

BITTER SEEDS

Teaching Guide

by

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DIRECTOR'S STATEMENT

I believe Globalization has become the overarching theme of our times. It clearly has many positive aspects that have improved our lives. But mostly, the dynamics of Globalization are working for the rich and powerful, for those who make the rules, enabling multinational corporations to expand their reach and governments to extend their control.

My **Globalization Trilogy** focuses on the current and emerging economic superpowers: U.S., China and India. The Trilogy begins with us here in the West, and then journeys back down the production-consumption chain, each film peeling off another layer.

Store Wars: When Wal-Mart Comes to Town explores consumerism in the U.S. *China Blue* investigates the sweatshop labor conditions in the manufacturing of the “Made in China” clothes we all buy. *Bitter Seeds* goes further back to the raw materials – looking at the suicide crisis of farmers in India who grow the cotton exported to China’s garment factories to be used for the clothes sold in the West.

Each film tells a story of individual lives, whether of small town residents trying to keep out a megastore, or a farmer fighting to keep possession of his land. Even though by global forces far beyond anyone’s control shape these lives, I don’t find the films dispiriting. Each film portrays protagonists who struggle despite the odds, who pursue their dreams, who leave us both awed and outraged, causing many viewers to ask when the lights go up: “What can I do to help?”

It has taken me twelve years to make these films. I didn’t know when I began that this would be a trilogy, or I would never have started.

I’m glad so many people have seen these films. We’ve had screenings in over 100 film festivals, theatrical runs on three continents, tv broadcasts on 35 channels and official DVD editions in ten languages.

Winning 20 awards has been a great honor. But most precious were some of the reactions I got from viewers, like the handwritten letters from inner-city kids in Oakland, California, who never thought before about how their jeans were made; or the offer from a Polish teacher to send money to a girl in China who can’t afford the train ticket back home. That’s Globalization at its best.

--Micha X. Peled

SYNOPSIS

Bitter Seeds explores the consequences of agricultural modernization and globalization for small-scale farmers in India where an epidemic of farmer suicides highlights the unequal distribution of economic growth. Farmers face mounting debt due to the increasing costs of inputs, including the genetically engineered (GE) seed variety Bt Cotton, which costs double or triple the price of conventional hybrid seeds. At the same time, the global price for cotton, notwithstanding extreme shocks in 2010-11, has remained flat. This squeeze is not confined to cotton- it is pushing small-scale farmers throughout the world to the brink of collapse.

The film documents a season in the state of Maharashtra, at the heart of India's 'suicide belt.' Farmer Ram Krishna, already in debt to a traditional bank from previous seasons, must borrow from a moneylender to finance the seeds and agro-chemicals needed to plant his family's small plot in cotton. The moneylender requires Ram to sign over his land title as collateral for the loan. Weather and pests cause crop loss and the harvest does not provide enough income to repay the loans; the family's subsistence, including their land, lies in the balance. Ram's distress is evident when he is no longer able to eat or sleep and his daughter recognizes that their family is in danger of becoming another suicide victim. The Krishna's story overlaps with a neighbor's daughter, Manjusha, a journalism student whose farmer father has committed suicide. She is determined to become a journalist in aid of the farmer's plight, despite the considerable social barriers she faces as a poor, young, unmarried woman. Manjusha interviews the Krishnas for her first reporting assignment.

Bitter Seeds is the third in a trilogy of documentary films that explore the consequences of globalization. The trilogy links the destruction of Main Street across the U.S. (***Store Wars***) to the deplorable conditions faced by garment workers in China (***China Blue***) to the suicide epidemic among Indian cotton farmers (***Bitter Seeds***). The link is the global flow of cheap clothing- cotton grown in India provides material for jeans made in China that are ultimately sold at Wal-Mart in the U.S.. A similar story could be told following any number of other global commodities. The trilogy bolsters academic treatments of globalization by telling stories about specific places and people affected by the increasing interconnection of economies that defines neoliberalization and globalization. These stories complicate the 'growth is good' narrative that uses alienating figures like GDP to paint an overly simplistic picture of globalization and free trade.



