one of the first militant particularism movements away from transnational corporation's movements in the global South, which is poised to last. In the next paragraph I will discuss the other global resistance to Bt cotton.

Around the globe, there has been resistance to the Bt cotton seeds because they are not presenting the results post-harvest that Mahyco-Monsanto has promised with their claims. Burkina Faso and Brazil are also mobilizing against Bt cotton (Krinninger 2016; Scoones 2008). "In April 2016, Burkinabe President Roch Marc Christian Kabore announced that permission to grow

genetically modified cotton would be withdrawn from 2018 onwards” (Krinninger 2016). This presents the possibility for the resistance in India to jump scales again to create a global movement against Bt cotton (Ahmed 2011). This scale jumping could occur if the national government of India passes the proposed bill to create a law in which it fixes the seed prices of Bt cotton and making corporations compensate farmers for failed crops (Government of Karnataka 2015;2017). This would be a large blow to the producers of Bt cotton seeds and possibly create systemic change through militant particularism.

The resistance was advanced by Navdanya through their activism, and uniting farmers to protest Bt cotton seeds. Through this grassroots movement, and scale jumping the resistance to Bt cotton has created a larger movement in which the state government of Karnataka has gotten involved to lessen exploitation through seed price fixation and holding the producing corporations responsible for compensation for farmers failed crops (Government of Karnataka 2015; 2017). The resistance to Bt cotton constitutes militant particularism because of the particular interests of the working class farmers that formed the original movement, and then through scale jumping the movement has come to take on the general interest of the working class farmers through government action. These particular interests revolve around the issues of biodiversity, debt, seed prices, land holdings, farmer suicides. These issues have promoted the general interests of the working class, Indian farmers, to construct a general movement for the betterment of the farmers. The overall movement has become apparent through the intersection of all particular interests because of the influence by NGOs, political parties, and government assemblies that have been advocated fiercely for the farmer’s rights. This general movement has incorporated local protests of small groups trying to advance their interests through incorporation of other interests into the movement that has promoted large protests and resistance in the form of a social movement. The

social movement seeks to advance the general well-being of the farmers and their rights for social justice (Shiva 2015b). Though the national Indian government has not approved this bill to become law there is a strong possibility of this because of the falling Bt cotton yields, quality, and increase in pest attacks. This movement can be spurred through globalization because it can allow other nations to follow an example set by India, and this would allow them to decrease exploitation and marginalization of working-class farmers in the countries of Burkina Faso and Brazil which are feeling the same effects as those endured by the Indian farmers. This relief to the high purchase input's prices and the knowledge of compensation for failed crops could advert the trend of suicides by Indian farmers due to their increasing debt.

The resistance to Bt cotton has created a transformative movement in India, characterized by the combination of local and particular interests into a larger movement for the betterment of Indian farmers' rights. The movement, I assert, is not simply a movement for social justice to alleviate exploitation, but has an alternative layer when examined with the dispossession of Indian farmers. The construction of this resistance and the social movement for the betterment of Indian farmers also constitutes a movement for the regulation of the economy by the nation and state governments, but more importantly is characterized by the loss of common and collective rights that afflict the farmers because of neoliberal practices to advance private property rights. This right to common and collective property and free exchange of seeds was prevalent in Indian society prior to neoliberalism (Sahai, Kumar, Ahmed, 2005; Shiva 1991). The movement is a common right to protest unfair market and working conditions that exploit and marginalize the producers. The resistance to Bt cotton shown by Indian farmers is characterized by the promotion and move towards the cultivation of indigenous seeds. Indigenous seeds would promote a better and more sustainable method of agricultural production. The indigenous seeds, likewise, would prompt the

reinvigoration of common and collective rights that are important to Indian agricultural society. Corporatized agricultural production with the market imperatives driving production has devastated the life of Indian farmers and they are expressing their collective and common right to protest the domination of their lives a corporation halfway around the world, as well as, protest the domination and control that is exhibited by Indian agribusiness corporations against their own people. The Indian farmers have been called to action to protest their unfair treatment because of their loss of biodiversity, loss of property rights through seed privatization, their dispossession from their hard earned wealth created by themselves and the loss of their livelihoods from an increase in their debt. Indian farmers, distressed by their economic, political, and social conditions are now exercising their rights to collectively protest the use of Bt cotton and its derivatives as the narrow choices in cotton cultivation. The farmers are recognizing their exploitation and taking action, through a social movement, to create better conditions for themselves.

