Design of innovative orchards: proposal of an adapted conceptual framework

The system approach is a generic method well-developed in annual crops...

On-farm and on-station system experiments address complex questions related to the sustainability of cropping systems. Main steps in the approach are:
- Set objective(s) & describe the feasible constraints;
- Design cropping systems and related decision rules to manage them;
- Evaluate agronomic prototypes to iteratively design innovative cropping systems.

Conceptual framework to design innovative orchard systems towards more sustainability

- Beyond eco-design, co-design is an opportunity to involve growers, advisors, scientists... and to renew interactions among these agents through participatory research. This allows for growers to design their own orchard and decisional system in a changing context.

Focus on two experiments aiming at decreasing pesticide use in apple and citrus orchards in temperate and tropical areas

These experiments combine various levers adapted to the specific situation and species to manage orchard pests.

Acknowledgements
We express our warm thanks to all the growers, technicians and other stakeholders for their involvement in these studies, and to all the staff members of INRA, Sauphanor and ADEME for their contribution to this work. We are very grateful for the financial support from the European Union 7th Framework Programme (BioREco 2004-2008) and the French Ministry of Research and Higher Education (CIRAD, INRA, AFPA, ECOFRUT).