

Phytoprotection



The grape rootworm, *Fidia viticida* (Coleoptera: Chrysomelidae), newly recorded from Quebec Première mention du gribouri de la vigne, *Fidia viticida* Walsh (Coleoptera: Chrysomelidae), au Québec

Charles Vincent, Stéphane Dumont and Pierre de Tonnancour

Volume 97, Number 1, 2017

Received 2016-12-16; accepted 2017-01-30

URI: <https://id.erudit.org/iderudit/1040511ar>

DOI: <https://doi.org/10.7202/1040511ar>

[See table of contents](#)

Publisher(s)

Société de protection des plantes du Québec (SPPQ)

ISSN

1710-1603 (digital)

[Explore this journal](#)

Cite this article

Vincent, C., Dumont, S. & de Tonnancour, P. (2017). The grape rootworm, *Fidia viticida* (Coleoptera: Chrysomelidae), newly recorded from Quebec. *Phytoprotection*, 97(1), 17–19. <https://doi.org/10.7202/1040511ar>

Article abstract

The occurrence of the North American native grape rootworm, *Fidia viticida* Walsh (Coleoptera: Chrysomelidae), is reported for the first time in Quebec. During the summer of 2016, adults were beaten from Virginia creeper, *Parthenocissus quinquefolia*, and riverbank grape, *Vitis riparia*, along the Papineau-Leblanc Highway in Laval, Quebec. *Fidia viticida* is a pest of cultivated grapes in the Lake Erie area. Its current pest status in Canada is unknown.

The grape rootworm, *Fidia viticida* (Coleoptera: Chrysomelidae), newly recorded from Quebec

Charles Vincent^{1✉}, Stéphane Dumont² et Pierre de Tonnancour³

Received 2016-12-16; accepted 2017-01-30

PHYTOPROTECTION 97 : 17-19

The occurrence of the North American native grape rootworm, *Fidia viticida* Walsh (Coleoptera: Chrysomelidae), is reported for the first time in Quebec. During the summer of 2016, adults were beaten from Virginia creeper, *Parthenocissus quinquefolia*, and riverbank grape, *Vitis riparia*, along the Papineau-Leblanc Highway in Laval, Quebec. *Fidia viticida* is a pest of cultivated grapes in the Lake Erie area. Its current pest status in Canada is unknown.

Keywords: chrysomelid, *Fidia viticida*, first record, grape, pest, vineyards.

[Première mention du gribouri de la vigne, *Fidia viticida* Walsh (Coleoptera: Chrysomelidae), au Québec]

La présence du gribouri de la vigne, *Fidia viticida* Walsh (Coleoptera: Chrysomelidae), indigène en Amérique du Nord, est mentionnée pour la première fois au Québec. Au cours de l'été 2016, des adultes ont été récoltés par battage de vignes vierge à cinq folioles (*Parthenocissus quinquefolia*) et de vignes des rivages (*Vitis riparia*) en bordure de l'autoroute Papineau-Leblanc, à Laval (Québec). *Fidia viticida* est un ravageur de la vigne cultivée dans la région du lac Érié. Son statut de nuisibilité au Canada est actuellement inconnu.

Mots-clés: chrysomélide, *Fidia viticida*, première mention, ravageur, vigne, vignobles.

1. Centre de recherche et de développement de Saint-Jean-sur-Richelieu, Agriculture et Agroalimentaire Canada, 430 boul. Gouin, Saint-Jean-sur-Richelieu, QC, Canada J3B 3E6; ✉charles.vincent@agr.gc.ca
2. Département de biologie et de biotechnologies, Collège Ahuntsic, 9155 Saint-Hubert, Montréal, QC, Canada H2M 1Y8
3. 22 5^e Avenue, Terrasse-Vaudreuil, QC, Canada J7V 3P5

In Canada, viticulture has recently experienced a tremendous growth in terms of cultivated areas and economic value (Frank 2013). This has been a steady trend in all major wine-producing provinces, including Quebec. These increased areas of cultivated vines offer new hosts for native insects that are associated with wild vines. Meanwhile, some insects may become new pests of vineyards, mainly via two mechanisms.

First, several foreign invasive species introduced into North America may thrive in the absence of efficient natural enemies and in the presence of new host plants. For example, the Asian native spotted-wing fruit fly, *Drosophila suzukii* Matsumura (Diptera: Drosophilidae), has recently been found infesting several crops in North America. It was discovered in Quebec vineyards for the first time in 2012 (Saguez *et al.* 2013). Another invasive pest from Asia, the brown marmorated stink bug, *Halyomorpha halys* (Stål) (Hemiptera: Pentatomidae), has invaded North America, where it rapidly became an important pest in several crops (Leskey *et al.* 2012). The Japanese beetle, *Popillia japonica* Newman (Coleoptera: Scarabaeidae), is another invasive pest from Asia that is found in vineyards from the eastern USA (Pfeiffer 2012) all the way to southern Quebec, where it is becoming increasingly troublesome (J. Lasnier, pers. comm.). *Halyomorpha halys* currently threatens several crops in southern Ontario (Garipey *et al.* 2014) and is expected to be found imminently in Quebec.

