Spring 5-6-2012

Farmer Suicides in Maharashtra, India: Facts, Factors, and Possible Fixes

Jennifer Guha
University of Connecticut - Storrs, Jen.Guha@gmail.com

Farmer Suicides in Maharashtra, India: Facts, Factors and Possible Fixes

Jen Guha

Advisor: Betty Hanson

University of Connecticut
Honors Program
Political Science
India Studies

Table Of Contents

ABSTRACT

This paper looks at the phenomenon of farmer suicides in India, specifically in the state of Maharashtra. Research was collected through primary sources (interviews) as well as secondary sources (journal articles and books on previously completed studies). There is not one single cause for the suicides; therefore this paper looks at the several compounding factors (political, economic, and social) that influence the decision of the farmers to commit suicide. Some of these factors include: integration with the world market, genetically modified crops, government policies, water access and drought, as well as social issues. Lastly, this paper analyzes policies and preventative measures in order to make a final recommendation of: endorsing organic farming techniques, creating more insurance schemes, and creating more community groups for farmers. The paper also includes a discussion of the prevalence of farmer suicides in the media, and highlights the new 2012 Budget, which includes an increase in funding towards agriculture.

INTRODUCTION

"On average, one farmer commits suicide every 30 minutes in India," (Center for Human Rights and Global Justice, 2011). India experienced its first wave of farmer suicides in 1997, at which time the number of farmer suicides per year was around 14,000. This number increased in 2005 to 17,000 per year (Sainath, 2007). What causes farmer suicide in India? What factors contribute to the fluctuation in number and frequency of suicides (increases/decreases); and to what extent have farmer suicides been affected by globalization (participation in the world market, liberalization)? What is the best type of policy to pursue in order to address this problem and to positively impact a farmer's life? This thesis investigates these questions and proposes policy recommendations based on information from 1990 to the present (2011). It will focus on the state of Maharashtra, which has experienced the largest number of suicides: 28,911 farmer suicides between 1997-2005 (Sainath, 2007).

Reports of farmer suicides are not always accurate; therefore numbers can often be misleading. Official statistics for farmer suicides started being recorded in 1995 by the NCRB (National Crime Records Bureau) under Accidental Deaths and Suicides. The first couple of years of recording are often thought to be unreliable since methodology and infrastructure in taking data were still being sorted out. For example, K. Nagaraj, who conducted the largest study on farm suicides, used the NCRB data starting from 1997 instead, as to account for any inaccuracies within the first two years of data collection (Sainath, 2012).

Additionally, sources differ in their statistics. According to one source, since 1997, over 25,000 farmers have committed suicide (Deshpande, 2010). Another source

has a much higher number, stating that Maharashtra itself has had 28,911 farmer suicides between 1997-2005 (Sainath, 2007b)[1]. In 1995, farmer deaths (accidents included) in the Vidarbha region were reported at 978 and increased to 3799 in 2005 (Fernando, 2009). Many of the more recent deaths are suicides. In comparison to overall suicides in India, farmer suicides are proportionately greater. "The Annual Compound Growth Rate for suicides in India over a nine-year period is 2.18 per cent…But for farm suicides it is much higher, at nearly 3 (or 2.91) per cent" according to Professor K. Nagaraj of the Madras Institute of Development Studies (Sainath, 2007a).

There are many factors leading to suicide on three levels. International factors include negative effects of globalization, as well as negative effects of the Multi-National Corporations and the seed industry. National factors include insufficient government policy and overall health issues. Local factors such as weather, water access, and social issues, including pressure and humiliation, all contribute as well. Based on these multiple factors, the best policy to pursue in order to prevent and reduce the occurrence of farmer suicide would be: a policy of encouraging organic farming techniques, creating more insurance schemes, and endorsing the creation of community groups for farmers, which would all help to prevent farmer suicides.

This paper begins with a literature review of what has been previously written about farmer suicides and then highlights the significance of this issue. The discussion of the factors contributing to farmer suicides comes next, starting with international level factors, which includes globalization and the Bt[2] (Bacillus thuringiensis) cotton industry.

[1] Further research could warrant a comparison with another state, such as West Bengal, which is of comparable size.
[2] Bacillus thuringiensis, genetically modified cotton to resist bollworms

A discussion of the national level factors follows, including government (national and state) policies as well as NGO's involvement, and also health issues. Local level factors succeed this, including weather, water, soil, and social issues. The paper then moves into a constructive section, by presenting suggestions for alleviating farmer suicides taken from previously done studies by scholars such as Mishra (2006; 2008) and Deshpande (2010). A policy recommendation based on the research from this paper is then offered. A brief conclusion sums up the findings of this paper and looks forward to a future of decreased numbers of farmer suicides, and of increased prosperity in the agricultural sector in India.

LITERATURE REVIEW

The literature on farmer suicides in India tends to divide into two perspectives. One side generally concludes that globalization has negative effects on farmers that lead to suicide. The other side argues that globalization is not to blame, but rather some other factor, which varies among authors. Those who support globalization tend to be economists, who are factual, accepting the big picture in which winners and losers are created, but ignore the personal and human side of the problem. Those opposing globalization tend to be activists, who look at human rights as a central issue, and focus on the personal level, ignoring the big picture in which integration with the world market has positive effects as well.

Those on the left, most notably Vandana Shiva and P. Sainath, tend to be anti-globalization and anti-capitalism. They discuss the more negative impacts of globalization, such as the vulnerability of developing countries in the world market due to

their dependence on other countries for trade. Their focus is on poverty, rural issues, social issues, and the impact of globalization on agriculture. Vandana Shiva, a physicist, environmentalist, and feminist, founded Navdanya, an NGO designed to "protect biodiversity, defend farmers' rights and promote organic farming" (Lerner, 2010). Navdanya has formed the Seed Sovereignty Campaign, which seeks to reduce the importance of genetically modified cotton, as well as its capitalistic nature, and promote organic seeds and traditional farming techniques instead. Shiva is an activist in the farmers' rights movement and is quite concerned with the impact the Multi-National Corporations in the seed industry have had on small farmers. She, along with others (Fernando et al, 2009), argues that the benefits of globalization go to the seed and chemical corporations, while the costs and risks fall upon the small farmers. She also focuses on the theories surrounding transgenic cotton and its impact on the farmers, which will be discussed later. Other sources (Anderson, 2000; Deshpande, 2010; Fernando et al, 2009) argue that globalization spreads capitalism and the increase in farming for profit rather than for subsistence.

Sainath emphasizes credit and indebtedness as farmer issues, which he discusses in many of his articles, speeches, as well as in the interview I had with him in January 2012. Like Shiva, he emphasizes the increased cost associated with Bt cotton usage, but focuses more on suggesting microcredit and overall bank reform as a resolution rather than organic farming. He also writes more about the politics of farmer suicides, whereas Shiva writes more from ecological and economic standpoints.

On the other side, there are those who do not emphasize globalization or capitalism as the root cause of farmer suicides. They accept the outcomes of globalization

and liberalization discussed by the anti-globalization scholars, such as declining growth in agriculture, however they argue that participation in the world market can help combat poverty through economic growth. These scholars discuss the positives of globalization: stimulation of trade, capital flows and technology. This side argues that Bt cotton is not a cause of increased farmer suicides, as is often claimed, but rather this technology has been overall effective in India in improving agriculture (Gruère et al, 2011). T.N. Srinivasan (2007), a professor of Economics at Yale University, argues that India's "state-directed, state-controlled and state-dominated development strategy" and "insulation from the world economy" in the past greatly contributed to the current agricultural crisis. Arvind Panagariya, another pro-globalization scholar, highlights the research of R.S Deshpande, which disagrees with the widely accepted finding that debt, as a product of globalization is a major cause of suicide. Panagariya recognizes the costs of globalization when it comes to farmers, but he emphasizes economic growth as a solution to poverty, and therefore advocates globalization of industries.

Government sources also include both information about, and explanations for farmer suicides. The Government of Maharashtra assigned the Indira Gandhi Institute of Development Research to conduct a study on the socio-economic factors that are key risk factors in the issue of farmer suicides using case studies in order to find policy suggestions. Srijit Mishra, a researcher and professor of economics, wrote an analysis of this study. Although Mishra is a professor of economics, the paper does not seem to endorse globalization, as many other economists. Based off of this study, the Government of Maharashtra came up with an economic scheme to benefit farmers.

The Government of India has information pertaining to agriculture, farmers, and

suicide. There is public access to statistics in the agricultural sector, as well as a database of all the government schemes (programs) implemented. The agricultural statistics present data on population, growth, production and yield of certain crops, percentage of population below poverty line, and other data. The schemes database includes information about who the sponsor is, a description, the beneficiaries, the benefits, and eligibility requirements.

Some of the literature (Mishra, 2006; Fernando et al, 2009; Deshpande, 2010; Gyanmudra, 2007) discusses social, neurobiological, and personal problems and often conclude that: "Most suicide victims have a diagnosable psychiatric illness/disorder" (Mishra, 2006). There are not many public or local services for those suffering from depression, or contemplating suicide. It is frequently suggested that more strategies of suicide prevention be implemented (therefore looking at farmer suicide as a health issue) since it was found that the higher suicide rate in the rural areas as compared to the urban areas was in part due to the lack of mental health facilities (Gyanmudra, 2007).

Most studies look at the risk factors for farmer suicides, as well as the agricultural crisis in general. Some questions frequently asked include: What are the causes of farmer suicides? What are proper methods of relief and rehabilitation for the victims' families? What are successful strategies of prevention? How have liberalization, globalization, and privatization affected farmer suicides? The Indira Gandhi Institute study asked the following questions: "What is the nature of the current agrarian crisis? Is it largely related to cotton cultivation? Is it also associated with rural credit scenario? Is there a withdrawal of state support from the rural agrarian scenario? Is there a geographical concentration of suicides? Is it of seasonal nature? Is it high among certain social group (age, caste,

education and land size owned) that is aggressive in its pursuit of attaining economic well-being? Is indebtedness an important risk factor? What are the other socio-economic risk factors?" (Mishra, 2006). These questions overlap with much of the literature already written on farmer suicides in India.

Methods of research include field studies, case studies, and data analysis.

SIGNIFICANCE

The topic of farmer suicide is significant on multiple levels: on the political, social, economic, and public health levels. This topic is significant because about 2/3 of the population of India is still reliant on agriculture to make their living, whether by cultivation or as a laborer (Government of India, 2005). The persistence of farmer suicide leaves families in debt with no income. The way the government has been dealing with the suicides has not actually made a significant impact in assisting families of the suicide victims. It is important to understand what aggravates the farmers' plight in order to decide on legitimate government policy that will reduce the frequency of suicides.

