

Section VI. Biological and Cultural Controls
Category C. Biological Control

NATURAL MORTALITY FACTORS OF THE RUSSIAN WHEAT APHID IN SOUTHWEST IDAHO

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The Russian wheat aphid (RWA), *Diuraphis noxia* (Mordv.), was first found in Idaho in Canyon County in late June of 1987. Since then, weekly surveys have been made of local RWA populations. In the past season, mortality in RWA populations was largely attributable to three groups of natural enemies: fungal pathogens (Entomophthorales), parasitoids and predators.

A number of mummified aphids were obtained both by directly collecting in the field and by rearing live aphids randomly sampled from natural colonies. Two fungal pathogens have been identified as *Erynia neoaphidis* and *Conidiobolus obscurus*, of which *E. neoaphidis* predominated. The natural infection rate by *E. neoaphidis* reached 32% in July, 1987. *C. obscurus* occurred at a very low rate. Six species of parasitoids including 4 from the family Aphidiidae and 2 from the family Aphelinidae, have been preliminarily identified as *Diaretiella rapae*, *Aphidius nigripes*, *Lysiphlebus testaceipes*, *Proan volucre*, *Aphelinus mali* and *Aphytis diaspidis*. RWA mortality due to parasitoids reached 13.5% (observed in the field) to 20% (based on rearing), with the majority attributable to *Aphelinus mali*. All the above pathogens and parasitoids except for *D. rapae* are new records for RWA. Regular irrigation of grain in SW Idaho may enhance survival of these natural enemies.

Lady beetles (predominately *Coccinella* sp. and *Hippodamia* sp.) could not attack RWA as effectively as they attack other cereal aphids because RWA colonies usually occur in tightly curled leaves where the predators cannot easily reach them. Syrphid larvae (species pending determination) are more effective predators than lady beetles because they are able to penetrate the tightly curled leaves.

In conclusion, natural enemies including fungal pathogens, parasitoids and predators play an important role in suppressing the development of RWA populations in SW Idaho. These preliminary results show that natural agents should not be ignored in planning an IPM program for RWA. Further efforts should be directed towards evaluating relative importance of various agents in natural control of the new pest, with special attention paid to the fungal pathogen *E. neoaphidis* and the parasitoid *Aphelinus mali*.