

Inside this Issue...

Harvesting Sunflowers for Silage ..1
Sample Dry Edible Beans for Soybean Cyst Nematode3
Guidelines for Fall N Application in North Dakota4
Fall Needle Drop in Evergreens – This is Normal5
Around the State6
North Central ND6
Northeast ND6
Northwest ND6
South-Central/Southeast ND8



HARVESTING SUNFLOWERS FOR SILAGE

Many producers are wondering if their sunflower will make it to grain harvest or should they salvage the crop and harvest it as forage. The decision to harvest sunflowers as forage, particularly silage, requires careful consideration of several factors. Sunflower silage can make a suitable feed for beef cows, sunflower silage is about 80% of the feeding value of corn silage. Still, the challenge is getting it put up, because sunflowers typically do not dry down well. Consequently, dry feed must be added to the silage pile to reduce the moisture level to a point where seepage is not a major problem.

The moisture problem in sunflower silage can be corrected by several means. Former NDSU animal science specialist, LaDon Johnson, suggested blending corn and sunflower silages when packing as one method. The blending ratio should be one load of sunflower silage to three to four loads of corn silage. Waiting seven to 10 days following a killing frost will facilitate dry down. Some varieties may take longer and waiting longer, also increases the risk of wind damage to the crop and greater dry matter losses. It is also suggested to blend dry forage into the silage pile to reduce the moisture content.

Optimal moisture content in sunflower silage appears to be 60% to 72% or 28% to 40% dry matter. To minimize effluent seepage problems, the moisture level will likely need to be below 65%. Silage that is too wet will also result in undesirable clostridial fermentation, reducing the forage quality and may limit voluntary intake due to palatability. Keep in mind the target moisture of 60% to 72%; harvesting immature sunflowers can produce silage with lower fiber, lignin and fat content, possibly improving the forage quality.

Sunflower silage is lower in energy at 61% to 66% total digestible nutrients (TDN), variety dependent, than corn silage at 68% TDN. The lower energy of sunflower silage is mainly due to the greater fiber content of sunflower silage which is approximately one-third more than corn silage and three times the amount of lignin, the indigestible portion of the fiber.

However, confectionery and oil-type sunflowers can make silages that contain more protein (11.1% to 12.5% versus 8.2% crude protein, respectively), fat (7.1% to 10.7% versus 3.3%, respectively), calcium (0.8% to 1.5% versus 0.24%, respectively) than corn silage at 100% dry matter.

Due to the fat content of sunflower silage, the forage should be limited to one-half or less of the diet dry matter basis. In forage-based diets, dietary fat content exceeding 6% will reduce the intake and digestibility of forages. Likewise, the high fiber content of sunflower silage may reduce intake by slowing down the rate of passage in the rumen.

As with making any silage, allow 28 days for the ensiling process to occur before feeding or exposing the forage to oxygen. Pricing silages can be complex. Factors that may influence the value of sunflower silage include substitute feed costs, fertilizer costs, harvesting costs, removal of residue and nutrients from the field, storage costs, harvest and storage losses or shrink, and energy, protein and fiber content of the sunflower silage. Analyze the sunflower for nutrient content, and use these values to better understand the forage quality, and determine the pricing based on forages with similar nutritive value, such as medium quality hay.

For sunflower covered by insurance, be sure to contact your crop insurance agent before harvesting. Likewise, check any herbicide and insecticide labels applied to the sunflower and follow the pre-harvest time restrictions before harvesting for silage.

Many drought-stressed plants accumulate nitrates. Before feeding, test your drought-stress sunflower silage for nitrates. Although proper ensiling will reduce nitrates, it does not guarantee the forage will contain 'safe' levels of nitrates.

See the NDSU Extension publication "[Nitrate Poisoning of Livestock](#)," for more information about elevated concentrations of nitrates in feedstuffs.



Sunflower field

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SAMPLE DRY EDIBLE BEANS FOR SOYBEAN CYST NEMATODE

We recommend that dry edible bean growers soil sample their fields for soybean cyst nematode (SCN). This is particularly important in Southeastern and East Central North Dakota, where SCN is most commonly found in the state.

