

Silo Sense

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Introduction

Like soldiers standing at attention, upright silos stand all over the country preserving and protecting farmers' valuable feed. These silos have performed so well and for so long that often little attention is given to their maintenance.

Year after year, they are filled with wet acidic feed. Often times, they stand with a foot of manure around their base. They stand up to wind, rain, snow and sleet. Many years they are never emptied.

The silo unloader that empties them delivers hundreds of tons of feed per year. This is done at a very low energy cost and without a lot of maintenance. It, too, is in a moisture-filled, acidic atmosphere. Often the only time it is serviced is when it is not working.

Today, some of these old silos are beginning to fail. When this happens, it is not only unexpected, but also a real hardship on the user.

Over the coming months, timely tips on silo inspection and maintenance will appear in a column entitled "Silo Sense". Topics will include silo footings, concrete deterioration, silo doors, silo ladders and cages, filling equipment, distribution of feed, silo chutes, unloader suspensions and cables, silo roofs, silo hoops and concrete reinforcing, silo insurance, and hydric lifting.

These articles will be fun to read and informative. Stay tuned.

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Unloader Suspensions and Cables

The call came this morning; “We were raising our unloader, it’s halfway up the silo. It started to pull hard so we stopped. On the outside pulley, we got a bird’s nest of cable. We can’t let it down. We can’t pull it up. What do we do?”

The call came last week; “We’ve got a three-cable suspended unloader. When we were raising it, one of the cables broke. The silo is empty. What do we do?”

Many times the call comes; “We were pulling the unloader up and the cable broke. What do we do?”

All these situations were taken care of, but at the expense to the farmer and with loss of time during harvest. How are they preventable?

A silo unloader cable needs to be replaced when the small strands in it begin to break. If you feel or see broken strands, it is dangerous. Most often, a cable wears first about 10’ above the unloader where the cable sits on the outside suspension pulley during filling. Also, a cable wears at the point of attachment to the unloader. Cables need inspection every year and replacement every 8 to 10 years. Cable costs run anywhere from \$100.00 to \$350.00. Replacement labor is extra. Replacement can be easily done when the silo is full. If it is not full, better call a professional; he will know how to handle it.

Upon inspection, many times you will find that the suspension pulleys are not turning. Over the years, the cable running across them has cut a groove in the pulley, further damaging the cable. These pulleys will also need replacement.

The answer is to inspect your cable every time the unloader is raised. But remember, a lot of cable never gets on the hoist, so you don’t see it. Inspect and lubricate pulleys every time the silo is full. If they are not turning, replace them. Your best resource is your unloader dealership. If they can’t handle your situation, they will know of someone who can.

And remember, never, never, never put yourself under a suspended unloader.

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Leaning Silos

Like most mornings, the farmer's son headed out of the house first for morning milking. As he walked to the barn, he counted two silos (last night there were three silos standing behind the barn). He turned around, went to the house and told his dad that one of the silos was gone. His dad questioned the number of beers he had the night before. But on their next trip out, they both realized one of the silos was gone. It fell away from the barn, thankfully, and laid on the ground like a big sausage. The silo had been filled recently. It was an old silo and recommended maintenance had not been done.

The first call went to the silo service man in the area. The second went to the silo company. Within a few hours, a plan and date for clean up were set. On that day, the 16'x70' silo was cleaned up with the help of neighbors, the silo company and a backhoe by 1:00. The debris was separated and disposed of and the feed was piled and covered. The next year, a new silo stood in its place.

In some cases, a silo fails in a matter of minutes. Other times it moves slowly and may stabilize. In all cases, it's time for a professional. Sometimes, it's better to let the silo fall and clean it up. If buildings are in its path, it's better to stabilize it.

What do you do? First, call a professional. Some smaller silos have been stabilized with poles propped against them. Sometimes cabling the silo stops it. Other times, it takes cables and a concrete sheave to stabilize them. Depending on how much the silo leans, modifications will be needed on the unloading equipment. Above all, extreme caution needs to be used. Your best resource is a professional.

Before feed removal begins on a leaning silo, a plan for getting the structure down needs to be developed. Sometimes it can come down with a silo scaffold. Other times, it takes a crane and manbasket. Always, Always, Always, safety is the major consideration.

So, what's the answer? Have your silo inspected and do the recommended maintenance.

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Silo Chutes

First, shake the power cord to get the loose feed down, then hope there's not an updraft. Climb over the conveyor and under the canvas. Make sure your hooded sweatshirt is tied tight and head up the dirty chute. About halfway up, open your eyes and lean back to rest. Oops, can't see, head back down for a flashlight.