Farmer suicides are a manifestation of the inequality in the socioeconomic structure of India. The people affected by farmer suicides are the poor and lower castes. The main reasons for suicide often cited are indebtedness and crop failure (Gyanmudra, 2007). There is still a significant problem with the caste system in India, which is another issue in itself, however farmer suicides are representative of this problem. Essentially, those in the lower castes or of lower income do not get the assistance or attention they

may need or deserve from the government and media. Therefore, many problems of the lower castes are often overlooked.

The problem of farmers' suicide is meaningful because it shows the negative effects globalization can have on countries, industries, and more importantly, humans. The agricultural crisis has been exacerbated by globalization. While there was a Green Revolution from the 1970's up until the balance of payments crisis in 1991, by the 2000's, growth in the agricultural sector declined (Deshpande, 2010). Investment in agriculture is very small. Since so much of the population of the country relies on agriculture, this reduction in growth and the resulting crisis is incredibly relevant and important. Globalization's effects on trade, liberalization and privatization of certain industries, have shown as a burden on small farmers. When it comes to trade, farmers cannot compete with the cheaper prices abroad. Therefore, they do not make as much of a profit. Also, the privatization of the seed industry has caused seed prices to go up (mainly because of the introduction of the genetically modified cotton seeds in Maharashtra, also known as Bt cotton) (Gruère et al, 2011). Since input costs are going up, and output costs are staying the same, if not going down, profit is also decreasing. Globalization has brought about the concept of capitalism to developing nations. While India has blossomed in the information technology field, the agricultural field has felt the negative effects of capitalism.

Suicide itself is a public health issue. Factors leading up to committing suicide include many neurobiological factors, as well as personal issues. Many of the suicide victims in India (specifically the Anantapur district of Andhra Pradesh in the study cited) had been found to have suffered from some of the following issues: depression,

alcoholism, anti-social behavior, impulsiveness, aggression, frequent mood changes, social inactivity, absconding before committing suicide, and criminal acts (Deshpande, 2010). Addressing farmer suicides would also address many personal issues affecting those outside of agriculture, who also suffer from depression and anxiety.

The topic of farmer suicides is important to academics, as they are the educators of society. For this problem to be discussed and written about is important. Policymakers must take even more notice of this issue. Further research and policy suggestions could help save many lives, and pull many out of poverty, if implemented well. This topic may also hit close to home for some, as suicide is a very sensitive issue. Unfortunately, many people have been affected by suicide, whether it is by someone who has committed suicide or has contemplated doing so. Being educated on risks and signs is important not only in the case of the farmers, but also in a broader sense. Research on this topic will increase understanding of the past farmers who took their lives, as well as the present situation of farmers in India, which can hopefully better their futures. Factors on the international, national, and local levels can be looked at and addressed to accomplish these goals.

INTERNATIONAL

Globalization

Globalization as a broad term has social, political, economic, and cultural implications. There are varying definitions that are often contested, discussed, and built upon. In this paper, the term globalization refers to economic globalization specifically, which can be defined as "the increasing interdependence of world economics as a result

of the growing scale of cross-border trade of commodities and services, flow of international capital and wide and rapid spread of technologies." (Shangquan, 2000). Therefore, the term globalization refers to India's integration with the world market.

Prior to economic reforms in 1991, India's economy was limited by restrictions and protectionist tariffs. The applied average tariff in 1990-91 was 93.3% (WTO, 2004). These restrictions came about in an attempt to reach self-sufficiency in food production. High investment in the agricultural sector between 1965-1980 resulted in the Green Revolution, a time in which agricultural research and development was strong (Deshpande, 2010). In 1991, India implemented economic reforms, which liberalized its economy, increased privatization, and decreased the government's role in regulation. As a result, the applied average tariff a decade after the reforms (2000-01) was down to 34.62% (WTO, 2004).

Since the 1990's, investment in the agricultural sector has decreased. Indian governments cut expenditure on rural development from 14.5% of GDP in 1985-1990 to 5.9% of GDP in 2000-01 at the suggestion of the IMF and World Bank (Gyanmudra, 2007). Additionally, "the neglect of agriculture in plan resource allocation has led to a decline of public investments in irrigation and other related infrastructure." (Mishra, 2008).

Integration with the world market means an increase in trade. Trade is beneficial to countries because it allows each country to import goods at a lower cost than it would cost to produce itself, and export goods it has the comparative advantage in. Comparative advantage means that a country can produce a certain good at a lower relative cost (lower

opportunity cost; forgoes less of another good in order to make the first good) when compared to another country.

With regard to the farmers in India, agricultural imports tend to be cheaper than the local agriculture. Therefore, imported agricultural goods are being purchased rather than locally grown goods. Additionally, the price volatility of crops due to integration with the global market is a problem. The excess overseas supply of the same products at a lower price is due to subsidies, leading to "dumping" by the developed countries, and therefore neglect of the farmer's crops domestically (Mishra, 2008).

This lack of success in trade puts economic pressure on the farmers in India to compete with other countries in the world market. The idea of growing crops for profit rather than survival and self-sufficiency places a new pressure on farmers to produce cash crops. The harvest of crops depends on many factors, such as the seeds, the weather, and the presence of pests. (These factors will be discussed in the later sections on Bt Cotton, and Local factors leading to farmer suicides). Farming for profit is a difficult task, as the cost of production is increasing, weather conditions are unknown, and output price is often unknown.

In the farming of cotton, which is increasingly a high-risk crop, input costs include: seeds, pesticides, fertilizers, and labor. The cost of production is increasing for farmers: the cost of cultivation increased nearly 17 times between 1975-76 (Rs 1,047 per hectare of land) and 2001-02 (Rs 17,234 per ha); whereas a farmers income only increased 11 times from Rs 1,252 to Rs 13,775 per hectare of land (Deshpande, 2010)[3].

[3] $1 = ~ Rs 50

The cost of cultivation of cotton (irrigated) according to the Tamil Nadu Agricultural University breaks it down as follows:

Cost of Cultivation (in Rs per acre)

Land Preparation	1200
Seeds and sowing	1343
Manures and Manuring	1000
Weeding after cultivation and irrigation	1900
Plant protection	1400
Harvest and other expenses	1200
Total:	Rs 8443 per acre
Average yield (Kg)	1000 kapas
Gross income	13643
Net income	5200

(Tamil Nadu Agricultural University, 2008).

Pricier hybrid and genetically modified seeds are replacing organic seeds (which are cheaper and salvageable to save from year to year) increasing farmers' input costs (The issue of seeds is discussed further in the section on Bt Cotton). Pesticides and fertilizers are expensive, but necessary in order to avoid the pests and to increase output. Often times, over-zealous marketing of pesticide and fertilizer companies trick farmers into spending more on their products (Fernando et al, 2009). Labor is an additional cost of farming, and since the Government fixes minimum wages, it is difficult to find cheap, quality labor. Oftentimes, the laborers who are guaranteed a certain wage will be less inclined to work productively or as frequently (Fernando et al, 2009).

"The prices of most agricultural commodities are highly volatile" (Government of India, 2005). The prices of many agricultural goods have been declining in the international realm due to a plateau of demand paired with higher production; growth of the world economy; weather conditions; fluctuating value of the US dollar; government

policies ignoring tariffs and subsidies; instability of governments; inflation/depression; and competitiveness of the commodity when compared to other countries, in regards of the quality and price (Government of India, 2005). The steady decline in prices over the years is shocking: in 1994 a pound of raw cotton was worth $1.10; in 2006 it was only 54 cents (PBS, 2007). With these prices, a farmer cannot maintain his or her livelihood.

The income of a farmer does not allow for much breathing room when it comes to expenditures, not only on inputs, but also with everyday consumption. Based on the average returns from cultivation per farmer household, for a family of 5.5 persons, the return is less than Rs 8 per capita per day (Mishra, 2008), which means that in order to stay above the poverty line, other sources of income are necessary. The average income of a farmer is less than the average consumption, illustrated in the following table:

Monthly Per Capita Income and Consumption by Size-Class of Holdings, 2003

Size-class (hectares)	Income (Rs)	Consumption (Rs)
< 0.01	1380	2297
0.01 -0.40	1663	2390
0.41 –1.00	1809	2672
1.01 –2.00	2493	3148
2.01 –4.00	3589	3685
4.01 –10.00	5681	4626
>10.00	9667	6418
All Sizes	2115	2770

Source: Mishra, 2008

The high cost of production (on top of the every day cost of living) in order to reach a desirable outcome causes many farmers to seek the help of loans. A study done by the National Sample Survey Organisation in 2005, found that 48.5% of loans came from Cooperatives, 34.1% from banks, 6.8% from moneylenders, 1.2% from the

Government, and 9.4% from other sources (Mishra, 2006). Another study conducted by the World Bank and NCAR's Survey on Rural Access of Finance showed that 48% of landless and marginal farmers borrow from private moneylenders, a source that cannot be controlled by the Government (this includes cooperatives, moneylenders, and informal sources) (Naidu, 2005). Attaining loans is not always easy. A table from the results of the MIT-School of Government's case study in Vidarbha shows the different options for loans:

	Relatives	Nationalised Bk	Co-operative	Money lenders
Ease of availing	Not easy now	Procedure locked	Manageable	Easy to get
Time factor	---	Long delays	Delayed	Instant
Amount available	---	By rule, less	Influence matters	Highest
Rate of interest	Low	Up to 14% p/a	18% p/a average	60% to 120% p/a
Recovery method	Emotional	Relatively mild	Severe	Harassment/sale deed

Source: Fernando et al. 2009

As shown in the table above, attaining loans from moneylenders has two extremes: it is easy to attain, however it is paired with high interest rates and painful recovery methods. The harassment can come from co-operatives as well, however moneylenders are usually community based and therefore have a stronger influence over the reputation of the farmer. A sale deed is used as collateral, instead of a pledge to land, and is an actual signed deed given to the moneylender, and returned upon repayment (Fernando et al, 2009). Additionally, "names of indebted farmers are made public causing great humiliation to poor farmers whose only remaining assets are their respect in the community" (Deshpande, 2010). This is a tactic to enforce repayment of debt, and has been cited as a factor of suicide.

Due to the high interest rates of moneylender's loans, farmers are often unable to pay them back, what with their low output and low income. More than half of the farming households in Maharashtra are indebted, three-fourths of which loans had been taken out for farming activities (Mishra, 2006). According to Gruère in his 2011 paper: "another factor enhancing indebtedness is the lack of access to institutional credit. Most of the farmers who committed suicide in both states had high, unpaid loans." (Gruère, 2011). Mishra also contends that the "supply of credit from formal sources to the agricultural sector is inadequate", which leads to borrowing from the informal sources with high interest (Mishra, 2008). Farmers' indebtedness has been cited as one of the main reasons for committing suicide (Mishra, 2006; Gyanmudra, 2007; Shiva et al, 1999; Mishra, 2008; Fernando et al, 2009; Gruere, 2011).

