

# Organic Cotton Production

## an alternative to GM Cotton for small farmers?



GM cotton is unlikely to have much appeal to small-scale cotton farmers. Photo: Coen Reijntjes

### Dorothy Myers

Global cotton production has tripled (to around 20 million tonnes) since the 1930s largely due to the intensive use of synthetic chemicals; irrigation and higher-yielding varieties have also played their part. Large quantities of the most toxic pesticides are used on the cotton crop - with associated health and environmental problems, especially in developing countries. Regulatory systems are weak or are not enforced; farmers are not adequately informed of the dangers and lack the necessary skills and equipment to protect themselves and their families. Recent NGO research in Benin has revealed many poisonings and deaths related to the use of the highly toxic pesticide, endosulfan.

### GM cotton production

By 2000, some 5.3 million hectares of genetically modified (GM) cotton were grown, representing 16% of the total cotton area planted worldwide. It is grown commercially in Argentina, Australia, China, South Africa and the USA. There are three main types of GM cotton: herbicide tolerant (tolerant to glyphosate and bromoxynil - 2.1 million ha), insect resistant (with the *Bacillus thuringiensis* -Bt- toxin genes inserted - 1.5 million ha) and a third type which combines both attributes (1.7 million ha). Concerns about the increasingly widespread use of this technology abound. Predicted reductions in herbicide use appear not to have occurred

and transfer of genes to related wild species seems inevitable. There are also concerns about the development of resistance to Bt. Strategies are in place to prevent this happening but questions have arisen about their effectiveness and enforcement. Moreover, GM cotton is unlikely to have much appeal to small-scale cotton farmers in the South - mainly for economic reasons. For example, GM cotton is sold as a package that includes the herbicide which the cotton is engineered to tolerate - usually glyphosate. Farmers are also required to buy new seed each season contrary to their customary seed saving practices. GM seed is more expensive than conventional seed since a 'technology fee' is included in the price.

### Alternative cotton production

Concerns about costs and the detrimental effects on health and the environment of the high usage of synthetic pesticides on cotton have persuaded many small-scale farmers to seek alternatives where opportunities exist. Expanding interest on the part of Northern consumers and established verifiable regulatory systems for organic production such as the IFOAM Basic Standards (see p.12) have stimulated interest in the development of projects in many countries. Organic cotton production started in Turkey and the USA in the early 1990s. Other projects followed throughout the last decade in South Asia, Africa and Latin America.

Certified organic cotton fibre is currently produced in widely

varying production systems in 12 countries. Global production of organic cotton was about 8000 tonnes in 1997 and indications are that it has stayed stable at that level since then.

In most of the organic cotton projects involving small-scale farmers there has been significant involvement of outsiders. Projects have been initiated and supported by a variety of actors including private companies (eg. Remei, Verner Frang, Bo Weevil), development cooperation agencies, and NGOs (PAN-UK, for example). Knowledge of marketing practices and potential markets is often in short supply, when projects are not directly linked to companies that buy the output. Financial support is also needed to meet the costs of organic certification. A good level of technical support has been a feature of many projects and is essential in the early stages of transition to organic when decreases in output may occur.

As is to be expected, a range of factors seems to determine the success, or otherwise, of organic cotton projects including project structures, management, agronomic back-up and expertise, market conditions and access. The key factor is the motivation of farmers which, especially for small farmers in Africa, for example, appears to be determined by economic reasons first and foremost. With the collapse in recent years of state extension services, the level of support available within projects to help convert to organic systems has also proved to be highly significant and is much appreciated by farmers.

### Finding local solutions

At the technical level, organic cotton is a product of an organic farming system, which relies on crop rotation, organic fertilisation and on non-synthetic chemical pest control methods. More specific technical details of production systems are site-specific and are determined by local conditions. In Benin, for example, a palm oil tree residue is used as fertiliser, in Uganda a species of black ant is used for pest control, and in Senegal and elsewhere neem extract is used for pest control. In addition to cotton, such integrated systems produce other crops, which can also generate income and should be accounted for when assessing profitability.