Photo: Shaull Vitis



THE GEOGRAPHICAL CONTEXT

Maharashtra is India's third largest state and second most populous. Over half of those who live in the state make their living in agriculture. Maharashtra is also India's leading industrial state, which is attributable mostly to the city of Mumbai the political capital of the state and financial capital of India. Located in northeastern Maharashtra is the Vidarbha region and the 'cotton belt' of India. During British colonialism, Vidarbha's proximity to Mumbai made it a logical place to grow cotton for trade in Mumbai, ultimately bound for Europe. Vidarbha today remains less industrialized than neighboring states but claims reputable cotton and yarn manufacturers. The region is mostly characterized by dryland farming due to semi-arid climatic conditions and a lack of irrigation systems. Rains typically arrive from June through September. Crops and farmers are dependent on the volatility of such a short monsoon season. The constraints of water and soil degradation are challenges to growing not only cash crops of cotton, oranges and soybeans but food crops as well. Food crop diversity is extremely limited; families traditionally plant sorghum, millet and rice as dietary staples. Sparse and poor infrastructure, along with deficient education, agricultural extension and health systems, contribute to the cyclical poverty of many Indian farming families.

Worldwide, the process of urbanization continues but most people in low-income countries continue to live in rural places and are dependent on farming to make at least part of their living. While rural households across the world construct livelihood strategies in diverse contexts, there are discernable patterns between cotton growers in Vidarbha and small-scale farmers around the globe. Across the less developed world, small-scale farmers are directly dependent on their interaction with nature. The availability and productivity of natural resources are central to farmers' livelihoods. Poor farmers who are socially and economically excluded most often grow rain-fed crops on small plots of marginal land. Very few of these farmers cultivate a second crop and all contend with high-risk situations, such as debt and market volatility- without social safety nets. The cotton farmers in Vidarbha are part of the 1.5 billion small-scale farmers whose lives are ordered by changing agricultural and ecological conditions, expansion of free-trade and commodity markets. They own little land and hold few positions of power, yet they feed and clothe their villages, states, countries and world.

PRE-FILM DISCUSSION QUESTIONS

- *Where is your shirt made? Your jeans? What are they made of? Where did you buy them?*
- *How would you like the people who made your clothing, or grew the cotton, or raised the sheep or silk worms to be treated?*
- *Do you think about these people, crops, or animals when you buy clothing? If you did, would it change how you made purchasing decisions?*
- *Why would farmers need loans?*
- *Is capital equally available to all farmers?*
- *What role does debt play in the global farm crisis?*
- *How might gender and class norms affect farmers in your region?*
- *Is farming a respected occupation?*
- *What are the lives of women and children on farms like?*
- *What kinds of policies and technologies favor large-scale agriculture?*
- *How can small-scale farmers protect themselves from inappropriate policy and technology?*
- *What policies govern the flow of cotton around the world and who makes these policies?*
- *How can citizens (not consumers) impact global trade rules and norms?*
- *Who owns most soy, cotton, corn and rapeseed (canola) seeds?*
- *What are the benefits and drawbacks of allowing seed patenting?*
- *Is increasing yield the only objective to which plant sciences should be directed?*
- *What risks do farmers face when growing cotton for their livelihood?*
- *What types of technical solutions are available to help resource-poor farmers grow better crops?*



Photo: Shaull Vitis

PATENTING LIFE, PRIVATIZING SEEDS

Forty percent of the world's population – 2.6 billion people – depend directly on agriculture to sustain their families. Development strategies to reduce rural poverty and make farming a viable livelihood often follow neoliberal political and economic policies that emphasize deregulation of markets and industries in promotion of free trade. As a result, for many small-scale Indian farmers, whose livelihoods depend on seeds planted in unstable environments, income is contingent on international trade and agricultural products marketed by transnational biotechnology corporations.

