

# Knowing is half the battle: Increasing awareness of biocontrol as part of IPM through digital outreach

## Project Leaders

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## Project Location

Work is being done in Geneva, NY but is entirely digital and/or virtual. Stakeholders from Maine, Rhode Island, New York, Delaware, Pennsylvania, Maryland, Massachusetts, Washington D.C., and Connecticut have participated in focus groups, and project outputs will be useful throughout New York, the northeast and the rest of North America.

## Abstract

The retirement of its creator necessitates the migration of the website “[Biological Control: A Guide to Natural Enemies in North America](#)” to a new domain where it can be maintained and continue to serve as an important resource to a range of audiences, including farmers, extension staff, and the general public. This migration also creates the opportunity to re-design and update the website so that it is more useful and usable to target audiences. Updates will include reducing text, adding pictures, adding additional biocontrol agents, creating and linking short videos, and creating a database of biocontrol agents. This database will make it easier to search for information about specific biocontrol agents, or biocontrol options in specific crops or settings. It will also enable the generation of on-demand fact sheets on biocontrol. These fact sheets will be easier to update and easier to distribute to stakeholders, including those who do not have access to the internet. Updates to the website will be planned using input from focus groups representing stakeholders around the Northeast. The updated Biological Control website will be a great resource for extension agents and stakeholders across all agricultural commodities and among the general public, increasing knowledge and awareness of biocontrol as an important IPM strategy. This increase in knowledge and awareness has the potential to increase the successful use of biocontrol for pest management, decrease the use of chemical pesticides, and decrease risks to human health and the environment, while increasing effective and economical pest management in a variety of settings across the Northeast. In this first year of the project, focus groups have been used to gather information from stakeholders and the template for biocontrol agent profiles has been re-designed.

## Background and Justification

More than 20 years ago, Tony Shelton (Professor, Department of Entomology, Cornell University) launched the website “[Biological Control: A Guide to Natural Enemies in North America](#)”. The goal was “to extend the delivery of biological control information to the widest possible audience of researchers, extension personnel, educators, land managers, growers, and the general public” (Shelton). Experts from across North America contributed content, and links to the site exist on many other websites. As Shelton prepared to retire, he wanted to ensure that the site could be maintained and updated. While the site already contains a wealth of research-based information, some updates are needed. New biocontrol agents continue to become available and knowledge about biocontrol agents continues to increase. As these updates are made, the website will also move to a new home at [nysipm.cornell.edu/environment/biocontrol/](https://nysipm.cornell.edu/environment/biocontrol/). This move will allow us to take advantage of the increased functionality of the Cornell College of Agriculture and Life Sciences (CALs) Drupal environment, that will improve the usefulness and usability of the Biological Control website, as we add new information.

## Objectives

Objective 1 - Improve the usefulness and usability of the existing Biological Control website while migrating it to the NYS IPM website.

Objective 2 - Create and add new content to the Biological Control website, including information on biopesticides and new arthropod biocontrol agents, and short videos that explain basic biocontrol concepts.

## Procedures

Nine focus groups were conducted virtually to solicit input from 32 stakeholders, including extension professionals, home gardeners, museum and park managers and growers in Maine, Rhode Island, New York, Delaware, Pennsylvania, Maryland, Washington D.C., and Connecticut. Participants were asked what questions they have (or have been asked) about biocontrol, and what words or phrases they would use to search for answers to these questions. Then they were sent into individual breakout rooms and asked to use the current version of the website to look for answers to their questions. Participants who participated on a computer were encouraged to share their screen within their individual breakout room and record (preferably with narration) their attempts to find the answer to their questions. After spending 10 minutes browsing the current website, participants were asked to reflect on how easy or difficult it was to find answers to their questions, what might have made it easier, and what changes would improve the website. Finally, participants were asked about the best ways to share information about the updated website when it is ready, including digital and print formats.

All focus group participants, as well as additional stakeholders (especially home gardeners and Master Gardener Volunteers) were invited to respond to a short survey about where they currently find information about biocontrol. They were also asked whether they use the current Biological Control website, and if not, why not.

Based on the results of the focus groups and the surveys, I designed a template for writing the modified biocontrol agent profiles. I am in the process of finalizing a Qualtrics survey to collect profile content from authors and have begun author recruitment.

