

AN ALTERNATIVE MANAGEMENT STRATEGY FOR CODLING MOTH: AUTOCIDAL BIOLOGICAL CONTROL

Lisa G. Neven¹ and Holly J. Ferguson²

¹ USDA-ARS, Yakima Agricultural Research Laboratory
5230 Konnowac Pass Road, Wapato, WA 98951

²Heritage College, 3240 Fort Road, Toppenish, WA 98948

Codling moth, *Cydia pomonella*, was used to determine whether a conditionally sterile line of moths could be developed using molecular techniques. It was determined that embryo injection was the most efficient method of DNA delivery. It was also determined that the *piggyBac* transposable element resulted in consistent and stable transformation of codling moth. Injections using the *Hobo* transposable element resulted in numerous eye and palp mutations, but no stable transformations. The marker gene, Enhanced Green Fluorescent Protein (EGFP) was used in combination with the Actin A3 (BmA3) promoter from *Bombyx mori* to generate transformants. Stable transformation of EGFP expressing codling moths was determined using PCR, Southern Blotting, and inverse PCR. Two lines of EGFP transformed codling moth have been in culture since 1995 and have resulted in over 26 generations. Additional transformations of codling moth with a temperature sensitive, conditional, lethal mutation of the *Notch* gene resulted in transgenic lines highly expressing the EGFP and exhibiting embryo sensitivity to low temperature exposure. These results indicate that the development of conditionally sterile lines of codling moth can be developed using transformation techniques.