



December 2010
Volume 48 Number 6
Article Number 6FEA7

[Return to Current Issue](#)

The End of the Beginning and the Beginning of the End: The Decline of Public Agricultural Extension in Ontario

Lee-Anne S. Milburn

Associate Professor and Program Chair
Department of Landscape Architecture
College of Environmental Design
California Polytechnic University Pomona
Pomona, California
lsmilburn@gmail.com

Susan J. Mulley

Assistant Professor
Department of Landscape Architecture
California Polytechnic University Pomona
Pomona, California
sjmulley@csupomona.edu

Carol Kline

Assistant Professor
Hospitality and Tourism Administration
School of Business
North Carolina Central University
Durham, North Carolina
ckline@nccu.edu

Abstract: Canadian Extension has reached a critical point: the last 20 years have seen drastic reduction in governmental agricultural Extension services in Ontario. This article proposes that the breakdown of the Canadian Extension system has been the result of a variety of factors. The situation in Ontario suggests that Extension in the United States needs to recreate itself: it must address the changing profile of rural residents, shift program foci and delivery models, document and promote its benefits, redefine its contribution to the research system, (re)train Extension experts, use technology creatively, and maintain field staff to protect its role in rural development.

Introduction

If Extension reached a critical turning point in the 1980s that was the "end of the beginning" (Rivera, 1991, p. 3), in Canada it was also the beginning of the end. While as early as 1997, researchers were stating that Canadian Extension was in a state of transition (Gravelines, 1997), the almost complete withdrawal of

government funding in Ontario by the turn of the millennia would suggest that, in fact, Extension in Ontario was moribund. The lack of documentation in either the popular or academic press makes it appear that public Extension in Canada has disappeared with a "whimper," rather than a "bang'." However, public Extension systems elsewhere, for example many states in the U.S., New Zealand, Australia, and economically developing nations, appear to have reinvented themselves as successful interfaces between academia and the community. How has the Ontario Extension system failed to reinvent itself to meet the needs of Ontario's rural communities in the 21st century?

Applebee (1990) argues that client enrollment is the key indicator of declining Extension programs and when impact is measured by quantitative measures (see also Jones, 1996), programs with declining funding require radical redesign to embrace change through "downsizing" and greater efficiency, rather than "downgrading" and reduced program impact (Schuchardt & Cunningham, 1987). Schuchardt and Cunningham (1987) identify the importance of both public demand and the impact of the program as metrics for redirecting resources to maximize impact. How, though, do programs avoid the shift from downsizing to substantial cuts? The Canadian system may provide insights that can serve as a warning for U.S. Extension.

Agriculture in Canada underwent difficult times in the 1980s as a result of the farm crisis: at the urging of financial institutions, farmers borrowed to invest in expensive machinery and farm upgrades in order to improve productivity, and as interest rates rose and commodity prices dropped, they were caught in a financial "squeeze" (Jean, 1997). This coincided with a period when the public and the government were challenging the role and scope of Extension in both the United States and Canada: Extension was seen as outdated and excessively commodity-oriented (Buttel, 1991). In the United States, this challenge was addressed by changing the allocation of human and financial resources and distributing resources according to priority (Blackburn & Flaherty, 1994; Gustafson, 1991).

In Canada, government service to farmers and agribusiness expanded until the 1990s. However, the last 20 years have seen the gradual reduction in governmental agricultural Extension services (OIA, nd). While the government considered the viability of privatization, Extension professionals moved into contextual Extension servicesâ they became involved in community development, facilitative learning, and individual empowerment. As late as 1997, government reports included recommendations to "retain at least the same number as field offices" (Gravelines, 1997, p. 1) and locate agricultural advisors "at a majority of the field offices" (Gravelines, 1997, p. 2). At the same time, however, these reports recommended pilot ventures to explore co-funded partnerships with agricultural and rural organizations, universities (especially the University of Guelph), and adjacent states and provinces (Gravelines, 1997).

