# Networks, Methods and Quality of Livestock Advisory Services in Ontario

## Research Brief

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## Abstract

In the last decade, agricultural extension and advisory services in Ontario have gone through tremendous transformations, including declining public funding, the emergence of new stakeholders in the delivery and funding, increasing use of group methods, and introduction of new terms, such as Knowledge Translation and Transfer (KTT). The reconfigurations of the systems in which public and private organizations play roles in financing and delivering extension services are known as pluralistic advisory services. There has not been any systematic assessment of the contemporary pluralistic agricultural extension and advisory services in Ontario. Therefore, the current study intends to examine the characteristics and quality of the crop, soil and livestock advisory services. This research brief reports the findings of the literature reviews and key informant interviews with the purposively selected livestock advisors. The findings show that the role of public sectors in extension delivery has changed from face-to-face delivery towards facilitating partnerships and supporting initiatives led by non-profits and producer organizations. The pluralistic advisory service offer opportunities for various stakeholders to contribute to service delivery. Although various advisory methods are being used, there are increasing trends in using digital and online media to provide livestock advisory services. The findings highlighted that the most effective methods are the ones (e.g., face-to-face meetings) that allow one on one communication with farmer clients. Fees-for-services and product-linked advice are far more prominent within this sector. Advisors expressed their concerns about the quality of service in terms of feedback, timeliness and authenticity of the information. Although there are various opportunities for the capacity development of advisors, the findings indicate a lack of agreement among advisors on issues, such as practical experience and technical knowledge of advisors. Livestock advisory services have "followed the money", we have seen the development of different pluralistic systems with variation across farm size of target client and big differences between supply-managed and non-supply managed sectors. The findings indicate a lack of coordination, a unifying voice and a sense of direction. The greatest challenge is to improve the coordination among all actors in the diverse and complicated pluralistic advisory service system that has emerged. The public sector advisory service needs to play a stronger role in supporting the governance of the systems by reconciling the differences, brokering relationships, listening to farmers and other stakeholders, and facilitating a better understanding of their needs and knowledge levels.

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# 1. Introduction

Agricultural advisory services are essential to facilitating joint learning and the co-production of knowledge (Faure et al.,2017), both of which accelerate the adoption of sustainable agricultural technologies by farmers (Long et al., 2016; Labarathe & Laurent, 2013; Cerf et al., 2011). Traditionally, advisory services have depended on technically capable extension staff to work closely with communities and research bodies and produce knowledge for the advancement of agricultural techniques (Blackburn 1994). Extension or advisory services are tasked with identifying issues and solutions, introducing new technologies and transferring knowledge to the public (Milburn, Mulley & Kline, 2010). Effective service provision can increase the resiliency, efficiency, and productivity of agricultural sectors with targeted information that is delivered in an appropriate manner, preferably through joint experiential learning and practice (Klarkx & Jansen, 2010). The research currently being undertaken seeks to understand the nature and relationships within Ontario's agricultural advisory system. This research brief reports the preliminary findings of a study focused on advisory networks, practices, and capacities within the livestock sector of Ontario. The findings of the Crop and Soil advisory service will be discussed in another research brief. This report will begin with a literature review of advisory services in Ontario, including the concept of a pluralistic system. Included is a delve into the decline of the public advisory system within the province and seek to understand the challenges, opportunities, and relationships developed from the private sector filling these gaps. The theoretical and practical methodology employed will be discussed, followed by the findings of the literature reviews and key informant interviews with purposively selected livestock advisors.

## 1.1 Changing Roles of Public Sector in Agricultural Extension and Advisory Systems in Ontario

As the public sector has been unable to adapt to changes and has been reduced in size, often due to budget cuts, agricultural extension services in Ontario have experienced a rise in private actors producing and disseminating knowledge to clients (Hambly 2020). The history of agricultural extension services in Canada is long and had remained in the public sector until only recently. Blackburn (1994), discusses accounts of extension in Canada back to as early as 1606. He traced the hiring of the first extension staff to 1906 in Ontario and discussed that the Cooperative Extension System in the USA heavily influenced the Canadian system. By 1985, there were over 1000 professional staff and nearly 4000 support staff in federal research and demonstration farms across Canada (Hambly 2020). Similarly, Milburn et al. (2010) argue that government services to farmers expanded until the 1990s. Agricultural extension advisory services in Canada have been developed less consistently and pervasively than in the USA (See Annex Table 1 and 2), which has led several authors, such as Milburn et al. (2010), to describe this phenomenon as the disappearance of public extension services in Canada. On the other hand, public agricultural extension and advisory systems in the USA have managed to continue face-to-face delivery, various forums and associations, higher education opportunities, and service coordination and collaboration mechanisms despite a decrease in public funding (See

Annex Table 1 and Table 2). Public supports for agricultural extension, including both funding and services, were drastically cut at the beginning of 21st century in Ontario and other provinces of Canada (Maynard & Nault, 2005). Indeed, the withdrawal occurred with little documentation or press and was deemed to have "disappeared with a 'whimper', rather than a 'bang'" (Milburn et al., 2010). In the American context, policy makers encountered similar challenges related to the proper reallocation of human and financial resources (See Annex Table 1). In response to Milburn's observations that extension services were seen as outdated and commodity-oriented, leading to the lack of funding and support in Canada (p.2), Hambly (2020) further detailed the key shifts in the extension service in Ontario since the 1980s.. Notably, these have included the lack of political and financial support, related to the reasons mentioned above. Rising costs associated with public extension programmes also resulted in a lack of return on investment or economic benefit for Canadian provincial and federal governments. In turn, the role of the agricultural extension advisor experienced a shift towards agri-business advisory and training services, operated by the private sector. This coincided with the not-for-profit sector providing more holistic, community-based projects. As digital technologies and communications methods have evolved, so have the needs of farmers for higher levels of education and access to information. The technological evolution can be seen either as a "pull" or demand-driven shift, or as a "push" towards the private sector. Lastly, the changes in agricultural research and design institutions were met with cuts to both federal experimental farms, as well as university and college extension services and agricultural faculty (Hambly, 2020; AIC, 2018).

Extension audiences in Canada were primarily producers, future producers, including students, and commodity groups (Blackburn 1994). As mentioned, the decline in support and funding for public advisory services within Canada has allowed for various actors, such as producer organizations, private consultants, input dealers, to intervene and fill the gaps in Ontario (Hambly, 2020). Indeed, this has led to the transformation of the system into what is best defined as pluralistic systems of extension services. Pluralistic agricultural advisory services are characterized as an extension system in which multiple public and private providers with diverse funding streams are providing services to farmers and agricultural communities (World Bank, 2012). While pluralistic services have been shown to allow for more multifunctional advice and promote the empowerment of civil society actors, there are many challenges with this approach (Birner, et al., 2009). The Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA) has traditionally been one of the most important actors for agricultural extension in the province. However, their funding and capacity have been reduced, as is apparent in the drastic reduction of extension staff (Milburn et al., 2010; Hambly, 2020). OMAFRA still maintains regional offices in the province with technical staff to provide advice but has eliminated the position of agricultural representative (Stark, 2017). Research and knowledge translation partnerships, such as the one with the University of Guelph, are examples that highlight the province still plays an active role, but it is now only one of many actors (See Annex Table 2). For example, in the case of the dairy industry, the Dairy Farmers of Ontario (DFO), a

regulatory organisation in the province, has become one of the many providers of advisory services (Watters, et al. 2019).