## Results and Discussion

Results from the focus groups indicate that while the current site has excellent information, it would be difficult for non-scientific audiences to find answers to their questions. All participants would like to quickly find practical information, like where to purchase biocontrol agents and exactly how to release or apply them. In

particular, growers pointed out that they would be looking for quick answers about how to use biocontrol in response to a pest they just identified in the field. For this reason, growers also pointed out that mobile compatibility is essential.

From a design standpoint, participants recommended that more and higher quality pictures with better captions be added. They also recommended adding or linking to videos, and developing more graphical ways to communicate information. They suggested that either the amount of text be reduced, or that text be broken up (e.g., with anchor links and headings) to allow easier and faster navigation to relevant information. Some participants also pointed out that while there was a lot of text, the information was good.

To make the website more useful to and usable by a broader audience, focus group participants strongly recommended that biocontrol agents not be listed only by scientific name, as these names are not well-known to non-academic audiences. They also suggested that multiple common names or even descriptions of what the biocontrol agents look like might be added. One participant pointed out the importance of offering translations of the content into additional languages besides English (especially Spanish). Some revealing comments from participants included:

"It would be hard for a home gardener or [Master Gardener Volunteer] to know where to go to find the information they wanted."

"This website reads like it's written by scientists, for scientists (especially entomologists)."

"At first glance it looks like too much information. But as you begin to read you realize the information is essential."

Focus group participants had helpful suggestions about additional information that should be added to the biocontrol agent profiles, including:

- whether the biocontrol agent is native or introduced
- should the biocontrol agent be used indoors or outside; released or conserved; at what time of year
- is the biocontrol agent compatible with pesticides (and which ones)
- is the biocontrol agent commercially available

In general, participants thought that the general layout of the profiles was good and contained valuable information, but that the profiles could be reformatted to make it easier for readers to find answers to practical questions quickly. However, they suggested that links to the more detailed information be maintained for readers who want to learn more. This would hopefully retain the utility of the site to a scientific audience, while also making the information more useful to non-scientific stakeholders. This feedback helped me create a template to send to potential authors when soliciting new articles.

Finally focus group participants helped me develop a list of important biocontrol agents that are not currently on the website and should be added, including: praying mantis, the rust fungus that attacks Canada thistle, the entomopathogenic fungus *Beauveria bassiana*, *Trissolcus japonicus* (the relatively recently introduced egg parasitoid of the brown marmorated stink bug), and many important greenhouse biocontrol agents. Participants also requested that profiles on more microbial biocontrol agents be added, including those used against plant diseases.

Many participants commented on the limited ability to search or browse the current website by multiple criteria of interest. For example, many stakeholders want to search for biocontrol agents by the pest they control, rather than by the type of biocontrol agent or the general habitat in which it lives. Others want to search by the crop being grown. The new Drupel environment will enable us to put the content of these profiles into a database

format, which will be searchable by multiple criteria. However, participants were still interested in having a site-wide (but limited to this site) search feature, even if multiple search criteria were available once the content is moved to a Drupal database.

While Facebook was the most popular social media platform for sharing information about the updated website, once it is launched (Fig. 1), focus group participants pointed out that different social media platforms will reach different groups. For example, Facebook may be better for reaching older or more established growers, while Instagram could be a good way to reach younger and newer growers, as well as hemp, cut flower, and urban growers. Participants also suggested that the new site be advertise through digital or print newsletters and emails from Extension, government, other organizations, or industry.

