*Annual Bluegrass Weevil Larvae Trial at Heatherwoode*

*Ent6707 Group Project – Preliminary Anyalysis*

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The “Annual Bluegrass Weevil Larvae Trial at Heatherwoode” data set consists of the counts of surviving larvae, alongside their stages, replicated across 6 random blocks through 12 pesticide treatments and a set of untreated controls. This experiment was designed and assessed in Spring of 2024 by Henry Rice and Shaohui Wu as a component of Rice’s thesis work on integrated pest control of the Annual Bluegrass Weevil (ABW) at the Ohio State University.

The data set describes 13 treatments, labeled T1 through T13, which include untreated control plots, early application plots and late application plots, treated with different insecticides using different modes of action. The treatments are detailed in the table below.

|  |  |  |
| --- | --- | --- |
| **Treatment** | **1st app (1st to 2nd instar, 4/30)** | **2nd app (3rd to 4th instar, 5/14)** |
| T1 | Untreated check | |
| T2 | Suprado |  |
| T3 | Tetrino |  |
| T4 | Ference |  |
| T5 | Plinazolin Tech. |  |
| T6 | Acelepryn |  |
| T7 |  | Suprado |
| T8 |  | Tetrino |
| T9 |  | Ference |
| T10 |  | Plinazolin Tech. |
| T11 |  | Matchpoint |
| T12 |  | Provaunt |
| T13 |  | Dylox |

Treatments were applied according to the mix rates in the table below, at 2 gallons per 1000 sq ft at 40 PSI using a two-nozzle CO2 backpack sprayer, followed with 0.1 in. Irrigation following each application. Each plot was a 5 foot by 5 foot area in an area known to be infested with ABW. 8 turf samples from each plot were collected and salt flushed to check for active larvae.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Product** | **Rate** | **Product** | **Rate** | **Product** | **Rate** |
| Suprado | 128 fl oz/A | Tetrino | 32 fl oz/A | Ference | 12 fl oz/A |
| Acelepryn | 12 fl oz/A | Plinazolin | 10.3 fl oz/A | MatchPoint | 16 oz/A |
| Provaunt | 18 oz/A | Dylox | 300 fl oz/A |  |  |

Our goal in analyzing this data is to compare the various insecticide treatments to the control plots in how effective they were at controlling ABW. We plan to use a Generalized Mixed Linear model to make these comparisons. The response variable is a count of the surviving larvae which follow a Poisson distribution. The predictor variable is Treatment, a categorical variable ranging from T1 to T13. The random variable is Blocks, ranging from Block 1 to Block 6.

To prepare the data for importation into R, the relevant data sheet was copied into a new excel file, and columns of data irrelevant to our analysis were removed. All header cells were edited to remove characters that can interfere with R. The cleaned excel file can now be imported into R using the readxl package.

SUMMARY STATISTICS FOR RELEVANT VARIABLES

PERTINENT GRAPHS

POSSIBLE OBSTACLES