Comparative Analysis of Agricultural Extension in

Ontario, Yaroslavl Oblast and Crimea

by

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ABSTRACT

COMPARATIVE ANALYSIS OF AGRICULTURAL EXTENSION IN
ONTARIO, YAROSLAVL OBLAST AND CRIMEA

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The Challenges of Agricultural Extension

Globally there has been a growing pressure on the traditional public agricultural extension services to restructure and adapt to new funding constraints and the need of a changing agricultural sector. The century old extension is no longer that of a unified public agricultural extension, but of a multi-institutional network of knowledge and information support for farmers and rural dwellers. Although many countries in the West have almost completed full privatization of agricultural extension services, there is a substantial concern in environmental protection and the availability of impartial information which full private agricultural extension may not provide. On the other hand many countries in the former Soviet Republics are still developing their own models of agricultural extension following the global experience. However, there is lack of enough comparative studies in agricultural extension systems between the West and the Eastern European countries to learn from each other.

Therefore, this research is intended to bridge that gap by comparing and contrasting agricultural extension systems in Ontario (Canada), Yaroslavl Oblast (Russia) and the autonomous Republic of Crimea (Former Ukraine). It is hoped that this research will be useful for the policymakers in those three regions all seeking to determine the
most effective extension systems to accomplish the need of their respective countries, international professionals engaged in agricultural extension, faculty and students in the field as well other countries that are facing similar challenges and need to act to redefine extension and implement coherent extension policies.

Ontario is an ideal research base for this study as the province of Ontario has one of the oldest and most advanced agricultural extension systems in the world and the University of Guelph which is the centre of this research, is located in Guelph, Ontario. Yaroslavl Oblast of Russia was chosen for the research due to its relatively established agricultural extension services compared to other Russian regions and its close proximity to the Federal Training Centre in Moscow’s Timiryazev Agricultural Academy which provides farmer information and advisory services. The Crimean peninsula was chosen because of several factors. Although Crimea was a Ukrainian region, its official language has always been Russian, which enabled me to utilize the same Russian language questionnaires used in Yaroslavl Oblast. This was also beneficial as I am fluent in Russian language and analyzed the Crimean data without the need of translation.
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CHAPTER ONE

1. Introduction

Agricultural extension is a process for facilitating rural social change (Baker, 1989). It is the process whereby knowledge which is developed by agronomists, horticulturalists and other subject matter specialists is communicated, often via extension agents, to farm families and rural non-farm people as well as the process by which farmers communicate their technological developments back to extension agents and subject matter specialists. Rural extension stresses building on rural people's potential and utilizing their knowledge and expertise base to bring about desired levels of changes in rural living (Röling, 1988).

There is insufficient research on how agricultural knowledge and information systems (AKIS) differ from one country to another (Röling and Engel, 1991). Many case studies exist of agricultural extension in some western countries (for example, Röling and Wagemakers, 1998) but fewer comparative studies exist despite the fact that the latter can lead to useful cross-fertilization (Rivera, 1991). Rivera’s book on comparing agricultural extension, for instance, deals with Asia, Latin America and Africa but ignores Canada, Russia and Ukraine (2002). Canada, Russia and Ukraine have comparatively similar geographical and climatic conditions and are major producers and to some extent exporters of grains and other agricultural products. All three countries are searching for better ways to revitalize their agricultural extension systems.
1.1 Background of the Study

The similar geographic, geological and climatic conditions within Canada, Russia and Ukraine, yet diverging forms of agriculture make a comparative analysis of their agricultural extension systems (AES) potentially useful theoretically and practically. Despite the fact that they have different farming systems, especially in recent years, they have been learning from each other’s land tenure and production systems as well as agricultural knowledge and information systems (AKIS). The impact of intensified agricultural production in Ontario is increasingly impacting the environment and although Russia has become a major grain exporter in the last decade, both Russia and Ukraine’s total agricultural product has not yet recovered to the levels they achieved at the end of the Soviet period (Eidlin and Patsiorkovsky, 2005). Russian average annual grain output during 2001–08 was 83 mmt, down from 103 mmt over 1987–90 (Federal State Statistics-Russia 2012). Other well-known impediments to the emergence of successful agricultural production units in Russia and Ukraine include inadequate rural extension services (Eidlin et al, 2000). As Canadian farming becomes more industrialized agricultural extension (AE) has been largely privatized or transformed into a combination of agricultural information website a help line and a call-centre leaving small producers without meaningful agricultural advice. While information that farmers need to produce and market their products is readily available through farm dealerships and representatives of feed and seed companies, the externalized environmental costs of intensive agriculture have provided a new rationale for publicly funded agricultural extension dealing with the promotion of environmentally beneficial management practices. This need is presently not being sufficiently met.
On the other hand, in spite of the recent strengthening of some large capitalist farms in Russia and Ukraine, since the collapse of the U.S.S.R. most farms have been de-collectivized, privatized and are still finding their way as these countries make the transition to market economies. For instance, the purchase, sale and in turn mortgaging of land for investment in Ukraine has started to take shape in 2007, and a new Ukrainian Land Cadastre Law was adopted on July 7, 2011, however, the new owners face huge restrictions and regulations to sell freely their land. The new law allows only Ukrainian citizens who do not hold any other second citizenship to buy agricultural land after they fulfill a long list of other requirements. Certainly, this will limit the long term investment in the agricultural land.

Whether the newly privatized Russian and Ukrainian joint stock companies, private cooperatives and rising household production will be any more sustainable than the relatively unsuccessful large specialized State and Collective Farms has much to do with whether new young farmers acquire the necessary entrepreneurial and agronomic skills, market wisdom and managerial acumen to become economically viable. Other well-known impediments to the emergency of successful agricultural production units in Russia and Ukraine include inadequate rural extension services (Eidlin et al, 2000). The AESs in all three countries are therefore strongly in need of direction and reorganization.

In the Soviet system there had been no formal, publicly funded AES except for whatever Agricultural Academies of Science, agricultural universities and research institutes managed to transfer to collective and state farms to supplement local collective and state farm managerial advice. Nevertheless, much earlier but mainly theoretically, Russia has been a leader within the area of agricultural knowledge and information systems based mainly on the work of Alexander Chayanov (1925) including his famous
work, *The Theory of Peasant Economy*. Chayanov recognized that different solutions were needed for different regions. He realized that the agricultural officer (extension agent) must pay close attention to the nature of agricultural organization in particular regions so that the best arrangements for exploiting the soil in each region can be determined. Agricultural officers and state farm administrators should also receive an accelerated form of agricultural training. He believed that the people came before agriculture and that it is the role of the agricultural officer to help to instill a new rural culture most appropriate to the new agriculture desired (Chayanov, 1986).

Chayanov observed that, in Chorner’s words, “Capital does not play the same part in a peasant economy as a capitalist one. The family’s contribution to production consists less in capital than in labour” (1986: li). Thus the size of a family is the main difference in the amount of production between one peasant family and another. Chayanov also noted that despite the existence of a capitalist large-scale agricultural enterprise from the peasant emancipation in 1861 to the Revolution in 1917, there were also peasant farms that needed agricultural information. He proposed that both production and consumer cooperatives be put in place to replace the peasant economy.

In fact, until today both small-scale farmers and large factory farming exist. On the level of rural farm production in Russia in the aftermath of the dissolution of the state and collective farms is primarily a combination of joint stock companies, production and consumer cooperatives and smaller, independent forms of production.

Now both Russia and Ukraine are developing a mix of public and private AES which are more different than the direction of extension forms in Canada. While the Canadian publicly funded system has been diminished and privatized, the Russian and
Ukrainian public systems are being expanded in part because one of the most pressing needs for Ukrainian and Russian agriculture at this time is the education of young farmers in production, marketing and entrepreneurial skills.

The comparison of these systems using common qualitative and quantitative data collection and analytical methods, juxtaposition and interpretation in this research is being done to generate new AE insights which will be useful to agriculture ministries, university researchers, extension agents and farmers. This study compares AE consultation services within three important Canadian, Russian and Ukrainian regions of Ontario, Yaroslavl Oblast and the Crimean Autonomous Republic, respectively. In addition to the content and function of the various elements of each AES, the dominant extension methodologies are being compared. The data is analyzed to assess respondents’ perceptions about the nature of AE in each region including what they would like to see improved to strengthen each region’s agricultural knowledge and information systems as well as determining what needs to change particularly within the areas of (a) the most suitable public/private relationships of AE, (b) the most effective ways of improving environmental and social consequences of intensive agriculture in Ontario, (c) the need to reinvigorate and expand Crimean and Yaroslavl agricultural production and (d) the prospects for a more sustainable form of agriculture in each region.
1.2 Problem Statement

Ontario agriculture is becoming more differentiated due to the intensification of agriculture, further concentration, specialization and the growing gap between the relatively more corporate, commercial operators and the remaining class of small, independent family farms often pits small farm operators against bigger commercial operators (Filson, 2004a). While increasing farmers’ productivity is still important, there has been more concern about both the environmental consequences of “factory farming” and ability of small farmers on more marginal land to be able to adequately protect the environment.

Agricultural production in Russia and Ukraine has still not recovered to 1991 levels (Eidlin and Patsiorkovsky, 2005); however it has rebounded better in Russia than Ukraine partly because of better financial situation in Russia than in Ukraine. Meanwhile in Canada, as the number of Canadian family farms decreases and factory farms grow, overall production continues to rise but there are still environmental crises like the Walkerton tragedy (Filson, 2004b).

The Russian economy has experienced many changes since the economic reform started in the beginning of the 1990s. Price liberalisation, launched in 1992, diminished the role of central planning in the allocation of inputs and outputs in favour of the role of market prices. The reform of the agricultural sector has resulted in a widely spread privatisation. Markets were liberalised relatively fast; especially those for commodities and services, as well as the labour market. This meant the planning system was largely dismantled, state procurement abolished and production and consumption decisions were to be guided by the market. Also government intervention via subsidies or other
instruments were greatly reduced. The consequences for agricultural enterprises were a decrease in production and financial performance. Production declined over 40% since 1990. The financial crisis of 1998 resulted in a larger demand for domestic food products and a more favourable ratio of agricultural input and output prices. The share of agriculture in GDP decreased from 16.5% in 1990 to 9% in 2003. The sector is less demanded by investors and not attractive on the labour market due to lucrative energy and trade sectors (Federal State Statistics-Russia, 2007).

An Agricultural Extension Service (AES), shown to be one of the most important and effective instruments for raising agricultural productivity worldwide, is now being created in Russia. It has already been formed in 67 out of 89 regions with 3000 consultants. But only in a few of the regions are the services well developed where advice, consulting and information services to the clients are available on a wide range of the economic, financial, technical, social and other issues. In Russia there are no other well functioning institutions and mechanisms of efficient transfer of academic and applied science knowledge than the AES.

Though improvements have recently been made in Ukraine, Agricultural extension as a network of institutions that could provide educational and consulting services for farmers is practically absent in Ukraine (Kobzev, 2001: 2.3). Both Ukraine and Russia face severe underfunding, insufficient applied research, inadequate connections between research centres and education institutions and inadequate agricultural information (AI). Both Russian and Ukrainian agriculture have been substantially reorganized and privatized, yet the absence of a truly private market for land and limited resources, especially in Ukraine, minimizes the agricultural investment both
countries desperately need if they are to exceed the highest levels of production achieved in the Soviet period. Comparative analyses can be a very effective way of inducing cross-fertilization among agricultural information systems (Rivera, 1991, 2002, 2001; and Pfeiffer et al, 2001). All three countries have seriously inadequate AE and could benefit greatly from a thorough comparative assessment and critique of their AI systems.

1.3 Research Goal

This study will develop policy recommendations designed to fill the gap in agricultural extension (AE) which has developed as the result of cutbacks in publicly funded extension in Ontario. It will also help Ukraine and Russia determine an appropriate balance of private and publicly funded AE for their respective countries.

This study intends to achieve the following goals:

1. To compare agricultural extension and information systems in Ontario (Canada), Yaroslavl Oblast (Russia) and Crimea (Ukraine).

2. To develop policy recommendations designed to fill the gap in AE which has developed as the result of cutbacks in publicly funded extension in Ontario.

3. To help Russia and Ukraine determine an appropriate balance of private and publicly funded AE for their respective countries.

1.4 Research Objectives

1. To identify and describe the similarities and differences among the content and processes of agricultural extension and information systems in Ontario, Canada, Crimea, Ukraine and Yaroslavl, Russia regarding
a) The nature (structure and function) of the agricultural extension/information systems in the three countries including the relationships between the farmers, extension workers and the agricultural universities/institutes/academies of agricultural science;
b) The accessibility of the agricultural extension/information systems in the three countries among researchers, rural extension agents and farmers.
c) The dominant and residual models of agricultural extension within each region.

2. To develop a critical understanding of the context, culture, and effects of agricultural extension each region of Canada, Russia and Ukraine.

3. To compare and contrast the main agricultural extension methodologies in each region.

4. To assess critically the potential and limitations of emerging technologies (for example, communication media) and their applicability for the three countries.

1.5 Hypotheses

1. The higher the ratio of privately funded to publicly funded agricultural extension/technology transfer, the lower the awareness among landholders of the importance of adopting agro-environmental practices.

2. The privatized forms of agricultural extension of agri-businesses usually provide marketing of their products without reference to the social, environmental and economic goals of sustainability.

3. Farmers in remote areas, those growing minor crops, or those who cannot afford to pay for information are not served by privatized organizations.
4. Canadian extension is becoming less traditional, more bottom-up and participatory while Ukrainian and Russian extension is being established in a more top-down, traditional fashion.

The next chapter will review the available relevant literature on the current state of agricultural extension as well as the different models of extension and their evolution, to illustrate the importance of comparative agricultural extension systems.
CHAPTER TWO

2. Literature Review

Introduction

This study attempts to provide a cohesive review of the literature surrounding the field of agricultural extension worldwide in general and the three regions (Ontario, Yaroslavl and Crimea). This study also attempts to provide an in-depth understanding of the similarities and differences of these three regions in hopes to contrast and compare them and consequently to produce recommendations for these regions and potentially worldwide.

In the last century agricultural extension/innovation has been professionalized in outsourcing these activities to universities and state activities in applied research and extension and to professional companies (seed companies and equipment suppliers). The social return of these activities has been enormous, and often far above market rates for investments (Alston, 2010). As a result food (in the rich countries), has become cheap and lavish.

Despite these successes, in the recent years discussions on the effectiveness of the public extension system have taken place in the high income countries. With plenty of cheap food available and rising awareness of negative externalities (such as environmental and food safety issues) the future of the food system became an issue for broad political debate. This public debate has affected agricultural policy, rural development and food legislation. Of course this also affected the structure of the agricultural knowledge and innovation system but also led to complaints that the old
production oriented extension/innovation system was not fit to deliver new farming systems (Brunori et al. 2008).

In the other parts of the world especially Russia and Ukraine, have been building their agricultural extension/innovation system for the past two decades. However, they are also caught in the global political debate on the effectiveness of the “old” publicly funded agricultural extension. Therefore, this chapter will explore the different models of agricultural extension/innovation worldwide including those in Canada, Russia and Ukraine.

2.1 Description: Agricultural Extension

Agricultural extension is the process whereby knowledge which is developed by agronomists, horticulturalists and other subject matter specialists is communicated to farm families and rural non-farm people. It is therefore important for extension staff to have technical knowledge, be able to conduct community analyses, be able to work with farming systems researchers and others to produce new knowledge and be able to communicate this knowledge to farmers. Extension agents are also involved in non-formal education with rural populations to help them solve their problems, increase their efficiency and improve their standards of living. Thus agricultural/rural extension is mainly concerned with helping to improve living conditions in rural areas in order to increase the quality of life of farmers and rural dwellers.

Agricultural extension agents seek to work in a collaborative manner with farmers to improve agricultural and farming practices. Hitherto, the main concern of agricultural institutions in both developed and underdeveloped countries had been increased output in
agricultural produce. This notion helped in the 1960s in the introduction of strategies such as the Green Revolution, the Diffusion of Innovation approaches, Training and Visit System and Participatory Technology Development.

2.2 Ontario (Canada)

Blackburn and Flaherty, (1994) describe the beginning of the top-down, state driven extension model in Ontario as early as 1906, when the first agricultural representative was posted to rural Ontario. It was essentially a system of low farmer participation, and a predominantly one way flow of information in its first incarnation. Followed by the Farm Radio Forum in 1940s – 1960s, fully publicly funded until 1980s, when there was a massive shift in political focus away from public extension. It was felt to be too costly and not effective enough. Blackburn and Flaherty (1994) also note a changing worldview in the 1980s from a social focus to an environmental focus. The public was mobilized to participate in the fight against climate change; agricultural innovation was no longer in the forefront of the public mindset.

Milburn et al., (2010) argue that the extension job became aiding the farmer in accessing information rather than providing expertise. In the 1990s in Ontario this was further encouraged by OMAFRA's focus on fact sheets, fax, and Internet information sources rather than provision of extension field staff.

Canadian research from Cuddeford et al., (2004) underlines both the importance of encouraging farmers to introduce environmental best management practices (BMPs) and the relative absence of publicly funded AE/technology transfer that would be capable of carrying out the necessary non formal education to raise the awareness among
landholders of the importance of introducing BMPs. This is despite the fact “that farmers can accelerate adoption of agro-environmental measures, when governments and in some cases markets, provide more diverse supports and incentives than are currently offered” (Cuddeford et al., 2004: 7). Ever since the provincial government closed most OMAFRA extension offices in the early to mid-1990s, with the exception of OMAF’s series of best management practice (BMPs) booklets, and on-line agricultural fact sheets there has been little publicly funded AE activity in Ontario to promote BMPs and agricultural sustainability except for the AE work of local watershed conservation authorities and the privatized forms of AE of agro-businesses. The latter usually amounts to the marketing of their products without reference to the social, environmental and economic goals of sustainability (Filson, 2004). Unfortunately there are too few agricultural extension agents who remain working for OMAFRA to make a significant difference to capacity development requirements in rural areas (Filson and Agnew, 2004; Cuddeford et al., 2004).