This resistance is another social manifestation of the circuits of capital coupled with a historical system of exploitation. Through the transformation of humans, using Bt cotton, on nature, this has resulted in the transformation of humans through the reaction of nature. This has with the coupling of other social factors led to a mass protest and now an emerging resistance to the use of Bt cotton through these grassroots organizations. The government of Karnataka, and if passed, the government of India proposed bill would allow a nation to hold a corporation responsible for the failure of their products, in this case, Bt cotton. This would produce systemic change as other nations suffering the same fate would, I believe follow the same route. Through these, the exploitation of farmers would be weakened, and the commodification of collective property rights would set precedent to allow future locales, states, and nations to fight the commodification of genetic material.

2.8 Conclusion

How is Bt cotton used to commodify agriculture under neoliberalism and how does this cause accumulation by dispossession? India was propelled into classical and neoclassical capitalism through British colonization. During the British involvement, the population of India was dispossessed of their access to common and collective rights to nature and land. The establishment of private property laws through the British interpretation of classical Hindu law with the English common law allowed capitalism to flourish under classical and neoclassical economics. The dispossession of the Indian population was crucial for Britain to develop India into a resource provider for their empire. The dispossession of rural Indian people from their land was a devastating blow to the agricultural practices that implemented a commercial agricultural production system. This allowed the British to accumulate wealth through cotton and wheat commodities, and through the implementation of a modern monetary exchange system that required the payment of taxes and the purchase of goods in the market. The rural Indian farmers were also dispossessed from their rich history of biodiversity through the implementation of this commercial agricultural system. The transformation of the Indian agricultural system on nature manifested as the creation of droughts and degradation of the environment, which produced falling yields during the second half of the nineteenth century. The colonial system created extraction of surplus capital through commercialization of agriculture production.

The Green Revolution, under state-managed capitalism, created capital extraction through producing Indian farmers as consumers for chemical pesticide, herbicide, and fertilizer inputs in the agricultural system. The lasting effect of this was the increased consumption of agricultural inputs, not including seeds. This created a constant market for the sale of agricultural input

commodities, mainly the chemical pesticides, herbicides, and fertilizers. The extraction of capital from the Global South, India, produced an accumulation of wealth in the Global North and allowed biotech companies the ability to invest that capital in the tertiary sector that produces the science and technology for creating new products.

In 2002, under the regime of accumulation known as neoliberalism Bt cotton was promoted as the answer to cut pesticide inputs and allow the Indian farmers produce better yields. Bt cotton has caused extraction of capital through creating Indian farmers as consumers of Bt cotton seeds each growing season because they are sterile and lose vitality after the first generation of crops (University of Montana 2013). Bt cotton created a cycle that required more agricultural inputs for Indian farmers to produce better yields. The Indian farmers, now, have to purchase their seeds, pesticides, and fertilizers from international agro-businesses. The expansion of Bt cotton into India created agriculture as a commodity because Indian farmers must now purchase their seeds every year to continue to produce agricultural commodities from which they collect their capital surplus. Monsanto, through Bt cotton, has created a new avenue for capital accumulation through divorcing the farmers from the majority of their capital surplus by creating consumers of the Indian farmers. In the next section, I will address how this research has provided an understanding of the nature of dispossession of farmers in India, and Maharashtra, Telangana, and Andhra Pradesh.

The nature of dispossession is not a new relationship to the agricultural system in India. It has been propelled, historically, through the British implementation of classical and neoclassical capitalism and commercialization of the agricultural system. It was then continued by the Green Revolution and adapted through a cycle of transformations that occurred through nature and human interaction. The nature of dispossession, in India, is propelled forward by the historical framework of capital accumulation. These farmers are fetching higher yields from the cultivation of Bt cotton,

and this has created India as the number one cotton producer in the world, as of 2016 (ISAA 2016). The contradiction of this increased production is the increased debt that Indian farmers experience because of the requirement that they purchase their means of production, seeds, pesticides, and fertilizers, from corporations. The Indian farmers produce more cotton that produces more surplus capital for the farmers, but their surplus capital is extracted through high seed prices that consist of royalty payments to MMB. The resulting cycle from Bt cotton production in India has been deemed by many to be a debt cycle that produces more debt and financial stress for the farmers than under previous regimes of accumulation. The shining principle of neoliberalism as the best way to advance the well-being of humankind is a contradiction in India's agricultural sector. This is because neoliberalism, through Bt cotton, has produced more debt and less social mobility that has emerged in the social processes as tension between the center and state governments and their population. The deterioration of social relations has in the past, and currently led to conflicts between the people and the state.