Canada's agricultural system is referred to as the Agriculture and Agri-food system (AAFS). The Canadian Agricultural Partnership (CAP) was launched to respond to the myriad challenges and changes the primary agriculture industry faces. Referred to as "the partnership", this is a five-year program that involves the collaboration of federal, provincial, and territorial governments to support AAFS (OMAFRA, 2021). Within this arrangement, agricultural advisory services continue to evolve to meet the needs of various individual clients and organizations. Hambly (2020) envisions a duality in the roles of both the private and public sectors in offering services. It is characterized by public sector resources being focused on the regulatory standards while the private sector, through its agriculture R&D efforts, evolves its R&D extension services.

As the nature of advisory services has changed through the technology "pull" and "push" mentioned above, waning public support has reduced public sector extension and advisory staffs. In addition, as many experienced civil servants retired or left for employment elsewhere, few, if any, were replaced (Hambly, 2020). Also experienced in Ontario is the increased utilization of communications and information technology and more participatory teaching methods. In the early 2000's, the concept of extension and advisory was to be replaced by the label of knowledge translation and transfer (KTT). OMAFRA states that this is a more advanced approach, promoting a two-way dialogue between researchers and research users. Through the use of KTT, which originates from the field of public health, or Knowledge Mobilization (KM), the field of agricultural extension becomes ever more complicated and obscure (Hambly, 2020). This model embeds KTT processes into the research programs and seek to incorporate extension services, despite some notable differences (Bergen et al., 2018). There is variation in KTT delivery compared to traditional extension services, which were present in Ontario. The goal of the KTT approach is to broker knowledge and ensure that research findings are accessible to the end-users. Proponents of KTT claim that the discontinuation of the term 'extension' does not mean services or targets have changed. Instead, it can now be seen as practiced and continued under different guises. There are some concerns and uncertainties about whether this remains the case (Allen, 2021; Hambly, 2020). A recent study by Allen (2021) indicates that direct needs of cover crop farmers are not necessarily additional information but a rather direct system of knowledge brokering which allows for one-to-one interactions and supports knowledge utilization. The current approach needs to consider aligning KTT initiatives with farmers' social networks and integrating a more personalized approach to reaching out to smallholders and reluctant adopters.

An example of extension-related KTT activities supported by federal funding is the proAction initiative by the Dairy Farmers of Ontario. This specific method of KTT utilises the 'train the trainer' approach by providing education for 128 veterinarians across Ontario to become proAction advisors, later holding their own workshops with dairy farmers and other

producers. The cost of this initiative was largely offset by the Canadian Agricultural Partnership (CAP) program, allowing proAction advisors to organize 1,819 classroom and 350 on-farm training sessions between February 2019 and July 2020 (Dairy Farmers of Ontario 2021). The terminology change from 'extension' to 'KTT' is evident in many advisory organizations, including OMAFRA and Dairy Farmers of Ontario (DFO). In addition, the CAP itself parallels these changes as both the AgriInnovate and AgriDiversity programs emphasise components of KTT, with no direct mention of agricultural extension (Agriculture and Agri-Food Canada 2018). While OMAFRA manages the CAP within Ontario, it can be best understood as a supporting program to private initiatives (e.g., DFO ), demonstrating the waning role of the public sector to provide direct advisory service to farmers.

## 1.2 Assessing the Gaps and Addressing the Extension and Advisory Needs of Smallholders

No comprehensive assessment of the current pluralistic agricultural advisory service system in Ontario has yet been conducted. As per the available research reports (Warsame, 2015; Roche, 2015) and policy documents (AIC, 2018; AAFC, 2016; Maynard & Nault, 2005; Agricultural Odyssey Group, 2002), many of the diverse characteristics, as well as comparative issues, currently exist with the Ontario context. Given the limited literature on the current advisory system within Canada, it is challenging to discuss specific examples of issues faced within the system today. There is an increasing trend that federal and provincial government investments in extension services have been allocated to grants and to facilitate contributions and collaborations to support initiatives led by industry stakeholders (AIC, 2018). Private sectors and producer organizations have taken proactive roles to fulfill the extension and advisory needs of farmers. The extent to which these needs, and new gaps brought on by the sector's evolution, are properly addressed through the pluralistic system needs to be examined.

At the local level, agricultural advisory committees formed by some municipal councils provide a platform for various stakeholders to raise their voices and influence local agricultural policy, plans and programs (Epp, 2018). An important goal of these committees is to address the challenges associated with a lack of coordination between research and knowledge and to mediate and educate around topics of nutrient management (Carlow, 2009). Committees identify gaps in understanding the storage and application of nutrients and provide training to the community. Committee members receive training through OMAFRA and support from the Ministry of Environment for technical guidance. A nutrient management line is also available for the community to contact for questions and referrals to specialists (Carlow 2009). Research farms are another approach that can involve community members in knowledge production. One such farm is the Elora Research Farm, through the University of Guelph for soil and cropping practices. The initiative brings together stakeholders from the community, OSCIA, OMAFRA, and scientists to design and interpret results. The research results are displayed in an interpretive center where the public and interested parties are able to visit (Lammers-Helps, 2016).

Despite these initiatives, challenges remain, especially with regards to small and medium-sized farms. The utilization of extension services has been found to be much lower in smaller farms (revenue of $25,000 to $99,000), with only 24% of farms reporting the service of third parties to be an important factor when preparing to adopt innovation. This is in contrast to 61% of larger farms ($1,000,000+) in Canada (Agriculture and Agri-Food Canada, 2016). Canada, much like other developed nations, has experienced a decline in small-scale farming operations. Since 1961, the total number of agricultural operations has dropped from 480 000 to 193 500, or a 60% decrease, in 2016. Meanwhile, the total acreage of farm area has only dropped by 8.8% in the same time period, indicating that farm operations are only getting larger (Statistics Canada 2016). Economic viability continues to be a challenge for smaller farms, and the reduction in public extension services means that unconditional services (e.g. services at free of cost, contracts or obligations) are less accessible (Maynard & Nault, 2005). The weak coordination among extension providers, authorities and farmers has made small and medium-sized farms less visible target clients (Faure et al., 2017).

Furthermore, small and medium-sized farms do not rely on, nor can they afford, highly standard information about sustainable agricultural technologies, which need to be continuously updated (Benson & Jafry, 2013). As a result, these farms find it difficult to make informed decisions since information sources have been diversified from public services to various sources, such as private extension agents, web-based portals, help-lines and call centers. For example, the experience of privatization of agricultural advisory services in the European Union has raised the question of whether the private sector's introduction has truly addressed these gaps, especially fulfilling the needs of smallholders (see Labarthe & Laurent, 2013). The concept of capacity development, linking the individuals to networks for social change, is the preferred approach to facilitate learning and leadership across the system (Hambly 2020, 9). As small and medium-sized farms are excluded from these benefits, not only are the gaps maintained, but the difference becomes further entrenched. Technologies and concepts continue to evolve, raising concerns that those unable to access new information may be left behind. In order to address these concerns, there is a greater need for a higher quality of extension and advisory services and initiatives.

## 1.3 Quality of Services Provided and Capacity of Extension Workers

The quality of advisory services can be understood as the combination of program quality developed, quality of services provided and quality of the advisor providing services. Generally, the quality of advisory service is measured through the satisfaction of clients or results of the service provided, but as is discussed by Landini (2020), the quality of service can be further broken down into enabling factors that all contribute to the level of service. Enabling factors can be considered staff educational level, research-extension linkages, institutional communication and the planning and evaluation process. The qualifications and capacity of advisory staff is one large area of focus for agricultural extension service providers. AIC (2018) assessed that skilled labour shortages, particularly in the agricultural extension and advisory

services, have a negative impact on the farm level adoption of technologies. The lack of succession and replacement of retired civil servants working in the agricultural advisory sectors might distort coordination and KTT efforts in Ontario (Hambly, 2020). As per Birner et al. (2009), the quality of pluralistic service depends on various criteria, such as (i) content, i.e. information and advice provided are according to the needs and opportunities of the clients, (ii) accuracy of the information and knowledge provided; (iii) timely provision of the services; (iv) effectiveness, the advice provided by the organization is useful in bringing changes of livelihoods of the clients; (v) efficiency, the expertise of field advisors regarding service provision using optimum resources and efforts; and (vi) and the existence of a feedback or evaluation system of the service.

