GROWERTALKS

Features

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From the Top Down: Recovering Poly Greenhouses

Don Grey

Many growers choose polyethylene greenhouse film to cover everything from hoop houses for overwintering to heated and cooled freestanding and gutter-connected houses. Properly covered houses will protect plants through all kinds of conditions. But sooner or later, they need to be recovered—or "reskinned"—with new film. Growers and suppliers share their tips and techniques for this routine, but critical, task. After all, there's more than one way to skin a
greenhouse.

Poly coverings

Today's poly films are better than ever, but they don't last as long as glass or rigid sheeting. So poly needs to be changed on a regular schedule, depending on its thickness and rating, and where and how it's being used. Poly typically comes in one- to three-year ratings (ratings reflect durability against weather and UV degradation). It comes in white, clear and colored, and single sheets or two sheets melded into a tube, as well as different thickness.

Manufacturers fold the poly in several styles—center, gusseted or double-gusseted, for example—so make sure you buy it folded to your specifications. How it's folded determines how you put it on your house.

A single layer of one-year poly may be suitable for mild climates, whereas a three-year film installed in a double layer typically works well for greenhouses in more demanding weather conditions. The air inflation between the two layers provides excellent insulation, strength and durability.

"Plastic requires more maintenance than glass, but it still results in a tremendous heat savings compared to glass," says Jim Gapinski of Heartland Growers in Westfield, Indiana. Heartland grows potted and bedding plants in nearly 300 greenhouse bays.

"Make sure you buy your poly from a reputable dealer," Jim recommends. "Have your best people put it on. It's there for three years, so make sure it's done right because you want that poly to last."

Inspection first

To help your new poly last, first look for problems with the old roof. Before you reskin your houses, inspect the existing poly for wear points, especially premature wearing. This could indicate problems with loose or defective poly locks, which can cause poly to rub against roof supports and shorten its life. Look for areas that are torn or punctured and have been repaired with poly repair tape. Also look for sharp metal shards, nails or wood slivers, and file or sand them smooth. Remove old lath boards and nails.

Off with the old

After inspecting the existing poly cover, it's off with the old and on with the new. It's tempting just to unfasten the old poly and let it drop to the ground, but careful removal can help keep the film clean for recycling.

Tanasacres Nursery Inc., Hillsboro, Oregon, a potted and bedding plant grower, folds the plastic in half or thirds, starting from the endwalls. For longer houses (most are 28 x 100 ft. [9 x 30 m]), workers cut the poly into two or three sections for easier folding. At least 75% to 80% of its houses are covered in one-year poly, so they're usually uncovered in June, when bedding plants don't need supplemental heat, and reskinned in September in time for poinsettia production. The film is recycled, so cleanliness and neatness are important.

Keys to removing poly are calm, dry days. You don't want poly flapping or blowing around as it's coming off. Likewise, it's very difficult to pull wet poly, so wait until rain and dew are gone.

Here's an interesting twist: While most growers remove old poly first and then reskin with new, one Northwest grower simply lays new poly atop the old and then pulls the old layer down through the greenhouse. Because the old poly film is still durable and stretched taut, workers can walk right over it, if necessary, and pull the new poly into proper position. The old layer is then unclipped from the poly locks, folded and fed through the bows into the empty house.

On with the new

The first rule in covering greenhouse is the most obvious and practical: calm, still days are essential. Even the slightest breeze can cause problems. You don't want the film flapping around or blowing away. Ron Schmidt, a production manager at Woodburn Nursery & Azaleas Inc., Woodburn, Oregon, relies on a commercial agricultural weather forecast to pinpoint still days.

"Even with a mild breeze, you can't do much," he says. "The biggest obstacle is the wind." When conditions are favorable, work crews reskin as many houses as possible.

Getting the poly up on top or over the house is probably the next biggest challenge. For freestanding houses, it's common to pull the poly from one side of the house to the other, but this isn't recommended. It's best to keep the poly off the ground to keep it clean and avoid snagging or tearing the film. Instead, hoist the poly to roof level, set it on the ridge and unfold the sides. Tanasacres Nursery, Hillsboro, Oregon, for example, has a device it uses for its freestanding houses to lift the poly to roof level. It has metal poles on each side that fasten to a tractor's scoop to hold a poly roll. Once hoisted, the poly is unrolled over the top and then down the side and endwalls. A crew of four will cover as many houses as possible, loosely fasten the plastic and then go back to finish clipping the houses more securely. Endwalls are done first, followed by sidewalls. The crew can cover a house in about 20 minutes.

Gutter-connected houses are more challenging. At Heartland Growers, Jim uses a forklift and a pallet to lift a poly roll to roof height. A crew of six (two to unroll the poly and four to pull it down the gutters and clip it in place) can cover a bay in about 20 minutes. Heartland uses a three-year poly tube and typically reskins its houses in October.