In previous research, I came across the same trend. After searching through three major Indian newspapers (The Hindustan Times, Press Trust of India, Times of India) with the search term "farmer suicide", I found that while most articles did not give a reason for the suicide, the ones that did provide a reason most frequently cited debt/indebtedness as the reason (See Table below). Out of 171 articles found, only 33 gave reasons (some listing more than one). The time frame of the search is from 1990 to July 2011, with the oldest article found from 1998, and the newest from September 2010.

Reasons Given For Farmer Suicides In Articles from Three Major Indian Newspapers

Reason	**# of Articles Citing This Reason**
Debt	23
Crop Failure	8
Inability to Get Remunerative Price	2
Health Ailments	2
Absence of Safety Net/Insurance	2
Social	2

Worsening Agricultural Conditions	1
Poor Agricultural Credit	1
Increasing Price of Inputs	1
Not Mentioned	137

Bt Cotton Industry

The genetically modified seed industry is one that has evolved out of the transnational spread of innovations in biotechnology. It has both affected and been affected by globalization. Multi-National Corporations are entering the seed industry in India, changing the culture of agriculture from subsistence crops for food security, to cash crops for profit. Monsanto, a U.S. based company, paired with Maharashtra Hybrid Seeds Company (Mahyco) in 1998 in order to introduce Bt cotton (Bacillus thuringiensis) to farmers in India. This genetically modified seed is intended to prevent the cotton bollworms from attacking crops (Shiva et al, 1999).

The Bt cottonseeds have often been argued to be a leading factor in farmer suicide. However, Gruère and Sengupta disagree in their 2011 article, in which they point out that Bt cotton has actually increased cotton production in India from 15.8 million bales in 2001-02 to 31.5 million bales in 2007-08 (Gruère, 2011). Their findings showed that there was no causality between the use of Bt cotton and farmer suicide, and that the suicide rate of farmers decreased after Bt cotton usage began. Also, in years with reduced suicides, there was an increase in usage of Bt cotton. (Gruère, 2011). This can be seen in

the following graph:

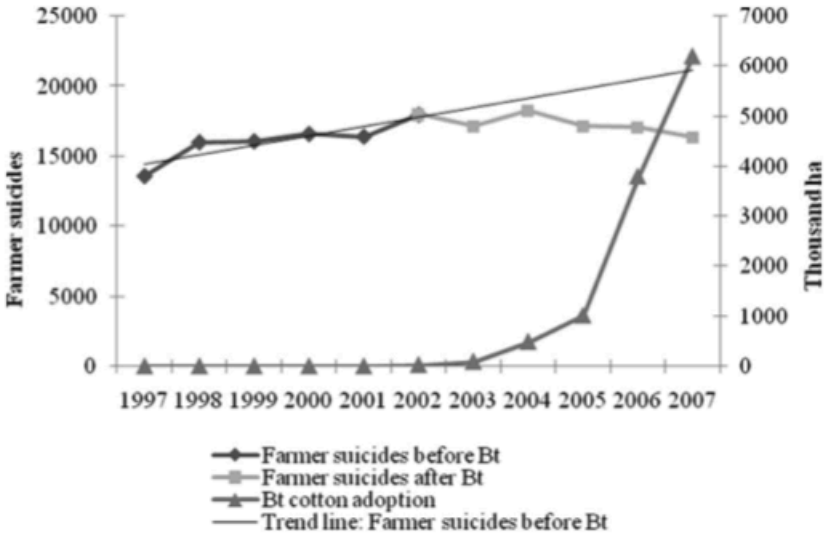


Figure 5. Farmer suicides and Bt cotton area in India, 1997–2007. *Source*: Combined data from Table 1 and Table 2.

Source: Gruère et al, 2011

This graph does show that overall in India an increase in Bt cotton usage coincides with a slight decrease in farmer suicides. However, when looking at the state of Maharashtra, this relationship is less accurate:

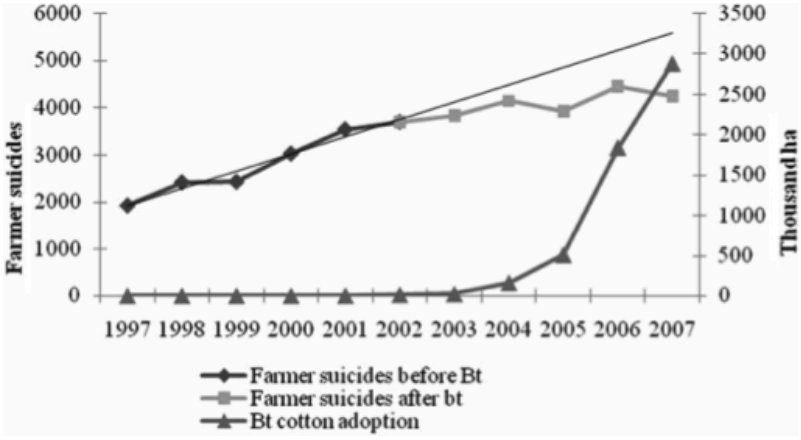


Figure 6. Farmer suicides and Bt cotton area in Maharashtra, 1997–2007. *Source*: Combined data from Table 1 and Table 2.

Source: Gruère et al, 2011

This graph shows a fluctuation of farmer suicides with the use of Bt cotton. It is not convincing enough that Bt cotton caused any sort of decline in farmer suicides. The amount of suicides is still very large. In Maharashtra, it seems that there is not a very significant change in numbers when using Bt cotton.

While it may be difficult to establish a causal relationship between the usage of Bt cotton and farmer suicides, there are many arguments stating that the use of Bt cotton affects farmers economically, which in turn contributes as a factor into suicide. The problems often cited with Bt cotton is not necessarily the usage of the seeds, but more so the industry behind it. The privatization of the seed sector has lead to many negative effects on the agricultural sector, such as the monoculture of crops, the change in the culture of farming, and the shift from a public system approach to private (Shiva et al, 1999).

The monoculture of crops is a negative effect of the introduction of Bt cotton, as it decreases biodiversity of crops. This reliance on single crops also increases the risk in farming, in that if the harvest does not yield what is expected or needed to make a profit, the farmer loses out on money, food, and confidence.

The change in the culture of agriculture, as mentioned earlier, has caused farmers to shift from farming for food security to farming for profit. Cash crops (such as cotton) are cultivated for profit, rather than diverse food crops for security and self-sufficiency. The shift from a public system approach of the seed industry to privatization has lead to many changes for farmers. Firstly, the TRIPs (Trade Related Intellectual Property Rights) agreement of the WTO prohibits farmers from “reusing, sharing, and storing seeds” (Shiva et al, 1999). With organic seeds, or even hybrid seeds (crossbred from more than

one variety), farmers could save seeds from year to year, which cut down on the input costs of farming. With the new guidelines, farmers are forced to purchase new seeds for each year. MNC (multi-national corporation) focused agriculture "is capital intensive and creates heavy debt for purchase of costly internal inputs such as seeds and agri-chemicals" (Shiva et al, 1999).

Although the use of Bt cotton has increased production, it does not mean that the cost of production has decreased, nor does it mean that the output price of cotton has increased. Therefore, no indication of increase in profit has been made. While Bt cotton has its benefits, the costs have befallen on the small farmers, who struggle to meet economic needs.

NATIONAL

Government

There are a great number of agricultural schemes developed by the government, many of which have been successful. However, the government's direct response to the farmer suicides has not been entirely effective in preventing or resolving the issues facing the farmers. There have been government aid packages, statewide schemes, as well as non-governmental organization's (NGO) working on behalf of farmers.

Government Packages in Response to Farmers

Loan Waivers:

On July 1, 2006 Prime Minister Dr. Manmohan Singh visited the suicide stricken region of Vidarbha, Maharashtra to declare a relief package of Rs 37.50 billion to assist

the farmers. This broke down into several portions. For six districts of Vidarbha, Rs 7.12 billion was given out for overdue interest. Rs 21.77 billion was given for "expediting major and medium irrigation projects" to irrigate about .16 million hectares of land in the six districts over the next three years (Desphande, 2010). Other aspects of the package included: seed replacement and purchase of cottonseeds (Rs 1.8 billion); watershed development (Rs. 2.42 billion); subsidy under the National Horticulture Mission (Rs 2.25 billion); micro-irrigation (Rs .78 billion); and improving cattle and fisheries activities (Rs 1.35 billion) (Deshpande, 2010).

The impact of this package was not as intended. After the package was presented, around 1377 farmers committed suicide even though there was this indication of help to come (Deshpande, 2010). The package was unfortunately not implemented in a way so that the relief would reach those who needed it (Deshpande, 2010). The package was so that farmers with loans of Rs 25,000 would be allowed to waive the interest, but farmers with loans of greater than Rs 25,000 plus amounting interest were disqualified from any of the benefits. This signaled the need for a uniform loan waiver scheme (Deshpande, 2010).

The following table (on page 21-22) shows the number of farmer suicides in six districts of Maharashtra, and breaks the numbers down in terms of who was eligible or ineligible for the assistance from the Prime Minister's 2006 agricultural package. For a couple of the years, numbers for those under enquiry (the process of deciding whether or not one is eligible) is also presented. As one can see from looking at the table, most of the farmers were not eligible to receive any sort of financial compensation (such as loan waivers). The study from which this table comes showed farmers' satisfaction with the

Prime Minister's package overall, but when shown the numbers of those involved in the study, it can be determined that the farmers who were reached by the package were satisfied but very few in numbers (40 households in the study), whereas most of the farmers did not receive any financial assistance.

