

North Dakota State University CROP & PEST REPORT

NDSU EXTENSION

No. 1 April 29, 2021

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Welcome to the 2021 edition of the NDSU Extension *Crop & Pest Report*. We hope that you will enjoy reading the various articles about webinars/field day, pest problems (insects, diseases, weeds), agronomic issues, fertility, soils, horticulture, forestry, happenings around the state and weather. Please feel free to contact the writers or editors if there is something that you would like to know about. Have a successful cropping season!

entomology

GOOD BUGS WEBINAR SERIES



Photo credit: Green Lacewing, by Sarah Foltz Jordan

GOOD BUGS 20.21

Webinar Series: Farming with Beneficial Insects for Pest Control and Conservation Biocontrol

Learn a science-based strategy that seeks to integrate beneficial insects and their habitats on farms and ranches for natural pest control!

Pre-registration is required by May 23rd, 2021 in order to receive the correct zoom link via email.

Webinars begin at 9:30 AM CDT/8:30 AM MDT

Runs about 1 1/2 hours in length and will be presented via Zoom.

County commissions, North Dakota State University and U.S. Department of Agriculture cooperating. NDSU does not discriminate in its programs and activities on the basis of age, color, gender expression/identity, genetic information, marital status, national origin, participation in lawful off-campus activity, physical or mental disability, pregnancy, public assistance status, race, religion, sex, sexual orientation, spousal relationship to current employee, or veteran status, as applicable. Direct inquiries to Vice President for Title IX/ADA Coordinator, Chelmar 201, NDSU Main Campus, 701-231-7766, ndsu.ada@ndsu.edu. This publication will be made available in alternative formats for people with disabilities upon request, 701-231-7881.

Individuals with disabilities are invited to request reasonable accommodations to participate in NDSU-sponsored programs and events. To request an accommodation(s), please contact T.J. Prochaska at 701-857-7677 by May 20, 2021 to make arrangements.

Registration is available at:

Using your smartphone, open your camera and hover over the QR code or email TJ at the email listed below.



USDA is an equal opportunity provider, employer, and lender.

May 26, 2021

Part I—Intro to Conservation BioControl
Sarah Hamilton-Buxton

“Here are the Bugs”
T.J. Prochaska

June 9, 2021

Part II — Beneficial Insect Scouting
T.J. Prochaska

“Critters under your Feet”
Candy Thomas

June 23, 2021

Part III — Beneficial vs. Pest Life Cycles
T.J. Prochaska

Soybean Aphid Resistance in North Dakota
Jan Knodel

July 7, 2021

Part IV — Habitat Creation
Sarah Hamilton-Buxton

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Lena Bohm 701-389-8701
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**"NOTES FROM THE FIELD," WEBINAR SERIES**

- Join soybean research and Extension specialists, from land-grant institutions across the United States, including North Dakota State University, for monthly informal discussion on production topics of timely relevance. Bring your questions!

When?

Friday May 7 at 8 AM Central Time

Friday June 4 at 8 AM Central Time

Friday July 9 at 8 AM Central Time

Friday August 6 at 8 AM Central Time

Want to plug in?

Register to attend via Zoom for each monthly session and you will receive Zoom login information

Registration:

<https://ncsu.zoom.us/meeting/register/tJEkdeigrTlqHNMYI3FuXRVpGsC87mavL6hs>



Questions or suggestions about the webinar contact [Seth L. Naeve](#) Extension Soybean Agronomist University of Minnesota

- Recently the group of extension agronomist put together three soybean production fact sheets

Soybean Plant Population Density, The best soybean management practices by Extension researchers from across the United States. https://soybeanresearchinfo.com/wp-content/uploads/2021/02/FINAL-2700-002-20-Seeding-Rate_Science-for-Success_Dec-23_v1-1.pdf

How to Pick the Right Soybean Row Spacing, The best soybean management practices by Extension researchers from across the United States. https://soybeanresearchinfo.com/wp-content/uploads/2021/02/FINAL-2700-002-20-Row-Spacing_Science-for-Success-Dec-22_v1.pdf

The Best Soybean Planting Date. The best soybean management practices by Extension researchers from across the United States. https://soybeanresearchinfo.com/wp-content/uploads/2021/02/FINAL-2700-002-20-Planting-Date_Science-for-Success_Feb-9_v3-1.pdf

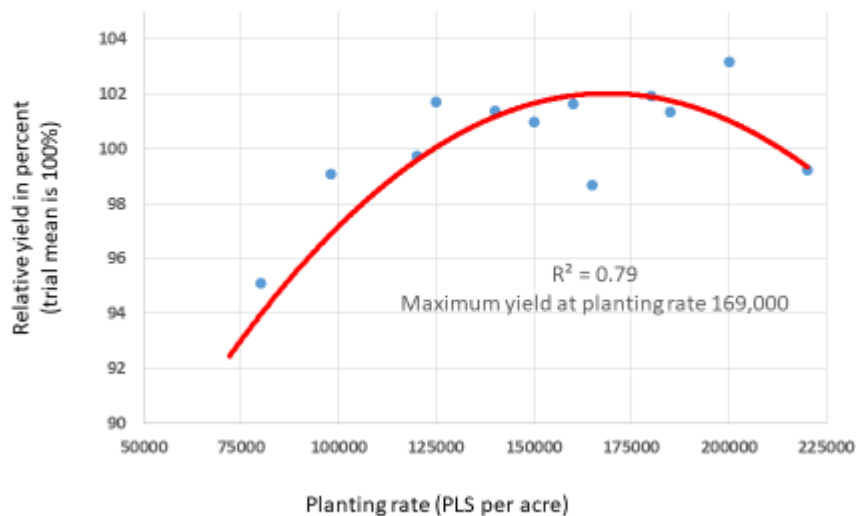
[Hans Kandel](#)

