Note

OCCURRENCE OF *Dinarmus basalis* IN *Callosobruchus analis* IN STORED SOYBEAN IN SÃO PAULO, BRAZIL

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ABSTRACT: *Callosobruchus analis* (F.) is considered an important pest in several countries in Africa, Asia and Oceania. It has been observed infesting seeds belonging to 15 Leguminosae genera, including peanut, bean, chickpea, pea, cowpea, and soybean. One of its main natural enemies is the parasitoid *Dinarmus basalis* (Rondani) (Hymenoptera: Pteromalidae), whose control efficiency has already been demonstrated in several studies. This paper records the occurrence of *C. analis* and its parasitoid, *D. basalis*, in stored soybean of the state of São Paulo, Brazil.
Key words: *Glycine max*, Hymenoptera, Pteromalidae, Coleoptera, Bruchidae

OCORRÊNCIA DE *Dinarmus basalis* (RONDANI) EM *Callosobruchus analis* (F.) EM SOJA ARMAZENADA EM SÃO PAULO, BRASIL

RESUMO: *Callosobruchus analis* (F.) é uma praga de expressão econômica em diversos países da África, Ásia e Oceania. Já foi observado infestando sementes de espécies de leguminosas pertencentes a 15 gêneros, incluindo-se culturas como amendoim, grão-de-bico, feijão, ervilha, caupi e soja. Um de seus inimigos naturais mais importantes é o parasitóide *Dinarmus basalis* (Rondani) (Hymenoptera: Pteromalidae), cuja eficiência de controle já foi demonstrada em vários estudos. Neste trabalho registra-se a ocorrência de *C. analis* e de seu parasitóide, *D. basalis*, em grãos armazenados de soja no estado de São Paulo.
Palavras-chave: *Glycine max*, Hymenoptera, Pteromalidae, Coleoptera, Bruchidae

In Brazil, the following bruchid species are referred as important pests of stored grain pests: *Acanthoscelides obtectus* (Say) in *Phaseolus vulgaris* and *P. lunatus*; *Zabrotes subfasciatus* (Boh.) and *Callosobruchus maculatus* (F.) in *P. vulgaris, P. lunatus* and some *Vigna* species; and *C. phaseoli* (Gyll.) in *Vigna* spp., *Cicer arietinum*, and *Dolichos lablab* (Athié & Paula, 2002; Gallo et al., 2002). Another bruchid that also infests legumes in Brazil is *Callosobruchus analis* (F.), reported infesting *V. unguiculata* seeds in the northern and northeastern regions of the country (Bastos, 1968; Silva & Magalhães, 1980). In Africa, Asia, and Oceania, *C. analis* is considered a pest of economic expression for stored legume grains (Southgate, 1979). This pest has been observed infesting seeds of 15 genera, including peanut, chickpea, bean, pea, cowpea, and soybean (Waterworth, 1986). Therefore, this study involves the record of the presence of *C. analis* and one of its parasitoids, in the State of São Paulo, Brazil.

In January 2003, during an inspection in a seed storage facility at the Instituto Agronômico (IAC), Campinas, São Paulo State, bruchids were found infesting soybean seeds. The facility had no control of temperature, relative humidity and photoperiod. Live adults were taken to the laboratory, at 27°C, relative humidity around 70 % and natural photoperiod, and placed in vials containing seeds of the infested cultivars to confirm that the species could be reared on soybean. Upon emergence, adults of the filial generation were sent to Dr. John M. Kingsolver, Florida State Collections of Arthropods, Florida, USA, who identified them as belonging to the species *C. analis*. Next, studies were initiated in the laboratory to evaluate whether soybean cultivars were suitable for the development of this species.

The emergence of *Dinarmus basalis* (Rondani) (Hymenoptera: Pteromalidae) was observed in the rearing vials. This is a solitary, idiobiont ectoparasitoid of

immatures and even recently-formed adults of several bruchid species that develop on legumes (Verma, 1991). The females are synovigenic, i.e., they produce eggs during the entire adult stage (Nishimura, 1993) and can actively move within the column of stored grains in search for seeds containing larvae of their hosts (Gauthier et al., 1999).

Parasitism of *D. basalis* in *C. chinensis* on *Vigna radiata* had already been verified in Brazil in the state of Santa Catarina (Lima, 1942), in *C. maculatus* on *V. unguiculata* in Pará (Ohashi et al., 1993), and in *A. obtectus* in the northeastern region (Oliveira, 1948); the present communication, however, is the first record of the association of this parasitoid with *C. analis* in the country and also of the occurrence of both in the State of São Paulo. *D. basalis* probably occurs all across Brazil, because although the species has its origin in Africa, it has spread throughout the Americas, Asia, and Europe, due to grain and seed trading (Rasplus, 1989).

In South America, *D. basalis* also occurs in *Z. subfasciatus*; in the rest of the world, in addition to the five hosts already mentioned, it is found parasitizing *Bruchidius atrolineatus* (Pic), several species of *Bruchus* and *Callosobruchus* (Coleoptera: Bruchidae) (Rasplus, 1989), and other coleopterans.

The effectiveness of *D. basalis* in the biological control of *C. maculatus*, *C. chinensis*, and *B. atrolineatus* was demonstrated experimentally, but the success depends on the storage conditions (Islam & Kabir, 1995, Ouedraogo et al., 1996, Sanon et al., 1998).

Additional parasitism studies for our conditions are extremely important to make integrated bruchid control in stored grains viable, since studies on the use of *D. basalis* in association with plant varieties resistant to several bruchid species (Schmale et al., 2003), insecticidal plants (Boeke et al., 2003), as well as other parasitoids already exist in other countries (Gauthier et al., 1999; Huis et al., 2002).

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