First Record of Rhyssomatus nigerrimus (Curculionidae: Molytinae: Cleogonini) Infestations in Soybeans in Mexico

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FIRST RECORD OF RHYSSOMATUS NIGERRIMUS (CURCULIONIDAE: MOLYTINAЕ: CLEOGONINI) INFESTATIONS IN SOYBEANS IN MEXICO

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Weevils are members of the beetle family, Curculionidae, which comprises approximately 4,600 genera and 51,000 species (Oberprieler et al. 2007). In Mexico, more than 2,300 species have been reported and 6.5% and 40.5% of the genera and species, respectively, are endemic (Anderson & O’Brien 1996). Most weevils are phytophagous during both larval and adult stages (Marvaldi & Lanteri 2005).

The genus *Rhyssomatus* includes more than 150 Neotropical and Nearctic species, many of which are of agricultural importance (Viale 1951; Viale & Thomas 1954; Santos et al. 2001). In Costa Rica, the presence of a *Rhyssomatus*, *R.* *R. subcostatus* Fahraeus, was observed attacking yam (*Ipomoea* spp.; Solanales: Convolvulaceae) crops, while in Argentina *R. subtilis* Fiedler was recently reported attacking soybean (*Glycine max* (L.) Merr.; Fabales: Fabaceae) (Viale 1951; Viale & Thomas 1954; Socías et al. 2009). In Mexico, 27 species of *Rhyssomatus* have been reported (Kissing 1962; O’Brien & Wibmer, 1982; Maes & O’Brien 1990; Salas-Araiza et al. 2001; Mor-rone et al. 2002); but none has been considered as an agricultural pest.

Soybean is widely planted in Mexico, and in 2011 the surface area dedicated to the soybean crop was 167,925 ha, with a production of 183,201 t, mainly in the states of Tamaulipas, San Luis Potosí, Chiapas, Veracruz and Campeche (SIAP 2011). In San Luis Potosí, weevil species had been cultivated in the municipality of Ebano, San Luis Potosí.

Sampling was conducted in soybean growing areas in the states of Tamaulipas, Chiapas and San Luis Potosí to collect adult weevils, which were preserved in 70% alcohol. The coordinates of each of the points where the insects were collected were georeferenced with a GPS instrument (Garmin 12, Olathe, Kansas, USA) (Fig. 1). The weevil specimens were identified as *Rhyssomatus nigerrimus* Fahraeus 1837 (Curculionidae: Molytinae: Cleogonini) by Dr. Germaino Rosado-Neto. Identification was corroborated independently by Dr. Charles O’Brien. The voucher specimens were deposited in the collection of El Colegio de la Frontera Sur, Chiapas, Mexico, in the collection “Pe. Jesus S. Moure” of the Zoology Department, Federal University of Paraná, Curitiba, Brazil, and in the personal collection of Dr. Charles O’Brien, Green Valley, Arizona, USA.

*Rhyssomatus nigerrimus* has been recorded in the Lesser Antilles, Belize, Honduras, Panama, Guatemala and Mexico (Champion 1902 cited by Burke 1961; O’Brien & Wibmer 1982; Peck 2009). In San Vicente, this weevil species has been reported attacking yams, *Ipomoea batatas* (L.) Lam.; Solanales: Convolvulaceae (Bailey 1994; Peck 2009), while in Mexico it has been collected...
in Nayarit, Guanajuato and Tabasco (Salas-Araiza et al. 2001; Morrone et al. 2002). Salas-Araiza et al. (2001) mentions that in Guanajuato, Mexico, *R. nigerrimus* was found on *Acacia* spp., *Am-

Fig. 1. Distribution of *Rhyssomatus nigerrimus* in Tamaulipas, Chiapas and San Luis Potosí, Mexico.
**Summary**

The Mexican soybean weevil (MSW), *Rhysomatus nigerrimus*, has recently been observed causing damage to soybean crops in Tamaulipas and Chiapas, Mexico. The insect has been observed to feed on other host plants, such as soybeans, *Prosopis* spp., *I. hederaeae*, *Mimosa* spp., *Prunus* spp., and *Prospisis* spp. However, *R. nigerrimus* previously had not been reported attacking soybean.

In the states of Tamaulipas and Chiapas, *R. nigerrimus* has been found feeding on both vegetative and reproductive parts of soybean. The vegetative stage is attacked by adults that feed on tender sprouts of both seedlings and well-developed plants. The weevil also attacks the stems and branches of developed plants where perforations without oviposition have been found. Also, the damage caused to the vegetative stage of soybeans can be observed in seedlings and buds, and can even cause death of the plant. In the reproductive stage of soybeans determined by Fehr et al. (1971), the female weevils can feed and deposit their eggs inside the pods from full pod (R4) to full maturity (R8). When the larvae hatch, they feed on the endosperm of the green seeds until they destroy them, partially or completely. The weevil, in addition to directly damaging the soybean seeds, facilitates the development of phytopathogens in the seeds, which may lower the quality of soybean oil.

It has been observed that the larvae, after feeding on the seeds, fall to the soil as prepupae; there they bury themselves 10 to 30 cm deep to continue their development as pupae and adults for approximately five mo. The time lapse between harvest of the previous crop and the appearance of adults in the following crop indicates that this insect has 2 developmental phases: one active phase that occurs in soybean plant and a latent phase, or diapause, which occurs in the soil. The duration of pupal and adult stage in soil was determined by soil sampling randomly with the excavation and examination of the soil of 5 holes of 20 × 20 × 30 cm per ha per wk. The soil samples collected were processed in laboratory to look for immature and mature stages of weevil, and when larvae, pupae and adults were found, they were observed to determine if they were in a latent phase. In southern Tamaulipas it has been found that with the arrival of the first rains, just between harvest of the previous crop and the appearance of adults in the following crop indicates, it should become possible to provide recommendations for the integrated management of *R. nigerrimus*.

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and Chiapas, Mexico. The weevil adults have been found feeding on vegetative parts of soybean while larvae develop and feed in the plant's reproductive parts. The pest may migrate to other Mexican regions in the near future to cause a threat to soybean crops. The genera *Phaseolus* and *Ipomea batata* are potential hosts of the MSW in Mexico. Our finding appears to be the first published report of MSW as a pest of soybean in Mexico.

**REFERENCES CITED**


**Fig. 2.** Life stages of *Rhyssomatus nigerrimus* on soybean; a, adult; b, egg; c, larvae; and d, pupae.


