ECOLOGICAL EFFECTS OF CROWDED INSECTS IN WINTER WHEAT

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Bare spots in a winter wheat field resulting in ca. 40% loss of the winter wheat crop occurred in a field near Rockford, WA. This field was taken out of Kentucky Blue Grass last summer, (2004) and seeded to wheat using a low rate of Lindane as the seed treatment insecticide. I found a complex of insect larvae feeding on the crowns and roots of this wheat in February 2004.
Wireworm larvae (Elateridae) ***Limonius canus*** LeConte were present in a fairly dense population (ca. 1 per square meter up to 3 per square meter). This alone would allow for major stand reduction.

Pyralid moth larvae of the Genus ***Crambus***, which are much larger that the Blue Grass Webworm, ***Crambus teterellus***. I believe without having adult specimens, but with "Arnett American Insects" these moth larvae are likely to be ***Crambus agitatellus*** Clemens, the Grass Webworm, and, **Crambus vulgivagellus** Clemens, the Vagabond Webworm. Both are occasional pests on the crowns and roots of winter wheat and ***agitatellus*** is a cyclic species appearing under certain dry winter conditions. A significant number of maturing larvae of the Army Cutworm, ***Euxoa auxiliaris*** Grote, a common and serious pest of winter wheat, was also numerous in the field. Black Cutworm is reported to be resistant to *B. bassiana* and a sample will be collected to send in for pathological analysis. Any one of these three pests in the numbers present by each species could account for serious damage to the wheat stand. There were more larvae in the lighter soils moving up slope in the wheat.

In the adjacent **Blue Grass** fields, I found the typical situation of Blue Grass Webworm, ***Crambus teterellus*** (Zinken) in a variety specific relationship in large numbers, under droughty conditions in older stands of grass. This moth has pink tinged larvae smaller that the Vagabond Crambus, which has grey spotted larvae. Note: the Cranberry Girdler ***Crambus topiaria*** (Zeller), which does not feed on cereals or Blue Grass sod, was not involved and is an artifact of literature. All Crambine moths lay eggs after adult emergence post harvest. The 1st instar larvae
feed on the crowns for a time then over winter as larvae which begin feeding in the early spring, pupating as the crop matures. There is one generation per year for most webworms. There are over 400 species in several genera. The bottom line is – a webworm is a webworm and one should go by damage and not wait for specific species ID. Better seed treatments need to be applied following grass field take out when seeding to wheat.

Another interesting wrinkle – many of the larger Lepidoptera larvae in both the wheat and the Blue Grass fields examined were showing signs of a pathogenic fungus, ***Beauvaria bassiana*** spp. which covers the dead larvae with white cottony hyphae. The webworm larvae and cutworm larvae reared for adult specimens died of this pathogen. This may be a result of wetter conditions following a very dry winter, and very high insect populations, since research shows the Blue Grass Webworm is more of a pest under drought conditions or very light soil.