

Ten Years for Agroecology in Europe Transition pathways towards a sustainable European food system

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The outline of our presentation

- The objectives and rationales of TYFA
- Presentation of the macro-agronomic modelling developed so far
- Outlook on the future work program (2019-2021)

TYFA in a nutshell

- TYFA : Ten Years For Agroecology
- A plausible and desirable image in 2050: European agriculture is pesticide-free, biodiversity rich and procure healthy food
- A pathway during which the first 10 years are crucial
- A European project, i.e. for the European Union
- Europe (the EU) needs to be apprehended as a consistent unit, notwithstanding its diversity
 - For agro-eco-geographical reasons (macro-agronomy approach)
 - For cultural reasons: food, landscapes
 - For economic and organisational reasons of its food system
 - For socio-political reasons

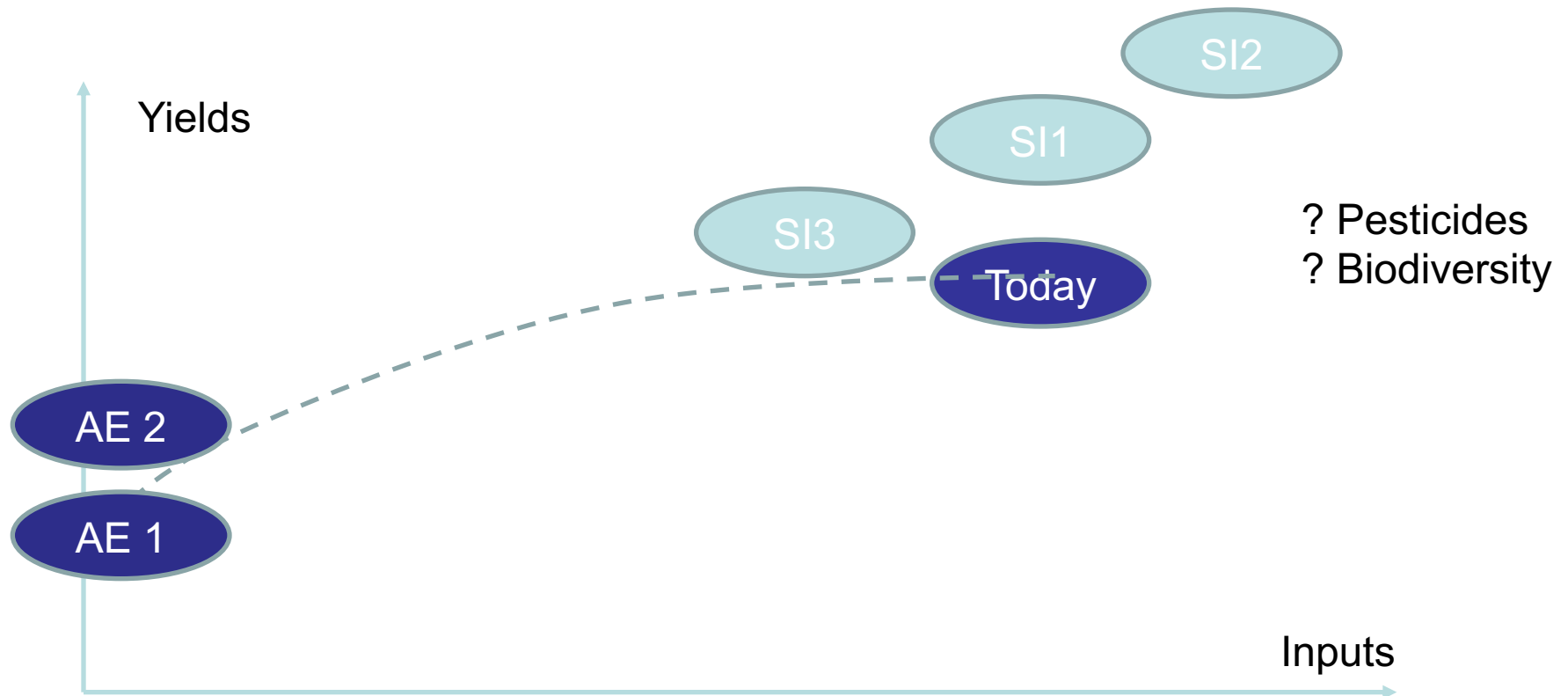
The European dimensions of TYFA

- The issue of Agroecology is different in Europe when compared to the rest of the World: AE is likely to entail *lower* yields
 - Meta-analysis of Ponisio (2015) about yields of organic farming
 - Defending higher yields would be a inaudible position
- Issues dealing with the internal organisation of the EU
 - See above
- Issues dealing with the EU and the rest of the World
 - The EU imports the equivalent of 35% of its UAA: the World is feeding the EU ; the issue of the industrial livestock sector

The debates that TYFA wants to contribute to

- Production: does European agroecology produce enough to feed Europe without harnessing the rest of the World?
 - A sufficiency paradigm
 - Introducing a qualitative dimension
- Socio-environmental: what are the overall impacts of AE?
 - Trade-off between the climate/carbon agenda and the biodiversity agenda
- Socio-territorial debate: what are the impacts of AE on jobs?
 - Capital/labour intensity, about meaning of farming and eating
- Socio-technical debate: what agricultural and food-system model? With what social consequences?
