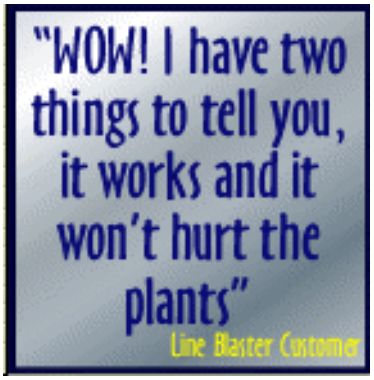
Water Quality Issues

Nursery owners are plagued with water quality issues. Greenhouses are a breeding ground for algae, mold, viruses, bacteria and mildew buildup. Irrigation emitters, tubes, and fittings become plugged with organics. Organic buildup in nurseries causes several areas of concern.

First, algae and other organics cover surfaces making them slippery and dangerous. Everywhere the water lands becomes a breeding site for algae. Pots, benches, tables, floors, walls, fans, and even on the plants themselves. Air quality becomes laden with mold and mildew spores causing respiratory problems and illness for employees. Nursery managers spend countless labor hours trying to clean up the algae and remove the organics from the surfaces of the greenhouse. Labor costs associated with cleaning up algae are of serious concern to the grower, as is the safety of the employees. Air quality and a safe work environment in nurseries has become such an issue of concern that insurance companies and regulatory agencies are beginning to institute policies of safe mold and mildew levels in building of all types including greenhouses

Second, filters, drip tubes, micro jets, spaghetti tubes, and pipes become clogged with organic growths. Algae begins growing inside the drip tubes and clogs emitters. Water flow is reduced by this blockage and system pressure rises. These blockages prevent water form reaching plants. Many times the symptoms of this blockage are mistaken for the cause. Growers see visible buildup of iron or rust and think they have an iron problem. The same is true of calcium buildup or scale. Visible rust or calcium buildup is usually caused by colonies of algae or other organics acting as a filter in the system, which catches these minerals. Naturally occurring iron and calcium in irrigation water is completely soluble. Without a filter made by the organics, the iron or calcium would simply pass through the emitters with no problem.

Other Products Haven't Worked



Nursery owners have tried multiple water treatment technology that are labor intensive, expensive and at best only somewhat effective. Removing equipment and cleaning with chlorine bleach or pressure washing with chlorine solutions is the most common approach. This technique is not always a safe. Chlorine treatments will kill plants if it comes in contact with them, and care must be taken by workers to prevent plant contact. Chlorine (including chlorine dioxide) treatments are effective at killing surface algae, although the dead cells are left behind for other organisms to consume. This sometimes compounds the problem by helping the microorganisms multiply. Pressure washing is not always a good approach either, since it tends to spread the spores to other areas.

Other strategies currently used in nursery cleanup include chemical compounds such as quaternary ammonium compounds (quats) and peroxide. Quats, much like chlorine, will destroy the top layer of algae and other organisms but fails to exhibit any removal abilities or substantial penetration into the bio-mass. Peroxide is even less effective because it degrades when atomized at a fast rate and must be used in such high concentrations. It is also fairly expensive. In general, traditional treatments such as these have proven to be an inadequate means of eradicating hazardous organisms in nurseries. Nursery owners have been stymied by this problem and have resorted to replacing nursery materials and equipment, which, of course, is costly in labor as well as cost of materials.