

Section I

Invasive & Emerging Pests

Wheat Stem Sawfly Blank Heads in Bayer I Trial Nick SWSW

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Protocol. All white heads were pulled 1 week after anthesis began. *Fusarium culmorum* heads were pulled and discarded. Heads showing the chewing damage of the larva or containing a larva were counted per 9 meter square replicate. Poisson distribution is shown, as is typical of winged insects. Wheat Stem Sawfly, *Cinctus cephii* is increasing each summer in this site location. It is a major pest of spring wheat in Montana and Canada, and was found to be present on the Columbia Plateau of the PNW by Dr. Wendell Morrell of MSU in 1995. There are no known natural enemies in the field in WA at present. But *Bracon cephii* is used extensively in Montana and in Alberta.

Experiment 1. Wheat Stem Sawfly Raw Data

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 2 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| 3 | 1 | 1 | 2 | 2 | 1 | 0 | 0 | 3 | 2 | 1 | 1 |
| 2 | 1 | 3 | 1 | 2 | 2 | 4 | 0 | 0 | 2 | 1 | 2 |
| 0 | 4 | 2 | 3 | 0 | 0 | 0 | 2 | 3 | 3 | 1 | 1 |

Experiment 2. One-Way AOV for: WSSF heads per 9 square meter replicates

| Source | DF | SS | MS | F | P |
|------------|----|---------|---------|-------|--------|
| Between | 11 | 12.1295 | 1.10268 | 0.84 | 0.5990 |
| Within | 36 | 47.0156 | 1.30599 | | |
| Total | 47 | 59.1451 | | | |
| Grand Mean | | 1.3983 | CV | 81.73 | |

| Homogeneity of Variances | | F | P |
|--------------------------|--|------|--------|
| Levene's Test | | 1.12 | 0.3749 |
| O'Brien's Test | | 0.72 | 0.7149 |
| Brown and Forsythe Test | | 0.37 | 0.9604 |

Welch's Test for Mean Differences

| Source | DF | F | P |
|--|------|--------|----------|
| Between | 11.0 | 1.05 | 0.4576 |
| Within | 14.1 | | |
| Component of variance for between groups | | | -0.05083 |
| Effective cell size | | 4.0 | |
| Observations per Mean | | 4 | |
| Standard Error of a Mean | | 0.5714 | |
| Std Error (Diff of 2 Means) | | 0.8081 | |

Experiment 3. LSD All-Pairwise Comparisons Test for mean WSSF white heads per 9 square meters

| Treatment | WSSF per 9 square meters |
|------------------|--|
| 4 | 2.0000 A |
| 9 | 2.0000 A |
| 1 | 1.7525 A |
| 10 | 1.7525 A |
| 3 | 1.7500 A |
| 2 | 1.7500 A |
| 5 | 1.5025 A |
| 12 | 1.2500 A |
| 7 | 1.0075 A |
| 6 | 0.7550 A |
| 11 | 0.7525 A |
| 8 | 0.5075 A |
| Alpha | 0.01 Standard Error for Comparison 0.8081 |
| Critical T Value | 2.719 Critical Value for Comparison 2.1976 |

Conclusions: There are no significant pair wise differences among the means of Cinctus cephi damage. None of the Treatments had any effect on the WSSF. No natural enemies were observed. The distribution in Experiment 1 Raw data shows the extent of spread from the river grasses to the upper trial area = 360 feet from bottom near road.