 - Issue about the nature and role of technologies in the development of agricultural and food systems (low-tech vs. high-tech)

Agroecology and sustainable intensification



Assessing the current situation for identifying levers

- A comprehensive analysis of production/consumption developments of European food system (use of FAO stats)
- In short: the EU diet has followed the EU production rationale:
 - More meat and animal products (x 2 from 1960's)
 - More sugars, shortage in vegetables and fibers
 - More cereal produced and used for industrial animal production
 - More proteins (soya) imported from the Americas for industrial animal production
 - The EU is a *net importer* of 1/3 of the equivalent of its UAA out of which 1/5 is for soya only
- Our excessive consumption broadly corresponds to the excessive production of the present industrial animal sector
- In a sufficiency paradigm, it is logical and desirable to get rid of this production (in terms of quantity and nature)

A bio-physical model to contribute to the debate

- A need for quantification: at the end, does agroecology produce enough to feed Europe?
 - So far, no model addressing this specific question at this specific level with this specific framing
- A holistic model, an iterative approach for completing different cycles

Input	Output
<ul style="list-style-type: none">• Diet• Crop production modes• Livestock production modes• Waste• Non-food use• Nitrogen inputs to crops	<ul style="list-style-type: none">• Production by type of products• Land-use• GHG emission• Biodiversity attribute• Nitrogen export by crops

3. The TYFA scenario: the tested hypothesis

1 Fertility management at a territorial level



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Organic farming is the reference model



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4 Livestock extensification (phase-out of industrial modes)



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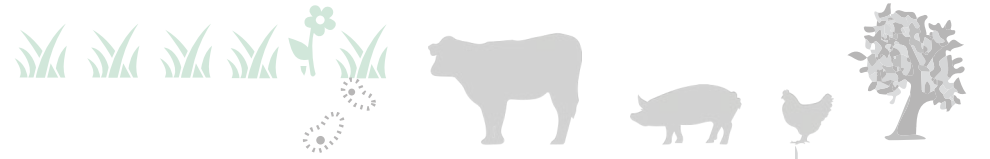
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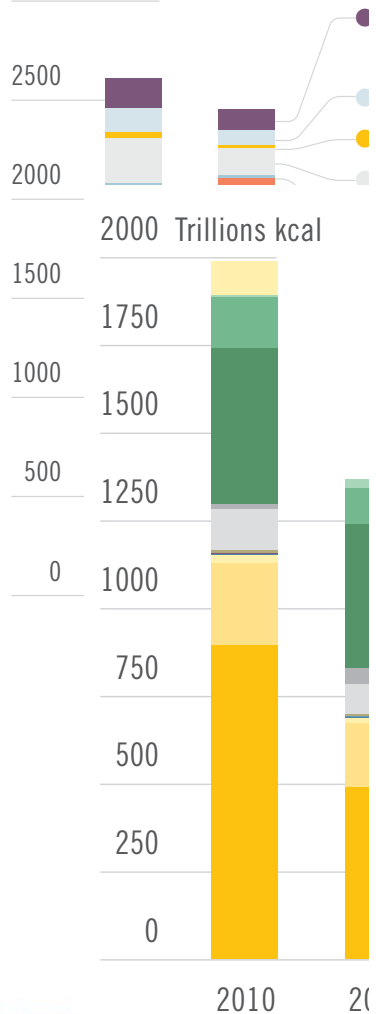


