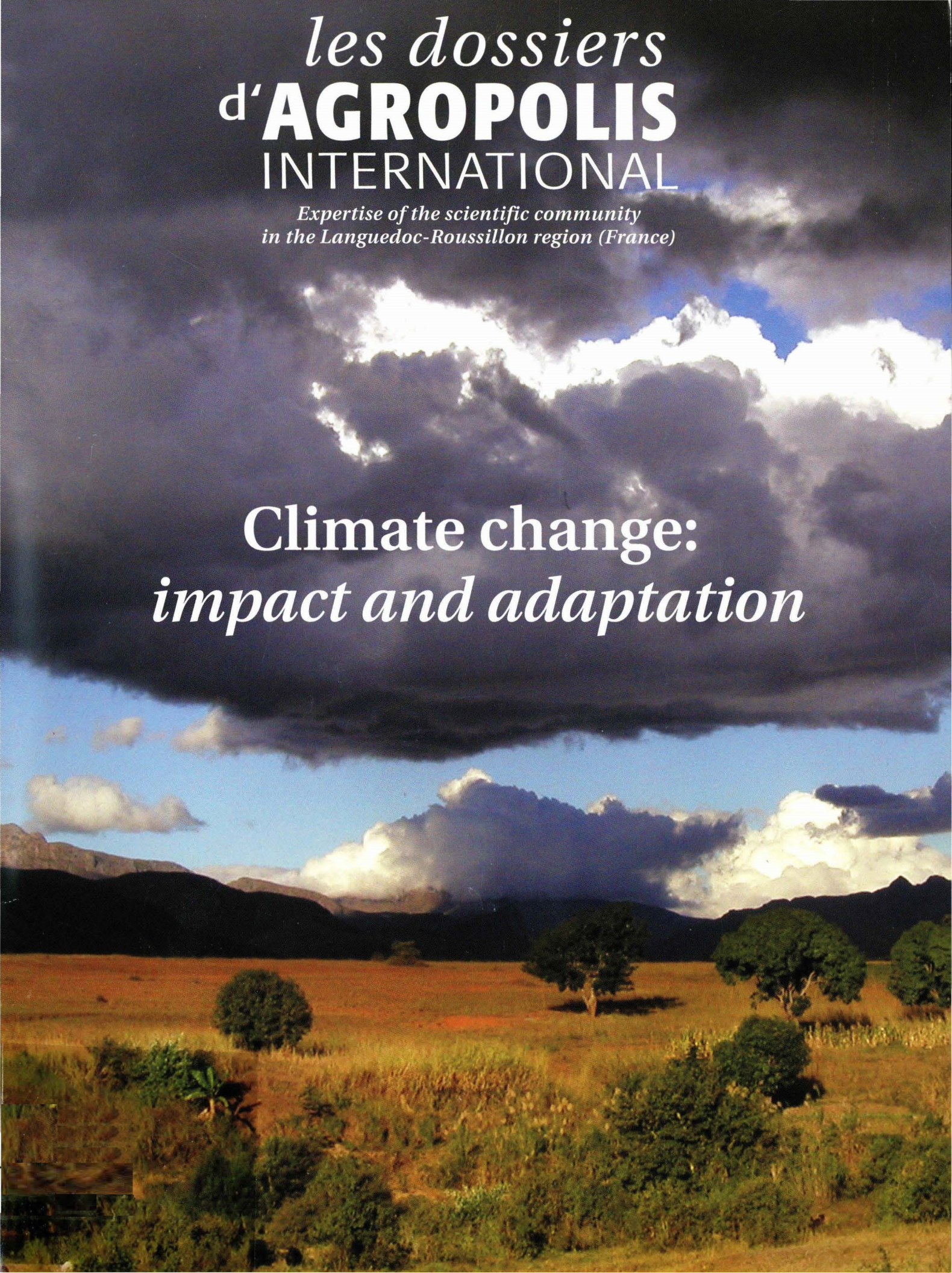


*les dossiers*  
d'**AGROPOLIS**  
INTERNATIONAL

*Expertise of the scientific community  
in the Languedoc-Roussillon region (France)*

**Climate change:**  
*impact and adaptation*







▲ Bacterial canker on an apricot tree.

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## Towards sustainable protection of vegetable crops in a global change setting

The aim of research conducted by the *Plant Pathology research unit* (INRA) is to develop efficient rational control methods to protect plant health when high quality sustainable crop production is sought. They are focused on bacterial, fungal and viral diseases of fruits and vegetables grown in the Mediterranean Basin.

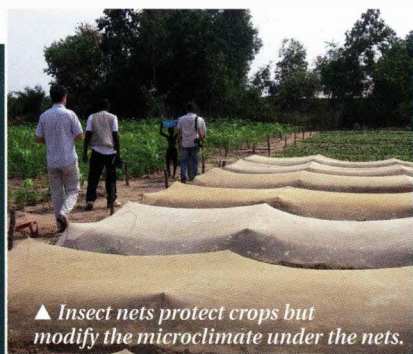
The preventive methods developed are prophylactic and based on:

- 1 early efficient assessment
- 2 sustainable management of varietal resistance
- 3 use of biological control agents
- 4 disease forecasting based on a clear understanding of the pathogen biology and evolution (including the epidemiology of the diseases they cause).

Research carried out by the unit is based on close partnerships with agricultural development stakeholders and on national and international scientific cooperation, and is hinged on two INRA research platforms: 'Integrated Horticultural Production' and 'Adaptation to

Global Change'. One aspect of the research carried out by this latter platform is to project scenarios of changes in agricultural landscapes under the intensification of a set of land-use stresses. It is thus possible to assess the role of landscape in the emergence and dissemination of plant diseases.

*See an example of a project conducted by the UR Plant Pathology on page 81. •••*



▲ Insect nets protect crops but modify the microclimate under the nets.

- in Benin, with the *Institut National des Recherches Agricoles du Bénin* and the *Université d'Abomey-Calavi*
- in Kenya, with the *International Centre of Insect Physiology and Ecology*, the *Kenya Agricultural Research Institute* and *Egerton University*
- in Tanzania, with the company *AtoZ*.

There were different sources of funding, including the *United States Agency for International Development* and the *Fondation Mutavie* (MACIF, France).

## Designing better regulated vegetable cropping systems

Studies on the use of insect nets to control arthropod pests of vegetable crops were carried out by the HortSys research unit (see page 73), in partnership:

These studies demonstrated:

- 1 that input treatments on cabbage and tomato crops could be reduced by 70-100%
- 2 that the insect nets were effective in protecting crops from lepidopterans and delayed aphid and whitefly infestations, or even halted them completely if combined with repellents. The 'under-the-net' ecosystem could nevertheless be disturbed by climate change, so adaptations would be required.

Note that differences have already been observed between Kenyan highland areas and Beninese lowland areas regarding the impact on crop yields (via plant physiology effects) and the fungal disease incidence, as shown in published HortSys studies on modifications in the microclimate under the insect nets.

Contact: **Éric Malézieux**, [malezieux@cirad.fr](mailto:malezieux@cirad.fr)