Organic Rice Production in Camargue, France. A resilience glimpse in turbulent times

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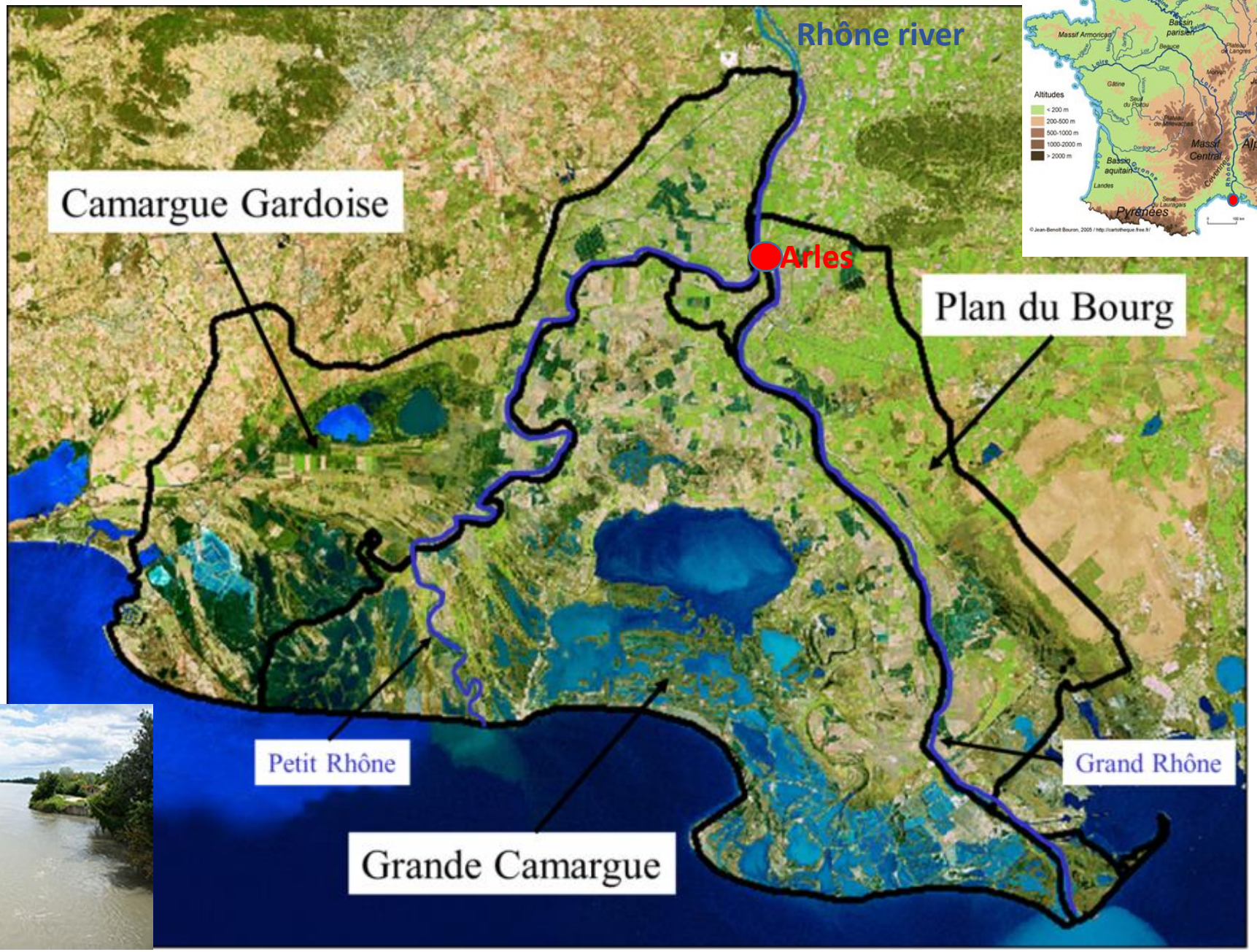
第 4 回 有機米生産システム 国際シンポジウム

Tohoku University Sendai - Japan
September 4 th – 7 th , 2023

THE CAMARGUE



The delta of the Rhône river

150 000 ha

1/3 : cultivated land

CONSTRAINTS

Minimise

¤ **Salty to very salty water table**

¤ Temporary or permanent **waterlogging**

¤ Frequent and **strong winds**

¤ **Very high water deficiency** (700 mm)

