



Climate resilient farming
and forestry systems
and water management

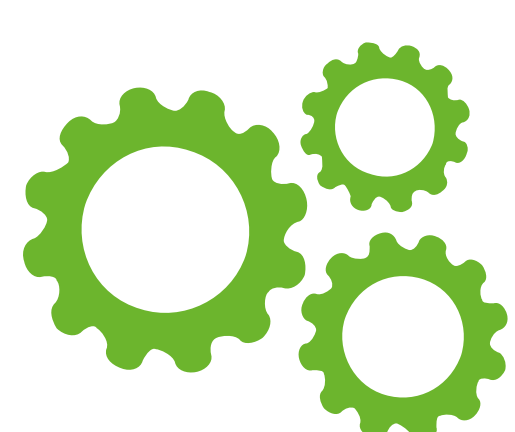


AGRI
Innovation summit 2019

Operational Group

Climate change and emerging cryptogamic diseases in arboriculture in the Rhône-Alpes region (CLIMARBO)

Changement Climatique et maladies cryptogamiques
émergentes en arboriculture en Rhône-Alpes (CLIMARBO)



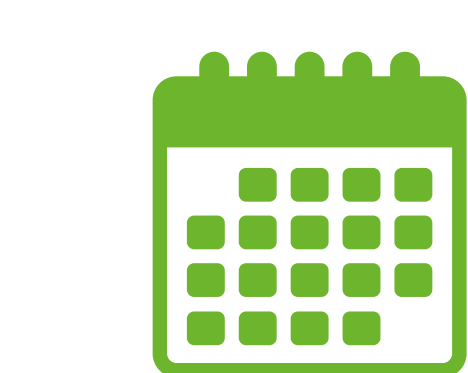
Practical problem

Stone fruits brown rot and walnut colletotrichum
are not well known cryptogamic diseases
that cause significant losses in the orchards



Partners

SEFRA (head of project) and SENUA (fruits' and walnuts'
production experimental stations), GRAB (organic
farmers group), INRA de Gothenburg, INRA d'Avignon.



Calendar

Start: 01/01/2016
End: 31/12/2019



Budget

Total amount:
€760,484.66

Objectives of the project

The project tries to identify and characterize 2 cryptogamic diseases of the orchards: stone fruits brown rot and walnut colletotrichum. It aims to determine the sensitive phenological stages, the occurrences of contamination in the orchards, in order to find suitable response means. The project also tries to identify climatic risk factors of the development of the diseases, linked to the precise knowledge of the climate in our territory, and its possible evolution during the next decades. The goal is to anticipate the future problematics linked to these cryptogamic diseases and allow our growing sectors to answer to these issues today and tomorrow.

Main activities

First, the main activity consists in the monitoring of parcels networks: phenological stages, weather data's statements, damages on infected organs in order to determine risky weather conditions. We also identify the species responsible of the symptoms. Moreover, a trial on apricot trees in pots is realised to find the most sensitive phenological stages and the most influent climatic conditions, in order to elaborate a risk forecasting model. In SEFRA (fruits' experimental station) we examine peach trees and in SENUA (walnuts' experimental station) we examine walnut trees. Both are experimented by "bagging" trials to understand which infection period is the most impacting before the harvest.

Expected results

We hope to develop our knowledge about these diseases (species, life cycles and sensitivity stages) and learn about the impact of favorable weather conditions, so we can better anticipate, now and in the future, the management of the struggle against these diseases and maybe new diseases which could emerge. We expect to develop a risk forecasting model on brown rot, and the most effective and sustainable treatment strategy against it. In the end, the expected results are to limit the economic losses caused by these emerging cryptogamic diseases, and to limit the environmental impacts of our practices thanks to adapted practices and well-argued treatments.

Results so far/first lessons

INRA trials attest that higher sensitivities are on phenological steps 57 to 65 (BBCH scale) on apricot trees. These results, combined to the parcels monitoring's results, allowed to develop a brown rot forecast model on apricot trees flowers, based on precipitation and temperature. The "bagging" trials confirmed that the contamination risk of brown rot increases as the harvest approaches (on peach tree). However, sooner favorable weather conditions can also have an impact. Walnut's trials allowed to identify the species of Colletotrichum the most virulent, and we keep trying to determine an efficient strategy of treatments, likewise the brown rot in stone fruits.

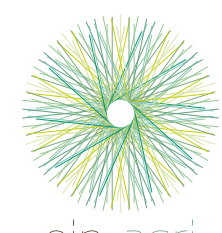
Who will benefit

The project results will benefit the walnut and stone fruits growers, and especially the arboricultural growing sector in the Rhône-Alpes region. The knowledge acquired will allow to better manage the struggle against these diseases, and particularly with the new brown rot forecast model we started to build. It will assure more regular productions of stone fruits and walnuts with less inputs. Walnuts and stone fruits growers will also stay competitive in the foreign market.

Supported by:



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