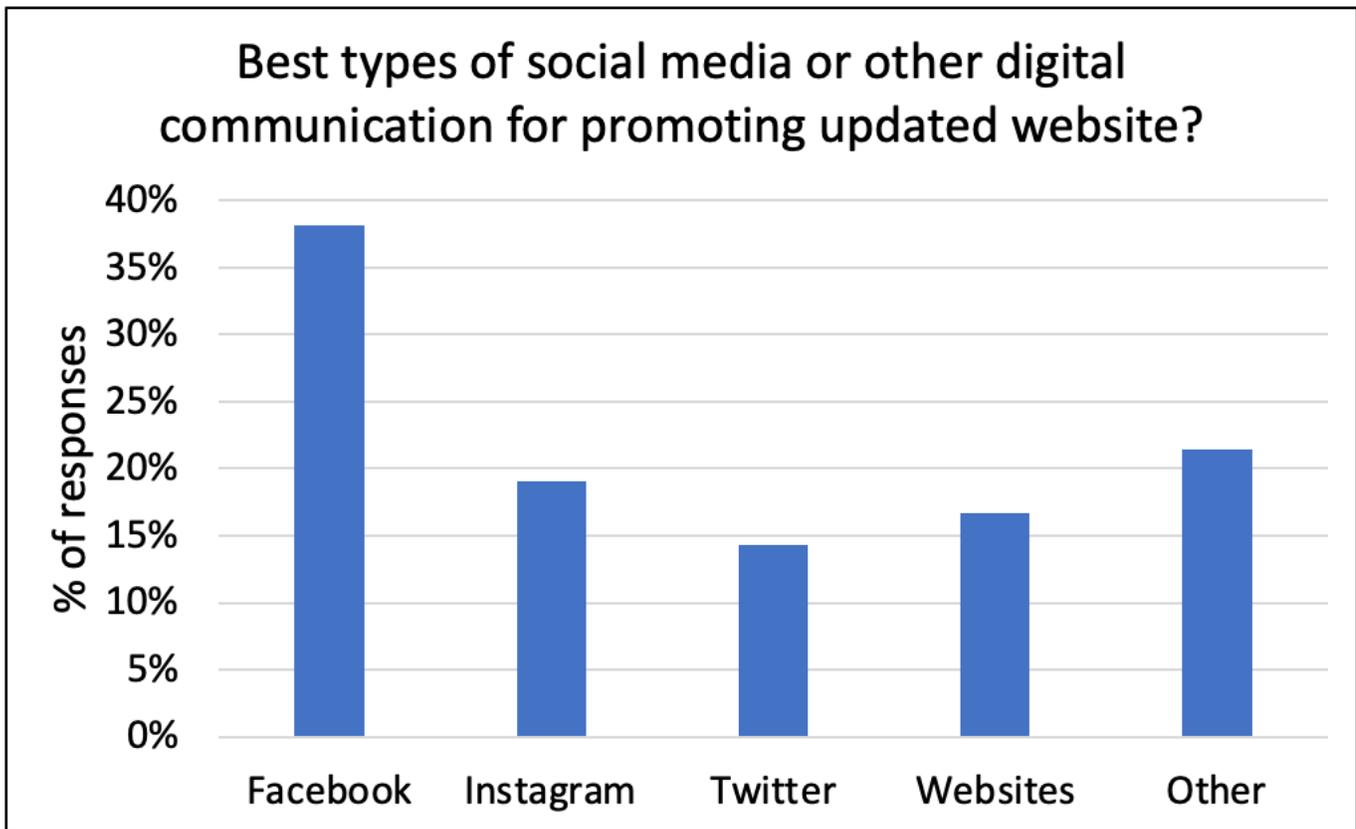


Figure 1. Responses to the question “What are the best types of social media or other digital communication for promoting the updated website?” Other responses included digital newsletters and email lists from industry, extension, government, and other organizations.

A total of 299 people responded to the survey; mostly home gardeners and/or Master Gardener Volunteers (84%) and extension personnel who primarily work with home gardeners (12%). The vast majority of responses (84%) were received from Pennsylvania, with much smaller numbers of responses received from New York, Rhode Island, Delaware, Connecticut, Massachusetts, Maryland, and Maine. Most respondents (88%) reported getting their information about biocontrol online from Land Grant Universities or Cooperative Extension, representing 49% of the total responses. Meanwhile, 40% of respondents find information from other online sites, representing 23% of total responses, and 30% of respondents get information from phone or in-person conversations with their local Cooperative Extension office, representing 17% of all responses. However, 94% of respondents had not used the current Biological Control website to find biocontrol information. A similar percentage had never referred others to this website, primarily (96%) because they did not know the website existed.

## Outcomes and Impacts

None to report at this time.

## Grants Funded

Two graduate students in the Cornell Entomology Department were awarded an Extension and Outreach Assistantship for a total of three semesters in fall 2021 and spring 2022 to contribute content towards the updated website.

## References

Shelton AM. Biological Control: a Guide to Natural Enemies in North America.  
<http://www.biocontrol.entomology.cornell.edu/>. Accessed 4 Nov 2019.