

GO FURTHER : PERSPECTIVES

----- on the farm

If the priority is to stabilize the farm results, more or less long-term prospects are emerging :

- Optimize land by rearranging other agroforestry parts, by installing more crops.
- Produce more RCW and study the possibility of marketing the surplus
- Produce plants and agroforestry seeds

LINKED RESEARCH ACTIONS

Roumassouze of Lands is also the scene of other research activities, complementary to those conducted in ARBRATATOUILLE.

AGROECO

Led by Jérôme Casas team (University of Tours), the aim of this project was to understand more accurately the impact of agroforestry and especially the grass strip around trees on activity and the spatial dynamics of ground beetles. In addition, lymph analyzes were performed every 3 to 4 hours to monitor the energy state of the monitored beetles



SMART

This project supported by the GRAB from 2014 to 2016, and whose Agroof is a partner, aims to create a national network of farmers practicing agroforestry market gardening and collecting the experience feedback on agronomic and technical- economic aspects. www.agroforesterie.fr/smart-systemes-marai-chers-agroforestiers.phpa

TO KNOW MORE ...

on the farm

Denis et Virginie Florès
email : denisflores2@orange.fr
Web : www.roumassouze.fr

on ARBRATATOUILLE project

Camille Béral (AGROOF scop)
email : beral@agroof.net
web: www.arbratatouille.projet-agroforesterie.net

About training in agroforestry:

Daniele Ori (AGROOF scop)
email : ori@agroof.net
web : www.agroof.net

----- of the experiment

- Trees and climate change over the years. It is important to continue the current experiments.
- Better understand the impact of trees on soil organic matter and better manage fertility and carbon storage in soils.
- Better understand the root interactions.

AGRIPSOL

Made from 2012 to 2015. This project, coordinated by Agroof and in partnership with UMR Eco & Sols, UMR System, UMR UMR Ecobio Ecosys and aimed to quantify carbon storage in agroforestry soils and understand its dynamics in relation to biological tactivity.

www.agripsol.projet-agroforesterie.net/



The Roumassouze lands A PILOT SITE ON AGROFORESTRY MARKET GARDENING

Vézénobres - Gard

Since 2012

Roumassouze lands : Organic Agroforestry

Vézénobres agroforestry parcels are among the oldest in France. The trees were planted by INRA, as part of an experiment that lasted twelve years. Denis and Virginie settled in 2010, very enthusiastic about the opportunity to acquire 11 hectares of agricultural land with trees well developed. They immediately launched into organic market gardening and cereal agroforestry. For them, trees contribute to soil fertility, biodiversity conservation, timber production and BRF. It is also a comfort and a framework they could not do without.



Their goals :

- Ensure the profitability of the farm, fully and peacefully live their activity: limited investments, optimization of production per unit area
- Autonomous and independent Being: peasant seeds, processing workshop, few external inputs
- Share their activities and share their passion: direct sales, organization of training courses, group home
- Managing natural resources: herbal treatment, no-till practices

ARBRATATOUILLE : A unique participativ experiment in France

ARBRATATOUILLE is a research project founded on active collaboration between farmers and researchers. Each year the objectives, methodology and results are discussed to improve the experiments, in accordance with the objectives of each.



ARBRATATOUILLE from left to right Odile Sarrazin (farmer in Marseillan) ; Sonia Guérin (farmer in Cazilhac) ; Denis Florès (farmer in Vézénobres) and Virginie Florès (missing from the photo) ; Camille Béral (AGROOF SCOP) ; Yvan Capowiez (INRA-UR PSH) ; Maxime Poissonneau (AGROOF trainee in 2015) ; Ambroise Martin-Chave (AGROOF SCOP) ; Daniele Ori (AGROOF SCOP), IMBE-University of Avignon (missing from the photo) ; INRA UMR ECODEV (missing from the photo).



