

## The role and attitudes of agricultural advisors in implementing sustainable pest management in European agriculture – a cross national case study in NL, FR; UK and DK

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**Abstract:** *One of the major current challenges facing European agriculture is to achieve an important reduction of pesticides use. If farmers are first in line facing this challenge, agricultural extension is expected to play a key role in this achievement. However, while government funding got substantially reduced, agricultural extension was growingly provided by private actors, and with farmers supporting most of its costs. In which extent this new context of advisory provision is likely to enable innovative processes turned toward low pesticide use? This exploratory research, implemented in the framework of ENDURE network in 2009 is based on data collected in Denmark, France, Netherlands and United Kingdom. We analyze the attitudes (discourse and practice) of different advisors and advisory organizations, ranging from input suppliers, to consulting firms, from private profit-orientated organizations to non-profit and public organizations. Our different results firstly lead us to call into question the capacity of the current advisory practices, grounded in both one-to-one relations and commercial interests, to enable the growth of real innovative practices and strategies in crop protection. Furthermore we underline how, with no strong economical driving forces, advisors and farmers will very likely continue to be stuck into “optimization” processes, and the farmers can difficultly favour implementation of innovative and radical changes in the latter pest management strategies.*

**Keywords:** *advisory organizations – Advisors attitudes - innovative pest management practices – optimization processes – driving forces - ENDURE network –*

### Introduction

Agriculture in Europe has achieved during the 20th century high levels of productivity at the expense of huge consumption of chemical inputs and non-renewable resources. For many years now, this orientation is being strongly criticized and a broad turn toward more sustainability is at stake. One of the major current challenges is to achieve an important reduction in pesticides use. The corresponding European legislation has been progressively reinforced these last years while more sustainable methods for pest management are growingly promoted (EU, 2009). If farmers are first in line facing this challenge, all the Agricultural Knowledge and Extension System (AKIS) is challenged too, including the agricultural extension agents and organisations, known as a cornerstone in modern farmers’ decision making (Ingram and Morris, 2007).

From the 90’s on, the consequences of the growing privatization of the extension sector and the commercialization of its services in Western Europe are in debate. Whereas most authors argue that ongoing reforms in the sector show important benefits, notably in increasing efficiency, flexibility and accountability of the providers, many claim that leaving advisory to business logics may lead some subjects for advice to fall by the wayside, and particularly sustainability related issues - such as soil, water, biodiversity or landscape management ones (Leuwis, 2000; Garfoth et al., 2003; Klerks et al., 2005; Laurent et al., 2006; Labarthe, 2009). In line with this debate, we will discuss here the extent to which the current context of advisory provision is likely to enable

the implementation of sustainable integrated pest management in Europe. We will more particularly shed light on the current attitudes of advisors and advisory organisations toward pest management issues, identify some of the major factors underlying these attitudes and focus on the role that advisors play in supporting farmers to adopt new practices in this domain.

### **An explorative study**

Our study is based on a survey conducted between February and June 2009 within the activities of the European Network for Durable Exploitation of crop protection strategies (ENDURE crop protection), including partners from Italy, Denmark, Netherlands, United Kingdom and France. In this contribution results are provided for the four last countries.

Data procurement relied on two set-ups. On the one hand, 12 semi-structured interviews were performed with representatives of extension organizations and of public authorities (3 in each country). On the other hand, a closed questionnaire, with few open questions, was sent to a total of 60 field advisors providing extension to arable farmers in the different countries. While the interviews aimed at shedding light on general strategies and orientations of different advisory organizations, the questionnaire aimed to compare the way fields' advisors were individually "relating" to contemporaneous pest management issues. The questionnaire was made to focus both on discursive and practical aspects of this "relation": what do they say about their participation in lowering pesticide use and implement IPM on farm, and how do they concretely deal with pest-management/crop protection issues in their activity?

