GROWERTALKS

Cover Story

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Navigating the Challenges of Shipping

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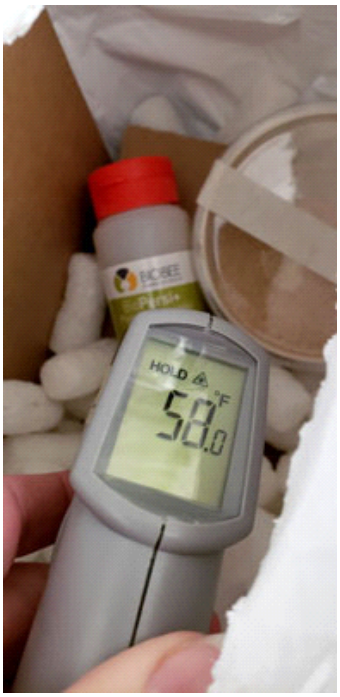


Growers invest considerable effort to ensure their pest management programs are effective. For those incorporating biological control, it requires a bit more effort at the outset (but the rewards are well worth it). These growers meticulously identify pest species, order the correct beneficial organisms, monitor their pesticide applications to avoid harming their beneficials, and plan carefully for the arrival of their shipments. However, there is often one factor that is outside their control: shipping.

One company working hard to remove shipping concerns is Beneficial Insectary. Located in Reading, California, their staff has worked diligently to not only ensure the organisms they produce are in optimal health when they leave the facility, but remain viable throughout the shipping process. Decades of research has gone into optimizing bottle sizes, packaging materials, ventilation, humidity and temperature during transit. Yet, despite these precautions, shipping mishaps—such as delays or exposure to extreme temperatures—can occasionally occur. While most shipments arrive without issue, when problems do arise, the consequences can be devastating to a pest management program. Releasing compromised beneficials is essentially the same as releasing none at all.

Pictured: Checking the temperature inside your package of beneficials upon arrival is crucial. Your supplier should provide guidance on the acceptable temperature range for the package upon delivery. Inexpensive infrared thermometers are an excellent tool for quickly and accurately measuring the temperature inside the package.

Leveraging technology to protect beneficials

To mitigate the risks associated with shipping, Beneficial Insectary is turning to advanced technologies, including the use of data loggers. About the size of a thumb drive, this compact device is placed inside packages to record conditions such as temperature and humidity throughout the journey.

When the shipment arrives, growers and insectary staff can download the recorded data to identify any periods where conditions exceeded acceptable thresholds, such as exposure to excessive heat or cold. These devices also capture the duration of these fluctuations, providing essential insights into whether the beneficials may have been affected.

If the data indicates potential harm, the insectary can advise growers on appropriate next steps. This may involve

quickly dispatching a replacement shipment, ensuring growers aren't releasing compromised beneficials into their pest management programs.

Pictured: Data loggers (pictured in brown envelope) are increasingly used in shipments of beneficial insects and mites to monitor temperature and humidity inside the shipping package. If you discover one in your shipment, contact your supplier to learn how to share the recorded data with them.

Identifying and resolving shipment challenges

Speaking with Beneficial Insectary, they recounted one instance a customer reported high mortality in a shipment of their beneficials. Their team immediately cross-referenced the available data and confirmed that the product had left the facility viable.

To investigate further, they requested the customer's permission to track their next shipment using a data logger. This device allowed Beneficial Insectary to monitor environmental conditions during transit and pinpoint any potential issues. To ensure a smooth process for the customer, they outlined a simple, user-friendly method for handling the data logger:

1. Note the time the shipment arrives.

2. Remove the data logger device and plug it into a computer (USB format).

3. Download the PDF report and email it to the customer service team.

Upon receiving the data, Beneficial Insectary analyzed the parameters and identified the issue: a shift in external temperatures during transit caused the cooling elements in the packaging to underperform, compromising the shipment. In other words, the beneficials got too hot.

Armed with this information, Beneficial Insectary implemented changes to their packaging process for the next order, introducing additional cooling materials to better account for external temperature fluctuations. Subsequent shipments demonstrated excellent results, with the customer reporting no further issues.

Pictured: Data loggers work by using built-in sensors to measure environmental conditions, such as temperature and humidity, at regular intervals. The device collects and stores this data in its memory, which can later be accessed via software or a connected device like a computer or smartphone.

