



INSTITUT DE RECHERCHE
ET DE DÉVELOPPEMENT EN
AGROENVIRONNEMENT

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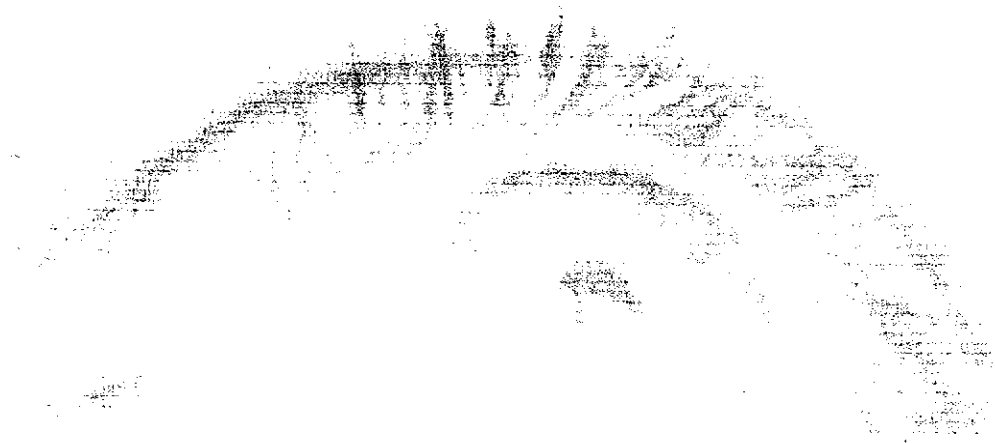
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Consultation sur le développement durable
de la production porcine au Québec

6211-12-007

Strategic plan

2001-2004



"For the development of a sustainable agriculture"

Founding members:

Québec 

- Ministère de l'Agriculture, des Pêcheries et de l'Alimentation
- Ministère de la Recherche, de la Science et de la Technologie
- Ministère de l'Environnement

 *L'Union des
producteurs
agricoles*

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Introduction

During the Conference on Québec Agriculture and Agri-food, held on March 5th and 6th 1998, in Saint-Hyacinthe, the participants agreed to contribute to the establishment of a research and development institute on the agri-environment, in order to mobilize all of the governmental, private and university forces involved in research, development and technological transfer in this field.

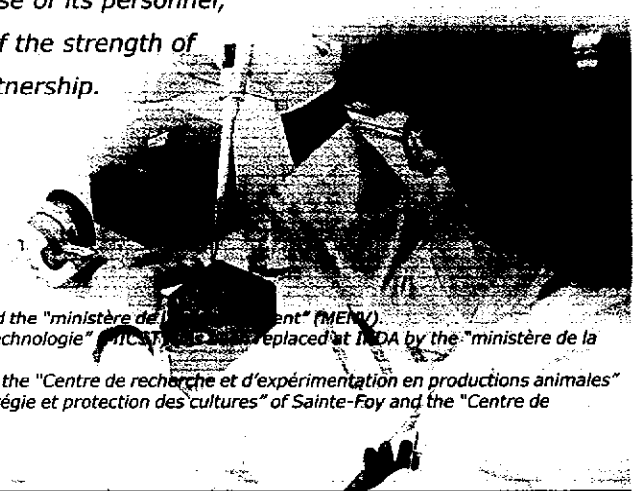
The "Institut de recherche et de développement en agroenvironnement inc." (IRDA) was created on March 20, 1998, as a non-profit corporation. Its creation resulted from the initiative of the ministère de l'Agriculture, des Pêcheries et de l'Alimentation (MAPAQ), in collaboration with the Union des producteurs agricoles (UPA), of the ministère de l'Environnement et de la Faune (MEF)¹ and of the ministère de l'Industrie, du Commerce, de la Science et de la Technologie (MICST)².

Heading four research centres³, IRDA promotes an interdisciplinary approach to designing solutions for the development of a sustainable agriculture. The complexity and the constant change associated with environmental issues require a pooling of expertise in order to foster the establishment of partnerships.

