Agriculture and Agri-Food Canada
Agriculture et Agroalimentaire Canada

ANNUAL REPORT 2009-2010

AGRICULTURE AND AGRI-FOOD CANADA
REGIONAL ADAPTATION AND PRACTICE CHANGE DIVISION
QUEBEC REGION

Canada

MESSAGE FROM THE TECHNICAL DIRECTOR

A YEAR OF SIGNIFICANT CHANGE

2009-2010 was a year of reorganization for Agriculture and Agri-Food Canada's Agri-Environment Services Branch, including the **Regional Adaptation and Practice Change Division** in Quebec Region. Drawing on its resources and experience, the branch conducted a detailed review of how we deliver services at the national level.

For the Quebec Region, our team adopted a collaborative approach, providing expertise that complements our partners' activities and responses that are tailored to the particular financial needs of the projects carried out under partnerships. By adopting a collaborative approach with our clients, our division has acquired experience that will be very useful to our entire network. Moreover, our colleagues from the other regions of Canada can draw on such an approach to assist them in their own process of change in the area of service organization.

Due to the major change implemented this year, I often had to be absent. I want to thank the entire team for doing such an amazing job of holding the fort and demonstrating such a high level of autonomy and professionalism. Change is not always easy and often requires a considerable measure of understanding and flexibility. Thanks to the team members' adaptability and clear sense of their responsibilities, we were able to easily complete this critical step, without compromising the smooth implementation of our projects.

With the reorganization of the Agri-Environment Services Branch now complete, we are turning our thoughts more to the future. Our first challenge will be to increase access to the expertise of the other divisions of the branch in the area of integrated resource management, knowledge transfer and agri-geomatics, to name a few. We are also considering improvements to our service offer, primarily by strengthening our partnership-building capacity and offering advanced expertise. We hope to complete the staffing process, which was initiated in 2009-2010, to create professional positions to complement the existing team and more effectively support collaboration projects.

Lastly, in the wake of the initiative by the Agri-Environment Services Branch last year, we must now align the new internal project funding process with the regional priorities identified for Quebec. We will have to determine whether projects emerging from this internal process effectively meet regional objectives and needs. This will no doubt require the ability on the part of our team members to adjust again, another challenge I am certain they will tackle with enthusiasm!

Yves Lavergne
Technical Director
Regional Adaptation and Practice Change Division – Quebec Region

QUEBEC REGION DIVISION

TARGETED EFFORTS TOWARDS SUSTAINABLE AGRICULTURAL SYSTEMS

AAFC's Regional Adaptation and Practice Change Division in Quebec Region* is a versatile, dynamic team that integrates professionals from several disciplines: biology, agronomy, engineering and agrometeorology. All members of the division share the common goal of supporting the agricultural sector's adaptation to today's challenges by focussing on building strong partnerships with organizations working in the area of agri-environment and facilitating the acquisition of complementary knowledge.

Whether to meet society's demands regarding agriculture, to ensure improved management of land, water and environmental risks in agricultural areas or to respond more effectively to climate change, the team agrees on the need to propose sustainable solutions to Quebec producers and on the importance of being able to recognize and seize economic opportunities for their benefit.

The professionals of the Quebec Region Division collaborate on a variety of projects, often jointly with other organizations, institutions or departments. They provide technical expertise and act as strategic advisor. They also participate in the production of communications tools or decision support tools and provide material or professional support for the organization of events. The team works primarily in three key agri-environmental sectors: **water management, sustainable agri-systems and agricultural lands** and **decision support tools**.

The team is also sometimes called upon to conduct project analyses and environmental assessments. When the federal government allows a project to be implemented in the agricultural sector, either through authorization or funding, an environmental assessment is required under the *Canadian Environmental Assessment Act* to ensure that the project causes no significant adverse environmental effects. The members of the Quebec Region Division will assist their colleagues from AAFC or other organizations on projects involving environmental legislation.

Role of observation and influence in *Growing Forward* programs

The *Growing Forward* Multilateral Agreement between the federal, provincial and territorial agriculture ministers officially came into effect on April 1, 2009. This new financial commitment, which flows from the 2003-2008 Agricultural Policy Framework, has profoundly changed the role of AAFC's Agri-Environment Services Branch. Lead responsibility for the management of financial support programs for producers now rests with the Quebec Department of Agriculture, Fisheries and Food [ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec – MAPAQ]. However, the Quebec Region Division maintains a role as observer and influencer in the implementation of certain *Growing Forward* programs in Quebec, specifically the geese scaring program and the environmental farm planning program, which is centred primarily around the environmental farm plans. The team also made a number of technical recommendations to the managers of three programs: the Agricultural Flexibility Fund, AAFC's Canadian Agricultural Adaptation Program and the College and Community Innovation Program of the Natural Sciences and Engineering Research Council of Canada.

