Article Charles Vincent – 2021 Lifetime Achievement Awards of Excellence

Integrated Pest Management Symposium (Colorado, USA), Feb. – March 2022

A Rich Career at the Forefront of Agricultural Pest Management

His name is well known in scientific and academic circles studying agriculture and in organizations dedicated to agricultural pest management, both in America and in Europe. This scientist is involved as much in research as in sharing knowledge on pest management without insecticides and has made an indelible mark on the way fruit is produced. Dr. Charles Vincent, a retired researcher from Agriculture and Agri-Food Canada (AAFC) in Quebec, has just received a new award that crowns the efforts of a career spanning nearly 40 years. The 10th IPM (Integrated Pest Management) Symposium is presenting him with one of three Lifetime Achievement Awards of Excellence for 2021.

CHARLES VINCENT IN BRIEF

In 1983, Dr. Charles Vincent began his research career with AAFC with the ultimate goal of discovering alternatives to chemical insecticides for managing fruit pests. This was a very cutting-edge idea several decades ago, when sustainable development was not as popular as it is today.

Over the years, he has made his mark by developing pest management methods that have reduced the amounts of chemical insecticides used in North America and around the world. In Canada and internationally, Dr. Vincent is a highly involved and respected scientific leader. His career is marked by discoveries and high-quality writings, as well as a strong dedication to knowledge sharing. The hundreds of conferences and presentations he has given or co-organized have contributed greatly to the propagation of a new vision of pest management that can be effective through means other than conventional insecticides.

HIS HIGH-IMPACT DISCOVERIES

During his career, Dr. Charles Vincent has been mainly interested in three types of widely grown fruits: apples, blueberries and grapes. His discoveries in insect management continue to make a big difference in limiting insecticide residues in the environment.

Apples

One of the most damaging pest to apple trees is the codling moth (*Cydia pomonella*). Its larvae feed on fruits and can destroy a crop in a few weeks. In collaboration with BioTepp Inc., Dr. Vincent developed Virosoft CP4, a highly effective biopesticide that was the first viral insecticide for agricultural use to be registered in Canada in 2000. It has also been registered in the United States because, in addition to being effective in hot and humid Canadian climates (Quebec, Ontario and British Columbia), it is also effective in the hot and dry climates of the American West (Washington, Oregon, Idaho, Utah, Ohio and Michigan).

This viral biopesticide has been used to replace conventional insecticides on thousands of hectares of orchards in North America each year for over 20 years.

Blueberries

The blueberry maggot (*Rhagoletis mendax)* is the most significant insect pest in highbush and lowbush blueberry. Dr. Vincent's research has shown that all larvae and pupae of *R. mendax* die after a few days of exposure to extreme cold. This discovery led the Canadian Food Inspection Agency (CFIA) to change the Canadian post-harvest regulation for managing this fly. The CFIA reduced the mandatory storage quarantine time for reusable blueberry shipping containers. Regulatory cold storage was reduced from 40 days at 0°C to 4 days at -20°C. This great saving in time and energy is of monetary benefit to processors, growers and consumers.

Highbush blueberries can also be affected by a disease caused by phytoplasmas (microorganisms) transmitted by leafhoppers (insects). In collaboration with AAFC scientists in Saskatoon and Kentville, Dr. Vincent recently developed a rapid test to detect the presence of this disease in plants. This allows for the identification of affected plants within a few hours and their removal to prevent contagion. Again, no insecticides are required.

Vines

One excellent way to manage insect and mite pests that attack vines is to encourage the presence of their natural enemies. Natural enemies are important allies in grape production because they feed on or parasitize pests and prevent them from proliferating. However, insects and other predatory organisms can be difficult to identify.

Recognizing this problem, Charles Vincent joined forces with three AAFC research colleagues and other partners to create a comprehensive guide to identifying

vineyard pests and predators—the Guide to the Key Arthropods of Vineyards of Eastern Canada, published in French and English in 2019. This guide presents in detail nearly 40 pests as well as 20 of their natural enemies, with excellent photos for easy identification. Encouraging the presence of predatory arthropods will reduce the need for insecticides in vineyards and make production more sustainable.

KNOWLEDGE TRANSMITTED ADMIRABLY

Dr. Charles Vincent's excellence in his career is also due to the extent of his involvement in knowledge sharing. He has been involved in all aspects of scientific writing—more than 600 documents of all kinds, including the first book in French on biological control in 1992 and the first book on physical control in plant protection in 2000—but also in more than 600 conferences for various audiences, both scientific and non-scientific, even including presentations with plain-language content for young people.

He has mentored more than 40 graduate students in three universities and supervised the internships of more than 100 students from several universities. He has fostered collaboration between researchers from different countries, including by directing the publication of 10 volumes of their research results. He has even passed on his passion for insects to the general public and to young people as one of the founding members of the Montreal Insectarium, which opened in 1990. With 400,000 visitors per year, the Insectarium plays an immense role in introducing the public to knowledge of insects.

This short overview of his career allows us to better understand why Dr. Charles Vincent has received this international recognition. The Lifetime Achievement Awards of Excellence will be celebrated in February–March 2022 in Denver, Colorado, US, during the 10th edition of the IPM Symposium.

Figure legend: Charles Vincent in his office, behind a pile of books and technical bulletin that he edited throughout his career (Photo Cezarina Kora, 2019)

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