

 **O.55 - Crop protection in changing agro-food systems. A sociological approach**

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### Abstract

This paper analyses the conditions of transition towards more sustainable crop protection practices from a sociological point of view. It is centred on farmers' transitions, but also takes into account the interdependencies at the scale of the 'agro-food system'. This includes the determining role of certification systems and retailers, but also NGOs and civil society, research, extension and regulatory bodies. This agro-food system has progressively stabilised itself around the 'paradigm of intensification' due to a convergence of innovations (homologation of new pesticides, changes in fertilisation methods, earlier sowing, etc.) and of actors' strategies, which has led to a change from a curative use of pesticides to a more systematic one. However, some minor trends may highlight the conditions for an evolution towards more sustainable crop protection strategies. In this paper, the comparative analysis of exemplary cases (in apple and wheat production) of transitions towards integrated protection (IP) strategies is based on extensive sociological fieldwork achieved through ENDURE sub-activity RA3.5 (sociological approaches) in France, Switzerland, the Netherlands, the UK, and Denmark.

This paper is based on the work achieved in ENDURE sub-activity RA3.5, which aims to identify, along the food chain, social and cultural factors affecting decisions, behaviour and practices that are relevant to the adoption of low-input crop protection strategies. Our intended contribution as social scientists is to analyse the evolution of a whole complex social system – let's call it the 'agro-food system' (Gliessman, 1997), as it involves many social actors i.e. farmers, certification systems, retailers, NGOs and civil society, research, extension and regulatory bodies. In another paper submitted at the ENDURE Conference, we draw on the case of winter wheat in France to analyse how this agro-food system has progressively stabilised itself around the paradigm of intensification. The convergence of innovations (homologation of new pesticides, changes in fertilisation methods, earlier sowing, etc.) and actors' strategies led to a change from a curative use of pesticides to a more systematic one.

However, some minor trends may highlight the conditions for an evolution towards more sustainable crop protection strategies, and this is what this paper is about. We will draw on our sociological fieldwork on apple and wheat production in France, Switzerland, Netherlands and the UK to describe exemplary cases of transitions towards integrated protection (IP) strategies. We will analyse, in a comparative perspective, the possible role of sociological factors such as learning processes, the nature and organisation of advisory services and collective dynamics among farmers (Langvad and Noe, 2006, Lamine and Bellon, 2008) in their relative robustness. The method includes the analysis of relevant documentation and some 60 qualitative interviews, all undertaken with common interview guidelines, with growers, intermediaries, supermarkets and NGOs.

### **Transitions towards integrated protection in apple production**

In Switzerland, the positions and practices of growers regarding integrated production can be categorised in three successive periods:

- 1962-1982: integrated production, from pioneers to professionalisation. The increasing number of treatments on apple causes researchers to develop new methods with the collaboration of advisory services and several growers. From these pioneers, IP developed at a larger scale due to the reorganisation of training at all levels of agricultural education.
- 1982-1993: IP as a way to add value on the market. In 1982 the first guideline for IP is elaborated at Swiss level, although the labels initiated by grower groups were never largely used by retailers.
- 1993-2008: integrated production as the standard. When IP becomes the standard through ecological requirements for direct payments, motivations change and different practices and perceptions of IP are observed among growers.

This Swiss approach towards IP in apple production demonstrates three determining factors: the involvement of research and extension, the existence of collective dynamics among farmers, and the change in public policies. In France, the evolution of IP in apple can be described as primarily market led, even though there has been in the 1990s a movement similar to the Swiss collaboration between research, extension and growers. The visual quality of fruits, in conflict with pesticide reduction, is the main requirement of private certification schemes and considered to be the main focus of 'consumer demand', a critical notion as this importance of visual aspect is more likely to be induced by retailers' competition...Indeed, in some alternative systems such as community supported agriculture-type weekly box schemes (Lamine, 2005), a fundamental principle of the partnerships between producers and consumers is that these accept the irregularity of the box contents and of the products themselves (as opposed to the visual quality).

Even though these schemes are not much more demanding in terms of environmental aspects than the basic legislation, they might have led some growers to go further in their biological control strategies, thanks to the collective organisation of producer groups, often with their own advisors.