Like soybeans, dry edible beans are susceptible to SCN. Also like soybeans, above-ground symptoms of infected dry edible beans are not diagnostic for SCN. Infected dry edible beans may only appear stunted, yellowed and have poor canopy closure (Figure 1). SCN can be observed on the roots, but as plants age it is increasingly difficult to identify (Figure 2). Consequently, soil sampling is the best way to test for the nematode.

Methods to sample dry edible bean fields for SCN are the same as soybeans. Sampling can be done anytime now until freeze-up. Using a soil probe (or shovel), take 10-20 subsamples per field, 6-8 inches deep, aiming for the roots. Mix the sample and submit to a lab. If you do not know if you have SCN, sample area where SCN is most likely to be first introduced such as field entrances (on equipment with soil), periodically flooded areas (with flood water) or near shelter belts (dispersed with blowing soil). Sampling high pH soils is also a good area to sample, as high pH favors SCN reproduction. If you already know you have SCN, understanding your egg levels will help you make management decisions next year.

Research conducted at NDSU demonstrated that different market classes of dry beans have different susceptibility to SCN. SCN was able to feed and reproduce on kidney beans just as successfully as a susceptible soybean. SCN was able to feed and reproduce on pinto and navy beans, but at a reduced rate when compared to susceptible soybeans. Among all the market classes tested, feeding and reproduction was lowest on black beans. It is notable however, that differences among varieties within the market classes exist. If we were to use a soybean scale to compare the market classes, results would suggest that Kidneys would be rated 'S', pintos and navys 'S/MS/MR', and blacks 'MR'.

For more information on [SCN biology](#), [SCN distribution in ND](#), and [SCN sampling](#), please see my [articles from last week](#).

[Sam Markell](#)

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Figure 1. SCN infected kidney beans (Photo: Guiping Yan)



Figure 2. Kidney bean root with SCN cysts (Photo: Guiping Yan)

[Guiping Yan](#)
Nematologist



GUIDELINES FOR FALL N APPLICATION IN NORTH DAKOTA

Fall N application is a possible fertilizer management strategy if the timing is optimized. The following are timing guidelines for application of anhydrous ammonia and urea in North Dakota. The guidelines consider the delay in nitrification caused by a concentrated anhydrous ammonia band on bacteria activity immediately following application, a smaller delay caused by the ammonia gas aura surrounding a concentrated urea band, and no delay in nitrification from ammonia released from individual urea pellets as a result of broadcast application. If urea is applied at the surface or less than 2 inches from the surface, an NBPT-based urease inhibitor should be added to the urea.

Anhydrous ammonia-

Never apply anhydrous ammonia before October 1. From October 1 on, look at the NDAWN data on 4- inch depth soil temperature from 6AM-8AM, or take the measurement yourself. When the temperature drops to 50°F or less, the risk of a large percentage of ammonia transformation to nitrate, which is susceptible to leaching/denitrification loss is low. Once this temperature is reached, there will nearly always be a day or days when temperatures are greater than 50°. But in North Dakota, winter is coming, so charge ahead. A nitrification inhibitor (I dislike the marketing term 'stabilizer', as it is grossly misused) can be used to protect against an unusually late starting freeze-up, but it should not be used to push the date of application earlier, as the late freeze-up would erase the advantage. Nitrapyrin (N-Serve™) is the most effective nitrification inhibitor, with DCD and its relatives an effective 2nd.

Banded urea-

Banded urea with an air-seeder, drill, or in strip-till date should be one week later than the date for anhydrous ammonia. Nitrification inhibitors for urea are less effective than nitrapyrin for ammonia, but still provide some protection.

Broadcast urea should be delayed 2 weeks following the date for anhydrous ammonia. Nitrification inhibitors provide some protection, but not as much as nitrapyrin for ammonia.

For example, if soil temperatures in Cando dropped to 50° on October 5, anhydrous ammonia application may begin in that area. October 12, banded urea application is relatively safe. October 19, broadcast urea may be applied with confidence.

The later the application of any of these options, the lower the risk of nitrate loss in the spring. The challenge is to balance the logistics of waiting with the ability to apply all the planned acres in-between rains and before freeze-up. Fall N application is never more efficient than spring application. However, the logistics of being able to apply N before or at seeding will weigh heavily on the decision to apply fall fertilizer. Although lower efficiency of fall N is a production cost consideration, a delay in seeding from waiting on fertilizer application in the spring is a greater cost in most years.

