

Prepare Bins and Equipment Before Harvest

As we approach harvest, grain bin preparation is a timely subject. Remember, grain harvested in Nebraska is essentially insect-free, but can become infested by storage insects, which originate in or around the bin or in contaminated equipment such as combines and grain augers. Following are some tips on how to prepare bins and equipment to ensure insect problems are minimized.

Grain Stocks

First, be sure to store sound, clean, dry grain. It may be advisable to screen out broken grains, trash and fines to increase the quality of the final storage product. Also, the elimination of trash will enhance fumigation, should this procedure be required later.

If purchasing old crop grain for storage with newly harvested grain, be sure to watch for insects in the incoming grain. If infested grain is purchased for livestock feed, store it away from the new crop and feed it as soon as possible. Grain stocks may be rotated, or moved and a grain protectant applied at the time of turning.

Cleanup

Since stored grain insects can invade new grain from infested harvesting and handling equipment (combines, augers, etc.), cleanup is essential. Carefully remove all traces of old grain from combines, truck



beds, grain carts, augers and any other equipment used for harvesting, transporting and handling grain. Even small amounts of moldy or insect-infested grain left in equipment can contaminate a bin of new grain.

Then clean grain bins thoroughly, disposing of spilled, cracked and broken grain and grain flour, along with the insects feeding on such material.

A simple broom and a vacuum cleaner are essential pieces of equipment in cleaning grain bins.

"How clean is clean enough?" is a question many producers ask. A good rule of thumb to follow when cleaning bins and equipment is: If you can tell what was stored or handled last season by looking in the auger, bin or combine, it is not clean enough to prevent recontamination of the new crop.

Grain spilled near the bin attracts insects and draws mice and rats. Clean up and dispose of any spilled grain several weeks prior to harvest.

Bin Repairs

Make sure that the bin is insect and rodent-proofed by plugging holes, sealing bins, caulking and making general repairs. If rats have tunneled under foundations, use baits or traps to reduce or eliminate them.

Landscaping

Around the bins, be sure to remove old equipment, junk and clutter to reduce attractiveness

to insects and rodents. Mow around the bin site to remove tall grass and weeds to reduce the potential for insect and rodent infestation.

Landscaping should be maintained well away from grain storage facilities. Leave a four foot wide strip of bare gravel around the perimeter of storage bins.

If necessary, re-grade the site so that water readily drains away from bin foundations. One cannot always wait for the soil to dry before loading or unloading grain from bin sites. Make certain that travel lanes have enough rock or gravel to bear the weight of heavy trucks and grain carts.

Grain Moisture and Temperature

Stored grain insects cannot live on extremely dry grain (less than 10 percent), however it is impractical to reduce grain moisture much below minimum moisture levels necessary for long-term storage. Insect activity and reproduction are favored, however, by high grain moisture (14 percent or more), especially when condensation and molds occur and fermentation raises temperature in the grain mass. A bin of 19 percent moisture corn with a starting temperature of 75° F can lose a full market grade in about five days if the aeration system shuts down, allowing the grain to heat and deteriorate. Electrical system maintenance before harvest can

prevent costly downtime. Spoilage and internal heating allow insects to remain active even in winter.

Through proper management of aeration, one can manipulate grain temperature. Since insects are "cold-blooded," they are not active much below 55° F and grain cooling can be particularly important in reducing insect reproduction. Condensation of moisture in the grain mass is prevented by slow cooling and gradual reduction of the gradient between the grain mass temperature and the outside (ambient) temperature.

Electrical Components

Wiring for fans and other electrical components should be inspected for corrosion and cracked, frayed or broken insulation. Exposed wiring should be run through waterproof, dust-tight conduit. Avoid kinking the conduit, and make sure all connections are secure.

Mice often nest in control boxes where they are protected from predators. They can strip insulation from wires for nest material and their urine sometimes causes corrosion on relays and other electrical components. If rodent damage is found, clean and repair or replace damaged wiring, relays and other electrical equipment. Then seal over knock-outs and other openings that may permit rodent entry.

