



Conceive and evaluate innovative orchard management systems to reduce dependence to phytosanitary products.

EcoPêche 2 : a multipartenarial project



Julien Ruesch (CTIFL)
X International Peach Symposium (Naoussa, Greece)

01/06/2022

CTIFL

Research, Innovation, Transfer

CTIFL is the referent organisation for **applied research in the French fruit & vegetable** sector.

Through its studies and innovations, it contributes to the development and the diversification of production and marketing methods **for all actors involved in the value chain**

- Searching for **alternatives for pesticides**
- **Maintaining the quality** of fruits and vegetables all the way to the consumer
- **Reducing the use of fossil energy** in greenhouses
- Study and development of solutions for **mechanisation and automation**
- Evolution of fruit & vegetable **consumption patterns**

CTIFL in numbers



6 research themes

17 experts serving as primary contacts for ca. 40 product value chains and coordinating 400 research actions and expertise and valorisation assignments



A 25 million euro budget of which 54% are contributed by the sector through an extended voluntary contribution (CVE) collected via the inter-trade organisation Interfel



Ca. 11.500 analyses

carried out by the virology and molecular biology laboratory for inspection and maintenance of plant material



281

staff (FTE), including 234 permanent staff and 10 PhD and co-op students



Ca. 40 fruit & vegetable species

covered by research and an expertise extended to 77 vegetable species and 54 fruit species registered in Metropolitan France



1.800 participants

in events organised by CTIFL: information days, national meetings, presentations of varieties



More than 4 million certified fruit plants

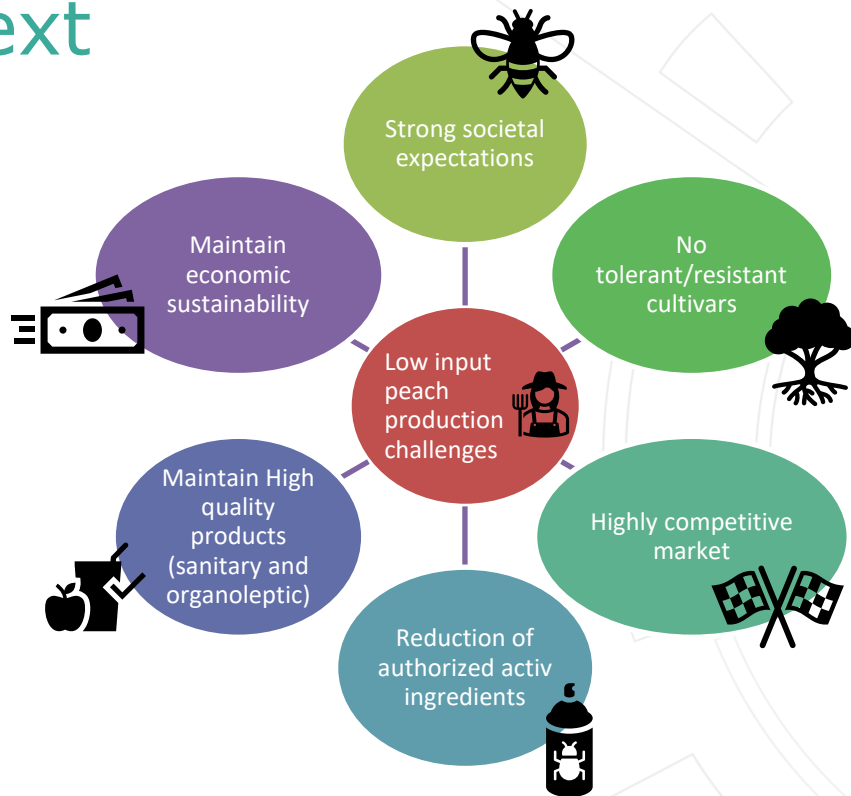


Ca. 4.000 visitors

to the CTIFL centres: professionals, students, researchers from other institutes, and officials



Context



A highly challenged production system

Material and method

EcoPêche 1

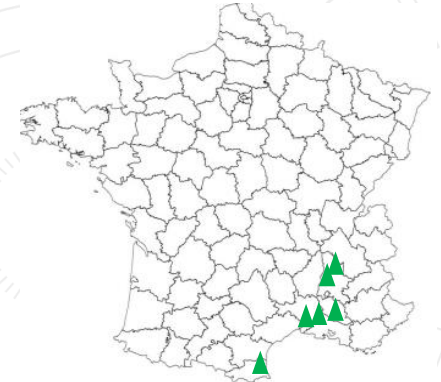
- 2013-2018
- TFI : - 50 %

EcoPêche 2

- 2019-2023
- TFI : - 70 to 80 %

- 6 partners

- CTIFL
- SEFRA
- SUDEXPE
- CENTREX
- INRAE Avignon
- INRAE Gotheron



TFI : Treatment Frequency Index

Material and method

- A global approach

- 5 systems
- At least Eco + and Reference (IFP) on each site
- Eco + : combination of variables