¤ High environmental pressure

Agricultural production systems

<u>with an aim to</u>:

ASSETS

Take advantage of:

+ Abundant fresh water

+ Flat land, deep and stone-free soil

+ Temperate Mediterranean climate

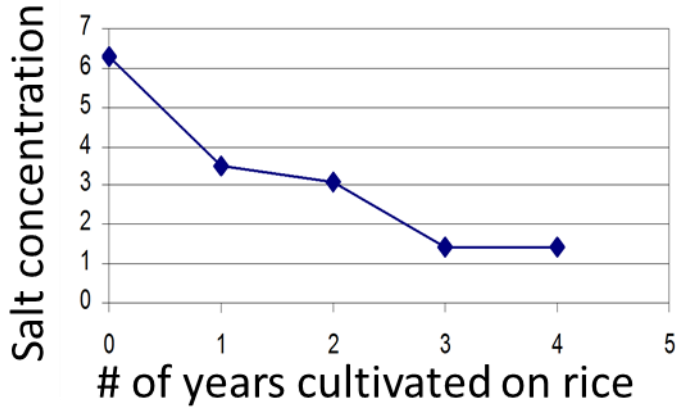
+ High radiant energy

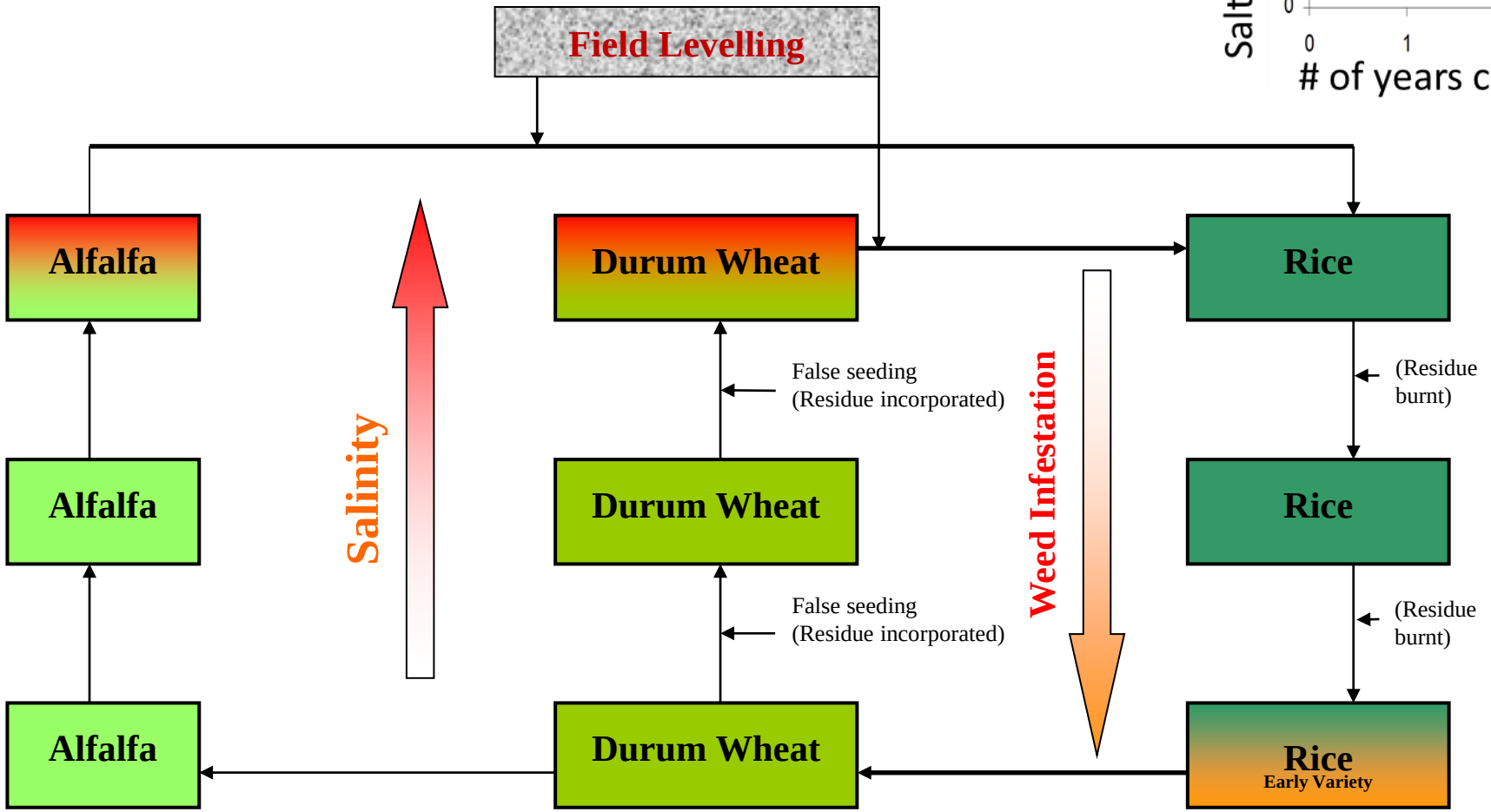
+ Limited contamination by pests and deseases