## 2. Methodology

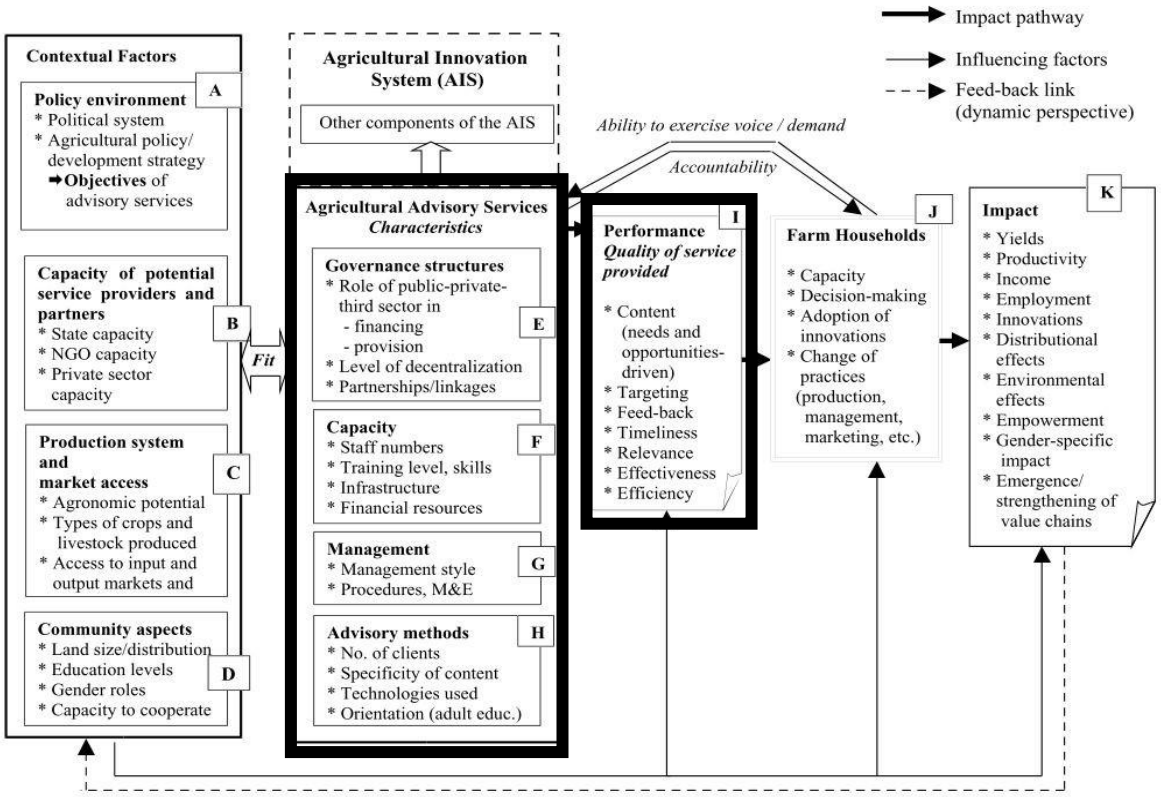


*Figure 1: A conceptual framework for the analysis of pluralistic advisory services (Birner et al., 2009: 344).*

In this study, we employed a mixed-method design and the framework proposed by Birner et al. (2009) , illustrated in Figure 1 below, to understand the contemporary practices of livestock, crop and soil advisory services in Ontario. Also known as a 'best-fit' approach, it covers a range of issues for analysis and understanding of the conditions that best suit different organizations and their advisory services to meet their clients' diverse needs and expectations (See Briner et al, 2019 for details). According to the framework (Figure 1), the pluralistic

advisory services can be analyzed by considering the local context within which the advisory services are delivered, the characteristics of the advisory service system, and the quality of the service provided.

In this report, we focus on preliminary results of the livestock advisory services. The initial research phase focused primarily on existing literature and initiatives within Ontario and elsewhere. Themes and trends have been identified related to advisory services that support farmers' decision-making processes. This has culminated in the literature review presented above. Next, workshop sessions were held with purposively selected 17 livestock advisors separated into three groups, such as private sector representatives (group 1), public sector representatives (group 2), and producer organizations (group 3). Finally, key Informant Interviews were conducted with purposively selected eight representatives from the livestock advisory services, including one public sector advisor, two from the non-profit sector, and four from for-profit organisations.

# 3. Results

The preliminary results of this research come from a series of workshops with three groups of stakeholders and key informant interviews with individual advisors. While all advisors had obtained post-secondary education, including one Ph.D. and two master's degrees, the respondents hold a variety of positions, including in management and field-level advisory roles. These combinations ensured a diverse number of viewpoints, priorities, and perceptions. While some espoused slightly different priorities and goals for their advisory work, the general principle remained the improvement of the sector as a whole, including support for smaller farmers. Coordination among separate actors is seen as a major impediment to the system, evermore since the changing roles of OMAFRA's for delivery of the service.

## 3.1 Livestock Advisory Service Delivery Methods

Livestock producers seek advice on a myriad of practices from animal health and feed, to transportation and farming business practices. Throughout the pluralistic network, different actors have undertaken different roles, many overlapping, regarding the advisory services they provide. Similarly, they also employ a variety of methods to disseminate the information. This could be done through the role of veterinarians, direct one-on-one meetings, workshops, conventions, and trade shows. One respondent explained the evolving nature of advisory work and how their role now pertains to communicating new technologies and ideas.

> *"I'm not a farm advisor financially or management or anything like that, but I do work with farmers and farm organizations in a communications capacity […] So, I communicate a lot around research and innovation, a lot of what I do is write articles about research outcomes: how they're applicable on farm, what they mean to farmers, [and] why it's important"*

Different delivery methods, including articles and newsletters, are seen as necessary to satisfy advisory service needs. The COVID-19 pandemic furthered our use of digital communication methods such as websites, videos, social media and others. While the new online format has further highlighted challenges regarding rural broadband access and technical challenges for older farmers, it has also provided new opportunities to share information from abroad and to reach a greater number of recipients in a shorter period of time. Similarly, respondents noted that these new opportunities came with cost savings due to the reduction in travel costs associated with in-person training and conferences. Two respondents have transferred all services into an online format, while the others have transferred some services and retrained staff for the new virtual formats. In sum, the livestock advisors found that an increase in online interactions, such as webinars, has made it challenging to get participants. However, an increase in reach offset that. While public organizations, including OMAFRA have adopted a 'train-the-trainer' approach, private organizations prefer a more direct "client" approach with one-to-one meetings, tours and demos, workshops, and trade shows.

### 3.1.1 Delivery Method and Strategies

Advisors place a lot of value on tailoring the advice to individual farmers and different audiences. All found that a plethora of options was needed to reach different kinds of farmers. Identifying their audiences and utilising specific delivery methods is seen as paramount for the advisors. When asked about different methods, including farm visits, newsletters, online tools, one on one communication, and social media, all respondents saw them as important and necessary.