In addition to research activities, the institute communicates its results and progress to the various contributors of the agri-food sector, to agricultural producers and to the collectivity. The Institute also participates in the development of technologies necessary for the protection of the environment and for the improvement of agri-food systems, while taking into consideration the importance of the competitiveness and profitability of firms in a global market environment.

The mission, the expertise of its multidisciplinary research team and the development of effective partnerships, give the Institute a prime position in Québec's research community. In a desire for continuity and progress, IRDA is planning, during the next three years, to increase its efforts in research and development (R&D), to gain a better knowledge of the needs of its clientele, to join new partners and to equip itself with a new management policy for human and material resources.

By implementing this strategic plan, IRDA wishes to be recognized, by 2004, as a leader in the agri-environment field because of its innovative solutions promoting a sustainable agriculture in harmony with its environment, because of the high degree of expertise of its personnel, and because of the strength of its partnership.



1 The "ministère de l'Environnement et de la Faune" (MEF) is now called the "ministère de l'Environnement" (MENV).
2 The "ministère de l'Industrie, du Commerce, de la Science et de la Technologie" (MICST) was replaced at IRDA by the "ministère de la Recherche, de la Science et de la Technologie" (MRST).
3 The "Centre de recherche et d'expérimentation en sols of Sainte-Foy", the "Centre de recherche et d'expérimentation en productions animales" of Deschambault, the "Centre de recherche et d'expérimentation en régie et protection des cultures" of Sainte-Foy and the "Centre de recherche en productions végétales" of Saint-Hyacinthe.

Context

Brief overview of the agri-environment in Québec

The agri-environment field is concerned with the interactions between agricultural activities and the surrounding environment. The impacts of these activities on ecosystems (physical and biological resources) are studied from a quantitative as well as a qualitative viewpoint. Research in agri-environment aims to promote the emergence of a sustainable agriculture, which provides wholesome food and is profitable for the grower.

The founding members of the institute⁴ have, to this end, defined priority themes for action and research. Through its scientific programs and its research activities, IRDA brings its expertise in the search for solutions to promote the development of an agriculture which is respectful of the environment.

Soil

In Québec, the question of the durability of resources is particularly important because agricultural activities are concentrated on a small percentage of the territory. The issue of soil degradation is indeed worrisome since areas with a high agricultural potential are limited to approximately 1,500,000 hectares, which is less than 2% of the entire territorial area. In this context, each hectare degraded or lost for agricultural production must be considered as irreplaceable.

Water

By contrast, water is abundant in Québec. It represents a third of the water resources of Canada and 3% of the planet's. This impression of abundance has been reflected, during the last decades, by an inappropriate use

of the water resource. Several reports by the MENV, including the BAPE report⁵, indicate that water quantity in rural areas is affected by various pollutants (nitrogen, phosphorus, pesticides, bacteria, etc.).

Air

The irritations caused by a few agricultural activities, in terms of bad odours for example, are such that they paralyze the expansion of certain productions. The outcry at each announcement that a new pig farm will be built can be largely explained by such irritation problems. Furthermore, agricultural activities can, in the absence of corrective measures, become greenhouse gas production sources, which several States have agreed to decrease following the Kyoto agreements.

Quality and safety of food products

Over two million cases of food poisoning are reported each year in Canada. The growing preoccupation of consumers with food safety, which can be perceived through increasingly higher market standards, requires an understanding of the factors which can affect the safety of food products and the integrity of resources. Animal husbandry practices, as well as the management of animal wastes, water and pesticides in agricultural environments are some of the parameters which must be studied in order to evaluate their potential for contamination risks of meat and horticultural products.

⁴ MAPAQ, UPA, MENV and MRST.

⁵ BAPE. 2000. "L'eau, une ressource à protéger, à partager et à mettre en valeur". Report of the Commission on water management in Québec.

MAPAQ Strategic plan

Québec has set the objective of doubling its exports of bio-food products by 2005. Internally, the government of Québec wishes to increase the domestic market share occupied by its products by 10%. This increase in the offer of food products will only become reality if it is supported by an intensification of the production.

