INTEGRATED PEST MANAGEMENT (IPM) STRATEGIES

IPM is defined as a decision-making process that uses all necessary techniques to manage pests effectively, economically and in an environmentally sound matter.

The first Canadian Apple IPM program was put in place in Nova Scotia apple orchards in the 1940's. A Canadian IPM strategy was developed by Agriculture Canada in 1985. In 1997, the IPM concept was integrated in the British Columbia *Pesticide Control Act*.

The implementation of an IPM program is a six-step process:

- Managing the ecosystem to prevent pests (*e.g. sanitation, cultivar, rotations, fertilization*)
- Identifying friend and foe (*know what's in your fields and the potential impact)*
- Monitoring and evaluating the situation *(e.g. environmental conditions, pest and beneficials' populations, crop development)*
- Using action thresholds
- Integrating control methods (*e.g. preventative and curative; biological, mechanical, cultural, genetic, chemical*)
- Evaluating the effects and efficacy of management decisions (*e.g. post-treatment scouting, crop quality and yield monitoring, record keeping*)

IPM is used:

- To reduce pesticides application and costs (*mainly during first years of adoption*)
- To produce safe, high quality food *(with less pesticide residue)*
- To remain in the business and access new markets (*consumers' demand, green labelling – e.g. Wegmans IPM brand*)
- To reduce pesticide resistance (*by integrating control methods with various mode of action*)
- To reduce risk for human health and the environment (*which includes your own family and surroundings*) and much more...

Current IPM initiatives in Canada

- Ontario's Food System 2002
    - Funding plan for development and implementation of IPM and other more sustainable pest control programs
- Ontario's Environmental Farm Plan Program (since 1993)
    - Grower driven, with government funding
    - Helps growers to evaluate and improve their agro-environmental practices
    - Involved until now approx. 21,000 farms
    - Similar program expected in the Maritimes and Alberta

- Québec's Pesticide Reduction Strategy (established in1992)
    - Driven by MAPAQ and supported by all stakeholders, including growers
    - Aims at reducing by 50% the amount of pesticides in agriculture by year 2000
    - Promotes the adoption of IPM by growers
    - Communication and training

- Clubs d'encadrement techniques et clubs agro-environnementaux
    - Government funded program, supporting implementation of sound agricultural practices by grower groups (*scouting, etc*.)
    - Involves currently more than 1,500 farms

- BC has a long experience in IPM strategies
    - IPM started during the mid 1960's, using counts of both predaceous and damaging levels of mites
    - BC was the first province practicing IPM due to pesticide resistance problems
    - The rate of adoption of IPM is over 75% in the tree fruit industry
    - BC orchardists have been involved in the Sterile Insect Release Program since 1990 (to eliminate the codling moth)

- BC's *Greenprint* Food Production System (1998)
    - Certification program managed by the Professional Pest Management Association of BC and BCMAF
        - Aims at producing food with high standard of safety, sound environmental production practices and the use of IPM

- Nova Scotia has been involved with IPM since the 1940's
    - A high percentage of Nova Scotia growers use some measure of IPM:
        - First Level 1 IPM: 95%
        - Second Level and Third Level 3 IPM: 25%-40%

- PMRA's IPM Working Groups (WG)
    - Involve all stakeholders, on a voluntary basis
    - Aim at developing national and/or regional IPM strategies
    - Identify needs and help develop, access and implement new IPM-compatible pest control tools
    - Past and current WG in horticulture
        - Potato late blight
        - Colorado potato beetle
        - Apple
        - Cranberry
        - Methyl-bromide replacement in food processing
        - Urban landscape (incl. *Healthy Lawns Action Plan*)

- World Wildlife Fund Canada's Plan for a Sustainable Agriculture Fund
    - Proposes a national target of 50% of Canadian farm acreage under reduced pesticide use by the year 2010
        - 40% in bio-intensive IPM (vs. 6 %)
        - 10% under certified organic (vs. 1 %)
    - Recommends an investment of $180 million annually over 10 years

Adoption of IPM in Canada

- Expert Committee on Integrated Pest Management Survey of IPM in Canada (1997)
    - Covered apple, canola, carrot and potato
    - A fairly large proportion of growers applied IPM strategies and techniques, but these varied from province to province and crop to crop
    - Baseline for further assessment

- IPM in the greenhouse sector
    - Bio-intensive IPM is now the standard

Evolution of IPM implementation

- First-level IPM
    - Rely largely on rational use pesticides, based on monitoring programs and use of thresholds
    - Most growers using IPM are at this Level
- Second-level IPM
    - Rely mainly on the integration of non-chemical, low-risk and "IPM-compatible" tools
    - Bio-intensive and bio-rational IPM
- Third-level IPM
    - Integration of combined pest management with entire system of crop production
    - E.g.: integrated crop management, integrated fruit production, organic farming
- Fourth-level IPM
    - Blending concerns of all groups having a vital interest in pest management
    - E.g.: IPM certification, recognition

Challenges to the future development of IPM

- Education
    - Of consumers and public (benefits of IPM, food quality vs. cosmetic appearance, etc.)
    - Of growers (awareness of the importance and concept of IPM, acceptance of changes, risk and input involved, etc.)
    - Of regulators and researchers (awareness of growers' needs)

- Research
    - Lack of viable, scientifically proven and grower accepted non-chemical alternatives
    - Need for more interdisciplinary approach and "implementable" integrated strategies
    - Need for increased commitment to long-term research

- Legislation/regulation
    - Intensification of the international harmonization of registration processes
    - Need to facilitate and support minor uses and reduced-risk products registrations
    - Recognition/certification of IPM production
    - Need to tailor crop insurance to address with risks associated with IPM

New chemistry is more targeted, with little residual activity. New chemistry is very effective but only for few pests. For most crops, we deal with a pest complex of several pests so in some instances, based on pest monitoring, we may actually need more applications of more products than we did in the past. The total impact of this use will likely still be less than with the conventional products.

For this reason, it is important to have access to a complete range of products that are IPM compatible to replace the current broad spectrum products. It is of limited value to have access to only one or two new products since industry would still have to use broad spectrum products for the remainder of the crops.

As part of their commitment to IPM, CHC apple growers are developing national Integrated Fruit Production (IFP) guidelines (principles and standards for Canadian-grown apples). World Wildlife Fund Canada is assisting in the initiative. IFP is a toolkit that will enable Canadian apple producers to bring excellent quality fruit to market, both in the domestic market and in export markets, that satisfies consumer expectations, meets increasingly rigid grocery retailer customer specifications for food safety, enhances the orchard environment and contributes to improved bottom lines for growers.