Four decades of IPM Research onstage, backstage and offstage

Charles Vincent (Retired)

Saint-Jean-sur-Richelieu Research and Development Centre
Agriculture Agri-Food Canada, Saint-Jean-sur-Richelieu, QC, Canada

Denver, Colorado, 3 March 2022


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WEST
VIRGINIA
Washington
KENTUCKY

After working four decades as a scientist in agricultural entomology, I became convinced that science is like a theather.

Onstage- Professional activities apparent to all

1) Scientific publications
2) Oral presentations before various audiences
3) Acknowledging the work of others

Onstage- Professional activities apparent to all

Scientific publications are a defining factor because they are visible and permanent elements.

One should aim for quality and quantity of publications.

Metrics. Downloads (intention) and citations (use).

Annu. Rev. Entomol. 2003. 48:261–81
doi: 10.1146/annurev.ento.48.091801.112639
First published online as a Review in Advance on August 27, 2002

MANAGEMENT OF AGRICULTURAL INSECTS WITH PHYSICAL CONTROL METHODS*

Charles Vincent,[1] Guy Hallman,[2] Bernard Panneton,[1] and Francis Fleurat-Lessard[3]

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[3]*Laboratory for Post-Harvest Biology and Technology, INRA, 71 Edouard Bourleaux Avenue, P. O. Box 81, F-33883 Villenave d'Ornon, France; e-mail: francis.fleurat-lessard@bordeaux.inra.fr*

Key Words integrated pest management, mechanical control, pneumatic control,

Essential Oils in Insect Control: Low-Risk Products in a High-Stakes World

Catherine Regnault-Roger,[1] Charles Vincent,[2,*] and John Thor Arnason[3]

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[2]Centre de Recherche et de Développement en Horticulture, Agriculture et Agroalimentaire Canada, Saint-Jean-sur-Richelieu, Quebec J3B 3E6, Canada; email: charles.vincent@agr.gc.ca

[3]Faculty of Science, University of Ottawa, Ottawa, Ontario K1N 6N5, Canada; email: John.Arnason@uOttawa.ca

Annu. Rev. Entomol. 2012. 57:405–24

First published online as a Review in Advance on September 19, 2011

Keywords

biopesticide, botanical, terpenes, phenolics, repellent, fumigant

Abstract

Annual Review of Entomology

Entomological Opportunities and Challenges for Sustainable Viticulture in a Global Market

Kent M. Daane,[1,*] Charles Vincent,[2] Rufus Isaacs,[3] and Claudio Ioriatti[4]

[1]Department of Environmental Science, Policy, and Management, University of California, Berkeley, California 94720-3114; email: kdaane@ucanr.edu

[2]Saint-Jean-sur-Richelieu Research and Development Centre, Agriculture Agri-Food Canada, Saint-Jean-sur-Richelieu, Quebec J3B 3E6, Canada; email: charles.vincent@agr.gc.ca

[3]Department of Entomology, Michigan State University, East Lansing, Michigan 48824; email: isaacsr@msu.edu

[4]Technological Transfer Center, Fondazione Edmund Mach, San Michele all'Adige, Trento 38010, Italy; email: claudio.ioriatti@fmach.it

Annu. Rev. Entomol. 2018. 63:193–214

The *Annual Review of Entomology* is online at

Keywords

grape pest management, global trade, invasive species, vineyard

Annual Review of Entomology

Blueberry IPM: Past Successes and Future Challenges

Cesar Rodriguez-Saona,[1,*] Charles Vincent,[2] and Rufus Isaacs[3]

[1]Department of Entomology, Rutgers University, New Brunswick, New Jersey 08901, USA; email: crodriguez@njaes.rutgers.edu

[2]Saint-Jean-sur-Richelieu Research and Development Centre, Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, Quebec J3B 3E6, Canada; email: charles.vincent2@canada.ca

[3]Department of Entomology, Michigan State University, East Lansing, Michigan 48824, USA; email: isaacsr@msu.edu

Annu. Rev. Entomol. 2019. 64:95–114

The *Annual Review of Entomology* is online at ento.annualreviews.org

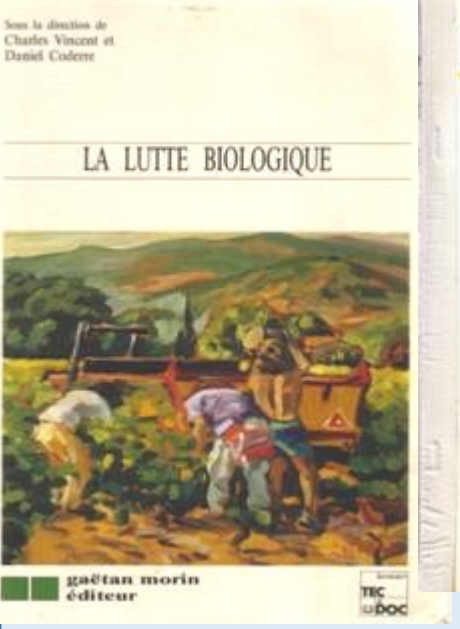
https://doi.org/10.1146/annurev-ento-011118-112147

