

Organic agriculture development in Martinique: where does agroecological research fit in?



ORGANIC agriculture is developing slowly in Martinique, a French Department in Caribbean area. In 2010, the total certified acreage reached about 100 ha, with a further 6 ha in conversion, cultivated by a total of 24 certified organic (Agriculture Biologique) farms. There are two organic farmers' associations: "La Bio des Antilles", certified under the French AB regulations; and the "Orgapeyi" association, which uses a form of participative certification. How could the local organic production be boosted to supply the local market for organic products? This paper proposes to answer this question by reviewing three activities by various research institutions including CIRAD to address organic production.

de Bon H.(1), Langlais C. (1), Fernandes F. (2), Achard R. (2), Lavigne C. (2) & Cupit G. (3)

(1) CIRAD-UR HortSys, TA B-103, BP 5035, 34398 Montpellier Cedex 5, France

(2) CIRAD, PRAM, BP 214, 97285 Le Lamentin Cedex 2, Martinique, France

(3) La Bio des Antilles, ZAC de Rivière Roche, Bat F3, ARTDIVERS, 97200 Fort-de-France, Martinique, France

hubert.de_bon@cirad.fr



Methods

- Two agronomic and socio-economic diagnoses achieved in 2005 and 2009.
- A comparative experiment of organic vs. non-organic technical practices set up on Tahiti lime production.
- Agroecological investigations aiming to reduce the negative environmental impacts of agriculture through increasing the biodiversity and enhancing the self-regulation of the agrosystem.

Results

- The two diagnoses found that the lack of control over the indicators concerning the economic and financial assessment conditions of organic products is the major disincentive. In addition, the technico-economic and agronomic analyses of the farms revealed three other disincentives: (i) the absence of local references and technical support; (ii) the poor and fragmented supply of and access to specific inputs; (iii) low labour productivity.



- Tahiti lime cultivation in the tropical climate of Martinique is difficult due to high pest and disease pressure. The same variety, *Citrus latifolia* Tanaka cv. Tahiti lime, has been used grafted onto *Citrus volkameriana*. Organic practices include: cover crop with *Arachis pintoii*, fertilization with Orga 10 and Sul-Po-Mag and sulfur application to control the mites *Polyphagotarsonemus latus* and *Phyllocoptruta oleivora* (citrus rust mite). Conventional practices include: NPK synthetic fertilizers, weeding with glyphosate and control of mites and insects with sulfur. This comparative study showed that the main constraints concern weed control and underlined the high price of the nutritive inputs approved for organic farming. The cumulated yield over the first five-year period is similar for both types of crop management (figure 1).

- Other cognitive studies have been undertaken on different topics. In a banana plantation, about 40% of the nitrogen brought to the crop is 'reorganized' by the soil biological system. The use of cover crops is a way to improve use of nitrogen supplies, as well as to address weed management problems and to control nematodes such as *Radopholus similis*. Furthermore, the use of a model (SIMBA-CC) will help to choose the most appropriate cover crop. These examples based on the self-regulation of multi-species systems show that cognitive studies in agroecology may yield valuable tools for organic farming.

References

- François M., Moreau R., Sylvander B. (coord.) (2005). Organic agriculture in Martinique: Quelles perspectives de développement ? IRD Editions, Paris, 297 p. + CD-Rom
- Tixier P., Lavigne C., Alvarez S., Gauquier A., Blanchard M., Ripoche A., Achard R. (2010). Model evaluation of cover crops, application to eleven species for banana cropping systems. Eur. J.Agron. In press, doi:10.1016/j.eja.2010.10.004

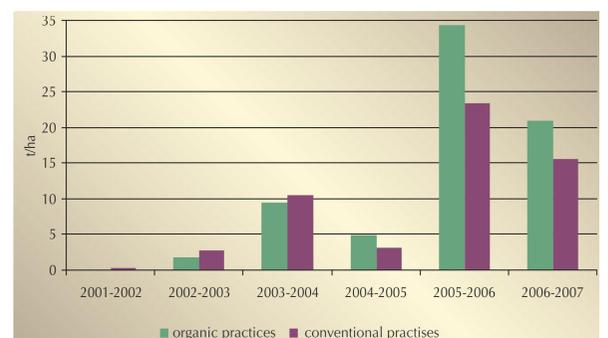


Figure 1. Annual yields comparison between organic production and conventional Lime production.

Conclusion

THIS paper mentions three different types of studies run in Martinique island from the fruit and vegetable sector. The experiment comparing organic and conventional systems shows that biological diversity in agrosystems brings different scientific and technical issues into focus. Conventional agriculture practices and constraints need to be re-analysed from within a new framework. CIRAD outputs show that conventional and organic agriculture share the same overall objective, that is, to produce while taking into consideration environment protection and consumer health - organic farming having its own strict specifications and conventional farming abiding by national regulations. Will the future be a combination of the two systems?