In order to preserve natural resources and protect ecosystems, the government of Québec has set clear objectives for adopting conservation practices which will allow the development of a sustainable agriculture. The following are the sectorial stakes of the "*Plan stratégique du ministère et des organismes (APA) 2001-2004*":

- Ⓞ Food safety
- Ⓞ Environment
 - Update of the action plan "Un environnement à valoriser";
 - Air-tight and water-tight storage of solid and liquid manures;
 - Establish agri-environmental plans for fertilizer use;
 - Soil conservation practices and protection of streams and rivers;
 - Integrated pest management and reduction of pesticide use.

UPA Action framework

The UPA has also approved an Agri-Environmental Action Framework ("*Cadre d'intervention agroenvironnemental*"). By 2003, the UPA wishes to achieve tangible, concrete and measurable results through the implementation of actions in response to the expectations of Québec society and of the agricultural profession.

The action framework, responding to agri-environmental issues, is composed of six priority action themes:

- Ⓞ Reduction of non-point source pollution (nitrogen and phosphorus);
- Ⓞ Treatment of liquid manure and reduction of nitrogen and phosphorus losses in solid manures;
- Ⓞ Reduction of point source pollution (nitrogen and phosphorus);
- Ⓞ Reduction of soil erosion by water;
- Ⓞ Reduction of odour when liquid and solid manures are spread;
- Ⓞ Reduction of non-point source pollution by pesticides.

These themes are associated with a series of measures, some of which will require the support and the involvement of private and public partners.

MENV Strategic plan

The MENV supports the actions undertaken to develop a sustainable agriculture, in harmony with its surrounding environment. In its *2000-2003 strategic plan*, the ministry and the agencies for which it is responsible have defined sectors of action in which they intend to play a significant role:

- Ⓞ Water management
 - Environmental management of agricultural activities;
- Ⓞ Climatic change
 - Substances weakening the ozone layer;
- Ⓞ Conservation of biological diversity
 - Environmental management of genetically modified organisms;
- Ⓞ Promotion of sustainable development.

Context (continued)

MRST Scientific policy

In its "Politique québécoise de la science et de l'innovation" published in 2001, the MRST proposes challenges and stakes which corroborate some of IRDA's priorities. In this policy, the following actions are listed:

- Ⓞ Awakenning the scientific interest and education of the young;
- Ⓞ Increasing technology transfer activities;
- Ⓞ Reinforcing research and development in private firms;
- Ⓞ Reinforcing the scientific expertise of ministries;
- Ⓞ Supporting the concerted development of the regions;

In Summary

This brief overview of the agri-environmental context of Québec illustrates how this sector is destined for considerable growth. The demand for practical solutions, which are also economically viable, technically applicable and environmentally effective, will increase considerably. The issues will also become increasingly more complex and will require the contribution of various and complementary expertises.



Importance of partnership

The majority of projects at IRDA are carried out in partnership. As of the spring of 2001, IRDA has more than one hundred research partners and financing from the public, university and private sectors. This collaboration between partners ensures the advancement of science and knowledge, as well as the communication of discoveries and of the innovative solutions for solving agri-environmental problems.

Public organizations

Public organizations provide a reference framework for the agri-environment by issuing agricultural and environmental policies. Several government organisms are involved in the agri-environment field by the implementation of research funding programs, by their financial contribution or, in collaboration with IRDA, by their participation in technological transfer activities through their advisors and advisor-clubs.

Universities

Universities are major stakeholders in the field of research and development in agri-environment. Projects carried out in collaboration with IRDA provide gains in scientific knowledge while creating a network of various expertises. Within the "Action concertée Fonds FCAR-IRDA" Fund, the partnership with universities contributes to the scientific mission of the institute, particularly on the level of training relief.

Private firms

Private firms are important stakeholders, particularly in sectors where R&D can lead to knowledge, techniques and technologies which have a potential for commercialization. Beyond exchanges of services, several firms, including UPA and many of its federations, financially support research at IRDA.

We therefore find several stakeholders in the agri-environment field in Québec. This diversity is reflected in the development of a variety of research methods and technical solutions. It also stimulates a collaboration among institutions, allowing the common use of research and development infrastructures.