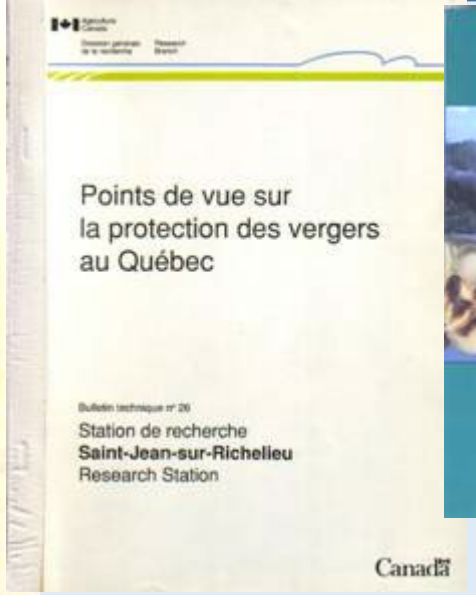
Keywords

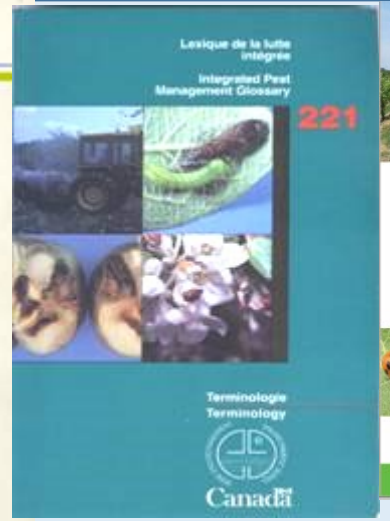
Vaccinium, blueberry pest management, globalization, invasive species, maximum residue limits, MRLs

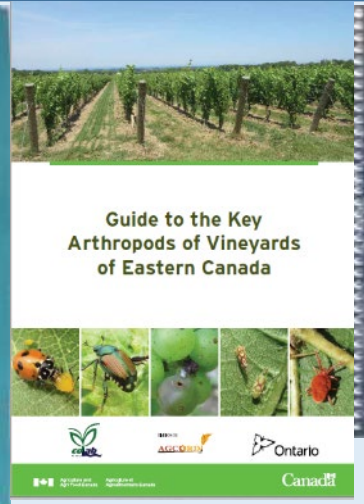
Abstract

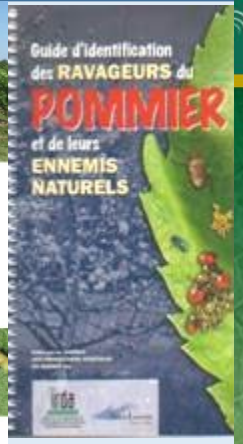
Blueberry is a crop native to North America with expanding production and


Sous la direction de
Charles Vincent et
Daniel Coderre
LA LUTTE BIOLOGIQUE
gaëtan morin
éditeur


Points de vue sur
la protection des vergers
au Québec
Station de recherche
Saint-Jean-sur-Richelieu
Research Station
Canada


Lexique de la lutte intégrée
Integrated Pest Management Glossary
221
Terminologie
Terminology
Canada


Guide to the Key
Arthropods of Vineyards
of Eastern Canada
Ontario
Canada


Guide d'identification
des RAVAGEURS du
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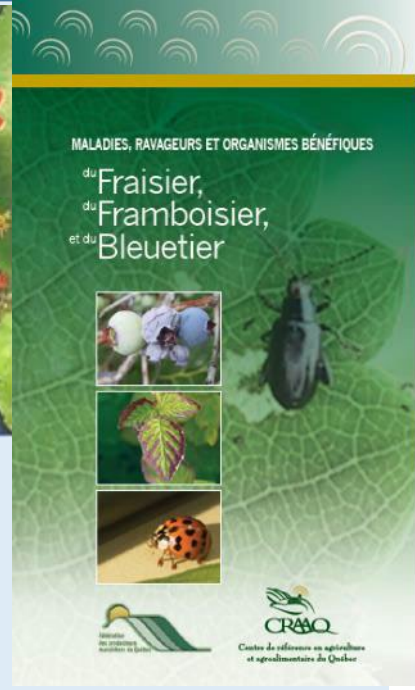
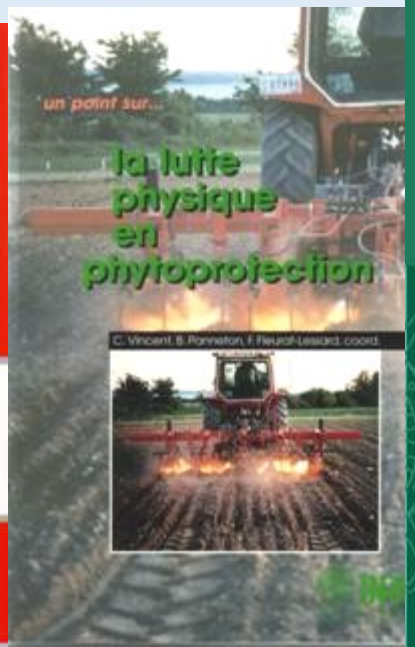
et de leurs
ENNEMIS
NATURELS