The rise of biotechnology in the 1980s changed the trajectory of plant breeding and seed saving from a public good to a private enterprise. For the majority of human history seeds were considered a common resource controlled by farmers who innovated with varieties based on local knowledge, conditions and capacity. Seeds were bred over long time periods resulting in crosses with stable desirable traits, such as drought tolerance, that reproduced faithfully from saved seed. Unlike these traditional seeds, modern hybrid varieties developed by research institutes and agribusiness firms require greater amounts of fertilizer and reliable irrigation.

With promises of considerable yield increases, Indian farmers began buying modern hybrid cotton seeds and planting fewer traditional cotton varieties or food crops in the 1990s. This seed shift signaled a fundamental change in India's agriculture. Cotton farming became a capital-intensive venture dependent on agrichemicals and irrigation, resulting in a cycle of farmer indebtedness. The 2002 introduction of Monsanto's genetically engineered Bt cotton further embedded farmers into a cycle of debt. Bt cotton demands precise irrigation, fertilizer and pesticide application schedules in a monocrop to achieve high yields and it is much more expensive than modern hybrid varieties.

A host of policy changes ushered in this new era in Indian agriculture. In the nineties, the World Bank's structural adjustment policies for India insisted on the opening of the agricultural sector to foreign companies like Monsanto and Syngenta. The same suite of policies required a pullback of state support of agricultural extension services for farmers, the traditional public information and support system for farmers. In 1995, India joined the World Trade Organization (WTO). Soon after, the U.S. filed a dispute settlement alleging that India's import restrictions (called quantitative restrictions, QRs) were inconsistent with its WTO obligations. Excluding the

U.S., countries involved in the dispute reached an agreement, but the U.S. proceeded with the dispute to the full panel process (similar to a trial). The panel ruled that India was in violation of its WTO obligations, forcing the removal of QRs on 1,429 products, many of which were agricultural products. Had India not complied the U.S. could have retaliated by imposing higher tariffs on Indian goods going to the U.S. Of the first QRs removed over 200 were agricultural commodities, including cotton. The stage was set for international biotech firms to compete in India's heretofore-closed seed and chemical markets.

When biotech firms and institutions began marketing modern hybrid and genetically engineered seeds on the international market, they pressured countries to legislate patent rights for genetic resources. These patents grant firms exclusive rights to sell genetically engineered seed. This prevents farmers and other companies from appropriating the technology by saving seed or creating hybrids. Farmers must then purchase a license to use the seeds they save or, more commonly, they must buy new seeds annually. Responding to pressure from biotech firms and the industrialized countries where these companies are based, the WTO redefined seed genetics from "common heritage" to "sovereign property." In doing so, the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) obliges WTO members to legislate patent protection for plant varieties by 2013. TRIPS institutionalizes the commodification and control of seed resources.

Farmers in Maharashtra are most likely planting Monsanto seeds. The majority of cotton seeds in India are marketed by Mahyco Monsanto Biotech (MMB) Ltd., a partnership between the U.S. multinational's India arm and the Jalna based Mahyco, a seed company in which Monsanto holds 26 percent equity. Though there are now a handful of biotech firms who purchased the rights to develop Bt cotton varieties, the research, development, marketing and sale of over 80% of cotton seeds grown in India are under the control of Monsanto. Indian farmers no longer control the most fundamental element of their farm; policy, markets and a U.S.-based behemoth control the seed.