Furthermore, they documented a desire to concentrate on areas unlikely to be addressed by the commercial sector or in areas where broad-based benefits would be likely to accrue. "Regular one-on-one advice to agricultural and rural clients" would be provided by private consultants, with backup expertise provided by Ontario Ministry of Agriculture, Food (and Rural Affairs) (OMAF(RA)) (Gravelines, 1997, p. 3). Cost recovery and fees to cover non-fixed costs and overhead were identified as opportunities to explore for revenue generation. Website and information transfer technology development was identified as a priority in order to develop a system to allow the redirection of Extension inquiries to online resources, seen as a less costly alternative to Extension expert contact.

In 2000, the Honorable Ernie Hardeman, Minister of OMAFRA, responded to concerns expressed by the Ontario Soil and Crop Association that the "withdrawal and downloading of the cost of [Extension and advisory services] to individual producers" would place Ontario farmers in a disadvantaged position in Canada and North America (OSCIA, 2000, p. 1). The Minister stated:

The new structure within Agriculture and Rural Division positions the Ontario Ministry of

Agriculture, Food and Rural Affairs (OMAFRA) to be more adaptable to the changing needs of Ontario's agri-food industry and rural communities. OMAFRA has realigned its resources to ensure that producers continue to have access to leading edge technology...in order to remain competitive (OSCIA, 2000).

Three short years later, OMAF(RA)'s "withdrawal" (Connell & Wall, 2001) from Extension service provision created both opportunities and problems within the rural sector.

Challenges to the Extension Service

Originally, Extension involved the informal sharing of ideas between rural residents to solve problems faced in farming and rural life (Rolls, Jones, & Garforth, 1986). As agricultural research became institutionalized, the problem of dissemination of technological developments to farmers was addressed by the creation of formal Extension and education programs (Rolls et al., 1986) led by government agencies in Canada and universities in the United States. Eventually public, private, and voluntary sector Extension (Blackburn & Flaherty, 1994) developed to address three primary roles: identification of needs and problems, generation and testing of technology, and dissemination of information (Rolls et al., 1986).

The subsequent breakdown of the Extension system in Canada has been the result of a variety of factors, including: the changing rural sector; the loss of political support for Extension; the challenge of documenting economic benefits from Extension in difficult economic times; the changing role and definition of Extension; the changing nature of the farmer; developments in technology and communication; and the evolution of the university system. These factors undermined the Extension worker in Ontario in the eyes of the government, the farmer, and the public, and as a result placed their role under question.

The Changing Rural Sector

While Ontario as a whole saw some of its best economic times between 1985 and 1990 under Premier David Peterson's minority liberal government, the agricultural and rural sector continued to suffer from the farm crisis. The rural population continued to drop: in 1901 two-thirds of the country lived in rural areas, dropping to one-third in 1961 and one-fifth in 2001 (Statistics Canada, 2001). Little more than 2% of the population continued to be involved in agriculture (Statistics Canada, 2001), and Canada's rural areas faced new challenges from the migration of ex-urbanites and returning rural individuals into rural areas, resulting in tensions around land use, development, and services. Between 1997 and 2002, thirty thousand farms disappeared, and average farm sizes increased by over 10% (Bergman, 2002).

Loss of Political Support for Extension

A key factor in the loss of support for Extension in Canada has been the decline in the agricultural sector. Agriculture lost its political 'voice' as a result of the decrease in the farming population (Jean, 1997), the loss of small farms, the decline and aging of rural communities (Nemeth, 2002), and the transfer of labor from agriculture to manufacturing (Whyte, 1968). Pressures from globalization resulted in Canadian agriculture's share of global wealth being redistributed to nations with stronger trade subsidy programs (Jean, 1997; Coxe, 2003).

Many researchers have argued a loss of public support for agriculture and the agricultural research system (Dillman, 1986; Jasanoff & Colwell, 1997; Buttel, 1999; RÅlling, 2000). Agriculture has a "social contract with society" that motivates public support of the research establishment (Lubchenco, 1998; RÅlling, 2000; Gallopin, Funtowicz, O'Connor, & Ravetz, 2001). Problems such as reduced numbers of farmers, loss of jobs

in the agricultural sector, constantly decreasing farm income (RÃ¶lling & Jiggins, 1998; RÃ¶lling, 2000) and increased urbanization make agriculture less politically relevant and therefore create difficulties in accessing necessary funding for agricultural research and Extension (RÃ¶lling & Jiggins, 1998; RÃ¶lling, 2000).

