

Purdue University  
Department of Entomology  
Undergraduate Capstone  
Project Summary

**Name of Student:**

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**Name of Mentor:**

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**Project Title:**

Infestation of Weevils in Grain Bins

**Project Summary:**

**Introduction**

*Sitophilus oryzae*, rice weevils are usually found in grain storage facilities or processing plants, infesting wheat, oats, rye, barley, rice, and corn. They penetrate and feed on the internal part of the grain in their larval stages, making it difficult to detect early infestations. Weevils can enter the grain bins through doors, eaves and fans. Once inside the bins they have the potential to move up and down. To manage the situation you have to make sure the bins are clean, keep grain temperature low and remove any weeds surrounding the bins. Some controls you can use are protectant insecticides and fumigation.

**Objective**

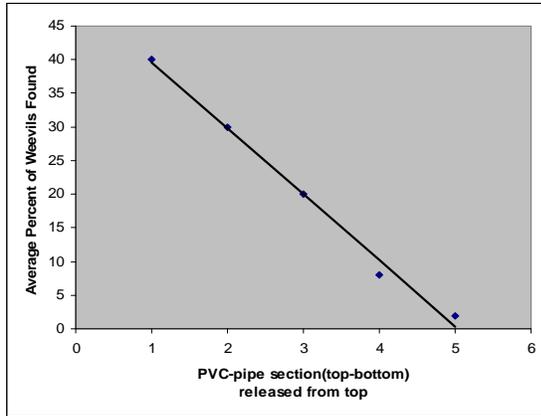
The objective of this study was to investigate if the point of access would influence the distribution of insects, weevils in this case, with a tower of grain.

**Experimental Design**

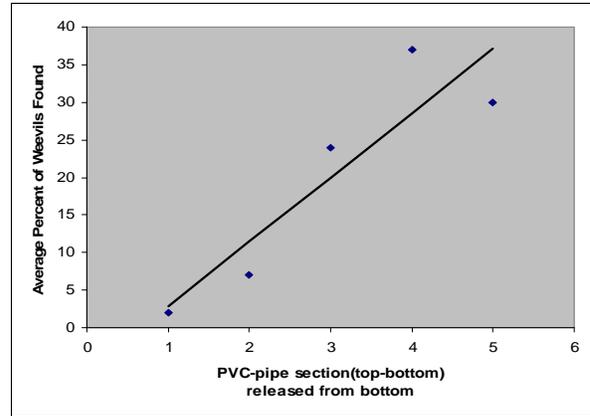
Newly harvested wheat was placed in 1.5m tall PVC- towers (5 towers per rep). Towers were divided into 0.3m sections (5 per tower). Twenty weevils were released at the top or bottom of each pipe and allowed to freely move for 7 days. At the end of 7 days the towers were unassembled by section, the adult weevils were removed from each section and the towers were held for 5 weeks. (This would not allow those laid at the end of 7 days to be adult yet). At the end of 5 weeks the towers were again disassembled and the number of insects and infected kernels were determined for each tower section.

**Results**

The graphs below show the average percentage of weevil damage in the PVC-pipe according to each section. There were five sections adding up to 1.5m tall towers. Figure 1, shows the results of the weevil damage where the weevils were released at the top of the towers. Figure 2, show the results of the weevil damage where the weevils were released at the bottom.



(Figure 1)



(Figure 2)

### Data Analysis

The weevils placed at the bottom of the PVC-pipe laid their eggs at the bottom of the pipes. The weevils placed at the top of the PVC-pipe laid their eggs in the top portion of the pipe. The data also shows that the weevil damage will be higher at the point of entry.

### Discussion

Weevils that invade areas with grain will take no time to damage the grain. Weevils lay several eggs and it's important that you manage the grain bins. Applying the right insecticides and fumigants are vital to managing grain bins. This information is not just for grain bins, this can also apply to your home or anywhere else where grain infestations are a problem.

### Acknowledgements

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