

# Evaporative Cooling System

What growers are saying about the system.

By Mackenzie Gaffney



About 95 percent of the time, water will solve heat issues, and in the greenhouse it is no different. American Coolair used this theory when designing its PVC Evaporative Cooling System, which has been around for years. Not long ago it introduced the PVC Open-Top Evaporative Cooling System to the marketplace. American Coolair has relied on relatively natural applications to make its products achieve 10- to 25-degree heat reductions.

The concept of evaporative cooling used by American Coolair is to counter periods of extreme temperature that affect in-house environments and thus production. It has designed the evaporative cooling pads (evap pads) from specially formulated cellulose paper that becomes saturated with water and produces cool air when large amounts of warm air are pulled through the pads. Gene Young, owner of Young's Nursery & Greenhouses, Gallatin and Smithville, Tenn., relied on Mother Nature to keep his greenhouses cool until purchasing an American Coolair system. Young said, "We have been using the system for about three or four years, and before that we were using air directly, no cooling systems. The system instructions are self explanatory, and so far the cooling system has been effective and trouble-free."

## SYSTEM DESIGN

**PVC Evaporative Cooling System.** Your individual needs should be recognized when considering a switch from natural air to a cooling system such as the transition Young made. "I highly recommend the system if you need it, such as when rooting in the summertime," Young explained. And with a system you have more control as to the successful cooling needed for profitable production. This is especially true in areas where temperatures remain high for extended periods.

**PVC Open-Top Evaporative Cooling System.** The difference with the open-top system is that it does not require you to remove the tops to thoroughly clean the units as with the earlier model. The open top is designed to easily detect clogged water holes that aid in making it easier to clean. This is in addition to the features of the original cooling system, i.e., pads, piping and pump.

"We have the PVC Evaporative Cooling System with the open-top, which is a good system — far better than the aluminum system that we have used in the past," said Mark Gerace, CFO of Welby Gardens, Denver, Colo.

**The Evaporative Cooling Pad.** Evap pads are 4-6 inches thick and 12 inches wide with height in 12-inch increments of 24-96 inches. The cellulose paper pads have anti-rot salts, stiffening saturants and wetting agents that are immersed into each pad. Evap pads are self-supporting and positioned adjacent to each other to acquire the desired length and height. As a general rule set by American Coolair: 4-inch pad systems use 1 sq.ft. of pad per 250 cubic feet per minute (CFM) and 6-inch pad systems use 1 sq.ft. of pad per 400 CFM.

**Pump, Sump and Water Distribution.** "Our system is not leaking," Gerace said. "The connections with our aluminum systems always leak, but this system seems foolproof. The gutter systems are part of the reservoir, that allows us to avoid having a problem with water and holding capacity."

The system comes completely self-contained, featuring a built-in sump that stores water for the entire system using either a submersible or centrifugal pump. The PVC pipe has metered outlet holes and a water trough with the PVC sump that holds water supply for up to 60-foot-long and 8-foot-high systems.

## MAINTENANCE

"The method of keeping the pads clean is a main concern," said Bruce Knox, president, Knox Nursery, Winter Garden, Fla. "We use a

copper tubing system that cuts down on the algae, staying away from chemicals like Clorox because it is highly corrosive."

The best way to keep the system performing in top condition is to take preventative measures against algae. "We don't treat the system, we just treat the water. We chlorinate the water on a regular basis, using ½ ppm," said Gerace. "The systems are also shut down almost every night a couple hours before sunset. We don't have a problem with algae."

It is recommended by American Coolair to never use straight Clorox to clean the system because it will destroy the pads. If chlorine must be used it is best to use a chlorine tablet which will not harm the system because the water will never absorb more than it can handle. According to American Coolair, the pads will last five or more years with proper maintenance.

## LAST NOTE

The evap pads were made to give the most cooling when warm air passes through the pads. To be the most effective, the evap pads, and system, should be centered on the plants that are to be cooled, so the upper portion of the pad is at the same level as the top of the crop to be cooled. Overall, growers have had success with this cooling system. As with everything, there needs to be attention towards maintaining the system. GPN

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