Or, climb the ladder next to the silo chute, put your hat on, step through the chute door and close the door to stop the updraft. This chute has windows and a poly chute dormer for light. These doorsteps are out farther so feed doesn't build up so easily on them. These doors are locked shut. Where's the power cord? This silo has got cord looping. There's a clean chute system or it is poly lined, poured concrete or made of staves. There's no place for the feed to catch on the back. If there is a center drop unloader, check it out at deer hunting and see you next Spring. (Not recommended but normally is the case.)

Who wants to climb a dirty chute? You don't have to.

Obviously, silo chutes do wear out. There are three concerns; feed is being wasted, a roof that is adjacent to the silo gets covered with feed and wears out quickly, and it's not safe to lean back on a chute that is junk.

What's the fix? If it's structurally sound, a liner can be installed. Also, a clean chute system will keep the feed confined. If it's not safe, it has to come off and be replaced by a new bolt-on chute.

And remember, during filling season, always, always, always ventilate the silo and chute before entering. Silo gasses produced can be lethal.

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Silo Doors

The call came just before filling time in the Spring; “I think the cover on top of my silo chute is loose. Can you come check it out?”

It was a 70’ silo with self-storing doors. All the doors were swung open and the chute needed to be climbed to check the cover. After closing all the doors to climb to the top, it was discovered that the cover was in good shape.

Next year the call came again, just before filling; “I think the cover on my chute is loose. Can you check it out?” This time, the farmer was told it would be checked out when the silo was full. Just like farmers, silo guys are pretty smart. After that, the farmer closed his doors as he emptied the silo.

Whether plywood, fir, cedar, fiberglass, plastic, or steel, silo doors serve two purposes: first, they keep the door opening tight to prevent spoilage, and second, they provide a ladder to climb to the feed level. Both functions are important.

If doors and door jams are not tight, they provide a source of oxygen. With this source of oxygen, the feed around them will spoil. In some cases of dry feed, poorly fitting doors have caused silo fires. Most wood doors are double lapped. When individual boards start to fall out, it is time for replacement. Also, doors should be checked for deterioration. When this happens, a step bolt can be pulled right through it.

New standards for doorsteps are: 16” wide, 15” apart, and 7” toe space. A good deal, easy to climb, and feed that would before build up behind the step can now fall through (most of the time). Door latches are now designed to not open unless they are released. This is especially important if you need to climb the door system when the silo is empty.

Upgrading silo doors is good sense. Doors are still made for all types of silos. There are door systems available for the old concrete silos with the open door column.

And remember, always, always, always inspect your doors every time you climb your silo. If there is doubt, replace them.

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Fill Pipes

A call came during filling; “I touched the blower and got a jolt that set me on my fanny”. (Not his exact words). “What’s going on?” Another call came; “I just blew my PVC pipe apart. What happened?”

As a youngster, during winter, did you ever take a balloon and rub it on the carpet? Magic! You could get it to stick on the wall. Well, not really magic, it’s static electricity. Because PVC pipe doesn’t conduct electricity, when enough static charge is generated, you can get a good shock off of it or it can blow apart. That’s why PVC pipe carries a warning sign not to use with feeds below 45% moisture. Steel pipes must be used with these feeds.

Isn’t duct tape great! Sometimes you can find a silo pipe with duct tape in more than five places. It’s great for a quick fix, but remember, the hole didn’t go away. Eventually, you’ll run out of tape and that pipe that was smooth on the inside is now rough and it won’t blow properly.

The flange on steel pipe is just spot-welded. Warnings on steel pipe read, “Blower pipe flanges are for alignment purposes only. Spreaders, goosenecks and silage guides must be firmly secured to the silo, as well as, bolted to the blower pipe”. Pipe clamps are recommended every 12-1/2’ for PVC pipe and every 15’ for metal pipe.

Pulling pipes up every year is not recommended because both the gooseneck and pipe need to be attached to the silo properly. There are a lot of stories told about pulling pipes up to fill a silo and most of them aren’t good. It is a matter of safety.

And remember, never, never, never use PVC pipe to fill your barn with straw or dry hay.

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Hydric Lifting

It's a 24'x80' Stave Silo. It had 65' of haylage in it after filling which settled to 57' and was capped. It was uncovered and refilled with early corn silage. It took 65 loads to fill. When it settled, there was still room for a dozen loads of late haylage. The farmer wondered if his silo had a basement.