> *"Provide a variety of different methods to get information out to the wide variety of farmers who they're trying to reach, and to get to know their audience and get to know where their audience likes to receive information"*

> *"All of those for two reasons. One, because I think everybody learns differently so some people might get more out of going to a day-long conference or event and hearing some speakers, where, [with] other people, [it] might actually be better [to have] a shorter one hour say, workshop, online where they can digest a certain amount of information in a short amount of time and move on"*

Similarly, the three workshop groups were all able to provide substantial lists detailing the different advisory methods utilised by different actors (figure 1). Many of these methods are being used by multiple groups of advisors, however, some are more specific to individual groups (see tables 3, 4, and 5). As can be seen, the overall effectiveness of different methods can be attributed to the quality of content, accuracy, timeliness, effectiveness, and feedback of methods. The highest regarded methods include one-to-one meetings, as well as workshops and regional information days. The ability for individual farmers to ask questions and receive tailored advice is strongly respected. One advisor mentioned that their priority was to ensure that the farmer could see how they could directly benefit from this new information in order to

improve their quality of life. Both peer-to-peer and online social media resources are seen as providing potentially dubious information. While the information being shared by peers is also viewed positively, there is an understanding that this method is not always the most reliable.

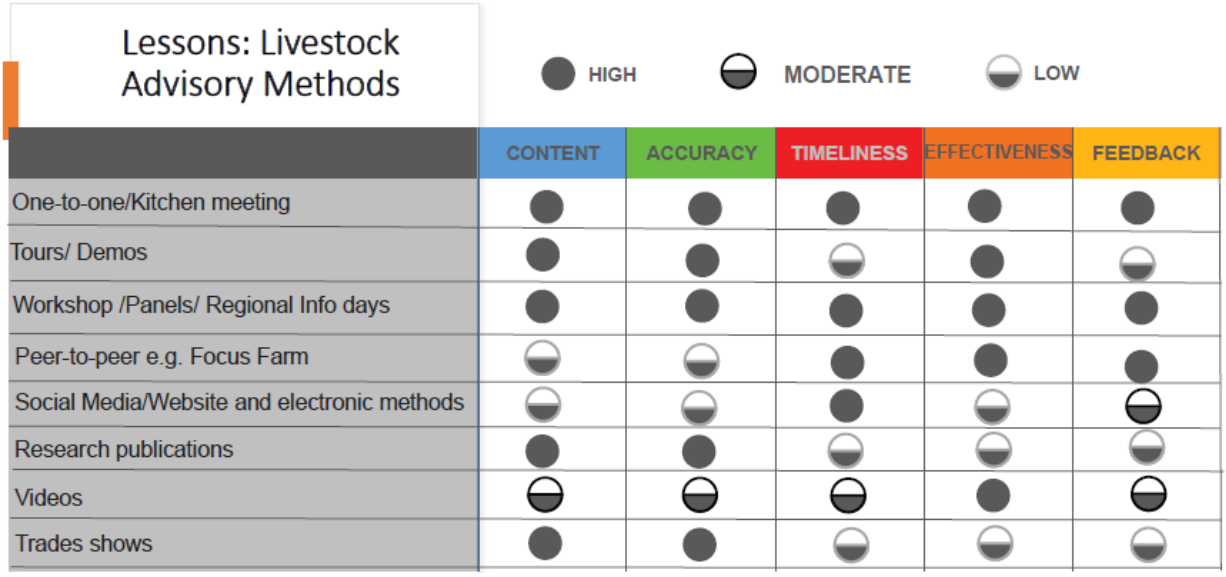


*Figure 1 Livestock Advisory Methods (Source: Workshop)*

When deciding how to separate delivery methods and target individual farmers, advisors tend to separate farmers into four distinct categories. These include *Pro-activists*, who actively seek advice from advisors; *do-it-yourself-ers*, who develop their own way, for example, by experimenting or seeking alternative sources of information; *Wait-and-see-ers*, who seek advice but implement this to a lesser degree or at a slower pace; *Traditional/Laggard*, who do what they have always done or think they know best. Respondents mentioned that their delivery methods were to be adjusted, depending on the 'type' of farmers. Specific techniques and remarks are included in Tables 6 and 7. Importantly, it cannot be assumed that an individual farmer will fall uniformly into one specific category. Rather, it requires time and understanding to best suit the farmer's needs.

The advisors interviewed found the greatest benefit for the efficiency and effectiveness of advisory services is dealing with Pro-activist farmers. These individuals prefer direct, clear, and timely advice. Understandably, many of these farmers are most frustrated with the slow speed and macro-scale advice from public organisations. This can cause some contradiction as while they may be the earliest adopters of new technologies, the lack of efficiency within the system can cause grievances. One advisor noted:

> *"They are like, "Don't waste my time, show me the value, and get on it now." They're used to making things happen."*

In contrast, the Do-it-yourself-ers are perhaps best suited for the current state of Ontario's advisory system. Information that is given is neither dismissed nor too slow. An emphasis was placed on experimentation, seeking, and utilising alternative sources of information in a pluralistic system. There is certainly the issue of credibility, in which many advocate that public organisations and OMAFRA should be the objective and unbiased source. Fulfilling this role would be greatly beneficial to Do-it-yourself-ers.

The advisors showed frustrations when dealing with the latter two 'types'. While the Wait-and-see-ers can be convinced after some time, and especially with help from fellow producers, the Traditional farmers are almost seen as a lost cause for many advisors. In some ways, advisors advocate for more of a 'carrot and stick approach to force innovation and technology uptake with this group. Alternatively, some advisors have little interest in expending the amount of time and effort required to reach this group and would rather wait for the next generation to take control of the farm.

> *"it gives him a firm price today, [so they] don't have to change anything. So, my thing with them is let him go. Stop supporting them, stop trying to support them, let them go. Its less frustrating that and it's a waste of time"*

Although there is a high level of frustration with this group, leading some to give up, these individuals still need to be served by advisory services. It is important to note that no individual farmer will fit neatly into a single one of these categories and that they should rather be treated as suggestions and tips for different clients. Identifying which source of information is most respected, whether it is veterinarians, professional advisors, or peers, is an important step to reaching these individuals.

## 3.2 Perceived Quality of Livestock Services and Advisor Capacities

While the advisory method plays a strong role in the perception of the quality of the service, there are varying degrees of quality expressed by different groups of advisors (see figure 2). The accuracy and quality of the content being provided is highly regarded with most sectors, however primary issues remain with regards to the timeliness and effectiveness of the advice. Public sector advisors perceived the quality of service differently than private and producer sectors advisors. The public sector advisor perceived that the current services provided highly relevant content and accurate advice, while the services had low quality in feedback, timeliness and effectiveness. In this sense, there is an understanding that government information is highly valuable, but there is frustration with its delivery speed. Some concerns note that by the time a certain technology is explained and made available, it has already become obsolete or is simply no longer the best option. In addition, some of the information provided by the public sector lacks a clear return on investment (ROI) that the individual farmers can easily understand. Whether it is due to time constraints or delays, or difficulty accessing certain information, uptake can be difficult to pursue.

*"There's been challenges with accessing sensitive data or whatever from OMAFRA.There should be a way to make any of the survey work that has been done available. It would be helpful to kind of put that package together [for assessing] what is ROI, like where are you trying to get to? How do you compare to your neighbors, compared to Finland with a similar situation?"*