The objective was to apply the questionnaire with advisors working in different types of organizations, public, semi-public and private ones, not necessarily as to encompass the total diversity of existing advisors status/profile, but to reach most of them and at least the most representative ones<sup>1</sup>. We've been facing various constraints in data procurement for this study. Firstly, while in United Kingdom, Netherlands and Denmark, the questionnaires were addressed with no specific regard to the geographies of the advisors activities, in France limited resources led us to concentrate in a specific region (Burgundy). Secondly, owing to lack of availability of some advisors and sometimes reluctance to participate in the study, the dataset didn't reach the threshold that would have made our quantitative analysis really robust: only 41 answered questionnaires were returned, 6 from France, 10 from United Kingdom, 12 from Denmark and 13 from Netherlands. Nevertheless, multiple regression analysis were performed with this data (using SPSS<sup>2</sup>) and interpreted in the light of qualitative data (issued from the questionnaires), the interviews and various documents. Such a « concurrent procedure » (Creswell, 2003), normally supposed to provide a comprehensive analysis of a research problem in integrating both forms of data in an overall interpretation, enabled us, here, to partly overcome the operational weakness of our research design. Still, these results and our related interpretations should only be seen as "exploratory".

### **Advisory organizations and activities, an overview of the Extension's contexts in the four countries**

Until recently, the four countries included in this study featured agricultural extension services financed to a large extent by public funds and/or by a system of additional taxes on the sale of farm produce or on land tax (Laurent et al., op.cit.). United Kingdom, Netherlands and France had strong public extension organizations whereas in Denmark, massive public funds were supporting the activities of the Danish Agricultural Advisory Services (DAAS), a private company owned by the Danish Farmer's Union. These organizations were sharing, in different extent, the advisory arena with private actors, such as input suppliers, trade partners, farmers' cooperatives

<sup>1</sup> For more details, see the next section

<sup>2</sup> Statistical Package for the Social Sciences, Version 17

and, in Netherlands, farmers' Unions. Although acting independently from the public sector, and pursuing their own interests, these actors were in a great extent following the same blue-print than the public-related organizations, i.e., orchestrating the agricultural growth and supporting farmers in the modernization process. Whoever it came from, farmers were receiving support mostly free of charges, as even when economical agents offered the services, they were included in - and financed by - commercial trades of material inputs and/or outputs.

Both the social demand facing agriculture and the agricultural extension systems from these countries have been through important changes these last decennia. While farmers are facing a growing complex and fragmented social demand, involving water, biodiversity, landscape management and quality issues (health and sanitary), States strongly lowered their direct involvement in technical and strategic agricultural extension activities.

In United Kingdom and Netherlands, former public extension services have been privatized – respectively in the early and late 90s – leading to the emergence of many private consulting firms selling their services. Nowadays, they are major actors of the national agricultural advisory sectors, offering extension support along with the former traditional actors of the sector (input suppliers in United Kingdom, trade partners, cooperatives and input suppliers in Netherlands). This commercialization process is occurring in Denmark too, where, - after many years of progressive lowering – the DAAS experienced a recent (2006) definitive withdrawal of public support, leading this organization to charge the farmers for its services even if remaining in a non-profit perspective. The Danish farmers are now paying its on-farm services on an hour-basis, while small private consulting companies are gaining importance in the main production sectors. France is the only country – of our study - still having departmental and regional public agricultural extension agencies (Agricultural Chambers) offering free of charge extension to the farmers<sup>3</sup>. They have experienced budget cuts and increasing assignments in environmental, rural development and Grant scheme issues these last years however, leading some of them to lower or sometimes even stop their agronomical and strategic advisory activities. Consequently, in many places in France, advisory support is growingly left in the hands of private providers, mainly cooperatives.

Within a common commercialisation and privatization trend of the extension sector in Western Europe, a diversity of actors and advisory set-ups have emerged. How do these different organizations deal with the overall greening blue-print of agriculture in Europe? In what extent differences in business constraints, connection between advisory activities and other trades interests (inputs, outputs) or diversity of competitive and regulatory contexts at national level may lead to different attitudes towards contemporaneous pest-management issues?

## Discourses and practices regarding pest-management advisory

Many advisors that participated to this survey claim that it is part of their job to make farmers think about alternative pest-management strategies. However, some differences appear combining both organization type and national context determinants (table 2).

**Table 1.** Advisors considering that it is part of their job to make the farmers think about alternative pest management strategies.

	Consulting Firms	Input Suppliers	Downstream Trade Partners	Farmers Union	Cooperatives	Public	Total positive answers
UK	4/5	4/5	X	X	X	X	8/10
NI	1/4	1/3	1/4	1/1	0/1	X	2/13
Dk	4/4	1/3	X	4/4	X	X	9/11
Fr	X	X	X	X	3/4	2/2	5/6

<sup>3</sup> Out of few special features (soil analysis, Nitrogen diagnostics, etc.).

