

## Transferring the Science of Organic Agriculture through Accessible Written and Oral Communication

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### Abstract

*Stewardship of the land and respect for the environment can involve complex decision-making. Organic practitioners are compelled to follow stringent management practices, designed to optimize environmental benefits in relation to land, air, water and livestock. As self-identified stewards of the land, organic practitioners also create additional management systems designed to protect the environment. Decision-making in organic agriculture is a process in which the needs of the whole are considered, rather than the needs of one aspect of the business. The ability to effectively make these decisions is one which requires a new way of thinking and a critical mass of credible scientific research.*

*Objective: To discuss the purpose of and factors influencing effective knowledge translation (scientific to practical) and transfer for the organic sector to improve farm profitability and sustainability.*

### Introduction

One of the tenets of organic agriculture is that of land stewardship and respect for the environment. Long term sustainability goals of healthy soils, people and the environment require uninterrupted nurturance. Profitability for the sector must be stressed in order for this production system to thrive and have a positive ecological impact. Thus, the first step towards sustainable agriculture and business practices in organic require a focus on industry stability. This stability begins with economic stability, which revolves around profitability in business endeavors.

Decision-making in organic agriculture is a process in which the needs of the whole are considered, rather than the needs of one aspect of the business. The ability to effectively make these decisions is one which requires a new way of thinking and a critical mass of credible scientific research. Research has shown that organic practitioners prefer information that is developed specifically for the organic community rather than for the agricultural community as a whole (Padel 2001).

### Review

Industry stability can be enhanced in two main streams, both requiring access to credible scientific knowledge.

1. Create an environment in which new entrants (either new to farming or new to organic agriculture) are attracted to produce, process or sell organic products. The average conventional Canadian farmer is approximately 55 years of age, and is male (Statistics Canada 2012a). There are concerns in agriculture regarding succession and maintaining consistent farming as this population begins to age. Organic agriculture, in juxtaposition, attracts new entrants, including women (Egri 1999). New entrants may be from rural areas, but may also be in proximity to cities in order to capitalize on innovative market opportunities.

Between 2001 and 2011, the Census of Agriculture (Statistics Canada 2012b) shows that the number of Canadian organic operations increased by 66.5%. During the same time frame the number of certified organic processors and handlers increased by 194% (OVCRT 2013). Creating a new business or modifying operations in an existing business requires careful planning and research to mitigate risk. Readily available, credible scientific research results in accessible language are crucial to today's business person in order to make an important decision such as transitioning to a new production model or opening a novel operation. As decision makers, organic farmers tend to fall into one of two categories: 'innovators' or 'early adopters' (Padel 2001). Characteristics of each of these categories include a need for knowledge to make decisions (Padel 2001).

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2. Create an environment in which existing producers, processors and retailers have credible scientific research in order to increase their margins and/or sales receipts. On a daily basis, the organic stakeholder faces change, decisions and increasing pressure to develop innovative solutions to a host of challenges in production, marketing and distribution. To remain competitive and effective, time has become a precious commodity, yet problems are more varied and ever-present. These business people require credible scientific research delivered through multiple information channels and through relationships in which it is understood that the knowledge transferred is from a credible source.

Farm profitability is impacted by a variety of factors including farm size, type, yields and prices (Offerman and Nieberg 2000). “The influence of the farm manager’s abilities on economic performance....can be assumed to be one of the most important determinants...” (Offerman and Nieberg 2000). Thus, increasing knowledge translation (from scientific to practical language) and transferring to the farm manager to enhance their performance can be assumed to be an important determinant of economic performance. As stated by Lundvall and Johnson in 1994, “Knowledge is now the most important economic resource and learning the most important process”.

The needs of the organic sector are varied and diverse, encompassing field crops, horticultural crops, livestock, and markets while traditional sectors may focus on a single commodity group. While scientific research is vital, knowledge transfer is the action that allows it to have impact within the sector. Adoption of practices and processes, such as organic agriculture, occur more readily when knowledge reaches a critical mass of saturation (Padel 2001). In order to support the growth of this mass of information the scientific community must be supported in knowledge transfer.