In 2008, the Ontario Ministry of Agriculture and Food and the University of Guelph received federal funding for a partnership project entitled Knowledge Translation and Transfer (KTT), which has replaced OMAF/RA’s Knowledge Transfer (KT). This has been integrated into OMAF and MRA's research funding programs. OMAF argues that knowledge translation (KT) gained greater emphasis in the field of research and development and this new approach will mobilize the unique, synergistic capacities of the research’s various stakeholders in the development of demand-driven research related to Ontario’s agriculture, food and rural sectors and the acceleration of knowledge produced through that research into use.
2.3 Yaroslavl Oblast (Russia)

A number of scientific studies have been made and books written regarding agricultural extension worldwide. Filson et al. (1998) have compared agriculture in Ontario with agriculture in the Moscow Oblast and found that while Ontario and Moscow Oblast farmers are apparently both capitalist, major differences exist which have implications for the ways in which AE is developing within both countries. Collaborator Valery Koshelev (2002), an important leader within Russian AE, argues that the establishment of extension services requires new institution-building and therefore multidisciplinary staff training. An extension agent must not only be a highly-qualified specialist in technology, economics, finance, and several other areas, but must be able to disseminate this knowledge effectively to agricultural producers. Such institutions were frequently governed by people lacking appropriate education and sufficient professional experience, which led to a need for expert help for training and improvement of professional skills. Furthermore, advisory services on operating in a market environment were demanded by both skilled managers and experts in agricultural production. This resulted in the creation of information consulting service (ICS) in the agricultural sector (AS) in Russia to furnish rural producers of all patterns of ownership with scientific and technical knowledge, innovative projects and commercial information. This service was provided within the Ministry of Agriculture of the Russian Federation and consisted of regional, republican, territorial, area and district ICS centres. However, budget and funding constraints remain the major challenges among others.

The Agricultural Reform Implementation Support (ARIS) Project, with World Bank support, set up the Federal Training Centre (FTC) at the Moscow Timiryazev
Agricultural Academy (MTAA) in 1996. The main purpose of the FTC affiliated at the MTAA, which is the leading agricultural institution in Russia, is preparation and retraining the experts of consulting services capable to ensure sustainable development of the AES of Russia.

There are therefore differences and similarities between these AE systems in their modes of delivery, underlying philosophy and epistemology, and the directions these systems are taking. Describing, juxtaposing, interpreting and comparing their respective agricultural knowledge and information systems is therefore a worthy endeavor. As Canadian agricultural extension is being privatized and therefore more unequally available to farmers, Russian and to a lesser degree, Ukrainian agricultural extension are expanding their public extension funding for a small but growing clientele. On the other hand, Canadian extension is becoming less traditional, more bottom-up and participatory while Russian and Ukrainian extension is being established in a more top-down, traditional fashion.

2.4 Crimea (Ukraine)

During the Soviet period, like many other former Soviet Republics, in Ukraine the local Soviet agricultural departments provided some type of agricultural extension services in the fields of agricultural machinery use, engineering, and construction. The system however, corresponded to the requirements of the Soviet administrative system as a whole and suffered from a number of negative aspects that prevented it to succeed. The services were not demand driven to meet the real needs of the farmers, and the state often
used its strict control over the system to manipulate rural dwellers rather than assist agricultural producers.

Therefore, the Soviet planned economy had created a culture of state dependence in all decision-making processes. Now in the post-Soviet era, the state is no longer in a position to decide on everything and for everybody. At the same time, the private initiatives and entrepreneurial skills required to capitalize on the advantages of the market economy are insufficient in the Ukrainian agricultural sector. The autonomous Republic of Crimea is not different than the rest of Ukraine. This situation has been compounded by the accelerated reorganization of the collective agricultural enterprises that began early 2000. A large number of new participants have entered in the process of agricultural production. Many of these participants have never run their own farms or agricultural businesses and their knowledge of modern, effective agricultural management is often very basic.

Despite the fact that Ukraine’s agricultural sector has undergone some significant changes in the end of 1990s, agricultural market infrastructure remains underdeveloped (Kobzev, 2001). A. Kobzev argues that the character of agricultural extension and research in Ukraine does not correspond to the needs of the agricultural sector. Chronic underfunding of research, the dominance of fundamental over applied research, inadequate ties between research centres, educational institutions and agricultural producers, and weak cooperation among these institutions in transferring agricultural information and expertise; these are some of the most evident specifics of the present situation.
Although a number of international pilot projects have been established in some regions of Ukraine, agricultural extension as a network of institutions that could provide educational and consulting services for farmers is practically absent in Crimea and all Ukraine. The overwhelming majority of the international projects are funded by international donor organizations which makes the sustainability of these projects uncertain. Therefore, the autonomous republic of Crimea, like other regions of Ukraine is in imminent need to develop its own agricultural extension services funded by local and/or central government.

2.5 History of extension

Traditionally extension systems followed a Diffusion of Innovation model but more recently other extension systems have come into vogue including Röling’s Agricultural Knowledge and Information System (AKIS) and more recently, Farming Systems Research and Extension (FSR/E). These latter systems target "recommendation domains" or particular types of farmer clientele based on gender, commodities, sizes of farm and other farm characteristics. Whereas the earlier models of extension were top-down systems from researchers on down to extension agents and eventually farmers, contemporary systems attempt to be both top-down and bottom-up enabling farmers and other user groups to "pull down" the extension services which they need.

Röling (1988) notes that in its early days extension science was concerned with getting its message across. The next question extension agents asked was "Why don't they do what we want them to do?" The initial answer was that farmers were resistant to change the basic idea underlying diffusion research.
Benor (1989), consultant to The World Bank, outlines the principles of the ‘Training and Visit Extension’ (T&V) system, advocating a return to the basics, claiming that key aspects of the T&V system are often misunderstood or ignored, he discusses the principles of T&V, misinterpretations of the system. T&V seeks to benefit small farmers by urging them to adopt technological innovations, it focuses on specific crops. It also emphasizes frequent in-service training for extension personnel, regular visitation to farmers’ farms, promotion of extension/research linkage and improved extension management (Benor et al., 1984). The main goal of T&V is the transformation of the extension administration (Gustafson, 1990). Montague Yudelman (1984), a former director of World Bank’s Agricultural and Rural Development Department, stated that the T&V system provides a sound institutional framework for reaching large numbers of farmers, and it has many elements that can be adapted to be effective in a range of different environments. T&V is based on a set of managerial and organizational principles that are of broad applicability and which, when applied together, constitute an extremely powerful managerial tool.

Morris (1983) emphasizes the importance of ‘Incentives for Effective Extension’. He re-conceptualizes how organizational context can promote or inhibit agricultural extension. Morris considers the importance of such incentives as price ratios and credit (and input) subsidies for farmers.

Later it was learned that extension offerings cannot be designed without taking into account research, technology development, policy, farmers' production conditions, etc. That is, the AKIS. Roling also says that experience shows that none of the extension
can be effective unless users can wield effective user control over the AKIS and its professional and specialized institutions such as research and extension.

He says that if we look at the history of the developing nature of extension from the Diffusion of Innovation (transfer of technology) period through the Training and Visit System to Farming Systems Research and now the Agricultural Knowledge and Information System extensions have come to realize that the top-down approach alone is authoritarian and ineffective. What is needed Roling thinks is a combination of the top-down and bottom-up approach, the AKIS system.

Although research-extension-farmer linkages are crucial to the 'technical innovation process' other linkages remain significant for the success of extension. For example, these include the agricultural development process linkages among credit, supplies governance, research/extension, marketing and production. In the 1980s concerns grew about the linkages between research and agricultural extension and this has led to some policy changes and institutional reorganization.

One example of this is the move toward privatizing some aspects of agricultural extension in both developed and underdeveloped countries. In some cases there has been a shift toward allowing commodity groups to do the work of extension either by first funding programs via traditional government sources and then later totally privatizing the service. Sometimes a fee is charged for services provided, first to those most able to pay and eventually the entire government extension service is privatized. Finally, private companies have increasingly become involved in the provision of extension services.
2.6 Challenges and reorganization

When discussing agricultural extension, "privatization" is used in the broadest sense which is one of the major challenges agricultural extension is facing – introducing or increasing private sector participation, which does not necessarily imply a transfer of designated state-owned assets to the private sector. In fact, a variety of cost recovery, commercialization, and other so-called privatization alternatives have been adopted to improve agricultural extension (Rivera & Cary 1997).

Public sector extension suffered a series of attacks beginning in the 1980s when politicians and economists around the world began to express concern about the costs of financing public sector extension. Public sector extension was criticized for various reasons: for not being relevant, for not being adequately effective, for not being efficient and, sometimes, for not pursuing programs that foster equity. Competitive interests from the private sector heightened these attacks. The result was a turning point in the way public sector agricultural extension was conceived and practiced.

Rivera (1997) states that there were three strategies which dominated the rationale and approaches to extension reform strategies.

1. To decentralize the burden of extension costs through fiscal system redesign;
2. To decentralize central government responsibility for extension through structural reform; and
3. To decentralize the management of programs through farmer participatory involvement in decision making and, ultimately, taking responsibility for extension programs.
Public sector extension systems in high-income countries (HIC) have tended to change quickly toward strategies such as commercialization and other forms of market-oriented privatization.

New Zealand's Ministry of Agriculture and Fisheries was challenged to "go commercial" in 1986 (Hercus 1991). It currently operates as a consulting firm to farmers, under the company title of Agriculture New Zealand.

The Netherlands began its reform of public sector extension by privatizing one-half of its national public extension staff – transferring them with initial financial support to work with farmer associations, while the other half was assigned regulatory tasks primarily to oversee the use of agricultural chemicals. Later the technical agronomic services were transferred from the farmer associations to a private company, the Dienst Landbouw Voorlichting (DLV), the Agricultural Advisory Service.

Direct charging was introduced in England and Wales in 1987. By 1990, the national government’s contribution to public sector extension had declined to 80%, with direct charging providing the other 20%. By 1995 farmers were expected to pay about 60% of the cost of any services which they used. All other users had to pay the full cost of the service.

In Germany distinct approaches to extension have developed in its three main regions. In the Northwest, Chambers of Commerce cooperates closely with farmer associations in the provision of extension. In the East, extension services are contracted out to private companies. In the Southern region, the public sector continues to subsidize extension activities although private providers are becoming commonplace (Hoffmann, Lamers & Kidd, 2000).
The United States took a different route in response to political criticism. The U.S. Cooperative Extension System advanced a set of "issues-oriented" initiatives designed to revitalize the relevance of the system (USDA, 1987). Despite this positive response, the system remains under attack (Hall & Kuiper, 1998).

In some countries extension is historically decentralized, and devolved authority has long existed, such as in Canada, United States, Germany, Brazil and India. It is not surprising then that minimal shifting of programmatic and fiscal responsibilities would take place in countries that are already decentralized. The federal governments in these countries have nonetheless tended to reduce their contribution to state and local extension activities, thereby shifting greater authority to lower levels of government.

In countries where devolution to lower levels of government has only recently taken place, greater responsibility on local governments has raised the issue of cost-efficiency. The trade-off between greater local responsibility and the risk of higher costs due to scale and management inefficiencies is a cause for concern (Deller 1998).

Middle-income countries (MIC) have tended to shift the burden of delivery to private sector companies (Chile), universities (Hungary) and NGOs (Venezuela). Contracting for extension is a strategy increasingly adopted by governments that chose to continue to fund extension but use private entities to provide extension services (The World Bank 2001). Some middle-income countries, like Colombia and Mexico, have decentralized responsibility for extension to lower levels of government.

Chile’s agricultural advisory service for small farmers evolved gradually from 1980 – 2000, although throughout its evolution it kept the key feature of private delivery and public funding. The public sector initially provided farmers with vouchers that could
be used to employ private agricultural consultants to assist with their needs for technical knowledge.

Mexico originally developed a fee-based system among large-scale farmers in the Northwest region with plans for developing a similar arrangement among small-scale farmers in the South-Central region (Wilson, 1991). Since then, Mexico has decentralized its national extension system, devolving responsibility to the state level.

South Korea and Taiwan, maintain a structurally de-concentrated "dual" authority whereby authority is shared by government with farmer associations. This structure is also operative in the high-income countries of Norway and Sweden, which underscores the fact that extension’s development is not divisible either by geographic region or economic status, although some common trends or tendencies may be observed.

Russia is developing partially privatized system. The Federal Training Centre (FTC) - a university based system, which has branches in many regions provides some free services as well as paid services (Koshelev 2006).

For the less developed, low-income countries (LIC), particularly for those in Africa, agriculture is, and will remain in the foreseeable future, the main sector producing exportable goods. Furthermore, agriculture is the main source of income for large numbers of people and provides the basic food subsistence needs for the majority of the population in these countries. Finally, because of its importance, agriculture has been heavily interfered with in all countries. Not surprisingly it is one of the main objects of reform (Sarris, 1990).
2.7 Public vs. private

Contracting for services and cost sharing with private sector for-profit firms and individuals, non-governmental organizations (NGOs), and farmer organizations are on the increase in low-income developing countries (World Bank 2001). However, while government contracting “out” to private entities is becoming a common place strategy, contracting “in” is also observed (Crowder & Anderson 2001). In many developing countries, such as Jamaica, Uganda and Mozambique, donor projects and NGOs hire well-known, public extension advisors to help provide services. In such cases, extension workers are provided operational funds, travel allowances, per diem, and in some cases salary supplements to augment low civil servant wages. Although a form of secondment, this arrangement is also an example of the private sector contracting public sector extension staff. Other, different examples of contracting "in" for extension services exists in middle-income countries, such as Israel, where farmer organizations contract with public sector extension for specialized services.

Contracting for extension is increasingly utilized as a strategy by various countries, but especially by less developed countries to augment the delivery of extension services. In contracting out extension delivery, public funds are used to contract private providers of services (for example, for-profit companies, extension consultant associations, and non-profit non-governmental organizations). Anticipated benefits include greater operational efficiency and cost effectiveness; greater accountability of extension agents to perform and produce results; and a greater variety of providers of extension services. When publicly financed extension services are contracted out, the role of government changes from that of implementing agency to that of quality controller,
overseer, and provider of training and technical information to agencies contracted. In some cases, as in Mozambique, both the public and private sector may provide services, with division of labor by district and province.

Contracting for agricultural extension is not new, but the breadth and extent of its use has increased as agriculture becomes more industrialized and extension systems more privatized. Even in countries where extension continues as a public sector institution, there is a tendency to reduce staff and thereby depend on contractual arrangements to accomplish certain service tasks.

Despite diminishing public sector involvement in the delivery of extension services, central governments in low-income and middle-income as well as some higher-income countries often continue to fund extension-related services. Hawking back to the observation that there has been a global “power shift” from public to private hegemony (Mathews 1997), there has also arisen a kind of myth that nation states have become powerless.

The tendency to by-pass agricultural extension has caused critics to question the need for a public sector extension function. Ironically, however, this highlights the need for public sector extension for small farmers since it is less feasible for them to contact researchers or take advantage of private sources of knowledge. Indeed, the World Bank justifies its support for public institutions such as research and extension based on the public good nature of these institutions (Purcell & Anderson 1997). IFPRI, the International Food Policy Research Institute, argues that to reduce poverty and food insecurity, "agricultural research and policy should focus on improving agricultural productivity, particularly of small-scale farmers, in low-income countries" (Pinstrup-
Anderson, Pandya-Lorch & Rosegrant 1997). Unfortunately, ensuring food security and promoting national economic development are often incongruent.

Different directions are being pursued by countries in the reform of their national extension systems. Extension can and does mean different things to different countries. Still, a number of common problems exist worldwide that require concerted action.

In market-oriented schemes, extension tends to be strictly an agricultural advisory service for producers who can afford to pay for the service, usually on a contractual or fee-based basis. At the same time, however, countries such as The Netherlands, have initiated national policy that promotes efforts that go beyond production interests. That government is fostering sound environmental practices through a combination of better-adapted technology, high-quality extension services, supportive legislation and regulations concerning pesticide and nutrient use, and economic incentives that mobilize farmers for meaningful change (Proost & Matteson, 1997). National policy in favor of cleaning up environments degraded in part by non-point sources of pollution has been introduced in a number of countries. Since the mid-1980s, the U.S. Cooperative Extension Service has initiated special programs to meet urgent environmental problems.

2.8 The Political Economy of Agricultural Extension

Agricultural extension is funded mainly by public sector entities that are defined geopolitically. Thus, the development of agricultural extension policy in any country is often more global than local. The World Trade Organization along with large global agricultural producers promote free trade agreements which often benefits the rich countries.
The global report of the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD, 2009) argues that opening national agricultural markets to international competition before basic national institutions and infrastructure are in place can undermine the agricultural sector, with potential long-term negative effects for poverty alleviation, food security and the environment. Some developing countries with large export sectors have achieved aggregate gains in GDP, although their small-scale farm sectors have not necessarily benefited and in many cases have lost out. The poorest developing countries are net losers under most trade liberalization scenarios.

These distributional impacts call for differentiation in policy frameworks as embraced by the Doha work plan (special and differential treatment and non-reciprocal access). Trade policy reform aimed at providing a fairer global trading platform can make a positive contribution to the alleviation of poverty and hunger. Developing countries could benefit from reduced barriers and elimination of escalating tariffs for processed commodities in developed countries; deeper preferential access to developed country markets for commodities important for rural livelihoods; increased public investment in local value addition; improved access for small-scale farmers to credit; and strengthened regional markets.