Number of Farmers' Suicides in Six districts of Maharashtra:
2001-2009

Year/District		*Amravati*	*Akola*	*Yavatmal*	*Buldhana*	*Washim*	*Wardha*	*Total*
2001	Eligible	7	5	7	4	7	2	32
	Not Eligible	4	1	10	4	0	1	10
	Total	11	6	17	8	7	3	52
2002	Eligible	16	7	23	6	5	15	72
	Not Eligible	4	0	15	3	1	9	32
	Total	20	7	38	9	6	24	104
2003	Eligible	22	15	30	12	6	8	93
	Not Eligible	19	6	22	2	0	6	55
	Total	41	21	52	14	6	14	148
2004	Eligible	49	39	82	38	29	17	254
	Not Eligible	52	7	60	47	15	12	193
	Total	101	46	142	85	44	29	447
2005	Eligible	59	37	97	39	25	19	276
	Not Eligible	43	6	70	42	1	7	169
	Total	102	43	167	81	26	26	445
2006	Eligible	78	81	145	99	108	54	565
	Not Eligible	191	93	215	207	77	100	883
	Total	269	174	360	306	185	154	1448
2007	Eligible	74	51	103	42	24	43	337
	Not Eligible	190	74	256	151	153	85	909
	Total	264	125	359	193	177	128	1246

2008	Eligible	62	78	76	46	25	14	301
	Not Eligible	197	83	229	144	87	73	813
	Under Enquiry	5	4	6	5	12	1	33
	Total	264	165	311	195	124	88	1147
2009 (up to 10.06.2009)	Eligible	2	1	1	3	1	0	8
	Not Eligible	2	0	14	0	1	6	23
	Under Enquiry	51	16	46	13	29	20	175
	Total	55	17	61	16	31	26	206
Total	Eligible	369	314	564	289	230	172	1938
	Not Eligible	702	270	891	600	335	299	3097
	Under Enquiry	56	20	52	18	41	21	208
	Total	1127	604	1507	907	606	492	5243

Source: Kalamkar and Shroff, 2011

Additionally, with regard to the compensation to suicide victim households, and incredibly small number (in three districts) received this compensation. This shows how few people the scheme reached, and it also highlights the small number of households surveyed in this research.

Details about Compensation Received

Districts	*No. of Households Received Suicide Compensation*	*Ex-gratia Payment*	*Grant Received (Rs/Household)*	*Expenditure Incurred (Rs/Household)*	*Use of Funds (Purpose)*
Yavatmal	1 (2.5)	----	100000	29500	Consumption
Amravati	1 (2.5)	----	110000	12000	Consumption
Buldhana	0.0	----	0.0	0.0	----
Average	2 (1.67)	----	105000	20750	----

Note: Figures in parenthesis are percentage to total sample households.
Source: Field survey data, Kalamkar and Shroff, 2011

The longer-term impact was that the amount of Rs available for farmers in crop loans decreased from 2006 (Rs 1,800 crore) to 2009, where Rs 1,240 crore was provided as crop loans. This pushed farmers into borrowing loans from moneylenders at a rate of 50-60% interest, whereas the bank's rate was only 6% (Hindustan Times, 2010 "Death Harvests").

In 2008, the central government implemented the Agricultural Debt Waiver and Debt Relief Scheme worth Rs 65,000 crore[4], which was disbursed over time, pulling many farmers out of debt (Hindustan Times, 2010). The scheme covered "marginal farmers" (cultivates up to 2.5 acres), "small farmers" (cultivates up to 5 acres), as well as "other farmers" (cultivates more than 5 acres) (Reserve Bank of India, 2008). The Debt

[4] Crore = ten million

Waiver was intended for the small or marginal farmer, in which case the entire "eligible amount" would be waived. The Debt Relief was intended for the other farmers, where a one time settlement scheme would be implemented, giving the farmer a rebate of 25% of the "eligible amount", as long as the farmer pays the balance of the remainder (Reserve Bank of India, 2008). Each bank (commercial, regional, cooperative credit institution, etc) were to prepare two lists: one of the eligible marginal and small farmers, and one of the eligible other farmers. In most cases, the institutions giving out the loans were not to charge interest, unless a farmer defaults on paying his share (in the case of the other farmers) (RBI, 2008).

The Indian Bank lists the beneficiaries of the scheme, with over 3,000 farmers from Maharashtra listed as having received either a debt waiver or debt relief of some amount (Indian Bank, 2010).

Risk Management:

The National Agriculture Insurance Scheme, first implemented in 1999, was designed to "reduce farmers' vulnerability to natural disasters", such as drought, flood, cyclone, pests, and diseases (GFDRR, 2011). This insurance scheme is a market-based program, with "actuarially sound premium rates, up-front subsidies, and participation of private insurers." (GFDRR, 2011). Around 1761 lakh[5] farmers have been protected under the NAIS from 1999-2000 to 2010-11, with approximately 2.79 crore farmers from Maharashtra as beneficiaries (The Economic Times, 2011). NAIS has been quite

[5] Lakh = 100,000

successful in helping farmers through crop failure, which has been cited as a major reason for farmer suicide.

The Government of India offers minimum support prices for 24 major crops, which helps farmers reduce their seasonal risk, as they mostly sell their crops after harvest when market prices are low (Mishra, 2008). The minimum support prices act as a cushioning, and make crops easier to sell to those also receiving MSP. However, minimum support prices have the potential to lead to food price inflation, which as of 2011 was at a 10% inflation rate (The Economic Times, 2011).

The central government has also created the National Calamity Contingency Fund for serious calamities. If such an event occurs, the government "considers rescheduling of existing loans, issuing of fresh loans and waiving of interest" (Mishra, 2008).

Government Policies Indirectly Affecting Farmers

While the government has done very little in favor of the farmers, it has been making policy shifts in favor of globalization, benefitting corporations rather than the people who need help. The Indian Government has been lowering the corporate tax rate over the years (see table below).

1 Jan 00	1 Jan 01	1 Jan 02	1 Jan 03	1 Jan 04	1 Jan 05	1 Jan 06
38.5 %	39.55%	35.7%	36.75%	35.875%	36.5925%	33.66%

Source: KPMG International, 2006

Competition between countries in having lower corporate taxes indicates that there are some benefits: "countries that adopt comparatively low tax rates tend to do better in terms of growth and inward investment than those that do not." (KPMG International, 2006). Therefore, it seems that the Indian Government has been lowering

the taxes in order to incur greater economic growth, a desire stemming from the new globalized nature of business. This policy benefits the corporations, while the losses fall upon the poor and marginalized people. Since the government has less revenue, there will inevitably be budget cuts. "Policymakers, faced with the need to fund social programs, may fear revenue shortfalls" (KPMG International, 2006), implying that the areas losing out on funding would be the social programs.

The policies benefitting the corporations are not bad for everyone: "There is, in fact, a substantial part of the Indian population—a minority but still very large in absolute numbers—for whom India's economic growth is working well, along with those who were already comparatively privileged." (Sen, 2012). However, the majority of Indian people do not fall into this category, and are incidentally undermined by the government policies benefitting corporations.

Additionally, the Indian Government has also been known to give tax write offs to corporations: "In six years from 2005-06, the Government of India wrote off corporate income tax worth Rs. 3,74,937 crore…in successive Union budgets." (Sainath, 2011). Presently, the Government writes off an average of Rs. 240 crore per day in corporate income tax (Sainath, 2011). The latest budget has cut spending on agriculture by Rs. 5,568 crore in absolute terms, according to R. Ramakumar of the Tata Institute of Social Sciences.[6]

The Government has redefined what agriculture means in terms of qualifying for agricultural loans. In 2009-2010, agricultural loan requirements were changed to include

[6] R. Ramakumar, personal interview, January, 12, 2012, Mumbai, Maharashtra, India.

cold storage, which is a unit that "incorporates a refrigeration system to maintain the desired room environment for the commodities to be stored." (NABARD, 2007) Cold storage is beneficial to agriculture because it prevents post harvest losses, and prevents farmers from having to sell their produce immediately after harvest at low prices. "A cold storage facility accessible to them [the farmers] will go a long way in removing the risk of distress sale to ensure better returns." (NABARD, 2007) The inclusion of cold storage is in the hopes of helping the farmers, however, this has not been realized.

Due to this change, more people have taken out agricultural loans – people who are not in dire need to protect their livelihood. In 2008 in Maharashtra, 57.6% of agricultural credit went to urban plus metropolitan branches (see table below for figures). (Chavan, 2010) In comparison, 25.7% of agricultural loans were coming from only rural branches. Due to the change in qualification, people in the cities with cold storages can receive agricultural loans, thereby taking away access to credit from the small farmers who need it.

Share of agricultural credit from bank branches classified by population groups, India and Maharashtra, 1990-2008, in per cent

Year	Share of total agricultural credit (in %) supplied through				
	Rural plus semi-urban branches	Only rural branches	Urban plus metropolitan branches	Only metropolitan branches	All branches
India					
1990	85.1	55.5	14.9	4.0	100.0
1994	83.4	54.6	16.6	5.6	100.0
1995	83.7	52.7	16.3	7.3	100.0
2005	69.3	43.0	30.7	19.0	100.0
2006	62.4	37.1	37.6	23.8	100.0
2008	66.0	38.4	34.0	20.0	100.0
Maharashtra					
1990	82.4	59.7	17.6	-	100.0
1994	76.8	52.9	23.2	-	100.0
1995	70.5	46.5	29.5	-	100.0
2005	41.8	26.1	58.2	48.5	100.0
2006	31.6	18.4	68.4	61.3	100.0
2008	42.4	25.7	57.6	48.3	100.0

Source: Calculated from Basic Statistical Returns of Scheduled Commercial Banks in India.
Note: Due to changes in the classification of rural, semi-urban, urban and metropolitan centres, only the following comparisons across years are possible: between 1990 and 1994; between 1995 and 2005; and between 2006 and 2008.

Source: Chavan, 2010

On top of the restructured qualifications, the fact that it is more difficult to obtain bank credit if one has defaulted on loans previously does not help the farmers. While there may be access to cheap loans to agriculture on paper (5-6% interest compared to 14% for tractors or even up to 30% for poor women), the bank will not give the loan to the farmer since he is in debt—it is cheaper for the bank to pay the fine for not meeting the quota of loans they must give to poor people, since the bank will make their money from loans to the wealthy.[7]

[7] P. Sainath, personal interview, January 7, 2012, Mumbai, Maharashtra, India.

Statewide Schemes

In 2008, in response to the Central Government's Rs 71,000 crore loan waiver package (of which Rs 9,000 crore was for Maharashtra), the Government of Maharashtra added Rs 6,200 crore. The state's package would give a loan waiver for debts up to Rs 20,000, and a waiver for that amount if the debt were more than Rs 20,000. Also, loan adjustments would be available for those who have a good track record with repaying loans in the past (Hindustan Times, 2010, "Death Harvests"). These loan waivers assisted many farmers in the short term, however many farmers were not benefitted by the packages, since the Central Government's loan waivers applied only to small farmers (who owned up to 5 acres).