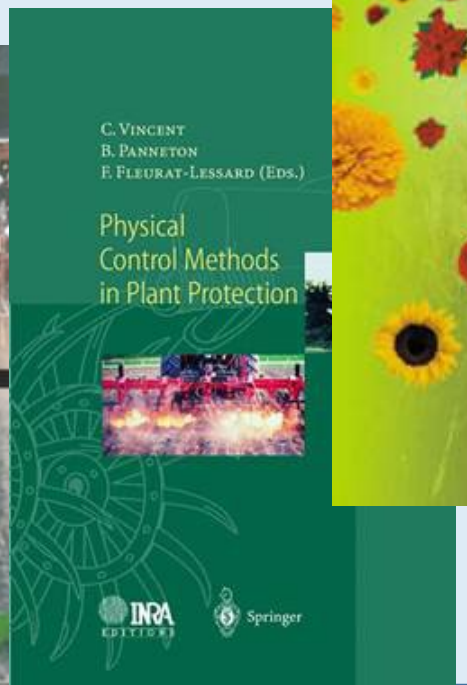

MALADIES, RAVAGEURS ET ORGANISMES BÉNÉFIQUES
du Fraisier,
du Framboisier,
et du Bleuetier
CRAAQ

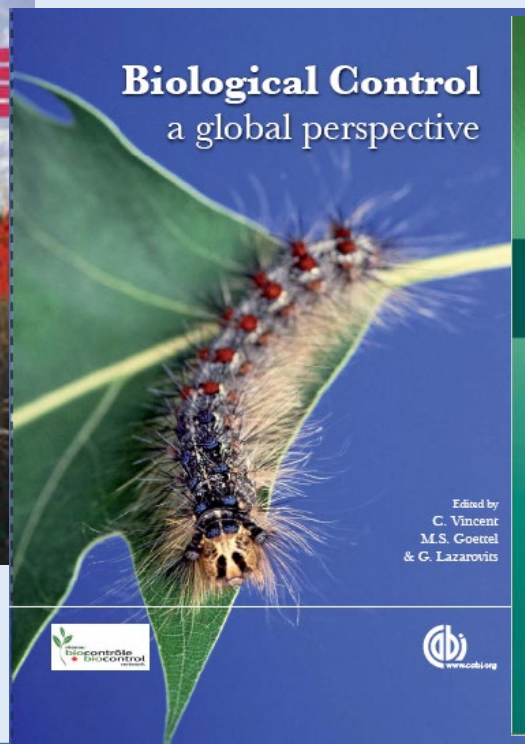

Guide d'identification
MALADIES, RAVAGEURS
ET ORGANISMES BÉNÉFIQUES
DES ARBRES FRUITIERS
irda
Agriculture et Agroalimentaire Canada
Agriculture and Agri-Food Canada
CRAAQ

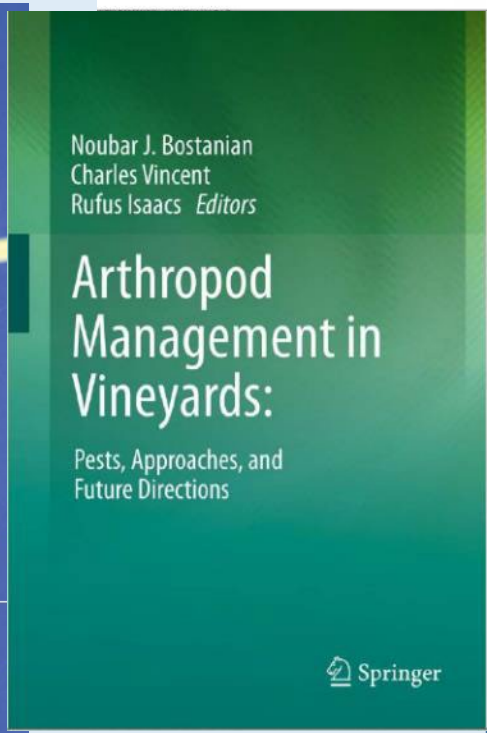

Biopesticides
d'origine
végétale


Volume 97
Number 4
2000
EUROPEAN
JOURNAL OF
ENTOMOLOGY


un point sur...
la lutte physique en phytoprotection
C. Vincent, B. Panneton, F. Fleurat-Lessard, coord.