Global extension issues have changed over time and are continually changing. As a result, in the United States extension personnel are increasingly referred to not as "agents" but as "extension educators" and "issue leaders". In addition to agricultural production knowledge transfer, these leaders engage in the enhancement of product quality, promotion of food safety, and awareness concerning the transition to integrated
pest management (IPM), environmental problems and resource management. As well, they provide impartial evaluation of new products and services, and validate and localize new technology. Many of these "issue leaders", according to a California farm advisor, do not realize how often they are engaging in these activities.

Advanced, high-quality extension systems, such as those in The Netherlands and the United States, provide an example to extension systems in high-income, as well as middle-income and low-income countries of the issues that will need to be confronted in the future. Waste management, protection of endangered species, clean water and other laws will obviously need to be promoted. These issues will likely need to be confronted through the development of new or redefined national extension services.

In the coming years, developed as well as developing countries will require public policy to respond to the pressing needs of the general public for information services related to food and agriculture. Additional arguments for public sector extension include the generally unbiased nature of public sector extension, the value that extension provides through client feedback, and the importance of extension education in moving disadvantaged people into mainstream society. There are also new and emerging priority issues of public and therefore national interest that are only partially being confronted, such as social equity, sustainable agriculture and a clean environment.

Rivera (1997) states that to base food security of a large part of the world's population on liberalized trade and a free market system is a high-risk social experiment. Fee-based agricultural information transfer systems tend to be biased toward larger, wealthier farm enterprises. Some fiscally redesigned public sector extension systems recognize the special status of farmers with lower income levels and greater
informational transfer needs (Rivera, 1997). In OECD countries, projects that are highly individualized command higher prices and projects for low-income users are offered at reduced prices (OECD 1989, 1992).

Regardless, small-scale farmers often have less access to high-level agricultural information. Fee-based reforms have received negative reactions from small farmers who cannot afford the financial arrangements demanded by these newly constituted extension businesses. The United Kingdom's fee-based funding arrangement has been strongly criticized (Harter, 1992). Commercial agencies do not provide services on an equal access basis. The focus is on clients whose profits can be maximized and on areas with fertile soils and satisfactory infrastructure. This tendency reinforces existing patterns of inequality in the distribution of rural incomes and services. As international organizations such as the World Bank have recognized, the public sector has a special role to perform in small farm development when this role is not fostered by the private sector. Indeed, this role when performed successfully can be as important for economic development as for social equity (Bennett 1994; Cary 1998; IICA 1997; Rivera 1997; Rivera & Cary 1997, Swanson 1997).

According to Duijsings (1998) one criticism of the private system is that the agricultural knowledge and information system in the Netherlands, which has always been characterized by openness of information flows and linkages between actors, has become less so as result of the process of privatization and commercialization. Another criticism is that farmers in remote areas, those growing a minor crop, or those who cannot afford to pay for information are not served by the privatized organizations. This may well have happened to Ontario’s AES.
In the privatized system, the focus is on the client and not on the advice whereas, in the public system, the Transfer of Technology model is quite popular, with agricultural researchers developing innovations which were then transferred to a farmer by an extension agent. In the private system an advisor brings only information that is asked for by farmers and works according to a contract. So the client’s question is central in the private system. This might not work well for the Russian and Ukrainian farmers who may be former state or collective farm workers.

Donnellan et al. (2002) notes the importance of public support for the environment. For example the Australian government funded farmers’ initiatives to prevent land degradation on their properties and their immediate surroundings through a Land care program. The farmers were concerned about the degradation of their land and are interested in improving or repairing the degradation but could not do by themselves and decided to involve government money. This is a uniquely Australian form of participatory resource management primarily focused on productive agricultural landscapes.

Agricultural sustainability is a major concern. National public sector support is considered increasingly critical for safeguarding sustainable agriculture and ensuring clean environments (Altieri 1990). Encouraging farmers to adopt new practices for sustainable agriculture is a challenge that is more likely to be promoted by the public sector than the private sector. Extension policy education programs are useful in advancing best management practices (BMPs) and the development of integrated management systems (IMS). National strategies in some countries are inadequate to respond to natural resource and environmental problems. Governments tend to establish...
market competitiveness priorities before sustainability and ecology protection policies. Thus, farmers attempting to become competitive are unaware of the unsustainable nature of their resource use.

Natural resource management is an obvious, pressing and critical need, one for which the public sector again has a crucial role to perform. Extension is needed to assist farmers with understanding and responding pragmatically to, for instance, environmental management laws, as well as to assist with practices that serve to maintain a clean environment. Extension has a key role to play in the promotion of policy education, the adoption of nutrient management, and pollution control technologies among both crop and animal producers.

In short, public sector extension has a number of known goals to execute, including the promotion of social equity through non-formal education and technology transfer to small-scale farm operations and the promotion of new technologies to advance sustainable development, and to foster the use of measures to protect the environment. Turning public sector extension toward these goals, even without considering other goals aimed at confronting new and emerging priority issues, would constitute a new paradigm for agricultural and rural development.

Despite differences in their organizational forms and financing, the purpose for the establishment of agricultural services was always rather similar. The primary purpose behind agricultural advisory service in the countries of Western Europe and North America were to increase agricultural production, to stabilize the income of the agricultural population and help adjust it to incomes in the rest of society; and to help solve social issues in rural areas.
In many cases, agricultural extension programs were originally viewed as socially important activities and their provision was mostly free of charge for farmers. The main part of the financing of this agricultural extension was assumed by the state. In the majority of countries, extension was often a public institution closely connected with the national system of agricultural education. Starting in the mid-1950s, the role of government in the provision of agricultural extension and the share of state funding began to decrease in many countries. At the same time, private consulting agencies were becoming the main provider of agricultural extension. This was especially the case in many countries of Western Europe, where government involvement in agricultural extension is increasingly contained to social and environmental programs (Blum, 1996).

In recent years, agricultural extension in the majority of developed countries has been in transition from downstream extension, where the government takes a lead in all programs and activities, to upstream extension, where farmers determine extension programs with little or no intervention from the government. Now in many cases extension service takes the form of individual consultations (Feder et al., 2000). The adjustment of extension services to changing conditions and needs occurred in two areas: in the scope and in the nature of agricultural extension as well as in its organizational and institutional forms. Despite differences in the nature and the scope of agricultural extension in specific countries, a general trend lies in the broadening of extension services into new areas, and the shifting of priorities within agriculture.

There are many different models of agricultural extension services around the world, and despite the high volume of literature in agricultural extension; there is deficiency in comparative international research on agricultural extension systems which
considers the role of private and publicly funded forms of agricultural extension. This research will therefore provide a comparative agricultural extension system in Canada, Russia and Ukraine, while it will also develop a conceptual framework which could be used for international comparative.

2.9 Conceptual Framework: Agricultural Extension

(Figure 1)

Since the mid twentieth century, a variety of conceptual frameworks for agricultural extension have been developed. Despite the fact that the authors of these paradigms were attempting to identify the elements that were considered relevant, their
relative importance and relations to the state of the agricultural extension at the time, each of these frameworks were later perceived as insufficient or incomplete as the focus of agricultural innovation shifted to different an approach and different challenges.

This framework however, which was inspired by the Agricultural Knowledge and Information/Innovation System AKIS (Rivera et al. 2005) encompasses the evolution of agricultural extension/innovation, the stakeholders, their relations and how they change overtime. This model takes into consideration all main actors and groups them into four entities.

- Research
- Farmers
- Extension services
- Support system (producers’ associations, agribusiness, interventionists, governments, NGOs etc)

The two-ways arrows from and to all domains demonstrate the direct knowledge exchange and their interrelations. This relationship has not changed overtime, but the direction of the exchange has been modified based on the state of agricultural innovation as well as the politico-economical and situation.

The major policy or approach changes alter the support system actors, which in return affect the type and the direction of the interrelationship. For example, in the mid twentieth century the focus was on building public sector research institutes and extension services due to world population increases and fears of famine. This provided a momentum for major investments in agricultural technology and research to increase food production. This approach neglected or did not pay much attention to the role of the
support system, thus the role of the support system was not significant despite its existence.

In the 1980s however, the focus of agricultural development emphasis began to shift toward promoting agricultural technology dissemination and system approaches that involved a wider range of institutions in technology dissemination. Private sector firms, NGOs, farmer organizations, and universities were recognized as legitimate partners and participants in diffusion of agricultural innovation. This time the support system’s role has increased. Therefore, all models have the same actors but different roles and importance at different socio-economical, political and technological conditions.
CHAPTER THREE

3. Research Methods

My comparative research methods will employ both quantitative and qualitative techniques in order “To compare and contrast the main agricultural extension and information systems in Ontario, Canada, Crimea (former Ukraine) and Yaroslavl, Russia. “Comparative analyses can be a very effective way of inducing cross-fertilization among agricultural information systems” (Rivera, 1991, 2002; Rizk, 2001; and Pfeiffer et al, 2001).

3.1 Description of the Study Area

3.1.1 Data Collection (2007)

The quantitative part of my method was conducted through mail-out questionnaires, using the stratified random sampling technique to ensure that I have representatives from two different watersheds in southern Ontario. This is appropriate and practical, because the sample was drawn from a larger population of farmers who reside in two different watersheds. In this case, the questionnaire becomes the most effective way, despite any problems of missing data, incomplete or non-response. Overall, questionnaires are an optimal alternative when your budget is limited, the questions you want to ask are fairly straightforward and you are interested in acquiring a large heterogeneous sample (Palys, 2003). The questions asked were a mix of open-ended and structured. The open-ended questions will be asking for short explanations and the structured will be of the single response type.

Farmers from Grand River, Ausable River and Bayfield River watersheds were sampled. The P size calculation (Fitzsimmons, 2006) was used to determine the required
sample size at a confidence level of 95% (i.e. correct 95 times out of 100). The P size calculation arrived at a sample size of 30. Based on 18% to 20% response rate, it is proposed to send out 150 questionnaires to acquire this sample size (30). Also my co-researchers (2 graduate students in Russia and Ukraine) used quantitative interview based surveys with farmers/researchers and extension agents in Crimea and Yaroslavl Oblast. A representative survey of all three countries was used. These comparative surveys employed inferential statistical methods to identify the relationship between respondents’ views about Agricultural Extension (AE) and their agricultural practices with causative, independent variables (e.g. gender, age, education, farm size and type). The results of each survey were then interpreted and combined prior to analytical comparison.

The qualitative part of the methodology was done through face–to–face interviews with farmers, researchers and extension agents. This is appropriate, because interviews can clarify any unanswered questions we might have. The questions were more open ended to find out the respondents’ views about the prospects of Agricultural Extension systems in their respective countries. The interviews also helped us to identify which forms of “Extension” are most potentially beneficial, if any, for each region. “While the privatization of extension has been widespread in both rich and poor countries, privatization is most extensive in advanced capitalist countries” (Kobzev, 2001).

A combination of both qualitative and quantitative methods and a comparative scientific approach is suitable for drawing conclusions with regard to the goals and objectives of this study.
3.1.2 Data Analysis

Both ordinal and continuous variables were collected using the questionnaire. Based on this both parametric (ANOVA - Analysis of Variance) and non-parametric (Kruskal-Wallis) tests were used. Kruskal-Wallis ANOVA was used to compare the distributions of responses for the variables of interest in the three countries to confirm whether there was a significant difference in the response of the participants. The Kruskal-Wallis test is used to determine if there is a significant difference in two or more samples from independent populations. This non-parametric form of analysis of variance uses mean rank instead of mean, so a form of chi-square test underlines this attempt to determine whether within mean rank differences are smaller than between variable rank differences.

The collected data was analyzed in four steps. The first step required us (the research team and I) to describe the major elements of AE in each country and for each province. This included determining the dominant types of AE in each region (such as Participatory Methodologies, T&V System and Commodity Focused Approaches). Secondly we made interpretations based on an evaluation of the historical, political, economic and social contexts of each region. Stage three required us to combine the main elements of each system according to criteria of comparability and hypotheses for comparative analysis based on the first two steps. Finally, we made conclusions about the strengths, weaknesses, opportunities and challenges facing each system based on simultaneous comparisons and the testing of hypotheses about each difference identified in the combination. This lead to recommendations for improvement of each system given the context within which each system is situated.
Case study was also used in this study to describe the extension system in each country and also compare the similarities and differences in each country. The case study approach was used to analyze the report from the interviews. A case study approach is considered appropriate since it placed action and events in context. It also takes account of the issue of uniqueness, to deepen understanding of the phenomena under study, and to make findings more predisposed to theory generation and generalization (Miles and Huberman, 1986; Adekunle, 2007).

Yin 1996 states that the case study is the method of choice when the phenomenon under study is not readily distinguishable from its context. He indicates further that such a phenomenon may be a project or program in an evaluation study. There are three types of case studies: exploratory, descriptive and explanatory. Exploratory case study is aimed at defining the questions and hypotheses of a subsequent study, descriptive case study presents a complete description of a phenomenon within its context and explanatory case study presents data bearing on cause-effect relationships. In this study the descriptive case study was used.

3.2 Case studies

3.2.1 Case study – Ontario (Canada)

Ontario’s agricultural sector is the second largest industry in the province, contributing $30 billion to Ontario’s economy and employing more than 700,000 people. Agriculture in Ontario is changing due to the advanced concentration, specialization and the growing gap between the large scale industrialized and small scale/family farmers. Although increasing agriculture’s productivity is important, there has been more concern
about both the environmental consequences of "factory farming" and the ability of small farmers on more marginal land to be able to adequately protect the environment.

Agricultural extension in Ontario has historically been one of the main components of rural non-formal education and development. Farmers used to contact the extension services office whenever they had technical questions (such as checking testing soil fertility) or they needed consultation. Farmers would still like to have it like the old days when the old Ontario Ministry of Agriculture and Food (OMAF) people would come to their farms free. They prefer it when advice is unbiased and not connected to a particular business.

The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) still provides a service by phone but it’s not the kind of personalized service that it was before. The University of Guelph, for example, which obtains roughly $50 million annually for agricultural research and technology transfer in the areas of animals, plants, food, resources management and the environment and sustainable rural communities from OMAFRA. Rizk (2001) found, however, that despite lofty technology transfer claims, about 40% of the agricultural research studies funded by OMAFRA had no technology transfer component at all.

OMAFRA refers to AE as technology transfer (TT). In the 1980s OMAFRA employed one-to-one agricultural extension specialists in the major agricultural commodity areas such as dairy, beef, horticulture, tender fruits, grain and oilseeds, etc. and maintained 53 field offices; 13 in southern Ontario, six in northern Ontario and four or five who also maintain rural development staff in addition to their commodity experts. The pro-business Conservative Provincial Government from 1995-
2003 cut the Ministry of the Environment staff by one-third and also reduced OMAFRA staff dramatically. Now there are private certified crop advisors who provide information for companies. By the year 2000 OMAFRA had switched to a more passive ‘one-to-many’ approach which involved the use of a call centre and a website. OMAFRA presently maintains five offices which deal with 16 Ontario counties. OMAFRA does still employ at least one subject matter specialist per agricultural industry.

The reasons an OMAFRA official gave for their new method of TT delivery included (a) shrinking budgets, (b) changing private sector, (c) fewer stakeholders (down from ~70,000 in 1990 to 36,000 full time farmers in 2007), (d) a shift in policy which suggested that OMAFRA should not compete with the private sector of Certified Crop Advisers, agronomists and consultants in providing agricultural information. Farmers with off-farm employment can often access these private consultants fairly easily. Besides, many farmers now link more directly with researchers to obtain necessary information for their management, production and marketing.

OMAFRA follows the Diffusion of Innovation model of TT popularized by Rogers (2003). Knowledge activities include needs identification, research, knowledge production, management, translation, product development, dissemination and adoption/use. The adoption continuum proceeds from awareness, through interest, knowledge, understanding, trial, evaluation and adoption. OMAFRA’s Needs Identification/Research approach involves the Ontario Agricultural Services Coordinating Committee (OASCC), the Agricultural Research Institute of Ontario, OMAFRA/University of Guelph agreement for research, education and laboratory services. OMAFRA Research Programs include food, plant, animal, rural, resource management
and the environment, sustainable production systems, nutrient management, life science and innovation, food safety, alternative renewable fuels, and new directions. OMAFRA is involved with education through its agri-food diploma at the University of Guelph Colleges in Ridgetown, Campus D’Alfred and Kempville though the latter two colleges are now being closed to save money. It also provides laboratory services such as soil analysis for farmers and the public. Besides its website and contact centre it publishes many fact sheets and e-bulletins, runs seminars, trade shows and workshops and provides client information through its resource centres.

Producers do still like the independent third party, publicly funded advice of OMAFRA as compared with private agricultural consultants and especially agricultural feed and seed dealers or machinery sales people. Nevertheless, one agricultural extension agent working with the Ausable Bayfield Conservation Authority observed that “OMAFRA still provides a service by phone but it’s not the kind of personalized service that it was before.”

One OMAFRA official admitted that there probably is a gap between the research that gets done in agriculture and the technology transfer that they believe should happen. OMAFRA is considering developing a tighter evaluation system for the research it funds to guarantee that the technology transfer which is supposed to flow from these research projects.

The farmers who tend to access OMAFRA’s website which gets 168,000 hits per year, 10% of which are email messages; (40% is international or from the rest of Canada, 60% is from Ontario) and a call centre, tend to be relatively smaller operators as the bigger operators with three to five employees usually do not call OMAFRA as much.
Apparently they can access the information privately without difficulty from Certified Crop Advisers, dealers or other private businesses. OMAFRA therefore helps the small to medium sized farmers the most, including some of the most innovative farmers. OMAFRA advocates value added to farming and has an innovative extension model that is a hybrid of networking such as the informal committees like the Halton Agricultural Committee) and technology transfer (TT). OMAFRA staff are very well educated with PhDs, MScs and BSc Agr degrees. They have created a network for getting information out through multiple channels from demonstration field days, the Plowing Matches, contact with researchers, the call centres and the website, among many other channels.