In early spring, the corn silage was gone and the farmer started feeding haylage at about 40'. The only way to get the unloader to start in the morning was to raise it 15 turns on the hoist.

As the haylage was emptied, he noticed the staves were lifting up; in some places as much as 1/2" at the horizontal joints. Some staves cracked where the silo lifted. After he fed past that point, the staves came down tight again. The call came that spring; "What's going on? Is this a silo or a yo-yo, the way it's going up and down?"

The term we use is hydric lifting. Like a sponge, the feed in the bottom of the silo was compacted to its absolute maximum density. During the winter, it froze and was static. When spring came, the weight of the feed above it was gone. The compacted haylage rebounded or expanded, just like a sponge does. The adhesion of the feed to the silo wall and the tremendous rebounding pressure of the compacted feed pulled the silo apart. As soon as the feed was removed, the weight of the silo brought it back tight again.

So, what was the fix? The cracked staves were replaced. The silo hoops were re-tightened and the inside wall was reinforced with gunite. The silo has performed well since. Does this happen? Absolutely! Does it happen often? No, and in a lot of cases, it goes unnoticed. What can be done to prevent this? First, it's not a good practice to fill a silo that is already over half full with higher moisture or heavier feeds, especially when there is haylage on the bottom. Next, make sure your silo hoops are tight. Over the years, they are stretched at filling, then they relax after the feed settles. This stressing and relaxing does affect their tensioning. Finally, make sure the staves in your silo are in good shape. If not, reline the silo.

Over the last two decades, hundreds of 100' or higher silos have been built. Design considerations in these big silos include vertical reinforcing. Hydric lifting has not been an issue in any of these huge tower silos.

And remember, always, always, always; if you suspect that one of your silos has lifted, call your silo guy, he will know how to take care of it.

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Concrete Deterioration

It's hard to get excited about what happens in slow motion. For the most part, concrete silo deterioration goes unnoticed. Yet, this issue causes the most silo failures. In many cases, a disbelieving farmer has been advised; "Fix it or it's going to fall over." Some of these silos fail every year, usually after filling.

In both concrete and stave silos, the concrete in the walls sacrifices itself to the acidity of the feed placed in them. Depending on moisture, this may be a long-term process or it can happen rapidly. This concrete deterioration affects concrete and stave silos differently.

In all silos, during filling, approximately one half the weight of the feed placed in them is transmitted to the silo walls. So, if you put 500 tons of feed into your silo, 250 tons bear on the silo walls vertically. Most stave silos average a little over 3 inches in thickness. Some are ribbed while others are steel reinforced. When the staves in these silos deteriorate, they can no longer withstand the vertical load placed on them. At this point they sheer, resulting in a lean or collapse.

Concrete silos normally have a 6-inch vertical wall. Even as their concrete deteriorates, a substantial part of the wall remains which allows them to withstand the vertical pressure. The concern with concrete silos is their ability to withstand the horizontal pressures placed on them by the feed. With deteriorating concrete, the rebar in these silos loses its bond to the concrete. That is why concrete silos in need of repair crack and stave silos lean.

What do you look for? When the stones show in your silo, it's time to fix it. If the stones are loose, the situation is critical. In plastered stave silos, when the plaster is gone, it's time to reline. Exposed stone and exposed rebar in a concrete silo is a recipe for disaster. Special inspection is needed for hollow stave silos that are below grade. These hollows tend to fill with silage juice or moisture. The freeze/thaw cycle and acid deterioration in these hollows greatly reduces stave strength over time.

What's the fix? First, inspect your silo during unloading. If the plaster is gone, if the stones show or if there is exposed rebar, plan to get it empty and fixed before the next filling. Sometimes it's recoating, sometimes you will need to pour a sleeve around your silo and other times it may also require hoops. Contact an experienced professional for advice.

Remember, relining a silo usually costs less than painting a barn. Your silo that has worked so hard deserves a new coat. And, never, never, never fill a silo that you may expect needs repair.

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Silo Roofs

Hemispherical domes; they adorn churches, homes, parks and they can even be found at Disney World. They're architectural wonders. They're free standing, requiring no trusses or rafters. They come in sizes of up to 32' in diameter. They are economical, easy to install and beautiful.

These domes and the engineering for them was developed for farm silos. Because your silo roof is the "high point" of your farmstead, you want it to look good. New roofs have replaced old roofs on many silos just to make the farm more attractive. One thing about a silo roof, you certainly can't hide it.

