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# Les ArboNovateurs, for resilience in fruit growing and fruit growers proud of their craft. ” Des ArboNovateur® pour une arboriculture résiliente et des arboriculteurs fiers de leur métier ”

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## Abstract

Practical problem

The project is structured around two issues:

- ”produce differently” through a system approach that makes it possible to reconcile economic performance and agro-ecological practices based on the organic farming model.
- Organisation of events to present our activities to local consumers.

Partners name

GIEE Arbonovateur (farmer association)

CEFEL (research institute)

Chambre d’Agriculture de Tarn et Garonne (Farmer organisation)

Project objectives

In particular, four actions implemented by the GIEE ArboNovateur® require multi-partner work around innovation and research-action.

1. Water management of orchards in the territory is a strong issue for the different players in a deficit water catchment area, particularly in dry periods
2. create a method to adapt nitrogen fertilization to soil and climate conditions
3. Looking for innovating solutions to limit the use of pesticide
4. The perception of by society in the territory is a major problem that requires an innovative approach

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Expected results

Improved water and nitrogen, management through the choice of more adequate irrigation systems, designing decision tools and by enhancing their efficiency, thus adjusting the water and nitrogen quantity to the needs.

Results so far/first lessons

Understanding soil functioning to improve water and nitrogen feeding

More than 80% of the nutritional problems in an orchard are related to soil functioning problems. To understand it, four steps are essential in the Arbonovateur Operational group

Step 1: Soil conductivity mapping

Step 2 : soil Profil

Step 3: Soil analysis

Step 4 : Installation in the orchard, based on analyses, of irrigation control stations. On these stations there are different types of sensors: temperature, air, rainfall, anemometer (wind measurement) pyranometer (radiation study), and soil humidity sensors. Within the ArboNovator® group, a new approach was added in 2016 with the installation of dendrometer sensors on branch, which measure daily micro-variations directly related to the plant's water content. This approach makes it possible to go further in the optimization of water resources

The water and nitrogen savings in optimized management are around 30%, i.e. 1000 m<sup>3</sup> / ha of water and 30 kg of nitrogen on average for several years in apples.

Who will benefit

”Local producers ”organisation and regional authorities who are not partners in the Operational Group are also sharing results to reach farmers, local communities and consumers. The Arbonovateur want to show consumers that they are producing healthy and safe food in a sustainable way.

**Keywords:** Water management, fruit production, dendrometer