



Cotton farmed sustainably - South Asia



Many cotton pickers in Pakistan are now less at risk from being poisoned because 167,000 farmers are being trained in agricultural methods that reduce the use of pesticides and increasingly rely on natural pest enemies.

Cotton and the Environment

Most clothes are made of cotton and the production of new cotton or other textiles puts a strain on the environment. It results in the emissions of 7 kg of greenhouse gases.

To produce 1 kg of clothes - this corresponds to a pair of trousers, a shirt and a T-shirt - requires 10 tons of water, 0.5 kg of fertilisers and 20 g of pesticides.

Global Warming

When fossil fuels such as oil and coal are burnt, CO₂ is released into the atmosphere. Fossil fuels are used by tractors in the cotton fields, for production of fertilisers, to power textile factories and to move goods many times before they are sold. All this contributes to global warming.

Land

Food prices are rising as oil prices increase and less land becomes available for food crops due to higher temperatures and evaporation, less irrigation water, larger and richer populations. To produce 1 kg of clothes requires the land that can feed a person for 3 weeks.

Water

75% of the global cotton production is in dry areas and needs irrigation. 10,000 litres of water are needed to produce 1 kg of cotton clothes.



Cotton plants requires much water, and since most is grown using machines, fertilizers and pesticides, the production releases large amounts of greenhouse gases.

This means further pressure on the scarce water resources in Egypt, South Asia, Australia and US, which will have even less water as the globe heats up.

Pesticides

Current cotton production requires much poison and the Indian state of Andhra Pradesh has become the pesticide capital of the world. Both national and state governments supported cotton production with high chemical inputs. The result is that 50% of India's pesticides are used on cotton fields, although cotton only occupies 5% of the farmland.

The Vidarbha region in central India has 3.2 million cotton farmers and used to be known as the country's cotton belt. It is now known as India's suicide belt. In recent years, suicides of farmers in Vidarbha have been occurring at the rate of one every eight hours.

The farmers face a grim reality of crop





India's cotton production uses half of the pesticides used in the country although cotton fields only occupy 5% of the farmland.

failures, sinking global cotton prices and crushing debts.

The government safety net - that once kept cotton prices closer to the cost of production - has disappeared as a result of demands from the World Bank and IMF. Under India's new free trade policies, the smallholders of Vidarbha must compete in a global market against subsidised rivals, such as the American cotton farmers.

In the early 1960s, only six or seven major pests worried the cotton farmer. New varieties and less sustainable production methods have resulted in the farmer fighting 70 major pests of cotton plants today.

Monsanto and Bt Cotton

GM (Genetically Modified) cotton has been falsely promoted as the answer to the high pesticide use, and many farmers have been pressed into growing GM cotton. Many farmers end up in the grip of middlemen, who sell "packages" of hybrid

seeds, fertilisers and insecticides, supplied by Agribusiness corporations such as Bayer, Syngenta, Dupont and Monsanto, on credit. The villagers are forced to sell their crop to the middlemen (at their price) in order to pay back their loan. Credit is very risky for small-scale farmers. If the crop is destroyed by droughts or floods, they lose their crop and end up with a debt they cannot pay back.

A Way Forward

Many farmers around India are realising that they need to go another way and a movement is growing to escape the grip of the Big Agribusiness. A number of farmers are, with the help of NGOs, turning to Natural Pest Management (NPM) and against the GM (Genetically Modified) cotton.

Nearly 2,000 villages in Andhra Pradesh have adopted NPM systems on an area totalling 280,000 hectares.

There are now 50 organic and GM-free villages in the state. The villagers have restored the natural pest control systems have no reason to adopt the GM cotton from Monsanto.

These GM seeds cost 5 - 10 times as much as local cotton seeds. In spite of massive commercial campaigns and pressure from politicians, many farmers are now seeing that the local seeds have many advantages, since they are more resistant to a number of pests and climatic changes, and since they can be collected and used the following year.



4 - Cotton and the Environment

A survey of the yields and income of Bt (Monsanto's GMO cotton seeds) and non-Bt farmers over 3 years clearly showed the benefits of non-Bt farming.

1. GMO did not bring profit to farmers. Over the three years, the non-Bt farmer earned on average 60 percent more than the Bt farmer.

2. It did not reduce the cost of cultivation.

On average, the Bt farmer had to pay 12 percent more than the non-Bt farmer.

3. It did not result in a healthier environment; researchers found a special kind of root rot spread by GMO cotton infecting the soil, so that other crops would not grow.

The National Government has now formally admitted that Bt cotton has failed in a number of Indian states.

It requires an extra effort to change to organic farming. Most face a drop in yields in the first year of non-chemical farming,



The Indian state of Andhra Pradesh has 50 villages where the crops are grown completely organically, and 280,000 ha where natural pest management systems are used.

either because the soil needs time to recover or because the farmers have not yet mastered the new techniques.

But the results are good. As can be seen in the photo, the non-GMO (NPM) farmers and the GMO farmers had nearly the same cotton yields - about 520 kg. The net income of the NPM farmer was considerably higher (about \$ 700 compared to \$ 560), because his costs were much lower.

Particulars	NPM	Non-NPM
1. Total Expenditure	6371=20	7066=00
2. Cost of Pesticides	456=00	1040=00
3. Yield (in Kg)	520.2 Kg	522.5 Kg
4. Total Income	9883=80	9927=50
5. Net Income	3512=60	2861=50
6. Expenditure for 1kg. Yield	12=58	13.67
7. Pesticide Cost 1kg. Yield	0.88	1.99

The farmers in this village who grow cotton with NPM (Natural Pest Management) get the same yield as the conventional growers, but have reduced expenses and therefore better profits.

Andhra Pradesh's minister for agriculture, Raghuveera Reddy, has become a supporter, and banned the use of some of Monsanto's cotton seeds.

The plan of the state is within a few years to have 1 million hectares under community-managed sustainable agriculture, and in the longer term 4 million ha - 45% of the cultivable land in the state.



4 - Cotton and the Environment



More and more villagers have started production of cotton with much less pesticide use where the natural pest control systems are restored.

Reducing dependency on pesticides in Pakistan

Pakistan is another large cotton producer in the South Asia region. The government has now, with support from FAO and EU, started a large-scale programme over five years to train 167,000 farmers to use pesticide-free methods. The result is better crops, better health, better income and better environment. The programme is a challenge to the interests of agribusiness in a country that has over 300 pesticide manufacturers. The farmers are trained in farmer field schools, where they spend one morning

a week in a typical cotton field, observing insect behaviour and plant growth rates.

They learn that beneficial insects often devour pests, and when this happens, pesticides are not required. Farmers, even illiterate ones, gain confidence and begin relying on their own judgement, even in the face of intense pressure from extension officers (many still need training in these new practices) and pesticide sellers to spray frequently.

As one farmer tells: "Before, we used to follow what the neighbours did while spraying pesticide. Last year, I used six to seven applications. This year, after observing my field, I used commercial pesticides only three times and bio-pesticides like neem and aloe vera twice. The crop looks as good as it did last year, and I've saved money on the pesticide."

Pakistan can already measure a dramatic decline in pesticide use. Farmers are making more profit, and a government study shows a 10% increase in cotton production thanks to the new practices.

The health of the farmers is also improving. Female cotton pickers working in conventionally sprayed fields had dangerously low blood enzyme levels for more than a month after field work. But with the new practices this did not occur.

Read in the next GAIA Info about agricultural practices that reduce global warming.