* For the purposes of this document, the team will be called the Quebec Region Division.

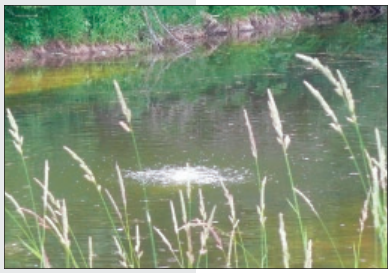
WATER MANAGEMENT

Many Quebecers are increasingly concerned about the impacts of agriculture on water quality. Interest in the protection of water resources in agricultural areas has grown dramatically in recent years and considerable efforts have been made to improve agricultural practices in watersheds. The water management specialists at the Quebec Region Division play an important role by participating in major water quality management and protection projects. They provide professional support for the implementation of various integrated management projects in agricultural watersheds and take part in studies and technology transfer activities in the field of water pollution control. They also promote the development of interprovincial partnerships.

HIGHLIGHT PROJECT OF 2009-2010

Aeration of irrigation storage ponds: an effective way to improve irrigation water quality!

The safety of the fruits and vegetables we eat is closely tied to the quality of the water used to irrigate the crops. The Canadian Council of Ministers of the Environment has set a guideline for fecal coliforms in irrigation water of 100 CFUs/100 ml. How can we comply with the CCME guidelines and meet market requirements?



Trials conducted in Saskatchewan have demonstrated that the aeration of irrigation storage ponds can contribute to reducing populations of microorganisms in the water, including those that are potentially pathogenic to humans. The Quebec horticultural context is, however, different from that of Saskatchewan. Climate and production conditions are not the same. So, will the method be as conclusive in Quebec? To verify this, trials were carried out in three different ponds in 2008. The results presented in the report submitted in early 2009 show that the technique is applicable in Quebec and is effective in quickly reducing *E. coli* populations.

This research is of interest to all Quebec producers who use water from irrigation storage ponds. Moreover, the Quebec Department of Agriculture, Fisheries and Food is offering a financial incentive to encourage them to purchase and install aeration systems in their ponds. On the basis of the results obtained, the Quebec Department of Agriculture, Fisheries and Food has decided to offer substantial financial assistance through its Prime-Vert program. The cost of professional services, infrastructure work and the purchase and installation of equipment are eligible for financial assistance of up to 70%. The incentive goes a long way to promote adoption of this best management practice!

From the testing in 2008 to today, the Quebec Region Division has worked closely with the professionals at the Water Quality Unit of AAFC's Agri-Environment Services Branch in Saskatchewan. The Quebec agri-environment research and development institute [*Institut de recherche et de développement en agroenvironnement – IRDA*] and the Quebec Department of Agriculture, Fisheries and Food have also collaborated actively on the project.

The many collaborators also contributed to the success of the major technology transfer activity held on March 9–10, 2010. Two training sessions were offered to agricultural advisors to present the concept of aeration and the components of aerators and to provide information on the cost of the equipment and where to purchase it. These farm advisors are therefore well equipped to provide support and guidance to help Quebec producers find aeration systems that are tailored to the specific characteristics of their pond. Efforts must now continue to encourage the Quebec industry to bring equipment to the market at an affordable and competitive price, as has been done by distributors in Saskatchewan in response to demand in that province!

OTHER ACHIEVEMENTS

- Development and implementation of a project aimed at assessing the effectiveness of water purification and flow regulation ponds in agricultural areas during peak flows. Ponds were installed in Saint-Samuel, in the Nicolet River watershed. They temporarily collect water flowing from the fields and act as a sort of barrier between the fields and the river. The preliminary results of the pilot project demonstrate that the ponds are effective at slowing flows, thereby limiting erosion and reducing pollutant loadings to the river. For this project, the Quebec Region Division is working in collaboration with the Quebec Department of Agriculture, Fisheries and Food, the AAFC Soils and Crops Research and Development Centre, the Bois-Francs Coop and the municipality of Saint-Samuel.

- Participation in the water quality committee of the *Plan d'action concerté sur l'agroenvironnement et la cohabitation harmonieuse* (Joint Action Plan on Agri-Environment and Harmonious Cohabitation). This committee oversees follow-up of some 50 watershed-based water management projects, including 10 new local group projects for the current fiscal year. These projects are designed to improve water quality in agricultural areas and are focussed on agricultural practices and riparian zone protection as well as on hydro-agricultural installations for agriculture. In an effort to quantify the benefits of the various measures taken under these projects, the Quebec Region Division has planned the creation of a network for monitoring flows on the various streams within the targeted watersheds. It also participated in organizing and chairing a symposium on erosion control held in conjunction with the annual meeting of the agri-environmental advisory clubs in Quebec City on March 19, 2010. Over 200 agri-environmental advisors registered for the workshop.