C. Vincent
B. Panneton
F. Fleurat-Lessard (Eds.)
Physical
Control Methods
in Plant Protection
INRA
Springer


Biological Control
a global perspective
Edited by
C. Vincent
M.S. Goettel
& G. Lazarovits


Noubar J. Bostanian
Charles Vincent
Rufus Isaacs Editors
Arthropod
Management in
Vineyards:
Pests, Approaches, and
Future Directions
Springer

Onstage- Professional activities apparent to all

Oral presentations before various audiences provide opportunities for a human touch

Metrics. How many people in the room

Onstage- Professional activities apparent to all

Acknowledging the work of others

Team work is about humans

Onstage- Professional activities apparent to all

Choosing a research subject

“Do not go where the path may lead,
go instead where there is no path and leave a trail.”
(Ralph Waldo Emerson)

I go where the puck goes (Wayne Gretsky)

In other words:
We don't repeat, we research

Backstage- Professional activities apparent to some

1) Reading scientific publications (mastery of a field)
2) Writing scientific articles and grant proposals
3) Reviewing scientific manuscripts and grant proposals
4) Committee work
5) Acknowledging the work of others
6) Choosing a research subject
7) Above all, thinking

Backstage- Professional activities apparent to some

Insects that cannot be reared or multiplied by rearing

Plum curculio (*Conotrachelus nenuphar)* Coleoptera, Curculionidae
Apple sawfly (*Hoplocampa testudinea*) Hymenoptera, Tenthredinidae
Blueberry maggot (*Rhagoletis mendax*) Diptera, Tephtitidae

37 Madex and Virosoft, Viral Biopesticides for Codling Moth Control

CHARLES VINCENT[1], MARTIN ANDERMATT[2] AND JOSÉ VALÉRO[3]

[1]Horticultural Research and Development Centre, Agriculture and Agri-Food Canada, 430 Gouin Blvd., Saint-Jean-sur-Richelieu, Quebec J3B 3E6, Canada, vincentch@agr.gc.ca; [2]Andermatt BIOCONTROL AG, Stahlermatten 6, CH-6146 Grossdietwil, Switzerland, andermatt@biocontrol.ch; [3]BioTEPP, 895 Chemin Benoit, Mont-St-Hilaire, Quebec J3G 4S6, Canada, josevalero@videotron.ca

Overview: This chapter relates the research and development of two granulovirus-based insecticides to manage the codling moth, *Cydia pomonella*, which is a worldwide pest of a number of fruit crops. Madex® and Virosoft$^{CP4®}$ were registered in Switzerland and Canada, respectively.

The Codling Moth

The codling moth, *Cydia pomonella* (Lepidoptera: Tortricidae), is a worldwide pest of a number of crops, including apples, pears and walnuts. Its literature is considerable, as the Codling Moth Information Support System indexes ca. 6500 references (CMISS-2005). Standard commercial management practices consist of several sprays per season of synthetic pesticides applied against larvae. Among alternatives to insecticides, parasites and predators have been studied but their effects are below expectations in commercial situations. Mating disruption has been successfully implemented in several apple-producing regions. However, this method is relatively costly and needs an environmentally friendly back-up method in case of failure.

The Baculovirus

Baculoviruses are DNA viruses that naturally infect arthropods, chiefly insects. One of their features is that they infect only larval feeding stages, in which they form proteinaceceous structures called occlusion bodies (OBs). A second feature is that many baculoviruses contain multiple virions (genomes) in each infective OB.

Acaricidal Properties of a *Chenopodium*-Based Botanical

H. CHIASSON,[1] N. J. BOSTANIAN,[2] AND C. VINCENT[2]

J. Econ. Entomol. 97(4): 1373–1377 (2004)

ABSTRACT The emulsifiable concentrate UDA-245 [25% EC (vol:vol)], based on an essential oil extract from *Chenopodium ambrosioides* variety *ambrosioides*, a North American herbaceous plant, was compared with commercially available pesticides for their effectiveness to control the adult stage and egg hatch of the twospotted spider mite, *Tetranychus urticae* Koch (Acari: Tetranychidae) and the European red mite, *Panonychus ulmi* (Koch) (Acari: Tetranychidae). After a laboratory bioassay with adult twospotted spider mites, a 0.5% concentration of UDA-245 was more effective than 0.7% (AI) of neem oil (Neem Rose Defense). After a similar bioassay with the European red mite, a 0.5% concentration UDA-245 was as effective as 0.006% (AI) of abamectin (Avid). UDA-245 at 0.5% significantly reduced egg hatch of the twospotted spider mite, 5 and 9 d after treatment and of the European red mite 6 d after treatment. Egg hatch was significantly lower using 0.006% (AI) of abamectin, 0.7% of neem oil, and 1.0% insecticidal soap than UDA-245. Residual tests indicated that UDA-245 may be persistent in the environment only for a few hours. Only 23% mortality was noted when mites were introduced on bean leaves 1 h after treatment with a 2% concentration of UDA-245. At the recommended dose of 0.5%, UDA-245 was not considered phytotoxic for most plants tested, i.e., lettuce, roses, and tomatoes. Results suggest that a greenhouse integrated pest management program using UDA-245 could effectively and selectively control mite infestations by treating "hot spots" with negligible effect on biological control agents when treating before introduction or when natural enemies are absent.