The Monopoly Cotton Procurement Scheme was established in December 1971 with the goal of "protecting farmers from private traders" (Katakam, 2003). The scheme gave farmers more economic security of price with a 'bonus in advance', which was an amount greater than the minimum support price from the Central Government. Originally, there was a set expiration date of 1980 (Godbole, 1999). The MCPS was a good effort, however throughout the 1990's the scheme accrued losses of about Rs 3,000 crores. Debt befell upon the state, which pays annual interest of Rs 300 crores. In October 2002, the government announced the termination of the MCPS (Katakam, 2003). However, in January 2003 the scheme was reinstated after many suicides took place in the Vidarbha region of Maharashtra. The success of the MCPS is often debated, and a sense of uncertainty surrounds the discussion. Many are opposed to the continuance of the scheme, as "it has nowhere been shown convincingly that the cotton farmer in the state has benefited from the scheme." (Godbole, 1999).

The Maharashtra State Agricultural Marketing Board, created in 1984, established a scheme advocating Farmers Markets, also known as Shetkari Bazar. The idea of farmers markets stems from the fact that a farmer has no say in the price of his produce in the market, and in the system loses profit to the intermediaries; as a result receiving only 30-35% of each rupee paid by the consumer (MSAMB, 2008). By eliminating the middleman, the produce is directly sold to the consumer, resulting in a better price for the farmer, and a better quality product for the consumer at a lower price. While there are very few Shektari Bazars in operation, they have been successful on a small scale for those involved.

NGO's

There are hundreds of NGO's dealing with farmers, farmer suicide, and agriculture as a whole. Therefore, I have selected a few major NGO's to discuss on the national, international, and local levels.

National:

Navdanya is a national NGO founded by Vandana Shiva (prominent activist in agriculture) focused on the concepts of organic farming, seed saving, and biodiversity conservation. "Navdanya has helped set up 65 community seed banks across the country, trained over 5,00,000 farmers in seed sovereignty, food sovereignty and sustainable agriculture over the past two decades, and helped setup the largest direct marketing, fair trade organic network in the country." (Navdanya, 2009). Navdanya positions itself

against chemical agriculture and genetically modified seeds, as they have negative effects on public health, as well as the economic wellbeing of small farmers.

International:

Project SHARE is a four year program announced on February 20, 2009, piloted by a joint effort of the NGO Indian Society of Agribusiness Professionals (ISAP) and American seed corporation Monsanto that "aims to improve the socio-economic conditions of 10,000 small-marginal cotton and corn farmers" (Monsanto, 2011) in three states: Andhra Pradesh, Maharashtra, and Rajasthan. SHARE has the objective of increasing the yield and income of the farmers. Part of the program is giving training to farmers on pre-sowing practices, Integrated Nutrient Management, Integrated Pest Management, Good Agricultural Practices, and post-harvest technology (Indian Society of Agribusiness Professionals, 2011). ISAP CEO Rajeev Dar explained: "Our partnership with Monsanto on Project SHARE will develop a sustainable model that provides small and marginal farmers access to technology, better inputs, agronomic practices, and market linkages to improve farm productivity, thereby making farming a viable proposition," (Monsanto, 2011).

Local:

The Vidarbha Jan Andolan Samiti is an NGO in Maharashtra, in the Vidarbha region as its name gives away. Established in 1998, the NGO fights for "the cause of common man" dealing with issues in administrative, judicial, legislative, parliamentary, and international levels. The public issues dealt with include farmer suicides,

malnutrition of Tribals, plights of rural economy, drinking water, right to food, among others. Successes from the group relevant to farmers include the waiver of small farmers crop loans, interest remission to marginal farmers, and farmers packages (Vidarbha Jan Andolan Samiti, 2011).

Health Issues

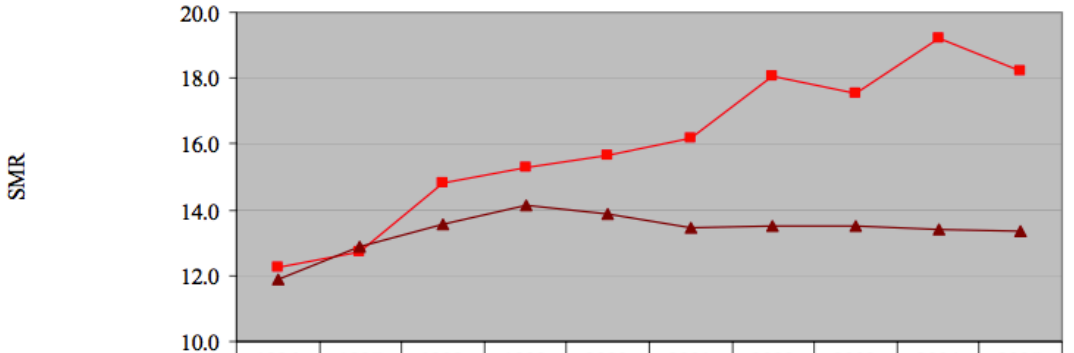
The suicide of farmers is many times attributed in part to health issues, such as an illness, or neurobiological issues such as depression. In Mishra's study of farmer suicide in Maharashtra, it was found that 21% of the suicide cases had a personal health problem, out of which 26% had a mental problem (Mishra, 2006). The health issues of a farmer becomes a factor in suicide because health care seeking is quite difficult due to economic constraints, and often times distance from a health care center (Mishra, 2006). If a loan is taken out to pay for medical expenses, this can increase the farmer's indebtedness. If the health issue is debilitating, a reduced ability to work can often cause the farmer to miss out on production, thus worsening his economic condition. In 3% of the cases in Mishra's study, some other member of the family had an illness, which puts great pressure on the "breadwinner" to help this sick person, and often causes a sense of failure for not being able to afford the proper health care (Mishra, 2006).

Many cases of suicide are also impacted by addiction (28% in Mishra's 2006 study).

Suicide in general is a national health issue, with the suicide mortality rate (suicide death for 100,000 persons) having fluctuated between 1996 to the present. For male farmers, the SMR increased from 12.3 in 1996 to 19.2 in 2004, and decreased to

18.2 in 2005. In comparison, the SMR for male non-farmers increased from 11.9 in 1996 to 14.2 in 2000, then decreased to 13.4 in 2005 (Mishra, 2008). These fluctuations are illustrated in the table below:

Figure 2
Suicide Mortality Rate (SMR) for Male Farmers and Male Non-Farmers in India: 1996-2005



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Farmers	12.3	12.7	14.8	15.3	15.7	16.2	18.1	17.5	19.2	18.2
Non-Farmers	11.9	12.9	13.6	14.2	13.9	13.5	13.5	13.5	13.4	13.4

Note and Source: Calculations are based on suicides data from National Crime Records Bureau (Various Years) and interpolated/extrapolated 5+ years cultivators and non-cultivators population for males using *Census of India, 1991* and *2001*. For details of the method of calculation see Mishra (2006c).

Source: Mishra, 2006/2008

LOCAL

Weather

Climatic conditions are a very important factor in agriculture. Natural disasters can lead to crop failure, which diminishes the farmer's chance at profit. As stated earlier, crop failure has been cited as a major reason for farmers committing suicide (Gyanmudra, 2007).

The monsoon is a very important seasonal fixture. A.K. Singhal asserts that agricultural production depends on the monsoon, with around 60% of the cultivated area in the country being rainfed (Deshpande, 2010), and nearly all of Maharashtra being rainfed. However, if there is too much rain, flooding occurs, destroying crops and livelihoods. The crops that cannot withstand excess water die, leaving the farmer in debt. According to the National Commission on Floods, the flood prone area in India is about 12% of the total land area (Government of India, 2011). The governments try to minimize the backlash from floods, providing food, shelter, cleaning of damage, and vocational training. The Prime Minister may give compensation to families of those killed in natural disasters (Government of India, 2011).

Drought is a significant water shortage, and occurs when the "principal monsoon fails or is deficient" and leads to crop failure "due to insufficient irrigation, shortage of drinking water as well as undue hardship to the rural and urban community" (Government of India, 2011). There are in fact two types of drought: meteorological and hydrological. Meteorological drought is in terms of rainfall amount, while hydrological refers to when the aquifer is declining, and there is no recharge of the ground water. With hydrological drought, the land area can look normal, and have had some rain, however the aquifer is not recharging, which leads to water access problems. A combination of a meteorological and hydrological drought is known as an agricultural drought, which leads to failing agricultural factors, such as soil fertility (Sainath, 2012). The only ways to prevent great disaster from drought is for the states to monitor the weather, and submit an early warning to farmers if drought is forecasted. There is some financial assistance from the Central Government (the Calamity Relief Fund) given to states.

Between 1990 and the present, there have only been two declared severe drought years: 2002 and 2009 (India Meteorological Department). In 2009, 47% of the area of cultivation nationwide was affected by drought (India Meteorological Department). A correlation can be seen between drought and farmer suicide: at least 17,368 Indian farmers killed themselves in 2009, up by 1,172 from 2008, and the worst figure for farmer suicides in six years, according to data of the National Crime Records Bureau (Hardikar, 2011).

However, when I looked at rainfall divergence per year within Central India alongside farmer suicide data for three states, I did not find a strong association. While rainfall affects crop turnout/failure, it does not seem to be in direct association with the number of suicides per year. The table below shows the number of farmer suicides (in three states) along with the rainfall data for each year (for the Central India region). As suggested by the table, there does not seem to be an association between the number of suicides and the amount of rainfall. Perhaps water access itself is more of a factor rather than whether or not the monsoon is up to par.

Central India (Maharashtra, Madhya Pradesh & Chhattisgarh)

Year	Farmer Suicides	Rainfall in % Departure
1995	2322	-14.3
1996	3790	-7.6
1997	4307	-1
1998	4687	-5
1999	5077	-6.2
2000	5682	-21.7
2001	6360	-4.9
2002	6273	-16.9
2003	6347	8.3
2004	7180	-10.6
2005	6586	10.4
2006	7311	16.3
2007	7094	8.1
2008	6954	-3.6
2009	6069	-20.1
2010	5504	3.6

Sources:
NCRB "Accidental deahts & suicides in India" 1995-2010
IMD, "Rainfall Data for the SW Monsoon"

However, there are a few caveats with the data: it includes the number of suicides from only three states; the rainfall data is for Central India in general and the dispersion of the rain is unclear—therefore the rainfall was variable across the region and could have had certain dry pockets that align with higher suicide rates; lastly the rainfall data does not indicate ground water levels, which also play an important role in cultivation. It is true that the All India number of farmer suicides increased during drought years, but it seems as though in Central India the numbers actually went down, suggesting that there are other factors as important as the monsoon.