- Organization, as member of the organizing committee responsible for the agriculture component, of the 62nd national conference of the Canadian Water Resources Association, held in Quebec City on June 9–12, 2009. Its theme was trends and future challenges in water quality and quantity. One of the members of the Quebec Region Division presented a paper at the conference entitled *Flood Peak Mitigation Measures in Agricultural Areas: A Climate Change Adaptation Tool*.

- Technical support for a stream geomorphology project aimed at updating existing methods for calculating peak flows in small agricultural watersheds. The project was carried out in cooperation with the Quebec Department of Agriculture, Fisheries and Food and McGill University.

- Drafting and publication of a fact sheet on rock chute spillways designed to help producers clearly assess their needs in terms of spillways. Produced in collaboration with the Quebec Department of Agriculture, Fisheries and Food, the fact sheet explains how to construct a rock chute spillway and where to locate it. It is the latest in a series designed to inform producers on how to design water developments for agriculture.

- Analysis of the data gathered in 2003, 2006 and 2007 during surface water quality monitoring on two streams running through the Lennoxville experimental station. In the light of the results of this analysis, which was carried out with the support of the Dairy and Swine Research and Development Centre in Lennoxville, the Quebec Region Division developed a method for ensuring future monitoring of these two streams.

- Collection and digitization of data for entry into a geographic information system for the Lennoxville experimental station. The GIS will be used to determine the boundaries of the station's watersheds and to identify flow patterns. The station's employees will be able to add data to the system or query it when they wish to select a study plot location, for example. The GIS will be completed in the coming year.

LOOKING AHEAD

- Continue the study on the water purification and flow regulation ponds in agricultural areas.

- Pursue our role on the water quality committee of the province of Quebec's *Plan d'action concerté sur l'agroenvironnement et la cohabitation harmonieuse* (Joint Action Plan on Agri-Environment and Harmonious Cohabitation).
- Produce a DVD on integrated water resources management in collaboration with the Quebec Department of Sustainable Development, Environment and Parks [*ministère du Développement durable, de l'Environnement et des Parcs – MDDEP*].
- Continue the study on the effectiveness of aerating irrigation storage ponds as a method of irrigation water disinfection and quantify the impact of this practice on other chemical and biological parameters.
- Develop a study on the technical feasibility and effectiveness of UV treatment as an irrigation water disinfection method.
- Develop a hydromorphological water quality management project at the small agricultural watershed scale to improve water quality and minimize hydrologic impacts.
- Draft a method for conducting water quality monitoring at the farm or small agricultural watershed scale. Validate the method by testing it at the Lennoxville Research Station.
- Develop a decision support tool in collaboration with the Quebec Department of Agriculture, Fisheries and Food for assessing the advisability of shoreline development along agricultural streams and propose ways to implement such developments when they are required.
- Adapt a decision support tool for the establishment of riparian buffer zones that was developed for the Prairies to the Quebec context.

Photo credit:
David Rivest,
Université Laval

SUSTAINABLE AGRI-SYSTEMS AND AGRICULTURAL LANDS

There is a wide range of different types of agricultural production in Quebec, from extensive livestock production on pasture to intensive monoculture. Within the context of the new Growing Forward policy framework, Agriculture and Agri-Food Canada wishes to help farmers and farm organizations build an agricultural sector that is more profitable and sustainable and thus contributes to protecting the environment and the health and wellness of Canadians. The area of sustainable agri-systems and agricultural lands is vast and involves various fields of expertise. In an effort to complement the efforts of organizations in the field, the Quebec Region Division is focussing special attention on agroforestry. Various agroforestry developments and riparian systems are improving the sustainability of existing production systems. Over the past year, special efforts were made to facilitate the networking of stakeholders involved in agroforestry and to disseminate information on agroforestry practices. The Quebec Region Division supports producers and resource managers in the development and adoption of practices and techniques designed to improve agri-environmental performance at the watershed scale. To this end, it works in a variety of partnerships, both provincial and federal.

HIGHLIGHT PROJECT OF 2009-2010

Improving copper redhorse habitat quality: a question of survival!