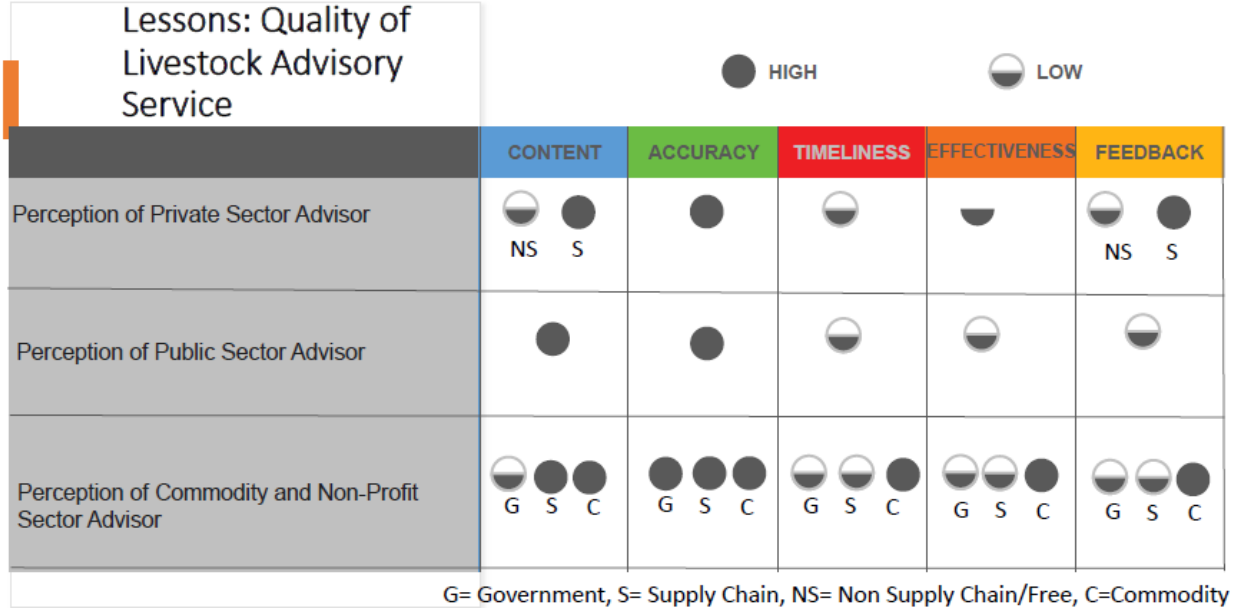


*Figure 2 Quality of Livestock Advisory Services (Source: Workshop)*

As per the private sector advisors, services provided through the supply chain managed mainly by private sectors (e.g., dairy, poultry, egg advisory service etc.) are of higher quality in content, accuracy and feedback. On the other hand, services provided through a non-supply chain managed by various stakeholders (e.g. sheep, goat advisory service) are of low quality in content and feedback. The advisors from non-profit and commodity sectors considered the quality considering types of advisory organizations. According to them, all organizations provided highly accurate advice, but advisory services provided by government organizations are of low quality in terms of content, timeliness, effectiveness and feedback. According to this group, services provided by the commodity groups are of high quality in terms of content, accuracy, timeliness, effectiveness and feedback. The findings indicate the quality of the services is perceived differently by different groups of advisors. There is a lack of agreement among groups of advisors about the overall quality of services.

When discussing the individual capacities of advisors, all respondents stated that they had utilised internal and/or external capacity building activities. These include conferences, workshops, and training courses. Some organisations provided support for advisors to participate in various capacity building initiatives in the form of Continuing Education funds. While certain individual companies lack the funding necessary for internal capacity building, many external opportunities are available. The advisors indicated that they need to remain up

to date with a constantly evolving industry. Stakeholders within the private sector and producer organizations voiced concern about the lack of on-farm experience of public sector staff, while the public sector questioned the formal education and technical knowledge of private extension staff. As was found in the literature review, the concerns regarding a lack of on-farm experience by advisors were echoed by one respondent:

> *"If you want to get across to the farmer you have to speak "their language", right, speak the way they speak. The new people coming through just don't have that background, it's not their fault, I'm not knocking them"*

As noted, the advisors interviewed held high levels of formal education with differing levels of experience. Importantly, the newer generation of advisors are seen as lacking the specific interpersonal skills acquired through experience. One respondent suggested perhaps having retired farmers peer mentor new entrants into the advisory field. This could certainly provide one solution but requires further investigation.

## 3.3 Livestock Advisory Service Networks

The different sectors within the industry were seen as having varying levels of importance or influence regarding advisory service delivery. Workshop participants were asked to rank different actors on a scale of one to five for the two criteria, resulting in a general understanding that private-sector workers now maintain the highest level of importance and influence. Veterinarians, nutritionists, and feed suppliers were seen as having the strongest impact on producers and were highest regarded in terms of advice quality. These responses were aggregated and represented in figure 3. There is some lament with regards to the decline in influence for public organizations, with one advisor stating:

> *"We are not nearly as important in that advisory field as we used to be in terms of boots on farms. I think a bunch of the commodity organizations would tell you that they do a bunch of this but I would generally say they do it poorly and they would probably say that we do it poorly…"*

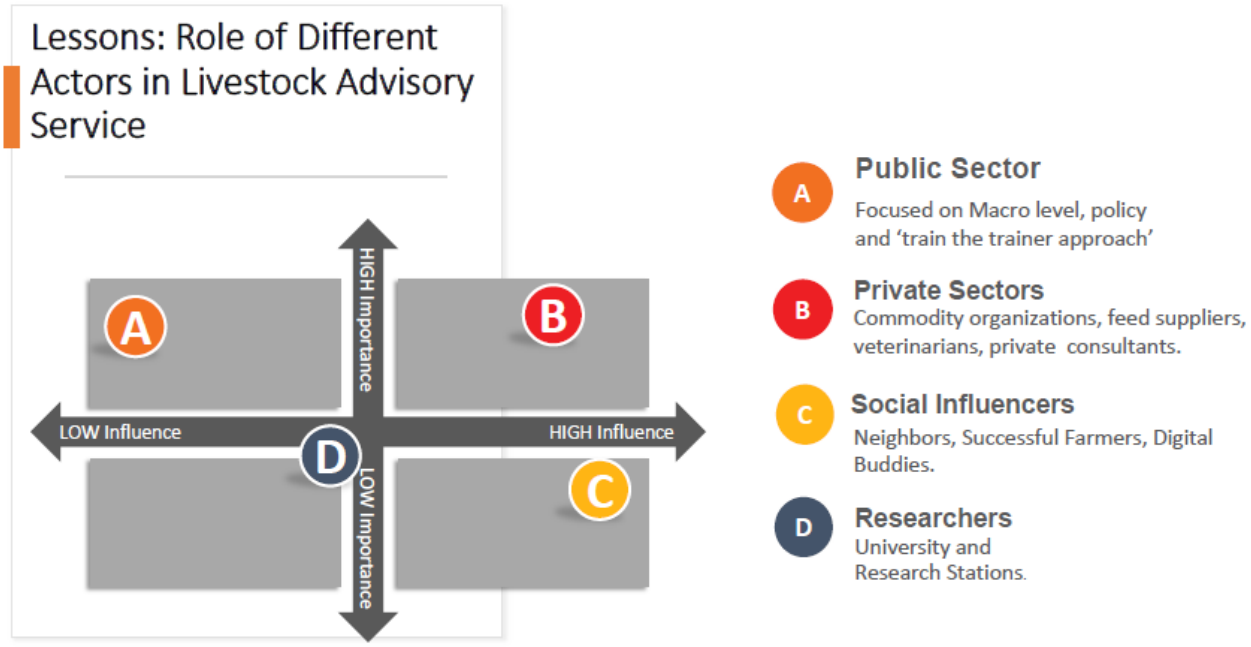


*Figure 3 Role of Livestock Advisory Service Actors (Source: Workshop)*

Through this statement, a level of distrust, or perhaps even animosity, can be seen between the public and private sectors. These beliefs further reinforce the lack of coordination amongst major actors. While it could be argued that a macro approach from public organisations, coupled with a more direct delivery method from the private sector, could lead to a holistic and cooperative *pluralistic advisory service system*, this does not appear to be the case. All respondents, excluding one representative from the non-profit sector, explained that they include advisory services for farm management practices as a stated goal of their respective organisations. The divisions are clearer when asked to explain the specific services provided. The public sector advisors provided general advice on animal nutrition, production, sustainability, and policy, while the for-profit sector included specific advisory on innovations in lighting for poultry, livestock transport monitoring, sensors for soil management, and communication strategies around research and innovation.

