



**CALIFORNIA STATE SCIENCE FAIR  
2002 PROJECT SUMMARY**

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| <b>Name(s)</b><br><b>Matt E. Bowman</b>   | <b>Project Number</b><br><b>S0404</b> |
| <b>Project Title</b><br><b>Hfr-1 and the Hessian Fly</b>  |                                       |
| <b>Abstract</b><br><b>Objectives/Goals</b><br>The goal of my project was to determine how the Hfr-1 resistance gene is affected by the Hessian Fly.<br><b>Methods/Materials</b><br>Using TRIzol rna preps I was able to quantify wheat tissue that had been infested with Hessian Flies. Then I ran Northern blots to move the rna onto a Hybrid membrane. I then hybridized with a radioactive probe and exposed the membrane to film.<br><br>TRIzol, chloroform, ethanol, isopropanol, rna precipitation solution, agarose/formaldehyde gel: various pipettes, sterilized tubes, gel boxes<br><b>Results</b><br>The results of my three experiments were as follows: Exp. 1- I infested three pots with three male flies and three female flies, three pots with six of each sex, three pots with twelve of each sex, and three pots with twenty-four of each sex. Each group has its own uninfested control. I harvested the pots five days later. I performed TRIzol rna preps and Northern blots to come up with my results. The Hfr-1 resistance gene is not affected by higher levels of Hessian Flies.<br>Exp. 2 I wanted to see in which part of the wheat plant Hfr-1 was most induced. I infested ten pots with six flies of each sex. I then took parts of the plant. I determined that Hfr-1 is most induced 2cm above the ground.<br>Exp. 3 I wanted to determine if as long as Hessian Flies were present that Hfr-1 would stay induced. I infested eight pots with six flies of each sex. I then harvested one group and reinfested the others. I repeated this process until I finished them all. My results were that Hfr-1 is not affected by the amount of time the flies are present.<br><b>Conclusions/Discussion</b><br>Exp.1 The Hfr-1 resistance gene is not affected by large amounts of Hessian Flies.<br><br>Exp.2 Hfr-1 is more heavily induced 2cm above the ground<br><br>Exp. 3 Hfr-1 is not affected any differently as long as Hessian Flies are present. |                                       |
| <b>Summary Statement</b><br>To determine how the Hfr-1 resistance gene in wheat is affected by the Hessian Fly  |                                       |
| <b>Help Received</b><br>My aunt helped me with the research, my mom helped me with the board  |                                       |