- While In United Kingdom and France, almost all advisors, with no regard to their professional affiliation consider it is part of their job to make farmers think about alternative pest-management, the situation is a little more contrasting in Denmark: the DAAS and the consulting firm advisors exhibit very positive attitudes, whereas the advisors from Input suppliers’ companies don’t share this normative position, two out of the three ones who answered the questionnaire having even explicitly stated that it is not part of their job to help the farmers to lower their use of pesticides.
- The Dutch case exemplifies a strongly different situation. Conversely to the other countries, most of the Dutch advisors consider that it is not particularly part of their job to put these concerns on their advisory agenda and to favour such practices. Different types of (negative) justifications are provided though, depending on the organization’s affiliations: Advisors from the consulting firms emphasize their neutrality is justified by the dominance of a demand-driven process overriding any particular prefigured professional attitude and considerations regarding pesticide use. Conversely, two out of the three trade partners’ advisors clearly showed interest-grounded advisory practices opposite to promotion of low input strategies: their only preoccupation is to get cheap raw agricultural products with the required qualities for industrial transformation and thus to favour a very conventional crop protection scheme guarantying the achievement of such outputs. Similarly, one of the three input suppliers – the only who provided a justification - clearly stated that his job was to sell inputs, including pesticides, and not to avoid doing it.

Our results further show that they are important differences in the advisors’ on-farm involvement regarding pest management issues. Some advisors are obviously discussing a broader set of pest management issues with the farmers than others: from crop rotations and fertilization, to scouting activities and use of specific guidelines to evaluate pest infection, along with spraying plans definition, pest biology, resistant varieties, etc. These advisors can be considered as having a more “integrated” counseling practice of pest-management than the others whose advisory is turned toward more limited number of issues (table 2).

**Table 2.** Differential Integrated views in PM of the advisors.

Countries	Integrated counseling practice		
	Low		High
Netherlands	<ul style="list-style-type: none"> <li>• Input suppliers</li> <li>• Trade partners</li> <li>• Farmers’ union</li> </ul>		<ul style="list-style-type: none"> <li>• Cooperatives</li> <li>• Consulting Firms</li> </ul>
Denmark	<ul style="list-style-type: none"> <li>• Input suppliers</li> </ul>	<ul style="list-style-type: none"> <li>• DAAS</li> </ul>	<ul style="list-style-type: none"> <li>• Consulting firms</li> </ul>
France	<ul style="list-style-type: none"> <li>• Input supplier</li> </ul>		<ul style="list-style-type: none"> <li>• Cooperatives</li> <li>• Agricultural chamber</li> </ul>
United kingdom			<ul style="list-style-type: none"> <li>• Input suppliers</li> <li>• Consulting Firms</li> </ul>

Results show that advisors sharing a more “integrated” counseling practice of pest-management engage with quite different issues, however:

- British input suppliers, along with Dutch and French cooperatives advisors are more often involved in discussions/advisory concerning the setting of a basic strategy for pest management, within broader aspects of the cropping system (the issues involved are spraying plans definition, discussions on resistant varieties choice, on crop rotations and fertilization management), along with discussions on the specific pesticides to use for identified problems and advices on spraying equipment.

- If advisors from all the consulting firms and the French public ones deal with these issues too (especially independent consultant from UNITED KINGDOM), they are more often involved in discussion/advisory concerning the resort to scouting and to specific guidelines to evaluate pest infection and asked to provide knowledge on pest biology.

### **National context as triggering contrasted changes in Trade Partners attitudes**

As Ingram recalls (2007), many authors in the late 90's suggested that "commercial advisors" and particularly those ones working for input suppliers and cooperatives, were promoting intensification and exhibit orientations strongly distorted by their interests in selling more inputs and favoring higher production output. Our results confirm that many input suppliers - in Denmark and Netherlands particularly - as much as trade partners of the Dutch's potatoes sector are still strongly reluctant in entering the "sustainable" game, as their commercial interests continue to be seen contradictory with low input crop protection strategies. This is not the case anymore for every company of this kind, however. Both the cases of input suppliers in United Kingdom and of some of the cooperatives extension agents in France illustrate changing attitudes of such companies, illustrating how sustainable development tends to generate forms of auto-regulation in private firms, based on the notion corporate social responsibility (Aggeri and Godard, 2006).