Extension Agronomist Broadleaf Crops

SOYBEAN SEEDING RATE AND ROW SPACING

North Dakota State University has a long tradition of recommending the establishment of a soybean population of 150,000 plants per acre, across row spacings. NDSU has conducted numerous field trials during recent years to examine the impact of planting rates and row spacings on soybean production. With the large amount of data available from across the state, the opportunity existed to re-evaluate the current recommendation and provide a more precise soybean planting rate and row spacing recommendation. This article summarizes the evaluation of data generated by 37 NDSU soybean planting rate and row spacing trials conducted during 2008 through 2019 in North Dakota. This work resulted in the NDSU Extension publication “Soybean Response to Planting Rates and Row Spacings in North Dakota” (A1961). It is available at <https://www.ag.ndsu.edu/publications/crops/soybean-response-to-planting-rates-and-row-spacings-in-north-dakota>

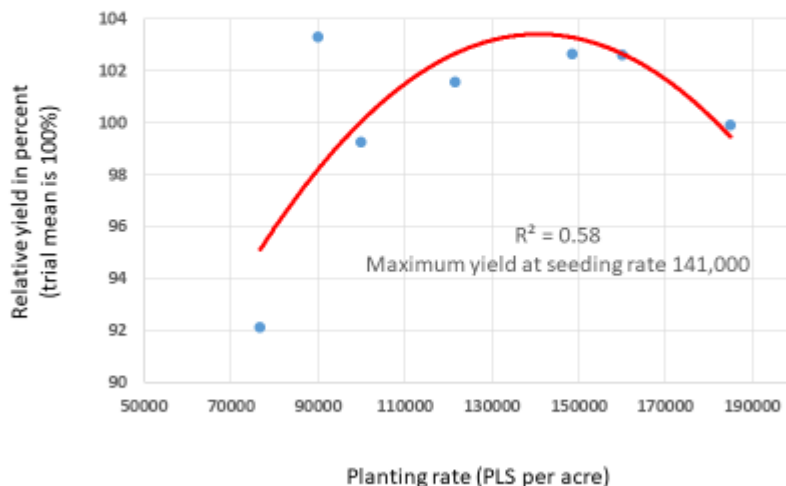
Figure 1. Soybean relative seed yield with planting rates averaged across row spacings, North Dakota 2018-2019.



Individual Factors

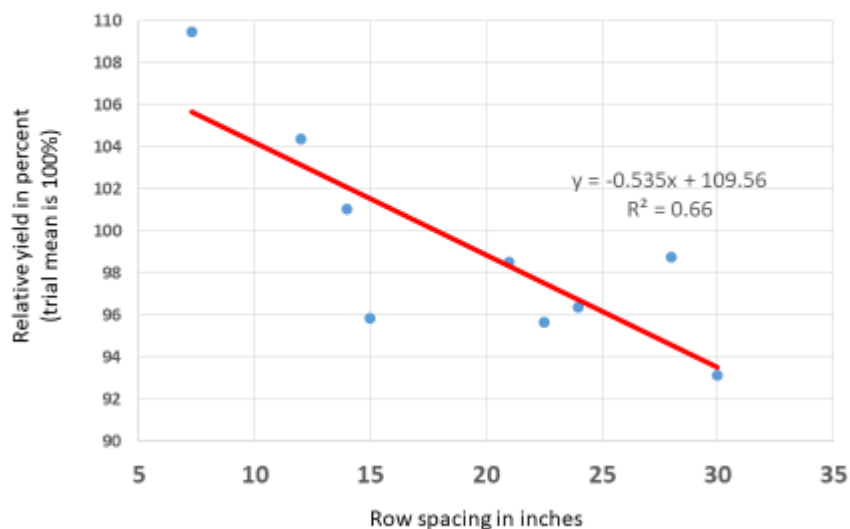
- Across North Dakota and row spacings, the planting rate of about 170,000 pure live seeds (PLS) per acre optimized soybean seed yield. In eastern North Dakota trials, 8% of planted PLS per acre did not develop into viable soybean plants. Assuming 8% of PLS do not result in established plants across North Dakota, and using 170,000 PLS per acre, about 155,000 plants per acre would be expected to maximize yield. Within regions, optimum yield occurred at 180,000 and 140,000 PLS per acre in eastern and western North Dakota, respectively.

Figure 2. Soybean relative seed yield with planting rates averaged across row spacings, western North Dakota, 2013-2019.



- Across North Dakota or by regions, narrow rows (less than 15 inches) consistently provided greatest soybean yield.

Figure 3. Soybean relative seed yield with row spacings averaged across planting rates, North Dakota, 2008-2019.