OMAFRA’s budget is less than one percent of the Provincial Budget. Of that about five percent is devoted to agricultural extension/technology transfer. The biggest parts of OMAFRA’s budget deal with Research and Risk Management.

In 2008, the Ontario Ministry of Agriculture and Food and the University of Guelph received federal funding for a partnership project entitled Knowledge Translation and Transfer (KTT), which has replaced OMAF/RA’s Knowledge Transfer (KT). This has been integrated into OMAF and MRA’s research funding programs. OMAF argues that knowledge translation (KT) gained greater emphasis in the field of research and development and this new approach will mobilize the unique, synergistic capacities of the research's various stakeholders in the development of demand-driven research related to Ontario's agriculture, food and rural sectors and the acceleration of knowledge produced through that research into use.
3.2.2 Case Study – Yaroslavl Oblast (Russia)

Russia’s farming models of post-socialist restructuring did not succeed in terms of productivity. There were too many ambiguities regarding property rights, accessibility and affordability of inputs and marketing opportunities for its output. These obstacles impeded agricultural production particularly family-based production.

Many rapid changes have taken place in the Russian economy since the breakup of the Soviet Union. These changes have been especially destabilizing to Russia's agricultural sector (Jones, Stallmann, & Infanger, 2000). As a result, there has been a significant decline in Russia's agricultural production and productivity, the standard of living and quality of life for many of its rural citizens (Miller, 2000).

Although most farmland in Russia has been privatized, a few programs have been developed to assist these new “private” farmers or their communities in facing the many challenges associated with “transitioning” to a market-based economy. For example, services and programs comparable to those provided by OMAFRA in Ontario and other provinces in Canada or in the U. S. Land Grant Extension model for American farmers and their rural communities have not been very well developed in Russia. An effective extension system could address several critical educational and information dissemination problems, thus increasing productivity and improving the quality of life for agricultural producers and other rural residents.

On the other hand, many of our interviewees have expressed their fear that importing different agricultural extension models that may have worked in other countries which are socially and economically different than Russia may lead to failure in Russian agriculture. Yet, there might be an opportunity for success, if efforts were made
to contextualize a system to account for Russian socio-economic conditions and other important local variables.

Many of the problems facing Russian Agricultural Extension are more or less similar to those in Ukraine but mostly are structural in nature. The structural components of the agricultural system developed under the former Soviet are not meeting or addressing the needs of a market economy. Moreover, a significant number of problems facing agricultural producers in Russia are due to a lack of access to information on a local, national, and international basis. Finally, of the numerous problems facing Russian agricultural producers, many exist because there is a lack of educational programs designed to assist them in acquiring the skills needed to compete in the new market economy. Similarly, the Russian farmers also encounter difficulty in accessing more capital than they presently have as lenders will not be eager to provide capital in the form of loans to farms that cannot demonstrate that they are able to make the most efficient use of the inputs that they already have.

Russia’s federal government regulates the organization of information structure and policy in the agro-food system (creation informational and trade systems for the main food markets; promoting the domestic production abroad; information support for agrarian policy implementation). The government plays an important role in promoting and organizing the information centres and extension services through agricultural universities.

Since 1996, the Moscow Timiryazev Agricultural Academy (MTAA) has taken part in the World Bank “Agricultural Reform Implementation Support Project” (ARIS) as Federal Training Centre (FTC) for extension service staff. The main purpose of the FTC
affiliated at the MTAA, which is the leading agricultural institution in Russia, is preparation and retraining the experts of consulting services capable to ensure sustainable development of agricultural extension service in Russia. One of the most difficult problems of the training system is the time limitation, the dearness of learning measures, which is connected to the large transport costs, costs for residing, power supply, etc.

According to agricultural researcher based at the Moscow Timiryazev Agricultural Academy (MTAA), the university based services are the major services used by the farmers: a specialized department of the university provides the service whereby the instructors are the consultants and there are branches in the regions in order to be closer to the farmers. However, the biggest challenge for the consultants is the difference in the levels of education between the farmers and the consultants. The teachers from university usually have a very specific but theoretical knowledge while the farmers come with very practical questions.

There are also private consultants who offer their services. They do not rely on public financing and their aim is to cover all costs from the payment of their customer. Very often they might be highly specialized in a certain subject, for example, taxes, management, land and assets privatization. Generally the clients of this type of service are large farms as small farmers are not able to pay for the services. The farmers are aware that the extension service can increase efficiency and quality of farm work. But it is also challenging to identify which service is the right service for different customers when profit oriented service-providers offer their services and the farmer’s ability to buy is very limited.
3.2.3 Case Study – Crimea (Ukraine)

Ukraine, the second most populous country in CIS (after Russia) and the third largest by area (after Russia and Kazakhstan), with more than one third of the world’s richest high-quality fertile black soil which has an enriched humus layer of between 40 and 50 centimetres, began the process of agrarian reform in March 1991, before even the declaration of independence from the Soviet Union. However, all through the 1990s international organizations criticized Ukraine for its slow and insufficient reforms. Derogatory phrases like "one step forward, two steps back", "changing the sign on the door", "disappointing performance", "lack of vigorous progress" were universally used to describe the Ukrainian reforms during the 1990s.

The ongoing process of reform has totally changed the face of Ukrainian agriculture: From agriculture with predominant concentration of production in collective farms it has evolved into agriculture characterized by clear dominance of individual farms. Corporate farms today control less than 60% of agricultural land (down from nearly 95% prior to the start of reforms in 1990) and contribute about 30% of gross agricultural output (down from 70% in 1990). The individual sector (consisting of the traditional household plots and the independent peasant farms that began to emerge after 1992) controls today more than 40% of agricultural land, contributing 70% of agricultural output. Within the individual sector, the main contribution to agricultural production is from household plots, not peasant farms, as they also control much more land (33% versus 8%). This will make the need for agricultural extension services very vital in Ukraine as small scale farmers traditionally relied on agricultural information system.
During the Soviet period, the local agricultural departments provided some type of extension service in the fields of agricultural machinery use, engineering, and construction. Currently the number of the specialists in these local agricultural departments decreased dramatically, although they continue to provide some type of consulting for the reformed collective farms mostly in the fields of property sharing, farm restructuring, accounting, and some aspects of production technology. However, they do not work with small farmers and household plots – some of our interviewees believe that this is due to lack of capacity to cover the needs of the high number of small farmers and household plots who live and work in the region in addition to the large farms; and they do not have the special knowledge to fill the needs of small agricultural producers. Hence, there was a vacuum regarding the services that should be provided to small farmers and household plots.

To fill this vacuum and support the new private firms (small farms and household plots), agricultural extension system has been established in most of Ukrainian regions including the autonomous Republic of Crimea with the help of the international donor community, such as USA, Canada, UK and UE and the Ukrainian government. Some of these regions have developed their own agricultural extension service centres through agricultural universities (Crimea Agricultural University in Simferopol). In 2003 an umbrella organization was established (Association of Advisory Services in Ukraine – DORADA) in hopes to coordinate extension activities in the regions. While Dorada was advocating the passing of Yin, R. K. 1996 *Case Study Research: Design and Methods*, London: Sage Publications a law in the Ukrainian Parliament that would
regulate the activity of agricultural extension service providers in the country and also allow central and local governments funding.

This relatively new start of agricultural extension in Ukraine has many obstacles. The first one is the result of many different experiences from different countries which promote their own system for instance, in the last decade when public sector extension was criticized for its cost and not being relevant in some cases, many countries reviewed their systems and responded quite differently. Those reviews were mostly tailored for specific countries or regions and most likely based on the economic, political, social and developmental levels of the respective countries. The obstacle is the situation on the ground; the Ukrainian economy is generally suffering lack of investment especially in the agricultural sector as the status of the land is not clear yet and the agricultural wages are very low comparing to those paid in the rest of the economy. According to the Ukrainian official definition of poverty, nearly 40% of rural residents have incomes below the poverty line.

Although agricultural extension does not directly increase agricultural production, yet international practice proved that extension stimulates agricultural growth and improves rural livelihood (Rizk, 2001). For this purpose production process has to be in place to stimulate and improve. Our survey in Crimea (a region with a relatively strong family farming system) showed that there was a strong need for market information. Producers cannot make their business plan without such reliable market information. This will make Ukraine develop more government oriented agricultural extension; that is, the government needs to reconsider land ownership in order for investment access, as well as to build strong foundations for agricultural extension system due to the large number of
rural poverty as agricultural extension includes services to other rural dwellers such as farm families and rural youth and also serve for developing rural community resources and adult education.

Another obstacle may be (although not only in Ukraine but in all former Soviet Republics) the psychological readiness of the farmers. During the Sovkhoz/Kolkhoz era of the Soviet Union, those who were involved in the agricultural production did not operate like farmers nor did they have farmer responsibility for decision making authority as they simply followed the directions of the head of the Sovkhoz/Kolkhoz. In turn, the director had not planned anything but was simply fulfilling the orders from the central command. This may undermine the decision making ability of the farmers who historically acted as farm workers rather than farmers and what they can gain from the new bottom/up or participatory approach of the technology transfer (agricultural extension).

Currently, there are several groups that use the agricultural extension services provided in Ukraine especially in Crimea which include: Large agricultural enterprises created to replace the former kolkhoz (collective agricultural enterprises). The average size of such farms is about 1800 ha (~ 4447 acres), with the kolkhoz being the only employer in many villages. Now it cannot maintain the huge number of employees they have. However, they cannot simply reduce the number of employees in a short period of term as this would increase social problems in rural areas. According to official statistics of Ukraine, 54% of those agricultural enterprises were making losses in the year 2011/12. According to a member of DORADA, the large farms possess a lot of knowledge, however, it is dispersed among many specialists, and simply outdated in many cases. To
solve these problems, both external advice and retraining of specialists would be appropriate.

The next group is private family farms with an average size of about 70 ha (~ 173 acres). This group emerged in the 1990s when some of former kolkhoz members wanted to become farmers, and some were forced into this job because the kolkhoz did not pay salaries and private farming was the only way to earn a decent income. Most of these farmers lack an appropriate education since a professional profile like this did not exist in the Soviet Union. The requirements of the small farmers differ from the large farms. Most of them cannot afford to hire the specialists for the different tasks on the farm, so the farmer needs to have access to broad knowledge. They have to be manager, agronomist, zootechnician and bookkeeper in one person. Therefore, this group needs less specialized but wider support covering all questions regarding farm management.

There is another emerging group – households with plots from 0,5 to 2,0 ha (~ 1.2 – 5 acres). The household farms are in a similar situation as the family farms, except that they are much smaller and have even less education. Many of them produce for specific markets such as fruits, vegetables, potatoes, or honey for the local towns. They need help from extension services first of all in technology, marketing and information on what is necessary for receiving small loans. For this group it is most important that the costs of getting access to knowledge is low enough.

Finally, the last group are people who want to develop small businesses in rural areas. Noticeably, a very large number of people are making their living in rural areas with other activities than farming. Many of them either own or operate a small business, or work for one. One of the most serious problems in rural Ukraine is unemployment or
“underemployment.” There are too many workers on former collective farms, more than really needed for the purpose of agricultural production. Managers of former collective farms are reducing their workforce, and recognize that only a small number of employees currently active on the farm are really needed for farm operations. Farm managers realize that the cost and productivity of labour is one of their most urgent problems as they strive to become profitable.

In 2003 Ukraine became member of the United Nations Food and Agricultural Organization (FAO) which gave it access to the international market and important statistical information. In addition Ukraine is negotiating to be a member of other international and regional organizations which will force Ukraine to accept obligations on cutting back any state support for the country’s vulnerable agricultural sector.

One of the main reasons of Ukraine’s projected population reduction in about half by 2025 is rural people’s migration due to the increasing number of poverty regardless of Ukraine’s possession of one third of the world’s black soil. Only a special tailored solution can reverse the situation including both public and private rural/agricultural extension.

3.3 Data Collection (2014)

In 2014 I collected another set of data (in Ontario) to examine how the perception/feeling of researchers and agricultural extension professionals in agricultural extension has changed since the initial data collection in 2007. I have interviewed 15 experts selected through snowball sampling from OMAFRA employees who are involved in agricultural extension/ Knowledge Translation and Transfer (KTT) and Southern
Ontario conservation authorities. I have also interviewed professors from the University of Guelph whose research include components of agricultural extension most of whom I had previously interviewed in 2007.

The interviewees were asked open ended questions which also had similarities with the qualitative questions asked in 2007. There were also new questions that asked whether their perceptions have changed since 2007. The data will be arranged in themes which are comparable to the data collected earlier in 2007, and then qualitative method will be used to analyze the data. In the next chapter (four – the findings of the study) we will demonstrate the data collected both in 2007 and 2014.

### 3.4 Limitations

The major limitation of this research was in the questionnaires. We used mail-out questionnaires, which have some disadvantages, such as low response rate and the cost increase caused by sending reminders; also we are not sure if the intended respondent answered the questionnaire (Palys, 2003). In addition, we cannot clarify ambiguities and misinterpretations.

The representativeness of the data was another limitation. Although a good number of respondents participated in every region, yet it is questionable if they could be representative of their regions due to their small number, therefore, sampling confidence level might be lower than 95%.
CHAPTER FOUR

4. The findings of the study

The data of this study had been collected different times: We conducted a snapshot data in 2006 at the agricultural extension conference in Sudak, Crimea Ukraine. In 2007 we sent mail-out questionnaires to 30 farmers in two watersheds in Ontario, 30 researchers and 30 extension workers in Ontario. Similar data collection was conducted in Yaroslavl Oblast, Russia and the autonomous republic of Crimea (Former Ukraine). In the summer of 2014 another set of data was collected through one-on-one interviews where twenty respondents were asked similar questions pertaining to the state of agricultural extension in Ontario and how it has changed or evolved since 2007 (when the previous data was collected) in terms of structure, funding, services provided, stakeholders and the challenges it faces if any.

4.1 Results of the Sudak conference

Five people (13.5%) mentioned that there are no extension services in their regions (countries). All these respondents are representatives of Vinnitsa State Agrarian University (Vinnitsa oblast of Ukraine). The other respondents confirmed the availability of extension services for customers in their regions (countries).

All private extension services are functioning independently. Public extension services have been established in different organization forms. The largest share of public extension services are functioning as departments of agricultural universities (85%). Only 15% of public extension services function independently or as parts of
agrarian governmental institutes. Thus the university type of extension service is the most commonly used.

The mechanism of agricultural extension activity financing is of great theoretical and practical interest now so we tried to define the financial features of the countries’ extension services which were represented at the Conference. Only 9 respondents (28.1%) from the total number said that their extension services were publicly financed by paid services. Other sources of finance including non-budget financial resources and international grants play an important role too. Another 28.1% of respondents said that the government partly finances the extension activity in their regions (countries). In Ukraine, some parts of the extension services obtain financial support from the National Association of Agricultural Advisory Services of Ukraine (NAAASU). Only 1 person (2.7%) felt that extension should be entirely funded by farmers whereas 16.2% felt it should be funded by Government and 81.1% thought that AE should be partially funded by government.

Of the eight countries present, AE activity is only licensed in Ukraine and Germany. In response to a question about the minimum requirements of extension workers, 29.7% said that a Masters degree was needed, 56.8% said a specialist degree was required, 8.1% said a bachelor’s degree was needed and only 5.4% said there were no educational requirements for being an agricultural extension agent.

Common extension services use a broad range of information dissemination tools. As it is well known, all these tools can be combined into three groups: mass methods, group methods and individual methods. Almost all extension services are using individual methods (for example, direct consulting, in 93.8% of cases). Group methods
including seminars, networking and demonstrations in the field were used by 53.1% of the respondents. Such mass methods as television, radio and the internet were the third most common methods.

Usage of different working methods depends on many factors including material and technical basis of an extension service, qualification of extension workers, cognitions of agricultural producers (farmers). Typically specialists pin their hopes on distance educational tools of information diffusion via the internet. The main advantages of these methods are that they are fast, reliable, include a large number of users, provide useful feedback and are generally secure.

However the agro-industrial complex in many countries often has very traditional technology and is slow to innovate. Therefore such mass methods as the internet, television and networking are often not commonly used in some countries like Russia and Ukraine. In such places direct consulting is usually more effective.

Then we asked who the main customer of the AE services were.
Thus, large-scale agricultural enterprisers and farmers are the primary customers of agricultural extension services (35.1% and 29.4% accordingly). Households consume a large share of services (18.8%) also. Other customers of agricultural extension services include trade firms, food processing enterprisers, rural young people and housewives.

As many as 43.8% of respondents said that extension workers in their regions (countries) control consulting results (quality services). The same percentage said that their extension services obtain feedback sometimes. Only 4 respondents (12.5%) said that extension services in their regions (countries) do not obtain any feedback on their performance. AE most often services commodity producers (51%) followed by rural households (23%) and then businesses (18%).
Thus, AE systems have many common problems within the eight countries of the respondents we surveyed. AE services are publicly funded in most countries and university based extension is the most common. AE advice and other services should therefore be at least partially paid for by government but not completely. Highly qualifying requirements exist for extension workers in most countries. AE services use all kinds of working methods (including mass methods, group methods and individual method. In most developed countries extension services focus their attention on socially important services, free of charge to individual producers. In post-soviet countries all extension services must find additional, private sources of funding.

4.2 Farmer Survey Results

4.2.1 Ontario:

In Ontario 24 farmers responded to our survey mainly from Waterloo Region, Wellington and Perth Counties in southern Ontario and they described themselves as farm owners or simply farmers. Ninety-five point eight percent were males of whom 39.1% had some form of post-secondary education, half of which was in agriculture. These farmers were asked how often they access farm production information through the agricultural information services.
More than three quarters (77.3% table 1) said they sometimes lacked production information, yet 54.5% said that it was easy to obtain such information. Only 9.1% had said they never experienced difficulties in accessing information.

