GROWERTALKS

Columns

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Examples of Air Pollution

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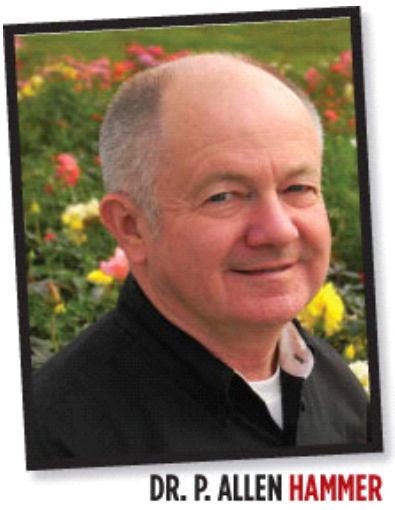

During the last month, I've seen two different greenhouse air pollution problems. Both entirely different, but resulted in plant injury. The two greenhouse structures were also entirely different. In one case, the plants showed signs of increased branching and somewhat abnormal growth. Not all of the plants of a single species and single cultivar in the greenhouse were affected by the pollution. In the second case, plants were actually killed by the pollution, but again with varying degrees of injury among different cultivars of the same plant and differences among plant species. There are some very important lessons to be learned from these experiences.

The plants in the first case were in a single Quonset, plastic-covered greenhouse with two gas unit heaters. When I first looked at the plants, my guess was mites. But upon looking at the shoots under a scope it was apparent insects were not the problems as none were found. Not every plant shoot was affected, so one wouldn't be led to believe it was an air-pollution problem. However, I suggested the grower check the heaters for cracks in the heat exchangers because it just looked like ethylene-type damage to me.

A month later the grower said to me, "By the way, I found a large crack in the one old gas heater and replaced it—the plants are now growing normally." There are several important lessons here: 1) The fact that every plant was not affected the same cannot always be used to rule out an air-pollution problem. The affected plants were bougainvillea stock plants with shoots of varying ages and stages of development. My guess is the air pollution from the heater was affecting only one stage of growth, therefore the varying symptoms. 2) The affect the gases from the heater was having on the overall growth of other plants in this greenhouse was not apparent to the grower's eye. A little suppressed growth on other plants would never be recognized, but could cost real dollars in production. I encourage growers with unit heaters to do a scheduled, routine check. Check the heat exchangers and make sure the chimney vent is working properly. And don't forget—gas unit heaters need fresh air from the outside to work properly, which means an open-air intake to the outside.

The second air-pollution case was in a very new, modern glass-covered greenhouse that was being expanded. The expansion was connected to the present greenhouse with all the exterior walls and roof in

place in the new area. Only the interior finishing work was being completed with welding and lots of machines with gasoline engines. In this case, the pollution did kill some plants while severely injuring other plants. But the surprising observation was some cultivars of the same plant showed much less injury than others. Air pollution is certainly not a breeding selection criterion for floriculture plants, particularly for the multiple pollutants that could come from welding and gasoline engines in the greenhouse. But I've seen herbicide damage in greenhouses that completely killed one plant cultivar while another cultivar showed absolutely no damage.

Air pollution in greenhouses is very real, but one of the most unrecognized problems by growers. My experiences in the last several months remind me of how big air pollution can be in the greenhouse. I urge grower to check their heaters. Think about every possible source of unwanted gases in the greenhouse. There are a great deal more greenhouse air pollution problems than we recognize or want to admit. Remember, every plant does not respond the same to a pollutant. One cultivar may be very happy with a small dose of ethylene, while another cultivar may become twisted and stunted from the same dose.

And most important, as a grower you cannot see, feel or even smell air pollution affecting your plants. And it's really expensive to wait until the plant "shows" you an air pollution problem. The grower has a responsibility to provide a "clean" growing environment for plants. **GT**

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