In Canada, the Organic Value Chain Round Table (OVCRT) has identified knowledge transfer of scientific information to the sector as one of the key goals of the sector (OVCRT 2013). This transfer provides extension experts with the information for communications to the producers. In its strategic planning, the Regulatory Working Group (RWG) of the OVCRT has identified that ‘Organic agriculture is horizontal, in all parts of the supply and value chains.’ One of the ways to address this lack of vertical movement is through knowledge transfer. Along with the knowledge that is mobilized, this function also connects players within the industry, strengthening and stimulating the vertical value chain for future communication, sector mobility and the ability to react swiftly and decisively to profitable opportunities.

Traditionally, knowledge transfer plans developed as one way communication models. In agricultural research, industry and producers are key players in knowledge transfer. Therefore, the model needs to be interactive. Current research and best practices need to be transferred to these players, and feedback on these newly developed practices and additional ideas on research required to grow the sector require a means of communication. According to Padel 2001, for organic farmer knowledge transfer, ‘a broad vision of a knowledge network with the involvement of producers, advisors and researchers should be aimed for.’ Thus, a system of a continuous communication feedback loop must be developed and implemented.

The model of information flow and relationship development varies between conventional and organic agriculture. Research has shown that the organic practitioner can be considered a high user of software – or knowledge – rather than hardware, or traditional inputs (Padel 2001). Conventional farmers may tend to rely on and build trust relationships with input suppliers. Since the relationship is established, the input supplier becomes an important conduit for information (Morgan and Murdoch 2000). However, due to a decreased reliance on inputs, this informational relationship is not available to the organic farmer who has needed to become a ‘knowing agent’ (Morgan and Murdoch 2000, Padel 2001). As such, it is important to direct information to the organic farmer, using other available trust relationships. Cooperation among organic players has been an integral and unique part of the industry development (Aeberhard and Rist 2009). Research has shown that the rate at which knowledge is institutionalized (adoption rate) increases when the knowledge is delivered through a trust relationship (Morgan and Murdoch 2000, Santoro and Gopalakrishnan 2000).

Tacit knowledge is knowledge which is inherent to the practitioner. Organic practitioners rely heavily and often unknowingly on tacit knowledge. The practitioner may not realize that others are unaware of this knowledge. In a high trust relationship, tacit knowledge is easily transferred and adopted (Morgan and Murdoch 2000). This experiential knowledge is a preferred form of learning for many farmers (Aeberhard and Rist 2009), while talking through a challenge is a preferred form of information delivery (Carrascal et al. 1995). Scientists must build relationships with practitioners and be able to relate to their operations in order for this valuable form of knowledge exchange to occur. Ongoing communications in high trust relationships allow tacit knowledge to exchange naturally between practitioners or practitioners and scientists. This can be

a very effective means of impactful communication. This can be achieved when researchers conduct work on farms and when they include practitioners in the entire scientific process from research prioritization and conceptualization, design, interpretation and dissemination.

## Discussion

Transferring the science of organic agriculture through accessible written and oral communication is integral to the growth of the Canadian organic industry. A critical mass of knowledge transfer can positively impact profitability and sustainability of the sector.

To satisfy this need a continuous communication feedback loop must be established between scientists and practitioners, with targeted pathways of knowledge transfer. Thus, knowledge transfer is a crucial function in the success of the business of organic agriculture. A key aspect of each of these activities should be an emphasis on feedback and adjustment of materials and delivery to satisfy the needs of stakeholders. These activity components, through a continuous communication feedback loop, link people, processes and knowledge in a diverse community. One of the key aspects of a knowledge transfer plan is the importance of the role of the stakeholder. Through a focus on continuous improvement, trust relationships within the value chain increase, as stakeholders see that their voice has impact.

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