Reducing pesticide dependence: a matter of transitions within the agrofood system as a whole

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Input supply

Input suppliers

Farmers

Wholesale, storage

Food supply

Knowledge

Researchers, Extensionists

Advisers, Trainers

Food processors

Retailers

Consumers, Citizens

Community-based actors

Civil society

Policy makers

Public policy

Food supply

Civil society

Public policy

Input supply

Input suppliers

Farmers
• The paradigm of intensification: a path-dependency analysis
• Current lock-in effects at farm scale
• Lock-in effects in the advisory and research sectors
• Lock-in effects at the market level
• The possible role of civil society
• Obstacles and opportunities for robust transitions
1. The paradigm of intensification: a path-dependency analysis

The modernisation period
- First insecticides and growth regulators
- First fongicides
- First systemic herbicides

The intensification turn
- From curative to systematic treatments
- Changes in practices: early fertilization, early and dense sowing
- Adapted equipment
- First resistances to fongicides

The period of questioning
- First productive multi resistant varieties
- First studies on low input strategies
- Development of good agricultural practices schemes

1960s
- Pesticides used to deal with an unexpected problem

1970s
- First systemic fongicides

1978-1984
- Pesticides used as an insurance

1983
- 1985-1993
- 1993-2006
The paradigm of intensification: a path-dependency analysis

- **Research:** yield optimization perspective
- **Policy:** European subsides based on production
- **Consumers:** demand for white bread
- **Intermediaries:** criteria of homogeneity, industrialisation
- **Extension:** yield maximization
- **Seed industry:** productive but disease sensitive varieties
- **Pesticide industry:** new products
- **Farm scale:** early fertilisation, early and dense sowing

*the intensification turn: towards a more systematic use of inputs*
2. **Current lock-in effects at farm scale**

- Sociological analysis of farmers’ trajectories -> 2 types of transitions:
  - Part of the IPM principles / reversible transition
  - Systemic change / gradual and robust transition

- ESR grid
  - Efficiency - Substitution - Redesign

- Role of progressiveness (how to assess and support it?) and collective dynamics
3. **Lock-in effects in the advisory and research sectors**

- Reduction in public involvement
  - advisory systems are more market-led
  - advisors are more likely to be risk adverse and not to promote alternative strategies

- However, more positive attitudes towards low-input practices

- Advisory systems and part of research favour the improvement of current techniques (eg., precision agriculture), more radical changes in agricultural systems are less tackled
4. **Lock-in effects at the market level**

- Retailers’ quality schemes are gaining importance since 1995
  - But they are mostly devoted to products traceability and safety (good agricultural practices and record keeping)
  - They are seen as a precondition to gain market access

- Few include IPM principles and environmental aspects
  - Some impose thresholds for pesticide use or the use of biological control
  - The collective organisation of farmers for marketing purpose might facilitate technical changes

- More generally quality criteria (size, homogeneity, visual aspect) are a major bottleneck to pesticide reduction... and consumers’ potential acception of irregularities is not explored
5. The possible role of civil society

- the construction of the impact of agriculture on the environment and health as a public issue

- Analysis of public debates in France and the NL
  - Concerns about environmental impact -> health impact
    (-> changes in regulations)
  - Opposition between reduction of impact / of use (cf NAP debates)

- The difficulty to legitimate IPM
  - Most civil society’s spokesmen think in terms of zero-pesticide rather than low input
6. Conclusion: Obstacles and opportunities for robust transitions

- Changes in crop protection practices involve a large socio-technical system
  - Not only a matter of change at farm level
  - Need to consider market conditions, governance of research and extension, public debates
  - Analysis of the interdependencies and coordination

- The main conditions for significant changes:
  - Collective dynamics and progressiveness in farmers transitions
  - Translation of changes into marketing strategies (or coherence)
  - Involvement of research and extension
  - Voluntarist public policies and involvement of civil society