



Integrated Pest Management:

*A Choice for the Future!
A Winning Approach!*



A Reality We Have To Face

Agriculture uses and alters the environment. Since the beginning of this century, intensive production methods have had an impact not only on soil, air and water, but also on flora, fauna and crops, as well as on humans.

The development of pests resistant to pesticides, the establishment of new harmful organisms, chemical residues in the ecosystem, soil degradation and consumer concerns are all incitements to adopt more environment-friendly pest control practices.

History and experience also tell us that to obtain good yields year after year, man must take advantage of the natural resources available in his environment. Results obtained from conservation tillage practices as well as by protecting natural enemies and pollinators are good examples of this.

Towards a Better Future

IPM is an agroenvironmental approach, based on experimentation and observation, that allows us to manage and harvest profitable crops by using the environment as an ally.

Various governments, international food and agricultural organizations and many consumer groups promote the use of this approach in agricultural and ornamental production.

- As of the year 2000, the United States intends to cultivate 75% of its productive land under Integrated Pest Management programs.
- For some years now, fresh and canned fruits and vegetables have been labelled "IPM" in the United States and Europe.
- By adopting its pesticide reduction strategy, called "Stratégie phytosanitaire", the ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec (Quebec Ministry of Agriculture, Fisheries and Food), together with its partners² and the agri-food industry, has also opted for IPM as the key to the future, in its action plan based on shared responsibility of all participants.

Not only is Integrated Pest Management effective, but it will become, in the near future, an indispensable marketing tool.

For more information on Integrated Pest Management and available resources for the development and implementation of IPM programs, contact the agriculture extension office nearest you, or one of the following specialists:

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**Direction de l'environnement et
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 Stratégie
phytosanitaire

Integrated Pest Management

Everyone Wins!



² Union des producteurs agricoles, Fédération des producteurs de pommes du Québec, Fédération des producteurs maraîchers du Québec, Fédération des producteurs de cultures commerciales, Fédération québécoise des producteurs de fruits et légumes de transformation, Canadian Council of Grocery Distributors, Crop Protection Institute, Agriculture and Agrifood Canada, ministère de l'Environnement et de la Faune (Ministry of Wildlife and the Environment), and ministère de la Santé et des Services sociaux (Ministry of Health and Welfare).

Integrated Pest Management (IPM) is a decision-making process that uses all necessary techniques to suppress pests effectively, economically and in an environmentally sound manner¹.



A Six-Step Process

1 • Identifying Friend and Foe

Most living organisms are useful. We can't afford to eliminate everything that moves. In an IPM approach, the first step is to identify and better understand which species are inhabiting our agricultural ecosystems (fields, orchards, greenhouses, etc.).



2 • Monitoring and Evaluating the Situation

For effective decision-making, various parameters such as environmental conditions, pest and beneficial organism populations, and the health and stage of development of crops must be considered. In many fruit and vegetable productions, a regular monitoring of the fields has resulted in a better and reduced use of pesticides without loss of quality or yield.

3 • Using Action Thresholds

The use of action thresholds makes it possible not only to apply control tools such as pesticides at the right time with maximum effectiveness, but also to make significant savings by treating only when justified.



4 • Managing the Ecosystem

Many pests live along field margins, in neighbouring crops, in crop residues and in the soil. They can also be transmitted by farm equipment and personnel. Use of tolerant or resistant cultivars, modification of the density and date of sowing, adoption of ridge tillage, management of windbreaks and ditches, disinfection of equipment and appropriate rotation of crops are all ways to make the ecosystem more favourable to crops and beneficial organisms and unfavourable to insect pests, pathogens and weeds.

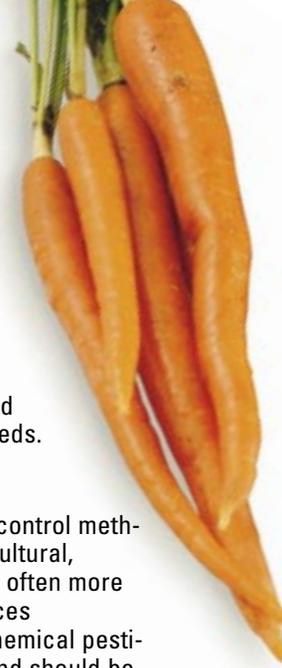
5 • Integrating Control Methods

Integrating the various preventative or curative control methods available, whether biological, mechanical, cultural, genetic or chemical, ensures a more lasting and often more efficient reduction of pest populations and reduces the risks associated with the exclusive use of chemical pesticides. Pesticides are just a component of IPM and should be used only when the situation calls for it.

6 • Evaluating the Efficiency and Consequences of Our Actions

Every decision-making process implies the evaluation of results. The use of control plots, post-treatment scouting as well as crop quality and yield monitoring allow us to measure the efficiency and profitability of our actions, and to gradually improve our approach.

Some Real-Life Examples...



Broccoli can tolerate a higher number of caterpillars before blossoming than after; by delaying treatments, their predators then have the opportunity to establish themselves naturally. Later, the use of a biological insecticide containing *Bacillus thuringiensis*, which does not affect beneficial organisms, allows, in many cases, the obtainment of a good crop with minimal use of chemical pesticides.



In corn, the application of herbicides directly on rows combined with mechanical weeding between rows can reduce by two thirds the amount of herbicide needed. This practice has the added advantage of aerating the soil.



In the case of cruciferous crops, 3 to 4 year rotations with legumes and small grains reduce clubroot infestations and can increase yield by more than 25%, which may double net profit per hectare. Rotations are also highly effective for reducing Colorado potato beetle populations in potato fields.



Keeping between 12 and 15 stems per metre of row in raspberry fields improves aeration and penetration of sunlight in the vegetation. This, in turn, reduces the level of humidity in the crop and decreases the risk of propagation of insects and fungous diseases. In addition, as soon as harvesting is completed, removal and destruction of old stems, which often carry insects, mites and diseases, revitalizes the plantation and eliminates numerous sources of contamination.



With the many biological tools available on the market, including various predators and parasitoids, it is

now possible to efficiently manage most of the destructive pests affecting

greenhouse vegetable production. Environmental control is also a very effective way to reduce the incidence of diseases in greenhouses.



¹ As defined by the Expert Committee on Integrated Pest Management, a working group composed of representatives from various provinces, the Canadian government, and the pest management industry.