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**FALL NEEDLE DROP IN EVERGREENS – THIS IS NORMAL**

This past year has been tough on trees, especially evergreens. Starting in late August and early September, we often get a lot of calls and emails regarding evergreen needles turning brown or yellow. It's the older, inner needles that are dying. This is actually normal and can be found in pines, spruces, arborvitae, and sometimes junipers.

Those older needles get shaded out by the newest growth, and become unproductive. The tree then sheds these needles; we've seen this happen as early as August though the situation is starting to increase across the state.

Pines hold their needles for 3-5 years before shedding them. Spruces usually hold on longer, about 5-8 years. What we're seeing is normal, and it's nothing to worry about.



Ponderosa pine in Bismarck showing normal fall needle drop. The older, inner needles get shaded out and the tree sheds them. Similar symptoms are often seen in spruce and arborvitae, and sometimes even junipers.

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AROUND THE STATE

NORTH CENTRAL ND

The dry pattern persists in the region. However, last week we observed rainfall in North Central region. Here are the latest precipitation reports as observed by area NDAWN stations over the last two week (beginning August 10th): Minot: 1.36" (NCREC: 0.11"); Bottineau: 2.61"; Garrison: 0.97"; Karlsruhe: 2.89"; Mohall: 2.29"; Plaza: 1.17"; and Rugby: 4.21". Bare soil temperature at the NCREC is observed at 73 degrees F.

Grasshopper calls are dropping but continue to be the leading entomology concern with localized spots of higher numbers in the region. Please keep in mind your economic thresholds for grasshopper adults – border threshold (21-40 per square yard) and an in-field threshold (8-14 per square yard). If thresholds are met, control may be required in some circumstances. As small grains, pulses, and canola continue to dry down or be harvested, grasshopper populations will begin to move to the later maturing crops. At the current moment, I have taken some two-spotted spider mite calls from area gardeners, but still haven't heard of any populations in area crops.

All the small grains are approaching to the complete harvested. The yields reported by producers are very low compared to the yields in normal years and in some cases the wheat yield is found 70% below the normal year. Pulse crops are mostly harvested in the region. We are seeing this year an increase of standing harvest canola. Soybean fields are mostly at the R-5 stage with a few fields up to the R-7 stage. Sunflowers are nearing the R-6 to R-7 stage with a few fields still playing catchup in the R-4 to R-5 stages. Most of the corn found in the region are at R-3 to R-5 and we are seeing a lot of drought stressed corn being harvested as forage.

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NORTHEAST ND

Majority of the small grains are off the field now. However, the untimely rains for longer periods caused sprouting issues in wheat crop. Canola is laying in swaths and dry beans are being combined. Corn looks tough. Soybeans are turning colors and dropping leaves. Sunflowers are being desiccated.

[Anitha Chirumamilla](#)

Extension Agent Cavalier County

NORTHWEST ND

Corn Dry Down In 2021

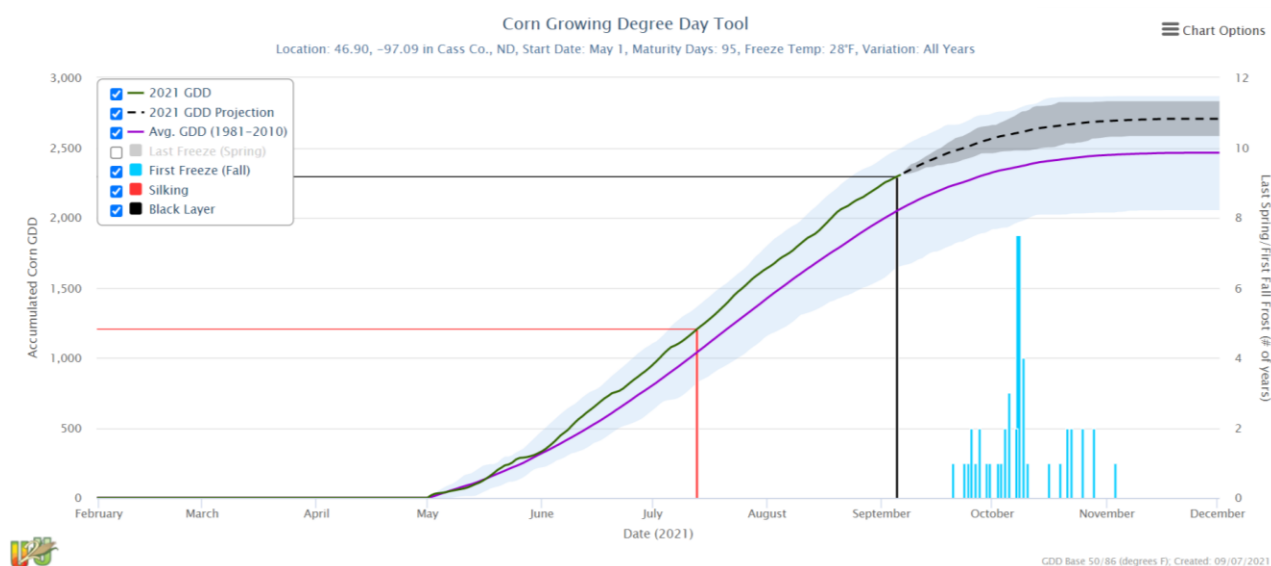
With the exceptionally warm and dry conditions of the 2021 growing season, corn is drying down quickly across most of the state. In areas where the drought was Extreme or Exceptional, much of the corn that failed to tassel or produce an ear was chopped or baled a month or more ago in many cases. Early-maturing varieties have already