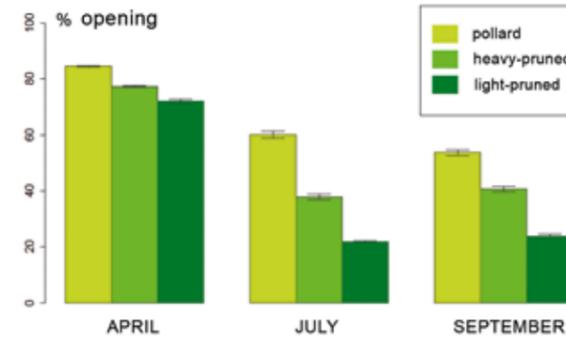
6000 m² (on a total of 11Ha) dedicated to the ARBRATATOUILLE project with different agroforestry systems.

- 2 ha of hybrid walnut trees arranged in 10m x 10m, integrating 0.8 ha of market gardening
- 4 ha of arboretum constituted by a dozen of various hardwoods
- 0,33 ha of market garden orchards, established in 2014.
- 0,85 ha of classical market gardening
- 2,5 ha of classical crop
- 1,43 ha of various hedge and riparian forest

Four different experimental units enable to explain the effect on crops of various microclimatic conditions.



Light-pruned : shadow ++ Heavy-pruned : shadow + Pollard : shadow - Control : full light



Average canopy openness at three periods of 2015, in the three agroforestry treatments.

Intermediate products from trees are important for Denis and Virginie, such as the key Rameeal Chipped Wood (RCW). It enables them to limit weeds' development and to reduce irrigation needs.

The 400 m³ of RCW produced every year by the walnut trees enable them to mulch the 0.8 ha of vegetables crops with an amount of 50 liters/m².



Pruning operations products : RCW and firewood



ACTIONS : impact of trees and associated microclimates on vegetable productions.

The final goal is to understand the interactions between trees and vegetables in order to propose tunings of the agronomic practices, of variety selections and of crop choices in the rotation.

1- Characterize microclimatic conditions as imposed by the trees in function of their pruning type.

Méthods

The shadow conditions are evaluated through hemispheric pictures and completed with measures of temperature and humidity which are recorded continuously thanks to probes.

Expected results

Production of references on the impact of different pruning techniques on the microclimate imposed to the crops. Identification of key microclimatic parameters to explain the difference in terms of crop performances between the different experimental units.



Pollarded treatment hemispherical photograph



Soft pruned treatment hemispherical photograph

2- Evaluation of the impact of trees, and of the associated microclimates, on the growth, development and agronomic performances of vegetables.

Méthods

Within the experimental unit, the performances of three different types of legumes, representing the diversity of physiological type of legume, are monitored: a leave-vegetable (lettuce), a root-vegetable (carrot) and a fruit-vegetable (tomato). The phenological events, the growth and the plants' health are then followed weekly. A final assessment of yields and commercial qualities of vegetables is eventually led

Expected results

The first references on agronomic performance of various vegetables in agroforestry conditions and organic production system. Some reflections on the impact of the technical interventions and their adaptation into agroforestry systems.



D. Florès and G. Herraney : tmonitoring tomatoes development



Light and shadow over a chard crop (Betulaceae).

3- To study the impact of the trees and the microclimate created on the natural regulation of pests by generalist predators of processions.

Méthods

To investigate these complex interactions, we have chosen to proceed in three stages: 1) daily and seasonal Monitoring the activity of beetles and spiders. 2) Monitoring the activity of slugs and crop damage. 3) Study of predation potential through predation cards.

Expected results

Better understanding of biotic interactions at work in these systems, and how microclimate changes could affect these interactions. Avenue for reflection to promote biocontrol in agroforestry system.



Slug (*Arion* sp.) eating a young lettuce



Sentinel prey cards : early stage of the grey slugs (*Deroceras reticulatum*)

4- Understand how agroforestry integrates with farms, assets and constraints it engenders

Méthods

Agroforestry impact social and economic performance of the farm. In ARBRATATOUILLE we endeavored to characterize the production system and agroforestry specifics decision factors.

Expected results

Acquire technical and economical references on production system functioning. Co-design management recommandation with farmers, based partly on produced results.



Weed management in vegetable crops under trees canopy



D. Florès and M. Roesch - training by BASE AGROFORESTERIE group