Discussion questions

- *What role does international trade policy play in farmer's lives?*
- *How do international politics and power imbalances affect Indian agriculture?*
- *What are the economic and social repercussions of laws prohibiting seed saving?*
- *How can countries regulate the business practices of transnational corporations?*

Resources

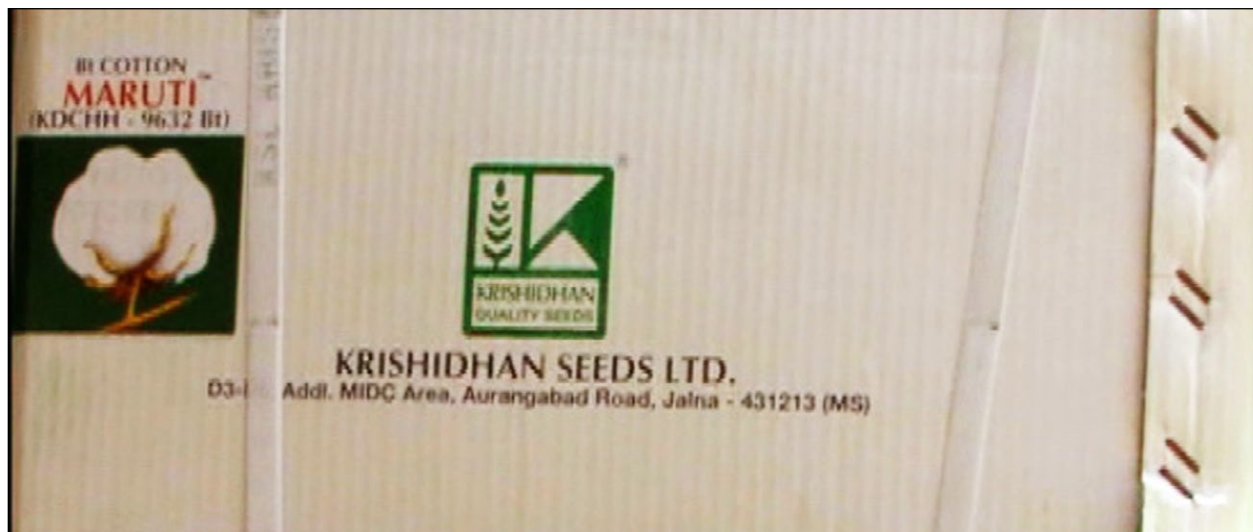
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GENETIC ENGINEERING (GE) AND PESKY PESTS

In March 2002, the Indian government permitted commercial cultivation of cotton seeds that have been genetically engineered with the bacteria *Bacillus thuringiensis* (Bt). Only eight years later India had the world's fourth largest cultivated area under genetically engineered (GE) crops – more than 23 million acres planted in Bt cotton. This area accounts for over eighty-five percent of the total cotton sown in India, including the more than nine million acres of cotton cultivated in Maharashtra.

Bt cotton is a transgenic crop; geneticists insert an engineered version of a foreign gene into the plant's DNA so that the plant's cellular machinery produces new traits. In the case of Bt cotton the transgenic property of the plant is derived from a soil based bacteria called *Bacillus thuringiensis*, which produces a toxin that kills cotton pests like the cotton bollworm, pink bollworm and tobacco bollworm. This technology was developed by Monsanto, which markets the seed under the name Bollgard. Bt cotton seeds are also pre-treated with an insecticidal coating. Proponents of Bt argue that by delivering toxin via the plant, rather than through sprays, yield increases while insecticide use and exposure decreases.

But yield promises have not been met, insecticide use has not decreased and insects are eating Bt cotton and surviving. Bt cotton fields in India are infested with sucking insect pests like the non-native mealy bug; farmers respond by applying insecticides, yet crop yields across India have suffered. In 2006, severe decreases in cotton yield (upwards of 50% reported in some regions) were attributed to mealy bug damage. Even the bollworm – the target of the Bt technology – has become problematic. A small percentage of bollworms are naturally resistant

to the Bt bacteria. This causes the bollworm population to become saturated with Bt resistant breeding individuals, resulting in subsequent generations of highly resistant bollworms. To protect their crop and suppress insect damage, Indian farmers turn to chemical controls that are increasingly ineffective (most are derived from the same bacteria used in Bt cotton). A high level of resistance requires repeated application of expensive insecticides; crop failure is often not averted, creating a further entrenchment of indebtedness.

