

GREENHOUSE FIRES, THEY CAN HAPPEN TO YOU

by Paul A. Thomas, University Of Georgia

I wish this were not a true story. I was headed for an extension meeting and was driving back country roads. I opened the car window for some of that fresh, Georgia pine air. There was a horrid smell in the air and I knew the cause of that smell. Burning plastic and peat! It was 5:30 am, cold and dark enough you couldn't tell there was a greenhouse up ahead in the fog. Only it wasn't fog. It was smoke, rolling down the hillside.

I pounded on the grower's door. "Your greenhouse is on fire!" I yelled. The door opened. "You're joking, what are you doing here?" was the response. Seconds later the grower's nose woke up and a look of fright came over her face. There was no sign of flame as we opened the back door to the greenhouse. What we saw was as amazing as it was horrifying. A stack of flats left on a floor mounted gas heater was melting. Each droplet of plastic ignited as it hit the propane heated air, sending hundreds of tiny balls of fire onto the bedding plants and hanging baskets and greenhouse sidewall.

Opening the greenhouse door was a big mistake. The smoldering peat flamed up and smoke billowed. I grabbed the hose, turned it on and committed the second big mistake. The hard spray of cold water on ignited, melting plastic exploded, sending millions more fireballs in the opposite direction. The vent fans came on, the flames spread and we realized that turning off the power was our best bet. But where was the switch? The grower ran to another greenhouse on the other end of the property and killed the main. Once the fans were off, it took us only ten minutes to put out the fire.

The crop, heater, plastic covering and the grower's employment were a complete loss. The owner was not impressed with the grower's explanation that a new employee had put the flats on the heater. When the fire inspector and insurance people came by, they were not impressed by a lot of things...It was a very bad week for that greenhouse owner.

Every year there are hundreds of minor greenhouse fires in the U.S. Unfortunately, many growers do not consider fire a serious threat. The comment is often heard, "What can burn?" or "I have water hoses everywhere...if we have a fire we can put it out in no time, right?" According to Bob Decker, of Florists Mutual Insurance, the answer to the first question is easy. Aerosol cans, gasoline from mowers trimmers, and chain saws, boat or RV stored in the greenhouse work shed or service building can burn. So can plastics of all kinds, paper, cardboard, bark chips, dry

peat, fiberglass and poly coverings. Not to mention the greenhouse itself.

The answer to the second question is a little less clear. "Only if your lucky...being there is no guarantee" stresses Gip Marchette, owner of Wolfskin Growers, Winterville, GA, who had a greenhouse fire this year. "I was loading the truck when I noticed a little smoke coming from my storage area next to the office. By the time I looked in the shed, it was engulfed. I barely had time to pull my child out of his playpen and grab the receivables when the place exploded." Gip was seriously burned on his arms and legs when he tried to grab a second load of paperwork. "There was no time to use a hose or even to think." The storage area was not electrified, and held only plastic, pots and a can of gasoline for the mower. "We still can't figure what caught on fire. None of us smoke nor were we in that storage area that day." His shed, office and potting machine were a complete loss.

The blizzard of 1993 sent extension people all over the state inspecting storm damage. As growers were showing me collapsed greenhouses and frozen crops, I couldn't help but notice things like frayed bare wires, gas cans next to generators and singed plastic flats next to "Salamander" heaters that had been blown over in the 70 mph winds. When I asked each grower if they had a fire extinguisher near the greenhouse, they looked at me like I was crazy. We were, of course, supposed to be talking snow load not fire. Most of them did not have an extinguisher as it turns out.

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There are several "common" causes of greenhouse fires that are easily avoided. Here is a quick tour of things Bob Decker and I suggest you lookout for.

Construction:

Greenhouse owners are usually found building, rebuilding or repairing. Many of these activities require welding or sweating pipe. "Florists Mutual has had three total-loss fires in the last two years from fires started by welding torch sparks" according to Bob Decker. "Standard operating procedure for welding calls for removal of all combustibles from the work area. Someone should be stationed near the work area to watch for small fires so they can be extinguished before they spread." Bob adds this piece of advice. "Fire extinguisher are important. In many cases, water is not effective, as on molten plastic or flammable liquids, or cannot be used, such as near electrical panels or electric heaters."