Environmental performance



Agronomic performance



Techno-economic performance

	Eco +	Reference (IFP)	Eco 50	0 residue	Organic (OF)
CTIFL	X	X	-	-	X
SEFRA	X	-	-	-	X
CENTREX	X	X	X	X	X
SUDEXPE	X	X	-	-	-
INRAE PSH Avignon	X	X	X	-	-
INRAE Gotheron	X	X	-	-	X



IFP : Integrated Fruit Production

Objectives Eco + system

- Very ambitious environmental objectives : Use **phytosanitary products in last resort**
 - Reducing TFI from 70-80 % comparing IFP
 - Producing fruits with 0 pesticides residues
 - No use of herbicide
 - Non-biocontrol TFI < 4
- **Maintain** a high **quality** of products
- **Maintain economic** results

Various technical solution

Redesign



Rain protection to control brown rot



Fruit wall to promote aeration

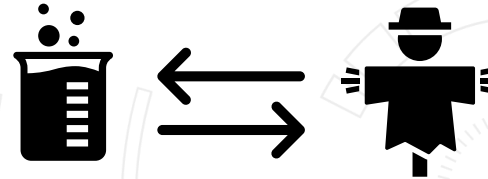


Efficiency



Tangential flow sprayer to reduce spraying liquid volume

Substitution



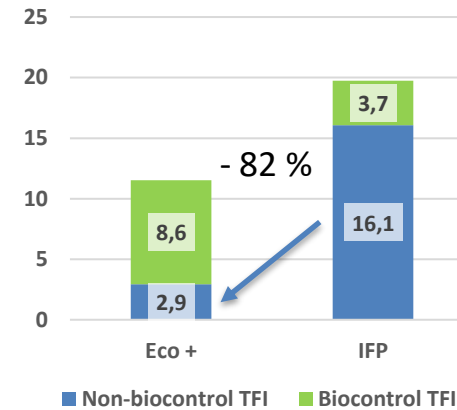
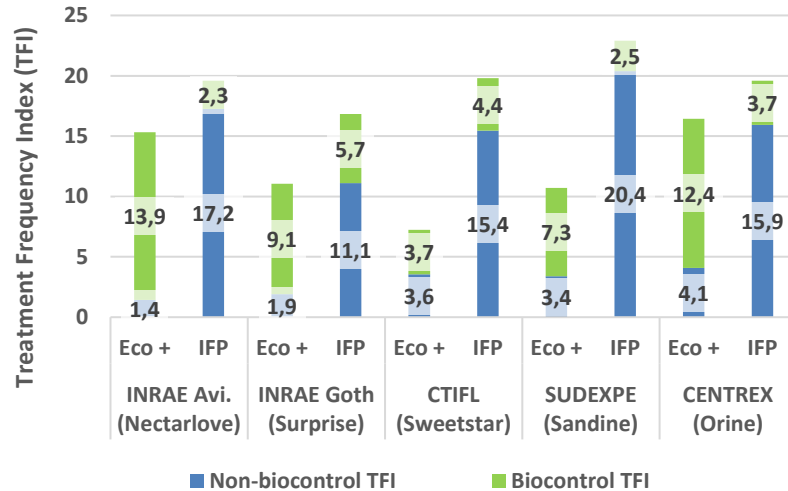
Mineral oils
Glue
Sexual confusion
...

Functional biodiversity



Flower strips to promote biodiversity

Environmental performance



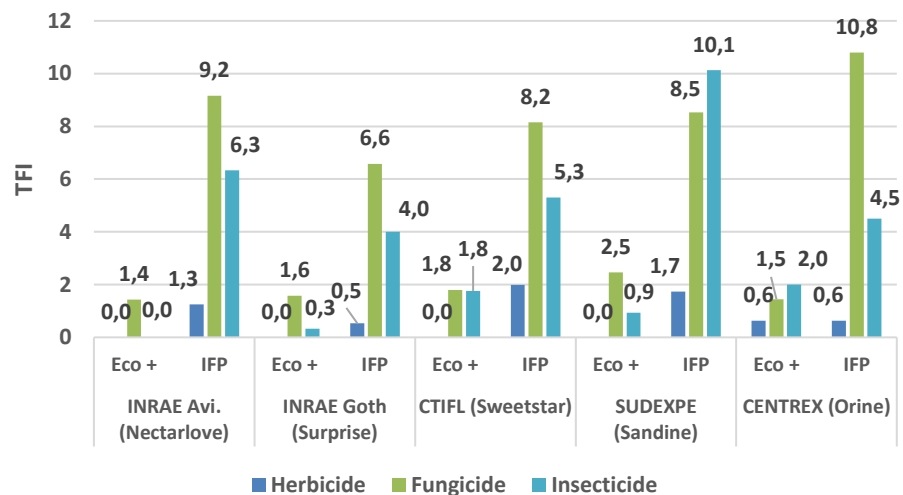
Average non biocontrol and biocontrol TFI per modality.
Average 2019-2021