6 Food first, then feed, then biodiversity, then non-food use

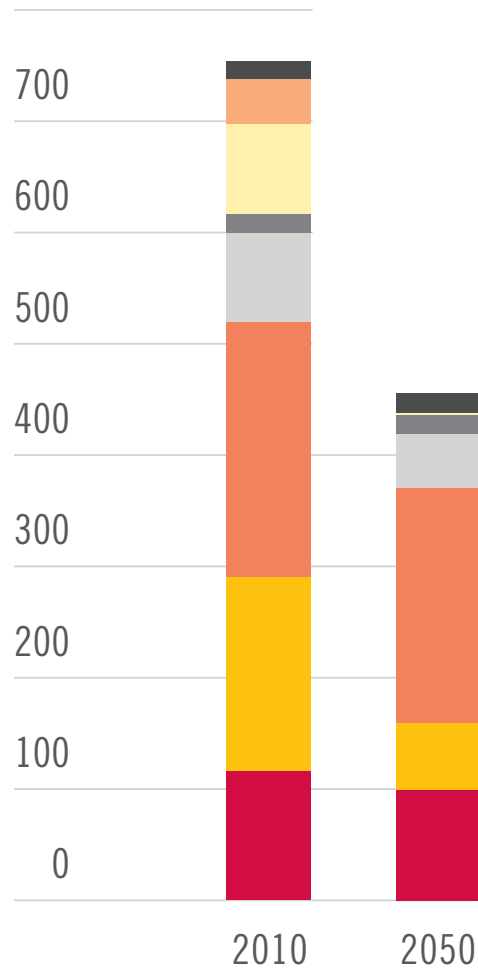


Main results

3000 kcal/jour/pers.



800 MtCO₂



- Fabrication du matériel
 - Aliments pour animaux (déforestation importée)
 - Fabrication de l'azote et autres intrants
 - Mise à disposition de l'énergie
 - Stockage des effluents
 - Fermentation entérique
 - Sols agricoles (y.c. N₂O lessivage et NH₃)
 - Consommation d'énergie
- (matière sèche)
fs
ville
ide de porc
is / caprins
ide de bœuf

Source : TYFAM.

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Main objectives of the next steps

1. Reinforcing our understanding of what could an agroecological transition pathway in Europe look like
2. Comparing contrasted pathways based either on AE or on SI through a multidimensional assessment framework, in order to feed in academic, societal and political debates regarding the future of our food system.

The next steps

- **The First Step of TYFA** : mainly relied on biophysical modelling / ability to feed Europeans by 2050 while ensuring the closing of the nitrogen cycle.

- **Deepening the TYFA scenario** :
 - **reinforcing the agronomic analyses** led so far and
 - developing a **socio-economic and political evaluation** describing under which condition the AE scenario would be feasible / while comparing it to a SI scenario.

Scientific works related to agricultural transition

- **(1) Biophysical and quantitative models**
(e.g.: work led on nitrogen balance, European or global physical scenarios, etc.)
- **(2) Integrative assessment models combining quantitative economic analyses and biophysical modelling**
(e.g.: IMAGE or CAPRI -> often based on existing farm structures)
- **(3) Mainly qualitative work on social aspects**
(e.g.: work led by GIRAF, IPES-food)

**WP0 – Scenario development
(AE and SI)**

WP4 – Debating in the public space

**WP1
Agronomy
& environment**

**WP2
Political economy
and
sociology of
transition**

**WP3
Socio-economic
implications**



Thank you for your attention!

<https://www.iddri.org/en/project/ten-years-agroecology-europe>

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