

Another approach to biological control, classical biological control, involves the importation of natural enemies to control pests which were introduced into Canada and were able to proliferate unchecked in the absence of their natural enemies. This approach, which involves lengthy testing before releases are made, has resulted in some significant successes in controlling certain insect pests and weeds.

Yet another approach, similar to the one described above, involves the use of endemic enemies of pests through the adoption of strategies that increase their effectiveness in controlling the target pest. These enemies may be parasitoids or predators, but sometimes they are microorganisms -- viruses, bacteria, fungi, and protozoans -- and the methods used to apply them may be similar to those used to apply conventional chemical pesticides. Microbial pesticides are typically highly target specific which makes them desirable from an environmental safety perspective but less attractive from a commercial standpoint (i.e., limited sales potential except for the control of a few organisms such as the spruce budworm). In Canada only a few such agents are currently registered for use and a few more are in the final stages of the registration process. There is potential for much greater use of naturally occurring microorganisms for the control of pests. This is also another area in which the application of the biotechnologies is expected to have a great impact.

With the advent of synthetic chemical pesticides powerful new tools became available that enabled significant increases in the quality and efficiency of production of many crops. Naturally these attracted, and still attract, the attention of agricultural researchers, but it wasn't long before it was realized that many of the available synthetic pesticides were a mixed blessing.

Even before there were serious concerns about the effects of synthetic pesticides on human health, it had become clear as early as the 1940s that many pesticides had undesirable effects on non-target organisms and eventually became useless as the target pests developed resistance to them. This led to the development of more intelligent use of pesticides, the "modified spray programs", that eventually developed into what are commonly called integrated pest management or IPM programs today. The basic idea behind IPM programs is to use pesticides as little as possible and only when absolutely necessary, and to incorporate a maximum of biological and cultural controls. IPM is not so much a destination as a way of travel with the ultimate goal being the