Challenges to the Ontario Extension infrastructure arose from the nature and functioning of the Extension system itself. Extension traditionally suffers from general misunderstanding of its role in the research process, and as its responsibilities shifted from education to regulation and administration (Whyte, 1968; RÃ¶lling, 1986), the prestige gained by participation in the research process was lost, leaving the Extension system in a weak position to compete with other government agencies for budget allocations (Van den Ban, 1986). According to Kidd, Lamers, Ficarelli, and Hoffmann (2000), privatization and public/private partnerships approaches to Extension are part of the changing focus on providing "an enabling environment for the support of an enterprise culture" (Kidd et al., 2000, p. 96) in the rural sector.

The Difficulty Documenting the Economic Benefits of Extension

According to Blackburn and Flaherty (1994), the Ontario government has moved towards using "return on investment" as the review mechanism for public service investment. This approach tends to be particularly popular during economically difficult periods (Blackburn & Flaherty, 1994). Unfortunately for Extension programs, return on investment in Extension is either not evident or can be difficult or costly to measure relative to specific programs or initiatives (Whyte, 1968; Bunting, 1986; Baker, 1978; Purcell & Anderson, 1997), though ample research exists documenting its benefits (see for example, Marsh, Pannell & Lindner, 2004; Napit, Norton, Kazmierczak & Rajotte, 1988).

The Changing Role and Definition of Extension

Since the late 1980s, Extension's role in rural areas has moved beyond the traditional focus on technology transfer and increased productivity. The traditional deficit model, with its one-way flow of information from laboratory ("experts") to field ("non-experts"), has been replaced by the contextual model of two-way dialogue (Baker, 1989; Clarke, 2003). Extension moved from a linear to a convergent model of communication (Whale, 1989) as intervention processes changed from the more coercive and persuasive approaches of the past to more participatory models (Rolls et al., 1986). These new approaches were particularly appropriate as Extension's focus expanded from production-orientation and adult education to facilitated learning and holistic cooperative processes involving interdependency and networking (Baker, 1989; Bennett, 1989). Empowering rural residents in order to encourage independence and self-reliance became a central concern (Baker, 1989).

The empowerment of farmers and rural communities through capacity building and participatory research methods has had the unintended consequence of undermining the authority of the Extension professional as an expert authority. Pressures from the rural sector resulted in changes to the structure and functioning of the research utilization process. As a result, research focused to a greater extent on "local" knowledge and participatory processes (Fuller, Ehrensaft, & Gertler, 1990; Gardner, 1990; Ingram, 1994; Warren, Slikkerveer, & Brokensha, 1995; Harrison, Burgess, & Clark, 1998; Smith & Taylor, 2000; Board on Sustainable Development Policy Division, 2002). Removing the authoritative "voice" from the research process validates local experience, but may undermine public willingness to unquestionably and generously fund research projects and the resulting Extension expertise.

The perception of the researcher and Extension worker as reliable has been further undermined by an erosion in the public belief that research always produces technically sound and economically viable possibilities for change (Rolls et al., 1986). Furthermore, innovations developed through research, imported from other countries or transferred from other farming systems have not always been successful (Rolls et al., 1986). This

also undermines Extension's credibility and the perception of its impact within rural society. In addition, the movement to specialization in agriculture and agricultural research conflicted with Extension professionals' traditional role as generalist educators.

The Changing Nature of the Farmer and Information Access

The farmer inadvertently contributed to the withdrawal of support for Extension. Farmers are increasingly well educated (in some cases as well as, or better than, Extension agents), and as such, often prefer to go directly to the source of research information or technology innovation. Farmers have also displayed an increased willingness to access requisite information from the agricultural press or from private sector representatives promoting products (Clarke, 2003). The Extension agent role evolved into more of a "peer information consultant" (Dillman, 1986); their job became aiding the farmer in accessing information rather than providing expertise. 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.

The Evolution of the University System

Internal conflicts from within the Extension sector as a result of changing roles and responsibilities were complicated by the modification of the Ontario university system agenda to a greater focus on research and teaching. These areas have assumed priority in the Ontario university system because they directly address issues of financial support and funding shortfalls and assist in the maintenance of faculty numbers (Buttel, 1991). Increasingly narrow definitions of scholarship for promotion and tenure decisions often relegated Extension to the academic hinterland of "service and outreach," undermining its value to academics required to prioritize their efforts. Furthermore, researchers increasingly choose to work directly with rural stakeholders and community groups as part of their research processes: this direct contact often eliminates the need for Extension, as researchers themselves have developed working relationships with rural residents during the research process. In Ontario the use of other mediating bodies for this type of contact (rural planners, conservation authorities, etc.) is especially prevalent and minimizes the potential role of Extension.