THE WATER ISSUE IN CAMARGUE

Big farms: from 100 ha to 1000 ha

Cropping system model based on Rice and Wheat in the Camargue *(conventional management)*





Semi perennial dry crop

Winter-spring dry crop

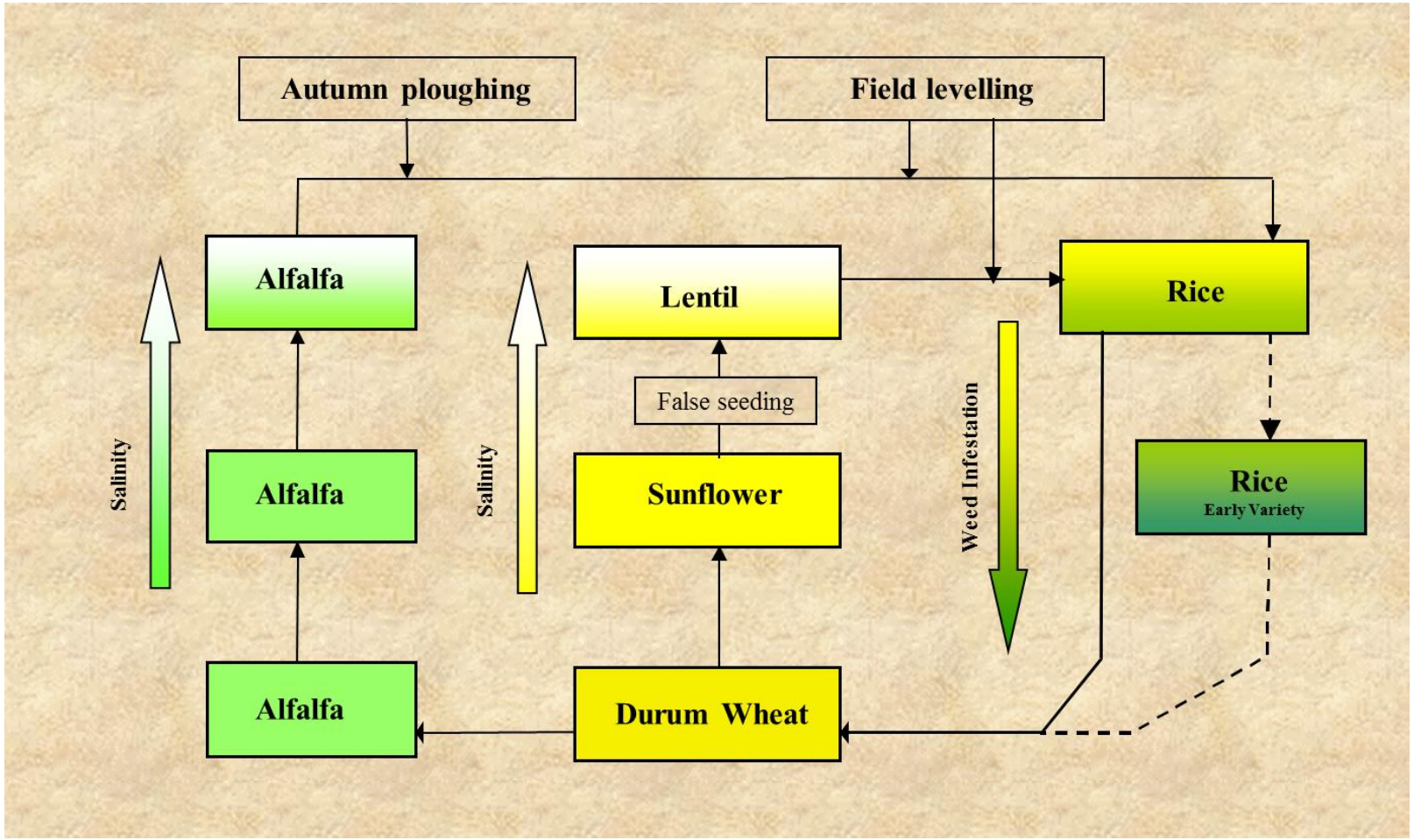
Summer irrigated crop


FORD

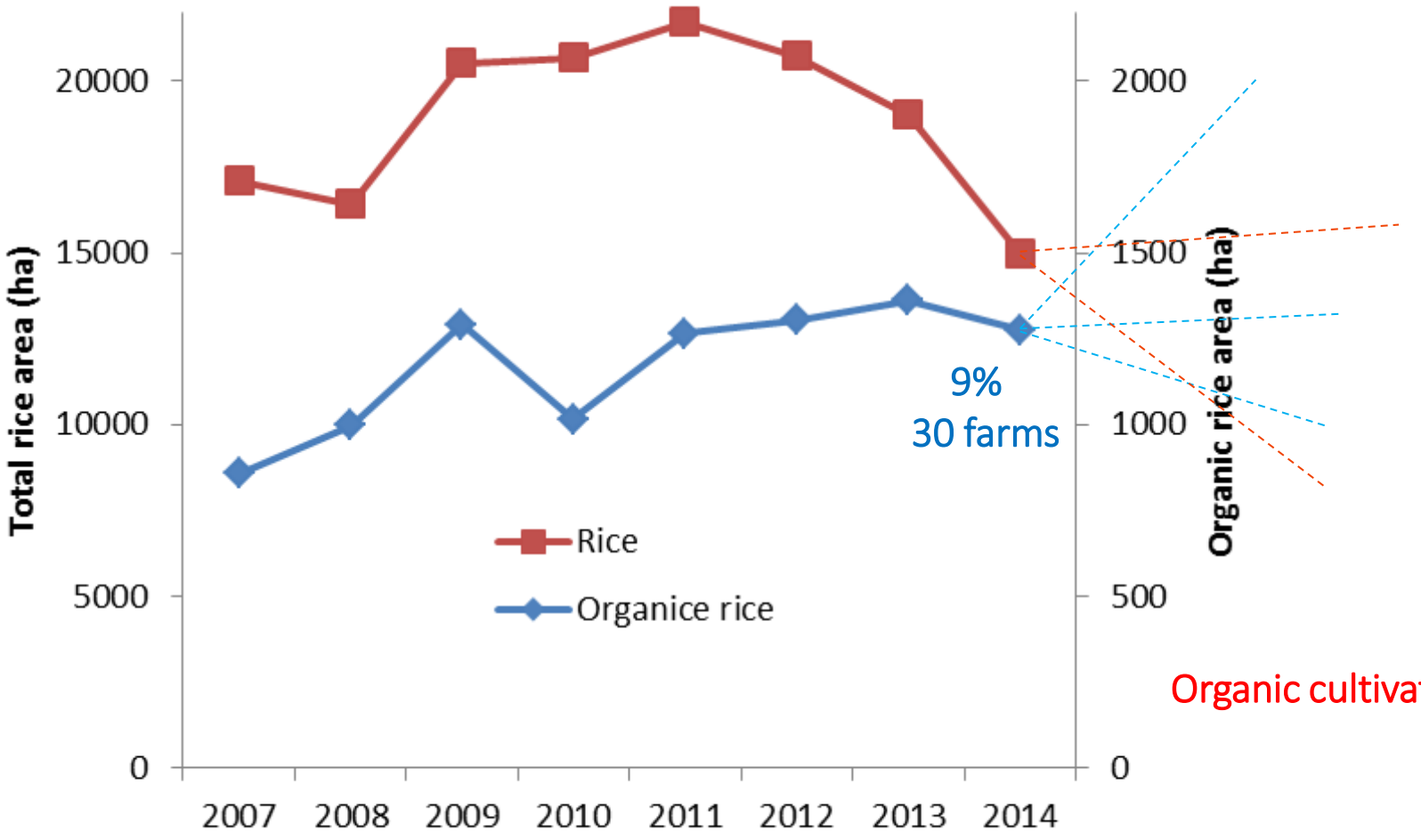
About organic Rice

ORGANIC RICE CROPPING SYSYEMS

- Weeds are the major problem -> only one year of rice and then several years of dry crops
- To lengthen the crop rotation is the solution -> Which third crop besides rice and durum wheat ?



2014: the European CAP reform; a new crisis for rice cultivation in France



Which future?

Organic cultivation : an answer ?

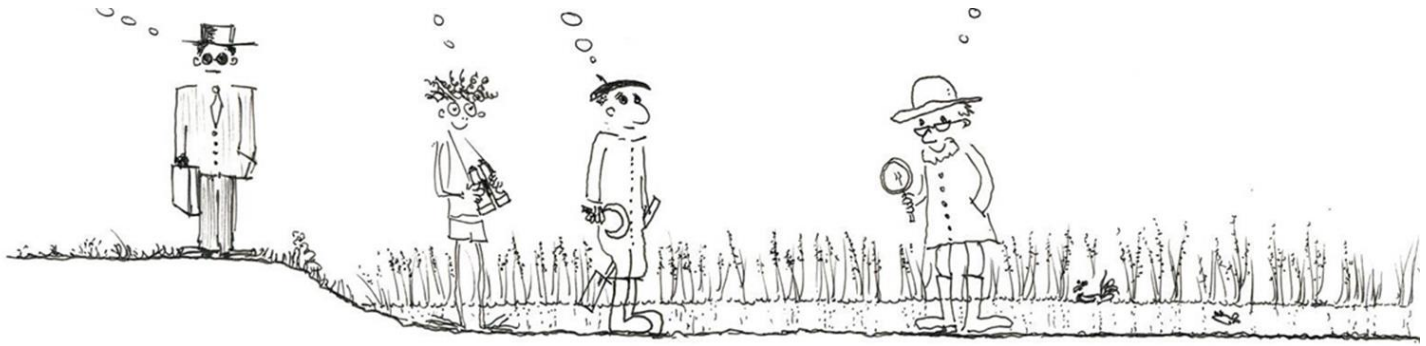
The general Framework of our research (2010-2014)