Factor Combination (by regions)

- In eastern North Dakota, the combination of narrow rows (12 to 14 inches) and planting rates of about 170,000 PLS per acre provided optimum yield. If planting in wide rows (24 to 30 inches), planting rates to reach the optimum yield were about 190,000 PLS per acre.
- In western North Dakota, the combination of narrow rows (7 to 10 inches) and planting rates of about 150,000 PLS per acre provided optimum yield.

Estimated Soybean Plant Stands in North Dakota

Region	Row Spacing	PLS/acre Planting Rate	PLS/acre Planting Rate Minus Field Loss Deductions		
			8%	10%	15%
			estimated early season plants/acre		
East	Narrow	170,000	156,500	153,000	144,500
	Wide	190,000	175,000	171,000	161,500
West	Narrow	150,000	138,000	135,000	127,500

Note that the recommended planting rates are for optimum yield. Economic yield also must be considered based on seed costs and soybean market prices.

[Greg Endres](#)

Extension Cropping Systems Specialist

[Hans Kandel](#)

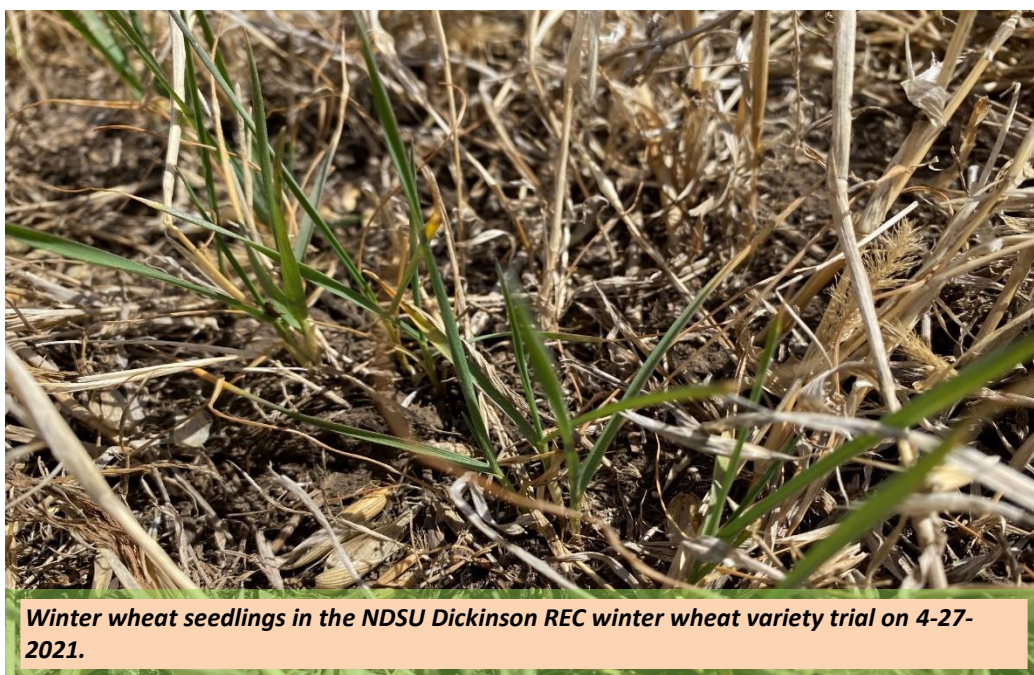
Extension Agronomist Broadleaf Crops

WINTER WHEAT VERNALIZATION

Winter wheat covers a small fraction of acres in the state, however with the limited snow cover and drought conditions there are concerns about whether or not winter wheat vernalized.

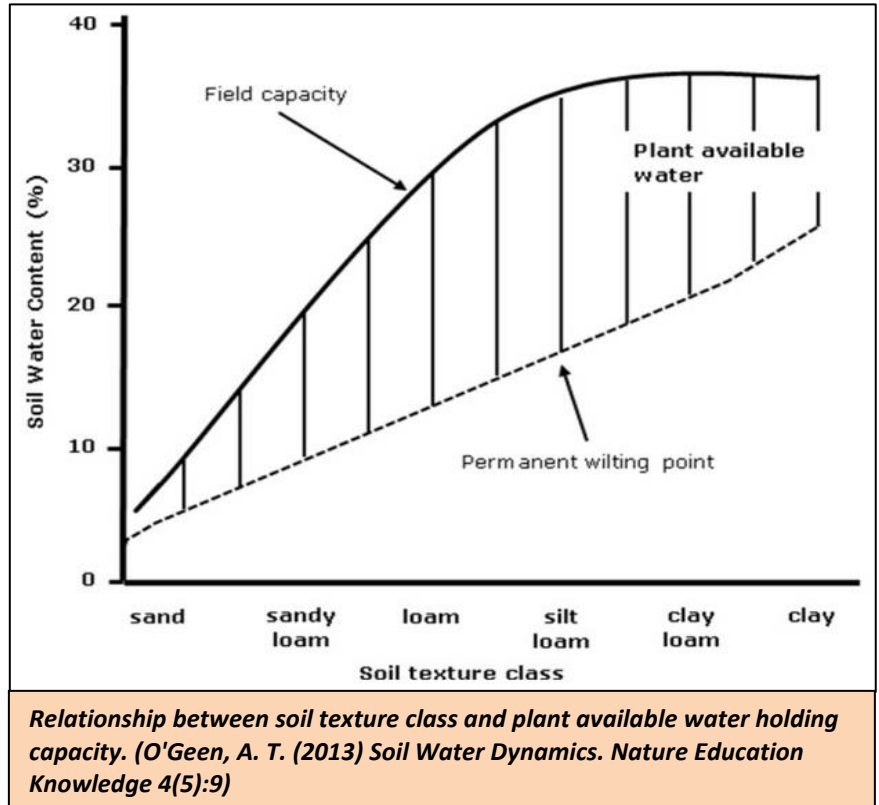
Vernalization is the process where plants need to sense exposure to cool temperatures in order to reach flowering. Winter wheat will not produce seed if not vernalized. If the seed did not germinate in the fall due to dry conditions, there is still an opportunity for the crop to vernalize. If the seed has imbibed water it can start the vernalization process and the process does not need to wait for the plant to be