The Impact of Changing Goals on Extension

Agricultural Extension programs in Canada grew out of a governmental drive to improve farm productivity (Bonnen, 1983; Busch & Lacy, 1983; Lipman-Blumen & Schram, 1984; Arnon, 1989; Thompson, Matthews, & van Ravenswaay, 1994; Thompson, 1998) and thereby increase agricultural exports and the viability of related sectors of the economy (Blackburn & Flaherty, 1994). The Extension system, recognizing the public movement from a productivity focus to a sustainability focus, adapted both the content and the method of communication of its interactions with the farmer.

Historically, Extension goals were optimized through investment in research, technology, and education. In the 1980s and 1990s, concerns over environmental problems and the breakdown of the fabric of the rural community brought environmental and community issues into prominence: sustainability that balanced economic, environmental, and social concerns became the popular perspective. Unfortunately, while this compensatory modification in service delivery addressed societal concerns over sustainability, it left Extension even more vulnerable to claims of irrelevance when periods of economic strain resulted in reviews of public investment based on quantifiable return on investment (Whyte, 1968; Bunting, 1986; Baker, 1978; Purcell & Anderson, 1997).

Lessons Learned

Extension in the United States and elsewhere can learn from the situation in Ontario by making a range of strategic changes in programming structure, format and delivery, and staffing profile and training.

Address the Changing Rural Population

Changes in the rural sector require that agricultural Extension recognize the importance of the growing population of non-farmers. Extension must include strategies to address the interest areas of non-farm rural landowners (Milburn, Brown, & Mulley, 2010), rural small businesses, multicultural groups, those of low socio-economic status, women, and youth. These groups often have significant demand for Extension services and a high level of willingness to implement innovative approaches provided by educated generalists such as Extension experts. Engaging these groups can maximize political support for Extension – they are often politically active, involved, and educated. Moving beyond the traditional focus on agriculture in rural areas to the broader areas of interest expressed by the new rural demographic, including land assessment, wetland and woodlot management, new forms of sustainable economic development such as tourism, and conservation and stewardship is likely to increase public awareness and support.

Document the Economic Impacts of Extension

Habitually documenting the economic impacts of Extension programs will bolster the resilience of this system. Techniques and strategies are amply available in the research literature and have been tested on land grant campuses across the U.S.

Recognize That Programs Need to Evolve and Change

An awareness of the life cycle of Extension programs, proposed by Bowling (2001) as conceptualization, development, maturity, decline, and termination, will support identification of programs requiring redesign. It is important to redirect what resources are available to redefining failing programs rather than allowing them to continue through the evolutionary process, often undermining healthy programs as they decline.

Take an Active Role in Research Initiatives

The role of Extension agent as a partner in the research process rather than just the entity responsible for technology transfer is one that can aid in enhancing both the relevance and impact of Extension. Adopting the role of facilitator of research can leverage the strengths of the Extension system: knowledge of the community, empowerment, and accessibility.

(Re)train Extension Experts to Serve the New Demographics, Information Areas, and Roles

Train Extension experts in education, interpretation, communication, basic research skills, leadership, and management. Extension needs to provide two diverse types of staff: specialists to serve the needs of the agricultural market and generalists for non-farm rural landowners who need education on the fundamentals of identifying and managing resources on their land. The future of Extension will at least partially be in the areas of human resources and social and cultural capital development.

Use Technology Creatively

Extension needs to become sophisticated in its use of technology beyond simply providing static, information-based Web pages. Creating interactive paths for information flow to and from the farmer and other information users and deliberately linking researchers to client groups and brokering informational exchange using many platforms will become increasingly important.

Recognize the Importance of Extension Field Staff

Reducing Extension staff and replacing one-on-one contact with rural landowners is a recipe for decline. Rural landowners value personal interactions with Extension field staff (Milburn, 2007) and are more likely to innovate or change behaviors as a result of in-person training and discussions, as compared to one-way forms of communication such as "fact sheets" or Web-based information.

