

militate against such focusing on farmers. The dictates of coordinated execution of agricultural practices, imposed by irrigation system and crop rotation schedule, have resulted in a hierarchical chain of command in which relevant information tends to be relayed to tenants by order rather than by extension. Although the receptive attitude of the Scheme management towards alternative methods of pest control has resulted in considerable reduction of insecticide use over the last ten years, efforts have to be initiated to end the tradition of non-involvement of tenants in cotton crop protection.

Photo: Lies Joosten



The ot

Central America has a long history of cotton production. Brown cotton (*Gossypium Mexicanum* Tod.), nowadays a product of increasing interest in the world, is originally from this area. Lies Joosten and Emilio Eweg report on their anthropological study.

Lies Joosten and Emilio Eweg

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Basic questions of the 'battle-plan'

- Can whitefly outbreaks be avoided?
- Can sprays against jassid and American bollworm be manipulated so as to conserve parasites and predators of the whitefly?
- Can planting dates be altered so as to reduce the need for sprays against bollworm or jassid?
- Can the choice of insecticides and dosages used against bollworm and jassids be restricted to selective compounds that do the least damage to natural enemies?
- Can broadcast sprays be avoided so that only infested fields are treated? Regardless, the first spray should be delayed as long as possible.
- Can the application of insecticides be further improved so as to provide better coverage of cotton foliage?

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In the hot coastal area of the Pacific Ocean, bright-white cotton grows on plantations of up to 3,000 ha. To raise production, about 236 kg/ha of (foliar) fertilizers are used. The plant is improved to raise fibre quality, whiteness of fibre and pest resistance. Airplanes spray up to 40 times in the growing season; every 4 days in the last months of the production cycle. In Guatemala, 60% of the inhabitants are indigenous people, descendants of 22 Maya groups. Most of the Maya people are farmers who, during the cotton picking season, suffer from miserable living conditions and work in the fields which are regularly sprayed. The effects cotton production has on human and environmental health may be clear. However, there are other ways to grow cotton.

Fresh and hot

Francisco's farm is an example of diversified local cotton growing. He lives near sugarcane plantations in the hot coastal area of Guatemala. The area is about 300 m asl. The rainy season is from June to October, with an interval in early August. The period between November and May is dry and hot. Most of the land is used for monocultures of cattle, sugarcane, palmoil, soybeans and cotton and depend on seasonal labour. Many small farmers are day labourers earning some cash income. Some are organized in cooperatives, although access to land is difficult. At the beginning of this century, rainforest covered the area. The volcanic soils are fertile and rich in humus. However, the top layer is rapidly wasted because of monocultures.

On the hilly edge lies Francisco's *milpa* (approx. 0.3 ha), where he grows maize, food crops and brown cotton. With his labour, he pays for using this land. Francisco does all the work, with the help of his grandchildren. He proudly produces cotton in the traditional Maya way. Efficient land use is the key. With a natural balance between land, water and light, and between 'fresh' and 'hot', a large number of companion crops can be grown. Everything has either fresh or hot characteristics. The use of chemical inputs (hot) affects the balance. The earth should stay fresh, wet. In combination with the (hot) sun the crops develop well. To obtain strong plants it's important to sow on the right day in the cycle of the moon.

Feeding the family

Francisco uses mulch for fertilisation and leguminous plants like beans, peanuts and chipilin (*Crotolaria pumila*) can be found in his *milpa*. Covercrops like squash and watermelon protect the soil in the dry season and prevent weeds to grow. After 2 years of cultivation, a natural fallow is allowed 'to let the holy Mother Earth rest for one year'. When the maize is almost ready to be harvested the cotton is sown between the rows. After harvesting the maize, the cotton gets all the space and light it needs: 'without sun you get a pale fibre'. In the shadow of the cotton, sweet potato and some medicinal herbs are grown. After picking the cotton and selecting seeds for the next year, he chops away most of the plants and burns them on an edge of the field. The best ones may stay for another

her colour of cotton

year. Francisco sells his cotton harvest to indigenous traders from the highlands. The price depends on the colour and the quality of the fibre. The cotton is for extra income and to help the poor people who use the material to make their clothes. It's no use to ask them a better price. Francisco's main aim is to feed his family.