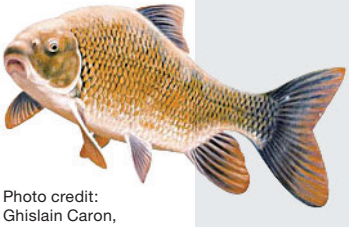
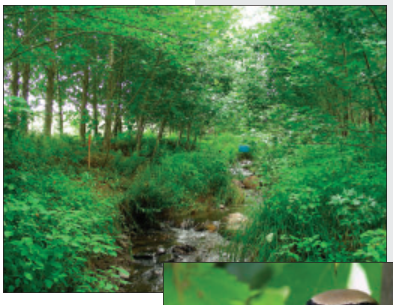


Photo credit:
Ghislain Caron,
Projet Rescousse

The copper redhorse is an endangered fish species that is found nowhere else in the world except Quebec. There are only two known copper redhorse spawning grounds, both located in the Richelieu River watershed. Recent studies show, however, that the Richelieu River population, on which the survival of the species largely depends, is having serious reproduction problems. In this sector, streambanks have been largely artificially modified and severely degraded.

In collaboration with the watershed organization *Comité de concertation et de valorisation du bassin de la rivière Richelieu (COVABAR)*, the agri-environmental advisory club *Club ConseilSol*, the copper redhorse recovery team, government departments and other regional agricultural and environmental organizations, the Quebec Region Division carried out various types of work aimed at addressing erosion problems. The objective was to support the recovery of the species in the Richelieu River through streambank renaturalization and stabilization, which reduces sediment and contaminant loadings to copper redhorse habitat. As part of this project, which has been under way since 2006, some 1,800 structures have been installed, including wattle fences, fascines and brush mats; banks have also been mechanically recontoured and over 6,200 trees and shrubs have been planted. The work covers the most degraded banks of certain streams in the Richelieu River basin, including those of Richer and Beloeil creeks and Rivière des Hurons.



An example of a 6 year-old agroforestry riparian system in the Eastern Townships.

Photos credit:
Daniel Gagnon,
UQAM, FRFCE

This year, the Quebec Region Division collaborated on the design and installation of an agroforestry riparian buffer demonstration site on a farmer's property along Ruisseau à l'Ours, in the Rivière des Hurons sub-watershed. Wooded riparian buffers, which are up to 10 meters wide in this project, reduce water temperature and solar radiation, protect a wider area of banks from erosion and promote the recovery of aquatic habitats. After 40 or 50 years, it will be possible to harvest the various tree species planted there, making this vegetation cover a multipurpose, economically attractive area. It is proposed, for future years, to extend this practice over a larger scale in order to gradually restore tree cover along the banks of small streams.

OTHER ACHIEVEMENTS


Agroforestry News from the Atlantic and Quebec

- Continue producing *Agroforestry News*, which is designed to provide information on agroforestry experiences in Quebec and the Atlantic provinces. The newsletter is the result of a partnership with the Regional Adaptation and Practice Change Division in the Atlantic Region and the Agroforestry Development Centre in Saskatchewan.
- Maintain the specialized agroforestry website on the Agri-Réseau portal. The creation and updating of the site is possible through the close collaboration of the professionals at the *Centre de référence en agriculture et agroalimentaire du Québec (CRAAQ)* and several volunteers. To visit the Agri-Réseau agroforestry website, go to: www.agrireseau.qc.ca/agroforesterie.
- Collaboration in the activities of the specialized agroforestry committee of the *Centre de référence en agriculture et agroalimentaire du Québec*. The purpose of the committee, which comprises some 20 specialists from the agriculture, forestry and land use planning sectors, is to facilitate networking, identify knowledge needs and acquire and disseminate information. This year, the Quebec Region Division supported a technical workshop, on invitation, which brought together some 83 specialists and stakeholders.
- Publication of a technical fact sheet describing the concept of intercropping hardwood trees with crops. Through such agroforestry systems, it is possible to combine timber harvesting and agricultural production, while providing various benefits for soil and the environment. The fact sheet, published in English and French, was produced in collaboration with Laval University in Quebec City and the University of Guelph in Guelph, Ontario.
- Start-up of a project on the development of an indicator of riparian agroecosystem health under the National Agri-Environmental Health Analysis and Reporting Program (NAHARP). The indicator will make it possible to identify trends in the health of riparian and watercourse ecosystems in connection with the presence of tree and shrub cover.

LOOKING AHEAD

- Continue the strategic development of agroforestry for agri-environmental purposes, more specifically:
  - continue the study of barriers and incentives to the adoption of agroforestry practices, including the impact of windbreak systems on crop yields and the feasibility of the use of conservation easements for maintaining agroforestry systems;
  - support the development of tools facilitating the adoption of beneficial management practices associated with agroforestry;
  - maintain and develop partnerships for the advancement of agroforestry and networking by scientific and technical communities in this field. Continue to work with the *Centre de référence en agriculture et agroalimentaire du Québec, Agri-Réseau* and the other organizations in the agriculture, forestry and rural sectors;
  - explore partnership opportunities with AAFC's Research Branch for the establishment of agroforestry research and demonstration sites.