Human resources

As of March 2001, IRDA has approximately one hundred employees. Of about 30 researchers working at the Institute, 28 hold at least a Master's degree, and 12 have a Ph.D. degree. Five final honours certified researchers are currently enrolled in a program leading to the Ph.D.

These researchers are supported in their projects by more than 50 technicians and agricultural workers, by the administrative and secretarial personnel, as well as the management personnel.

Multidisciplinary method

Our research teams are working on projects which are mostly multidisciplinary. They are specialists of research related to gaining better knowledge of the agri-environment, or related to measuring the impact of agricultural activities or technologies on the environment.

IRDA's research team has a vast and diversified expertise in different fields:

- Ⓔ Plant biology;
- Ⓔ Crop management programs;
- Ⓔ Integrated crop protection;
- Ⓔ Soil chemistry and integrated fertilizer use;
- Ⓔ Soil physics and conservation;
- Ⓔ Soil microbiology and biology;
- Ⓔ Use of biomass and organic conditioners;
- Ⓔ Farm animal management and feeding programs;
- Ⓔ Animal waste management and use;
- Ⓔ Air quality;
- Ⓔ Rural engineering;
- Ⓔ Landscape scale soil and water resource studies;
- Ⓔ Biotechnologies;
- Ⓔ New computer technologies.

The competence of IRDA's researchers is recognized on a national level and increasingly at the international level. These researchers are active members of approximately 60 scientific associations, committees of professional orders and networks of researchers, whose activities extend beyond our frontiers. Their contributions are solicited in various ways, as shown by the 250 or so scientific and technical communications they produce each year, their participation in the training of graduate students, as well as to Ph.D. thesis examination committees.

Context (continued)

The diversity and complementary expertises assembled at IRDA is one of the major strengths of the Institute. It unites all of the competences required for effectively solving agri-environmental problems and issues. The resulting multidisciplinary approach allows a better definition of the complexities of the issues at stake, and for suggesting general solutions which do not produce undesirable side-effects, for the environment as well as for the viability of agricultural concerns.



Infrastructures

IRDA has the use of research and experiment facilities on loan from MAPAQ and located in Saint-Hyacinthe, Sainte-Foy, Deschambault and Saint-Lambert-de-Lauzon.

- Ⓞ Many laboratories:
 - Biotechnologies;
 - *In vitro* tissue culture;
 - Entomology;
 - Weed science;
 - Pedology and soil mapping;
 - Physics and organic chemistry (certified ISO 9002);
 - Phytopathology.

- Ⓞ A phytotron composed of:
 - Twenty growth chambers offering various bioclimatic settings;
 - Three culture chambers which can accommodate *in vitro* tissue culture projects;
 - A cold storage room for preserving specimens;
 - A preparation room for manipulating plants;
 - A laboratory adjacent to the growth chambers;
 - A computer control room.

- Ⓞ Three experimental sites totaling more than 160 hectares which have different soil and climatic conditions.

- Ⓞ Controlled environment chambers, greenhouse complexes and preferred access to many field testing sites and experimental animal husbandry buildings.

Achievements

Since its beginning, IRDA has undergone a major change, established an organizational structure which suits its needs, strengthened its team and equipped itself with the means necessary to achieve its objectives, to develop its full potential, and to accomplish the mission that it was given.

Its main achievements in terms of research, administration, communications and partnership are summarized below:

Research

- Ⓞ Increase and better targeting of research and development activities;
- Ⓞ Drafting of the general *Research Program*;
- Ⓞ Approval of the six specific research programs:
 - Livestock production management;
 - Integrated crop fertilization;
 - Integrated crop management and protection;
 - Reduction of soil erosion by water;
 - Integrated soil management;
 - Quality and safety of products;
- Ⓞ Establishing the committee for scientific support (CSS) and the committee for scientific orientations (CSO);
- Ⓞ Establishing the "*Action concertée Fonds FCAR-IRDA*" research fund;
- Ⓞ Participating in the "*Portrait agroenvironnemental des fermes du Québec*";
- Ⓞ More than 250 technological transfer activities each year.