The U.S. Extension system has successfully weathered many of the resource challenges that undermined the Canadian system. However, Extension agents will need to be highly agile in their approach to dealing with their clientele. Extension must embrace change to continue to be seen as relevant in a service industry that is vulnerable to decline. It is tempting to retrench and return to approaches, structures, or technologies that have proven successful in the past during difficult financial times, but the Canadian example suggests this approach is counter-productive to the long-term sustainability of the system.

If Extension fails to recreate itself to address the changing profile of rural residents, shift program foci and delivery models, and document and promote its economic and social benefits, its role will be filled by other professionals who lack sensitivity to rural issues and who may be less skilled at creating "consensus in complex areas of concern" (R. Ramirez, personal communication, May 25, 2004).

Acknowledgements

Thank you to Robert D. Brown, Stewart G. Hilts, Wayne Caldwell, and Alan Lauzon of the University of Guelph, who provided the challenging questions that partially inspired this article.

References

- Applebee, G. J. (1990). Management and marketing strategies during periods of decline. *Journal of Extension* [On-line], 28(2) Article 2RIB2. Available at: <http://joe.org/joe/1990summer/rb2.php>
- Arnon, I. (1989). *Agricultural research and technology transfer*. London: Elsevier Applied Science.
- Baker, H. R. (1978, autumn). Extension program planning: some current problems. *Agrologist*, 7(4), 15.
- Baker, H. R. (1989). Extension's linkages with community development. In D. J. Blackburn (Ed.), *Foundations and changing practices in Extension* (pp. 47-57). Toronto: Thompson Educational Publishing, Inc.
- Bennett, C. F. (1989). Improving coordination of Extension and research. In D. J. Blackburn (Ed.), *Foundations and changing practices in Extension* (pp. 118-128). Toronto: Thompson Educational Publishing, Inc.
- Bergman, B. (2002). *Success down on the farm*. Macleans.ca Retrieved May 25, 2004, from:

<http://www.macleans.ca/shared/print.jsp?content=70532>

Blackburn, D. J., & Flaherty, J. (1994). Transitions and directions in Extension. In D. J. Blackburn (Ed.), *Extension handbook: Processes and practices* (2nd Ed.) (pp. 8-17). Toronto: Thompson Educational Publishing, Inc.

Board on Sustainable Development Policy Division. (2002). *Our common journey: A transition toward*. Washington, DC: National Academy Press.

Bonnen, J. T. (1983). Historical sources of U.S. agricultural productivity: Implications for R&D policy and social science research. *American Journal of Agricultural Economics*, 65(5), 958-966.

Bowling, C. J. (2001). Using the program life cycle can increase your return on time invested. *Journal of Extension* [On-line], 39(3) Article 3FEA2. Available at: <http://www.joe.org/joe/2001june/a2.php>

Bunting, A. H. (1986). Extension and technical change in agriculture. In G. E. Jones (Ed.), *Investing in rural Extension: Strategies and goals* (pp. 37-50). London: Elsevier Applied Science Publishers.

Busch, L., & Lacy, W. B. (1983). *Science, agriculture, and the politics of research*. Boulder, Colorado: Westview Press.

Buttel, F. H. (1991). The restructuring of the American public agricultural research and technology transfer system: implications for agricultural Extension. In W. M. Rivera and D. J. Gustafson (Eds.), *Agricultural Extension: Worldwide institutional evolution and forces for change* (pp. 43-58). Amsterdam: Elsevier.

Buttel, F. H. (1999). Sustainable agriculture: Beyond self-fulfilling marginality. In J. Ogilvie, J. Smithers, and E. Wall. (Eds.), *Sustaining agriculture in the 21st century: Proceedings of the 4th Biennial Meeting* (pp. 3-14). Guelph, Ontario: University of Guelph.

Clarke, B. (2003, December). Report: Farmers and scientists: A case study in facilitating communication. *Science Communication*, 25 (2), 198-203.