Photo credit: David Rivest, Université Laval

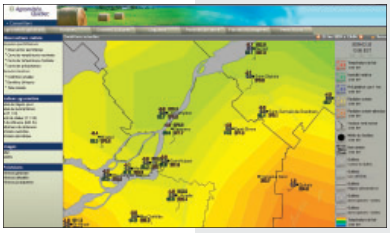
- Pursue support for the partners' efforts in the performance of agri-environmental diagnostics for supporting the implementation of beneficial management practices in the Richelieu River, Lavallière Bay and other watersheds.
- Develop scientific programming for the riparian agroecosystem health indicator project with our partners, including the Agroforestry Development Centre in Saskatchewan and the Kentville Research Centre in Nova Scotia.
- Continue to provide technical support to projects and programs and to offer consulting services to innovative organizations for the submission of structuring projects in the sector of sustainable agricultural lands and systems.

DECISION SUPPORT TOOLS

The quality and quantity of many agriculture products is closely tied to climate conditions. The spread of insect pests and plant diseases is also dependent on weather conditions. The Quebec Region Division stresses the use of decision support tools based primarily on agrometeorology and agroclimate data for the adaptation and modification of agri-environmental practices. It is working to promote the real-time use of meteorological and climate data to optimize decisions on crop treatment, soil fertilization, the anticipation of insect pest outbreaks and irrigation. The team members also provide technical support for the monitoring and upgrading of certain meteorological stations in Quebec and act as strategic advisors on various committees.

HIGHLIGHT PROJECT OF 2009-2010

AgWeather Quebec site: more content and news



The Quebec Region Division provided financial support and technical expertise to the maintenance and development of the AgWeather Quebec website (www.agrometeo.org), which provides access to agrometeorological data and products. Data is uploaded to the site daily from a network of over 250 climate stations located throughout all agricultural regions of Quebec. This project is a joint initiative between the Quebec Department of Sustainable Development, Environment and Parks [*ministère du Développement durable, de l'Environnement et des Parcs*], the Quebec Department of Natural Resources and Wildlife [*ministère des Ressources naturelles et de la Faune*] and AAFC. Other organizations involved in the project include the *Société de protection des forêts contre les insectes et les maladies*, the Oklahoma Climatological Survey, the *Centre de référence en agriculture et agroalimentaire du Québec* and Environment Canada.

The data found on the site include weather forecasts prepared from Environment Canada data. They are presented in the form of maps, graphs and bulletins that have a higher spatial and temporal resolution than general public forecasts. Data on mean temperatures, growing degree-days and corn heat units are provided for the 10-year period 1996-2005 and can be compared with current values.

New products have been developed over the past year and will be made available on the website at the start of the 2010 season:

– an agrometeorological bulletin containing drying index forecasts that facilitate planning of forage crop harvest

– new maps and a new agrometeorological summary available to all agricultural stakeholders from the website's home page

– new maps and summaries relating to vegetable and potato crops

– various data that will be made available to Cipra software, a tool for forecasting and monitoring various crop pests in order to reduce pesticide use at source.

For now, the various areas of the website are available only to a targeted group of users. Approximately 150 professionals have used the site to date, including agricultural advisors from the Quebec Department of Agriculture, Fisheries and Food, the agri-environmental advisory clubs, technical support clubs and *Financière agricole du Québec*. The *AgWeather Quebec* website, with the impressive amount of data it contains, is a veritable decision support tool!

OTHER ACHIEVEMENTS

- Coordination of the project *Atlas agroclimatique du Québec – Évaluation des opportunités et des risques agroclimatiques dans un climat en évolution*. This project pools the expertise of a number of organizations, including the *Centre de référence en agriculture et agroalimentaire du Québec*, Ouranos, the Quebec Department of Sustainable Development, Environment and Parks and *Financière agricole du Québec*. The project was launched in 2010 with the objective of developing an agroclimate atlas containing information on current climate, its variability and its future evolution. The tool will eventually be distributed to stakeholders in the agricultural sector through a user-friendly website. Adapted to today's technologies, the atlas will provide basic data for the analysis and management of climate risks and opportunities for the Quebec agricultural sector.

- Technical support to the *Institut de recherche et de développement en agroenvironnement* as part of the IRDA-AAFC co-management of the *Réseau pommier*, a network of 17 meteorological stations located in Quebec apple orchards. The data from these stations are used to optimize pesticide use to control apple insects and diseases. In this project, the Quebec Region Division ensured quality control of the data recorded at the 17 stations before real-time dissemination through the Apple section of the AgWeather Quebec website.

- Produce a computer file containing the basic parameters of the curves produced by Environment Canada to calculate rainfall intensity, duration and frequency (IDF index) at a given location, in accordance with desired recurrence intervals (2, 5, 10, 25, 50 or 100 years).