The proposed solution to the proliferation of resistant bollworms is to plant non-Bt cotton fields near Bt cotton to act as a “refuge” – areas where non-resistant bollworms mate with resistant ones. The standards for size and proximity of refuges are often not practicable because of the small plots most Indian cotton farmers cultivate.

In 2009, for the first time since it began developing GE seeds, Monsanto acknowledged some bollworm resistance. Monsanto suggested that farmers are at fault for not adhering to refuge standards and by purchasing illegal or fake Bt cotton seeds. Monsanto has since introduced Bollgard II, engineered to attack the new super resistant pests, and Bollgard III will soon be available. This genetic treadmill ensures Monsanto reaps profits while farmers continue to pay exorbitant prices for seeds that require chemical, irrigation and management regimes that small-scale farmers cannot meet.

Discussion questions

- *Can raising yields using GE seeds be achieved without social and economic consequences?*
- *What risks do GE crops pose to resource poor farmers that may not exist for industrial agriculture?*
- *If refuge standards are impracticable, what options are available to small-scale farmers for pest control?*

Resources

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FINANCING: THE ROLE OF DEBT IN FARMER SUICIDES

More than any other factor, indebtedness has been linked to the farmer suicide epidemic among Indian cotton growers. Farmers throughout the world are squeezed by the increasing cost of inputs and the stable or decreasing prices they receive for their crops. This squeeze is especially acute for farmers who have little capital to leverage loans with traditional institutions. They must turn to informal, unregulated, high-interest moneylenders. The cycle of indebtedness depicted in *Bitter Seeds* is a result of seed and cotton market globalization, coupled with local environmental and social conditions, that leads to mental trauma so severe as to have made suicide among male farmers an epidemic in India.

Farmers growing Bt, or other hybrid cotton, must pay annually for seed, fertilizer, insecticide and herbicide. Bt cotton, because it is a patented technology, costs two to three times more than conventional hybrid seeds, even with a government mandated price ceiling. But it is not just the seed costs. GE crops like Bt cotton require a management suite that includes precision application of synthetic herbicides, fertilizer and insecticides. The seeds are engineered to work with these inputs on a strict irrigation regime in a tightly controlled monocrop system. Because Bt cotton needs a reliable water source to attain its high yields, some Indian farmers elect to dig wells, the failure of which is common, exacerbating crop loss and indebtedness. However, the vast majority of cotton farmers in India cannot afford any irrigation. They work small plots in rain fed systems in arid climates. For these farmers, crop losses will be high in drought years and dependent on the monsoon in all years. Low yields and crop loss are compounded by a retreat of government supported extension services, leaving farmers to glean advice from biased seed and input salesmen or corporate marketing materials.

Many parts of rural India lack a sufficient banking infrastructure and where banks exist, many farmers are already indebted and do not qualify for institutionally based loans. In these cases, unregulated local moneylenders offer loans with land as the typical collateral. These loans have very high interest rates with short maturation periods, often requiring repayment at harvest time. If repayment cannot be made the loan can be rolled forward with additional credit for the following season, or the land can be claimed. Since some state laws cancel land-based contracts in the case of suicide, moneylenders often require the transfer of the land title at the time of the loan with an informal agreement to reinstate the title on repayment. In the film, we

see Ram Krishna signing his title to a moneylender in just such a situation.

Farmers who suffer crop losses face mounting debt and are further burdened by the decline in social position that crop failure entails as well as the family strife caused by such stress. The negotiation and payment of dowries is an additional burden for indebted farming families with daughters. Since alternative modes of employment are scarce, the lack of options available can lead to the drastic measure of suicide as a means of releasing the land from loan bondage.

