

SULFUR DIOXIDE (SO_2) INJURY TO BEDDING PLANTS

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Last spring a grower was having problems with his bedding plants (petunias and pansies). They had developed a marginal leaf burn plus white spots on the leaves (Figure 1). It did not appear to be a fungus problem but leaf, plant and soil samples were taken. The leaves were checked and there was no disease problem. The soil was analyzed and the only thing found was that the ammonium nitrogen was a little high. Suggestions for reducing this were made. However, after about a week, the plants in his greenhouse looked worse. Plants placed in our greenhouse looked better.

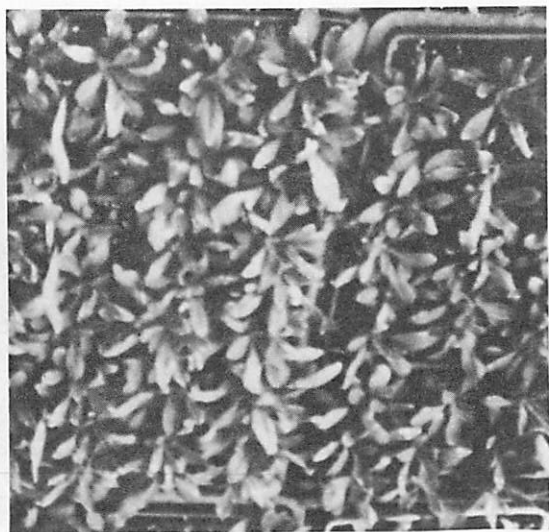


Figure 1. Sulfur dioxide burn on petunia.

The plastic greenhouses were heated with forced hot air furnaces. Two were 300,000 BTU's and one was 150,000 BTU's. The grower checked these as the injury did look like air pollution damage. The furnaces were reverted to the outside. The firebox was checked for cracks, but everything appeared to be all right. Not so. His plants were getting worse. The plants in our greenhouses looked very good.

Look closely at the picture of the furnace (Figure 2) to determine what was wrong. Note: The smokestack was extended almost to the ground NEAR THE BLOWER FAN. When the furnace came on, the blower drew fumes of SO_2 (sulfur dioxide) down the stack and distributed them very nicely throughout the house. Contributing to this was the fact that the furnaces rated for 300,000 BTU's had 2 gallon/hour nozzles. The furnace repairman neglected to tell the grower to reduce the nozzle size to 1.65 or 1.75 gallons per hour after the first year of use.

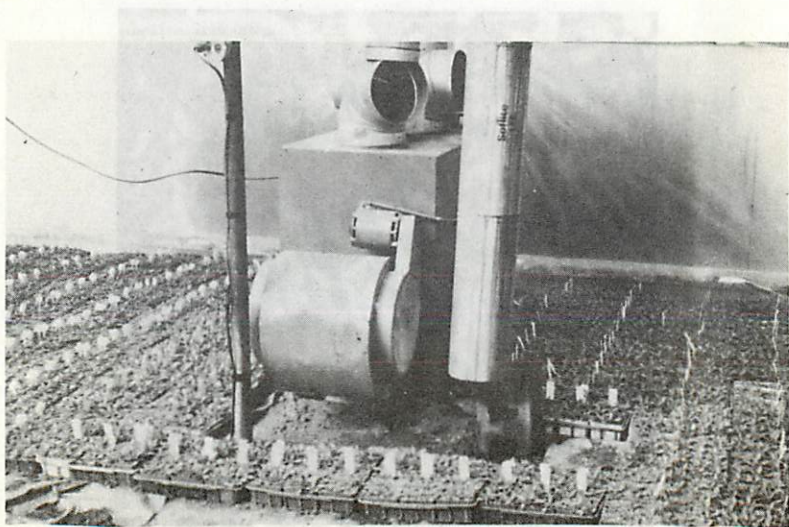


Figure 2. Malfunctioning hot air furnace.

After a year of operation, carbon deposits and a general lowering of efficiency of this type of furnace do not permit operation at the full 2 GPH rating. It is essential to reduce the nozzle size to maintain efficient combustion.

Once the stacks were moved, the problem was eliminated. However, the grower did have some losses as total time elapsed was about 2-3 weeks. One thing found out was that ordinary furnacemen know very little about the requirements for heating and ventilating greenhouses.

If a grower suspects sulfur dioxide in his greenhouse, a good detector plant is a white, fibrous-rooted begonia (White Comet). It will develop grayish to ivory colored spots on the leaves in 24-48 hours after being exposed to this pollutant.