- Participative scenarios development with stakeholders and farmers of Camargue

- Main drivers of change: (i) economic and regulatory conditions for rice (conv. and organic) and the other activities, (ii) climatic change.

- Implementation of these scenarios into different kinds of models (crop rotation model, bio-economic model…).

- By means of the models, simulations to « predict » the evolution of the total rice surface in Camargue, the proportion of organic and the environmental consequences.



Bank manager *Naturalist* *Farmer* *Scientist*

In a paddy field

Four modelling approaches for scenario assessment

(i) Bio-economic models (BEM).
Description of the agricultural activities by means of their inputs and outputs. Multiple Goal Linear Programming. Plausible futures.

(ii) Land use/cover change models (LUCC).
Based on analysis of what has happened, identification of main drivers and projections. Most probable spots for change.

(ii) Multi-agent models (MAS) and (iv) crop rotation decision models. Individual behaviour and aggregation of individual decisions. Bottlenecks and levers for Organic rice development, possible pathways.

Main results (2014)

= The regional conversion to Organic Farming (OF) is feasable and plausible.

The region could maintain its economic productivity while decreasing the potential harmful effect to the environment. But with a different land use (eg. Rice surface from 20 000 ha to 7 000, less durum wheat, triple alfalfa production)

= The most probable conversion would take place in fields with low salt pressure belonging to livestock breeders and diversified cereal producers.