US 20050013885A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2005/0013885 A1**

(43) **Pub. Date: Jan. 20, 2005**

Chiasson

(54) **EXTRACTS DERIVED FROM CHENOPODIUM PLANTS AND USES THEREOF**

(76) Inventor: **Helene Chiasson**, Saint-Jean-sur-Richelieu (CA)

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999 PEACHTREE STREET
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(21) Appl. No.: **10/467,696**

(22) PCT Filed: **Jul. 14, 2003**

(86) PCT No.: **PCT/CA03/01002**

Related U.S. Application Data

(63) Continuation-in-part of application No. 10/195,131, filed on Jul. 12, 2002.

(30) **Foreign Application Priority Data**

Jul. 12, 2002 (US)..... 10/195,131

Publication Classification

(51) **Int. Cl.**[7] **A61K 35/78**; A01N 65/00

(52) **U.S. Cl.** **424/764**

(57) **ABSTRACT**

The present invention relates to pesticides. More particularly, the present invention relates to botanical pesticides. In particular, the present invention relates to compositions and methods for controlling plant-infesting pests with plant extracts and notably with compositions comprising oil extracts derived from *Chenopodium* sp. plant material. The invention further relates to compositions comprising such extracts as pesticidal compositions and providing the advantages of minimal development of resistance thereto, minimal toxicity to mammals, minimal residual activity and environmental compatibility. The pesticidal compositions of the present invention comprises α-terpinene, ρ-cymene, limonene, carvacrol, carveol, nerol, thymol, and carvone.

In case you were unable to join (in person or on the conference line) the company meeting today, I wanted to share with you the good news. The EPA on April 16th 2008 registered the active ingredient "Extract of Chenopodium ambrosioides var ambrosioides". At the same time, EPA approved QRD400, 25EC formulation for use in ornamentals.

Sarah Reiter, Director, Marketing, AgraQuest, Inc.
1540 Drew Avenue, Davis, CA 95618
(530) 750-0150 x. 144/(530) 400-3699 cell sreiter@agraquest.com

Bayer CropScience

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Communications
40789 Monheim
Germany
Tel. +49 2173 38-3034
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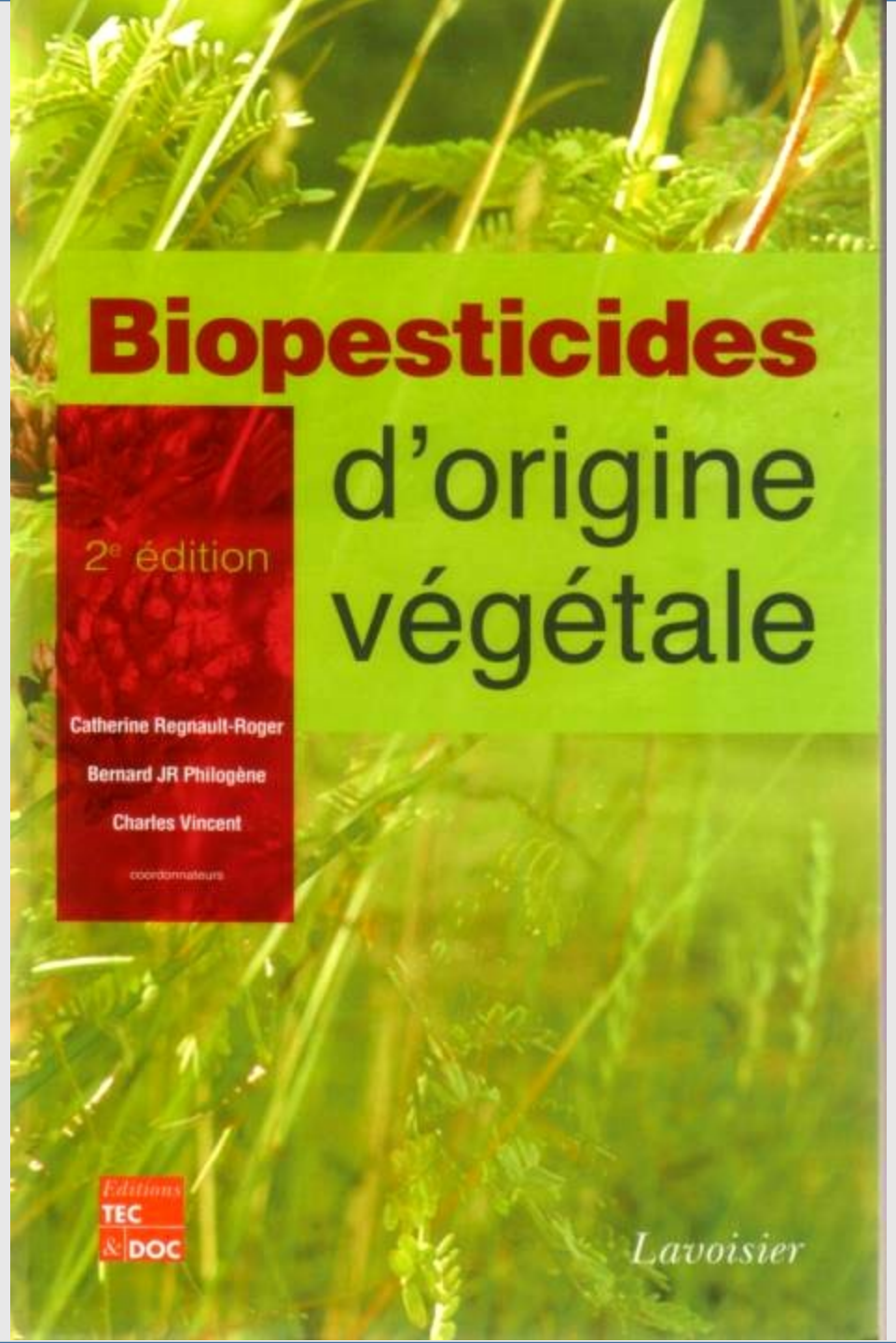
News Release