The forceful introduction of neoliberalism to India in 1991 by the IMF and World Bank has provided open access for corporations to enter the Indian economy. In 2002, India's first GM crop, Bt cotton, was introduced to the agricultural sector by MMB. Bt cotton has created a myriad of issues and consequences for the economic, political, and social conditions of the producers, Indian farmers. These consequences contradict the very essence of neoliberalism and impact accumulation by dispossession in a variety interactions. As stated above, "neoliberalism is a theory of political economic practices proposing that human well-being can best be advanced by the maximization of entrepreneurial freedoms within an institutional framework characterized by private property rights, individual liberty, unencumbered markets, and free trade' (Harvey, 2007, 22). The interactions between economic, political, and social mechanisms under neoliberalism

have become coupled with the ideas of human well-being, and that we are best advanced through an economic practice that promotes freedom. The case of the Indian farmers that grow Bt cotton, under neoliberalism, presents a complete failure and contradiction of neoliberalism. The process of neoliberalizing India's economy left the agricultural sector vulnerable to foreign investment that was damaging to the agricultural economy. The people that are employed in the agricultural sector lost many of the subsidies and support they relied on to provide for them, and have been opened to exploitation by corporations around the world (Pal and Ghosh 2007). These Indian farmers general well-being has diminished drastically to the point of economic marginalization because of the high costs of their means of production, or Bt cotton seeds. As well as the price for their product, Bt cotton, being coupled with a global market creating increased competition. When the nation's power to regulate and provide remunerative prices and low agricultural input costs was stripped from them due to the need for unencumbered markets the Indian farmers were tasked with increasing productivity in order to provide for themselves and their families. While the farmer's need to increase productivity, they have been increasingly pushed onto smaller landholdings because of the debt they incur from having to purchase their means of production. The privatization of seed rights to a variety of GM and GM hybridized Bt cotton seeds that need to be purchased to continue production has eliminated not only the common and collective rights to seed saving and seed sharing, but it has destroyed the individual liberty of the farmers to choose their own means of production and constructed a loss of biodiversity. The introduction and promotion of Bt cotton seeds has created a monoculture of Bt cotton in India that revolves around the use of an artificially created nature created by Monsanto to produce more capital. This artificial nature is the Bt cotton seeds and Monsanto was able to produce it due to the "explosion of intellectual property rights, which, on the back of capital have bored into the nature via the core of scientific discovery and

invention” (Smith 2007, 31). Monsanto’s creation and use of Bt cotton has increased the power of corporations because now they are able to produce nature, and through use of global markets, sell their produced nature. The production and use of artificial nature shifts control of the markets to corporations and this is done through the usurpation of new resources (Smith 2007). This control has allowed Monsanto to create a new hegemonic control on the resources and the labor source. The labor source is now dependent on a corporation for their means of production because they have been usurped of their rights to save and share seeds among themselves. The hegemonic control of the Indian farmers has created accumulation by dispossession as a multilayered condition of neoliberalism.

The process of accumulation by dispossession in this research is characterized by the transition of common and collective property rights into private property rights (Harvey 2007). Accumulation by dispossession within neoliberalism acts to “transfer assets and channel wealth and income either from the mass of the population toward the upper class or from vulnerable to richer countries” (Harvey 2007, 34). I contend that this act of accumulation by Monsanto has caused severe and drastic dispossession of the Indian farmers on many levels. The first act of dispossession is through the flow of capital. Monsanto incorporated a high royalty payment on Bt cotton seeds, and this channeled the wealth from the mass of the population, Indian farmers, to the upper class. This upper class is characterized by MMB and occurred at the global scale as the wealth was transferred away from India and to Monsanto in the U.S. Monsanto willingly violated the individual liberty and well-being of Indian farmers through promoting their own idea of nature and agricultural production through Bt cotton. The second act of dispossession that emerges from this is the dispossession of farmers from their land. The farmers are dispossessed from their most important means of production, land, because of the high costs of Bt cotton seeds and the low