The biggest sources of their information were special agricultural newspapers (58.3%) followed by OMAFRA (50%) and private extension agents like seed companies (50%) and other Ontario agricultural associations. From the farmers’ perspective the most acceptable forms of agricultural information were farm newspapers (83.3%), contacting other farmers (45.8%), learning in the field, seminars and courses (both 33.3%), followed by radio and television (25%) letters with emails as well as extension phone contact with extension workers (both 20.8%), internet/online users made only (16.7%), learning in extension centres and lectures (both 8.3%) other (4.2%).

Only 37.5% had ever used the provincial agricultural extension services in Ontario and of these, 33% had used them for more than three years and the rest for less than that. Sixty-two point five percent said that they never used such extension services.
One wealthy farmer/farm dealer argued that he and his company can always find the answers the farmers need. In an interview he observed that farmers always go to companies like his to get the information they need. He felt that farmers would almost never go to OMAFRA any more to get the information they need because all OMAFRA can do is provide very general information. OMAFRA holds field days, for example, where they explain various programs they have such as risk insurance and environmental funding for introducing beneficial management practices, etc. but OMAFRA does not give farmers the specific information that they need.

These farmers felt that extension services could be improved by increasing the cooperation between OMAFRA and the Conservation Authorities, 12.5% suggested that the quality of services needed to be improved. Only 26.7% said that they implement extension workers’ recommendations and 33.3% said they implement them sometimes. Of those who said sometimes or not at all, 20.8% said it was because OMAFRA did not have sufficient human resources and another 20.8% said OMAFRA’s extension services do not meet their needs. About 8.5% said their recommendations were too complicated and another 4.2% said their recommendations were unimpressive.

The percentage of farmers who perceived the following areas of knowledge to be extremely important included: farm management (50%), plant growing and animal husbandry (45.8%), environmental protection (45.8%), farm supply (seeds, fertilizer, fodder), etc. (37.5%), provincial law and rules (29.2%), information technology (16.7%), supply of agricultural machinery (12.5%) and finally, rural sociology (8.3%). Twenty-two point seven percent of the farmers said they used extension services that were not
publicly funded. In fact, 54.2% said they would not pay for extension services while 45.8% said they might be willing to pay for some services.

4.2.2 Yaroslavl (Russia):

In Yaroslavl 35 farmers responded to our survey mainly from Yaroslavskiy region, 77% described themselves as farm specialists, whereas 14.3% said they are farm managers, only 8.6% described themselves as farmers. Fifty-four point three percent were males of whom 34.3% had post-secondary education. 85.7% of our respondents in Yaroslavl had agricultural education.

Table 2: Information deficiency in production information (Yaroslavl – Russia)

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid Constants</td>
<td>3</td>
<td>8.6</td>
<td>8.6</td>
<td>8.6</td>
</tr>
<tr>
<td>Frequently</td>
<td>5</td>
<td>14.3</td>
<td>14.3</td>
<td>22.9</td>
</tr>
<tr>
<td>Sometimes</td>
<td>19</td>
<td>54.3</td>
<td>54.3</td>
<td>77.1</td>
</tr>
<tr>
<td>Never</td>
<td>8</td>
<td>22.9</td>
<td>22.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>35</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

More than half of our survey respondents (54.3% table 2) sometimes lacked production information (in Ontario, 77.3% of farmers had a similar response to the same question), however, 22.9% had said they never experienced difficulties in accessing information.
Table 3: Source of information

<table>
<thead>
<tr>
<th>Source of information</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special agricultural newspapers</td>
<td>29</td>
<td>82.9</td>
<td>82.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Seminars</td>
<td>27</td>
<td>77.1</td>
<td>77.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Provincial AE services</td>
<td>24</td>
<td>68.6</td>
<td>68.6</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Farmers stated that their main sources of information are special agricultural newspapers and seminars (82.9% and 77.1 % respectively – table 3) followed by provincial AE services and teaching aids or reference books (68.6% and 54.3% respectively). Most of the farmers (82%) agreed that training/learning in the field and seminars/courses are the most acceptable forms of agricultural information followed by contacting other farmers and special agricultural newspapers (both 54.3%).

Seventy-three point nine percent said they had used the provincial agricultural extension system in Yaroslavl before and more than half of these farmers have been using extension services more than 3 years. Only 21.7% of our respondents in Yaroslavl stated that they were partially satisfied with public extension services in their province, whereas 78.3% said they were fully satisfied with the provincial extension services (Yaroslavl has one of the most developed and functioning agricultural extension services in Russia), however more than half of the farmers said they would like to see better quality services and effective information that could fit their needs.

There is a private extension system in Yaroslavl and 45% of farmers said they usually use it, whereas 25.7% had at least used it once. More than 90% said they implement extension workers’ recommendations, whereas 8.7% feel they implement
recommendations sometimes. Actually, 65.7% said they would pay for effective extension service and only 3% said they would not pay for extension services while 31.4% said they might be willing to pay for some.

The percentage of farmers who said the following areas of knowledge are extremely important included: plant growing and animal husbandry (65.5%), environmental protection (56.4%), farm management (55%), information technology (20.6%), farm supply (seeds, fertilizer, fodder, etc. (15.3%), rural sociology (10.2%), supply of agricultural machinery (9.1%) and finally, provincial law and rules (3.3%).

4.2.3 Crimea (Ukraine)

(Information acquired before Russia annexed it and was still in Ukraine)

About one-fifth of Ukrainians are involved in the agri-food sector but within Crimea about 40% of the total industrial output comes from the food industry in this subtropical climate. Ukraine has about one-third of the world’s richest, black (chernozem) soil. Its main agricultural products are grain, sunflower seeds, sugar beets, vegetables, poultry, meat and milk.

In the autonomous republic of Crimea (Ukraine) 30 farmers responded to our survey mainly from Krasnogvardeiskiy, Leninskiy and Bilogrskiy regions and they described themselves as farmers. Seventy percent were males of whom 43.3% had post-secondary education, while 26.7% completed technical high school.
Table 4: Information Deficiency in Production Information (Crimea – Ukraine)

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid Constantly</td>
<td>1</td>
<td>3.3</td>
<td>3.3</td>
<td>3.3</td>
</tr>
<tr>
<td>Frequently</td>
<td>10</td>
<td>33.3</td>
<td>33.3</td>
<td>36.7</td>
</tr>
<tr>
<td>Sometimes</td>
<td>16</td>
<td>53.3</td>
<td>53.3</td>
<td>90.0</td>
</tr>
<tr>
<td>Never</td>
<td>3</td>
<td>10.0</td>
<td>10.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 5: Information Accessibility

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>I can easily find the necessary information</td>
<td>2</td>
<td>6.7</td>
<td>6.7</td>
<td>6.7</td>
</tr>
<tr>
<td>difficult in retrieving the necessary information</td>
<td>21</td>
<td>70.0</td>
<td>70.0</td>
<td>76.7</td>
</tr>
<tr>
<td>It is impossible to find the necessary information</td>
<td>7</td>
<td>23.3</td>
<td>23.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

More than half (53.3% table 4) said they sometimes lacked production information, besides (70% table 5) said that it was difficult to obtain such information. (In Ontario and Yaroslavl, a very small number of farmers had similar response to the
same question. Only 10% had said they never experienced difficulties in accessing information.)

Table 6: Source of Information

<table>
<thead>
<tr>
<th>Source of information</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhibition</td>
<td>23</td>
<td>76.7</td>
<td>76.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Seminars</td>
<td>17</td>
<td>56.7</td>
<td>56.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Provincial AE services</td>
<td>17</td>
<td>56.7</td>
<td>56.7</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The Ukrainian farmers stated that their main sources of information were exhibitions (76.7% table 6) followed by seminars and provincial AE services (both 56.7%)

Crimean farmers said that the most acceptable forms of agricultural information were learning in extension centres (80%), contacting with other farmers (76.7%), followed by learning in the field and seminars/courses (both 66.7%), internet/online users (50%) farm newspapers and journals (46.7%) information letters with emails (36.7%). Local extension service call centres made only (20%)
Table 7: How often do you Use Extension Services?

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>Constantly</td>
<td>3</td>
<td>10.0</td>
<td>12.0</td>
</tr>
<tr>
<td></td>
<td>Rarely</td>
<td>17</td>
<td>56.7</td>
<td>68.0</td>
</tr>
<tr>
<td></td>
<td>Only in exceptional cases</td>
<td>5</td>
<td>16.7</td>
<td>20.0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>25</td>
<td>83.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Missing</td>
<td>System</td>
<td>5</td>
<td>16.7</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>30</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

About 50% had used the provincial agricultural extension services in Crimea and of these, only (12% table 7) use regularly while 33.3% had used them for more than three years and the rest for less than that. Fifty percent had never used such extension services.

Seventy-seven point eight percent of the farmers would like to see more effective AE service which would be realistic and more practical. Only half of the farmers said that they implement extension workers’ recommendations while the remaining half said they implement them sometimes. Of those who said sometimes or not at all, 46.2% said it was because the regional AE service providers did not have sufficient human resources. An associate professor and AE services coordinator at the Crimean National Agricultural University Mr. Oleg Denets stated that there were not effective private AE services neither direct government funded AE services in Crimea, however, there are other AE services available in the region “Public” which means in the Ukrainian and Russian context another third organizational structure. It is a system which is funded by regional, national and international NGOs, while the services are provided by agricultural experts hired and partially paid by Crimean National Agricultural University (note, universities
are publicly funded in Ukraine). Only three point eight percent said their recommendations were too complicated and another 3.8% said their recommendations were unimpressive.

The percentage of farmers who perceived the following areas of knowledge to be extremely important included: plant growing and animal husbandry (80%), farm supply (seeds, fertilizer, fodder, etc. 60%), provincial law and rules (63.3%), information technology (53.3%), supply of agricultural machinery (50%) and finally, farm management (26.7%). Sixteen point seven percent of the farmers said they used extension services that were not publicly funded (free services). In fact, only 26.7% said they would pay for extension services while 73.3% said they might be willing to pay for some services.

4.3 Interview Results (2007)

As mentioned above, Ontario has a large privately funded and delivered AE services. Also OMAFRA is involved in AIS through conservation authorities, online information and a call centre, while in Yaroslavl (Russia) has the opposite proportion of public versus private. It has a large public (government funded) AE services and smaller private sector. As for Crimea (Ukraine) there are no publicly funded AE services, however, farmers get these services for free as they are covered by the National Agricultural University, local, national and international NGO’s. This means that the structure exists but the fund is not there. Mr. Roman Korinets a member of the National Association of Agricultural Extension Services of Ukraine (Dorada) mentioned, in an interview, that the Ukrainian parliament had officially voted 66.5% in favor of federally
funded agricultural extension services, however, the government had not delivered the money to the service providers.

**Ontario**

In Ontario, we interviewed 13 consultants (extension agents) from both public and private sectors, of whom 10 were male and 3 female, all had postsecondary agricultural education. They all stated that they cooperate with OMAFRA directly or indirectly before they reach their clients, 61.5% of them said they also have cooperation with universities as well as other AE service providers (53.8%).

Both public and private consultants (extension agents) in Ontario stated that their main sources of information are special agricultural newspapers, journals and previous reports of other AE consultants (100%), books and references (69.2%) followed by electronic references (61.5%).

**Yaroslavl Oblast**

Sergey Frolov interviewed 16 extension agents in Yaroslavl on behalf of our team, of whom 12 were female and 4 were male. Thirteen had postsecondary education of which 12 were agricultural, 2 uncompleted postsecondary. About 81% of our respondents said they cooperate with the oblast Ministry of Agriculture before they reach their clients (In Ontario 100% of the respondents gave a similar answer to the same question). Another 56.3% cooperate with other AE service providers agribusiness companies (such as fertilizers, chemicals, etc. producers) made up to 43.8%.

The main sources of information of extension agents seem to be similar in all three regions. Special agricultural newspapers and journals followed by books and references (100% and 81.3% respectively), Seventy five percent said their sources of
information include exhibitions and seminars, while those who access through the internet made up to 62.5%.

Crimea

Thirty Crimean extension agents took part in our interview survey conducted by Olena Kalna, 23 of them were male and 7 female, and twenty-four had postsecondary education while the 4 had uncompleted postsecondary, two respondents had technical high school education. The main sources of information are similar to the other regions, 66.7% agreed that they access their information through special agricultural newspapers as well as exhibitions and seminars, 46.7% said they access through internet, followed by books, references and previous reports of other AE consultants (both 40%).

One public extension agents argued that the private AE service providers offer very narrow specific information which can sometimes harm the environment as they might be focused on the profit of their product, while the public can offer a wider spectrum of information including environment. There is always a place for both public and private, but we have to balance their proportions. If information is needed for profit then the private sector can deliver it, while the public sector usually has to cover many environmental costs. One of the researchers at the University of Guelph who took part in our survey said on an interview that every region has its own needs of AE services and there are several things we have to consider when we evaluate the proper AE system for a particular region or country, such as the level of education of the farmers in the region, public information accessibility, socio-economical/financial situation of the region, infrastructure and of course government system. Here, we can conclude that farmers in Ontario do not have the same need as those in Yaroslavl or Crimea, as well as those in
Crimea might not have the same needs as those in the other two regions. Ontario farmers need more environmental programs rather than production information while the farmers in Yaroslavl or Crimea mostly need production related information. Having said that, we cannot deny that both public and private AE systems have different roles in every society or region, the proportions might vary in different regions.

Mr. Alois Heissenhuber a professor at the Technical University of Munich came to the same conclusion when interviewed at the Sudak (Crimea) International Conference on the Problems and Perspectives of Agricultural Extension Services, May 8th-12th, 2006 that his state of Bavaria still hires 1400 extension agents, despite massive AE privatizations in the rest of the country. Professor Alois argued that Bavarian government had to keep strong public AE system due to small farm sizes of Bavaria which is different than most of Germany. The government deals with many environmental issues by offering environmental incentives. This is done via a system which pays farmers for implementing environmental programs known as cross-compliance.

4.4 The results of 2014 interviews (Ontario):

As mentioned in the beginning of the chapter, the data of this study had been collected different times (2007 and 2014). The following data was collected in the summer of 2014 through one-on-one interviews where twenty respondents were asked similar questions pertaining to the state of agricultural extension in Ontario and how it has changed or evolved since 2007 (when the previous data was collected) in terms of structure, funding, services provided, stakeholders and the challenges it faces if any.
The respondents included University of Guelph professors (5 respondents) whose researches included agricultural extension (technology transfer) component. Three of these professors were part of the respondents who participated in the first data collection in 2007. Similarly, the respondents included members/employees of the conservation authorities (8 respondents) of the two watersheds where the previous data was collected. Five respondents of the conservation authorities were the same participants who were interviewed in 2007. The last group of the 2014 participants was OMAFRA employees (7 respondents from different departments such as the Agricultural Development Branch, Environmental Management Branch and the OMAFRA call centre). There was only one respondent from this group who participated in both 2007 and 2014 data collections.

The results of these interviews were divided into two main themes: Extension trend line and the extension political economy and how it affects extension public good.

4.4.1 Extension trend line:

Structure

All respondents agreed that agricultural extension in Ontario has been changing since the beginning of the twenty-first century when there were extension offices/workers in every municipality or county, who could meet farmers on one-on-one basis as well as groups. The extension staff were locally known and they had different commodity groups such as the beef team, the crop team etc. Some of these offices are still open but were drastically reduced with smaller teams. During OMAFRA’s major restructuring in mid/late nineties, a small call centre was developed to replace the local extension offices and to serve the primary producers (farmers). The farmers who could walk to their county
extension office had no longer anyone to talk to directly, and the farmers were expected to direct all their extension questions/inquiries to the call centre in Guelph. The respondents agreed that this major structural change of agricultural extension in Ontario is the trend that OMAFRA has been continuing until the present time with no indication of shifting from this path. However, the respondents had different views on the scope and the basis of the change.

For example the respondents from the conservation authorities felt that the provincial government had not only abandoned the traditional extension but had also disregarded environmental protection programs such as soil and water conservation, rural storm water management and the impact of the climate change on farm land. Whereas OMAFRA staff believes that despite the major restructuring and budget limitation, there is still the traditional type extension in Ontario. However, due to small extension staff, technological advancement and wide range of farmers from billion-dollar corporations to smaller organic farmers whose sizes and needs are much different from one another, change and adjustment in Ontario’s agricultural extension were imminent. While the researchers, who were all University of Guelph professors, agreed that an extension reform was necessary as the traditional extension was no longer viable in this internet and app obsessed era, nevertheless, they would like to see more research funding.

Respondents pointed out that in 2007/08; the availability of broadband internet had further changed the method of traditional extension in addition to the rise of commodity groups who became the de facto extension agents by selling their products to farmers which had already transformed the source of agricultural information in Ontario. The focus of OMAFRA’s extension had moved to mass extension through online, blogs,
tweets and technology based extension, getting the information to groups who would disseminate to smaller groups or individuals. However, the conservation authorities keep close relations with farmers and still continue one-on-one extension in addition to the boom of online technology. The conservation authorities utilize online technology to communicate with farmers, make program applications online accessible, get online feedback, etc. Nevertheless, the conservation authorities still visit farmers whom they help building manure storages, fences, trees planting etc.

**Funding:**

All three groups interviewed had somewhat similar thoughts in regards to the need for public funding for agricultural extension. All respondents were of the same opinion that private enterprises will only get into anything when there is immediate business opportunity for them. In contrast, public funding is needed to provide independent information.