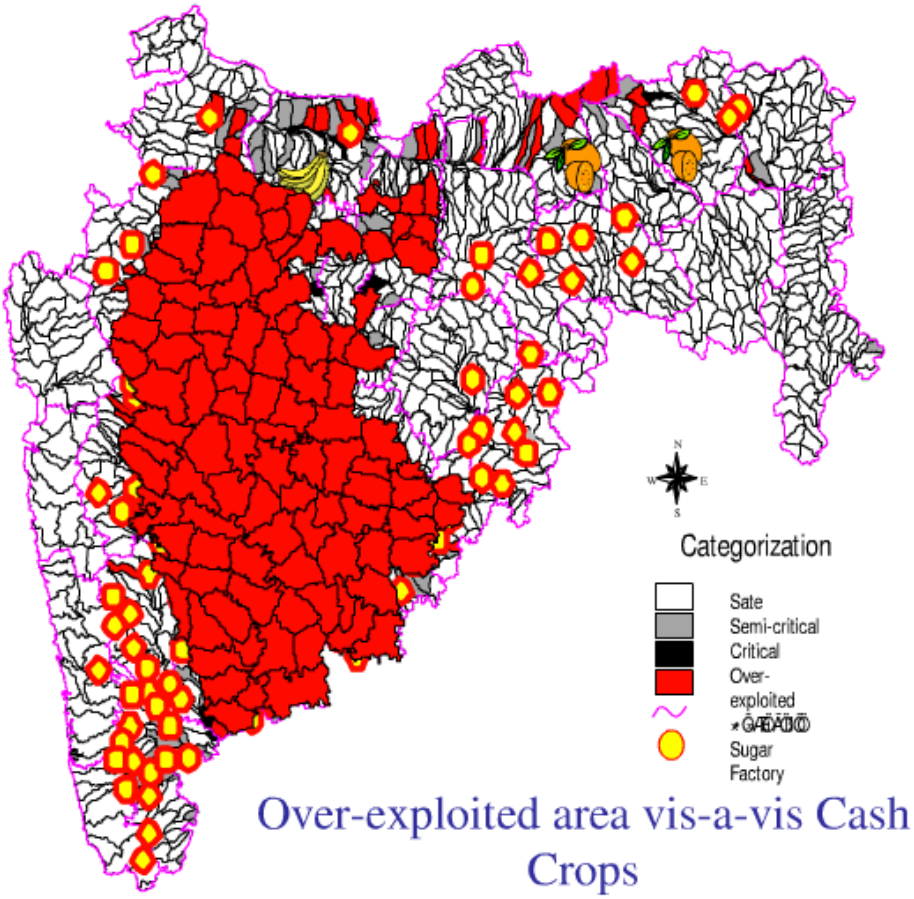
Water

Water is a very important input in cultivation. There is a recent claim in a paper prepared for the 12th Five Year Plan that water scarcity is the main cause behind farmer suicides (India Water Review, 2011). While it may not be the single reason for suicide, it is definitely a factor. The lack of irrigation and water storage leads to difficulty in accessing water for crops. In Maharashtra, much of the area relies on the monsoon for its water source. However, there is insufficient water storage, meaning that in the case of a drought, the farmers do not have proper access to water for their crops to survive, which therefore leads to crop failure. This crop failure leads to the farmer's indebtedness, another cited cause. Additionally, availability of drinking water is a serious problem (Mishra, 2006).

The reliance on the monsoon restricts cultivation to a small number of crops. Diversification of cropping, a frequently suggested solution to crop failure, could be expedited by improved water availability (Mishra, 2006). There has been increasing use of industrial technology to access ground water/aquifers for cultivation purposes. However, these techniques, such as using mechanized pumps to access water below ground, (Shiva, 2002) are leading to deeper issues.

In the decade of the 1990's, the ground water level noticeably declined due to "over-development (overuse) of ground water, where it was already scarcely available" (Sarkar, 1999). This trend continued through the 2000's. "India is the largest user of ground water in the world…Now, ground water supports around 60 per cent of irrigated agriculture and more than 80 per cent of rural and urban water supplies." (Athrady, 2012)

The overexploited area (due to cash crops, which tend to be water intensive crops) in Maharashtra is shown in this map:



Source: GSDA, 2009

According to the World Bank, "by 2025, an estimated 60 per cent of ground water blocks will be in a critical condition." (Athrady, 2012) Accessing water has only become more difficult over the years since industrial agriculture has become the way of farmers. Using water intense crops such as Bt cotton, only enhances the need for water, and thus exacerbates the ground water level issues when sources are being exploited.

The privatization of water and water resources is also another issue affecting access to water. There has been concern over the presence of multi-national corporations

not only for economic reasons, but for water as well. In more than one scenario, local farmers have tried their best to fight the MNC's entering their area due to their extraneous usage of water, which the farmers need for their livelihood. For example, in 2009, farmers in Rajasthan fought the opening of a Coca Cola bottling plant, which would use much of their limited water resources (Shiva, 2005). The threat of stretching natural resources necessary for agriculture leads to stress on the behalf of the farmers, since the large corporations have the interest of the Government on their side, as well as capital with which the corporation is able to access the necessary inputs (such as installing water pumps or other irrigation systems to satisfy their needs).

Soil

Another factor worth mentioning is soil quality, since it is a major factor in how successful cultivation is or is not. The "ecological underpinnings" of agriculture are huge threats to its success, and therefore are threats to the livelihood of the farmer. "Intensive agriculture has leached nutrients and organic carbon from the soil." (Economic Times, 2012) Intensive agriculture refers to the use of fertilizers and pesticides, and overuse of land. After the Green Revolution, during which industrial agriculture took precedence, a soil moisture drought occurred. This means that the organic matter necessary for moisture conservation is absent (Shiva, 2002).

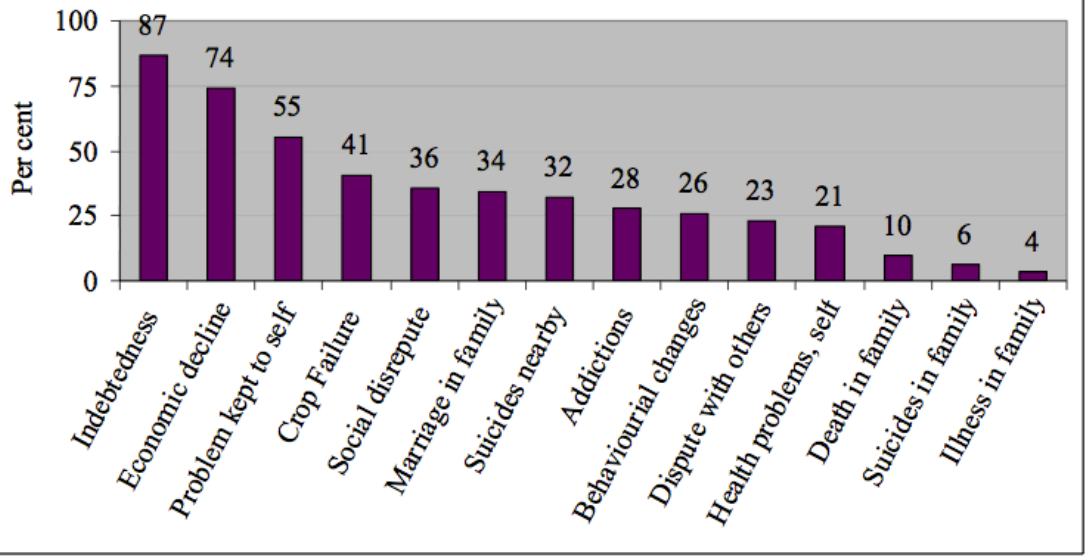
Social Issues

Marrying one's daughter or sister is a social pressure many farmers face. In Mishra's study, the issue of dowry appeared in 47% of the focus group discussions

(2006). The cost associated with marrying one's daughter can add to a farmer's indebtedness, and worsen the economic situation of the family.

Social problems such as disputes with neighbors or other villagers, and personal or familial health problems (as discussed earlier) have been cited as reasons. Behavioral symptoms of farmer suicide victims selected from Anantapur district in Andhra Pradesh include: depression, alcoholism, anti-social behavior, impulsiveness, aggression, frequent mood changes, social inactivity, absconding before committing suicide, and criminal acts. (Gyanmudra, 2010). Although these results do not deal specifically with Maharashtra, they do provide good insight to factors behind farmer suicide in India. With specific regard to Maharashtra, Mishra (2006; 2008) found risk factors associated with suicide households in Western Vidarbha, identified below in the graph:

Figure 4
Distribution of Risk Factors Identified with Suicide Households in Western Vidarbha, Maharashtra: 2004



Source: Mishra (2006a); for a shorter version of this study see Mishra (2006b).

Humiliation by moneylenders and harassment to repay debt has an impact on the farmer's social standing. This can affect the farmer by tainting his reputation, and making him feel like a failure. Since the community is often a valued part of rural India, to be looked down upon can be damaging to a farmer's morale.

SUGGESTIONS

Risk management:

Risk mitigation at community level: crop diversification, inter-cropping, farm fragmentation and non-farm income (Mishra 2008) as recommended by Ramaswami, Ravi and Chopra, 2004. Tenancy arrangements share risk between tenant and land owner. Sharecropping, share risk. Farmer household could get new loans, sell assets, or seasonal migration. Community level: informal interest-free credit, relatives help.