In general, organic systems produce less than conventional systems, but this is compensated through savings on inputs, payment of premiums, and perceived improvements in health for people, their animals and their environment. In Zimbabwe, for example, even though yields were lower in organic than in conventional cotton production systems, profits were higher even for the poorest farmers. The approach was highly valued by AIDS widows as reported in an article of the LEISA Magazine (Vol. 17.1, p.28). Differences in results depend on whether significant amounts of synthetic chemicals have been used in the previous production system and on the role and position of cotton in the overall production system. The conversion period is obviously longer where large quantities of chemicals have been used previously.

In Senegal, the number of women participating in the project in Koussanar is increasing steadily. In the past they have been unable to grow cotton because of lack of access to credit for inputs. People who are normally excluded from cash crop production within input-based conventional systems are able to participate in organic systems because no cash investment is called for up-front.

### Experiences from Benin and Senegal

Work on sustainable alternatives to pesticide-dependent agriculture at the Pesticides Action Network UK (PAN UK) has focused on promotion and support for organic cotton production with partners in Senegal and Benin. Benin is highly dependent on its cotton crop for export, and at the domestic level cotton is the main cash crop for many farmers. Crop protection in the conventional cotton sector relies entirely on chemical pesticides. The Beninese NGO, OBEPAB, started working on organic agriculture in 1995 when a group of farmers from Mangassa in the

Djudja district of Benin approached OBEPAB for help. The farmers had become dissatisfied with the conventional production system. Their profits were being eroded through increased costs of inputs and they were concerned about the lack of openness in the state system – especially regarding payments for their cotton crop. Farmers had become aware of the serious problems related to the pesticides that they were called upon to use.

The number of farmers involved in organic cotton production has increased steadily over the years, from about 100 initially to over 200 now. Kitche Denis is one of the Mangassa farmers who converted to organic. He described the situation in the following way:

*"We used chemicals on our cotton crop and had higher yields than now, but we were often sick and had to spend some of the money we earned on medicines. After harvesting groundnuts this season, I grew cotton without any chemical fertiliser or pesticides. We used palm oil cake, ash, and cattle manure as fertiliser and put the organic matter back into the soil through the cotton leaves, which fall early. We treated the pests with extracts of neem, crushed papaya leaves, cow urine and garlic. There are ten in my family and we all work in the fields, sometimes with extra help. The women do the sowing, weeding and harvesting. And with organic agriculture it is safe for them to be in the fields with the children because the natural sprays do not harm us.*

*We are now in our fourth season of organic cotton production and yields are increasing year by year. My message to other farmers is that we should rely on ourselves instead of depending on others. Our neighbours admire our village and want to become like us and the number of farmers in the project is increasing each year."*

### More farmers join

PAN UK is currently involved with partners in research covering all the African organic cotton projects. Results are expected in early 2002. Country reports indicate that farmers join and decide to stay in the organic system, not only because of the financial, health and environmental benefits. Their interest also has to do with being paid on time, not becoming indebted, and having a good level of support. Farmers have also expressed the view that their knowledge and experience is valued, which in turn generates greater confidence. It is vital that information and experiences generated by the projects is widely shared in order to expand the take-up of organic agriculture and to build a credible alternative to conventional production which may in future be increasingly dominated by GM crops.

However, the rapid spread of GM cotton could pose a threat for organic cotton producers as the Basic Standards for Organic Agriculture prohibit the use of GM varieties. Where organic and conventional cotton are grown side by side, contamination could be an issue. Organic cotton farmers are accustomed to planting with a 'safe' distance between their organic fields and the conventional fields of their neighbours to avoid spray contamination. The introduction of GM cotton reinforces this requirement and probably would require greater distances. To date, most small-scale organic cotton farmers are not faced with this problem – but that could change in the future. ■

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