Further milestone to strengthen the fruits and vegetables business:

Bayer CropScience acquires US-based biological company AgraQuest for close to US$ 500 million

- Unique technology platform and promising biological pipeline
- Wide range of established green product brands
- Purchase includes R&D and manufacturing facilities

Monheim, July 3, 2012 – Bayer CropScience announced today that it has signed an agreement to purchase AgraQuest, Inc. for a purchase price of US$ 425 million



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Recherche, développement et commercialisation de Facin®, un biopesticide d'origine végétale Étude d'un cas de réussite en Amérique du Nord

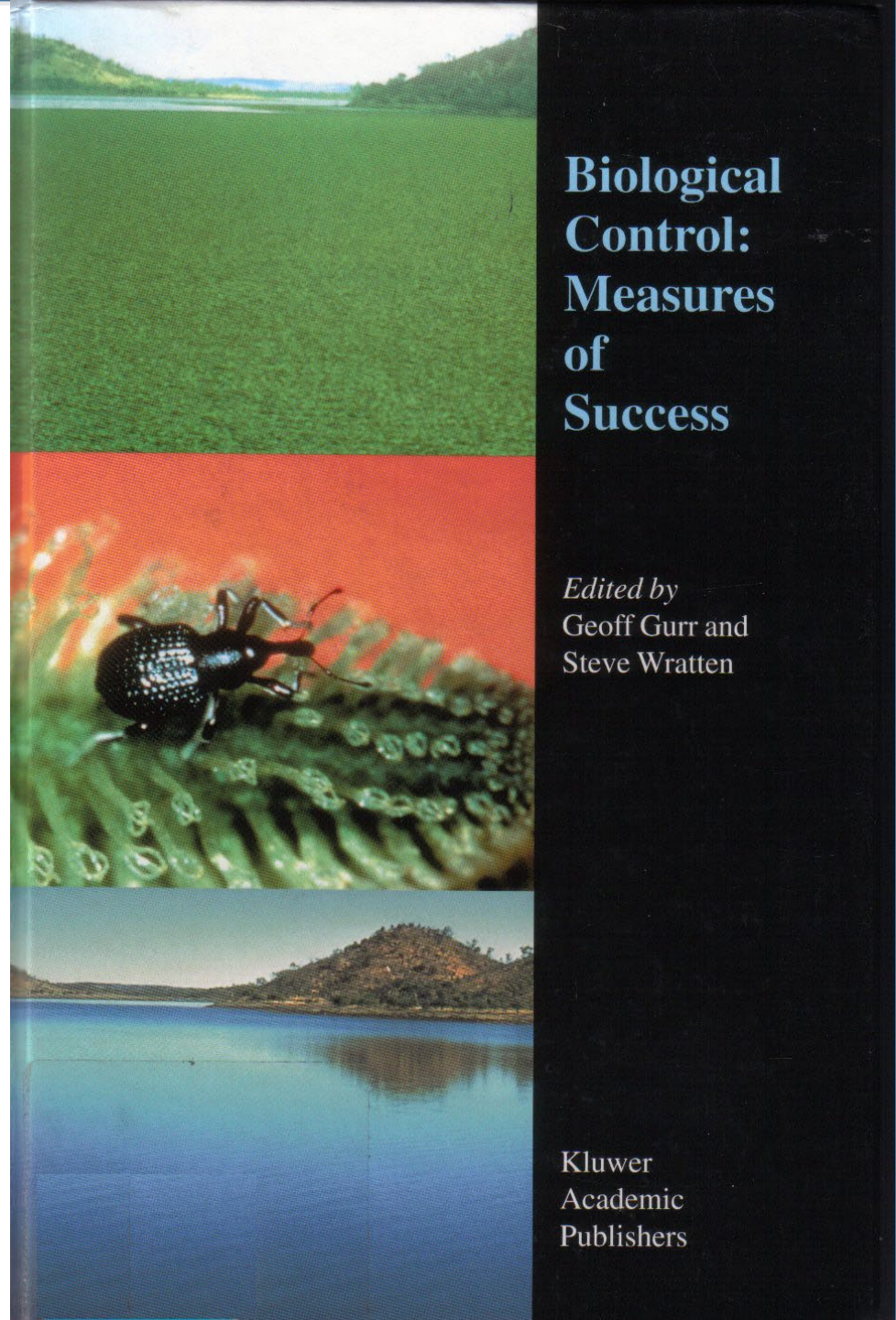
Hélène Chiasson, Urgel Delisle,
Noubar J. Bostanian et Charles Vincent

