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Organic agriculture in Cuba: The revolution goes green.

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Agriculture in post-revolutionary Cuba is based on large-scale, capital-intensive and labour-extensive monocultures. In order to sustain these, the island continually imported fertilizers, pesticides and diesel at subsidized prices from the former Soviet economic aid community, COMECON. Since this collapsed in the early 1990s, Cuba has suffered from an acute shortage of raw materials. At the same time, the main sales market for Cuban agricultural production has disappeared.

Given this situation, agriculture in Cuba faces multiple challenges:

Firstly Cuba needs to find new customers, practically overnight. Secondly, its agricultural producers must learn to manage with the little that they themselves have. Thirdly, Cuba needs financial resources to renovate its often out-of-date production facilities.

Managing on limited resources

At the production level, the solution is low input agriculture. As early as the late 1980s when supplies from the Eastern Bloc began to slow down, Cuba began nationwide production of biological pest control agents and, as a result, drastically reduced the use of pesticides. In the 1990s, national compost production was extended. This was used as fertilizer for the initial phase in establishing the primarily urban allotment gardens for self-sufficiency, the *organoponicos*. In agriculture for export, however, chemical fertilizers and herbicides continue to be applied. As we know, using biological crop protection is still far from farming organically.

Organic agriculture is the form of farming that is most consistently based on the use of on-farm and local resources. This is an attractive proposal for Cuban farms. From the marketing perspective, too, certified organic products are worthwhile for Cuba: In the search for new customers, numerous potential clients have been located in Europe who are willing to pay good prices for Cuban organic products. Such prospects swayed the Cuban Ministry of Agriculture to take first steps towards organic production in the 1990s.

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Organic structures in development

The first certified organic products from Cuba are citrus juices (current area approx. 900 ha) and sugar (approx. 300 ha). Initial certification will shortly be issued for 400 ha coffee and 480 ha cocoa. Mangoes, coconuts and other tropical fruits are also in the project pipeline. The typical Cuban organic producers are large-scale cooperatives, in which farming families are more or less loosely organized. These cooperatives normally specialize in one or a few products.

The Cuban initiatives on organic agriculture are supported by a grouping of agrarian researchers and advisers who have pooled their specialist knowledge on organic agriculture and organized themselves since 1992 as the *Grupo de Agricultura Organica* (GAO). This year GAO ran its fourth Cuban organic agriculture seminar, in which over 300 Cuban and foreign experts participated. GAO publishes the journal 'Agricultura Organica' and organizes courses throughout the country for practitioners.

Interest in organic agriculture is now being aroused in the Cuban Ministry of Agriculture. Drafts for national legislation are in preparation. However, organic inspection to date has been conducted exclusively by international certification bodies. In the view of the Ministry of Agriculture, the critical mass for a Cuban inspection and certification body has not yet been reached. However support has already been requested from various European partners to develop Cuban organic certification.

Organic certification is currently geared entirely towards exports to Europe, and a national market for organic products is probably still a distant prospect. Preliminary discussions have been held on the sale of Cuban organic products in the context of increasing tourism, however. Organic products for the international market are generally marketed by Cuban export monopolies in cooperation with European importers.

Project to establish organic citrus production

Since 1997, FiBL has been working as a partner of Cuban institutions (*Instituto de Investigaciones de Citricos* and *Corporación Nacional del Citrico*) and European investors to develop organic citrus production. In this project, FiBL is overseeing the conversion of several large citrus groves and supporting the marketing of organic citrus juices in Europe. At the same time, investigations are being carried out jointly with the *Instituto de Investigaciones de Citricos* on cultivation methods. Goals of the trials currently in development are:

- To evaluate the feasibility of organic production on Cuban organic citrus farms;
- To develop best management practice under Cuban conditions;
- To demonstrate the effects of conversion of organic citrus farms.

As anywhere, organic agriculture in Cuba begins with the soil. The heavy rainfall and the high temperatures speed up the mineralization of nutrients and slow down the accumulation of organic matter in the soil.

- The main difficulties along the path towards organic citrus production in Cuba are:
- plant nutrition, especially use of nitrogen fertilizers on the highly specialized plantations;
 - soil cultivation and ground cover, as well as the replacement of herbicides;
 - optimum compost production from the available raw materials;
 - mechanization of soil cultivation and fertilizer application.

The key to success in organic citrus production is a combination of compost and undersown legumes. This has been demonstrated by experience in Cuba. Suitable legumes are *Neonotonia wigthii*, *Teramnus labialis*, *Sylvestantes*, *Alysicarpus vaginalis*, *Conchita azul* and *Canavalia*, of which the first two were found to grow the best. The greatest limiting factor is the availability of seed. *Arachis pintoi*, for example, is very well suited to organic citrus farming, but virtually unobtainable in Cuba.

The production of good quality compost is first and foremost a problem of logistics. For holdings on a scale of 200 ha and more, quantities of 5,000 – 10,000 t of raw material are needed. These are relatively difficult to obtain in Cuba, since materials of both plant origin (citrus marc, sugar cane bagasse, rice straw etc.) and animal origin (manure, slurry) are in increasingly high demand. Organic cooperatives effectively need to build 'compost factories', which require substantial investment (compost mixers, compost spreaders, etc.).

Good organic farming need not to be small-scale

Soil cultivation and fertilization are the factors which make organic citrus production expensive in comparison to conventional production. This is particularly crucial for large-scale citrus farms where labour is scarce and investment in infrastructure is needed.

However, large farms also have advantages when converting:

- The planting distances between citrus trees and rows are often more generous, which allows better air flow and consequently ensures a lower incidence of disease.
- There is greater flexibility for (additional) ecological compensation areas. The goal is to establish a diverse mosaic of production units within large-scale farms.
- The larger farms can benefit from economies of scale on all levels.

Overall, Cuba is well prepared for management-intensive organic agriculture. The cooperatives tend to be open to innovations and increasingly familiar with sustainable production practices. Organic agriculture is not just an alternative for Cuba during the present resource scarcity. It is also a sustainable answer to agronomic, ecological and economic challenges. In addition, organic agriculture reduces Cuba's reliance on costly imports of agricultural inputs.

Picture 1: Compost spreader on an organic citrus farm in Cuba. Compost is the basic fertilizer used on an organic citrus farm. The production of good quality compost is a logistic challenge and demands considerable investment.



Picture 2: Undersown legumes on an organic citrus farm in Cuba. Undersown legumes supply extra nutrients, improve soil fertility and reduce leaching of nutrients. For large farms, however, the associated additional work is often a barrier.



Picture 3: Planning for conversion at a coffee and cocoa cooperative in the east of Cuba. FiBL advises agricultural enterprises in the south and east on conversion to organic farming.



Picture 4: Organic orange juice for the European market. Organic orange and grapefruit juice from Cuba is sold by the Swiss Coop and other European buyers. For Cuba, this is the first time that its citrus juice has been sold with a label of origin. Cuban producers receive double the price for their organic oranges.



All photos: FiBL