

MOMAC

Monitoring mediterranean agro-ecoABSYSs responses to climate change: from field to landscape scale

ABSTRACT

Mediterranean regions are facing a dramatic increase in the frequency and severity of heat and drought events, but also extreme rainfall, which threatens the agroecosystem sustainability. It is now of primary importance to propose innovations such as new genotypes, agroecological practices or Nature-based solutions, in order to adapt cultivated plants to these environmental constraints and improve agroecosystems resilience. There is a strong need to develop reference and highly instrumented observatories to monitor long-term evolutions of agroecosystems facing extreme events and test innovations for enhancing agroecosystem resilience to climate change. The MOMAC project first aims at enhancing the monitoring of a “micro-landscape” observatory. It consists in a small vineyard with its surroundings, located in the campus of l’Institut Agro (Montpellier). It is an excellent example of biotic-abiotic interrelations, gathering both wild and cultivated plant biodiversity. Dedicated phenotyping platforms will allow us to objectivate and anticipate plant responses to climate change, from photosynthesis to fruit development. Protocols tested in the “micro-landscape” observatory will be implemented in landscape scale observatories of commercial fields where long-term monitoring of agricultural practices, biodiversity and ecosystem functions are performed. This will help structuring a network of representative plots observatories to address the consequences of climate change on more diversified Mediterranean agricultural landscape. A special attention will be paid in putting observatories data on line for training students, communicating with professionals and informing the general public about cultivated plants and biodiversity response to climate change.

Keywords : Biodiversity, Observatories, Climate change, France

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Flagship project : no

Project leader : Fabrice Vinatier

Project leader's institution : INRAE

Project leader's RU : LISAH LEPSE ABSYS

Budget allocated : 250000 €

Total budget allocated (including co-financing) : 250000 €

Funding : Labex

GOAL

The objectives of the proposed project relied on (i) monitoring the multi-year effects of climate change on cultivated and associated biodiversities from the field to the landscape scale so as to observe the effects of extreme events and long-term adaptation of ecosystem functions, (ii) encouraging the deployment of technologies able to track relevant phenotypes and biodiversity in the field (iii) gathering scientists from various disciplines in common sites to address this multifaceted issue and (iv) training students, communicating with professionals, and informing the general public about cultivated plant and biodiversity responses to climate change.

ACTION

WP 1. The micro-landscape of “la Gaillarde” vineyard as a catalyst observatory.

WP2. Real-time monitoring of spontaneous, associated and cultivated plant responses to climate change in mediterranean agroecosystems

WP3. Monitoring biodiversity to enhance ecosystem services in mediterranean agroecosystems

WP4. Data management

WP5. Data communication and teaching