### 3.3.1 Coordination and Accountability

As mentioned, the *pluralistic livestock advisory service system* suffers from poor coordination between actors. Producer groups themselves reported relatively better collaboration amongst themselves. There are also collaborations with public groups, including OMAFRA, Farm Credit Canada, and the University of Guelph, to name a few. Organizations tend to create partnerships through shared goals and the urgency of the problem. However, there are concerns about the effectiveness of these partnerships. The advisors expressed their concerns regarding the opportunity for evaluation, criticism, and improvement built within the system. An inability to communicate needs and the effectiveness of the provided information leads to poor coordination among service providers and recipients. This is compounded by high

expectations from farmers from commodity-based organisations and independent advisors to fulfill the gaps. These expectations are not always being met.

Furthermore, there is a little or negligible capacity for political and policy engagement of advisory stakeholders to influence public policy related to advisory services. Not only do farmers feel as though they are not being heard, but the system lacks a specialised focal point or central platform to facilitate the voice of the advisory service providers. As there appears to be no true leader within the pluralistic system, it is seen as lacking direction or real accountability. There is little evidence that any organization or actor is substituting the diminishing role of the public sector extension, as a driving force and coordination of the service providers. In such a situation, most organizations are left with their own means to collaborate and coordinate their services. The general sentiment appears to be that these independent efforts sometimes do not align with the overall goal of coordination and accountability. Since there is no actor for overall coordination, it is difficult to hold individual actors accountable for the service they provide.

### 3.3.2 Funding and Accountability

The delivery of livestock advisory services does not involve using volunteer field level staff to offer advice to clients. In contrast, the level of paid field advisors is much higher, with many veterinarians adopting that role. Through a public sector approach, OMAFRA and other government organisations offer training for veterinarians and advisors alike. The public sector advisors reported fewer than twenty advisors who are involved in direct advisory support to farmers. Advisory services within the livestock sector are primarily market-driven, often requiring fees for services and advice tied to product sales. While veterinary advice is strongly respected, receiving near-universal highest marks for importance and influence from all three workshop groups, their services are invariably tied to a fee. There is some contention within the sector as much of this advice was previously free. One advisor noted that:

> *"a lot of farmers think back to the days when the Ministry of Agriculture had an Extension Service and the field Rep came to your farm and you could ask them questions and do whatever and that no longer exists"*

Similarly, there is a growing wariness regarding the objectivity of advice tied to a product. In response, there is a sentiment that OMAFRA has a role to play as the objective voice. Another respondent proposed a system of livestock advisors patterned off the Certified Crop Advisor (CCA) model to address these gaps and increase the quality of field-level advice and staff.

The private sector relies heavily on a fee for services for the bulk of their funding. This can have implications for issues of coordination and accountability, especially so, for animal health input suppliers, including feed suppliers. The question can be asked, what accountability structure is in place to protect the rights of the farmers/clients? The primary animal health advisory services actors are veterinarians, who are certainly held accountable to industry standards and medical licensing requirements. Individual veterinarians are guided by the code

of ethics of the College of Veterinarians, and any violations are handled through established disciplinary mechanisms. In this instance, the for-profit enterprise relies heavily on established relationships and reputations amongst its clientele, providing a level of accountability. If the source of their operational budget, fees, in this case, were to be affected, the operation would then cease (see figure 4).

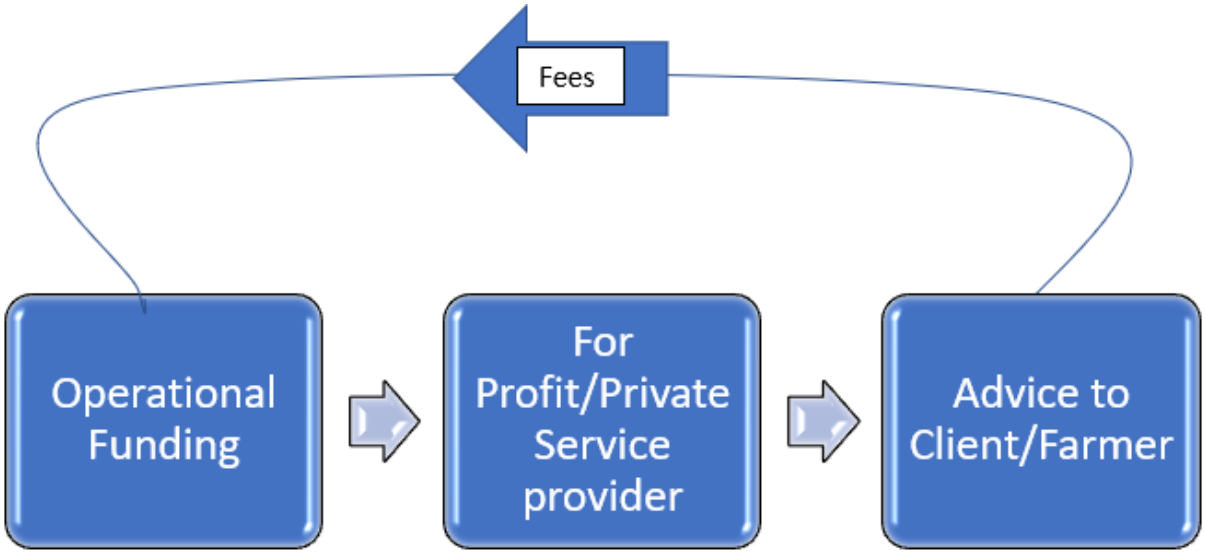


*Figure 4 For-profit/Private Funding*

Within the non-profit sector, there is a heavier reliance on non-traditional sources of income, in addition to membership fees. This includes fundraising activities such as sports tournaments and passive income streams that entail fees for the use of trademarked online tools. Within the not-for-profits, accountability can be viewed as part of the membership framework. Members are free to withdraw their membership if they are dissatisfied with the service being offered. However, because service is often tied to membership, loss of membership also means a loss of services. This, in turn, causes serious hesitancy to retract one's membership, despite potential grievances with the organisation itself. Greater access to advisory mechanisms through a coordinated approach would be beneficial in reducing the reliance on these organisations. The funding structure can be viewed below.

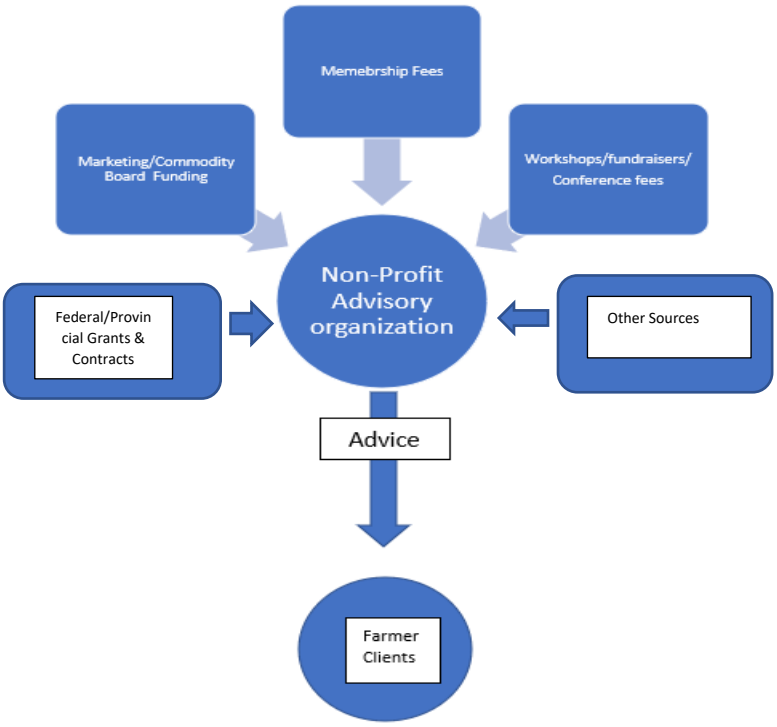


*Figure 5 Non-Profit Funding Mechanisms*

The producer workshop group was readily able to list many different funding mechanisms they were actively engaged with or saw regularly occurring. These include many membership fees, grants, sponsors, incentive programs, fees-for-services, Public Private Partnerships (PPP), and simply taxpayer funding. Each of these options provides varying levels of accountability. Notably, as for-profit organizations will provide advice linked to a product, there is an understood level of accountability as the product needs to work as advertised if it is to continue being sold. However, in the attempt to make the sale, the product can be exaggerated or may not be the most appropriate product for the specific circumstance. The lack of an objective opinion can result in both hesitancies to adopt the new technology and the inability to use an alternative product later due to investment already made. Wealthier companies will also have more resources at their disposal to promote their product.