emerged. Wheat seed germination occurs with soil temps in the upper 30s and vernalization occurs with temps at or below those same temps. The unknown factor is length of time needed at these low temps for vernalization; the range has been reported to be 30 to 75 days. Based off of state NDAWN soil temperatures vernalization should not be an issue. Soil that looks dry will still not be completely void of moisture and the imbibition process has likely already started.



Winter wheat seedlings in the NDSU Dickinson REC winter wheat variety trial on 4-27-2021.

There are many variables to consider for vernalization including cultivar, soil temp, and timing of germination and moisture. All of these factors included I would not be concerned about lack of vernalization across the state for winter wheat planted last fall and would be more concerned about potential for having varying growth stages within the field.



[Ryan Buetow](#)

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NDSU Dickinson REC

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PROJECTIONS FOR 2021 SUGARBEET CROP

Growers in the USA grow and process sugar from sugar cane and sugarbeet. Sugar cane is produced in Florida, Louisiana, and Texas and sugarbeet is produced in Minnesota, North Dakota, Idaho, Michigan, Montana, Nebraska, Colorado, Wyoming, Oregon, California and Washington. The United States Department of Agriculture estimates that 1.162 million acres of sugarbeet will be planted in the USA in the 2021 growing season.

Minnesota and North Dakota have three sugar cooperatives – American Crystal Sugar Company, Minn-Dak Farmers Cooperative and Southern Minnesota Beet Sugar Cooperative. In addition, growers in western North Dakota produce sugarbeet that are processed in neighboring Sidney, Montana. Growers in Minnesota and North Dakota will plant about 651,000 acres, which represents about 56% of the total US sugarbeet production. The 2021 acreage will be slightly higher than last year to produce sugar to increase our relatively low stock.

Growers are encouraged to continue their efforts at improving efficiency by ensuring that planting is done in properly prepared and weed-free seed beds, by using adequate seeding rate and uniform seed spacing to start with a good plant population to give the crop a solid foundation (Figure 1). Growers have the option of using several effective fungicidal seed treatments to control *Rhizoctonia* seedling damping-off should it become warm and wet soon after planting. Growers with a history of *Aphanomyces* in their fields are advised to use Tachigaren seed treatment, and to

apply and incorporate precipitated calcium carbonate to their fields to manage *Aphanomyces* damping-off and root rot. In the northern Red River Valley and other areas where sugarbeet root maggot is an issue, growers have the option of using insecticidal seed treatments where insect population is relatively low and at-plant insecticides where root maggot population is known to be higher.

Growers will typically wait until their insurance coverage comes in to effect, which is typically around April 11 for Minnesota and North Dakota, before they start planting. Growers are encouraged to continue best management practices to have a profitable sugarbeet crop in 2021.



Figure 1. Sugarbeet field with a good plant population and excellent weed control.

[Mohamed Khan](#)

Extension Sugarbeet Specialist

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FERTILIZATION IN A DROUGHT

Fertilization needs to happen whether we are in a drought or not. In our region, early spring drought does not necessarily translate into a growing season drought, so planning for a normal crop would be prudent. In addition, crop insurance rules dictate that normal cropping practices need to be maintained.

Although recommendations regarding fertilizer applied with the seed for some crops are similar, pushing rates towards the upper limit when the soil is dry would not be wise, as fertilizer tends to concentrate around the seed when soil dries, whereas if the soil is moist the fertilizer tends to be more disperse.

AMMONIA APPLICATION IN A DROUGHT

A common question that farmers have in seasons of dry soil conditions is whether ammonia will be lost if the soil is too dry. A dry soil in our environment still has about 10% water in it; it is just held more tightly onto clay and organic matter due to a thinner film and prevents crops from taking it up. However, ammonia can certainly be held by it. The problem of ammonia in dry soils is not the water in the soil restricting rate, but the tilth of the soil. If the soil flows around the ammonia application band and the band is placed at least 4 inches deep in the soil then the ammonia should be safe from loss. In the fall, dry soil often translates into cloddier soil because there has not been enough freeze-thaw to break up the soil into fine particles. Therefore, dry soils are much more a problem in the fall because if the soil is cloddy, there are gaps between the clods that would allow ammonia to escape not only the day of application, but in the days following. In spring, and this spring is no exception, all the soils I have investigated so far are very fine at and near the soil surface, and would provide good coverage of the ammonia band.