- Participation in several committees:

  - AAFC's National Climate Risk Committee

    - This committee met every two weeks from April and November 2009 to take stock of potential crop growth risks or problems associated with weather. Information notes were produced on a monthly basis. The process is proactive and Canada-wide. Specialists from the Quebec Region Division provide their expertise to evaluate the risks for Quebec.

  - Ouranos Agriculture Program Committee

    - The purpose of this committee is to guide the climate change adaptation efforts of the agriculture sector. It is composed of representatives of the Quebec Department of Agriculture, Fisheries and Food, the *Institut de recherche et de développement en agroenvironnement, Financière agricole du Québec*, the *Union des producteurs agricoles* and AAFC.

  - Agrometeorology Committee of the Centre de référence en agriculture et agroalimentaire du Québec

    - The objective of this committee, on which other specialists from various federal and provincial departments and members of the *Union des producteurs agricoles* participate, is to disseminate and transfer agrometeorology information in Quebec.

- Drafting and publication of a document identifying the key directions taken by the regional county municipalities (RCMs) in the regulation of soil, water and woodland protection in agricultural areas. This document was drafted following the analysis of the development plans and interim control bylaws of 71 RCMs accounting for over 80% of total agricultural activity in Quebec. The objective is to enable the various agriculture and municipal sector stakeholders to learn about, compare and even build on the sometimes innovative initiatives under way in various parts of Quebec.

Photo credit:
Jackie Lajeunesse

- Participation in the committee to monitor crop damage by blackbirds in Estrie comprising representatives of the Quebec Department of Agriculture, Fisheries and Food, the *Union des producteurs agricoles, Financière agricole du Québec* and the Quebec Department of Natural Resources and Wildlife. In 2009, damage of corn seedlings by crows caused considerable damage. In the Estrie region alone, 30 notices of damage covering 500 ha of crops were issued, representing total claims to *Financière agricole de Québec* of $280,000. By comparison, compensation for geese damage totalled $1 million for all of Quebec in 2009 and averaged $630,000 a year from 1999 to 2008. The purpose of the committee is to carry out monitoring in order to propose effective solutions to the problem.

LOOKING AHEAD

- Continue the maintenance and development of the *AgWeather Quebec* website by adding an irrigation planning tool. Expand access to the site to a larger number of users.
- Continue collaboration with the *Institut de recherche et de développement en agroenvironnement* within the framework of the management of the *Réseau pommier* and upgrade three other stations.
- Continue the development of the Quebec agroclimate atlas with the collaboration of the other partners involved.
- Collaborate with the *Centre de référence en agriculture et agroalimentaire du Québec (CRAAQ)* in the production of technical fact sheets on various topics related to climate change and agriculture in Quebec.

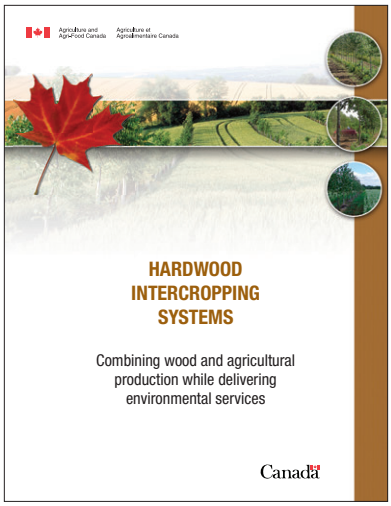
- Collaborate on various other projects:

- update the standards and procedures for the design of water structures in rural areas within the context of climate change;
- evaluate the wine-producing potential of Brome-Missisquoi;
- participate in developing a project on the contribution of multifunctional agroforestry systems to the capacity of agroecosystems to adapt to climate change.

PUBLICATIONS AND EVENTS

In 2009-2010, the Quebec Region Division produced or participated in the production of various publications in the form of technical fact sheets, proceedings or reports. It also collaborated in the organization and hosting of various events, either by providing financial or technical assistance, or by taking part in the organizing committees.

PUBLICATIONS



Bibeau, R. and I. Breune. 2009. *Les initiatives réglementaires municipales de protection environnementale en milieu agricole au Québec. État de la situation*. ISBN 978-1-100-91188-5 No AAFC 10906F. 70p.

Côté, C. 2009. *Faisabilité et efficacité de l'aération des étangs d'irrigation comme méthode d'assainissement de l'eau. Rapport final.* Institut de recherche et de développement en agroenvironnement, for the Conseil québécois de l'horticulture, funded by the Canada-Quebec Water Supply Expansion Program. 37 p.

Gariépy, S. and A. Vézina, 2009. *L'agroforesterie: concepts et possibilités*. Published in the conference proceedings of the Scientific and Technical Agri-food Engineering Information Day, March 25, 2009. Centre de recherche et de développement sur les aliments, Saint-Hyacinthe, p. 94.