Ron says Woodburn Nursery built a jog that holds a poly roll (locked so it doesn't slip), which fastens to a 4 x 8 ft. (1.2 x 2.4 m) safety cage. A forklift hoists the cage, jig and poly to just above roof level. A worker inside the cage feeds the poly off the roll. Four workers on each side of the house's gutters unroll the film and set it in place. The bottom layer is clipped at the corners and center; the top layer is installed next. Then everything is fastened securely.

"The bottom layer is pulled tight and the top is left a little loose," Ron says. "When it's inflated, we want a 6-in. [15-cm] balloon effect."

With a crew of 10, it takes about 20 minutes to skin a house. The nursery typically reskins at least 80 houses each September, usually on a three-year cycle.

Latching it down

It's critical to pull the poly to its desired tension and hold it in place. Poly should be pulled just tight enough to eliminate wrinkles and keep water from forming puddles, but not so tight that it stretches. If the poly is stretched too tight during warm weather, it can't contract in the cold and may tear.

Once the new poly is in place, it has to stay there. That's where a good lock is important. On steel greenhouses, most growers use commercial poly locks to secure the film. You'll find at least two basic locks: clips, or springs, and wire inserts. They cost about the same, are quite secure and can accommodate several poly layers. Clip-type locks are made from aluminum and are fairly durable, so they can be used year after year. Some locks use a plastic insert to hold the poly.

The clip or spring has a base and top section. It comes in styles for flat and arched roofs. Simply insert the poly film into the base and attach the top. Today's locks won't cut the poly and they hold it intact, even in strong winds.

"For larger gutter-connect greenhouses, I'd use a clip," says Gary Baze, director of Golden Pacific Structures, Redlands, California. "I have more confidence in it. I know from experience that when a good-quality clip goes into a good-quality base, it's there to stay."

Wire locks also perform well. An extruded aluminum frame houses one or two wires that are used to secure the film inside the extrusions. Two wires allow you to anchor a double-poly roof one sheet at a time, a handy benefit. They also work great on flat, straight roofs, but don't appear to be as effective on sloped or arched roofs, one supplier notes.

Locks do have a limited life, so inspect them carefully when the house is reskinned. Sometimes a clip just needs a new rubber gasket.

Keep in mind that locks can and do malfunction. One grower sends workers out to walk the gutters in windy weather and inspect the locks just to make sure they will hold.

“You’ll know in winter if the clips pop out of the house and it deflates,” he says.

Some growers use wood lath strips on their greenhouses or hoop houses to secure poly. Lath doesn’t work as well as poly locks. Although cheaper up front, in the end, the strips are more time consuming to attach. If you do use lath, make sure you fold the poly to the outside to prevent water penetration, which, over the course of a season, can rot the lath. Also, use form or two-headed nails, which are easier to remove.

Inflation

Double-poly houses need proper inflation to achieve full insulation and strength. Air space of 6 to 8 in. (15 to 20 cm) between layers is suggested optimum. A space of 2 to 3 in. (5 to 8 cm) may not be enough in many areas, but 2 ft. (61 cm) is excessive. Uniformity between layers from one end of the house to the next is important.

Guard against over-inflation. Again, poly stretched too taut during summer can’t contract in the cold and is more likely to condensate during winter. Use a manometer, an inexpensive tool that measures air pressure, to gauge the amount of air pressure between the two poly layers. Insert the manometer’s rubber tip between the two layers so that it’s pressurized and look for a reading between 0.2 in. (0.5 cm) and 0.4 in. (1 cm) on the scale. Check with poly manufacturers for their specifications.

Use blowers to keep the insulating air level between the poly layers inflated and constant. Blowers (often called squirrel-cage fans) are small and relatively inexpensive. It’s best to use air pumped in from the outside because air drawn from inside the greenhouse is moist, heated and often contains chemicals, which can cause condensation, channel heat from the inside and degrade the poly. Thus, a blower with an intake and exhaust manifold is necessary. Use fans big enough to inflate the amount of covered square feet (meters); a variable-speed motor or an adjustable baffle over the intake will let you vary the blower’s output.

Before installing new poly, check the blower motors to verify that they work and are adjusted properly. To be safe, check them monthly. Because they are on continuous duty, you may want to replace motors when you change the poly. Then, after you install the poly, make sure the blower fan is hooked up, cut a hole in the bottom poly layer and attach it to the fan’s brackets. You’ll want a tight seal around the fan’s base to prevent pressurized air from escaping.

Maximizing poly life

Some growers have been known to paint or coat the greenhouse’s tubing to prevent poly abrasion, says Gary Baze. Although he doesn’t know growers who paint the tops of arches, it’s true that poly degrades much quicker where it touches the metal, particularly in areas with high sunlight levels, he says. Instead of painting the tubes, Woodburn Nursery installs a house’s structural purlins on top of the tubes rather than underneath. The poly sits atop the purlins instead of directly on the tubing and lessens abrasion. It’s this attention to detail that leaves nothing to chance for such the routine, but critical, task of covering and protecting your crops. **GT**

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