While there are some OMAFRA program based funding available for agricultural extension through conservation authorities whose main focus is source water protection, conservation authorities primarily rely on municipalities for extension funding and OMAFRA does not have a dedicated budget for conservation authorities. The conservation authorities believe that the need for agricultural extension and the available budget are not comparable; therefore, some of the services they provide such as reforestation are on a ‘fee for service’ basis to bridge the funding gap, although there are some counties that provide with extra grants to help farmers in the watersheds surrounding them to cover these services.
To shed a light on the magnitude of extension need and the funding available, a respondent from one of the conservation authorities stated that their conservation authority had developed a rural storm water management plan to keep soil and nutrients on the land for forty farmers on four thousand acre watershed. The plan would cost $2.3 million while the counties’ clean water program budget is only 400 thousand dollars a year to cover sixty thousand acres.

Despite conservation authorities being out of OMAFRA’s budget list, OMAFRA developed a partnership program with the University of Guelph in 2008 in which the province funded agricultural extension research every five years. OMAFRA contributes five million dollars every five years. The funding is available for research in agricultural extension, primarily for the University of Guelph professors who should develop a plan which clearly demonstrates the extension component of their research and how the findings or the knowledge will be translated and transferred to the final user be it a farmer or a policy maker. This concept is known as KTT which stands for Knowledge Translation and Transfer. At OMAFRA, it is defined as the transformation of knowledge into use through synthesis, exchange, dissemination, dialogue, collaboration and brokering among researchers and research users. In order to be eligible for research funding through KTT, the research proposals must include a KTT plan.

The essence of KTT is spreading and use of knowledge through various processes which speed up the benefit of research outcomes for the various user groups. The concept has two main objectives: the research to be developed using a needs-based approach (demand-driven) and findings or knowledge produced in research is used in a timely effective manner.
Although KTT emphasizes linking the potential knowledge users with potential knowledge generators early on in the process, most of the professors affirm that research findings have always been translated into a form the final user could easily understand, but now with KTT there is a greater effort to translate information in a little more innovative way using social media such as blogs, twitter and youtube.

While the respondents from the researchers group welcome the research funding partnership between OMAFRA and the University of Guelph, most of them pointed out the funding was limited and most researchers try to secure further funding from other sources both public and private. However, all researchers agreed that funding limitations in general agricultural extension were imminent as farmers and their needs have changed. One of the University of Guelph professors pointed out that prior to 1970s farmers in Ontario and generally in Canada were poor compared to their urban counterparts. Now farmers in Ontario are wealthier and more knowledgeable than 40 years ago, therefore, their need have changed. Currently, there are some large farmers that the extension people get information from, while some small farmers might have been left behind. The large and rich farmers attend worldwide agricultural shows where new and sophisticated information is exchanged; also countless information is available online.

**Services:**

The structural change of OMAFRA, the rise of the commodity groups, the technological advancement and the need for highly sophisticated and specialized information in agricultural production have overhauled agricultural extension in Ontario. Consequently agricultural primary producers had to adapt the change. There are more fertilizer and seed companies and other agribusiness that provide agricultural information
through the sale of their products. In contrast OMAFRA had significantly decreased its offices and one-on-one information sessions.

For example, the primary producers get the information they need for crop growing or raising livestock from agribusiness (fertilizer or seed companies); however, this information is not independent while OMAFRA’s information is independent, impartial and drawn from university research then provided to the primary producers either one-on-one, workshops or at meetings. The agribusiness also provides reliable information based on research as well; however, it is profit driven in hopes to increase their sales and may be impartial.

**Participants:**

Historically the participants in agricultural extension or services were predominantly farmers and rural dwellers, now there are many more stakeholders that the extension people have to deal with such as: agricultural landowners, agricultural land renters, salesmen and other people providing professional services. An OMAFRA extension staff member acknowledged that they now communicate with the private professional service providers who influence farmers so that they can get their OMAFRA message to the farmers. OMAFRA staff added that it sometimes gets difficult to identify the right stakeholder when it comes to an environmental program – is it the landowner of the renter as the benefits of environmental programs are for the long run which the renter might not be interested in.

**Challenges:**

Despite multiple stakeholders in providing agricultural extension and high availability of information, there are still many challenges in agricultural extension in
Ontario. With too much information available online, now the question is: how do I sort out this information verses how do I get information back then.

A respondent from OMAFRA responded with a question saying “Is our job to work with innovators in agriculture or we should help the farmers that are lagging behind? We think we should help those that are falling behind, however, our programs and policies are based on the mindset that if anyone is falling behind, it is their problem and OMAFRA should work with innovators to make Ontario agriculture the best in North America”.

The lack of social sciences research is another challenge that all respondents have a common view. While the researchers unanimously articulated the challenge to produce policy making researches that would regulate or deregulate a policy, for example environmental regulation legislation must be very correct, but nothing can be very correct for every piece of land. The amount of information needed to suggest regulation is a lot greater than recommendation.

The impact of climate change farmland was another challenge observed all conservation authorities and the need for a newer water management in farmland. They stated that there is enormous rainfall in short period of time which washes away the soil and nutrient very fast.

4.4.2 Extension political economy:

There are many factors that contribute to the trend of agricultural of extension policy. It is not only the government and the farmers. Forty – fifty years ago, people saw the government as a grantor for social services and everybody expected more social
services from the government, and of course there was also trust in government, however, now fewer people see the government as a grantor for social services, many people trust private entities in innovation more than the government. Further, many voters believe that the farmers are wealthy enough that the government shouldn’t be spending any money on their profitability, while many people have difficulties to agree on the definition of public good. Not to mention the farmers or rural dwellers who tend to be very libertarian and see the government as a regulator only.

It was also mentioned that the more left leaning governments who more or less agree on the fact that agricultural extension to be a public good are elected predominantly from urban areas and have difficulties in spending in rural areas. There was an example that the current Ontario Liberal Premier who tends to pay attention to rural Ontario had faced political pressure from her own party that the party should concentrate more on their issues important to their core voters in the urban, rather than the rural issues where the Liberal party didn’t have much support.

Policies are mostly not based on science, but rather on politics. There was worldwide pressure on public agricultural extension in the past 2 – 3 decades and Ontario is not immune to this global phenomena. In addition many people in Ontario believe that farmers are wealthier and should be able to do well without the government. Nevertheless, the public may overlook the cost of environmental disasters caused by intensified farming as well as climate change. In this regard it is unfortunate that the political parties have become very partisan and develop policies that directly affect their immediate voters or lobbyists.
CHAPTER FIVE

5. Discussion

5.1 Introduction:

This chapter discusses the results of the findings presented in chapter four. It also examines how the findings are related to the literature review and the current state of knowledge in agricultural extension. The research used mail out questionnaires to farmers in two watersheds in southern Ontario, Canada, Yaroslavl Oblast of Russia and the autonomous Republic of Crimea (de jure part of Ukraine, de facto part of Russia) – when the data was collected Crimea was part of Ukraine entirely. Similar questionnaires were also answered by agricultural extension providers and university professors whose researches include agricultural extension components in all three regions. After several years, one on one interviews with university professors and professionals involved in agricultural extension were done in Ontario to gather their opinions on how and if agricultural extension in Ontario has changed over the years.

5.2 Agricultural Extension Conference in Sudak

As mentioned in the previous chapter four, before an in-depth data collection was started in all three regions (Ontario, Yaroslavl Oblast and the autonomous Republic of Crimea) I conducted a snap shot data collection at the agricultural extension conference, Problems and Perspectives of Agricultural Extension Services Development, in Sudak, Crimea Ukraine in May 2006. I asked 37 conference participants (from different regions including Ukraine, Russia and Germany) questions related to the state of the agricultural
extension in their regions in hopes to obtain a general idea of the state of the agricultural extension in these regions.

5.2.1 Agricultural Extension Accessibility

All conference members from Vinnitsa Oblast of Ukraine said that there were no agricultural extension services whether public or private in their region. This was also what the literature review indicated. Ukraine, similar to Russia, was developing agricultural extension services, therefore, some regions had no extension services despite having large agricultural lands and farmers who are struggling with information accessibility. Prior to the collapse of the Soviet Union, each collective and state farm had its own agricultural education service but there were no national or even oblast wide agricultural extension services. This is why the Russian and Ukrainian agricultural services must be built from scratch

The results showed that 85% of agricultural extension services in Ukraine were provided through agricultural universities while only 15% of the services were provided by government institutions. This was also similar to Russia. Koshelev (2006) indicated that Russia was developing a university based system through The Federal Training Centre (FTC) at the Moscow Timiryazev Agricultural Academy. Thus the university based agricultural extension is the most popular in all three countries of my study. Canada’s agricultural extension was also born at agricultural universities, hence our findings are a testament to the fact that Ukrainian and Russian agricultural extension are also following the same path.
5.2.2 Financing of Agricultural Extension

Financing agricultural extension services was also of great interest. 28% of the respondents reported that the agricultural extension services in their regions were publicly financed including international grants, while another 28% said the extension services were partially paid for by the government. No one mentioned privately paid services; however, some respondents mainly from Ukraine said that the National Association of Agricultural Advisory Services of Ukraine (NAAASU) was the sole financier of the agricultural extension services in their regions. This indicates that Ukraine is building the foundations of its agricultural extension services (financing and delivery) and would benefit from this comparative study of Russian, Canadian and Ukrainian agricultural extension services.

When we asked the respondents about who should pay for the agricultural extension services, the respondents overwhelmingly (81%) thought that the government should partially fund agricultural extension services, while 16% felt the government should entirely fund the extension services. Only 3% thought that the responsibility of funding agricultural extension services should fall on farmers. This is also in line with a University of Guelph agricultural economy professor’s description that the early days of the Canadian agricultural extension services relied on public funding until the farmers evolved to self-sufficient levels. Thus, the Russian and the Ukrainian farmers are still not wealthy enough to use private agricultural extension services. This Professor pointed out that the farmers in both Russia and Ukraine are at somewhat similar wealth level of that of the Canadian farmers in the mid-twentieth century, and would probably need publicly funded agricultural extension services until they are financially self-sufficient.
A report by (The World Bank 2001) also indicated that middle income countries such as Chile, which has privatized agricultural advisory services, had done it gradually over a period of two decades while keeping some of the feature of public funding.

5.2.3 Agricultural Extension Delivery

All respondents said that they had used a broad range of information dissemination tools such as mass methods, group methods and individual methods, although the most common method was the individual method which 94% of the respondents use most of the time. 53% of the respondents said they sometimes used group methods including seminars, networking and demonstrations in the field. However, mass methods such as television, radio and the internet were the least common, despite being fast, reliable and capable of reach a large number of users. This is because the farmers in some countries are often comfortable with very traditional technology and are slow to innovate and farmers are comfortable with one-on-one extension. Therefore such mass methods as the internet, television and networking are often not commonly used in some countries like Ukraine and Russia. In such places direct consulting is usually more effective.

5.2.4 Agricultural Extension Customers

The respondents noted that one third of the primary customers of agricultural extension services were large scale agricultural enterprises followed by small scale farmers and rural households. This creates an enormous challenge to the agricultural extension service providers due to huge gap between the need of their primary customers.
A member of the Crimean State Agrarian University said in an interview that it was very challenging to assist different levels of farmers whose needs were as different as their ages with very few extension agents and tight budget.

5.3 Farmers’ Perspective

5.3.1 Description

Eighty nine farmers from the three regions (Ontario, Yaroslavl Oblast and the autonomous Republic of Crimea) responded to our surveys. All of the farmers in Ontario and Crimea described themselves as farmers, while in Yaroslavl only 9% felt they were farmers. The vast majority, a staggering 77%, considered themselves as farm specialists. This is due to the fact that those involved in the agricultural production came from the former collective and state farms of the Soviet Union. Although Ukraine and Russia have similar economical and historical backgrounds, Crimea is a bit different due to its subtropical climate which made its citizens traditional small farmers. The data confirms this as the Crimean farmers had the least agricultural education at only 26%. In Yaroslavl and Ontario the percentage of farmers with formal agricultural education were 85% and 50% respectively.

When considering production information accessibility, all farmers in the three regions stressed that they sometimes lacked the information they needed, however, in Crimea the majority of the farmers (70%) found that it was difficult to obtain such information. In Ontario and Yaroslavl, a very small number of farmers had similar experience as there are other forms of extension services other than public extension.
A professor and agricultural extension services coordinator at the Crimean National Agricultural University said in an interview that there were no effective private agricultural extension services, nor were there direct government funded agricultural extension services in Crimea. However, there were other forms of agricultural extension services available in the region that were “Public” which in the Ukrainian and Russian context does not mean government funded, but rather a system which is funded by regional, national and international NGOs, while the services are provided by agricultural experts hired and partially paid by Crimean National Agricultural University. (Note, universities are publicly funded in Ukraine).

5.3.2 Source and quality of information

Special agricultural newspapers were found to be the main source of agricultural information in all three regions. However, farmers in Ontario have much more sources than Yaroslavl and Crimea, such as OMAFRA, private extension agents like seed companies and other Ontario agricultural associations.

In Yaroslavl, fewer than half of the farmers get information from private extension services in addition to the public, whereas in Crimea farmers only have one option, the public system – which only 12% of the farmers use regularly. About half of the farmers in Crimea said they get information from extension agencies only sometimes and they did not find much useful information. In contrast, the majority of the farmers in Yaroslavl usually access public extension services and are somewhat satisfied with it but they would also like to see many improvements, while over half of the farmers in Yaroslavl are even willing to pay for quality agricultural information.
In Ontario, only about a third of the farmers get information from the public agricultural extension (OMAFRA). Over two-thirds of the farmers had expressed that they never used public extension services as the farmers felt that extension services needed to be improved. Some even felt that the public extension services did not meet their needs.

One wealthy farmer/farm dealer argued that he and his company can always find the answers the farmers need. In an interview he observed that farmers always go to companies like his to get the information they need. He felt that farmers would almost never go to OMAFRA any more to get the information they need because all OMAFRA can do is just to provide very general information, such as holding demonstration field days and explaining various programs they have, such as risk insurance and environmental funding for introducing beneficial management practices, etc. but OMAFRA does not give farmers the specific information that they need.

This shows that in order for a private agricultural extension system to succeed in any given country, the farmers of that country must evolve to a certain level of wealth, knowledge and need. And to evolve to that certain level, a public system should lend a hand in providing a publicly funded agricultural information system.

5.4 Extension Agents

Ontario’s agricultural extension has been evolving for over a century and it is the largest and the most developed extension system in the three regions of our study in terms of service delivery, network, infrastructure and stakeholders. Ontario’s privately funded and delivered agricultural extension system has been growing significantly for the
past three decades as the public system was shrinking. The provincial government (OMAFRA) is involved in through conservation authorities, online information and a call centre. Although it is not significant and very rare, it is worth noting that Ontario still has one-on-one extension through environmental programs. While Ontario’s public extension is much smaller than the private extension, Yaroslavl Oblast (Russia) is developing a large public extension to address the growing need for such services. An extension worker in Yaroslavl told team member Sergey Frolov in interview that in early 2000s, small private agricultural advisory services were established throughout the Oblast in hopes to provide legal and marketing information to potential farmers. Nevertheless, those advisory companies slowly disappeared or reorganized in different forms of extension service providers. The extension worker added that some of those agricultural experts were hired by agribusiness companies as product consultants. Ontario’s large private agricultural extension and Yaroslavl’s expanding public extension with small or diminishing private extension can be explained by the fact that private agricultural extension can only sustain when there are wealthy and well established farmers whose need is more profit oriented, technologically very specific and higher than what the public can provide. This has also manifested itself throughout the length of this study especially in the interviews.

In Crimea (Ukraine) there is no publicly funded agricultural extension service, however, farmers get these services for free as they are covered by the National Agricultural University, and national and international NGO’s. In paper, public agricultural extension structure exists in Crimea but there is no funding. A member of the National Association of Agricultural Extension Services of Ukraine (Dorada) mentioned,
in an interview, that the Ukrainian parliament had officially voted 66.5% in favor of federally funded agricultural extension services; however, the government had not delivered the money to the service providers.

Among the three regions studied, Crimea has the least developed or established agricultural extension services due to lack of government funding. However, it is possible that the agricultural extension in Crimea might benefit from the political crises between Russia and Ukraine which lead to its annexation to Russia (Russia annexed Crimea from Ukraine in March 2014). It is speculated that Russia's Agricultural Ministry would invest the agricultural sector of Crimea with crop irrigation technologies (drip irrigation from artesian wells) as well as compensating farmers of the harvest lose in 2014.

Crimea has few water sources of its own and it was dependent on the North Crimea Canal which funneled water 400 kilometers from the Dnieper River in southern Ukraine to Crimea and provided more than 80 percent of the peninsula's water supply. However, in April 2014 Ukraine cut the flow of water through the canal due to Crimea's outstanding debt on water supplies.

In May 2015 the Russian government TV (channel Rossiya 24) citing the Russian Agricultural Minister Nikolai Fyodorov, reported that Crimea’s water supply problem has been resolved after water pipelines with a total length of 412.4km were assembled. The report claimed that Crimea harvested about 1.2 million tons of grain in 2014, up from 700,000 tons in 2013.
5.5 Extension Restructuring

The interviews conducted in 2014 (researchers/university professors from the University of Guelph) and individuals involved in technology transfer/agricultural extension (from OMAFRA, Conservation Authorities and the private sector), have pointed out that extension is an evolving process. It was also cited in the literature that extension reform was taking place worldwide. Rivera (1997) states that there were fiscal and political rationale dominated worldwide extension reform strategies.

While Yaroslavl and Crimea were developing their public agricultural extension system, Ontario was scaling down its over a century old public agricultural extension system. The interview results indicated that Ontario has been restructuring its agricultural extension since mid/late nineties. Although the respondents had different views on the scope and the basis of the change, they all agreed that this major structural change of agricultural extension in Ontario was a trend that had no indication of shifting from its path and the farmers would eventually adopt.