prices for the finished product. This creates debt for the Indian farmers that relates to decreasing land holdings because the farmers are no longer able to support their existing land and seek other means to decrease their loan debt incurred from the constant need to purchase all of their agricultural inputs. This decrease in land holdings and increase in debt marginalize the farmers to the verge of destruction because they are not able to sustain their own livelihood. The increased use of Bt cotton and the creation of a monoculture of cotton production stemming from Bt cotton represents a dispossession from biodiversity. Biodiversity is crucial to all agricultural systems because it promotes a sustainable system that allows most crops to thrive due to the rotation of crops and fallow periods that maintain the productivity of land. The dispossession of biodiversity through the use of an artificial nature, Bt cotton, has then exerted control over the environment and nature to corporations. This is because these corporations, such as Monsanto, control the types of seeds that are available to consumers through intellectual property patents and licensing of these seeds to other corporations for innovation. The loss of rights to biodiversity has marginalized farmers as consumers because of the limited types of seeds available on the market. Dispossession in the form of biodiversity transforms the meaning of the commons and creates a dispossession of the commons for Indian farmers.

The dispossession of the commons is due to neoliberalism's need to seek out new avenues of accumulation, and this occurs through the realization and usurpation of new resources that nature provides. The loss of the commons for Indian farmers is because these communities also lost part of their culture and intellectual property (Ahmed 2008). The loss of culture comes from the bullock capitalist's being deprived of their own means of production, in the form of land and seeds, and their loss of liberty to continue their own self-funded and self-employed agricultural system. Bullock capitalists were forced into the political economic practices of neoliberalism, and

this relates to a destruction of their individual and family well-being, which should have been increased under neoliberalism. It wasn't simply the bullock capitalists that were deprived of liberty and well-being under capitalism, but all Indian cotton farmers. They have been divorced of their ability to choose their seeds manage their land, or increase their wealth under neoliberalism. They have lost all rights to production since the introduction of Bt cotton under neoliberalism, and this creates a large scale exploitation of the agricultural sector in India. Expansion of neoliberalism into Indian has drastically decreased the entrepreneurial freedoms of the agricultural sectors most entrepreneurial class, the bullock capitalists. Neoliberalism in India has produced an imperialism that rivals that of the colonial period. This is because neoliberal practice in India is a direct and complete contradiction of the entire theory of neoliberalism. It has decreased the Indian farmers' well-being, decreased individual liberty, and increased imperialistic control of the agricultural sector in the hands of corporations. The interactions of society and nature are transformative to both, and society's effects on nature exist because of economic policies, political policies, and regulation of nature (Bakker 2007). The artificial expansion of nature by Monsanto via Bt cotton has placed the regulation of nature in the hands of corporations causing a drastic deregulation of the agricultural system that is having dire consequences on nature. These consequences manifest in the loss of biodiversity, caused by the construction of a monoculture of Bt cotton. This monoculture is constructed through corporation's manipulation of nature to produce seeds to control the market. This results in an economic consequence to the Indian famers through a loss of capital wealth that relates to a loss of land holdings. Accumulation by dispossession is not characterized only by the loss of a common or collective property rights that are converted to private property rights. It is the loss of common or collective property rights that are then strenuously expanded by neoliberal political and economic practice to incorporate a multitude of

other dispossessions. In the case of Indian farmers, their dispossession from wealth and increase in debt has created a dispossession from their control of their production system. This relates to their dispossession of different seeds and seed sharing, their access to biodiversity, their individual liberty, their well-being, and their control of their own production system. This is because of Monsanto's manipulation of nature to create a new commodity, Bt cotton, to create an imperialistic control on agricultural production. The processes of neoliberalism have disseminated from the global and national levels and infiltrated the local levels of agricultural production, and this infiltration threatens the existence of Indian farmers. These farmers have been marginalized through neoliberal practices to become a highly exploited class of laborers that are overlooked and forgotten by the industrial and mechanized processes favored by neoliberalism. Neoliberalism has failed to provide any benefits to Indian farmers because of its liberalization of the agricultural system. This failure has caused devastation to the Indian farmers who produce Bt cotton. Neoliberalism's failure has also destroyed any control that Indian farmers once had on their own production system by promoting a hegemonic control by corporations. Not only this, but it has produced a disastrous effect on the biodiversity of the Indian agricultural system as well as, annihilating any chance the Indian farmers had for upward social movement and access to common or collective property. The desolation caused by Monsanto in India has caused vast social consequences through the rise in Indian farmers' suicides, and inability of Indian farmers to experience and control their own lives through the individual liberty promised by neoliberalism.