Connell, D. J., & Wall, E. (2001). Broken circle or breaking new ground: Impacts from municipal restructuring and changes in service delivery on social capital in rural Ontario. *Canadian Society of Extension Abstracts*. Retrieved May 28, 2004, from: <http://www.uoguelph.ca/~csext/CSE%202001%20archive/abstracts/connel&wall.html>

Coxe, D. (2003). *The German invasion*. *Macleans.ca* Retrieved May 25, 2004, from: http://www.macleans.ca/shared/print.jsp?content=20031103_68490...

Dillman, D. A. (1986). Cooperative Extension at the beginning of the 21st century. *The Rural Sociologist* 6 (2), 102-119.

Fuller, T., Ehrensaft, P., & Gertler, M. (1990). Sustainable rural communities in Canada: issues and prospects. In M. E. Gertler and H. R. Baker (Eds.), *Sustainable rural communities in Canada* (pp. 1-41). Saskatoon, Saskatchewan: The Canadian Agriculture and Rural Restructuring Group.

Gallop, G. C., Funtowicz, S., O'Connor, M., & Ravetz, J. (2001, June). Science for the 21st century: From social contract to the scientific core. *International Social Science Journal*, 53 (168), 219-229.

Gardner, J. C. (1990). Responding to farmers' needs: An evolving land grant perspective. *American Journal of Alternative Agriculture*, 5 (4), 170-173.

Gravelines, R. (1997). *Industry update: Ontario agriculture and rural advisory services study*. Retrieved May 30, 2004, from: <http://www.canadagrainscouncil.ca/update25.htm>

Gustafson, D. J. (1991). The challenge of connecting priorities to performance: one state's response to the forces for change in U.S. Extension. In W. M. Rivera and D. J. Gustafson (Eds.), *Agricultural Extension: Worldwide institutional evolution and forces for change* (pp. 89-100). Amsterdam: Elsevier.

Harrison, C. M., Burgess, J., & Clark, J. (1998). Discounted knowledges: farmers' and residents' understandings of nature conservation goals and policies. *Journal of Environmental Management*, 54, 305-320.

Ingram, G. B. (1994). Rainforest conservation initiated by traditional island communities: implications for development planning. *Canadian Journal of Development Studies*, 15 (2), 193-218.

Jasanoff, S., & Colwell, R. (1997). Conversations with the community: AAAS at the millennium. *Science*, 278, 2066-2067.

Jean, B. (1997). Issues in institutional restructuring in the rural sector. In R. C. Rounds (Ed.), *Changing rural institutions: A Canadian perspective* (pp. 5-19). Brandon, Manitoba: The Rural Development Institute.

Jones, D. F. (1996). Enriching the future: Extension youth program in summertime learning. *Journal of Extension* [On-line], 34(3) Article 3FEA4. Available at: <http://www.joe.org/joe/1996june/a4.php>

Kidd, A. D., Lamers, J. P. A., Ficarelli, P. P., & Hoffmann, V. (2000). Privatising agricultural Extension: Caveat emptor. *Journal of Rural Studies*, 16, 95-102.

Lipman-Blumen, J., & Schram, S. (1984). *The Paradox of success: The impact on priority setting in agricultural research and Extension*. Washington, D.C.: USDA.

Lubchenco, J. (1998, 23 January). Entering the century of the environment: a new social contract for science. *Science*, 279, 491-497.

Marsh, S. P., Pannell, D. J., & Lindner, R. K. (2004, January). Does agricultural Extension pay?: A case study for a new crop, lupins, in Western Australia. *Agricultural Economics*, 30 (1), 17-30.

Milburn, L. S. (2007). Our rural future: The non-farm landowner and Ontario's changing countryside. Unpublished Ph.D. dissertation. University of Guelph, Guelph, Ontario.

Milburn, L. S., Brown, R. D., & Mulley, S. J. (2010). "Silver in the stars and gold in the morning sun": Non-farm rural landowners' motivations for rural living and attachment to the land. *Landscape Research*, 35 (1), 27-46.

Napit, K. B., Norton, G. W., Kazmierczak, R. F., & Rajotte, E. G. (1988, February). Economic impacts of Extension integrated pest management programs in several states. *Journal of Economic Entomology*, 81 (1), 251-256.

