Codling Moth Two-Stage Model Documentation
USPest.org at Oregon State University and the Oregon IPM Center

This is an update of the older Jones et al. 2008 codling moth "no biofix" model, which will be removed from uspest.org.

This new model, abbreviation "clmp", combines the newer, more geographically robust, Jones et al. (2013) "no biofix" model, with the traditional Brunner and Hoyt (1987) model. The newer algorithm uses latitude and elevation to estimate the degree-days needed to predict biofix (first consecutive capture of codling moth in pheromone traps). Then the date of this prediction is used with the traditional model to predict later stages. This model may be an improvement over the practice of using pheromone traps to determine biofix because of:

- Low populations can make trapping first males rather uncertain
- Time and expense of trapping is not convenient (very labor intensive to check traps daily)
- Mating disruption uses same pheromones normally used for trapping (traps less efficient)
- Apples and pears are often grown in topographically varied regions (e.g. Hood River, Oregon), so biofix can vary greatly even within a few miles

Since degree-day models are run from nearby weather stations, we use the Jones et al. 2013 formula to make use of the station latitude and elevation to calculate degree-days for biofix, and weather data to predict the date for biofix.

This is a new two-stage model that should simplify codling moth decision making. If you wish to use the no-biofix prediction of the model start date with the Knight 2007 model, simply run the former and plug in the predicted biofix into the latter. Both the Brunner and Hoyt and Knight models are very popular, the former more so.

We recommend that you test the model thoroughly (using pheromone traps) to see if it works for your needs. We make no guarantees: please read all disclaimers about using models at your own risk, etc! Please refer to the Jones et al. (2013) publication at https://uspest.org/wea/Jones_2013_codling_moth_CM-biofix.pdf for more guidelines on how the model was constructed and tested and how to use it. Please send your feedback on how we can improve our open source, public services at any time. Emails are the preferred form of feedback (see our home page at https://uspest.org/wea).