The Report of the Expert Group on Agricultural Indebtedness suggests:

- National Calamity Contingency Fund for serious calamities. If such an event occurs, the government "considers rescheduling of existing loans, issuing of fresh loans and waiving of interest" should be permanent aspects during natural disasters
- "Providing cyclical credit in rainfed areas to address weather uncertainties in a five-to-seven year period"
- "Formalisation of informal loans through a one-time measure of providing long-term loans by banks to farmers to enable them to repay their debts to the moneylenders" facilitated by the local Panchayati Raj Institutions and NGO's
- Larger agrarian crisis, in the long run, risk prevention in a cost effective manner to be basis.
    - Better water supplies, reduce ground water stress, initiate drought management through use of satellite data and income diversification
- Farmer's Self-Help Groups at village, taluka, district or state levels (Mishra, 2008)

General suggestions:

Other suggestions come from Srinivasan Santhanum: (Deshpande, 2010)

- Joint Cotton Farming
- Horticulture-MEGS linkage: state government has taken measures to promote horticulture through the Maharashtra Employment Guarantee Scheme
- Health Care Scheme: Karnataka has the Yeshaswani Health Care Scheme in which participants are covered for all surgical interventions and outpatient services at any of the designated network hospitals

Suggestions from Mishra's paper on the study in Maharashtra include:

- Reduce access to pesticides: or change toxicity to not be lethal
- Public Health: train staff in primary health care facilities to deal with poisoning
- Volunteer Crisis Centers: volunteers should be trained to identify psychological disorders and refer the patients accordingly
- Helplines
- Community Groups: survivor support groups, farmer groups
- Socio-Religious Activities: may help disseminate despair
- Responsible reporting: guidelines on reporting of suicides should be distributed amongst media
- Administration-media coordination
- Reduce social expenditure: costs associated with marriage in the family should be reduced
- Social sector needs: healthcare and educational requirements lead to credit need and indebtedness
- Research: should be encouraged
- Decriminalize attempted suicide: not a criminal, need psychological help
- Clear guidelines: of reporting and identifying suicides
- Streamline collection and maintenance of data
- Criteria for compensation: should be clear and minimize area for subjective interpretation
- Definition of farmer/cultivator should be broad: should also include those who cultivate but are not landowners
- Loan from moneylenders and other informal sources would be included while evaluating indebtedness status
- Crop loss should be another criterion for providing compensation
- Minimizing error: two common errors of not giving compensation to a deserving case; or providing compensation to an undeserving case
- Quick processing: to receive compensation faster
- Help all suicide case households: surviving members of a household are equally vulnerable

(Mishra, 2006)

Agricultural suggestions:

In the study done by the Indira Gandhi Institute of Development Research, Mishra makes many suggestions, including the following:

- Revitalize rural financial market
- Working capital
- Investment capital
- Credit cap: increase credit cap
- Regulate private moneylenders
- Insurance schemes
- Water management
- Land management: regulating fertilizer and pesticide use, as well as mono-cropping
- Diversification of cropping pattern
- Input quality: regulate
- Encourage organic farming: reduce costs associated with pesticides and fertilizers, and reduce availability of pesticides for committing suicide
- Increase import tariff: from the current 5 per cent to 30-35 per cent
- Price stabilization
- Non-farm employment
  (Mishra, 2006)

POLICY RECOMMENDATION

By looking at the previously asserted policies of the Central and State Governments, assistance from NGO's, and the suggestions of experts on farmer suicide, agriculture, and policymaking, a policy of encouraging organic farming techniques, creating more insurance schemes, and endorsing the creation of community groups for farmers would help to prevent farmer suicides.

First, to acknowledge some of the other suggestions and to explain why they may not work:

- Reduce access to pesticides: or change toxicity to not be lethal

This will not work, as the crops (especially genetically modified crops) need pesticides to keep insects away. The toxicity must be high enough to kill the pests, otherwise the

farmers will just have to use a larger amount of pesticide, and therefore will spend more money on the product. The proper use of pesticides could be advocated, however it comes down to a personal choice in how to handle the product.

- Reduce social expenditure: costs associated with marriage in the family should be reduced

Culturally, this will be difficult to change since the need to have one's daughter married off is ingrained in Indian culture. Additionally, having a fairly extravagant wedding reflects well upon the family, as well as providing a worthy dowry. While the issue of marriage/dowry does affect the farming communities and families specifically in an economic manner, the issue is really a separate controversial topic, which will be difficult to alter or control.

- Responsible reporting: guidelines on reporting of suicides should be distributed amongst media

While this is a positive suggestion, it is a bit too idealistic. As Amartya Sen reports in his article: "Indian reporting is characterized by great heterogeneity, and sometimes serious inaccuracies can receive widespread circulation through the media." (2012) Therefore, even if there were guidelines on the reporting of suicide, other inaccuracies may continue to subsist. Additionally, the reporting of farmer suicide numbers has traditionally varied depending upon the way in which they are counted. For example, whether the numbers are in absolute numbers, percentage, or ratios.

Based on the research I've done, the following suggestions would help to alleviate the issue of farmer suicides:

Encourage Organic Farming Techniques

Industrial agriculture has been the main technique since the Green Revolution in the 1970's and 80's. While it may have lead to a burst of production, in the long term it has lead to monoculture and the erosion of biodiversity, ecological distress, and pollution (Shiva, 2005). Since industrial agriculture usually coincides with cash crops, it therefore leads to monoculture of crops. However, many argue that the use of single crops leads to the erosion of biodiversity and the replacement of local crops adapted to the region, which makes cultivation of the cash crop more difficult as it is not accustomed to the area.

Industrial agriculture leads to ecological distresses, as mentioned previously, such as: water wasting, water depleting, and water polluting; and erosion of soil and soil fertility due to the exposure to wind and rain due to monocultures, as well as the use of chemical fertilizer.

Pollution is a big byproduct of industrial agriculture. Agriculture produces 25% of the world's Carbon Monoxide, 60% of methane, and 80% of nitrous oxide (Shiva, 2005). In nonindustrial agriculture, Carbon Monoxide emissions are seven times lower.

Organic farming is a plausible option to remedy some of the farmers' problems. Industrial agriculture requires more resources of inputs than is produced as outputs (Shiva, 2005). Replacing monoculture with polyculture will produce more food from fewer units of input:

	Industrial Agriculture	**Nonindustrial Agriculture**
Cropping System	Monoculture	Polyculture
Units of Inputs	300	5
Units of Output	100	100

Source: Adapted from information from Shiva, 2005.

The reason why the inputs are so high for industrial agriculture is because it includes resources, as well as energy, which are often not taken into account. However, when looking at the resources used, corporate agriculture uses ten times more energy than it produces, and ten times more water than ecological agriculture (Shiva, 2005).

Organic farming techniques would help farmers in that: inputs would become cheaper, which would reduce the amount of indebtedness; and there would be less damage to their environment, which would guarantee a greater number of years of cultivatable area.

Create More Insurance Schemes

The existence of the National Calamity Contingency Fund is beneficial to farmers because in case of a natural disaster, "the government considers rescheduling of existing loans, issuing of fresh loans and waiving of interest" (Mishra, 2008). This protects against flooding, drought and other natural calamities that cause problems for farmers and their crops. Another suggestion Mishra makes is to provide "cyclical credit in rainfed areas to address weather uncertainties in a five-to-seven year period" (2008). Having insurance schemes would protect farmers against uncontrollable circumstances and prevent indebtedness in some cases.

Endorse the Creation of Community Groups for Farmers

Community groups for farmers can be beneficial as it creates opportunities to share, learn, and support one another. Survivor support groups are important to build a sense of community amongst farmers who have attempted suicide. This is important for any group of survivors as often times after a traumatic event, people will feel alone in their struggle. Religious based groups have also been suggested, in which farmers can take part in activities that "may help disseminate despair" (Mishra, 2006).

In addition to support groups, Shektari Bazaars (farmer's markets) should be continued and expanded upon. These bazaars help farmers to come together in a business sense and to eliminate the middleman by selling directly to customers. Being a part of this kind of group fosters support amongst businesses.

As Bhushana Arvind Karandikar (Assistant Director, Maharashtra State Agricultural Marketing Board) said in a personal interview (2012): "Farmer to farmer dialogue is key. They won't listen to anyone else (outsiders)." The farmers are willing to learn, and if the government dispenses programs with relevant information, the farmers will attend educational seminars/groups. Therefore, farmer's educational groups would be extremely beneficial as well, to educate them about technology, marketing, and determining prices of goods. Also, farmers should get together in learning groups to share techniques, anecdotes, and other knowledge about farming.

Outside of farmer groups specifically, there should also be volunteer crisis centers to aid in the medical aspects of farmer suicide. The volunteers will be trained to "identify psychological disorders and refer the patients accordingly" (Mishra, 2006). Dispelling information about suicide prevention may also help. The lack of medical facilities in rural

regions is reflected in this anecdote: when Bhushana Arvind Karandikar told a rural pregnant woman that she must eat more, she said, "no—if the baby grows and gets big, I will die in childbirth."[8] This reflects sadly on the rural medical facilities, which must be improved upon in addition to volunteer centers.

Additionally, the definition of a farmer/cultivator should be broad enough to include those who cultivate but do not own land, as well as including women.

CONCLUSION

The Media and Farmer Suicides

Amartya Sen, a prominent Indian economist, wrote an article critiquing the Indian media, acknowledging its potential to be a strong instrument of democracy, while pointing out its current flaws. He discusses two "barriers" in the media: "The first is some real laxity in professionalism in achieving accuracy. The second is the bias, often implicit, in the choice of what news to cover and what to ignore, and the way this bias relates particularly to class divisions in India." (Sen, 2012) Sen makes note of the bias of news coverage based on the division between the "fortunate fifth of the population" who have reaped the benefits of the economic growth in India, and the "rest who are being left firmly behind", such as the poor, lower castes, low-income citizens – which is where the farmers fall.

An example Sen uses to discuss the difference in coverage is about the Food Security Bill and all of the media attention it has received. The media has criticized the

[8] Bhushana Arvind Karandikar, personal interview, January, 13, 2012, Pune, Maharashtra, India.

bill for being financially irresponsible—however, there has not been coverage of other "revenue-involving problems, such as the exemption of diamond and gold from customs duty" which leads to a loss of revenue of around Rs 50,000 crore per year, whereas the Food Security Bill would involve around Rs 27,000 crore per year (Sen, 2012). In a Ministry of Finance document, total "revenue forgone" under several headings comprises of a loss of Rs 511,000 crore per year. These are mostly made up of corporate write offs (Sainath, 2012). This bias in the media to report negatively about issues affecting the poorer people (the masses, really) shows how corruption is present in many areas of the public.

While reporting of farmer suicides has not always been accurate, statistically or in the media, it is increasingly a topic in the news from day to day. The keeping of farmer suicide data began in 1995, but the issue was not brought up in the media so much until the 2000's. In previous research looking through three major Indian newspapers (The Hindustan Times, Press Trust of India, Times of India) I noticed a trend where most of the articles were from the year 2000 or later. The search covered the term "farmer suicide" between 1990 and July 2011, however the oldest article found was from 1998. The majority of articles about farmer suicide started in 2006.

Year	Number of Articles Found
1998	1
1999	0
2000	1
2001	4
2002	1
2003	0
2004	7
2005	2
2006	52
2007	28
2008	22
2009	35
2010	18

Source: Data collected from Three Major Indian Newspapers

This trend shows that reporting of farmer suicides in the media was not too inclusive until the issue became larger and more urgent. Now that farmer suicide is a prominent topic in the news, it is receiving more attention nationally, as well as globally, and the government will hopefully take further actions to alleviate the issue.

Positive Steps

The Union Budget for 2012-2013 includes an increase in the agricultural sector outlay by 18%. "This is a positive budget for agriculture and shows that this sector continues to be a major priority for the government." (Vasant, 2012) Measures included in the budget are: a Rs 1,00,000 crore increase to agricultural credit target; research to develop seed varieties resistant to climate change is incentivized; tax exemption for agri research and extension services; an increase in the Rural Infrastructure Development fun; increased grain storage to prevent distress sale by farmers (Vasant, 2012).