If ammonia is to be applied at planting there needs to be at least 3 inches distance from the intended seed row. In moist springs, farmers have skated by with less distance because there is more water to trap the ammonia before it reaches the seed, but not this year. If the ammonia will be applied in a separate preplant trip before planting, it should be applied at an angle to the intended planting row. Some seeds will be damaged and stand reduced, but it will not leave large gaps within a row, just a plant missing once in a while, which increasing seeding rate about 10% will take care of.

UREA APPLICATION IN A DROUGHT

There is a lot more interest this spring in applying urea with a drill before planting, rather than broadcast application followed by a field cultivator to work it in. The drill will likely result in less soil disturbance and greater moisture conservation compared with a field cultivator. Urea application should be made deeper than 2 inches to avoid using a urease inhibitor (anything with a proper rate of NBPT). A separate drill application of urea should be made at an angle to the intended row, because when urea is broken apart into ammonia and carbon dioxide by the soil urease enzyme, the ammonia will hurt seed germination and reduce stand. By applying urea at an angle to the planting direction, a seed will be killed once in a while, but will not result in large gaps within a row. Any P applied in this manner will not behave as a 'starter', but will be available later in the season beyond which a starter might help early growth. If P is applied in this manner, some seed-placed/near-seed-placed P should be applied to corn, small grains, canola, sugarbeet and potato.

REDUCING FERTILIZER RATES IN A DROUGHT

With the old 'yield-goal' mentality still alive and well unfortunately with many growers, there will be a tendency to greatly reduce fertilizer rates this spring. This is a mistake. In dry conditions, crop nutrients are used much less efficiently than in a more 'normal' year. In 2012, efficiency of N applied to a dry soil was at least 1/3 less efficient than similar rates in a 'normal' year for corn in one of my experiments. It takes far more nutrient per bushel/pound/ton in a drought year compared to that in a normal year. That stated, being conservative on rates is not a bad strategy, within limits. In spring wheat, for example, if the rate from the NDSU N calculator is 150 pounds of N per acre, reducing it to 120 pounds N per acre would not be too extreme. If the weather turned around, the variety tended to be lower protein naturally, then supplementing the N early post-anthesis to regain some protein is a plan that conserves N early. If the weather remains dry, achieving high protein would happen without any extra N.

[Dave Franzen](#)

Extension Soil Specialist

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HERBICIDE CARRYOVER CONCERNS IN 2021

The weather conditions from fall 2020 through spring of 2021 have been a completely different situation than on the same calendar dates a year ago. The dry fall, winter, and spring conditions have led to early planting in many areas, as well as an increased concern in herbicide carryover from applications made in the spring and summer of 2020. Any discussion about herbicide carryover will focus on three key components: environmental conditions since herbicide application; chemistry of the applied herbicides; and interactions between the herbicide and soil conditions.

Our northern climate inherently places us at higher risk for carryover compared to other states to our south and east. Herbicides will break down more quickly in warm, wet soils due to increased microbial and chemical degradation. We will typically have the warm soils throughout our summer months, but soil temperatures decline rapidly as we progress into the fall and herbicide breakdown will also slow down during this time. It is important to remember that herbicide breakdown does not occur in frozen soils. What this means for us is that most herbicide degradation occurs in the summer months, and degradation is more rapid when we have adequate rainfall. Whenever we have dry conditions, herbicides can persist in the soil longer due to decreased microbial and chemical degradation. For many areas of North Dakota, the soil conditions since August or September of 2020 have certainly been dry, thus causing the concern for carryover.

In addition to increased risk of carryover due to environmental concerns, there are certain soil properties that increase the chance of injury with some herbicides. Soil pH is an important consideration for herbicide degradation. This is typically more important in the eastern part of the state, where high pH soils will reduce the breakdown of sulfonylurea and triazine herbicides. However, there is increased concern in areas of western North Dakota with pockets of low pH. Specifically, the imidazolinone herbicides (imazethapyr, imazamox) will persist for longer in low pH soils (<6.0) and will be another consideration as more areas with low soil pH are recognized.

One of the most important soil factors to consider for microbial breakdown of herbicides is the soil organic matter. In general, the higher the organic matter, the more microbial degradation will take place. There are several fields in western North Dakota with organic matter at or below 2%, and many more fields with pockets across the field with less than 2% organic matter. These soil types will also be at increased risk of carryover due to inherently less microbial activity. Fields with sandy knolls can also experience increased risk of carryover since those spots tend to be drier than the rest of the field.

Certain herbicides will also have an increased risk of persisting in the soil and causing injury in subsequent years. These are typically herbicides with a longer half-life, which is the time it takes for ½ of the chemical to degrade. While we will use many herbicides with relatively long half-lives (such as atrazine, fomesafen, imazethapyr, and metsulfuron), perhaps the most commonly used herbicide with a long half-life is clopyralid, which is found in WideMatch, Curtail, and similar products. Clopyralid has an average half-life of 40 days, but this has ranged from 12 to 70 days across soils and environments. Clopyralid is also exclusively degraded by microbes. So in the cases where little to no rainfall occurred after application last year, there would be less microbial activity in those drier soils. There is also an increased risk of clopyralid carryover in those soils with low organic matter or sandy knolls.

