

ECONOMIC THRESHOLDS FOR INSECT CONTROL

In recent days, observant Cache County growers have noted growing populations of insects in their crops. Many of these insects are beneficial while others are doing harm. Some damage is always expected, but excessive losses can be avoided with close and consistent observation of individual fields. One of the best ways to monitor insect numbers is to carry a sweep net in the pickup and use it on a regular basis.

Every attempted method of control or lack thereof, has an economic impact. Over the years, entomologists and economists have established "Economic Thresholds". These thresholds have been indispensable because they indicate the course of action to be taken in any given pest situation. Economic decision levels usually are expressed as the number of insects per plant or animal or sampling procedure.

In 1966, D. L. Chant termed the study of economic levels as bioeconomics. He argued that sensible pesticide use is possible only with an understanding of the insect population level that causes economic damage. Without such knowledge, we risk making illogical economic blunders, spending more to suppress an insect than the value of the commodity the pest could destroy. Conversely, understanding and properly using economic decision levels in dealing with pests can increase producer profits and safeguard environmental quality.

One example has to do with the cereal leaf beetle that has already been showing itself this year. Entomologists recommend scouting fields weekly by walking through the field in a "W" or "N" pattern to ensure coverage. Stop at 5-10 locations, depending on field size, and inspect 10 plants at each location. Record the number of eggs and larvae per plant for small plants or per stem for large plants. The recommended treatment threshold before the critical "boot stage" is 3 larvae per plant and/or 3 eggs per plant. Larvae will be concentrated on the flag leaves when they emerge. More than 3 larvae per flag leaf can negatively impact plant vigor and significantly reduce grain yield and quality. After the "boot stage" the treatment threshold changes to only one larva per flag leaf. Patient growers have found that parasitic wasps can hold cereal leaf damage to tolerable levels, but most are too nervous to get to that point.

The traditional economic threshold for alfalfa weevil in established alfalfa stands is 20 larvae per 180 degree sweep with a 15 inch net. Given the current high hay prices, growers are asking if they should treat at lower-than-recommended economic thresholds. Kevin Steffrey, University of Illinois Extension Entomologist, said, "Simplistically, if the commodity price doubles, the economic threshold is cut in half. My colleagues in research would take issue with that statement, but my rhetorical response

would be: What is the alternative? We aren't going to tell people to go out and solve quadratic equations for insect numbers versus yield and, quite honestly, neither they nor we have the data." Utah State University is working on a study this summer that challenges the traditional economic threshold for alfalfa weevil.

Black grass bugs have been a problem this spring in rangelands on CRP lands and in some pastures. Growers of wheat and barley have been nervous about having infestations move into their small grains. Economic threshold levels for black grass bugs are not defined, but widespread insecticidal control in forage grasses is usually not practical or economically feasible. Because these insects only have one generation per year, damage for this season is likely near the end. If it appears black grass bugs are moving into wheat or barley fields, one insecticidal treatment around the outside border is usually sufficient.

Our office has been receiving many calls on when to start spraying apple trees for the codling moth. Estimated spraying time for Cache Valley trees is between June 5 and June 7. Several products available from local garden centers or farm stores may include: Carbaryl (Sevin), Malathion and Gordon's Fruit Tree Spray. As always, follow label directions to maximize safety and effectiveness of the product. For additional information, visit <http://utahpests.usu.edu/ipm/htm/advisories/treefruit>.