Second, native North American species may show an extension of their historical range, putatively due to climate change. In this paper, we report for the first time in Quebec the occurrence of the grape rootworm, *Fidia viticida* Walsh (Coleoptera: Chrysomelidae) (Fig. 1), a native insect of North America.



Fig. 1. Adult *Fidia viticida* (approximately 6 mm long). (Credit: Serge Laplante)



Fig. 2. A hedgerow of *Parthenocissus quinquefolia* in Laval, QC, where numerous *Fidia viticida* adults were collected. (Credit: Stéphane Dumont)

In Canada, *F. viticida* was so far known to occur only in Ontario (Bousquet *et al.* 2013). As of September 2016, all Canadian *F. viticida* specimens in the Canadian National Collection of Insects (Agriculture and Agri-Food Canada, Ottawa, ON) had been collected in Ontario (Ojibway, Chatham, Tilbury and Rondeau Park).

In 2016, numerous specimens of *F. viticida* adults were beaten mainly from Virginia creeper, *Parthenocissus quinquefolia* Linnaeus (Fig. 2), and riverbank grape, *Vitis riparia* Michaux, along the Papineau-Leblanc Highway in Laval, QC (45°35'29" N; -73°41'13" W). Beating these native vines on June 29 and 30 and July 5 yielded 13, 22, and 26 adult specimens, respectively. All specimens caught on July 5 were obtained from *P. quinquefolia*, except for one individual collected from *V. riparia*. Three specimens were sent to Agriculture and Agri-Food Canada (Ottawa, ON) for identification. The plant names used here follow the nomenclature of Vascan (2016).

Voucher specimens of *F. viticida* were deposited in the Canadian National Collection of Insects and in the following three private collections: 1) Collection Claude Chantal (CCCH), Varennes, QC; 2) Collection Pierre de Tonnancour (CPTO), Terrasse-Vaudreuil, QC; 3) Collection Stéphane Dumont (CSDU), Montreal, QC.

Campbell *et al.* (1989) list four chrysomelid species feeding on grapes in Canada: *Colaspis brunnea* (Fabricius), *Brachypnoea puncticollis* (Say) [as *Nodonota puncticollis*], *Rhabdopterus deceptor* Barber and *Rhabdopterus praetextus* (Say). Bostanian *et al.* (2003) captured one chrysomelid of economic importance, the redheaded flea beetle, *Systema frontalis* (Fabricius), with window and pitfall traps deployed in two commercial vineyards in southern Quebec. In biodiversity studies conducted in the same vineyards, Lesage *et al.* (2008) collected 59 chrysomelid species, most of them transient species or species associated with weeds. They recorded four grape-feeding species: *Bassareus formosus* (Melsheimer), *Bromius obscurus* (Linnaeus), *Systema blanda* (Melsheimer) and *Systema hudsonias* (Forster). Lesage *et al.* (2008) also found *Systema frontalis*, whose adults feed on vine foliage but not on grapes.

As this first record of *F. viticida* suggests that it may become a new pest of cultivated vines in Quebec, the following considerations are discussed from a phyto-protection point of view.

1) *Fidia viticida* is considered a major pest of vineyards in the eastern USA, particularly from the Lake Erie region (Johnson and Hammar 1910; Dennehy and Clark 1986) to Virginia (e.g. Pfeiffer 2012, 2016), where it requires insecticidal treatments. Adults feed on leaves, leaving damage akin to those of larval flea beetles (Pfeiffer 2012). Larvae consume small roots; this type of injury may have a much greater impact than foliar injury. Its effect on yield is difficult to quantify.

2) Several species of wild vines grow in eastern Canada. Three species are known to occur in Quebec, two of which are indigenous (*Parthenocissus vitacea* (Kneer) and *V. riparia*) while the third one was introduced (*P. quinquefolia*) (Brouillet *et al.* 2010+). In Ontario, in addition to the two above-mentioned indigenous species, three indigenous (*Vitis aestivalis* Michaux, *Vitis labrusca* Linnaeus, and *Vitis vulpina* Linnaeus) and two introduced species (*Parthenocissus tricuspidata* (Siebold & Zuccarini) Planchon and *Ampelopsis glandulosa* (Wallich) Moniyama) are present. As these wild species are not treated with insecticides, they provide refuge for the grape rootworm to feed and reproduce.

3) As there are several vineyards in southern Quebec, including in Laval, it is likely that grape rootworm populations will establish themselves and develop on cultivated vines.

