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Find out more

<http://umr-system.cirad.fr/en/studied-agrosystems/wine-growing-systems>

The LIVE platform is connected with networks of growers' vineyards

- Studying of conversions to organic farming involves an analysis of the changes brought about by farmers on a technical and organizational level throughout the three years of administrative conversion. This research is based on surveys with a view to: (1) identifying and describing the dynamics of changes on a farm scale, (2) proposing analytical indicators for these phenomena, and (3) assessing how those changes affect the efficiency of the wine-growing system over time.
- The research process involves surveys and experimental monitoring of plots on farms undergoing the conversion process, located in the 'Languedoc-Roussillon' and 'Provence Alpes Côte d'Azur' regions.

Examples of projects implemented on the LIVE platform

- The European project PURE (2011-2015, www.pure-ipm.eu) was set out to provide practical IPM solutions to reduce dependence on pesticides in major farming systems in Europe, including viticulture, thereby contributing to a reduction in the risks to human health and the environment and facilitating the implementation of the pesticide legislation while ensuring continued food production of sufficient quality. IPM solutions based on decision support systems and on biocontrol have been assessed on the LIVE experimental platform.
- Within the ERA-Net action CORE Organic+, the FERTILCROP project (2015-2017, www.fertilcrop.net) addresses the design of sustainable soil management strategies in organic agriculture, based on indicators of interactions between crops and weeds, of soil structure, of soil biology and of the carbon and nitrogen cycles. On the LIVE platform, an experiment has been set up to assess the impacts of cover crops on both soil quality and grape production, and to design appropriate soil management plans.
- The Ecoviti (2010-2013) and EXPEcoViti Arc Méditerranéen projects (2012-2017) have brought together Inra and several R&D partners in viticulture. As part of the national Ecophyto programme that calls for a large reduction in pesticide use in agriculture, they have developed a way of prototyping novel cropping systems adapted to the specificities of the grapevine, which is a perennial crop, involving numerous technical interventions, under high pest and disease pressure, and with very varied quantity/quality/cost objectives.



