Section IV Biological and Cultural Control

UPDATE ON *PERISTENUS DIGONEUTIS* (BRACONIDAE), AN INTRODUCED WASP PARASITE OF LYGUS BUG NYMPHS

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Peristenus digoneutis, a wasp parasite of Lygus bug nymphs was released in alfalfa for the first time at the Parma Research & Extension Center on 27 June 1996. A followup release was made 25 June 1997. **Peristenus digoneutis** is a member of the parasitic wasp family, Braconidae, and has successfully established in New York, New Jersey, Delaware and several other eastern states since its introduction there in the early 1980's. In the eastern U.S. it has resulted in a 30 percent reduction of the eastern tarnished plant bug, a Lygus species that also occurs in Idaho and is closely related to our western tarnished plant bug, Lygus hesperus. The newly introduced parasite is a native of western Europe and was brought to the U.S. to aid in the biological control of Lygus bugs and closely related plant bugs. It does not parasitize other insects in our area.

Similar parasitism of *Lygus* bug nymphs in the Pacific Northwest occurs from related naturally occurring parasites and we have thought it was fairly rare. However, during 1997 we dissected hundreds of 3rd, 4th, and 5th instar *Lygus* nymphs and found up to 54 percent parasitized by larvae of a tiny wasp that apparently occurs naturally in *Lygus* nymphs in this area. It was still present in parasitized *Lygus* nymphs as late as September and October 1997. We reared out several parasites and found they also belong to the *Peristenus* group and are closely related to the *P. digoneutis* we released from the eastern U.S. Experts at the University of Kansas and USDA, Delaware are trying to identify this tiny wasp but it is very likely a new species, previously unknown to science. Its life history is unknown.

Objectives:

- 1. To establish a braconid wasp parasite, *Peristenus digoneutis*, as a biocontrol agent to aid in control of *Lygus* bugs in alfalfa grown for seed and eventually other crops.
- 2. To identify the naturally occurring *Peristenus* wasp parasites and to determine their biology and impact on *Lygus* bug populations.
- 3. To monitor *Lygus* bug populations in subsequent years to measure parasite establishment and possible pest reduction.

Procedures:

The parasites were reared from Lygus nymphs at the USDA Beneficial Insects Research Laboratory, Newark, Delaware. They were shipped as adult wasps by overnight Federal Express and released in alfalfa the next morning. Additional releases will be made as adult parasites are available. Evaluations will be made by collecting and dissecting Lygus bug nymphs to determine if the introduced species of wasp parasites have established in the Lygus population.

At the UI Research & Extension Center at Parma, Idaho, established alfalfa is in place and can be managed as necessary for this parasite and for subsequent monitoring. Plant growth, mowing, and pesticide use can all be controlled to maximize the probability of establishing this beneficial insect.

References:

- Day, W.H. 1996. Evaluation of biological control of the tarnished plant bug in alfalfa by the introduced parasite *Peristenus digoneutis* (Hymenoptera: Braconidae). Environ. Entomol. 25(2):512-518
- Day, W.H., J.M. Tropp, R.J. Chianese, R.F. Romig, R.G. Van Driesche, and A.T. Eaton. Known Geographic distributions and host ranges of *Peristemus conradi* and *P. digoneutis* (Hymenoptera:Braconidae), introduced parasites of the alfalfa plant bug and tarnished plant bug on alfalfa in the northeastern United States. In press, July 1996.

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