4) As the grape rootworm largely causes damage to vine roots (Pfeiffer 2012), it is likely to remain unnoticed at least until its economic damage becomes obvious or important in vineyards.

5) The pest status of the grape rootworm is uncertain at the present time. For example, although it is found in Ontario, so far it has not warranted the use of specifically targeted insecticidal sprays in that province. However, although its pest status is currently uncertain in Canada, biovigilance is in order.

ACKNOWLEDGEMENTS

Hume Douglas (Agriculture and Agri-Food Canada, Ottawa, ON) confirmed the identification of specimens. Patrice Bouchard and Yves Bousquet (Agriculture and Agri-Food Canada, Ottawa, ON) provided insights into insect databases and unpublished material. Luc Brouillet (Université de Montréal, Montreal, QC) provided insights into the plant database Canadensys. Serge Laplante (Agriculture and Agri-Food Canada, Ottawa, ON) prepared and photographed the adult *F. viticida* specimen showed in Fig. 1. We thank Douglas G. Pfeiffer (Virginia Tech, Blacksburg, VA, USA), Jacques Lasnier (Co-Lab R&D, Division d'Ag-Cord Inc., Granby, QC) and Noubar J. Bostanian (retired from Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, QC) for their comments on the manuscript.

REFERENCES

- Bostanian, N.J., C. Vincent, H. Goulet, L. Lesage, J. Lasnier, J. Bellemare, and Y. Mauffette. 2003. The arthropod fauna of Quebec vineyards with particular reference to phytophagous species. *J. Econ. Entomol.* 96: 1221-1229.
- Bousquet, Y., P. Bouchard, A.E. Davies, and D.S. Sikes. 2013. Checklist of Beetles (Coleoptera) of Canada and Alaska, 2nd ed. Pensoft Publishers, Sofia, Bulgaria.
- Brouillet, L., F. Coursol, S.J. Meades, M. Favreau, M. Anions, P. Bélisle, and P. Desmet. 2010+. VASCAN, the database of vascular plants of Canada. Available online [<http://data.canadensys.net/vscan/>] (Accessed in November 2016).
- Campbell, J.M., M.J. Sarazin, and D.B. Lyons. 1989. Canadian beetles (Coleoptera) injurious to crops, ornamentals, stored products, and buildings. Agriculture Canada, Research Branch, Ottawa, ON, Canada.
- Dennehy, T.J., and L.G. Clark. 1986. Grape rootworm, *Fidia viticida* Walsh. New York State Agric. Exp. Stn. (Cornell University), Geneva, NY, USA. Grape IPM Insect Identification Sheet No. 7.
- Frank, A. 2013. The economic impact of the wine and grape industry in Canada. A study commissioned by the Canadian Vintners Association, Winery and Grower Alliance of Ontario, British Columbia Wine Institute, Winery Association of Nova Scotia. Available online [www.frankrimerman.com/businesses/business_management/wine_research.asp] (Accessed in February 2017).
- Garipey, T.D., H. Fraser, and C.D. Scott-Dupree. 2014. Brown marmorated stink bug (Hemiptera: Pentatomidae) in Canada: recent establishment, occurrence, and pest status in southern Ontario. *Can. Entomol.* 146: 579-582.
- Johnson, F., and A.G. Hammar. 1910. The grape root-worm [*Fidia viticola*] with special reference to investigations in the Erie grape belt from 1907 to 1909. USDA Department of Entomology, Washington, D.C., USA. Bulletin No. 89.
- Lesage, L., P. Bouchard, and H. Goulet. 2008. Leaf beetle diversity and abundance in two Quebec vineyards (Coleoptera, Chrysomelidae). *Nouv. Rev. Entomol.* 25: 3-16.
- Leskey T.C., G.C. Hamilton, A.L. Nielsen, D.F. Polk, C. Rodriguez-Saona, J.C. Bergh, *et al.* 2012. Pest status of the brown marmorated stink bug, *Halyomorpha halys* in the USA. *Outlooks Pest Manag.* 23: 218-226.
- Pfeiffer, D.G. 2012. Japanese beetle and other Coleoptera feeding on grapevines in eastern North America. Pages 403-439 in N.J. Bostanian, C. Vincent, and R. Isaacs (eds.), *Arthropod Management in Vineyards: Pests, Approaches, and Future Directions*. Springer, Dordrecht, The Netherlands.
- Pfeiffer, D.G. 2016. Grape rootworm, *Fidia viticida* (Walsh). Available online [<http://www.virginiafruit.ento.vt.edu/rootworm.html>] (Accessed in November 2016).
- Saguez, J., J. Lasnier, and C. Vincent. 2013. First record of *Drosophila suzukii* in Quebec vineyards. *J. Int. Sci. Vigne Vin.* 47: 69-72.
- VASCAN. 2016. Database of Vascular Plants of Canada. Available online [<http://data.canadensys.net/vscan/search>] (Accessed in November 2016).