

Steeling Solutions – Tips to extend the life span of galvanized greenhouses

Linda Barnett

If growers are overwhelmed by the number of choices available in steel structures, it may be because they understand what it takes to build a solid greenhouse – one that can withstand season after season of harsh weather.

The Frame

Many growers are finding it is worth the small, additional expense to construct greenhouses with 2.400 O.D. galvanized steel tubing. It offers growers 15 percent more in structural strength, which means a greenhouse that, can withstand adverse weather conditions, translating into a house that is easier to insure.

Galvanized steel is the common choice for greenhouse structures because it is cost effective, easy to maintain, and most importantly – strong. While galvanized steel requires some upkeep, every house needs minimal maintenance for optimal product performance. Correct installation can also lead to a longer lifespan of a structure.

Tubing and Posts

Ground-anchored tubing or in-ground posts should be buried unprotected below the soil line. If concrete is used, based on studies about cement usage, the recommended grouts are Portland-based systems. The problem grouts are primarily gypsum-based system (which may contain a small amount of Portland cement). The Portland cement systems provide good protection for embedded steel due to the high alkalinity (pH). The problem grouts did have a high pH and reducing the corrosion protection. Gypsum-based grouts also pose additional problems because they are slightly soluble in water and can soften when exposed to moisture. This allows water and oxygen to more readily penetrate to the embedded metal. The gypsum-based grouts contain ionic components, which can promote corrosion. If they contain or contact Portland cement and water, they can produce an expansive reaction that can lead to cracking, warping, or spalling.

The concrete column anchoring the tube should also be extended above soil level and pitched on top so water drains away from the column. Ground-anchored or in-ground posts should be sealed from the bottom of the above the soil line with a heavy layer of asphalt (roofing tar), shrink wrap PVC tube, or heavy waterproof paint.

Pitch

Consideration in the design process can reduce maintenance and insure cosmetic attractiveness over a longer period. Slightly pitch or slant (1' drop per 10' or 5 degrees is typical) rectangular or square tube to eliminate standing water or puddling on the tube.

Install watertight caps over all open holes or pen the ends of the tube for air circulation. If open holes or open-end tubing cannot be avoided, provide a pitch and drain hole so liquid cannot accumulate on or in the tube.

Welding

Where welding is required, use a common carbon-steel welding rod or wire with a galvanized steel tubing. Provide a hole and spray the inside of the diameter in the general weld area with a zinc-rich primer or cold-galvanizing compound to cover and restore corrosion protection. Afterward, cap the hole. The cap may be reopened and resprayed if necessary at a later date.

Fillet all welds where appropriate and provide a slight pitch to drain away standing water. Protect the weld by removing all flux, clean the area and metallize with zinc or apply a zinc-rich, cold-galvanizing compound over the weld and surrounding area. The zinc-metallizing and cold-galvanizing compound should cover both the weld and adjacent burned area until the unaffected galvanized coating is touched. Top coating the metallizing/cold-galvanizing compound surface with a bright aluminum (or any appropriate color) pain will additionally seal the surface.

The use of all galvanized or plastic component hardware on the galvanized tube surfaces will insure metallurgical reaction between components. Any closely mating joined parts (such as claming) should be of material as noted above and painted or otherwise sealed at the joint to prevent the cap or capillary from holding water.