Administration

- Ⓞ Financial aid agreement between the founding partners;
- Ⓞ Establishing the legal and operational tools for managing human, material and financial resources;
- Ⓞ Obtaining the research consortium visa given by the MRST (fiscal refund for research);
- Ⓞ Approval of the environmental policy for the management of resources and activities.

Communications

- Ⓞ Completion of communication plans;
- Ⓞ Creating the Web site;
- Ⓞ Production of the newsletter, "*Irdaction*";
- Ⓞ Publication of popular articles and publicity in the media;
- Ⓞ Publication of IRDA's scientific journal, "*Agrosol*";
- Ⓞ Promotion of the Institute during missions abroad, exhibitions, conferences and shows.

Partnership

Since 1998, IRDA has increased by 40% the number of its active partners. This success can be explained by the development and establishment of an entrepreneurial approach which facilitates the meshing between firms with common interests and means of exchange.

Challenges for the upcoming years

The context in which IRDA currently finds itself, as well as the strong support of its founding partners, leads the Institute to foresee the future optimistically and to be confident that it can face the challenges of the upcoming years. The Institute has now reached a point where it can focus more steadily on stakes and challenges of strategic importance, by strengthening its assets, by using methods of operation judged to be appropriate, and by making some adjustments.

Strengthening and improving methodological tools

The report on the achievements⁶ of IRDA, produced in the fall of 2000, has allowed the identification of a number of actions which are likely to strengthen and improve the methodological tools of the Institute. The evaluation report recommends the implementation of a follow-up system designed to promote the systematic updating of achievements, which will result in the optimal use of confirmed competence, and significant experiments in the agri-environmental field. The improvement of methodological tools will also permit to better plan the research activities in order to point out priority targets and to identify the results to be achieve.

These recommendations have lead the Institute to better orient itself with respect to outside expectations. There is a necessity to define more precisely the needs of the targeted clientele, in order to respond adequately to these needs, by adapting, our work methods and methodological tools as required.

IRDA's contribution to the development of a sustainable agriculture

The research and technological transfer activities led by IRDA remain unavoidable levers for development and changes in the agri-environment. All of the stakeholders rely on the expertise of the researchers at the Institute to find solutions which combine agricultural expansion and the protection of the environment and of its resources.

IRDA is a full participant in this economic, technological and sociological challenge which must be undertaken by the agri-food sector of Québec. When appropriate, IRDA will seek partners to study economic and sociological aspects within its projects, in order to ensure an exhaustive analysis of the issues at stake.

The Institute is an active participant in its role as a member of the working group "Un environnement à valoriser" formed following the Meeting of Decision Makers in March 1999. The Institute was called upon to contribute to actions for implementing various environmentally friendly practices on farms, and therefore considered in its general scientific program these priorities:

- Ⓔ Storage and management of manures;
- Ⓔ Management of fertilizers and keeping fertilizer use schedules up to date with the latest technologies;
- Ⓔ Soil conservation;
- Ⓔ Protection of water courses;
- Ⓔ Pesticide use.

⁶ Groupe Concept CFO. "Institut de recherche et de développement en agroenvironnement inc., évaluation de la performance, sommaire exécutif et recommandations".

The "Portrait agroenvironnemental des fermes du Québec", a report to which IRDA contributed, will allow a better orientation of research projects according to regional issues and to types of production sectors. The report will allow the measurement, over time, using specific indicators, of the progress of agri-environmental improvements and, by the same token, the impact of the R&D activities of the Institute. However, it must be recognized that the implementation of agri-environmental practices depends greatly on governmental support policies, over which IRDA has no control.

