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Heater (got you) down? Avoiding cold damage on basil

With the recent cold weather across the country, cold-sensitive basil is susceptible to damage from cold air. This eGRO Edible Alert will review some of the common causes of cold damage on basil in the greenhouse and how to avoid it.

Basil (*Ocimum basilicum*) is the most popular and economically important containerized and fresh-cut culinary herb grown in greenhouses and other controlled environments. However, it is also one of the most cold-sensitive culinary herbs grown as well.

Although one of the benefits of using greenhouses and controlled environments to produce basil is the ability to control, manage, and manipulate air temperature, things don't always go according to plan.

In a recent visit to a greenhouse, the grower shared some basil that had been damaged by cold air temperatures in the greenhouse. Although they manage their air temperature properly, their unit heater in one of their bays with containerized basil had failed during this recent cold snap much of the country has been experiencing. The result was a textbook case of cold damage on basil foliage (Figs. 1 and 2), including necrotic spots and discolored foliage. One reason why cold damage on basil is so problematic is that it renders the crop unsaleable, be it fresh-cut or containerized basil. Furthermore, for containerized basil, trimming off the damaged shoots and regrowing new shoots produces unappealing, awkward, and unmarketable "re-finished" plant appearance.

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Figure 1. The necrotic lesions and discoloration on these basil leaves is a classic sign of damage from cold temperatures. .
Photo by: Christopher J. Currey

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This is not the first eGRO Edible Alert to focus on the effect of cold air temperatures on basil. For a comprehensive review on the topic, please refer to eGRO Edible Alert Vol. 3 No. 6 from March of 2018, “Preventing Chilling Injury of Greenhouse and Vertical Farm Grown Basil” by Roberto G. Lopez. However, we will review a few simple steps to take to try and avoid basil cold damage in the greenhouse.

First, if possible, keep basil away from cooler or draftier locations in the greenhouse, such as by cooling pads or exhaust vents where cold air may penetrate inside the greenhouse. The basil shown in Fig. 3 was in a warmer location in the same greenhouse as the cold-damaged plants, but you can see it did not succumb to the cold temperatures. Placing cold-tolerant species, such as the cilantro (*Coriandrum sativum*) in Fig. 4, in these draftier locations is a better idea. If you have to place your basil in these locations, take precautions to make sure cold air won't damage the crop. Cover cooling pads to stop air from entering the greenhouse. Ensure any louvres on exhaust fans move freely and are not getting stuck in the “open” position.

Another important step to take in avoiding cold damage is regular maintenance of heating systems, including unit heaters and central boilers. Several extension publications and trade articles online are available which detail specific, actionable items should be taken on an annual basis to ensure peak performance and help avoid unit heater and central boiler failures.

When the outdoor temperatures plummet, ensure you have taken the proper precautions to keep your basil protected from cold temperatures to maintain healthy and marketable product.



Figure 2. Once basil has symptoms of cold damage, there is nothing that can be done to salvage the crop. Photo by: Christopher J. Currey



Figure 3. These basil plants were in a different location in the greenhouse that did not get as cold as the section where the unit heater went out, and they are not displaying any signs of cold damage. Photo by: Christopher J. Currey



Figure 4. In the same facility, cold-tolerant cilantro survived the cold temperatures without any symptoms of damage. Numerous culinary herb species are cold-tolerant. Photo by: Christopher J. Currey

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