

Poultry Houses Need Proper Bracing To Endure Heavy Ice, Snow Loads

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most younger buildings have seen."

Collins spoke to 25 facility managers and contractors at the Poultry Management and Health Seminar in the midst of the year's first heat wave on Monday afternoon.

Collins told those present that the winter also caused more problems for existing and new facilities. Producers had to endure record-breaking cold, and for those that added insulation, more snow accumulated on the roofs and stayed there longer, creating more stress on the trusses.

If another winter like the past one occurs again, facility contractors and managers can take steps now to ensure the buildings are properly trussed and braced with these steps:

- Properly identify the design load of trusses. For the Lancaster region, building trusses should have a designed snow load of 25 pounds per square foot (PSF). For regions in the central to northern part of the state, a PSF of 30-35 may be necessary. Because of the harsh winter, Collins advises a PSF of 30.

- Don't forget to consider the effects of new and additional insulation in the design load. Make sure the design load is adequate, because additional insulation may mean more snow and ice load to the roof.

Consider the roof slope. Most facilities to 65 foot wide can accommodate a metal roof with a pitch from 4 to 12, if using prefabricated trusses.

- Examine the condition of the nail plates, used to join the trusses at critical points. Poultry houses with indoor composting create ammonia gas which causes heavy corrosion to the plates, weakening them. Protect the plates by cleaning, priming, and painting them in the correct way.

- Look closely to see if the trusses are properly braced. This is the "real clinker," said Collins. The amount of bracing and the proper placement of bracing must be

considered.

Producers should consider the various types of bracing.

Foremost is continuous lateral bracing, or lateral 2 by 4's that run the lateral length of the trusses. This ensures the stability of the trusses.

Next is the use of diagonally placed bracing to "brace the bracing," said Collins. Some manufacturers indicate with tags that diagonal bracing should be placed, but do not indicate exact position or give a schematic to scale. "The truss manufacturers could do a lot to help that by providing a little note saying, if you have one (bracing), it has to be in the midpoint, if you have two, it has to be at third-points, and so forth. I think they could save a lot of problems."

Collins provided photo examples of improperly installed diagonal bracing. "The diagonal brace is probably missing in almost 100 percent — I'd say 90-some percent — of buildings with wood trusses. They just aren't there," he said. "Lack of that bracing was the primary cause of failure." The diagonal bracing should be placed on 20-foot centers in the house. In one house, because of the lack of diagonal bracing, the trusses completely collapsed on one side of the house. On the other side, the trusses remained in place because the framework holding the chicken cages kept them up.

X-bracing, an additional bracing method, links the trusses to keep them from "falling over like a bunch of dominoes," said Collins. They should be placed at 12-16 foot centers across the building.

Bottom cord bracing, placed across the bottom of trusses, provides additional support and stability, especially during high winds and stress loads. The Truss Plate Institute recommends placing them at 20 foot centers, but Collins recommends 40 foot centers, because he thinks 20 foot centers are too excessive.

Top chord bracing, placed at 60-foot centers across the top,

according to Collins, works much like the bottom cord bracing.

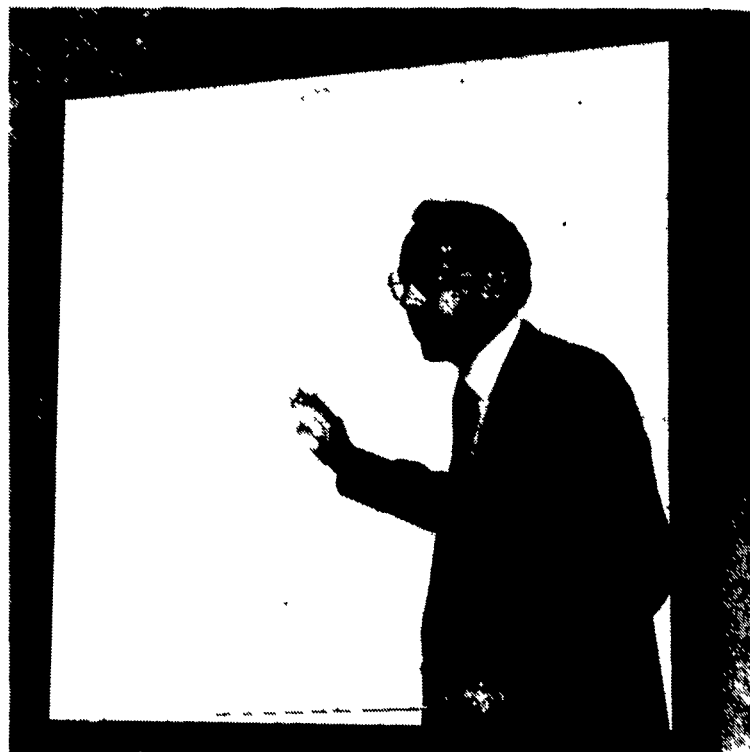
Other factors that could cause failure include improper nailing (using one nail per bracing was the culprit in one collapsed house). Collins said he recommends "two nails at every truss and every brace as a minimum."

Also, if the trusses are not properly braced, "they will probably fail at or below the designed snow load." A truss that is designed for 25 snow load plus a 10 dead load, for a total of 35, should carry about 50 percent more than that before they actually collapse.

Existing poultry houses can add bracing to protect them now, particularly if additional insulation will be added.

The position of bracing is critical. Producers should make sure they understand what the truss manufacturer is providing and carefully question any guarantees.

"There's supposed to be a built-in safety factor, but the safety factor doesn't work if the trusses aren't properly braced," he said. "When the trusses are properly braced, they will give you — and I think they should give you — their design load plus a comfortable margin of safety."



Galen "Bud" Collins, project manager for structural engineering at Rettew Associates, Inc., Lancaster, investigated the sites of 12 damaged hog facilities (with partial or full collapses) and one poultry house. He compared notes with another structural engineer. What did they find? "Every one of (the facilities) had, number one, a lack of adequate bracing, and, number two, faulty installation of bracing," said Collins.

Pasture Management Group To Meet

BLOOMSBURG (Columbia Co.) — Penn State's multi-county extension unit in the central Susquehanna Valley area is offering monthly pasture discussion group meetings for dairy and livestock producers.

Dairy producer meetings are being held the fourth Friday of each month from 10 a.m. to 12 p.m. The livestock producer meetings are being held the first Wednesday of each month from 7 p.m. to 9 p.m.

The purpose of the meetings is to meet on area farms utilizing intensive grazing programs to discuss management strategies, successes, and problems. Grazing management and pasture plant species information from Penn

State is also available at the meetings.

The next dairy pasture session will be on Friday, June 24 from 10 a.m. to noon at the farm of Tim and Denise Wetzel, near Selinsgrove in Snyder County. From Routes 11 and 15, take Route 35 South. The farm is along Route 35, three miles outside of Freeburg. If you live west or south of Freeburg, the farm is 1.25 miles north of routes 35/104 intersection.

The next livestock pasture session will be on Wednesday, July 6

from 7 p.m.-9 p.m. at the farm of Jeff Mamett, Numidia in Columbia County. This is a steer back-grounding operation. From Route 42, turn onto Ringtown Mountain Road at the blinking light in Numidia. Follow this road approximately one mile. The farm is on the right-hand side of a four-way intersection.

Producers are welcome to attend any or all sessions. No pre-registration is necessary. For more information, call Dave Hartman at the Columbia County Extension Office, (717) 784-6660.



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