LIVE LOW INPUT VINEYARD EXPERIMENTATION



An experimental platform for a sustainable Mediterranean viticulture

- Managed by the joint research unit

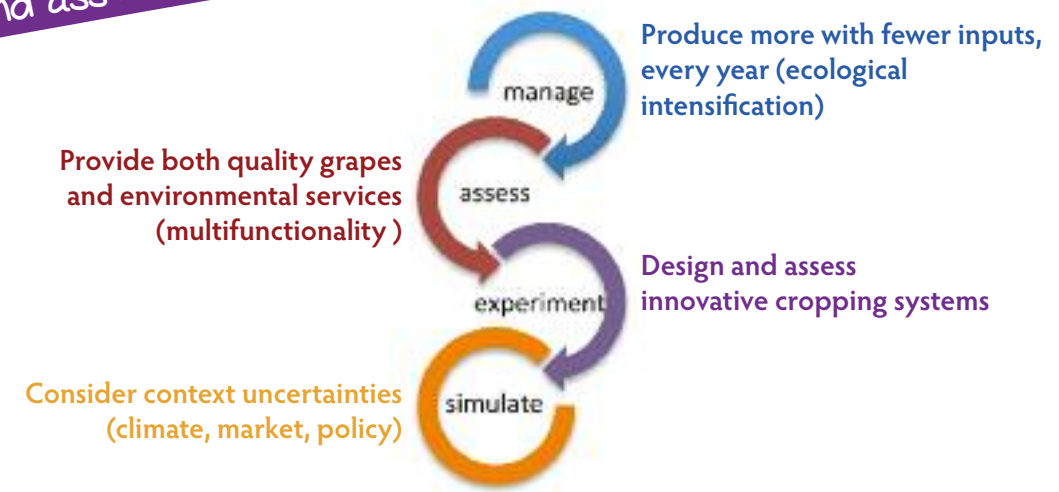


Functioning and Management of Tropical and Mediterranean Cropping Systems

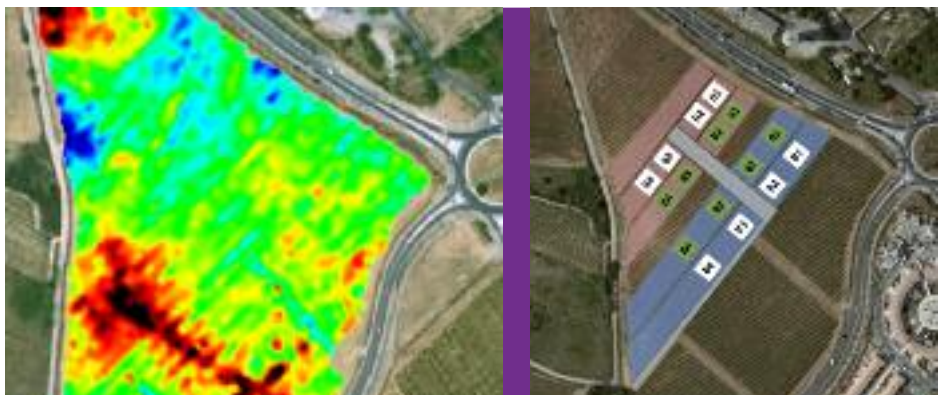
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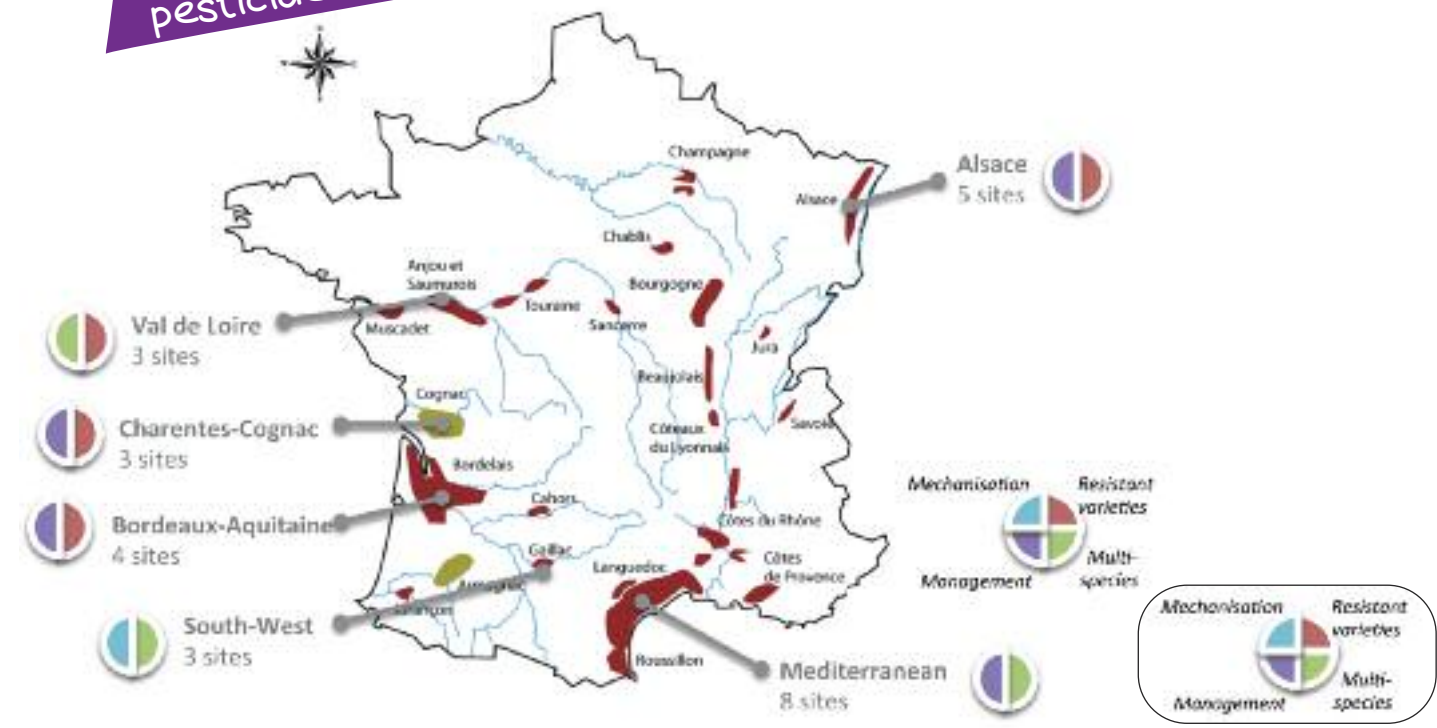
The LIVE platform offers a set of vineyard plots dedicated to the functional analysis of vineyard agro-ecosystems and to the design and assessment of low-input cropping systems



- The ecological intensification of viticulture consists in identifying cropping systems enabling win-win trade-offs between vine production and product quality on the one hand, and low environmental and health impacts on the other hand.
- In particular, UMR System explores the room for manoeuvre offered by soil management without herbicides, based on grass cover (partial or total, sown or spontaneous). Experiments are carried out to study the impacts of grass cover (1) on soil water and nitrogen balances, (2) on vegetative development and the resulting exposure to fungal diseases and (3) consequences for yield build-up and grape quality, including yield losses due to pests and diseases
- The prototyping of low-input wine-growing systems is based on 3 steps: (1) experts design theoretical prototypes paired with a set of objectives and constraints, (2) a shared conceptual model of wine-growing agrosystem functioning specifies the links between the techniques, processes and efficiency of the system, (3) a network of experimental platforms assesses the prototypes.



The LIVE platform belongs to EcoViti DEPHY EXPE, a national network of experimental sites set up in the main French grape growing regions to design and assess low pesticide cropping systems in viticulture



Located in Villeneuve-les-Maguelone, close to the Mediterranean sea, the 'Domaine du Chapitre' is an experimental agricultural estate of 135 hectares belonging to Montpellier SupAgro and mainly devoted to training, research and innovation in the vine and wine fields.



Some key results

Analysis of vineyard agro-ecosystem functioning

- Cover cropping reduces runoff and increases transpiration, which alters soil water and nitrogen balances, and the dynamics of stresses experienced by the grapevine.
Celette F., Gary C., 2013. Dynamics of water and nitrogen stress along the grapevine cycle as affected by cover cropping. European Journal of Agronomy 45, 142-152.
- When grapevine vegetative growth is altered by early water or nitrogen stress, the development of powdery mildew is reduced.
Valdés-Gómez et al., 2011. Powdery mildew development is positively influenced by grapevine vegetative growth induced by different soil management strategies. Crop Protection 30, 1168-1177.

Cropping system design and assessment

- Under the irregular rain regime of the Mediterranean, only adaptive rules of soil surface management ensure a stable combination of runoff mitigation and yield and quality performance.
Ripoche et al., 2011. Modelling adaptive management of intercropping in vineyards to satisfy agronomic and environmental performances under Mediterranean climate. Environmental Modelling and Software 26, 1467-1480.
- On the basis of a shared conceptual model of the system, stakeholders have designed prototypes of low pesticide vineyards that are being assessed through system experiments.
Lafond et al., 2013, EcoViti: a systemic approach to design low pesticide vineyards. IOBC-WPRS Bulletin 85, 77-86.
- CEPVITI, a technical guide for grape growers willing to reduce pesticide use (in French).
<http://agriculture.gouv.fr/ecophyto-guide-cepviti>