In the Netherlands, IP developed in apple production through the introduction of the biological control of spider moth in the early 1990s. Simultaneously fruit growers progressively changed to selective pesticides in order to save the natural enemies in their orchards. As a result the way of thinking about crop protection in orchards changed, as monitoring of pest populations and use of thresholds became common (even though this can have counter-effects). In the early 2000s, EurepGAP gave another boost to IP, more or less enforced by co-operative trade companies for which it is a means to improve the competitive position of the Dutch fruit sector.

### **IP Wheat growers**

The analysis of French wheat growers' trajectories towards IP has led us to identify three types of farmers.

The first type of farmers turned to IP for various intricate reasons (economic motivations, ecological ones, health, organisation of work, anticipation). They often started to look for economic optimisation a long time ago, often in the context of CAP revision and low prices (1993-2006). Technical problems and the lack of integration of their strategies (reducing the doses without changing any other thing in their technical practices) led them to seek advice, and to enter farmers' IP groups. From then on, they began changing other techniques in a more systemic way (e.g., date and density of sowing, date and quantity of fertilisers etc.).

The second type of farmers adopted some IP techniques during the period of low prices (partly because the arguments in favour of IP were mainly economical ones), but recently changed back towards higher use of pesticides or are considering this. However, they might also turn back again towards IP if better incentives were launched and it should be easier for them than for many other farmers to significantly reduce their use of pesticides if the legislation were to change.

Finally, some farmers are interested by these approaches (they read about them, they talk to other farmers) but feel too isolated to turn to IP yet. If their arguments are mainly linked to prices, the absence of specific valorisation (except for small niche markets), and the lack of support from the profession are also determining.

This shows the importance of collective dynamics among farmers, which allows them to overcome technical problems and build a collective identity in a professional world that is mainly sceptical. The involvement of extension services and research is also a determining factor.

#### **A synthetic view of the conditions of such transitions**

The following table compares the different cases in terms of determining the conditions of evolution towards IP. These are five: the role of public policies, the involvement of research and extension, the collective dynamics among farmers, the translation of the technical changes into marketing strategies, and the involvement of civil society.

	<i>Apple CH</i>	<i>Apple F</i>	<i>Wheat F</i>	<i>NL</i>	<i>UK</i>
<i>Role of public policies</i>	Strong: ecological requirements for direct payments	Might become stronger at national level and local level (eg. watersheds)		pesticides action Plan 1991	UK Pesticides Strategy 2006
<i>Involvement of research and extension</i>	Strong during the first phase	In pilot areas (research on IP fruit production)	In pilot areas (research on low input strategies)	Strong in pesticide action plan preparation; decreasing after	Strong in the Pesticides Safety Directorate
<i>Collective dynamics among farmers</i>	Strong especially at the beginning	Market led (producers group for marketing)	Strong in some pioneer groups	Market led (cooperatives) + study groups	
<i>Translation in marketing strategies</i>	Not really achieved	Supermarket schemes	Almost none (except for short circuits and a few cooperatives)	MRL requirements of retailers	Supermarket schemes
<i>Involvement of civil society</i>	Strong: public votation on agriculture/ environment	Low except in CSA schemes		Increasing via MRL actions of NGOs towards supermarkets	Increasing (PAN actions)

Our case studies show that farmers' trajectories towards IP are progressive along the continuum linking the two paradigms of input substitution (and/or reduction) and system redesign (Hill and MacRae, 1995). Therefore, a fundamental issue is to make this progressiveness possible.

The most robust and extensive transitions seem to concern producers who are not isolated but involved in groups and in lasting collective dynamics. In such groups farmers learn from one another and end up feeling more confident with their decisions as these are taken with other farmers and an advisor.

Transitions towards IP result from a mix of different motivations. Producers often talk more of rationalisation and economic expectations than of their environmental view or their taking into account of societal expectations. Here, the civil society through the construction of the environmental impact of agriculture as a public issue, has a determining role to play (see Haynes et al., same conference).

Finally, these different cases (as well as the one of the Danish IP) share the problem that IP does not have a clear definition, as opposed to organic. This is again a question of public policies.

In the context of a high coherence of the whole agro-food system around the 'intensification model', studying minor trends allows the conditions for transitions towards more sustainable forms of crop protection to be identified. It is clear that these different conditions can not play a role independently of others. For example, public policies have to be accompanied by agricultural advisory services and education; if not, there is a high risk that farmers who cannot adapt will be left behind, favouring further concentrations.

## References

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