Average non biocontrol and biocontrol TFI per site and modality.
Average 2019-2021

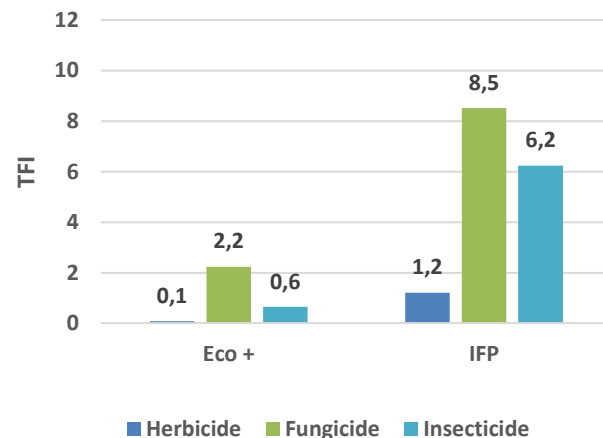
Non-biocontrol TFI reduced - 82 ± 7 %



Environmental performance - Non-biocontrol TFI



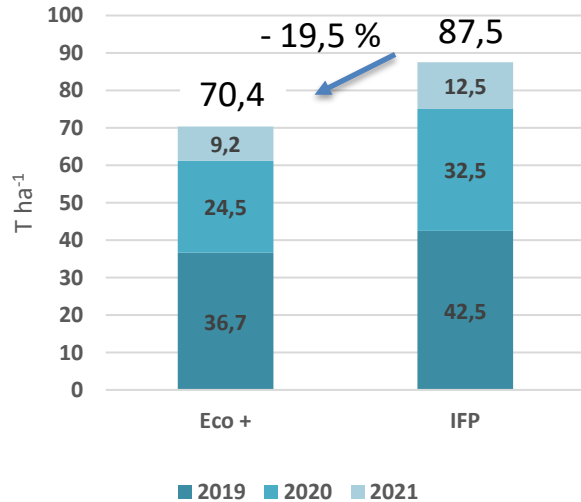
Average non biocontrol TFI per site, target and modality. Average 2019-2021



Average non biocontrol TFI per modality. Average 2019-2021

Fungicides : - 74 %
Insecticides : - 90 %

Agronomic performance



Five sites average cumulative commercialized yield per modality (expressed in T ha⁻¹).
2021 results penalized by frost damage.

A lower production

- Trees weakened by diseases and pests
- High waste rate (brown rot, forficulae)

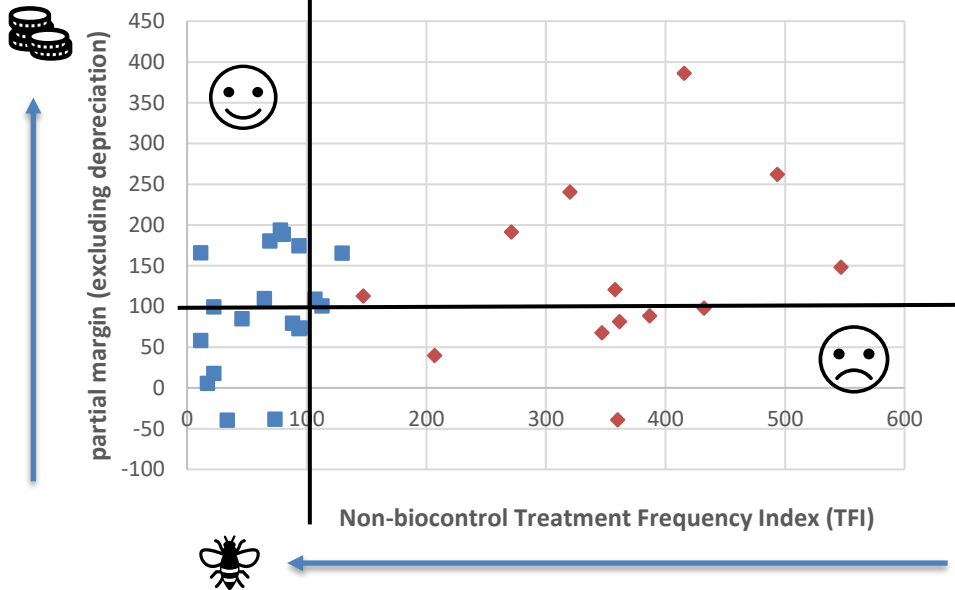


Aphids



Leaf curl

Techno-economic performance



Eco +

- More environmental friendly
- Lower techno-economic results
 - more variability
 - Losses not economically compensated

Conclusion

Environmental objectives reached...

... with agronomic and techno-economic performance depreciated

EcoPêche 2 project

- Very ambitious objectives
- Next step : find compromises and appropriated cursors levels
- A toolbox for stakeholders

Thank you for your attention



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c'est imaginer demain.

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