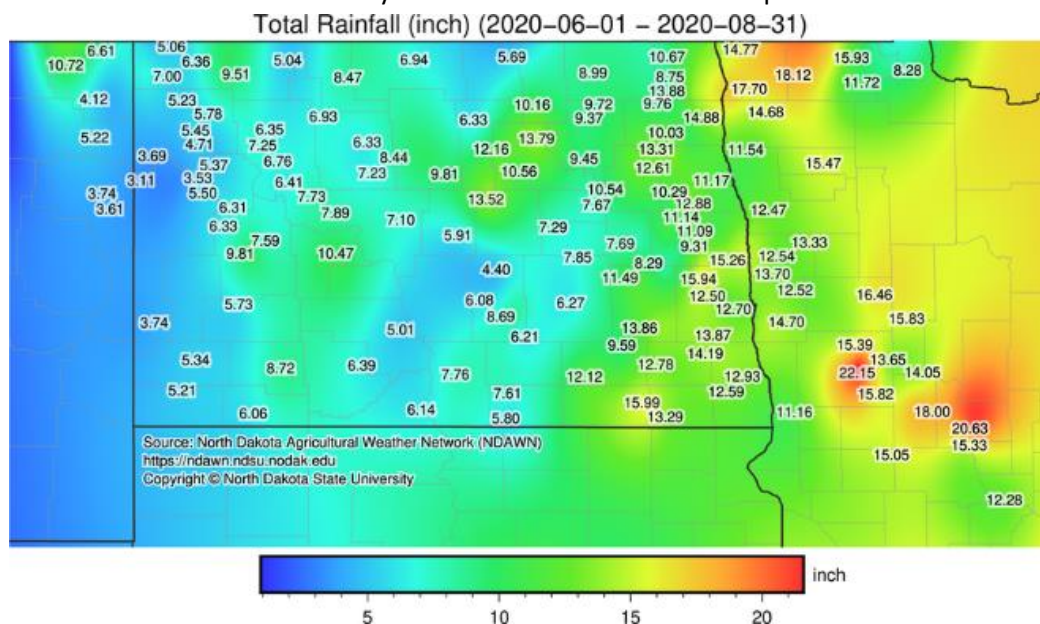
Most of the questions we have received this winter on carryover have been about fields where clopyralid was applied in small grains and the plan is to rotate to field peas, soybeans, or sunflowers in 2021. These crops are all sensitive to clopyralid and have crop rotation intervals of 10.5 to 18 months, depending on product and rates used, following clopyralid applications. Since clopyralid is broken down by microbes, there are additional rainfall requirements that can decrease or increase the rotation restrictions. For instance, the WideMatch label specifically states "For rotation to field peas in 10.5 months, precipitation must be greater than 7.0 inches during the 10.5 months following application of WideMatch and greater than 5.5 inches during the June 1 through August 31 time period following

application. Otherwise, rotation to field peas is recommended 18 months following application". This label requirement is driven by the need for increased microbial breakdown that occurs in wet soils during the warm summer months. Essentially, we need most of the precipitation to occur during the summer months when we have these warmer soil temperatures.

So what does this mean for planting these sensitive crops in 2021. As with everything in agronomy, it all depends. If the rainfall requirements on the label were met, then it should be ok to plant these crops in 2021. Even though we have been dry over the last six months, most of the degradation occurred last summer, and many areas had adequate rainfall in June and July to meet label requirements, even if the spigot turned off in August. Some areas are flirting with the required rainfall requirements, and these locations will be at greater risk for carryover and crop injury if field peas, soybeans, or sunflowers are planted. One good resource to check for rainfall since application is your local NDAWN station. For example, the NDAWN station near Webster shows 5.10" of rain in June 2020, 3.54" of rain in July 2020, and 0.73" in August of 2020, for a total of 9.34" over that time period. So if clopyralid were applied on June 1st, then the rainfall requirements were met. Even though there has been very little moisture since August of 2020, the moisture was available at the best time for microbial degradation.

Keep in mind that summer rainfall events can be variable and your fields may have received more or less rainfall than the nearest NDAWN station. There are some areas of the state that did not receive the required rainfall, and planting a more tolerant crop will be the safest recourse. Between field peas, soybeans, and sunflowers, field peas will be the highest risk crop in some of these areas that barely met rainfall requirements. Soybeans and sunflowers might be ok in some situations, but keep in mind that with most herbicide carryover events, injury is more likely to occur in pockets, such as low organic matter or sandy knolls. One additional consideration is that clopyralid can also be released from degrading crop residue, so if there are piles of residue in areas of fields following some of our wind storms this spring, then injury may be observed there as well.

One final note specific to clopyralid. Many have called with questions about soil tests that report back clopyralid is present at a certain part per billion (ppb) or part per million (ppm) in the soil. I took some time to survey fellow Weed Scientists and some industry representatives, and the consensus is nobody has a clue what these numbers actually mean when it comes to risk of injury to sensitive crops. So just because we can detect clopyralid in the soil doesn't mean we have any confidence what those numbers actually mean for risk to a sensitive crop.



Rainfall totals across NDAWN reporting stations from June 1 to August 31 2020.

