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Understanding and facilitating farmers' adoption of technologies

This article describes an initiative designed to improve the effectiveness of the Teagasc technology transfer process. This is an important component of improving innovation on farms.

Teagasc employs an innovative strategy in the scientific development and extension of technologies to enhance the competitiveness of Ireland's agri-food sector. Research activities in biological and food sciences develop technologies, while farmers' adoption of technologies is facilitated by social science research, knowledge transfer activities, and education programmes. Technologies developed by Teagasc are available to stakeholders in the agriculture sector through a range of media. Teagasc's upcoming launch of a web-based 'Compendium of Technologies' will profile and promote the organisation's suite of technologies. These technologies are applicable to the Irish agri-food sector, with a significant proportion targeted directly for use and application on farms. This latter group of technologies is designed to improve the profitability, competitiveness and sustainability of Irish farm enterprises.

In order to support the uptake of technologies by farmers, attention must be paid to the processes and key determining factors underpinning successful knowledge transfer. A new Teagasc research and knowledge transfer initiative seeks to explore these processes and factors in collaboration with client farm families. This article presents an introduction to one of the projects that forms part of the initiative.

Field research

A research project entitled 'Qualitative Analysis of Farmer Behaviour' studies the factors that influence farmers' uptake of technologies. The empirical research exercises involve ten in-depth case studies: five farms participating in the BETTER Farm Beef Programme and five counterpart non-participating farms. The case studies focus on the attitudes and opinions of family members who participate in the farm enterprise towards individual technologies, and

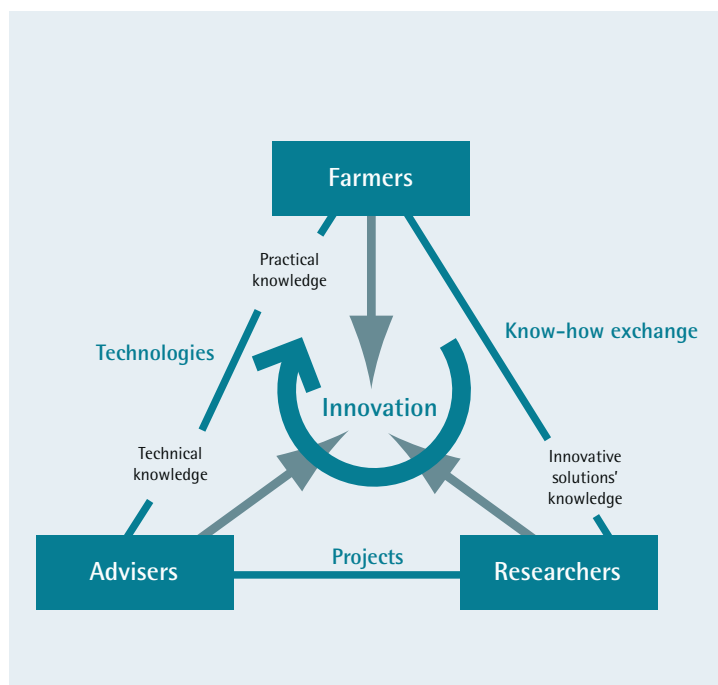


their past and current experiences of knowledge transfer processes. By exploring their attitudes, opinions and experiences, the complex factors influencing the adoption/non-adoption of technologies are being identified.

Decision-making on the farm: an overview

Commercial farms can be influenced to a significant degree by economic factors in how decisions are reached in relation to the adoption of technologies and the operation of the farm enterprise in general. The operators of commercial farms typically invest in and use a range of technologies on a broad scale and are involved in knowledge transfer processes. Farms that are less commercially oriented are often slower to invest in and adopt technologies, and the non-adoption of technologies has consequences for the efficiency, productivity and viability of such farms. Many traditional family farms across Europe are not operated or managed as commercial farms. A significant proportion of these farms are operated as family farms, which are recognised as having particular traits in terms of how they are operated and managed.

The sociological literature notes that a defining characteristic of family farms is the influence of social and cultural factors, in addition to economic factors, on how decisions relating to the farm are reached. Three forms of capital are identified as influencing family farm decision-making: cultural capital; social capital; and, economic capital. **Economic capital** essentially means material wealth. The meanings of cultural and social capital are more dynamic, however. **Cultural capital** can be described as representing the values and customs (as well as the practices and possessions that are symbolic of these values and customs) that are important to and prestigious to farmers. Some technologies are conducive to farmers' cultural capital, while others may



Adapted from: <http://www.taslab.eu/framework.htm>

potentially undermine or renegotiate cultural capital. For example, genetic breeding is perceived by some farmers to displace and undermine their own lay and practical knowledge of breeding. While cultural capital in such instances can be a focus of resistance, it is important to remember that cultural capital changes over time. Knowledge transfer processes, involving farmers as interactive participants, can contribute to changes in cultural capital and new forms of cultural capital.

Social capital also influences farmer decision-making in a significant way. Social capital can be described as the value of social relationships and networks. Farmers, and other social groups, often do not opt to take decisions that can lead to an undermining of social relationships or social ostracism. For example, farmers' decisions about the adoption of technologies are often influenced by the opinions of their peers. Some farmers will not adopt technologies if they feel that their peers disapprove. On the other hand, some farmers' decisions to adopt technologies are positively influenced by their peers' adoption of the same technologies. The adoption of technologies can therefore be seen as a social rather than an individual process, influenced by farmers' desire to maintain or enhance social capital.

Participatory action research: contributing to effective knowledge transfer

So how can such research findings be used in a practical way to support and enhance knowledge transfer activities? Participatory action research (PAR) involves a partnership of farmers, advisers, and social scientists to share knowledge in driving success and innovation in the knowledge transfer process. Venues for PAR are the interactive and participatory knowledge transfer tools employed by Teagasc, such as discussion groups, farm walks, and monitor farms.

Teagasc has pioneered these participatory tools for knowledge transfer in the Irish farming sector. The discussion group, for example, is acknowledged to be particularly effective in knowledge transfer, largely attributed to its facilitation of a farmer-oriented learning process. In order to be effective, however, discussion groups require support in effective planning and facilitation. By identifying through social science research the key factors that arise in technology adoption from a farmer perspective, strategies to underpin effective planning and facilitation of discussion groups can be developed and enhanced. PAR involves a communicative process between farmers, advisers and social scientists in addressing key factors of importance to farmers when considering technologies and their adoption. PAR can lead to the adjustment of existing technologies in order to enhance their usefulness and acceptability to farmers, or to the development of new technologies. One of the main advantages of developing knowledge transfer processes that are based on PAR is that farmers, together with advisers and social scientists, are co-drivers of the processes. This has the result that the knowledge transfer process is more effective as a learning tool and that it has more innovative outcomes. When farmers are co-drivers, their forms of cultural, social and economic capital frame and contextualise the knowledge transfer process. New information is thereby translated through the knowledge transfer processes into a form that is more accessible, acceptable and useful to farmers. Through PAR, knowledge transfer processes are enhanced by farmers' practical knowledge of key problems and ideas of how to solve them. Conversely, where drivers in knowledge transfer processes are advisers and/or scientists, farmers can become passive subjects. As a result, for both farmers and advisers, the knowledge transfer process is less dynamic and less innovative in terms of what is learned from and developed through the process.

Primary data collection and field research for this project is ongoing and the PAR phase will follow in 2011.

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