So, how do you take care of this unique architectural structure, this hemispheric dome, the "high point" of the farm that protects your feed? Fiberglass, aluminum, aluminized steel, galvalume, galvanized, Railoc, DeMuth, Lancaster, Madison and Fiberdome are all different manufacturers and materials. But, the recipe for roof care remains the same.

First, keep your roof tight and your door closed. Depending upon the style of roof, you may want to take a bungie up with you after filling to make sure it stays closed. If your roof is damaged, fix it. An open roof gathers the wind and eventually will come apart.

When your silo is full, clean the feed off the top of the silo wall. If this feed is left there, it will pick up condensation off the inside of the roof and eventually rot the bottom of the roof sheets and roof mounting brackets. With the materials being used today, rust on the outside of the roof shouldn't be an issue for a long time. If you have an older roof that is rusting, with the right equipment, it can be painted.

If birds are finding their way into your silo, a little sheet metal, self-tapping screws and a cordless drill will fix it up in a hurry. The challenge today in roof repair is that many of the manufacturers have discontinued business, so replacement parts are no longer available.

And remember, if you have roof damage, fix it right away.

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Silo Hoops

The call came in the fall, “One of my silo hoops is broken. Do you think I can fill my silo anyway?” Upon inspection, eight hoops on the bottom of the silo needed replacement. In a stave silo, the hoops hold the structure together. Every hoop put on a silo is there for a reason. When hoops are damaged or broken, they must be replaced.

Every time your silo is filled, its hoops are stressed. After the feed settles and is removed, your silo hoops relax. Is it a good idea to check your silo hoop tensioning? You bet, and here’s a simple test. With a hammer, walk around the bottom of your silo and tap the hoops up and down. If they move easily, there is something wrong.

What else do you look for? Check for deterioration, especially in the area inside the chute and below it. To accommodate the door opening, you will find hoop spreaders. These spreaders consist of tie rods and channels. If the channels are located inside the chute, careful inspection is needed. In some cases, these channels may have deteriorated enough that the rods are pulling through them.

Another type of spreader (sling spreader) has vertical angles that hold the tie rods apart at the doors. When the silage cart or tractor bucket knocks these angles out, the spreader collapses. These rods, being loose, become ornaments. They look good, but serve no purpose. If these angles are out or have rusted badly, they must be replaced.

In older poured concrete silos, the exposed rebar across the open door column needs inspection. Wet and feed covered, these chute bars do deteriorate. When these weaken, the structure loses cylindrical strength. If they are badly deteriorated, they may have to be replaced by continuous hoops around the silo.

And remember, never, never, never fill a silo with damaged or broken hoops. If it is an older poured concrete silo with chute bars, check them for deterioration. If they are bad, fix your silo before filling.

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Feed Distribution

Consider an egg. There's a lot of mass held by the thin shell, yet it performs well because the shell bears the pressure evenly. Drop it, and it fails; simply too much pressure in one place for it to stand.

Consider a coffee can without the lid or bottom. It has the strength to hold about anything you want to put in it. Now squeeze it between your hands. It doesn't take a lot of uneven pressure and it becomes way out of shape.

Consider your silo. It is designed with the capability for taking massive amounts of pressure. But if that pressure is placed on it unevenly, like an egg or a can, it can be deformed or split open. That's one reason why feed should be distributed evenly in your silo.

Another reason is that evenly distributed feed packs better. This allows you to put more feed in your silo. This packing eliminates the air faster and promotes better fermentation. With an evenly packed silo, your silo unloader performs better.

Remember, in a 20' silo, the outer 3' has over one half the volume. So, it's important to get the heavier feeds out to the wall where the capacity is. These heavier feeds pack better and keep better out near the wall.

One option for distribution is to sidefill the silo with a spreader. This places the feed in multiple piles in the structure. These multiple piles pack evenly and minimize feed separation. This, again, promotes better fermentation.

The other option for distribution is mechanical. This is accomplished by modifying the silo unloader and using it to distribute. This mechanical distribution directs the feed to the outside wall where the silo's volume is the greatest. The lighter feeds tend to move to the center where they keep better. The consistent pack provides for smooth unloader operation.

Is distribution important? Yes. It's good for the silo, it gives you more capacity, improves feed quality and provides greater unloader efficiency. During filling, remember to check on the performance of your distributor.

And remember, never, never, never fill your silo to one side.