Francisco's cotton has no serious pest problems. This is probably due to the small diversified plot, the natural balance and the remoteness of other cotton fields. Sometimes the 'picudo' (boll weevil, *Anthonomus grandis*) enters the field, but this year they did no harm. Some caterpillars (full army worm, *Spodoptera* spp.) were eating the leaves. Francisco explains that they are harmless: 'They just eat to stay alive'. He knows about other pests which affect the flowers and bolls, but they don't bother him. One possibility is first to sow only some cotton. The pests will damage these plants. Then burn this trap-field and sow the main field. Another remedy is to sow plants which attract the natural enemies of pests. Francisco never applies chemicals: 'I don't want to give poison to drink to Mother Earth, and the worst herbs and insects survive anyway. Because I don't use chemicals, I get healthy plants which produce strong seeds'. He would rather use biopesticides like extracts of onion and garlic.

Weeding is done by hand with the machete, two or three times, to keep the field free from creepers.

Fair trade

Guatemalan indigenous brown cotton is a huge perennial, relatively drought resistant and growing well up to 1000 m (even up to 1800 m). Its production is abundant, although the fibre is relatively short and weak. As cultural values change, indigenous brown cotton production is disappearing. Besides, the artisanal processing of indigenous cotton has to compete with the cheap monocultures of white cotton and industrial yarn market.

However, brown cotton has export value and several companies took seeds from Central and South America, selling patented fibre on the world market, an exclusive 'natural fashion'. The value in the USA is many times higher than that of white cotton. In Central America brown cotton is still a product from and for the poor people. Organically grown brown cotton could be an economic alternative. Many Northern consumers want to support small farmers in developing countries and wear 'clean fashion'. But a market alone is not enough, there are organizational and technical obstacles, for which appropriate solutions must be sought. Agro-ecological conditions have changed and in many regions indigenous knowledge does not suffice anymore. There is pressure on the land and deforestation is leading to declining soil fertility, pests and diseases. Efforts have to be made to gain more knowledge about alternative ways of pest control and soil protection. Agriculture based on the Maya world view has many similarities with modern ecological agriculture. Combining the two may be the best step forward for small farmers and conservators of the brown cotton plants. ■

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Trade not Aid?

Remarkable work on organic cotton growing has been done by both small- and large-scale producers in California, Mississippi, Arizona and Texas (USA). Some organic cotton is also being produced in Turkey and Peru. A small project is at present being conducted in India (Gujarat). Yields in Turkey are at the moment lower than in conventional cotton, but partially compensated by lower picking costs and a premium price. This has inspired IFOAM to call for a first International Conference on organic cotton to be held in Egypt, September 23-26, 1993. Topics will be production, research, marketing and fashion. For this conference, for which participation is limited due to technical reasons, contributions on research and marketing are most welcome. At this stage, there is enough information on production. Further information: Bio-Foundation, Poststr. 8, CH-8583 Sulgen, Switzerland (-fax: +41-72-423663).

Increased interest in organic cotton partly originates from Northern consumers. Faced with environmental problems one of the latest consumer trends is 'Back to the basics': natural fashion, ecologically sound food, recyclable packaging, 'green' products and 'fair trade'. Farmers in the South should get 'fair shares' of the profit. It is regarded as a more ethical way to support sustainable development than development aid. Greenpeace is one of the organizations who market organic cotton, from Peru. Clothes are produced in Peru and exported to Europe with prints like 'Don't panic, it's only organic' (WH).

OUR VIEW

Farmers observe a distortion of the natural balance by chemicals. Herbicides and pesticides don't seem to make their system more profitable but do provoke a vicious circle of ecological degradation. Organic farming is a necessary option for subsistence farmers. But this is only feasible when they are motivated and have access to information. Governments should create policies to cut back on pesticides, building on local experiences and indigenous knowledge. As long as this is not a reality, consumers can support local initiatives by exchanging information and buying their products for reasonable prices, like organic cotton.

MY VIEW

'Greenpeace advocates a new approach to farming. Organic farming is an excellent alternative, proven by experience. European studies show that it is technically and economically viable and that it can produce sufficient food to meet Europe's needs. It is neither a futuristic visionary, nor a traditional romantic idea.'

(Marjan Smeitink, Greenpeace, Keizersgracht 174, 1016 DW Amsterdam, the Netherlands).