Les plantes, au cours de leur co-évolution avec les insectes, ont élaboré une myriade de composés secondaires, soit constitutifs, soit induits (Walling, 2000). Ces composés leur permettent de se défendre contre les attaques récurrentes des phytophages. Ainsi, des extraits de tanaisie (*Tanacetum vulgare*) incorporés à leur nourriture causent de la mortalité chez des larves sensibles et résistantes (aux insecticides) de la tordeuse à bandes obliques (*Choristoneura rosaceana*) tandis des résidus d'extraits de tanaisie empêchent la ponte des femelles (Larocque

Success

Technical efficacy
Practical efficacy
Commercial viability
Sustainability
Public benefit

(Gelernter & Lomer 2000 p. 299)

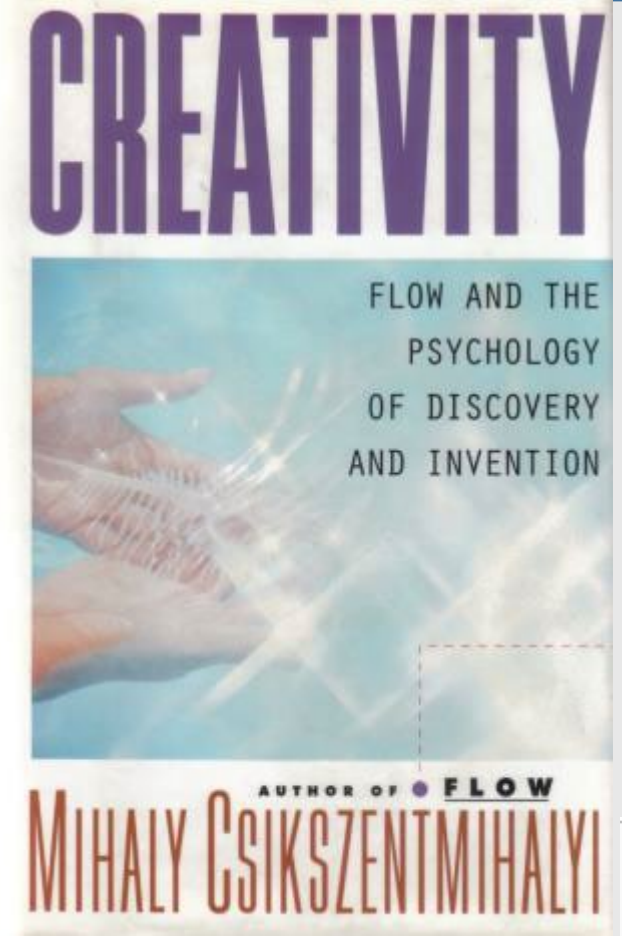


Backstage- Professional activities apparent to some

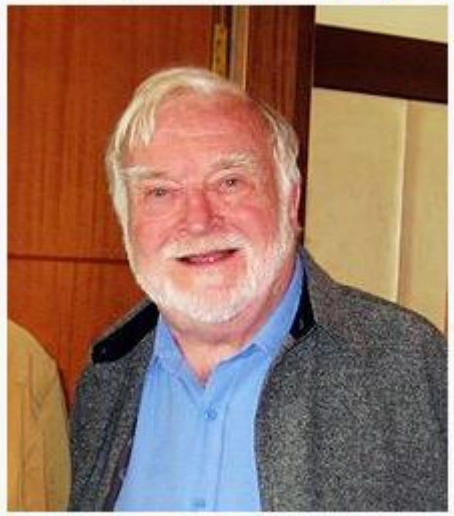
Writing scientific publications is a backstage process that requires focus and commitment

One has to be creative and rigorous

Judged by anonymous reviewers



Mihaly Csikszentmihalyi



Csikszentmihalyi on 5 June 2010 (aged 75)

In his seminal work, *Flow: The Psychology of Optimal Experience*, Csíkszentmihályi outlines his theory that people are happiest when they are in a state of *flow*— a state of concentration or complete absorption with the activity at hand and the situation. It is a state in which people are so involved in an activity that nothing else seems to matter.[9] The idea of flow is identical to the feeling of being *in the zone* or *in the groove*. The flow state is an optimal state of *intrinsic motivation*, where the person is fully immersed in what he is doing. This is a feeling everyone has at times, characterized by a feeling of great absorption, engagement, fulfillment, and skill—and during which temporal concerns (time, food, ego-self, etc.) are typically ignored.[9]

View from my office window, 24 December 2018

30-minute walk weekdays from 12h30 to 13h00

Backstage- Professional activities apparent to some

Core activities: Read, Think, Write

As a profession we've gotten into a position where we work every night, we read theses, we review for journals, we sit on grant panels, all for free. I basically have two full-time jobs."