A proactive approach to shipping success

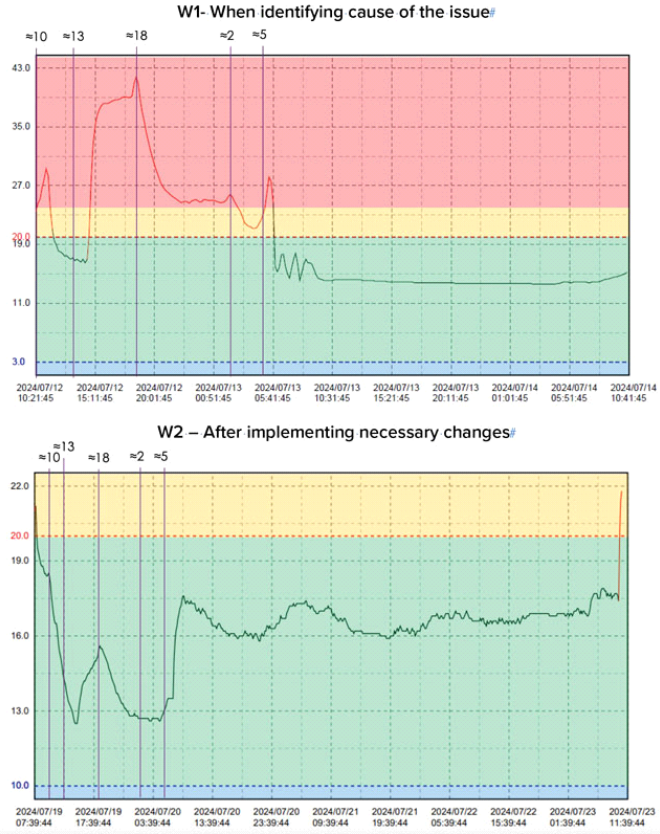
Beneficial Insectary and other suppliers prioritize proactive shipping practices to minimize risks and ensure the safe delivery of live organisms. By combining careful preparation, collaboration with growers and the strategic use of technologies—such as data loggers—they help ensure growers receive healthy beneficials. This saves the grower time and money because it helps ensure the effectiveness of their beneficial insects, predatory mites and nematodes.

While data loggers aren't included in every shipment due to their cost and the learning curve for growers, insectaries

use them in critical situations, such as extreme weather conditions or shipments with potential risks along specific routes. Whether or not to include a data logger is something to discuss with your supplier, but as this technology continues to advance, expect prices to become more affordable, potentially allowing for broader use in routine shipments.

Inspecting the shipment

When a shipment of beneficials arrives at your facility, take it to a suitable area for inspection. Avoid leaving shipments exposed to extreme heat or cold. Open the box and check the internal temperature (an infrared thermometer is ideal for this task). The optimal temperature may vary depending on the type of beneficials you've ordered, so consult your supplier to understand the recommended range. If the temperature is outside this range, there's an unusual odor or condensation is present inside the packaging, these may indicate potential issues.



Tables 1 & 2: This highlights the transformative role that data
loggers play in enhancing supply chain reliability. A small, unobtrusive device can uncover critical vulnerabilities, enabling proactive solutions that safeguard product quality and elevate customer satisfaction.

Why is temperature control so important?

If beneficials become too cold they risk freezing to death. On the other hand, if they warm up, they may become active and deplete their stored energy, particularly since not all beneficials are shipped with food. In some cases, predators in the shipment might even resort to cannibalism when they're overly active.

Temperature fluctuations can also lead to condensation inside the containers, causing the beneficials to stick to the packaging and compromising their viability.

Extensive research has gone into designing the containers used for shipping beneficials, including considerations such as screen size for air exchange. Proper airflow prevents the buildup of carbon dioxide, which could be fatal to the beneficials. Every detail is meticulously planned to ensure the beneficials arrive healthy and ready for release.

What to do if shipments are compromised

If your shipment of beneficials arrives and you suspect an issue, contact your supplier immediately. Companies have varying policies on how much time you have to report a problem, so be sure to familiarize yourself with these policies in advance. The insectary will be able to guide you through assessing if the beneficials are healthy to release or not.

If it's confirmed that the beneficials aren't viable and a replacement shipment cannot arrive in time, you may need to consider a temporary pesticide application to manage pest populations. In such cases, it's essential to collaborate with a trusted pest advisor to select a product that won't leave harmful residues. This precaution helps ensure that replacement beneficials can be released successfully without being affected by pesticide residues.

The future of shipping and biological control

Beneficial producers are looking to the future, constantly exploring new ways to enhance the shipping process and improve the reliability of biological pest control solutions. In the case of Beneficial Insectary, this includes further investments in North America to produce beneficial organisms closer to their customers, enabling faster delivery and fresher, more effective products. They are also utilizing AI to assess the quality of beneficial organisms right before departure, ensuring that only the healthiest products are shipped.

Additionally, they're investigating advancements in packaging materials that better regulate temperature and humidity, ensuring the safe transit of beneficial organisms even in extreme conditions. And as discussed, they're looking at low-cost data logging technologies, which could make this valuable tool more accessible for all growers.

Shipping beneficial insects has come a long way over the past 40 years. In the early days, orders were placed via fax and tracking packages often took hours. The industry also lacked the technology to monitor internal packaging temperatures in a cost-effective manner. Today, advancements in science and technology have significantly improved the quality of the beneficials that arrive at your doorstep. This progress will continue, offering you even better quality products for managing pests in the future. **GT**

Grower Checklist: Protecting Your Biological Control Program

To ensure the success of your biological control program, it's crucial to follow these key steps when handling beneficial organisms:

1. Store beneficials correctly upon arrival. Ensure they're kept in optimal condition as soon as they reach your facility. Consult your supplier for specific storage requirements.

2. Release them promptly and in optimal conditions. The sooner they're released, the more effective they'll be in managing pests.

3. Monitor environmental factors such as humidity and temperature in your operation to avoid conditions that could reduce the effectiveness of beneficial organisms.

4. Collaborate with suppliers to troubleshoot any shipment issues, ensuring quick resolutions if challenges arise.

By following these steps and working closely with crop advisors, you can minimize risks and maintain the health of your pest management programs—even when shipping challenges arise.

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