Indeed, in both countries self-regulation schemes have emerged in the agricultural business sector. In United Kingdom, a system of accreditation (BASIS<sup>4</sup>) was set up in 1978 to provide training and certification for sellers of agrochemicals and those giving advice on their use. Known as the "industry's self-regulatory scheme", it was strongly reinforced this last decennia and nowadays make it compulsory for any advisor to attend a certain amount of courses, conferences and training sessions every year to keep up to date with current problematic and knowledge, including integrated pest management and integrated crop production issues. Furthermore, more and more input suppliers are participating to the "Voluntary Initiative", a program launched in 2001 by the farming and crop protection industry in response to the introduction of a pesticide tax which had been under consideration (in the late 1990s) by the Government. Many advisors working on the behalf of input suppliers' are now going through trainings aiming, notably, to strengthen their knowledge in environmental protection issues. The same trend is emerging in France, where in 2006, a federated national Group (InVivo) of cooperatives created a "sustainable farming and development" committee whose assignment was notably to further knowledge in alternatives farming systems, with special concern in lowering environmental pollution of agricultural activities. Cooperatives' advisors thus recently began to follow training programs aiming to provide them with more integrated perspectives of crop production. While growing public debates and polemics stressing needs to move away from high input agricultural models and from practices damaging the environment (included pesticides pollutions), these private actors actively seek to be seen as reliable partners for farmers and avoid being the black sheep of sustainability. Changing tracks takes time, however. Indeed, some of the answers provided in the questionnaires by the British and French advisors from these private company show that "productivist modes of thinking" (Ingram, 2007) are still up to date. Contradictions in their discourses/attitudes may illustrate a 'structural inertia' in their attitude due to the lasting of a productivist heritage, but it may echo difficulties for these organizations to fully enter the green capitalism era.

Taking a closer look, two main contextual differences could explain that these changes occurred in United Kingdom and (in a smaller extent) in France but not in Netherlands or Denmark. Firstly, the trade partners don't have the same potential impact in farmer's decision making in both sets of countries. In Denmark, they are no major actors (low weight in the sector) and in Netherlands they are advisory providers among many others (high diversity of advisory providers).

<sup>4</sup> British Agrochemical Standards Inspection Scheme

Conversely, in United Kingdom and France, they are not only major actors of the advisory sector, but provide – to some extent – unbalanced on-farm advisory. Secondly, whereas National Pesticides Action Plans have been undertaken in Denmark and Netherlands, United Kingdom and France were, until recently, free of direct restrictive regulations coming from the Government. The combination of absence of strong public-regulated context and their important weight in the advisory system – and, consequently, in the farmers’ decision making – thus probably drove actors traditionally said to provide advisory indentured to their “sale and purchase” business interests to change tracks in France and United Kingdom. Conversely, the implementation of a regulatory context, and their weak or shared involvement in advisory provision didn’t encourage these “same” actors to move from their “conventional” attitudes in Netherlands and Denmark.

### **Advisory practices indentured in “optimization” processes**

Still, our results from quantitative data analysis show a stronger involvement of “independent” advisors (consulting firms) than trade partners’ ones in discussions/advisory that aim at lowering the use of pesticides. This is consistent with our results from interviews showing that in Netherlands and United Kingdom advisors from consulting firms are often hired for their “independent” views, whether instead or on top of input suppliers or trade partners. Most of the independent advisors emphasize that they only put these objectives on their agenda when the farmers ask for and that very few farmers are ready to engage with important changes in pest management strategies, however. They explain this reluctance as a consequence of the farmers’ adversity to risks and increased complexity that such changes would involve. For sure, one may wonder in what extent adversity to risk and concerns with profitability would only be farmers’ symptoms. Indeed, Dimter et al. (2008) already stressed that both innovative proposals and mutual trust are burdened by the financial dependence of advisors on farmers: In what extent advices that may lead to failure for the farmers, should be provided in a context of growing competition between providers, where the prime concern for advisors is to keep the trust of the farmers, so that they can keep their portfolio of clients? If there is no clear sign from the farmers, independent advisors have no reason to push toward deeper change in pest management practices.