The nature of dispossession comes from the history of India as a commercial agricultural nation. The transformation of nature by humans creates a reciprocal transformation of humans produced by nature. India has constantly been transformed since the rule of the British in the colonial period. Each regime of accumulation has produced different methods of capital

accumulation strategies of nations and corporations that have serious effects for the producers of capital in India. The use of Bt cotton, under neoliberalism, that has exponentially changed the façade of the domination of nature through the processes of capital and accumulation by dispossession.

2.9 Significance

The contribution of Bt cotton to developing commodities of agriculture in Maharashtra, Telangana, and Andhra Pradesh, India has far-reaching implications and allows for the influence of corporations to continue to expand. There has been little research on the issues that surround GM crops and their use in the creation and understanding of agriculture commodities to create accumulation by dispossession. The dispossession of the rural small farmers happens when they are separated from their means of production, their seeds, and farmland when corporations and states begin to enforce intellectual knowledge on seed patents. To create a better understanding of these issues there is more of a basis for policy change and improvements in the lives of these rural cotton farmers. The research will provide a better understanding of the exploitation that these farmers endure and the need to alleviate the issues of poverty and inequality that come with the exploitation. Through taking a unique approach and mixing quantitative and qualitative methods this research has created a better understanding of some of the complex issues that make this problem relevant to the world.

This research has significance because it can be used to create better government policies that protect one of the most important sectors of the economy, the agricultural sector. The people employed in this sector are often overlooked and forgotten, but without them, we would not have our clothing or food. India's state governments of Maharashtra, Telangana and Andhra Pradesh,

have created progress in providing relief for their farmers through the fixation of seed prices. The Central government of India must follow their example and provide a fixation of seed prices at a level that does not cause farmers to incur more debt every year. This is because if there is an unsustainable production model that relies on high input costs for farmers, the basis of our society would be in jeopardy as more people move away from farming to more gainful employment opportunities. This option for government support goes against the notions of neoliberalism. Though India is a neoliberalized nation now, over the course of the first thirteen years of Bt cotton, the state governments have gone against neoliberalism and exercised government regulation of the commodity Bt cotton seeds, and the product of these seeds Bt cotton. This suggestion may put corporations and the government at odds, but to create a sustainable agricultural system this is needed so that the farmers do not become more exploited by corporations in the future. The contestation for control between corporations and governments is exacerbated by neoliberalism and its actions within India, and it has shifted control from the government to the corporations. For the government to regain control they must act on the economy to produce what neoliberalism has failed at producing, a betterment of human well-being. This proposed strategy for relief may not be feasible due to the economic and political climate that the world currently is enduring. This strategy may also have vast consequences for the future of corporation investment in India, or from global monetary institutions. India may be hit with trade regulations by the global community because of government intervention. The global monetary institutions may recall India's loans and not provide any future loans. It is not my place to choose how the government of India or others will act, but I hold that the government should do more to protect their people's well-beings. The government is also responsible for providing opportunities, so that their people can maximize their well-being. Secondly, the government at the central level should provide crop insurance for all

crops and not just food crops. The central government should provide the funding for this and disburse the facilitation of this program to state governments that are more understanding of their local issues and could better distribute the insurance. This could negatively affect the government and the people of India. The government would be negatively affected because of a loss of capital, and similar to above would be providing a social program that goes against the hegemonic system of neoliberalism, and against the conditionalities of the loans from the IMF and World Bank. The Indian farmers may be negatively affected by this strategy because the farmers would become dependent on the government to provide assistance when their crops yield decreases or fails outright. If a large number of farmers lost their crops it would cost the central and state governments a large amount of capital to cover the crop loss.

The forced expansion of neoliberalism in India has produced a new form of imperialistic control by corporations over the agricultural system through the use of Bt cotton. Neoliberalism has constructed the process of accumulation by dispossession through privatizing property rights that were once open, common, or collective property rights to Indian farmers. Monsanto is profiting off of their artificially created nature, Bt cotton, and in turn causing a direct exploitation of Indian farmers because of the high seed prices and a complete separation of the producers from all of their means of production. This dispossession is multifaceted and infiltrates not only the wealth of the farmers, creating debt, but it also has dire consequences for farmer's land holdings, biodiversity, and human well-being. Monsanto has constructed their hegemonic control of nature and the agricultural system of Indian farmers through creating a system that relies on the market in all stages of production. This has produced a new avenues of capital accumulation for the corporations, but has left the Indian farmers devastated and on the brink of existence.