Nemeth, M. (2002). Disappearing Saskatchewan. *Macleans.ca* Retrieved May 25, 2004, from:

<http://www.macleans.ca/shared/print.jsp?content=9968894>

Ontario Institute of Agrologists (OIA). (n.d.). *A case for a right-to-practice act for agrologists*. Retrieved May 30, 2004, from: <http://www.oia.on.ca/businesscase.htm>

Ontario Soil and Crop Improvement Association (OSCIA). (2000). *2000 OSCIA Resolutions (including Minister's reply)*. Retrieved May 30, 2004, from: <http://www.ontariosoilcrop.org/resolutions.html>

Purcell, D. L., & Anderson, J. R. (1997). *Agricultural Extension and research: Achievements and problems in national systems*. Washington, DC: The World Bank.

Rivera, W. (1991). Agricultural Extension worldwide: A critical turning point. In W. Rivera and D. J. Gustafson (Eds.), *Agricultural Extension: Worldwide institutional evolution and forces for change* (pp. 3-12). New York: Elsevier.

RÃ¶lling, N. (1986). Flexibility versus targets in setting Extension objectives. In G. E. Jones (Ed.), *Investing in rural Extension: Strategies and goals* (pp. 107-112). London: Elsevier Applied Science Publishers.

RÃ¶lling, N. (2000). Sustainability as an outcome of human interaction: implications for curricula in higher agricultural education in industrialized countries. In W. Van de Bor, P. Holen, A. Wals, and W. L. Filho (Eds.), *Integrating concepts of sustainability into education for agriculture and rural development* (pp. 41-58). Frankfurt: Peter Lang.

RÃ¶lling, N., & Jiggins, J. (1998). The ecological knowledge system. In N. RÃ¶lling and A. Wagemakers (Eds.), *Facilitating sustainable agriculture: Participatory learning and adaptive management in times of environmental uncertainty* (pp. 283-311). Cambridge: Cambridge University Press.

Rolls, M. J., Jones, G. E., & Garforth, C. (1986). The dimensions of rural Extension. In G. E. Jones (Ed.), *Investing in rural Extension: Strategies and goals* (pp. 5-18). London: Elsevier Applied Science Publishers.

Schuchardt, J., & Cunningham, C. J. (1987). Extension's crossroads in turbulent timesâ Downsizing or downgrading? *Journal of Extension* [On-line], 25(1) Article 1FEA1. Available at: <http://www.joe.org/joe/1987spring/a1.php>

Smith, G. R., & Taylor, J. R. (2000). Achieving sustainability: exploring links between sustainability indicators and public involvement for rural communities. *Landscape Journal*, 19 (1/2), 179-190.

Statistics Canada. (2001). *2001 census*. Ottawa, Ontario: Government of Canada.

Thompson, P. B. (1998). *Agricultural Ethics: Research, Teaching and Public Policy*. Ames: Iowa State University Press.

Thompson, P. B., Matthews, R. J., & van Ravenswaay, E. O. (1994). *Ethics, public policy, and agriculture*. New York: Macmillan Publishing Company.

Van den Ban, A. W. (1986). Extension policies, policy types, policy formulation and goals. In G. E. Jones (Ed.), *Investing in rural Extension: Strategies and goals* (pp. 91-98). London: Elsevier Applied Science Publishers.

Warren, D. M., Slikkerveer, L. J., & Brokensha, D. (Eds.) (1995). *The cultural dimension of development:*

Indigenous knowledge systems. London: Intermediate Technology Publications.

Whale, W. B. (1989). Technology transfer revisited: Changing practices. In D. J. Blackburn (Ed.), *Foundations and changing practices in Extension* (pp. 108-117). Toronto: Thompson Educational Publishing, Inc.

Whyte, D. R. (1968). Rural Canada in transition. In M. Tremblay and W. J. Anderson (Eds.), *Rural Canada in transition: A multidimensional study of the impact of technology and urbanization on traditional society* (pp. 1-113). Ottawa, Ontario: Agricultural Economics Research Council of Canada.

Copyright © by *Extension Journal, Inc.* ISSN 1077-5315. Articles appearing in the Journal become the property of the Journal. Single copies of articles may be reproduced in electronic or print form for use in educational or training activities. Inclusion of articles in other publications, electronic sources, or systematic large-scale distribution may be done only with prior electronic or written permission of the Journal Editorial Office, joe-ed@joe.org.

If you have difficulties viewing or printing this page, please contact JOE Technical Support.