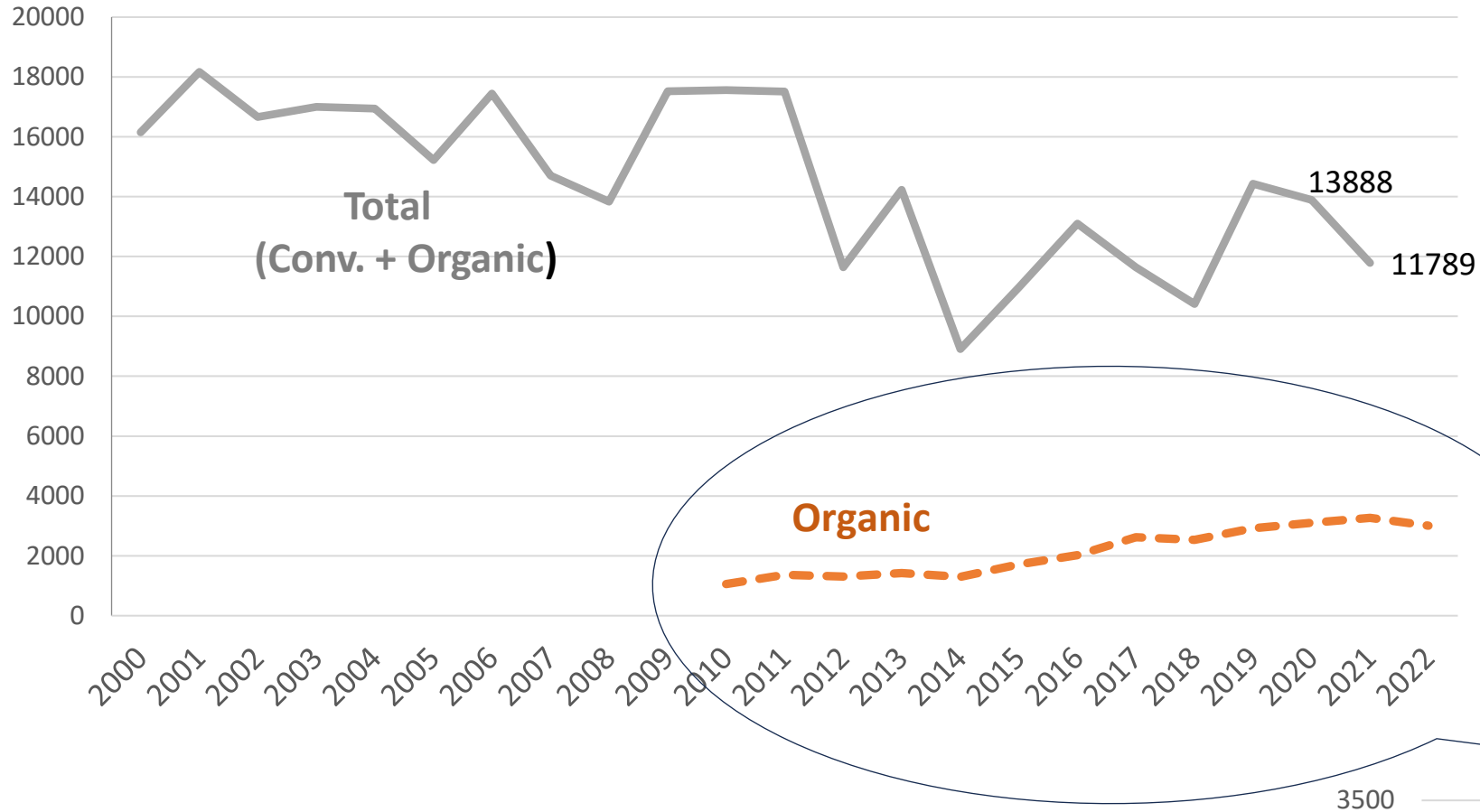
= The possible trajectories of conversion suggest that certain farmers (specialized in rice production) might need greater support for conversion to OF as their economic performance will be hampered during that period.