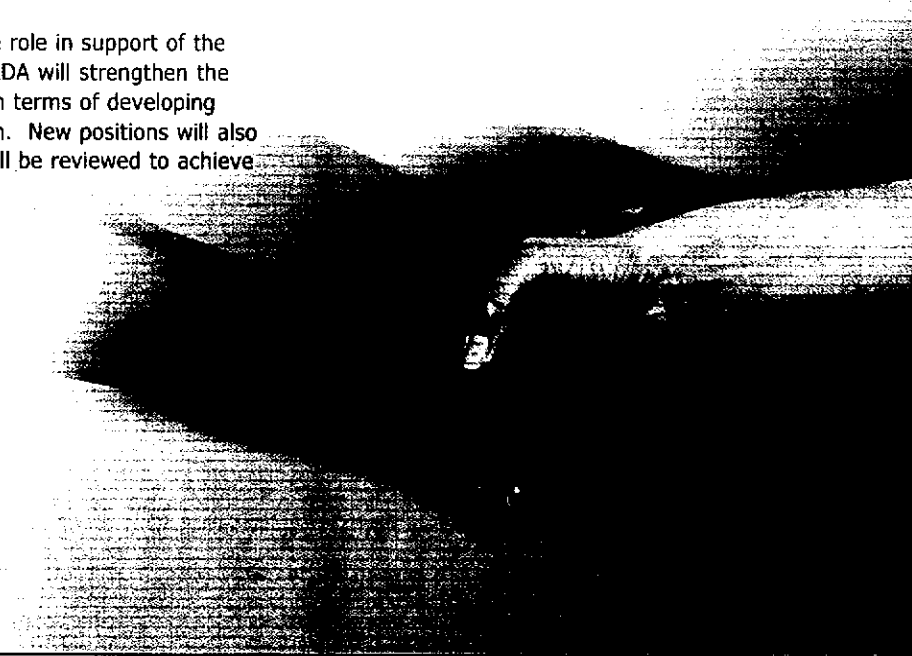
The activities of the Institute also contribute to achieving the objectives of the "Programme agroenvironnemental de soutien à la Stratégie phytosanitaire" of MAPAQ, a program on integrated management of crop pests and the reduction of pesticides used. IRDA's researchers are currently collaborating with the advisor-clubs and the advisors of MAPAQ in this sector. The sharing of information will increase in the coming years.

In order to assume its front-line role in support of the sustainable use of resources, IRDA will strengthen the expertise of its research team in terms of developing competences to fulfill its mission. New positions will also be created and hiring criteria will be reviewed to achieve this objective.

Reinforcing membership and partnership

Thirty-five firms have joined the Institute, since its beginning, as full members. Although it is recognized that partnership is of primary importance at IRDA, the management wishes to double, by 2004, the number of its members.

To strengthen its membership, as well as its partnership, steps will be taken by the Institute to measure the degree of satisfaction of its members, partners, clients and users of its services.



Strategic plan

Mission

IRDA's management has conducted a thorough analysis of the wording of the mission statement produced when the Institute was created in 1998. The final conclusion was that this mission statement was, three years after being proposed, still very much in conformity with the orientations, objectives, priorities and even with the vision of the future which management holds for the organization.

Values

In achieving the Institute's mission, IRDA's administrators, management team and employees share a certain number of values which guide them in decision making and in their work.

These values are:

Quality and rigour of the work

IRDA values work of quality from its personnel, work which is also executed with all due scientific rigour in order to satisfy the needs of its clients, with a high degree of performance, while keeping within budgets and deadlines.

Partnership

IRDA encourages the development of partnerships in the accomplishment of its mission because this allows for value added work, reduces duplications and allows significant technological transfers for each of the partners.

Service

IRDA wants to ensure that all of its work is relevant, in order for its results to fulfill the concrete needs of users.

Responsibility of employees

IRDA believes in the competence of its employees and considers that they are the best judges for determining the conditions which are necessary to accomplish their work, and that they are primarily responsible for their professional development. Managers, after having agreed with them on the content of a project or activity, play chiefly a guidance and support role in the accomplishment of their mandate.

Respect of individuals

IRDA places the highest value on personal interactions based on mutual respect, the acceptance of differences and the absence of any discrimination, according to the *Canadian Charter of Rights* and the "*Charte québécoise des droits de la personne*".

*IRDA mission's is
to provide its members
with the knowledge and
technology necessary for the
protection of the environment
and the development of
agri-food systems.⁷*

⁷ Excerpt from the licensing documents of the Corporation: March 1998

Vision

Considering the competence and enthusiasm of the members of its team, the various tools developed during the few years that the Institute has existed, and the sum of its achievements, the management of IRDA has a vision, which is ambitious but realistic, and which is also the result of a wide consultation, in house as well as with its partners.