CHAPTER 3

SUMMARY OF CONCLUSIONS

This research set out to understand how Bt cotton is used to commodify agriculture under neoliberalism and how this causes dispossession of farmers, and to find the nature of dispossession, regarding farmer's debt, in Maharashtra, Telangana, and Andhra Pradesh, and how this affects the social relations in these regions. These tasks were done in order to address how Bt cotton has become an agent of neoliberalism and created a new avenue of capital accumulation and how this avenue causes the farmers to be dispossessed from the means of production. Additionally, it has examined how the commodification of nature coincides with Indian farmers being dispossessed from their means of production and how this has resulted in social consequences. The consequences of commodifying agriculture have reciprocal consequences in the social processes of the producers. This chapter will summarize the conclusions and findings of this research.

The use of Bt cotton as an agent to generate capital has produced a transformation in the Indian agriculture sector. This transformation manifests as a complete divorcing of the Indian farmers from their common property and means of production, seeds. Through the forceful expansion of neoliberal policies in India Monsanto was able to partner with Mahyco, an Indian hybrid seed corporation, and introduce Bt cotton seeds to a new market of consumers, Indian farmers. The creation of Indian farmers as consumers of the means of production has allowed Monsanto to accumulate vast capital surplus from the high royalty amount charged for each packet of seeds. Not only has it done this, but it has produced Indian farmers as consumers of the means of production that is vital to the continuation of their mode of production. This represents the loss of private property rights, the seeds, which Indian farmers had once enjoyed as common property. This has caused dispossession of the farmer's debt because it has created a debt cycle that required

the farmers to purchase their seeds every year because of the loss of vitality after the first generation of plants. The second result of this is the dispossession of biodiversity of the farmers, who once were able to draw from a diverse gene pool of indigenous plants. This has also reduced the gene pool of Indian crops to a single common ancestry in Bt cotton. Indian corporations have expanded this gene pool through the creation of hybrid Bt cotton seeds, but it still remains narrow in the scope of biodiversity that was once present in the Indian agricultural sector.

Neoliberalism has facilitated this dispossession to occur in India through the deregulation of the Indian economy and promoting less state intervention in the economy. This is because the state has reduced power to promote low agricultural input prices and provide ruminative prices for agricultural commodities. Policies and programs that were enacted by the central government before the expansion of neoliberalism were stripped away due to neoliberalism. The second way neoliberalism has facilitated dispossession is through the opening of the Indian economy to the global investments because of conditionalities in loans provided by the IMF and World Bank in 1991.

The nature of dispossession is evident in the rising social consequences of an unsustainable model of agricultural production. These social consequences are the large increase in farmer's suicides, which are likely to be grossly underestimated, and through local protests and state government actions to promote control of Bt cotton seed prices. The most suicide devastated region is in eastern Maharashtra, in Vidarbha. These suicides have prompted a rising social movement that has formed the basis of resistance to the use of Bt cotton seeds. The rising social movement has jumped scales and attracted state and central government attention. This has resulted in proposed legislation from the state government of Karnataka to fix the prices for Bt cotton seeds to a single price in order to help provide some relief to debt-stricken farmers. The

movement has also attracted international attention to the farmer's plight from large media conglomerates. Within Maharashtra, Telangana and Andhra Pradesh, the social relations of the bullock capitalists and marginal farmers have been more solidified by the downward movement caused by the use of Bt cotton and the incurring debt. Allowing the resistance to formulate a movement that has attracted a great deal of attention from local to global scales.

Based off these relations, this research has proposed three possible policy areas that the central and state governments could address to promote better conditions for the Indian farmers. The first one is that the governments should move away from neoliberal policy to promote the fix Bt cotton seed prices at a level that makes them accessible to all farmers without producing a cycle of debt. Secondly, the government of India could provide funding for crop insurance for Bt cotton which would allow the Indian farmers a safety net through the social program. Mainly food crops, currently, are the major benefactor of crop insurance. The central government would provide the funding for this program and distribute this funding to the state governments that have a better understanding of the local issues and ensure a more effective and equal distribution of crop insurance.

The introduction of Bt cotton has produced devastating effects on the Indian rural farmers who rely on agriculture to provide for their families and their independence from the capitalist system. It has pushed the once proud and efficient Indian farmers away from independence that they had enjoyed before 2002 and promoted a cycle of vicious predatory attack on a vital sector of the economy. It is also a direct contradiction of the neoliberal principle that the well-being of humankind can best be advanced through the privatization of previously open property rights.

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