Fans, heaters, transitions and ducts should be checked for

corrosion and other damage. Remove any accumulated dust and dirt that may reduce operating efficiency and be sure all connections are tight to prevent air leaks that can reduce operating efficiency.

Residual Treatments

Once empty bins have been thoroughly cleaned, a residual treatment may be applied to bin surfaces to protect incoming grain from insect infestation.

Follow label instructions carefully. The following materials can be used to treat bin surfaces: **silicon dioxide** (Cringe, INSECTO), **silica gel + pyrethrins** (PRESCRIPTION TREATMENT/TRI-DIE SILICA & PYRETHRUM DUST), **cyfluthrin** (STORCIDE), **malathion** (Prentox 50) or **diatomaceous earth** (AGRISOLUTIONS DEI). Note: pyrethrins would provide a relatively short residual and malathion is not effective for some stored grain insects due to resistance. **Methoxychlor** is no longer labeled as a residual spray in stored grain facilities in Nebraska. For bins with false floors, which are inaccessible for cleaning, **chloropicrin**, a bin "clean-out" fumigant, is legal to use, prior to binning the grain. Other fumigants that could be used on empty bins would be **magnesium phosphide** and **methyl bromide**. Caution! Fumigants are dangerous, restricted-use pesticides and may require gas monitoring devices and respirator protection for the applicator. It is highly recommended fumigation be done by a commercial pesticide applicator who has been trained and EPA/NDA-certified in safe fumigant handling and application techniques.

Refer to current labels for specific details and instructions. (TD)

Johnswort Article

Note: The article on St. Johnswort that appeared in the September 2004 NEBLINE is now available as an in-house educational resource. It is available at the Extension office or online at <http://lancaster.unl.edu/ag/Factsheets/309.htm> (TD)

"Grapes" is October Rural Living Clinic

The University of Nebraska Cooperative Extension is presenting a series of seminars entitled "Acreage Insights — Rural Living Clinics" to help acreage owners manage their rural living environment. "Grapes" is the eighth in the series, to be held Oct. 23, from 9 to 11 a.m. at the Lancaster Extension Education Center, 444 Cherrycreek Road.

The selection of grape varieties, equipment needed, wildlife control, fencing, and the marketing of grapes will be the primary focus of this program. Participants will gain a greater understanding of the grape enterprise and wine industry by attending this session.

Pre-registration is \$10 per person and must be received three working-days before the program. Late registration is \$15 per person. For more information, visit the Acreage & Small Farm Insights Web site at acreage.unl.edu or contact Sarah Browning at (402) 727-2775.



Add Lime This Fall for Next Spring's Alfalfa

Do you have problems establishing alfalfa? Dr. Bruce Anderson, Extension Forage Specialist says the solution might be to apply lime if your soil pH is low.

Every year, some alfalfa growers experience slow growing seedlings as a result of a low soil pH. Most often, the farmer didn't take a soil test prior to planting the alfalfa to check pH. Sometimes, a soil test was taken, but the farmer disregarded the advice to apply adequate lime to bring the pH up to a level where the alfalfa would be productive and, either applied less lime, or no lime at all prior to planting alfalfa.

Alfalfa grows best in soils with a neutral pH of about seven. When soils are acidic, with pH 6.2 or lower, alfalfa plants do not grow as well. At a low pH, alfalfa roots are less able to absorb nutrients from soil. The nodules on alfalfa roots that convert nitrogen from the air into nitrogen the plants can use, have difficulty forming and working effectively in

acidic soils.

Soils that have been tilled and fertilized with nitrogen for a number of years, will become more acidic over time. Some crops, especially legumes like soybeans and alfalfa, are affected more by low pH than others. Eventually, the pH of the soil will drop to levels that affect the availability of many essential nutrients in the soil and will affect the yield potential of all crops. Soils need lime to solve this problem. Some folks still resist liming even when their own soil pH is down as low as 5.5 or even below five.

It takes some time for lime to neutralize high acidity. So lime should be applied at least four months ahead of planting alfalfa. Which means if you expect to seed a new field of alfalfa next spring, add lime, if needed, this fall to give it time to work. Lime does cost money, but it's much less costly than having a stand failure or several years of low alfalfa yields. (TD)