Gariépy, S. and C. Pharo (Eds.), 2009. *Agroforestry News from the Atlantic and Quebec*, Volume 1, No. 2, April 2009. Produced by: S. Campeau, Bryophyta Inc., for Agriculture and Agri-Food Canada, 12 p.

Gariépy, S. and C. Rochon, 2009. *L'agroforesterie: état de situation et perspectives*. Agroforestry Forum, Centre de référence en agriculture et agroalimentaire du Québec, March 3, 2010, Quebec City.

Gariépy, S. and C. Rochon, 2009. *L'agroforesterie, une alliée naturelle de la gestion intégrée*. Colloque «J'ai le goût de l'eau», October 16-17, 2009, Joliette, Quebec.

Gariépy, S., R. Hardin and J. Kort (Eds), 2010. *Agroforestry News from the Atlantic and Quebec*, Volume 2, No. 1, March 2010. Produced by: S. Campeau, Bryophyta Inc., for Agriculture and Agri-Food Canada, 12 p.

Lamarre, G. et coll. 2009. *Rock chute spillways*. Agriculture and Agri-Food Canada. Quebec Department of Agriculture, Fisheries and Food. 9 p.

Régnaud, A., 2009. *Rapport de stage pré-optionnel*. Work term in agricultural lands management and agroforestry. Agriculture and Agri-Food Canada Regional Services, Quebec Region and École nationale d'ingénieurs des travaux agricoles de Clermont-Ferrand – ENITAC, France, 57 p.

Rivest, D., A. Olivier and A. M. Gordon, 2010. *Hardwood intercropping systems. Combining wood and agricultural production while delivering environmental services*. Université Laval, University of Guelph and Agriculture and Agri-Food Canada, 12 p.

EVENTS

62nd National Conference of the Canadian Water Resources Association. Organized by the Canadian Water Resources Association, Quebec City, June 9 to 12, 2009.

Resource Conservation Day at the AAFC Lennoxville Research Centre. Jointly organized by the Quebec Department of Agriculture, Fisheries and Food [MAPAQ], Agriculture and Agri-Food Canada, the *Club agroenvironnemental de l'Estrie*, the *Union des producteurs agricoles*, the *Conseil de gouvernance de l'eau des bassins versants de la rivière Saint-François, Financière agricole du Québec* and the Quebec Department of Sustainable Development, Environment and Parks [MDDEP], February 16, 2010.

Visit by AAFC staff from Western Canada to Quebec

The Quebec Region Division introduced four of its colleagues from Manitoba and one from Saskatchewan, to various research projects and good agricultural practices implemented on Quebec farms. The visit took place from September 28 to October 2, 2009, and began with a meeting with professionals from the Quebec departments of Sustainable Development, Environment and Parks and Agriculture, Fisheries and Food. They described the agricultural context in Quebec, focussing on its environmental issues and agri-environmental policies, and gave an overview of the Prime-Vert program. Over the next four days, the participants headed to Deschambeault, the Beauce region, Nicolet and the Outaouais region, where they met a team of engineers from the *Institut de recherche et de développement en agroenvironnement*, which was working on several experimental projects. They were then introduced to various farmers who had installed agri-environmental systems or processes on their farms, including a farmer whose dairy farm has been certified organic for 23 years. The week included a wide variety of activities and provided an opportunity for many information exchanges and the establishment of new collaborations. The team from Manitoba was very enthusiastic and offered to host the Quebec team in its province.

Agri-Food Innovation and Progress in Centre-du-Québec (INPACQ) Day on the theme of water management in the context of climate change. Organized by the Quebec Department of Agriculture, Fisheries and Food, Drummondville, Quebec, February 24, 2010.

Agroforestry Forum. Organized by the *Centre de référence en agriculture et agroalimentaire du Québec* with the collaboration of Agriculture and Agri-Food Canada and the Canadian Forestry Service, Quebec City, March 3, 2010.

Regional Climate Change Adaptation Workshop. Organized by Agriculture and Agri-Food Canada, Quebec City, March 9 and 10, 2010.

Training sessions on irrigation pond aeration. Organized by Agriculture and Agri-Food Canada, the *Institut de recherche et de développement en agroenvironnement*, the Quebec Department of Agriculture, Fisheries and Food and the *Conseil québécois de l'horticulture*, Saint-Hyacinthe, March 9 and Quebec City, March 10, 2010.

Conference on erosion control. Organized by the agri-environmental advisory clubs, Quebec City, March 19, 2010.