Updating data and going back to Camargue for a new survey (May 2023)

15 stakeholders including farmers

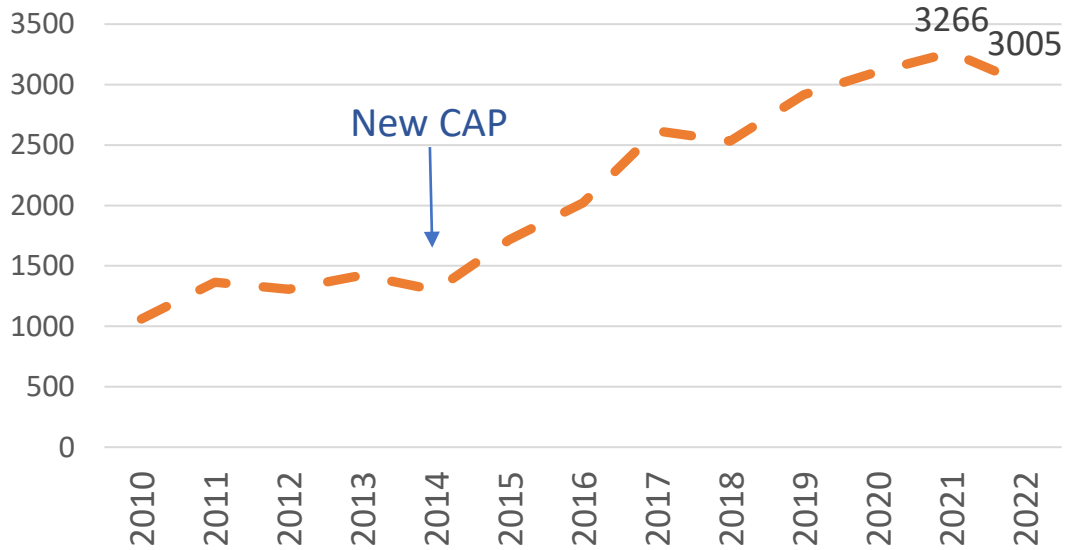
What have we observed?

Conventional and organic rice surface evolution in Camargue (Protected Geographical Indication area) from 2000 to 2022 (ha).



Ratio Organic/Conv.:
25%
90 farms

A zoom in on organic



What have made this evolution possible?

- The suppression of a (very high) specific subsidy for rice cultivation
- The price of organic rice compared with conventional rice
- Subsidies for organic conversion (but no more for maintenance)
- The possibility to grow conventional and organic rice in the same farm (with different types of grains)
- The development (good economic and regulatory conditions) of livestock farming (mixed farming with bulls and cows)
  - it increases the demand for forage production inside farms or in between farms at regional level
  - It creates outlets for alfalfa which is a very interesting « conversion » crop.
- The partial resolution of the « third crop » problem in organic rice systems: with alfalfa but also with market gardening crops (tomatoes, melon…).
- The prohibition of straw burning and aerial means (helicopter).

Perspectives: and the next future ?

- **At the european and worldwide level**
  - the Russia-Ukraine war

    -> increase of inputs prices but also increase of the selling prices for cereals, sunflower…
    -> lowered difference between selling prices of organic and conventional grains (including rice).
    -> Organic growers in the expectancy (wait and see). Return to conventional farming for some.

  - The effects of climatic change on fresh water availability and yields

    -> However, favorable conditions for access to water in Camargue

  - More about rice world market…

- **At the national and local level**
  - Inflation and and impoverishment of the population -> less purchase of organic products
  - while a successful growth of organic, organic agriculture still not well recognized and supported at local level -> Lack of technical support and research.

Delmotte S., Barbier J.M., Mouret J.C., Le Page C., Wéry J., Chauvelon P., Sandoz A., Lopez Ridaura S., 2016. Participatory integrated assessment of scenarios for organic farming at different scales in Camargue, France. Agricultural systems 143, 147-158.

Delmotte S., Couderc V., Mouret J.C., Lopez Ridaura S., Barbier J.M., Hossard L., 2017. From stakeholders narratives to modelling plausible future agricultural systems. Integrated assessment of scenarios for Camargue, Southern France. Europ. J. Agronomy 82, 292-307.

Santiago Lopez-Ridaura, Sylvestre Delmotte, Christophe Le Page, Laure Le Quéré, Gaël Goulevant, Philippe Chauvelon, Alain Sandoz and Jean-Claude Mouret. Multi-Scale Integrated Assessment of Regional Conversion to Organic Farming (OF). In S. Bellon, S. Penvern (eds), *Organic Farming, Prototype for Sustainable Agricultures*, Springer Science+Business Media Dordrecht 2014, 453-466.