Advisors from consulting firms are not the only ones emphasizing that the room of “manoeuvre” left to the farmers by structural and economical constraints is very small, however. The Danish case is often mentioned as an example of “success story” regarding its achievements in lowering pesticide use (Nielsen, 2002; Aubertot et al., 2005). Advisors from the DAAS explain that lowering pesticide use is fully embodied in their agricultural agenda and became a norm for any advisory as they have been supporting farmers facing the growing regulations and taxes on pesticides use and purchase since 1986<sup>5</sup>. As they testify, all efforts have been turned towards “optimization” processes, however. Improvements were achieved through reformulations of the pesticides, development of high precision forecasting systems offering live and on-line information for both farmers and advisors have been developed, and farmers’ education on lowering - useless - excessive dose spreading in the fields. But agricultural systems – and their global logics - have not been challenged as such, and no in-depth changes have been implemented. The current options that are developed nowadays are still in line with this orientation as investments are turned toward high-tech and IT systems and illustrate a technological headlong rush. The DAAS advisors are skeptic of the capacity for the Danish farmers to cope with further pesticide-cut, however, as from their point of view, the most important results have already been achieved and further improvements will imply important investments for quite modest results. The Danish case thus clearly illustrates how, even with strong pesticide regulations, change is limited by the overall economical frame in which agricultural activities are embedded. Whatever knowledge is available, real innovative ways to

<sup>5</sup> The first Danish pesticide action plan was launch in 1986.

cope with pest management will not emerge without concomitant changes of this overall context.

Comments from the French public advisors tend to confirm this view. French public advisors who participated in this study explain that if lowering pesticide use is now fully embodied in their agricultural agenda (since the passing of the brand new French National Pesticide Action Plan launched in September 2008), they feel like being more and more “out of the game”. Growing diversity of assignments and limited human resources in the local Chamber under study don’t enable them to have a good knowledge of the farmers’ characteristics and to stick with their specific needs anymore. They show a strong engagement in promoting low pesticide strategies but their advisory is too general and disconnected with the economical and working organization constraints facing the farmers. As they testify, they have little impact in the farmers’ decision making. The smallest is the room of “manoeuvre” facing the farmers, the more knowledge of their systems and constraints is needed to convince them for change. And even where Agricultural Chambers developed efficient IPM programs (Lamine et al., 2008), thanks to the tight relations public extension agents had with specific farmers, difficulties to upscale real innovative solutions (changes in crop rotations, in varieties, in fertilization balances, in soil preparation) are important, as only very motivated farmers are ready to risk important changes.

## Conclusion

This study, albeit exploratory, provides many insights about the current attitudes - and their determinants - of agricultural extension organizations toward current pest management issues. While part of the providers, said to push for high consumption of pesticide because of their trade-related interests (input suppliers, farmers’ cooperatives and trade partners) have change tracks, others are still stuck in conservative strategies. Even though, changes in discourse are not systematically followed by consistent changes in advisory practices, whether because advisors experience difficulties to move away from their former productivist modes of thinking, whether because financial interests of most of these firms are still not fully in line with green capitalism. Meanwhile, the activities of private consulting firms, said to provide *impartial agronomic advisory* and that could be expected to be stronger driver for sustainable pest management strategies, are indentured in a demand-driven process (and business constraints) that limit innovative and risky options to be taken.

Such results lead us to call into question the capacity of current advisory practices grounded in both one-to-one relations and commercial interests to enable the growth of real innovative practices and strategies in crop protection. Others approaches, based on collective action and participatory learning (Röling and Wagemakers, 1998), largely fund with public money have proved to be successful: the program Farming with Future in Netherlands, existing farmers’ groups working with public advisors on IPM implementation in France (Lamine et al., op.cit.), Farmers Field Schools all over the world (Van den Berg and Jiggins, 2007), etc. Wouldn’t European States benefit a lot in increasing their support to these approaches and turn them to a major leverage for innovation in pest management strategies?

Such results reveals that the current advisory systems can’t be expected to be nor developers and neither drivers of the dissemination of integrated pest management strategies and that other kinds of incitement must be driving the process, too. Important changes in pest-management strategies won’t be achieved in only strengthening the regulations and upgrading knowledge. Farmers must be offered a proper economical environment to develop more sustainable practices and, from a broader perspective, receive support from the broad society. Indeed, why should they support this new challenge by themselves?

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European agriculture has to achieve an important reduction of pesticides use. This exploratory research, based on data collected in Denmark, France, Netherlands and United Kingdom, analyzes the attitudes of different advisors and advisory organizations in front of this challenge: from input suppliers to consulting firms, private profit-orientated organizations to non-profit and ones'. We call into question the capacity of the current advisory practices grounded in commercial interests to enable the growth of real innovative practices in crop protection and underline how, with no strong economical driving forces, advisors and farmers will very likely continue to be stuck into "optimization" processes.