> *"There are other companies like private companies' global companies with trillion-dollar budgets are competing for airtime with us. So, there is always competition […] the other people that have got field offices out there now, really in any numbers are private companies and their information is always biased"*

Smaller for-profit organisations would also benefit strongly from an objective, third-party opinion.

## 4. Conclusion

The preliminary results so far have demonstrated a clear need for stronger public extension and advisory services and heavy reliance on the for-profit industry within Ontario's livestock industry. Fees-for-services and product-linked advice are far more prominent within this sector. As the public sector extension has seen a reduction in their role, they have also seen corresponding losses in influence. The system has transitioned into a profoundly pluralistic structure. As advisory services have "followed the money", we have seen the development of different pluralistic systems with variation across farm size of target client and big differences between supply-managed and non-supply managed sectors. There is a lack of coordination, a unifying voice and a sense of direction. The greatest challenge is to improve the coordination among all actors in the diverse and complicated *pluralistic advisory service system* that has emerged.

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# Appendix

*Table 1: Key Characteristics of Contemporary Agricultural Extension and Advisory Services in the United States of America and Australia*

| ***Characteristics*** | ***USA*** | ***Australia*** |
|---|---|---|
| Public funding for extension | Public funding for agricultural extension and advisory services have declined over the years, although multiple nationally funded programs and partnerships geared towards US agriculture extension. $315 million was funded by federal governments in 2020, which accounts for 10-50% funding at state level extension and advisory services. | Public funding for agricultural extension and advisory services declined and remained static over the last two decades, although public funding specifically for agricultural extension still exists. Over $21.3 million was invested between 2013-2017. Co-investment of fundings through the National Primary Industries Research, Development and Extension (RD&E) framework |
| Role of public organisations for extension delivery | Public extension provider (national and state) is one of many service providers under pluralistic systems. Provides direct education to farmers through the Cooperative Education System, employing extension agents in approximately 3000 counties. Ensures a federal, state, and local cooperation for reach. | Public extension provider (national and state) is one of many service providers under pluralistic systems. Extension and outreach efforts organised by the Australian Government. Support given to universities and individual farmers (see below). |
| Coordination mechanisms | While public agriculture extension in the US. is state-owned, collaboration between the state systems, and support from the United States Department of Agriculture (USDA), have led the collection of state-owned extension programs to be seen as a national US Cooperative Extension System. | The evolution of the agricultural extension sector in Australia has involved an emphasis on government coordination and leadership in bringing-in private organisations. Rather than a decrease, allowing for private organisations to fill gaps, they were invited to join and collaborate (Marsh and Pannel, 1999). Collaboration and coordination exist among national, state, territory governments, research institutes, universities through National Primary Industries Research, Development and Extension (RD&E) framework (see Hunt et al, 2012). |

| | | |
|---|---|---|
| University level education for extension | The US has a number of agricultural extension specific degrees available at a variety of universities, including a strong agricultural focus through Land Grant University (LGU) Extension Service Systems. Funding for LGU extension services is primarily dependent upon their State and Counties. In comparison, only UoG has an extension-specific program (albeit not exclusively agriculturally focused). Recent university graduates hired as extension agents are provided with mentors (Harder et al. 2021). | While there does not appear to be extension-specific degrees, the courses are taught in the form of graduate course, undergraduate course, and micro-credit. There are clear pathways towards a career in extension for students in various Universities. For example, see<br><br>Rural Innovation Research Group, University of Melbourne<br><br>School of Environment and Rural Science, University of New England, The University of Queensland, Master and Certificate in Rural Development |
| Association / forums for scholarly and practitioner communities | Multiple forums and associations are available for extension scholars and practitioners, including: National Extension Association of Family and Consumer Sciences, The American Association for Agricultural Education, Associations for International Agricultural Education and Extension, National Institute of Food and Agriculture Cooperative Extension Systems (Partnerships between government and universities). | Australasia Pacific Extension Network provides a forum for cooperation between government and universities for extension research (Example), Agrifutures website, |
| Methods of delivery | Although there have been many transformations of extension delivery methods, including reliance on digital delivery, publicly funded extension (national, and state level) continue to involve in face-to-face service and farmers' training. | Although there have been many transformations of extension delivery methods, including reliance on digital methods, publicly funded extension (national, and state level) continue to involve in face-to-face service and farmers training. |
| Replacement of extension / advisory term | The term agricultural extension is used at times, however, extension remains predominant. | Nearly exclusively uses the term 'extension' rather than advisory or Knowledge Translation and Transfer (KTT). |

Source: Based on Swanson et al. (2021); Turner et al. (2021); Harder et al. (2021); Al-Kaisi et al (2015); Paschen et al (2017); Hunt et al (2012); Marsh & Pannel (1999)

*Table 2: Key Transformations of Agricultural Extension and Advisory Services in Ontario*

| Major Issues | Key findings | Sources |
|---|---|---|
| Decline in public Extension in the 1990s | • Reduction in funding and political support for public extension.<br>• Large reduction in public sector advisors employed by OMAFRA, the position of agriculture representative was eliminated.<br>• Shift towards a "return on investment" approach to providing public extension services. | Hambly (2019); Stark (2017); Roche (2014); Milburn et al. (2010); Maynard & Nault (2005) |
| The changing role of public agricultural advisory services and the emergence of private extension actors to fill the gaps of public services | • Shift towards agri-business advisory services and networked information and non-formal education.<br>• Public extension workers shift to community development, facilitative learning and individual empowerment roles.<br>• Movement towards specialization in agriculture in conflict with the "generalist" nature of extension educators.<br>• OMAFRA shifts from providing face-to-face extension to methods and approaches, such as fact sheets, digital information sources, media, and partnerships with other organizations.<br>• OMAFRA staff interact at the organizational and policy level in a "train the trainer" approach to influence the uptake of new technologies at a more macro-level scale. | Hambly (2020); Stark (2017); Juhasz (2014); Milburn et al. (2010) |
| Greater coordination required amongst extension actors | • Farmers feel improvements could be made in extension by increasing cooperation between stakeholders of extension and advisory services for soil conservation practices.<br>• Cross-sectoral approaches linking agriculture, human health, environment are now a focus and challenge for the extension. | Allen (2021); Hambly (2020); Warsame (2015); Roche (2014); Juhasz (2014) |
| Unequal distribution of extension services, and shortage of | • Small and medium farms are affected by the decline in public extension to a greater extent than large farms. | AIC (2018); Roche (2014); Rajic et al (2013); Maynard & Nault (2005) |