Discussion questions

- *How does debt influence farmer suicide?*
- *What role does the seed variety play in the amount of debt farmers take on?*
- *How could farmers grow cotton with less capital?*
- *What factors contribute to farmer debt?*

Resources

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Photo: Anand Pande

THE SOCIAL SETTING: GENDER AND CLASS

Gender and class norms are important for understanding the ways that agribusiness technology and cotton market globalization are affecting Indian cotton growers. Farmers are not simply succumbing to problems imposed from the outside. Rather, these forces intersect with individual identities, family norms and specific regional cultures. The degree of gender inequality in law, religious tradition and social norms differs across states, caste, and religion, but in general, rural women are expected to be subservient to and dependent on husbands, brothers or sons for their livelihoods. Women are not likely to have title to the land they work or to inherit land when their husband or father dies.

In rural India, traditional patriarchal gender roles are common: men are responsible for the monetary care of the family and women are responsible for the reproductive work, including cooking, cleaning and child rearing. Men, women and children work together in the fields, but it is men who deal with banks, moneylenders and seed salesmen. As the household head, men most often hold title to their family land and as such they are the primary decision makers and can leverage that ownership to obtain loans. Sons are valued more than daughters partly for this reason. Children, both female and male, are important resources for cotton farming families because hybrid and Bt cotton must be hand pollinated, a job that children perform. The pollination of the cotton crop leads to long hours in the field. For daughters, this fieldwork is compounded by indoor housework, a double burden that leads many to miss school or perform poorly. Daughters present problems to the family finances because they have few opportunities for acceptable paid work and their marriages must be negotiated, which requires paying a dowry. Dowries, the tradition of giving money and gifts to a bridegroom's family, affect both men and women. The dowry is a financial stress on families, particularly on fathers. As such, giving birth to female babies is a stress on mothers. As we see in the film, being a daughter born to a poor cotton farming family is difficult. However, Manjusha's story reminds us that the constraints on daughters are not monolithic. Women are resilient and possibilities for their future can be found, especially through education.

Along with these gender norms, the class status of rural Indian farmers is important here. Often being of the lowest class (and castes), small-scale farmers lack alternative livelihood

opportunities. When alternative work is available, it most often requires men to travel to distant urban areas, leaving women and children to tend the fields. This lack of alternative work, coupled with low levels of education makes these farmers particularly susceptible to sensationalist seed marketing. The productivity of their small plots of land is important beyond measure and their lack of education does not prepare them to assess in a meaningful way the seed company literature or salesmen's pitches.

Discussion questions

- *What could improve the situation for daughters and wives in farming families?*
- *How does the choice of seed and crop impact children's lives?*
- *How might education be a tool for reducing farmer suicides?*
- *What are the ethics of seed development and marketing for this particular context?*

Resources

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FINDING A BETTER WAY: NAVDANYA AND AGROECOLOGY

Jeans, socks and t-shirts in Wal-Mart are cheap, but the cost of producing them is tremendously high for farming families and the land. Bt cotton farmers are squeezed by the high cost of annual seed, fertilizer and herbicide purchases that are financed through high interest loans. The risks of this kind of indebted farming are apparent in ***Bitter Seeds***.

In the past, the cost of farming cotton was not so high. Farmers saved seeds and bred varieties that were adapted to their region's growing conditions and available inputs like manure. These traditional hybrid varieties were adapted to local conditions and their cost was free or manageable. With the opening up of India to foreign seed trade through WTO rule enforcement, modern hybrids and GE seed quickly replaced traditional varieties. As Vandana Shiva points out in the film, the adoption of the new GE varieties was rapid because of the yields promised. Bt cotton is pitched to farmers as a way to get rich. Farmers across entire regions heeded the marketing claims and planted only Bt cotton. Very quickly there were no other varieties being grown and locally adapted seed supply was exhausted. Shiva's argument, echoed by many anti-GE activists, does not question the ability of Bt to create high yields under perfect research conditions. Rather, part of the problem is that GE seed is an inappropriate technology for most of the world's farmers. Bt seeds are expensive, they need irrigation, fertilizer and herbicides but most Indian cotton farmers are poor, working rain dependent plots of less than a hectare with little access to capital.