The rationale of the respondents was based on their professional and practical perspectives. For example the respondents from the conservation authorities felt that the provincial government not only abandoned the traditional extension but had also disregarded environmental protection programs such as soil and water conservation, rural storm water management and the impact of the climate change on farm land.

This can be explained by the fact that the conservation authorities work very closely with farmers on environmental issues and their views were mainly based on degrading environmental situations which extensively rely on public funding. Filson, (2004) argues that ever since the provincial government closed most OMAFRA extension
offices in the early to mid-1990s, with the exception of OMAFRA’s series of best management practice (BMPs) booklets, and on-line agricultural fact sheets there has been little publicly funded agricultural extension activity in Ontario to promote BMPs and agricultural sustainability except for the work of local watershed conservation authorities and the privatized forms of agricultural extension delivered by agri-businesses. The latter usually amounts to the marketing of their products without reference to the social, environmental and economic goals of sustainability.

A member of one of the Conservation Authorities pointed out in an interview that climate change/global warming is having a devastated impact on agricultural land due to much more intense rainfall in short period of time that washes soil and nutrients into watercourses. He added that the farmers didn’t understand the impact of climate change on temperature and precipitation patterns which brings warmer system that moves faster and is more chaotic and holds more water vapor. Thus farmers have to rethink how to adopt this phenomena and it is almost impossible to overcome the challenge without public funding.

In contrast, OMAFRA staff believe that despite the major restructuring and budget limitation, there is still the traditional type extension in Ontario. However, due to small extension staff, technological advancement and wide range of farmers from billion-dollar corporations to smaller organic farmers whose sizes and needs are much different from one another, change and adjustment in Ontario’s agricultural extension were imminent.

The view of the public extension people based on the fact that public funding for agricultural extension for profit was not sustainable; nevertheless OMAFRA had to
restructure public agricultural extension and readjust its focus. Also the technological advancement lead to the creation of private stakeholders which were interested in promoting and selling their for-profit products (information). But this doesn’t mean that the government has no place in agricultural extension, all respondents on this group pointed out the importance of the public role in agricultural extension such as environmental programs, research funding and food safety. It is also important to note that in contrast to agribusiness, the public agricultural extension provides unbiased information as there is no pressure to sell a certain product.

The researchers also agreed that an extension reform was necessary as the traditional extension was no longer viable in this internet and app obsessed era, nevertheless, they would like to see more research funding in all areas especially environmental issues.

A professor of the University of Guelph noted the important role of public extension especially in environmental research. He adds that some environmental phenomena now require regulation than recommendation, which changes the intensity of information needed to act. Environmental regulation legislation needs more concrete proof and intense research, thus, public involvement in necessary.

5.6 Summary

This chapter discussed in detail the findings, the questionnaires and responses in the interviews and the literature review. The discussion focused on to identify the differences between the three regions while explaining the reasons behind those differences.
There are several factors that contribute to the agricultural extension system in each country. While countries can learn from each other’s experience, yet it is important to consider the social, political and economic state of each country. The findings demonstrated that both public and private extension have roles to play in each country, although the lesser wealthy the farmers in the region (country) are, the lesser chance private agricultural extension to survive. Thus it is important that each country initially develop public agricultural extension until the farmers become more financially sustainable, then explore gradual transition to private agricultural extension system while keeping the public extension for environmental programs and research developments.

More private and for profit agricultural extension may lead to environmental negligence and degradation, therefore, public agricultural extension would be necessary to address environmental issues and promote research and development. Further, public agricultural extension maintains impartial and independent information.
CHAPTER SIX

6. Summary, Conclusion and Recommendations

6.1 Summary

6.1.1 Introduction and Background

This chapter provides a summary of the background of the study, the research goal and objectives, methodology, findings and discussions. Then conclusions and recommendations are presented and then followed by key policy recommendations. The aim of these recommendations is to provide insights for all three regions (Ontario, Yaroslavl Oblast and the autonomous Republic of Crimea).

This study because as part of a Social Sciences and Humanities Research Centre (SSHRC) International Opportunities Fund grant entitled Comparative Analysis of Ontario, Yaroslavl and Crimean Agricultural Extension Systems in 2006. It was developed with the cooperation of Professors Glen Filson (University of Guelph, Ontario), Valery Koshelev (Russian State Agrarian University – Moscow Timiryazev Agricultural Academy) and Tetyana Kalna-Dubinyuk (National Agricultural University of Kiev, Ukraine). My role involved working with the agricultural extension data supplied for Yaroslavl Oblast by PhD student, Sergey Frolov and the extension data for Crimea by Masters student Olena Kalna which comparing it with the agricultural extension data that I collected in south-western Ontario. Due to a hiatus of several years caused by personal issues that were later resolved, I returned to the University of Guelph more than a year ago to update the Ontario data with new interviews with University of Guelph faculty, OMAFRA staff and Conservation Authority staff. In the interim, Crimeans voted to become a constituent entity of the Russian Federation and its
agricultural extension policies will probably increasingly be aligned with those of Russia, rather than Ukraine.

The role of agricultural extension is vital to the diffusion of new technology. While agricultural extension is currently providing the necessary profit-oriented information for Ontario farmers without significant environmental protection plans, it is, however, falling short in satisfying the needs of farmers in Yaroslavl, Russia and Crimea, former Ukrainian region. The three countries have similar geographical and climate conditions, yet each country practices a different form of agricultural extension system. Therefore comparative analysis of agricultural extension systems (AES) in all three countries is potentially useful theoretically and practically.

The impact of intensified agricultural production in Ontario is increasingly affecting the environment the government is privatizing most of the traditional agricultural extension while the Russia and Ukraine governments are understanding the need to develop an adequate agricultural extension systems for their respective countries. As Canadian farming becomes more industrialized agricultural extension (AE) has been largely privatized or transformed into a combination of agricultural information website and help line, call-centre leaving small producers without meaningful agricultural advice. The externalized environmental costs of intensive agriculture have provided a new rationale for publicly funded agricultural extension dealing with the promotion of environmentally beneficial management practices. This need is presently not being sufficiently met.

Other well-known impediments to the emergency of successful agricultural production units in Russia and Ukraine include inadequate rural extension services (Eidlin,
2006). The AESs in all three countries are therefore strongly in need of direction and reorganization.

6.1.2 Research goal

This study intended to understand the agricultural extension and information systems in Ontario (Canada), Crimea (former Ukraine) and Yaroslavl (Russia) in hopes to develop policy recommendations designed to fill the gap in agricultural extension which has developed as the result of cutbacks in publicly funded agricultural extension in Ontario. Also this research was conducted in order to help Crimea and Yaroslavl determine an appropriate balance of privately and publicly funded agricultural extension for their respective regions.

6.1.3 Research objectives

The study identified and described the similarities and differences among the content and processes of agricultural extension and information systems in Ontario, Crimea and Yaroslavl regarding the nature (structure and function) of the agricultural extension/information systems in the three regions including the relationships between the farmers, extension workers and the agricultural universities/institutes/academies of agricultural science. The study also explored the accessibility of the agricultural extension/information systems in the three regions among researchers, rural extension agents and farmers as well as the dominant and residual models of agricultural extension within each region.

The research developed a critical understanding of the context, culture, and effects of agricultural extension in each region in order to compare and contrast the main
agricultural extension methodologies in each region. Finally the study also tried to assess critically the potential and limitations of emerging technologies (for example, communication media) and their applicability for the three regions.

6.1.4 Research methodology

Both qualitative and quantitative methods were used in this research. The quantitative part of my method was conducted through mail-out questionnaires, using the stratified random sampling technique. The sample was drawn from a larger population of farmers who reside in two different watersheds in southwestern Ontario, Yaroslavl Oblast of Russia and the autonomous Republic of Crimea (former Ukraine). Questionnaires are an optimal alternative when the budget is limited, the questions asked were fairly straightforward and we were interested in acquiring a large heterogeneous sample (Palys, 2008).

Myself and two other graduate students from Moscow Timiryazev Academy and the National Agricultural University of Ukraine had administered snapshot interviews of the participants of the agricultural extension conference in Sudak, Ukraine. I later collected the main data of the research in Ontario, and in Yaroslavl and Crimea with the help of the two graduate students from Yaroslavl and Crimea.
6.2 Conclusion

This section draws conclusions about the research objectives and hypotheses. It also focuses on the different aspects of the findings and discussion chapters, crystallizing the most important conclusions from that material.

Despite structural differences of agricultural extension systems in the three regions of the study, the research found out that the university based agricultural extension is the most popular in all three regions. The major differences were observed in agricultural extension funding; in Ontario while farmers can still access some sort of government funded agricultural extension services (also known in Ontario as knowledge translation and transfer KTT), Ontario farmers mostly rely on private agricultural extension service providers such as agribusiness for their production information. The public agricultural extension is mostly used to find out the latest research findings as well as environmental issues. One of our respondents in Ontario noted that the public agricultural extension information is known for its impartiality, thus, farmers utilize it to confirm private information when needed.

In Yaroslavl there are private agricultural extension services; however, the majority of the farmers rely and utilize the public agricultural extension despite its limitations. One of our respondents in Yaroslavl Oblast recalls that in the early 2000s there were many private agricultural consultants established in the region, which slowly disappeared after sometime due to the lack of a market for their services.

In contrast, in Crimea there were no effective private agricultural extension services, nor were there direct government funded agricultural extension services. However, there were other forms of agricultural extension services available in the region
that were “Public” which in the Ukrainian and Russian context does not mean
government funded. More specifically, for instance, in Crimea this is a system which is
funded by regional, national and international NGOs, while the services are provided by
agricultural experts hired and partially paid by Crimean National Agricultural University.
(Note, universities are publicly funded in Ukraine).

This study draws the conclusion that the farmers in Yaroslavl and Crimea tend to
be more in need of public agricultural extension services than the farmers in Ontario
presently need. As noted by an agricultural economy professor at the University of
Guelph, in the early days of the Canadian agricultural extension services, farmers also
relied on public funding until the farmers evolved to self-sufficient levels. Thus, the
Russian and the Ukrainian farmers are still not wealthy enough to use private agricultural
extension services. This professor pointed out that the farmers in both Russia and Ukraine
are at a somewhat similar wealth level of that of the Canadian farmers in the mid-
twentieth century, and would probably need publicly funded agricultural extension
services until they are financially self-sufficient.

A report by the World Bank also indicated that countries, which have privatized
agricultural advisory services, had done this gradually over a period time while keeping
some of the features of public funding.

6.2.1 Through farmer’s eyes

All farmer respondents in Ontario and Crimea described themselves as farmers,
while in Yaroslavl Oblast only one out of ten farmers would consider him/herself as a
farmer. The vast majority of those involved in agricultural production in Yaroslavl Oblast
preferred to be considered by other titles such as farm specialists or administrators. This is due to the fact that in Yaroslavl Oblast like other central regions of Russia, farming is still attached to the old stereotypes of the former collective and state farms of the Soviet Union as a poor rural peasant/farm worker. Although Ukraine and Russia have similar economic and historical backgrounds, Crimea is similar to the southern regions of Russia and is a bit different due to its sub-tropical climate which made its citizens traditional small farmers without a stereotype.

6.2.2 Extension trend

Ontario has the largest and the most developed extension system in the three regions of our study in terms of service delivery, network, infrastructure and stakeholders. Ontario’s public system has been evolving since the beginning of the twentieth century, while Ontario’s privately funded and delivered agricultural extension system was born in the last three decades due to what has started as political and economic reasons, but the major contributor to the change remains the fact that farmers in Ontario became much more wealthier than they were in half a century ago and their needs are more technologically advanced and sophisticated than what the public traditional agricultural extension can provide. In addition, unlike in the mid twentieth century, farmers are now much wealthier than their urban counterparts which put policy makers in a difficult position to justify pro-rural policies, while the majority political votes are concentrated in urban centres.

While Ontario’s public extension is shrinking, Yaroslavl Oblast (Russia) is developing a large public extension to address the growing need for public agricultural
extension in the region. Thus the study concludes that private agricultural extension can only be sustained when there are wealthy and well established farmers whose needs are more profit oriented, technologically very specific and more sophisticated than what the public can provide. This has also manifested itself throughout the length of this study especially in the interviews.

Among the three regions studied, Crimea has the least developed or established agricultural extension services due to the lack of government funding. During the period when Crimea was within Ukraine, public agricultural extension structure existed only on paper, but there was no funding. However, it is possible that agricultural extension in Crimea might benefit from the political crises between Russia and Ukraine which lead to its annexation into Russia. The Russian Agricultural Ministry promised a huge investment in the agricultural sector of Crimea with crop irrigation technologies (drip irrigation from artesian wells) as well as other compensation for farmers.

6.3 Recommendations:

The role of agricultural extension is vital to the diffusion of new technology. While agricultural extension is currently providing the necessary profit-oriented information for Ontario farmers, it is failing to cover the needs of farmers in Yaroslavl, Russia and Crimea, (former Ukraine).

In Ontario agricultural industrialization has strongly affected public sector extension. Farmers are finding themselves confronted by a new and highly competitive market. In many cases farmers require very specialized, expensive information to be viable in the market and stay in business. This severely affected the funding and delivery
of agricultural and rural extension. Increasingly privatized, agricultural information has in fact become a price-tag commodity. This commodification of agricultural knowledge is a major factor in the present transformation of public sector agricultural extension and the advancement of private sector technology transfer systems in Ontario. This change towards information commodification reflects the privatization of information and agricultural industrialization.

While large farmers in Ontario can easily access expensive, high-tech and very specialized agricultural information, there has been more concern about the environmental consequences of "factory farming" and ability of small farmers on more marginal land to be able to adequately protect the environment.

It’s clear that whereas the big operation Ontario farmers can afford to obtain information (such as nutrient management) from as far away as Texas A&M as well as private companies and independent consultants. Meanwhile, however, the small operation farmers complain that they don’t have the same degree of access to agricultural extension that they once had when Ontario has more of a one-to-one form of extension. They do not feel that the one-to-many extension offered by OMAFRA through its call centre, rare field days and the ‘Fact sheets’ on the OMAFRA website are sufficient. To some degree they are helped by the extension agents working with the Ministry of Natural Resources and especially the Conservation Authorities with respect to farming matters affecting the environment.
6.3.1 The Ontario Government

The provincial government has a major role in Ontario’s agricultural extension. It should not only continue its leading role in agricultural extension research but it should also help to dispense unbiased information, public good research, food safety and promotion, economic development and environmental protection research. For example, climate change has an enormous impact on farmland and private, for profit researchers probably do not take the lead for research whereas the government must make sure that this is done to both try to mitigate greenhouse gases (such as from cattle) and help farmers adapt to the changing climate.

The government can work on a variety of topics concerning the future of the primary producers of the province, whereas the private focus is on a product or a service for profit, which makes the emphasis on selling more products that would benefit the company to make more profit.

The small farmers of Ontario often face a different challenge which is not only how to get useful information but how to sort out the abundance of information, in this case a more robust OMAFRA’s knowledge translation and transfer is very useful. Finally, it is important that government policies should reflect on helping all sizes and shapes of farmers (big, small, very innovative and laggard), therefore, in order to make Ontario farmers the leader in the industry, decisions must be based on science rather than on politics.
6.3.2 Ontario farmers

Farmers need to recognize that being green today will help them be profitable into the future. It is very important to be environmentally responsible and understand that the government is not the only one who should protect the public good. It is a shared responsibility. Farmers should also adapt to the environmental change and be more environmentally and economically sustainable. Publicly funded agricultural extension in Ontario has been shrinking for the past three decades and there is no indication that the trend will change, however, there is sensible awareness among academia and policy makers of the importance of the public good in agricultural extension, which should be equally protected by all stakeholders including farmers and the Government.

6.3.3 Yaroslavl and Crimea

Meanwhile Yaroslavl Oblast and the autonomous Republic of Crimea, while it is very important to seek global experience in agricultural extension, it is essential to avoid the trap of simply duplicating extension systems that are copied from other countries. Some of these systems have been evolving for over a century on public funding, which had bolstered the farmers of those countries to a self-sufficient level that they are less dependent on public agricultural extension. Therefore, both Yaroslavl and Crimea are more in need of publicly funded agricultural extension due to their farmers’ earlier level of development and lack of money to pay for private extension.
At this early stage, most of the extension services needed by the farmers in Yaroslavl and Crimea have public good characteristics which the private sector may not provide successfully, thus, the government option would be the most appropriate.

While private agricultural extension may have some benefits in some countries, Yaroslavl and Crimea do not have the foundation for such clientele-driven services. Private agricultural extension tends to be quicker in responding to some issues, and is less subject to the political maneuverings which can delay government services in certain issues.

However, relying on only private agricultural extension services would be counterproductive as private extension services tend to focus on larger-scale-farmers, more commercially-oriented producers who are able to pay for advice. As a result, small-scale producers would be ignored by private extension providers. In both Yaroslavl and Crimea, this means that the many small-scale-farmers would receive less agricultural extension than is warranted by economic and social considerations.

Yaroslavl and Crimea should also consider the challenges that private agricultural extension would not be champions for such as environmental and social issues which are vital for sustainable rural development.

Finally, the providers of the agricultural extension services must be able and willing to carry on the continuous process of retraining in order to provide farmers with the most up-to-date information. National extension network would be vital for the development of sustainable agricultural extension in both regions where a bottom-up approach is the centre piece of information dissemination. Both Yaroslavl and Crimea
should also encourage the establishment of agricultural producer associations which promote information sharing (agricultural extension) among their members.

