

**NEW RECORDS FOR *RHOPALOSIPHUM RUFIABDOMINALE*
(SASAKI) (HEMIPTERA: APHIDIDAE) ON GREENHOUSE
TOMATOES AND PEPPERS**

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The rice-root aphid, *Rhopalosiphum rufiabdominale* (Sasaki) (Hemiptera: Aphididae), described from upland rice in 1899 (Doncaster 1956), is known to have a worldwide distribution (Blackman and Eastop 2000). Primary hosts are *Prunus* spp., while secondary hosts are monocotyledonous plants in the families Poaceae and Cyperaceae but include some dicotyledons, especially Solanaceae (Blackman and Eastop 2000). The heteroecious holocycle between *Prunus* and roots of secondary hosts was reported from Japan (Yano et al. 1983; Torikura 1991). Elsewhere, *R. rufiabdominale* is thought to be anholocyclic on roots of secondary hosts. In many parts of the world it is a pest of rice and cereals (Yano et al. 1983; Chapin et al. 2001). *Rhopalosiphum rufiabdominale* is not known to overwinter in Ontario, but migrates annually from the southern United States (Paliwal 1980).

In October 2004, numerous aphids were observed on the roots of greenhouse sweet pepper, *Capsicum annuum* L. (Solanaceae) at the Agriculture and Agri-Food Canada Greenhouse and Processing Crops Research Centre in Harrow, ON. Specimens were identified as *R. rufiabdominale* by E. Maw (Agriculture and Agri-Food Canada, Eastern Cereal and Oilseed Research Centre, Ottawa). The following spring in April 2005, large populations of *R. rufiabdominale* were again observed at the same location, but on this occasion on the lower stem of greenhouse grown tomatoes, *Lycopersicon esculentum* Mill. (cv Rhapsody) (Solanaceae). Identification was confirmed by R. G. Foottit. All plants were infested. The aphids were observed moving up the stem from the root zone and were alate viviparae. Aphids dispersed and disappeared as the season progressed. We believe that the aphids may have overwintered in the greenhouse on secondary hosts as April is too early in the season in Ontario for winged migrants to have arrived from the southern United States. Paliwal (1980) reported *R. rufiabdominale* on cereals from mid-July onwards in Ontario. In late October 2005, large populations of alate *R. rufiabdominale* were observed again on greenhouse tomatoes on the lower stems of the plants at the same location. By late November populations declined and few alates were observed alive on the above ground

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portions of the plants. In this instance, it is probable that winged aphids moved into the greenhouse from outside.

This is the first record of *R. rufiabdominale* on greenhouse tomatoes and sweet pepper in Canada. It has been previously reported causing damage on greenhouse grown zucchini in Italy (Ciampolini et al. 1993). Earlier host records of *R. rufiabdominale* in the Canadian National Collection include *Picea glauca* (roots of spruce seedlings in nursery; Ladner, British Columbia), *Gardenia* spp. (roots; Surrey, British Columbia), *Triticum* spp. (Ottawa, Ontario), and *Sparangium* spp. (Ottawa, Ontario).

Little information is known about the potential damage and yield loss due to *R. rufiabdominale* on greenhouse tomatoes and sweet pepper. However, its overwintering presence in Ontario greenhouses has implications outside the scope of protected cultivation, specifically on cereal crops where its impact has been documented (Jedlinski 1981; Riedell et al. 2003). This aphid is an effective vector of barley yellow dwarf virus (BYDV) in Canada (Paliwal 1980). BYDV is distributed worldwide and is considered one of the most economically important diseases of cereals in the world (Riedell et al. 2003), and can persist in volunteer cereals and wild grasses (Paliwal 1982). BYDV is present in cereal crops in Ontario every year but the incidence varies from one region to another (Paliwal and Comeau 1987). In Illinois, Jedlinski (1981) reported that subterranean *R. rufiabdominale* apterae are capable of overwintering on seedling wheat and transmitting BYDV, and suggested that undetected aphid colonies may explain BYDV outbreaks in the absence of conspicuous aphid populations. However, Chapin et al. (2001) found no correlation between *R. rufiabdominale* abundance and BYDV incidence and yield loss on the coastal plains of south Carolina.

Important aphid vectors of BYDV in Ontario are *R. padi* L., *R. maidis* (Fitch), and *Sitobion avenae* (Fabricius) (Hemiptera: Aphididae), which migrate each year from the United States (Paliwal and Comeau 1987). However, the potential importance of *R. rufiabdominale* should not be overlooked since the transmissibility of BYDV isolates to cereal hosts by *R. rufiabdominale* is similar to *R. padi* (Jedlinski 1981). If *R. rufiabdominale* becomes prevalent in greenhouses, it has the potential to move into cereal fields earlier than other aphid vectors more commonly associated with BYDV in Ontario.

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