Vandana Shiva's work, both personally and through her Navdanya institute, strives to enable a different story for Indian farmers through saving seed as a commons and the rejection of patents on life. In 1998, Navdanya and Shiva successfully sued through the Supreme Court of India to delay the then illegal introduction of Bt cotton into India. Shiva has been working on the issues outlined by ***Bitter Seeds*** for more than two decades. She is known internationally as a spokesperson for seed sovereignty and works through Navdanya to create and support regional seed banks so farmers will have choices other than expensive, patented, marketed varieties. Navdanya also teaches farmers how to engage in agroecological and organic farming. Agroecological farming is a systems approach to farming that works with the constraints of the land and the socio-economic context to ensure rural farmers maintain their livelihoods while

improving their resource base- the soil. Navdanya is working to re-teach and support Indian cotton growers in organic methods. Shiva reports that farmers who are now growing organic cotton are earning ten times more than those growing Bt cotton, and they are ensuring their farms' and family's sustainability for the future.

Discussion questions

- *What role does the marketing of seeds play in this story?*
- *Is Bt technology appropriate for small-scale farmers?*
- *Is access to non-patented seeds important? If so, who should insure this access?*
- *How might seed saving and agroecological farming help Indian cotton farmers?*

Resources

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FROM MANY HANDS: GLOBAL COTTON TRADE

A dominant triad largely defines world cotton trade: China, the U.S. and India – China for imports, the U.S. for exports and India for domestic consumption and increasingly export production. India ranks second in global cotton production after China. India accounts for about a quarter of the world's total cotton land area and 16 percent of global cotton production. India is also one of the largest consumers of cotton, used in the production of cotton yarn and fabrics manufactured by the growing textile and clothing sector. Cottonseed byproducts are also used in Indian production of animal feed and oils. India has gone from one of the world's largest importers of cotton to an important exporter of cotton, at the same time that its textile industry is growing.

Cotton passes through three main stages before becoming a textile. Farmers are responsible for production and harvest, ginning is the removal of debris and seeds after harvest, and cotton is finally stored in bales in a controlled environment until it is sold and shipped. This final stage, shipping, is particularly important for cotton. Almost a third of the world's cotton crosses international borders before processing- a larger share than for wheat, corn, soybeans, or rice.

The U.S. and China lead the global export market in cotton. They do so by paying their farmers subsidies. Agricultural subsidies are monetary payments to encourage farmers to grow a product regardless of market conditions. Since 1991, the U.S. government has paid cotton growers \$50 billion in subsidies, more than \$3 billion per year. In 2010, the WTO ruled that such payments constituted a trade barrier and awarded Brazil (which brought the complaint) the right to charge duties on U.S. imports. U.S. and Chinese 'dumping' of subsidized cotton on the world market artificially lowers the commodity price of cotton forcing Indian farmers to sell what they produce at distorted, low international prices. The price for cotton has been relatively flat for the past twenty-five years, save for the extreme price shocks in 2010-11, yet the price for agricultural inputs has steadily increased. As yet there are no repercussions for what U.S. cotton subsidies do to Indian and other farmers in less developed countries. The U.S. and China do not trade free or fair, and many of the world's cotton farmers suffer for it.

Discussion questions

- *What is your role in the global cotton trade?*
- *How might removing subsidies in the U.S. and China affect Indian cotton growers?*
- *Would a market price for cotton (without distortion from subsidies) solve the farmer suicide crisis?*

Resources

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Additional Resources

FAQ Sheet & FAQ Footnotes: Available as a PDF on the **Bitter Seeds** DVD

Film’s Website: <http://teddybearfilms.com/2011/10/01/bitter-seeds-2/>

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BITTER SEEDS

88 minutes

DVD

Grades 10 - 12, College, Adult

US Release Date: 2012

Copyright Date: 2011

Directed and Produced by Micha X. Peled

Assistant Director: Shyam Dharmadhikari

Associate Producer: Prachi Bari

Production Coordinator

Editor: Leonard Feinstein

Camera: Devendra Golatkar

Sound: Kaamod Kharade

Music: Frank Illman

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