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Silo Insurance

Worst case scenario: Your silo collapses. You have damage to adjoining structures. You have feed losses. You can't see the unloader. You have a mess to clean up. To say nothing about the loss of your silo. If you have to call your insurance company to find out what your coverage is, it's too late. Reading this column is important.

Insurance is a contract between you and the insurance company. It spells out what is covered, the perils that are covered, the amount of coverage, the deductibles and the cleanup coverage. When it comes to a claim, the policy or contract governs the settlement. The adjuster verifies the claim, obtains loss estimates, identifies the peril to determine coverage and then settles the claim according to the provisions in the policy. This is my understanding and I think it's pretty accurate.

What kind of insurance do you have on your silos? My experience is that the standard policy covers wind, fire and other accidental damage. Silo failure from lack of maintenance, cleanup, damage to buildings, loss of feed, loss of cattle and unloader loss are normally not a part of the standard insurance policy. In some cases, a collapse clause may be written to cover these perils. This usually requires silo inspection. To find out what you are covered for, read your policy. If you have questions, call your agent.

How much insurance should be put on a silo? I would never make a recommendation. This needs to be the owner's decision. But let's look at some general repair costs. A 20' silo roof, installed, depending on the accessories and method of installation, runs about \$6,000. Replacement fill pipe and brackets on a 60' silo run about \$1,000, installed. If you have a barn fire and the silo is damaged, repairs on a 20' X 60' could run like this:

Silo doors (complete)	\$1,900
Silo chute replaced with dormer	\$3,300
Silo hoop replacement	\$4,000
Relining	\$4,000

So, if you get the idea, repairs can be expensive.

In some policies, silo roofs are insured for 25% of what the silo is insured for. In some cases, the policy subtracts depreciation. There is also the deductible to consider. Different companies write policies in different ways and base premiums on the coverage provided.

Remember, the key to insurance on your silo is how much risk you are willing to take and how much risk you want the insurance company to accept. Then, make sure the risks you are unwilling to accept are spelled out in the policy. Your best resource is your insurance agent.

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Silo Ladders and Cages

Stand at the bottom of an 80' silo. Look up. There's a ladder on it and a fill platform at the top. It's an old silo and there's no cage. It has a 12" wide ladder. Maybe the rungs are 2' apart. It's kind of rusty. The fasteners don't look too good. Do you want to send your son up there to see if the silo is full?

On new silos that have been built in the last fifteen years, the standards for silo ladder systems have changed. These standards read: 7" toe space, 16" wide rungs, not more than 16" rung spacing, ladder starts 8' above grade, cage above 20', rest platforms on silos over 50' tall, large hoop on the bottom of the cage and cage with seven vertical straps. These standards are not law, but today's builders comply with them.

Existing ladders and cages should be checked every time before climbing. Sometimes the ladder fasteners rest behind the hoops. These fasteners need to be in good shape and properly secured. Other ladders are fastened with J-Bolts. These need to be tight and deterioration free. Ladder joints need to be bolted securely. Everything needs to be checked for corrosion.

Safety cages are either bolted to the ladder or fastened behind the silo hoops. These need to be checked to make sure everything is tight. D-Hoops and verticals are either tubular, flat or flat-formed. All the bolts need to be tight. All the steel components need to be inspected for rust, corrosion and fatigue.

Platforms need to be secure. The flip-down platform needs to rest securely and the surrounding steel straps need to be corrosion free. The platform should lock in vertical position when it is not in use. If anything is suspect, it needs attention.

Replacement ladders and cages are available. Retro-fit cage is available for most ladder systems that are in good shape. There is no good reason that your silo ladder system might be unsafe.

And remember, look up your silo ladder system. If you wouldn't send your son or a hired man up it, getting it replaced, updated or fixed is smart, safe and a good investment.

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Unloader Service

About mid February, the silo walls have frozen up pretty good. It's warmed up, so now it's time to check things out. Grab the remote control for the unloader and head up with a scrapper. The couple of inches of frozen feed comes off the wall pretty easily. The chunks break up without a lot of problem. Now, climb above the feed in the chute and watch the unloader run. About three trips around and all the frozen feed is down. The walls are clean, so head back down.

Whoa !! We've got a problem. Can't get out of the silo. With nothing to take the feed away, the chute filled up with feed. Jumping on it just packs it tighter. Good thing it's not too cold. Going to have to wait till Ma comes out to get me out.

On new unloaders today, remote control switches or unloader disconnects in the silo are standard. These are vital when servicing the unloader because it allows you to lock out the power from inside the silo. It also allows you to observe unloader operation from the chute. This is a good-sense safety and convenience feature.