While this is a positive step, increasing the budget for agriculture, not everyone is hopeful. "Economists and agriculturists have found 'nothing encouraging' for agriculture in the annual budget 2012. Though there are some provisions which might be of some help to farmers, there is nothing, which could boost the agriculture production, research, storage, marketing and distribution." (Times of India, 2012) While this statement may or may not be accurate, it does admit that some provisions may help. The 18% increase in allocation of agriculture is a constructive step towards improving the livelihoods of farmers.

Concluding Remarks

This paper focused on the phenomenon of farmer suicides in Maharashtra, India between 1990-2011 by looking for the answers to the following questions: What causes farmer suicide in India? What factors contribute to the fluctuation in number and frequency of suicides (increases/decreases); and to what extent have farmer suicides been affected by globalization (participation in the world market, liberalization)? What is the best type of policy to pursue in order to address this problem and to positively impact a farmer's life?

This paper discussed the many factors leading to farmer suicides. International, national, and local level factors all contribute. Globalization, inadequate government policies, along with ecological distress and social issues are more specific reasons. Based on these facts, this paper recommended policy suggestions to pursue as preventative strategies. The advocacy of organic farming techniques, an increase in insurance

schemes, and the creation of community groups for farmers all would have a positive impact on a farmer's livelihood.

Works Cited

Anderson, Sarah, and International Forum on Globalization. 2000. *Views from the south: The effects of globalization and the WTO on third world countries*. Oakland, Calif.: Food First Books.

Athrady, Ajith. 2012. India's ground water table to dry up in 15 years. *The Deccan Herald,* March, 7. http://www.deccanherald.com/content/56673/indias-ground-water-table-dry.html (Accessed March, 2012).

Buterbaugh, Kevin, and Richard M. Fulton. 2008. *The WTO primer: Tracing trade's visible hand through case studies*. New York: Palgrave Macmillan.

Center for Human Rights and Global Justice: NYU School of Law. 2011. *Every Thirty Minutes: Farmer Suicides, Human Rights, and the Agrarian Crisis in India.* New York: CHR&GJ. http://www.chrgj.org/publications/docs/every30min.pdf (Accessed November 22, 2011).

Chavan, Pallavi. 2010. How 'rural' is India's agricultural credit? *The Hindu,* August, 12.

Deshpande, R. S., and Saroj Arora. 2010. *Agrarian crisis and farmer suicides*. Thousand Oaks, Calif.: SAGE Publications.

The Economic Times. 2011. Minimum support price on food items up, may fan inflation. November 10.

Fernando, Nixon, Arun Kumar, and MIT School of Government (Pune, India). 2009. *The tragedy of farmers' suicides in vidarbha: A lesson and a ray of hope*. New Delhi: Rupa & Co.

GFDRR. 2011. National Agricultural Insurance Scheme in India. http://www.aseandrr.net/Portals/0/OK/DRF/India_mNAIS_Final.pdf (Accessed November, 2011).

Godbole, Madhav. 1999. Maharashtra Cotton Monopoly Procurement Scheme: What has it Achieved? *Economic and Political Weekly* 34 (5) (Jan. 30 - Feb. 5). pp. 250-253.

Government of India. 2005. Agriculture. National Portal of India. http://india.gov.in/citizen/agriculture/index.php (Accessed October 2011).

Government of India. 2011. Monsoon. India Meteorological Department. http://www.imd.gov.in/section/nhac/dynamic/Monsoon_frame.htm (Accessed February 2011).

Gruère, Guillaume, and Debdatta Sengupta. 2011. Bt Cotton and Farmer Suicides in India: An Evidence-Based Assessment. *Journal of Development Studies* 47 (2): 316-37. http://www.ifpri.org/publication/bt-cotton-and-farmer-suicides-india (Accessed August 2011).

GSDA. 2009. Groundwater Experiences in Maharashtra. http://www.slideshare.net/indiawaterportal/groundwater-experiences-in-maharashtra-gsda (Accessed March, 2012).

Gyanmudra. 2007. *Farmers suicide in India: dynamics and strategies of prevention.* Michigan: Deep & Deep Publications.

Hardikar, Jaideep. 2011. HD Farmer Suicides: State continues to be worst-affected 10th year in a row. *Daily News & Analysis,* January 10. http://www.dnaindia.com/mumbai/report_farmer-suicides-maharastra-continues-to-be-worst-affected-10th-year-in-a-row_1492455 (Accessed November 5, 2011).

India Water Review. 2011. Water Scarcity Leading Farmers to Suicide, Say Experts. August 23. http://www.indiawaterreview.in/Story/News/water-scarcity-leading-farmers-to-suicide-say-experts/370/1 (Accessed December 2011).

Indian Bank. 2011. Agricultural Debt Waiver and Debt Relief Scheme, 2008: List of beneficiaries. http://www.indianbank.in/agridebt.php (Accessed November, 2011).

Indian Society of Agribusiness Professionals. 2011. http://www.isapindia.org/ (Accessed November, 2011).

Kalamkar, S.S. and Sangeeta Shroff. 2011. *PM's Rehabilitation Package for the Farmers in Suicide Prone Areas of Maharashtra: Impact and Policy Implications.* New Delhi: Allied Publishers Private Limited.

Katakam, Anupama. 2003. Relief for Cotton Farmers. *Frontline* 20, no. 1 (January 18-31). http://www.frontlineonnet.com/fl2001/stories/20030117001904900.htm (Accessed November, 2011).

Kaur, Surinder. 2011. *Drought.* India Meteorological Department.

KPMG International. 2006. KPMG's Corporate Tax Rate Survey: An international analysis of corporate tax rates from 1993 to 2006. http://www.lib.uwo.ca/files/business/KPMGCorporateTaxRateSurvey.pdf (Accessed February, 2012).

Lerner, George. 2010. Vandana Shiva: Farmer Suicides in India Linked to Debt, Globalization. *CNN* (January 6, 2010).

Maharashtra State Agricultural Marketing Board. 2008. Farmers Market (Shetkari Bazar). http://www.msamb.com/english/schemes/default.htm (Accessed November 13, 2011).

Meeta, and Rajivlochan. 2006. *Farmers suicide: Facts & possible policy interventions*. Pune: Yashwantrao Chavan Academy of Development Administration.

Mishra, Srijit. 2006. *Suicide of farmers in Maharashtra.* Mumbai: Indira Gandhi Institute of Development Research.

Mishra, Srijit. 2008. Risks, Farmers' Suicides and Agrarian Crisis in India: Is there a Way Out?* *Indian Journal of Agricultural Economics* 63 (1): 38,38-54.

Monsanto. 2011. Project SHARE to Help Improve Farmers' Lives in India. http://www.monsanto.com/ourcommitments/Pages/project-SHARE.aspx (Accessed November, 2011).

NABARD. 2007. Agricultural Engineering: Cold Storage for Plantation and Horticulture Produce. http://www.nabard.org/modelbankprojects/agriculturalengineering.asp (Accessed March, 2012).

Naidu, M.Venkaiah, Apte, Bal, and Bharatiya Janata Party. 2005. *Farmer's suicide: Debate in parliament*. New Delhi: Bharatiya Janata Party.

Narayanamoorthy, A. 2011. Agrarian Crisis and Farmer Suicides: Land Reforms in India. *Indian Journal of Agricultural Economics* 66 (1): 142,142-146.

Panagariya, Arvind. 2008. *India: The emerging giant*. New York, N.Y.: Oxford University Press.

Research and Information System for the Non-Aligned and Other Developing Countries (RIS). 2004. India's Imports: Changes in Applied Average and Peak Tariffs, 1990-91 to 2003-04. http://wtocentre.iift.ac.in/NAMA%20Products%20in%20WTO/CHANGES%20IN%20APPLIED%20AVERAGE%20AND%20PEAK%20TARIFFS,1990-91%20TO%202003-04.pdf (Accessed November, 2011).

Reserve Bank of India. 2008. Agricultural Debt Waiver and Debt Relief Scheme, 2008. http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=4190 (Accessed October, 2011).

Sainath, P. 2006. A Final Note on Credit. *The Hindu*, August 27. http://www.indiatogether.org/2006/aug/psa-finalnote.htm (Accessed September 2011).

Sainath, P. 2007a. Farm Suicides Rising, most Intense in 4 States, *The Hindu,* November 12. http://www.hindu.com/2007/11/12/stories/2007111253911100.htm (Accessed September 2011).

Sainath, P. 2007b. One farmer's suicide every 30 minutes. *The Hindu*, November, 15.

Sainath, P. 2011. Corporate socialism's 2G orgy. *The Hindu,* March, 7. http://www.thehindu.com/opinion/columns/sainath/article1514987.ece (Accessed January 2012).

Sarkar, Sravani. 1999. Ground water level depleting in the State. *The Indian Express,* December, 10.

Sen, Amartya. 2012. The glory and the blemishes of the Indian news media. *The Hindu,* January, 7.

Shangquan, Gao. 2000. Economic Globalization: Trends, Risks and Risk Prevention. Committee for Development Policy. http://www.un.org/en/development/desa/policy/cdp/cdp_background_papers/bp2000_1.pdf (Accessed November, 2011).

Shiva,Vandana, Ashok Emani, and Afsar H. Jafri. 1999. Globalisation and Threat to Seed Security: Case of Transgenic Cotton Trials in India. *Economic and Political Weekly* 34 (10/11) (Mar. 6-19): pp. 601-613.

Shiva, Vandana. 2005. *Earth Democracy: Justice, Sustainability, and Peace.* Cambridge, MA: South End Press.

Shiva, Vandana. 2002. *Water Wars: Privatization, Pollution and Profit.* Cambridge, MA: South End Press.

Srinivasan, T. N. 2007. Development Strategy: the State and Agriculture since Independence. http://www.isid.ac.in/ (Accessed October 14, 2011).

Tamil Nadu Agricultural University. 2008. Cost of Cultivation: Cotton. TNAU Agritech Portal. http://agritech.tnau.ac.in/agriculture/agri_costofcultivation_cotton.html (Accessed November 13, 2011).

Times of India. 2012. Union Budget: Nothing encouraging for economists, agriculturists. *Times of India,* March, 17.

Vasant. 2012. Budget 2012: a shot in the arm for agriculture. *Daily News and Analysis,* March, 17. http://www.dnaindia.com/analysis/report_budget-2012-a-shot-in-the-arm-for-agriculture_1663649 (Accessed March, 2012)

Vidarbha Jan Andolan Samiti. http://vidarbhajanandolansamiti.blogspot.com/ (Accessed November 1, 2011).