reached black layer in many areas but later hybrids may still have a few days or weeks left to go. After reaching black layer, corn kernels do not add additional dry weight and lose water weight, i.e., moisture, through evaporation. The 2-4" of rain that has fallen in the past two weeks in eastern portions of the state may help increase the test weight of later maturing varieties that have not yet reached black layer, but will not contribute anything to yield for early maturing varieties that had already reached black layer by mid-August.

Growing degree accumulations have been greater than last year. Below are 2021 and 2020 GDD as of September 6th for a May 1st planting date for select locations according to the NDAWN Corn Growing Degree Day calculator, found here: <https://ndawn.ndsu.nodak.edu/corn-growing-degree-days.html>

Location	2021 GDD	2020 GDD	Difference (2021-2020)
Grand Forks	2219	2076	143
Fargo	2471	2290	181
Wahpeton	2335	2205	130

If you want to predict when your corn hybrids of different maturity will reach black layer, try the U2U Decision Support Corn GDD Tool developed by researchers from land grant universities through the High Plains Regional Climate Center (HPRCC) found here: <https://hprcc.unl.edu/agroclimate/gdd.php> This tool can be used to estimate corn maturity date anywhere in the mid-west region by pointing and clicking on your county in the map. Then, select your planting date and corn maturity days in the drop-down menus. The tool will then automatically generate a graph showing GDD accumulation for the current year and project it forward based on average weather data for future dates. As an example, below is the graph generated for a May 1 planting date of a 95 day hybrid in Cass County.



According to this scenario, black layer is predicted to occur on September 5th after 2280 GDDs have been accumulated. You can see how this year's line (the green line on top representing 2021) is higher than the purple line (the average GDD accumulation 1981-2010). In a more average year, black layer GDDs would not be reached until September 26th. Hopefully our warmer-than-average growing season will continue to allow for good dry down conditions and a timely corn grain harvest.

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SOUTH-CENTRAL/SOUTHEAST ND

According to NDAWN, the region's August 1 to September 6 rainfall ranges from 2.1 inches (Denhoff) to 7.5 inches (Wishek), with the Carrington REC receiving 3.5 inches.

Among row crops, the recent rain will provide most value for soybean, especially long-maturing varieties or late-planted fields. During the past 2 weeks, rain had little impact on dry bean that were near or at seed maturity. Plus, rain actually was a negative as many bean plants have produced new blossoms and initial pods, which likely will not produce viable seed and cause additional harvest challenges (see picture). The rain (and cooler air temperatures) has certainly promoted pasture regrowth. Also, the rain has provided the environment for successful establishment of fall cover crops.



Variability in growth among and within pinto bean plants.

Currently, 2021 CREC small grain variety trial data is available (www.ag.ndsu.edu/varietytrials/) for three HRS wheat (dryland, and Dazey and Wishek off-station sites); two durum (dryland and no-till); and three barley (dryland, irrigated and no-till); with more data pending. Our irrigated dry bean variety trial should also be harvested this week.

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