Fiona Simpson, a cancer researcher at the University of Queensland, in Woolston- The blight of burnout and impostor syndrome (Nature, 25 November 2021)

Backstage- Professional activities apparent to some

Some lessons learned

1- Think a lot **(difficult)**
2- Think long term **(long term financing)**
3- Attempt original solutions **(risk)**
4- Confront the results with reality **(disappointments)**
5- Do not expect success all the time **(never give up)**

Offstage- Personal activities apparent to some

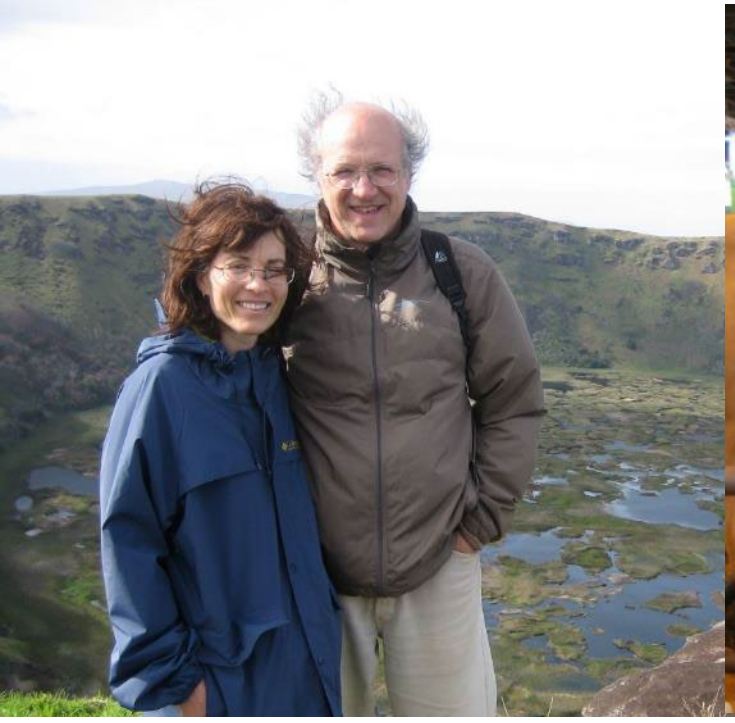
We all have 24h/day and 7 days/week

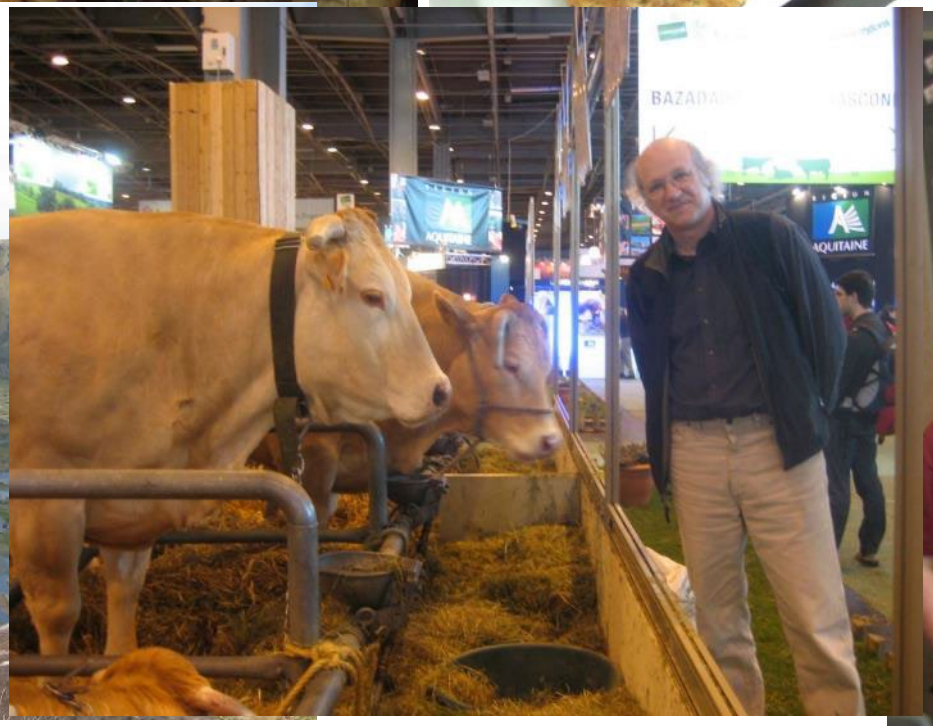
In the end, balance of onstage, backstage and offstage activities is required to have a sustainable and meaningful scientific career.

Offstage- Personal activities apparent to some

To cope with the continuous demands of partners and stakeholders, one has to keep a balance between professionnal and personnal aspects of life.


EQUIPE
DE FRANC




AQUITAINE