[Joe Ikley](#)

Extension Weed Specialist

STINGER HL IS NEW IN 2021

Corteva Agriscience is introducing a 'higher load' formulation of clopyralid in corn, cereal crops, canola, and sugarbeet in North Dakota and Minnesota in 2021. Stinger HL is a 5 lb gallon formulation compared to 3 lb gallon with Stinger. Producers may expect to find both Stinger and Stinger HL in their markets in 2021 as retailers' transition from the old to new formulations. Stinger (group 4, auxin) controls weeds in the Composite, Polygonum, Legume, and Nightshade families. Use the selector (that follows) to pick the Stinger HL rate matching to your Stinger rate.

Stinger HL 'Higher Load' is approved for corn, cereals, canola, and sugarbeet in MN and ND.

Product	Loading	Labeled rate	Sugarbeet rate
Stinger	3 lb/gal	4 – 10.7 fl oz/A	2 – 6 fl oz/A
Stinger HL	5 lb/gal	2.4 – 6.4 fl oz/A	1.2 – 3.6 fl oz/A

	Converting Stinger rate to Stinger HL rate			
	fl oz/A	fl oz/A	fl oz/A	fl oz/A
Stinger	2	3	4	6
Stinger HL	1.2	1.8	2.4	3.6

[Tom Peters](#)

Extension Sugarbeet Agronomist
NDSU & U of MN



WINTER INJURY ON CONIFERS

Over the last month, pines and spruce trees throughout much of North Dakota have shown symptoms of decline. The causes are varied, and treatment recommendations are equally diverse.

In 2020, many individual ponderosa pine trees across the state died in shelterbelts or yards. We believe that the extremely wet fall of 2019 is to blame. Soils were saturated in many areas, especially with the big snowstorm on October 10, 2019. Even areas that were not necessarily low spots accumulated a large amount of moisture. The saturated soil either killed the pines' root systems directly, or else kept the trees from developing full hardiness before the winter.

Symptoms on pines were dramatic. Entire trees died, showing symptoms throughout the whole tree, seemingly all-at-once. In most cases, there was no progression of symptoms from bottom-to-top, or interior-to-exterior. Instead, trees began to grow in the spring of 2020 then simply stopped with the needles turning brown.

Additional death of individual ponderosa pine trees is expected again in 2020.

More recently, spruce trees have been showing a variety of symptoms that have been diagnosed with the broad term of 'winter injury'. Winter injury generally shows up as early as February but is more commonly seen in March or April. Needles often turn a purplish-brown as they die. There is often no pattern to this dieback – the needles may be on one side of the tree, or perhaps the bottoms of branches, but may also be scattered throughout the tree crowns. Sometimes, only needle tips are dead while in other cases, entire needles die outright. Affected trees can be right next to trees that are showing no symptoms at all. On occasion, entire trees may turn brown and die.

Wildly fluctuating temperatures in February and March are often to blame for winter injury. This year, the drought of 2020 is likely a major factor in the damage. Additionally, other pests such as spider mites or pine needle scale may play a part, especially in those trees where the damage doesn't follow a pattern.

Treating trees is difficult, since most of the damage is due to environmental problems. Where trees lost most of their needles, they're likely to not recover no matter what we do. For those trees that retain most of their needles, we need to make sure that we keep the trees otherwise healthy. Specifically, water those trees that are suffering from drought. A long, slow soaking is better than multiple, brief additions of water. Move the hose around, as the tree's roots extend in all directions from the stem. The roots go out far beyond the drip line of the tree crown, extending to as far as four or five times the height of the tree. The ground should be moist, not saturated, after watering.

Scout for pests such as insects and diseases, and be prepared to treat them as appropriate. Scouting is important because treatment timing is critical to be effective. Spraying for a pest at the wrong time of year is ineffective and is a waste of both time and money.



Spruce tree showing symptoms of 'winter injury' in western North Dakota. Photo by Devan Leo, NDSU Extension.

[Joe Zeleznik](#)

NDSU Extension Forestry Specialist



around the state

AROUND THE STATE

SOUTH-CENTRAL/SOUTHEAST ND

The geographic area generally covered by this report includes a northern border of Sheridan County to Griggs County southward to Sargent County and west to Emmons County.

According to NDAWN, April 1-26 rainfall ranged from 0.25 to 1.7 inches (Lisbon). With the exception of the southeast (e.g. Ransom and Sargent counties), the region needs topsoil and subsoil moisture. Besides need for additional soil moisture, warmer soil temperatures are needed to establish small grain plants, and provide an adequate initial environment for corn and soybean seed germination.

The Carrington Research Extension Center's (CREC) first research trials (spring and durum wheat variety performance) were planted on April 9. The April 26 picture displays the (lack of) development of the durum trial seedlings – radicle and coleoptile with minimal lengths after 18 days from planting (120 accumulated growing degree day units).



Alfalfa regrowth is slow with plant height currently at 2 inches or less at the CREC. Winter cereals are in the seedling to tillering stages, primarily depending on soil moisture levels during and following planting last fall. Perennial weeds including quackgrass, dandelion, absinth wormwood and leafy spurge; and winter annual weeds are regrowing. Spring annuals including kochia, common lambsquarters and wild buckwheat also are emerging.

Farmers likely will have the majority of the region's small grain acres planted within a week. Corn planting is the most common crop currently being planted, with soybean soon to follow.