Electrical Wiring:

Greenhouse operators are notorious for temporarily wiring things. Lighting mums, fans, heaters and electric vents are good examples. Often the wiring (extension cords or something less) is left in place when the equipment is not is use. I have found often that the temporary wiring has been there twenty years, "since dad ran the place". This is very dangerous. Bob Decker points out that "one of the most common ignition sources is faulty electrical wiring. Only permanent, properly installed wiring (in conduit) should be used in greenhouses. Extension cords and cheap wire are not designed to withstand the physical

wear and tear from weather, being run over by carts, repeatedly bent or flexed, or exposed to fertilizer salts. Corroded wires may short and/or spark. If there is even a minor damage to the wire, it will reduce its ability to carry current, causing it to over-heat."

Conduit may cost more, but it protects the wire from physical damage. "If a wire should short, the heat and sparks are contained within the conduit. For the same reason, all splices should be made exclusively within the junction box, even if Romex is used. Twist connectors can easily come loose if they are in the open, or the wires are disturbed often, thus with the attendant danger of fire or personal injury" according to Bob.

Heating Ventilation Systems:

Faulty or improperly used heating devices are another common cause of fires. Suspended unit heaters may blow back on ignition. If there is less than a 35" clearance from all combustibles, fire may result. If a single wall vent pipe is used on your heater, a metal thimble should be added where the vent pipe passes through a "combustible" wall such as poly or wood. It would be best to use a double wall, "Class 5" gas vent pipe.

In Georgia, many small greenhouse owners heat with wood. If oil, coal or wood is used, vent piping specifically designed for these types of fuel should be used. These fuels produce higher stack temperatures and require more insulation.

Temporary Heating Systems:

"The improper use of temporary heating systems accounts for many greenhouse fires" says Bob Decker. "If temporary heaters are required, either because of failure of a permanent heater, or extremely cold weather, the U.L. listed heaters with electric blowers are recommended. Unless properly supported, the "Salamander" type heaters may tip over, spilling fuel which ignites. Other innovative solutions are even more dangerous such as lighting open buckets of alcohol, or burning fireplace logs in metal drums. Both of these practices are extremely hazardous since no venting is used, and usually do not produce enough heat to be effective".

Incendiary Pesticides:

It happens infrequently, but I have seen smoke bombs flame up just after lighting. Be sure your employees place the cans properly, not just underneath a hanging basket like one of client's employees did. It can be a real inconvenience to patch a double poly wall with a hole melted through each layer.

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There are some preventative measures you can establish that will minimize your risk.

Store Combustibles Properly:

I remember talking to a grower as he ground a piece of angle iron to be welded in the greenhouse. As we chatted, the sparks flew from the grinder. They bounced against a full can of gasoline stored next to the work bench. I'm still amazed we weren't toasted. I recommend storing all volatile materials outside and away from your headhouse, storage building and greenhouse. You can design a very small, inexpensive cinder-block building in the shape of an 'H' and store gas and propane on one side, and your pesticides in a locked cabinet on the other. By isolating these materials, if a small fire does start in your greenhouse, it is less likely a fuel or pesticide explosion will occur.

Providing a separate building, or a least building a firewall between your paper storage and your greenhouses, will reduce the likelihood of losing both in a fire. Dispose of shipping boxes, unusable containers and packing material immediately.

Cigarette Smoking Policy:

Smoking anywhere around a greenhouse presents several problems, but especially dangerous is employee's tendencies for smoking in storage areas near combustibles. Most headhouses I visit have sleeves, boxes and flats stored inside with restrooms and water fountains nearby, just the kind of place employees will spend a few minutes to have a smoke. Bob Decker suggests that cigarettes are the most difficult hazards to identify. "Cigarettes dropped on the floor may start fires that smoulder for some time before finally bursting into flames. By the time the fire gets going, everyone may be out of the area or may have left for the day. At that point, there is usually nothing left to do but cool the ashes". Set a company smoking policy and maintain it diligently.

Fire Extinguisher:

There are many types of fire extinguishers available, but since a grower may have to deal with electrical, oil/chemical or wood based fires, a ABC Multipurpose Extinguisher is what's recommended. According to Athens, Georgia, Fire Marshall, John Pritchett, "Using water based extinguishers, or the garden hose can be ineffective and may be dangerous if electrical equipment is present." There is no substitute to having several extinguishers on site. John also recommends having a regular extinguisher maintenance schedule established to be sure they are working properly and fully charged.

Train Your Employees:

The best fire protection known cannot save you from careless, or untrained employees. Your position as owner/grower or manager can be jeopardized by one person's mistake. Take part of a day and review smoking policy, material handling and risk reduction. Point out areas where caution should be exercised, such as near fuel storage or pesticide cabinets. It is the owner/grower's job to establish policy and safe working conditions. Have your local fire marshall inspect you site if you are unsure about what policies to set.

With a very small amount of preparation, you can greatly reduce the risk of your business going up in smoke.

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