

The IPM Practitioner

Monitoring the Field of Pest Management

Volume XXIV, Number 8/9, August/September 2002

Special
Biocontrol Issue

Evaluating Biocontrol

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In the very first agricultural entomology course that I took as an undergraduate student (was it really a hundred years ago?), the professor stated that the most important characteristic of any approach to pest management was that it had to work. It made sense a hundred years ago, and it makes sense today. We can extol the virtues of biological control all we want on the basis of it being a natural and safe practice, or that there are thousands of technical research articles about it, but people will not adopt it unless it is effective. That long-ago professor listed some other factors affecting the adoption of pest control practices—namely, they had to be cost-effective and they had to be relatively easy to use. Finally, if a control practice met all the above criteria, it would be helpful if it did not have negative impacts on the agroecosystem or the larger environment.

Pesticide Paradigm

The Cooperative Extension Service has a long and noble history regarding the evaluation of pest control practices, at least, to a point. And these countless research and demonstration trials over the last several decades have done a lot to help pest managers make decisions about pest control options. But some types of pest management evaluation are easier than others, and some types have been done more often than others. One thing that we have done really well is evaluate the efficacy of pesticides. To simplify "spray and count" work, you count bugs or weeds or disease

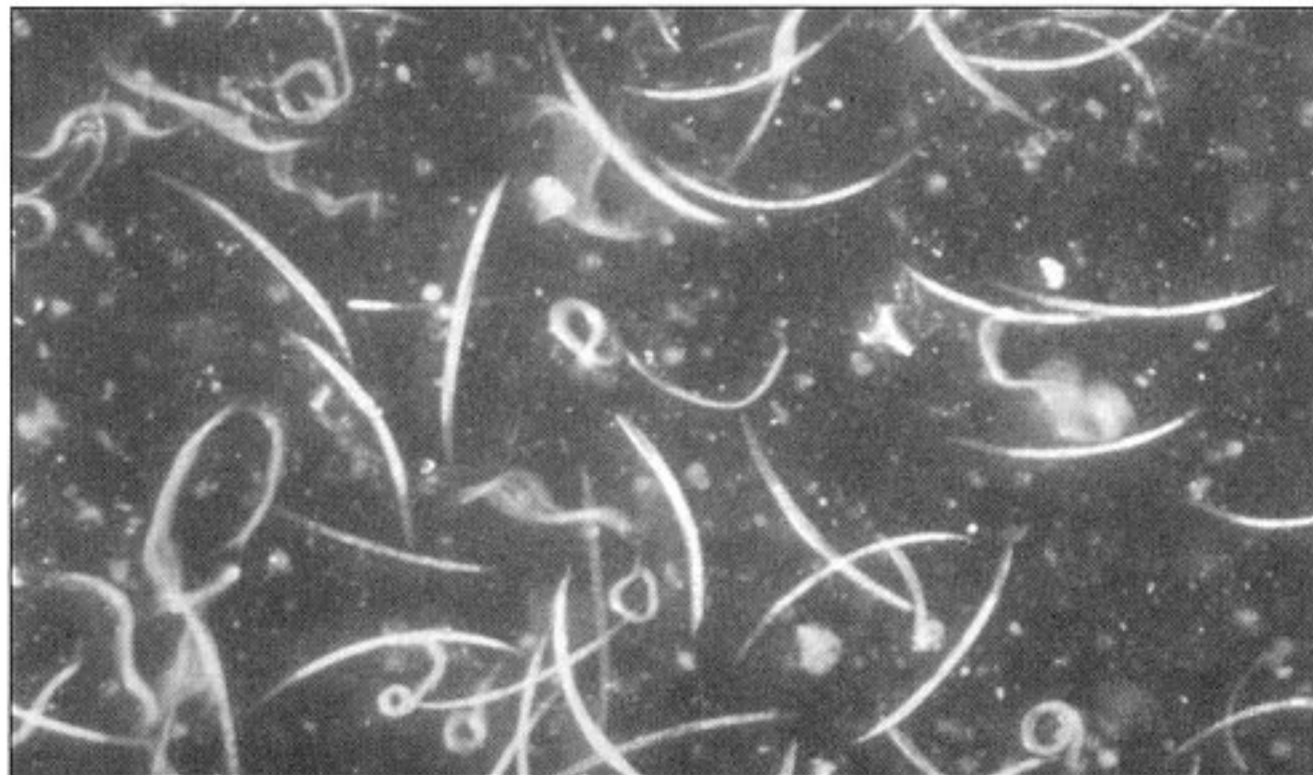


Photo courtesy of Raymond Clout

Biocontrol agents such as these nematodes must be alive to be effective. To evaluate quality, add water and observe under a hand lens. If the nematodes are moving, then they should be effective.

lesions in your plots. In one set of plots you apply the pesticide, then go back and count the bugs or weeds or disease lesions in all the plots. It is pretty easy to say "We killed all the bugs" or "99% fewer weeds germinated in the herbicide plot" or "We got a 22% increase in yield." We have also been pretty good at evaluating the impacts of certain other types of pest control practices, such as a tractor-drawn cultivator or a new disease-resistant crop variety.

Measuring Biocontrol

But in how many extension workshops or field days have you participated where the actual impact of a biological control was evaluated in a quantitative sense? I suspect, in most cases, relatively few. There are some reasons to explain this situation. Much biological control is provided by nature,

and it is hard to keep it out of some plots or fields while letting it be effective in others. Many biological control organisms are very mobile, and small plots just do not give good data, and the small-business based biological control industry is virtually without the resources to fund the needed large-scale research plots. And there are not very many state and federal research dollars to fund this type of research or demonstration work.

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