6.4 Future research

- Future research should focus on extension comparative studies between Canadian provinces and Eastern European countries whose agricultural extension has also been recently established. This would shed more light on global, comparative agricultural extension systems.
- More research is also needed on the effects of privatized extension on the environment.
REFERENCES


Relf, M., & Laidley, K. (2006, June 20). (Canadian, Russian and Ukrainian research team, Interviewer)


Rivera, W. et al. (2005). Enhancing coordination among akis/rd actors: an analytical and comparative review of country studies on agricultural knowledge and information systems for rural development (akis/rd). Rome: FAO.


*Maps of World.* (2015, November 26). Retrieved from Maps of World:

www.mapsofworld.com

*International visitors compare agricultural extension services in Canada with those in Russia, Ukraine* (June 21, 2006) Exeter, Ausable Bayfield Conservation Authority.

APPENDICES

Appendix A

SURVEY QUESTIONNAIRE - FARMERS

ONTARIO AGRICULTURAL COLLEGE
Thank you for taking time to fill out this confidential questionnaire. Your participation will help us understand farmers’ access to agricultural extension in Ontario.

1. **Do you experience deficiency in the information, in regards your production activity?** Please choose only one option:
   - [ ] Constantly
   - [ ] Frequently
   - [ ] Sometimes

2. **Please, evaluate the accessibility of information?** Please choose only one option:
   - [ ] I can easily find the necessary information
   - [ ] I generally experience difficulties in retrieving the necessary information
   - [ ] It is practically impossible to find the necessary information
   - [ ] Other (Please, indicate)

3. **Please, indicate your basic information sources:** You can choose one to five options:
   - [ ] Universities
   - [ ] Internet
   - [ ] Extension agents (e.g. seed companies)
   - [ ] Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)
   - [ ] Scientific research organizations of your province
   - [ ] Scientific research organizations of other provinces
   - [ ] Exhibitions
   - [ ] Seminars
   - [ ] Radio, television
   - [ ] Specialized newspapers, journals and other publications
   - [ ] Teaching aids, reference books
   - [ ] Other organizations (please, indicate) (e.g. Dairy Farmers of Ontario, Ontario Federation of Agriculture, Christian Farmers Federation of Ontario)

4. **Have you ever used agricultural extension services in your province?** Please choose only one option:
   - [ ] Yes
   - [ ] No
   - [ ] No, I do not know such organization

**If you chose the first option, please answer questions 5-9:**

5. **How long have you been using extension services?** Please choose one option:
   - [ ] Less than a year
   - [ ] 1-2 years
   - [ ] 2-3 years
   - [ ] More than 3 years
6. **How often do you use extension services?** Please choose one option:
- [ ] Constantly
- [ ] Rarely
- [ ] Only in exceptional cases

7. **Are you satisfied with the quality of extension services?** Please choose one option:
- [ ] I am satisfied
- [ ] Partially satisfied
- [ ] I am not satisfied

8. **What would you have improved in extension services?** You can choose more than one option (rank them in terms of importance from 1 to 4):
- [ ] To make it more effective
- [ ] To improve the quality of the services
- [ ] To increase the cooperation among the extension workers (e.g. Conservation Authority and OMAFRA)
- [ ] Other (Please, indicate)

9. **Do you implement extension workers’ recommendations?** Please choose only one option:
- [ ] Yes
- [ ] Sometimes
- [ ] No

9. a. **If you have chosen “sometimes” or “no” please, indicate the reason?** You can choose more than one option:
- [ ] There is not enough financial and human resource for implementing the recommendations,
- [ ] Recommendations do not correspond to my needs
- [ ] Recommendations are unimpressive
- [ ] Recommendations are too complicated to understand
- [ ] Other (Please, indicate)  

10. **Please, indicate the importance of knowledge in the following fields:**

<table>
<thead>
<tr>
<th>Field</th>
<th>Not Important</th>
<th>Sometimes it is Important</th>
<th>It is Important</th>
<th>Extremely Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant growing and animal husbandry</td>
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<tr>
<td>Marketing:</td>
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<tr>
<td>Farm supply (seeds, fertilizer, fodder etc.)</td>
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<tr>
<td>Category</td>
<td>Not Important</td>
<td>Sometimes It Is Important</td>
<td>It Is Important</td>
<td>Extremely Important</td>
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<tr>
<td>Farm management</td>
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<tr>
<td>Province law and rules</td>
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<tr>
<td>Information technology</td>
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<tr>
<td>Farm supply (agricultural machinery)</td>
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<tr>
<td>Environmental protection</td>
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<tr>
<td>Rural sociology</td>
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<tr>
<td>Other (indicate)</td>
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</table>

11. Do you use extension services other than the public extension? Please choose only one option:
- Yes
- Sometimes
- No

12. Please indicate the most acceptable forms of obtaining agricultural information for you? You can choose several options:
- Through internet
- Consultation/learning in extension centers
- Consultation/learning in the field
- Contacting with other farmers at business meetings and exhibitions
- Contacting the extension worker by phone
- Attending lectures
- Attending seminars and courses
- Farm radio and local TV programs
- Distribution of information (extension) letters including emails
- Farm newspapers and journals
- Other (Please, indicate)
13. Are you ready to pay for agricultural extension services? Please choose only one option:
- [ ] Yes
- [ ] No
- [ ] Some services only

14. Please indicate the proportion of each commodity in your total production:

a) ____________________________ Commodity proportion, % ______

b) ____________________________ Commodity proportion, % ______

c) ____________________________ Commodity proportion, % ______
PERSONAL INFORMATION

1. County: ____________________________________________

2. Occupation (Choose only one):
   □ Farm specialist
   □ Farm owner
   □ Farm manager (agricultural enterprise)
   □ Farmer
   □ Other (Please, indicate) ____________________________________________

3. Size of the farm (Enterprise, Small farm):
   Area of the agricultural land_________ hectares/acres
   3.2 Average annual number of workers(hired) _________ people
   3.3 Approximate Gross Farm Sales (from last year)___________ $CDN

4. Gender:
   □ Male
   □ Female

5. Age:
   □ Under 30
   □ 30-40 years
   □ 40-50 years
   □ 50-60 years
   □ Over 60 years

6. Education:
   □ Primary
   □ High school
   □ High school (technical)
   □ Uncompleted postsecondary
   □ Postsecondary
   □ PhD candidate

7. Education field:
   □ Agricultural
   □ Other

THANK YOU FOR YOUR PARTICIPATION
Appendix B

INTERVIEW GUIDE - RESEARCHERS

COMPARATIVE ANALYSIS OF AGRICULTURAL EXTENSION IN ONTARIO, YAROSLAVL OBLAST AND CRIMEA

FORM

PERSONAL INFORMATION

I. GENDER:
☐ Male
☐ Female

II. Age:
☐ Under 30
☐ 30-40 years
☐ 40-50 years
☐ 50-60 years
☐ Over 60 years

III. Education:
☐ Primary
☐ High school
☐ High school (technical)
☐ Postsecondary
☐ Masters
☐ PhD candidate

IV. Field of education:
☐ Agricultural
☐ Other
1. Organization:
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

2. What type of scientific research do you perform?
☐ Agricultural technology (agriculture, animal husbandry, veterinary, agro chemistry etc.)
☐ Social science
☐ Agricultural Mechanization
☐ Farm management
☐ Environmental protection
☐ Legal
☐ Other (Please, indicate)

3. Can your activity be divided in terms of time consumption into the following parts? (Please, indicate the percentage):

<table>
<thead>
<tr>
<th>Research</th>
<th>Teaching</th>
<th>Enlightenment activity (seminars and conferences)</th>
<th>Free consultation services</th>
<th>Paid consultation services</th>
<th>Agricultural production</th>
<th>TOTAL</th>
</tr>
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<tbody>
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<td>(        )%</td>
<td>(        )%</td>
<td>(        )%</td>
<td>(        )%</td>
<td>(        )%</td>
<td>(        )%</td>
<td>(        )%</td>
</tr>
</tbody>
</table>

4. Do you sell the product of your research?
☐ Yes
☐ Sometimes
☐ No

5. Do you think it is necessary to include agricultural extension component in your research?
☐ Yes
☐ No
☐ I do not know

6. How does your organization transfer its scientific research developments to the final consumer? You can choose more than option:
☐ Independently (e.g. directly to the commodity producer)
☐ Through extension service provider
☐ Through other mediators (organizations and companies)
☐ We do not transfer

7. Do you obtain personally (as a researcher) private scientific research orders?
☐ Yes
☐ No
8. Please, indicate your clients and the method you use to transfer the information?

<table>
<thead>
<tr>
<th>Services provided by you organization (regular)</th>
<th>Regular clients</th>
<th>Method of transferring information</th>
<th>Please, rank 1–3</th>
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<td>1= most used method</td>
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<td>2= medium used method</td>
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<td>3= least used method</td>
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</table>

- Farm management

<table>
<thead>
<tr>
<th>Large agricultural commodity producers</th>
<th>individually</th>
<th>small groups</th>
<th>large groups</th>
</tr>
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<tbody>
<tr>
<td>Farmers</td>
<td>individually</td>
<td>small groups</td>
<td>large groups</td>
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<tr>
<td>Small family farmers</td>
<td>individually</td>
<td>small groups</td>
<td>large groups</td>
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<tr>
<td>Extension agents</td>
<td>individually</td>
<td>small groups</td>
<td>large groups</td>
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<tr>
<td>Government organizations (OMAFRA)</td>
<td>individually</td>
<td>small groups</td>
<td>large groups</td>
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<tr>
<td>Agro business (seed companies)</td>
<td>small groups</td>
<td>large groups</td>
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- Rural sociology

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<th>Large agricultural commodity producers</th>
<th>individually</th>
<th>small groups</th>
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<td>Farmers</td>
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<td>Small family farmers</td>
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<td>Extension agents</td>
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<td>Government organizations (OMAFRA)</td>
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<td>Agro business (seed companies)</td>
<td>small groups</td>
<td>large groups</td>
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</tbody>
</table>

- Agricultural mechanization

| Large agricultural commodity producers | individually | small groups | large groups |
| Farmers                               | individually | small groups | large groups |

122
| Services provided by your organization (regular) | Regular clients | Method of transferring information | Please, rank 1–3  
1= most used method  
3= least used method |
<table>
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<td>Agro business (seed companies)</td>
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<td>Large agricultural commodity producers</td>
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<td>Small family farmers</td>
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<td>Extension agents</td>
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| Services provided by you organization (regular) | Regular clients | Method of transferring information | Please, rank 1–3  
1= most used method  
3= least used method |
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<tr>
<td>Agro business (seed companies)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large agricultural commodity producers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farmers</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Small family farmers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extension agents</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government organizations (OMAFRA)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agro business (seed companies)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. Please, indicate the level of your satisfaction of the activity of your organization? Please, check the suitable choice for each category?

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Completely satisfied</th>
<th>Partially satisfied</th>
<th>Unsatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>The budget of the organization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The rapport with extension agents</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Client feedback to your activity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The relationship with the funding organizations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical/equipment support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The success of your</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
10. **Who is your main financial resource?** You can choose several options:

- □ Government
- □ The income from individual scientific research orders
- □ Income from other commercial activities (e.g. renting office spaces etc.)
- □ Different kind of funding (i.e. purposive funding including government competition programs)

11. **What else can you tell me about agricultural extension in Ontario that I have not asked you about?**

**THANK YOU FOR YOUR PARTICIPATION**
INTERVIEW GUIDE – EXTENSION AGENTS

FORM

PERSONAL INFORMATION

I. GENDER:
□ Male
□ Female

II. Age:
□ Under 30
□ 30-40 years
□ 40-50 years
□ 50-60 years
□ Over 60 years

III. Education:
□ Primary
□ High school
□ High school (technical)
□ Uncompleted postsecondary
□ Postsecondary
□ PhD candidate

a. Field of education:
□ Agricultural
□ Other
1. **Whom do you cooperate with, when you prepare recommendations and consultations for your clients?** You can choose several options:
   - [ ] Scientific research centers
   - [ ] Universities
   - [ ] Ministry of agriculture
   - [ ] Research laboratories
   - [ ] Other extension organizations
   - [ ] Agribusiness companies (fertilizers, chemicals, etc. producers)
   - [ ] Other (Please, indicate)

2. **Please, evaluate your satisfaction of the information you receive.** Choose one option:
   - Scientific research centers
     - [ ] not satisfied
     - [ ] partially satisfied
     - [ ] completely satisfied
   - Universities
     - [ ] not satisfied
     - [ ] partially satisfied
     - [ ] completely satisfied
   - Ministry of agriculture
     - [ ] not satisfied
     - [ ] partially satisfied
     - [ ] completely satisfied
   - Research laboratories
     - [ ] not satisfied
     - [ ] partially satisfied
     - [ ] completely satisfied
   - Other extension organizations
     - [ ] not satisfied
     - [ ] partially satisfied
     - [ ] completely satisfied
   - Agribusiness companies (fertilizers, chemicals, etc. producers)
     - [ ] not satisfied
     - [ ] partially satisfied
     - [ ] completely satisfied
   - Other (Please, indicate)
     - [ ] not satisfied
     - [ ] partially satisfied
     - [ ] completely satisfied

3. **Where do you access the information you need?** You can choose more than option:
   - [ ] In the internet
   - [ ] Agricultural journals and newspapers and other publications
   - [ ] Textbooks and reference books
   - [ ] At exhibitions and seminars
   - [ ] Farm radio and TV
   - [ ] Electronic references (computers)
   - [ ] The reports of experts in agricultural extension
   - [ ] Other sources (Please, indicate) __________________________________________
4. Do you use in your activity the recommendations obtained from scientific research centers and universities?
☐ Yes
☐ No

If you have chosen NO, please, answer question 4.1

4.1 Information and recommendations are not applied due to: You can choose more than one option:
☐ The information is not important
☐ The information does not match the farmers need
☐ The information is not updated
☐ The quality of the information is very low
☐ Clients do not have financial possibilities to implement the recommendations
☐ Other (Please, indicate)

5. Do you often request the new research developments from research centers/universities or they always update you with the new developments?
☐ We always request
☐ We are always updated
☐ Neither

6. What would stimulate you to encourage your client to implement the recommendations? You can choose more than one option:
☐ Possibility of the additional income (if the services are paid)
☐ To attract new clients
☐ Maximum satisfaction of the clients’ needs
☐ Building a positive image of the service
☐ Government support
☐ Other (Please, indicate)

7. Please, arrange your customers according to the frequency of their consultation request (From 1 to 8; where 1 = most frequent, 8 = least frequent):

<table>
<thead>
<tr>
<th>Customer category</th>
<th>Frequency (consultation request)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large-scale agricultural commodity producers</td>
<td>1= most frequent, 8 = least frequent</td>
</tr>
<tr>
<td>Marketing companies</td>
<td></td>
</tr>
<tr>
<td>Enterprises, processing the agricultural production</td>
<td></td>
</tr>
<tr>
<td>Small agricultural commodity producers</td>
<td></td>
</tr>
<tr>
<td>Farmers</td>
<td></td>
</tr>
<tr>
<td>Rural youth</td>
<td></td>
</tr>
<tr>
<td>Housewives</td>
<td></td>
</tr>
<tr>
<td>Other (please, indicate)</td>
<td></td>
</tr>
</tbody>
</table>
8. Do you follow the results of the recommendations you gave to your customers?
☐ Yes
☐ Sometimes
☐ No

9. How often do you carry out surveys to find out customers need? Choose only one option:
☐ Once in three months
☐ Once per year
☐ Less than once per year
☐ We do not carry out
☐ Other (please, indicate)

10. How often do you participate in training to increase your own qualifications? Choose one option:
☐ Never
☐ Once per year
☐ More than once per year

11. Do you think that the services you provide are effective?
☐ Yes
☐ No
☐ I do not know

a. If you have chosen “No” or “I do not know” please, indicate the reason. You can choose more than one option:
☐ Information insufficiency
☐ Resource insufficiency (vehicle, computer, mobile telecommunication etc.)
☐ Shortage of knowledge and experience
☐ Insufficient collaboration with universities, research centers and government organizations
☐ Lack of finance
☐ Poor management
☐ Other (please, indicate)

12. Extension services should be paid by: (Choose the option, which you consider the most acceptable):
☐ Customers (farmers)
☐ Government
☐ Both
13. What are the basic services of agricultural extension services? You can choose more than one option:

☐ Services for business
☐ Services for rural population including farmers
☐ Services for agricultural commodity producers
☐ Social services
☐ Other (please, indicate)

14. What else can you tell me about agricultural extension in Ontario that I have not asked you about?

THANK YOU FOR YOUR PARTICIPATION
Appendix D

INTERVIEW GUIDE – 2014 (A)

Comparative Analysis of Agricultural Information Systems in Ontario, Yaroslavl Oblast and Crimea:

Interview questions:
1. What has changed in Ontario Agricultural Extension since 2007?
   a. Structure
   b. Funding
   c. Services provided
   d. Participants (stakeholders)
   d. Challenges

2. How is KTT different from the former forms of agricultural extension in Ontario?
3. How is the work of agricultural extension in OMAFRA different from that in the conservation authorities and private enterprises?
4. Is there a role for the government in agricultural extension? If yes, what is it?
5. What are the challenges of agricultural extension in Ontario and what are your recommendations for going forward?
Appendix E

INTERVIEW GUIDE – 2014 (B)

Comparative Analysis of Agricultural Information Systems in Ontario, Yaroslavl Oblast and Crimea:

Interview questions:
1. What has changed in Ontario Agricultural Extension since 2007?
   a. Structure
   b. Funding
   c. Services provided
   d. Participants (stakeholders)
   d. Challenges
2. How is KTT different from the former forms of agricultural extension in Ontario?
3. How do you transfer your research findings and recommendations to farmers and policy makers?
4. Who is the major funder of agricultural research, public or private?
5. Is there a role for the government in agricultural extension? If yes, what is it?
6. What are the challenges of agricultural extension in Ontario and what are your recommendations for going forward?
Appendix F

MAPS

[Map of Ontario with University of Guelph indicated]