This vision can be expressed as follows:

*In 2004,
IRDA will be recognized as
a leader in the agri-environment
field because of its innovative
solutions to promoting a sustainable
agriculture in harmony with its
environment, because of the high
degree of expertise of its
personnel and because of
the strength of its
partnerships.*

Strategic orientations

The reflection exercise led by IRDA's management team, in close consultation with its founding members, was carried out thanks to the collaboration of the institut's employees and the important participation of the board of directors. This exercise led to a series of orientations and priority actions to accomplish, in order to achieve this strategic plan.

The four orientations defined below, and the priority actions which arise from them, are to be seen as a motivating project for the Institute, as well as a challenge for its management, because they present an important answer to a part of the complex problem of sustainable agriculture in Québec, for which research and development can and must provide solutions.

Strategic plan (continued)

Orientation 1

Increase R&D efforts on issues related to animal husbandry (feed, herd management, treatments for solid and liquid manures, etc.), protection of resources (soil, water, air) and the safety and quality of products, while including social, environmental and economic preoccupations.

Priority actions

- Ⓞ Strengthen the scientific team in order to support the three sectors identified above by adding 12 new positions in the scientific team over 3 years;
- Ⓞ Initiate and pursue, in collaboration with partners, a project for measuring the environmental, social and economic impacts of agricultural activities in a significant Québec watershed.

Orientation 2

Develop more sustained relationships with our clientele in order to get to know its needs better, develop an adequate offer of services and increase significant technological transfers.

Priority actions

- Ⓞ Conduct a market analysis;
- Ⓞ Automate technological transfers by defining an appropriate procedure;
- Ⓞ Assign a resource dedicated to technological transfer.

Orientation 3

Identify and implement strategies and tools which will facilitate the development and the strengthening of partnerships, which would allow an increase of 50% in the basic contribution of the Institute's founding members by the sole increase in its research and development activities.

Priority actions

- Ⓞ Solicit the interest of one or several financial institutions to become partners in the financing of research projects carried out with agricultural firms;
- Ⓞ Implement a program of activities centered on agri-environmental issues, taking into consideration the needs of our partners and demonstrating our expertise;
- Ⓞ Implement a research project funding program based on cost-sharing with various partners.

Orientation 4

Equip the institute with a management policy for human and material resources which meets the requirements of science, of technology transfer and of an entrepreneurial management style.

Priority actions

- Ⓞ Draft an employee replacement plan in order to better identify our vulnerabilities in strategic positions, and to ensure continued growth of research and development in the agri-environmental field;
- Ⓞ Prepare a strategy for the permanent training of personnel;
- Ⓞ Review hiring criteria;
- Ⓞ Draft an infrastructure plan for installations and equipment which are state of the art in technology, and adapted to the scientific program.

Conclusion

The implementation of the strategic plan has the goal of providing a framework for the Institute's research and development activities, and of adjusting these activities according to the needs and expectations expressed by the users and by decisional bodies, concerning the establishment of solutions for resolving agri-environmental problems in Québec.

The orientations chosen correspond to the expectations of the members and to the priorities of the Institute, equally from the internal point of view of managing personnel and research projects, as well as from the external point of view of recruiting new members and creating new partnerships.

Finally, particular attention is paid to the importance of developing the tools necessary to support the research teams and technical personnel who will determine the success of our project.



List of acronyms

APA :	Agriculture, pêcheries et alimentation
BAPE :	Bureau d'audiences publiques sur l'environnement
FCAR :	Formation de chercheurs et aide à la recherche
MAPAQ :	Ministère de l'Agriculture, des Pêcheries et de l'Alimentation
MEF :	Ministère de l'Environnement et de la Faune (now called MENV)
MENV :	Ministère de l'Environnement
MIC :	Ministère de l'Industrie et du Commerce
MICST :	Ministère de l'Industrie, du Commerce, de la Science et de la Technologie (now called MIC and MRST)
MRST :	Ministère de la Recherche, de la Science et de la Technologie
UPA :	Union des producteurs agricoles



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