COLLABORATORS

The Quebec Region Division regularly works in collaboration with other organizations. In addition to carrying out projects in partnership with other teams within Agriculture and Agri-Food Canada, such as the teams from Ottawa, western Canada and the Atlantic regions, it brings its expertise and know-how to projects carried out in collaboration with departments, institutions or local associations in the public, private and academic sectors. The key partners of the Quebec Region Division in its 2009-2010 achievements are listed below:

Agri-environmental advisory clubs

Agri-Réseau

Agroforestry Development Centre, AAFC

Association des producteurs de canneberges du Québec

Atlantic Food and Horticulture Research Centre, AAFC (Kentville, Nova Scotia)

Bois-Francs Coop

Bryophyta Technologies Inc.

Canadian Water Resources Association

Centre de développement des bioproduits (Biopterre)

Centre de recherche agroalimentaire de Mirabel

Centre de référence en agriculture et agroalimentaire du Québec (CRAAQ)

Centre d'étude de la forêt (CEF)

Club agroenvironnemental de l'Estrie

Club ConseilSol (merger of Club Consersol Vert Cher and Club Solart in March 2009)

Club des producteurs de noix comestibles du Québec

Comité de bassin de la rivière Fouquette

Comité de concertation et de valorisation du bassin de la rivière Richelieu (COVABAR)

Conseil de gestion du bassin versant de la Yamaska (COGEBY)

Conseil de gouvernance de l'eau des bassins versants de la rivière Saint-François

Conseil pour le développement de l'agriculture du Québec (CDAQ)

Conseil québécois de l'horticulture

Copper Redhorse Recovery Team

Dairy and Swine Research and Development Centre, AAFC (Lennoxville, Quebec)

Ducks Unlimited Canada

Environment Canada

Fiducie de recherche sur la forêt des Cantons-de-l'Est

Financière agricole du Québec

Fisheries and Oceans Canada

Institut de recherche et de développement en agroenvironnement (IRDA)

Institut de technologie agroalimentaire du campus de La Pocatière

Institut national de la recherche scientifique – Eau, terre et environnement (INRS – ETE)

McGill University

Municipality of Saint-Samuel

Oklahoma Climatological Survey

Ouranos

Quebec Department of Agriculture, Fisheries and Food (MAPAQ)

Quebec Department of Natural Resources and Wildlife (MRNF)

Quebec Department of Sustainable Development, Environment and Parks (MDDEP)

Société de protection des forêts contre les insectes et les maladies (SOPFIM)

Soils and Crops Research and Development Centre, AAFC

Union des producteurs agricoles (UPA)

Université du Québec à Montréal

Université Laval

University of Guelph

TO CONTACT

THE REGIONAL ADAPTATION AND PRACTICE CHANGE DIVISION – QUEBEC REGION

OFFICES IN QUEBEC CITY AND LENNOXVILLE

Agriculture and Agri-Food Canada
Champlain Harbour Station
901 du Cap Diamant Street, Room 350-4
Quebec City, Quebec
G1K 4K1

Agriculture and Agri-Food Canada
2000 du Collège Street
P.O. Box 90, Lennoxville Station
Sherbrooke, Quebec
J1M 1Z3

CONTACTS

Yves Lavergne, Biologist
Technical Director
Telephone: 418-648-3316
Fax: 418-648-7342
yves.lavergne@agr.gc.ca

Stéphane Gariépy, P. Eng., MSc
Regional Manager, Sustainable Agricultural Systems and Lands
Telephone: 418-648-3652
Fax: 418-648-7342
stephane.gariepy@agr.gc.ca

François Chrétien, Agronomist, MSc
Water Management Specialist
Telephone: 418-648-4774
Fax: 418-648-7342
francois.chretien@agr.gc.ca

René Audet, Agrometeorologist, MSc
Agrometeorologist
Telephone: 418-648-3649
Fax: 418-648-7342
rene.audet@agr.gc.ca

Milène Beaudoin, Geomatics Specialist, MSc
Environment Specialist
Telephone: 418-648-4773
Fax: 418-648-7342
milene.beaudoin@agr.gc.ca

Lynda Lemelin
Administrative Coordinator
Telephone: 418-648-3498
Fax: 418-648-7342
lynda.lemelin@agr.gc.ca

Isabelle Breune, Agronomist, MSc
Agri-environmental Officer
Telephone: 819-565-9174 ext. 199
Fax: 819-565-0747
isabelle.breune@agr.gc.ca

Regional Adaptation and Practice Change Division, Quebec Region, Annual Report 2009-2010

Cat. No. A124-1/2010E-PDF
ISBN 978-1-100-16092-4
AAFC No. 10999E

Aussi offert en français sous le titre : *Rapport annuel 2009-2010 – Division de l'adaptation et de la modification des pratiques à l'échelle régionale – région du Québec*.

IMPRIMÉ AU CANADA
PRINTED IN CANADA

30 % post-consumer content