

Evaluating Changes in Practices

Patricia McManus
Department of Plant Pathology
University of Wisconsin-Madison

To remain productive and profitable in the cranberry industry, a grower needs to implement changes in practices from time to time. Indeed, growing cranberries is a life-long learning process. A lot of learning is acquired by “trial and error,” or put another way, by experimentation. How can one determine whether or not a change in practice is making a difference? Well-designed and carefully executed field experiments are a good way to evaluate crop management practices. The following are some tips for doing field research. These guidelines are focused on pest control research, but the principles can be applied more broadly.

Tips for Field Research

1. Choose a site where the pest is a problem. You need to have good pest pressure to see a difference among the different treatments.
2. A good experiment has variables (e.g., different pesticide treatments) and a control (i.e., place where you leave everything as is so that you can compare your treatments to it).
3. Keep it simple. The fewer treatments you have, the more likely you are to carry through with all steps of the project and get meaningful results.
4. Ideally you have repetitions of your treatments within a single bed so that you can take the average. And even more ideally, you repeat the whole experiment in another bed and over multiple years. If results are consistent from experiment to experiment, the more likely that the trend you are seeing is real.
5. Be aware of the tendency to bias an experiment and fight it every step of the way! Think uniformity when you set up plots; don't put one treatment at the bed edge and another in the middle of the bed. When taking data, it might help to have someone unfamiliar with the experiment do ratings. To avoid “rater bias,” try to have one person do all the rating, or at least have one person do all rating for one set of repetitions.
6. Taking data. Obviously, the kind of data you take depends on the pest and what sort of damage it does to the crop. For some pests you can take data just once per year and get a pretty good idea of how a pesticide worked. For other pests, you might want to rate multiple times to see how sprays at different times of the year are working.

7. Statistical analysis is used to determine how "real" differences among treatments are. But if you are not trained in statistics, just be aware that the less variability there is among repetitions of a treatment, the more secure you can be in calling differences "real" and not just due to chance.
8. You must take complete notes at every step (experiment set up, observations during the season, and at harvest) and store them in a safe place where you can find them.
9. Cost vs. benefit analysis. Remember, it's not yield but profitability that you want to improve.