| | | |
|---|---|---|
| highly skilled workers | • Market-driven research has led to more restricted information flows.<br>• Shortages of skilled labours, especially for extension services, to facilitate the adoption of research outputs at the farm level.<br>• Current KTT initiatives are not effectively reaching all members of the target audiences in Johnes Disease initiatives.<br>• Direct interactions between users of extension services and researchers are one of the most important factors in ensuring uptake of research results to allow a contextual understanding to develop. Research is presented in a format that does not meet the needs of end-users. | |
| Combination of Top-down, supply-chain, and participatory nature of agricultural extension in Ontario | • Most Johnes disease programs employ top-down, linear forms of education<br>• Bottom-up approaches have been shown to improve adoption and are recommended in the dairy industry.<br>• Veterinarian advisors could be more effective by participating in bottom-up, producer-led groups.<br>• Canadian Quality Milk Program employing veterinarians to provide training and extension to ensure farmers are meeting standards.<br>• Environmental Farm Plans giving farmers the opportunity to identify issues and providing funding and extension support for innovation.<br>• Local advisory committees established amongst community members to provide extension support and in nutrient management issues.<br>• Local advisory committees formed by some municipal councils serve as the forum for agricultural stakeholders to influence agricultural plans, programs and policies at local level. | Watters et al. (2019); Epp (2018); Roche (2014); Woyzbun (2010), Carlow (2009) |
| Replacing extension with labels such as Knowledge | • Shift away from “extension” to using the term “KTT”.<br>• Emphasis on two-way dialogue in KTT. | Hambly (2020); Bergen et al. (2018); |

| | |
|---|---|
| Translation and Transfer (KTT) | • KTT practices are embedded into research funding by federal and provincial programs.<br>• Federal funding provided to the province for KTT approaches in research. |

*Table 3 Advisory Methods, Group 1 (Advisors from Private Organization/ Workshop)*

| **Group 1** | | |
|---|---|---|
| **From whom?** | **Name of Methods** | **To whom?** |
| Commodity Group | Producer workshop | Producers |
| OMAFRA | Fact sheets | Producers |
| OMAFRA | Train the trainer | "Influencers"<br>(Vets, feed companies, consultants) |
| Collaboration between groups | Small group learning | Producers |
| LRIC | Media articles | Producers |
| Researchers | Publication<br>Industry meeting | Producers<br>Influencers |
| Truck driver | 1:1 on-farm discussion | Producers |
| Veterinarians | 1:1 on-farm discussion | Producers |
| Veterinarians<br>Feed companies<br>Commodity groups | "Lecture"<br>(producer meeting) | Producers |

*Table 4 Advisory Methods, Group 2 ( Advisors from Public Organisations/Workshop)*

| **Group 2** | | |
|---|---|---|
| **From whom?** | **Name of Methods** | **To whom?** |
| Commodity Organizations | Audits<br>Regulatory<br>E-newsletters<br>Learning events<br>One to one field service<br>Annual General Meetings<br>Incentives/premiums<br>Social media | Individual members<br>Government<br>Processors<br>Veterinarians |
| Farmer to farmer | Social media<br>Informal gatherings<br>Farm tours | Other producers |
| OMAFRA | Text-based articles<br>Video<br>Verbal | Producers<br>Service industry<br>Other government |

| | | |
|---|---|---|
| | Demos/applied research<br>Apps/ Social media<br>One to many<br>Funding programs | |
| University | Papers<br>Video<br>Reports/briefs<br>Teaching classes<br>Social media | Service industry<br>Students<br>Other researchers<br>Producers |
| Veterinarians<br>Feed Industry | One to one<br>Customized reports<br>Group targeted publications<br>Electronic (email)<br>Management clubs<br>Applied research on farm<br>Social media | Individual farmers<br>Peer to peer |

*Table 5 Advisory Methods, Group 3 (Advisory from Producers/Workshop)*

| **Group 3** | | |
|---|---|---|
| **From whom?** | **Name of Methods** | **To whom?** |
| Commodity Organizations/ Veterinarians/ Feed Companies/ Suppliers/ Government | Workshops with a meal | Farmers/ Industry/ Government/ Media/ Mennonites |
| Commodity Lenders/ Feed/ Veterinarians/ Processors | Kitchen Meetings | Farmers |
| Commodity Services | Tours/ Open Houses/ Demos<br>Successful Farmers/ Specialists/ Influencers<br>Info Days/ Regional Meetings | Farmers/ Lenders/ Industry Reps/ New Suppliers/ Entrants |
| All actors | Social Media<br>Case Studies<br>Publications – Research Papers | All actors |
| Industry/ Lender | Successful Farmers/ Specialists/ Influencers | Farmers |
| Influencers/ Certification Service/ Process Providers | Blogs/ Websites/ Videos | All actors |
| Researchers | Tours/ Open Houses/ Demos | Farmers |

*Table 6 Advisory Strategies followed according to Farmer 'Types', (Key Informants Results)*

| **Types of Farmers** | Techniques followed |
|---|---|
| **Pro-activists**, who actively seek advice from advisors | These farmers tend to be cutting edge, accept advice by text or message on demand (*They are like, don't waste my time, show me the value, and get on it now. They're used to making things happen:* KTTADVL05*)*<br>Electronic means of communication important, being able to access information on the go.<br>These are information seekers, so have information available where and when they need it. |
| **Do-it-yourselfers**, who develop their farming in their own way, for example, by experimenting or seeking alternative sources of information | As above, however prefer more detailed information in in longer format.<br>Provide fact sheets.<br>Group setting works best (*group setting for that where in you can impart information have the guys discuss it amongst themselves and then and then they all go home and do it in their own way* – KTTADVL04*).* Important to have information to support advice given to, ensure the information in contextualized example better circulation in a barn does not necessarily mean knocking down entire walls to improve airflow… |
| **Wait-and-see-ers**, who seek advice but implement this to a lesser degree or at a slower pace | Testimonial type of approach using examples from fellow producers (peer to peer); *I see a lot of value in testimonial type approaches from fellow producers; "Other people like Sam have done the trial you know I tried it [and] have shown that it works. They are not willing to be the first ones to put their neck out to try it but if three other people in the neighborhood have done it and they've all had good success with it then they be sort of starting to try it (*KTTADVL05*);* Know what the neighbors are doing as they have a great impact.<br>*Finding those producers that are influencers and early adopters is important for bringing new technology or changing the way things are done or giving advice which is influential to effect*. (KTTADVL03)<br>Provide case studies. |

| | |
|---|---|
| **Traditional/Laggard**, who do what they have always done or think they know best. | KTTADVL05: *They likely wont change unless they are forced to, or the next generation takes over and decide.*<br>Enforcement and coercive tools.<br>Tried and true communication methods such as farm newspapers and magazines.<br>Ignore them. Its one of the side effect of supply management approach to livestock farming in Ontario (*it gives him a firm price today, [so they] don't have to change anything. So, my thing with them is let him go. Stop supporting them, stop trying to support them, let them go. Its less frustrating that and it's a waste of time- KTTADVL04)*<br>Update the internet infrastructure to facilitate access. |

*Table 7 Advisory Strategies followed according to Farmer 'Types', (Workshop Results)*

| **Types of Farmers** | **Strategies followed** |
|---|---|
| **Pro-activists**, who actively seek advice from advisors | Commodity incentives for production improvements (premium programs)<br>Keeners who seek out info proactively<br>Attend and participate in workshops, groups |
| **Do-it-yourselfers**, who develop their farming in their own way, for example, by experimenting or seeking alternative sources of information | Youtube<br>Niche marketers – discussion forums, chat groups, feed mill advice, Tim Hortons advice |
| **Wait-and-see-ers**, who seek advice but implement this to a lesser degree or at a slower pace | Paper copy of everything<br>Testimonials/case studies<br>Price sensitive<br>Adopt when things become mainstream<br>Regulation influences change |
| **Reclusive traditionalists**, who do what they have always done or think they know best. | $ is not an effective motivator<br>90%, 10% return<br>Regulation influences change |