But, remember, when going up the silo to service the unloader by yourself, tell Ma what you're doing and if you're not down in an hour, have her check on you. If you fill the chute up, she is going to give you a hard time, but that's better than spending a half-day in the silo wondering how you're going to get out.

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Shell Corn in Conventional Silos

The phone call often comes; “Can I put shell corn in my top unloading silo?” There is no clear-cut answer.

Unless your silo was built specifically for free-flowing materials, it’s not designed to hold them. Compare a standard top unloading stave silo to a bottom unloading stave silo. There is a big difference in the hooping. Free-flowing materials put more outward pressure on the silo wall.

So, what is free-flowing material? Remember the days at the beach? It was great fun to fill a pail with moist sand, then flip it over and build sandcastles. If you want to fill your silo with shell corn, whether it be ground, cracked, rolled or whole, do the same thing. Pack a five-gallon pail with the corn you plan to put in your silo. Let it stand overnight in the milk house. Flip it over the next morning. If it runs all over the floor, it’s free-flowing.

If putting shell corn in your silo, a silo inspection is recommended. If it’s free-flowing corn, rehooping is needed. Also if the silo has a surface drive unloader, consideration should be given to the unloader to make sure it will drive properly.

And remember, filling with shell corn requires steel pipe and good distribution.

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Overfilling Your Silo

It's Saturday afternoon and you've got a wedding dance tonight. A few more loads and the silo will be full. Hurry up! Let's get the feed off and party! On the last load, the pipe plugs. The silo must be full. Take a quick trip up. Yes, it's full, right up into the roof. In fact, you can't see the unloader. It's covered with feed. Now, we can head to the wedding. **WRONG!** Unless you want to pay the price.

When you cover the unloader with feed, it puts tremendous pressure on the suspension, cables and machine. If left, when the feed settles, the unloader is going down with it. Bent tripod or hexapod, broken cables, bent unloader rings and broken unloader arms can be expected.

You can still go to the wedding, but if you don't have time to uncover the unloader, at least crank it down. Take all the pressure off the cable and leave plenty of slack so that when the feed settles, there is no pressure on the suspension or unloader.

If you were using the unloader to distribute, make sure the power is off and uncover the unloader as soon as possible.

And remember, run the blower for ventilation while working up there and never put yourself under a suspended unloader.

Disclaimer

These articles are contributed by Bruce Johnson of Wisconsin Silos. They are meant to be informative and fun to read. They are not all inclusive. Your best source of information is the International Silo Association Operator's manual or call ISA at 920-655-3301.

Silo Footing Concerns

Seldom, if ever, is the standard silo footing put in below frost level. There's an old saying; "It never freezes under a straw stack." So even though silo footings don't go down six feet below grade, the greatest majority of them perform well. But, beware, there are concerns about silo footings that need attention.

It's the moisture. Your silo footing needs to be well drained. Often times the barn or feed room roofs drain on top of the silo footing. These roofs need to be guttered to keep the water away. Many times, when two or more silos stand together, the water drains between them. A path for drainage away from the silo needs to be provided. When you saturate the ground around and under a silo footing, frost can be an issue. Also, saturated ground has less bearing capacity. It just makes good sense to keep the water away.

Unless you are building on a barn bank, it is recommended that the footing be above grade level. With a stave silo, this keeps the staves and hoops out of the ground. They last longer above grade and this makes footing inspection a lot easier. If footings are below grade, getting surface water away is critical.

Because of footing size, the way the concrete is placed and the loads the concrete needs to bear, footing concrete batch designs are normally less than silo wall concrete designs. This is a two-edged sword. Weaker batch designs are more apt to deteriorate faster, especially from silage leachate. Check your footing to see if the stones are showing. In many cases, footings have deteriorated enough that a trowel can be slid under the staves that sit on it. If this is the case the footing needs to be restored on the top.

And remember, water lines and drains should be rerouted around your silos. If they break, they may undermine your silo footing.

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Silo Footings

Going back to school in the fall as a 5th grader, Nick was asked to write about something he did during the summer. I read this when it was posted in the hall outside his classroom. When installing footings, Nick got it right! This is what he wrote:

“Nick’s Story”

“Silos are helpful to farmers, level the footing bases, install stones in the center to control seepage, keep the walls vertical with forms and footings are an important part of the silo.”

For almost 15 years, his story has been hanging on the wall next to my desk. A reminder of a great day spent with Nick and that footings need to be put in right because “footings are an important part of the silo.”

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