[Greg Endres](#)

Extension Cropping Systems Specialist
NDSU Carrington REC

NORTH CENTRAL ND

A dry pattern has controlled much of the north central region so far in the 2021 season. Some hit-and-miss locations have been lucky while others have missed the moisture. The NCREC has reported 0.95" of moisture for the month of April, however, the center seems to be a localized observation with that report. Here are some precipitation reports as observed by some area NDAWN stations since the start of April: Minot: 0.33"; Bottineau: 0.18"; Garrison: 0.21"; Karlsruhe: 0.63"; Mohall: 0.59"; Plaza: 0.11"; and Rugby: 0.13". Additionally, the soil temperature at the NCREC appears to be in the low to mid 40's degrees F.

As of April 27th, we have not observed much planting activity in the region, however, overnight temperatures have been pretty low (20-degree F) and likely the reason for that observation. However, I have heard some discussion that many hope to start that activity this week. The NCREC agronomy team started on Tuesday.

The Good Bugs Workshop is fast approaching. Participants will learn about supporting beneficial insects that provide pest control throughout this webinar series. Conservation biological control is a science-based pest management strategy that seeks to encourage beneficial insects back into cropping systems for natural pest control, ultimately rewarding farmers with economically-viable pest management systems. Due to the COVID Pandemic, this year's events will be virtual. The cost is free; however, pre-registration is required. To register, email TJ at travis.prochaska@ndsu.edu or use the QR code below.



Scan to register for the Good Bugs Workshop.

NDSU Extension has a new Extension Specialist at the NCREC. Dr. Leandro “Leo” Bortolon, NDSU Extension Cropping Systems Specialist, joined NDSU about 3 weeks ago. He is from Brazil, where he worked as a Research Soil Scientist with Embrapa for the last 10 years. Before joining Embrapa, he was a Research Associate with USDA-ARS-NLAE in Ames (IA). His backgrounds are related with on-farm research and extension projects to develop sustainable cropping systems. He is honored to be part of NDSU Extension and to help extend the science-based knowledge to North Dakotans.



Photo: Dr. Leo Bortolon

[TJ Prochaska](#)

Extension Crop Protection Specialist
NDSU North Central Research Extension Center

[Leo Bortolon](#)

Extension Crop Protection Specialist
NDSU North Central Research Extension Center

SOUTHWEST ND

It is dry.

Extreme drought conditions persist throughout most of the region. A large portion of HRSW and canola are planted. Some had been waiting to put durum and a few other crops in with sub-freezing temperatures, but with the warm weather in the forecast more field activity will be seen this week. The dry weather has limited weed emergence along with many other things, very little activity from spray equipment in the region. Under these dry conditions, a PGR seed treatment may be helpful with early vigor.

Dr. Chris Augustin and I have been collaborating with several county Extension ANR Agents on locating trial sites for no-till lime application research. It is important to remember to keep in mind a sample of 0-3" and 3-6" is helpful in finding stratified soil acidity in no-till systems. To learn more about soil acidity be sure to check out the publication "What is Soil Acidity?" <https://www.ag.ndsu.edu/publications/crops/what-is-soil-acidity/sf2012.pdf>.

Many are facing low pH issues in their soil that were not expecting it to be an issue. While the issue may be more prominent in Stark and Hettinger County we've found fields everywhere between Kidder County and Golden Valley County that had zones with a pH less than 5.5. Liming is the preferred method of dealing with this issue, but there are also band-aid approaches including tolerant varieties, seed placed phosphorus, and other in-furrow treatments.

[Ryan Buetow](#)

Extension Cropping Systems Specialist
NDSU Dickinson Research Extension Center

NORTHWEST ND

To say that planting season 2021 is starting out differently than 2020 is an understatement! Unfortunately, we are now in an extreme drought after a severely dry 2020 summer, fall, and a warm winter with little snow. Last year at this time, many were waiting for fields to dry out before planting after heavy rain during fall 2019. This year, some took advantage of warm and dry conditions in late March and early April to get started. A cold snap two weeks ago brought a little rain and snow (only 0.15" rain and 2" of snow to the Williston area, but places north and east received more with about 0.25" rain and 6-8" snow). We were hoping for more rain this past weekend but totals were only 0.05-0.15" in most places. Now with warmer temperatures this week with highs in the 60's and 70's and possibly 80 this Friday, planting is starting in earnest. Some farmers are nervous about planting canola and soybean due to the drought and may wait until moisture is in the forecast to seed, but likely those who have purchased seed will choose to plant it.

Here at the Williston Research Extension Center, the winter wheat trials have been abandoned due to lack of germination. It has been too dry since planting to get it out of the ground. Hopefully the bit of moisture we've received this month will be enough to allow spring crops to germinate and we'll get some timely rains in the coming weeks. The dry conditions have also inhibited weed germination, but PRE herbicides are still a good idea as many will stick around until there is moisture to activate them.

A reminder to anyone who does no-till and is soil sampling to select some fields to sample the top 2" separately from your normal sampling depth (usually 6" or 12") to check for low pH at the surface. We are continuing to find fields with low enough surface pH to negatively impact crop growth. Prioritize checking fields with lighter soils or where you have seen areas of reduced growth the past few years. If you have fields with pH < 6.0, it is time to start thinking about how to maintain or increase pH and consider avoiding rotations heavy in crops with high N needs. Fields with pH < 5.0 are at risk for aluminum toxicity and need remediation.

Best wishes to everyone for a safe and healthy planting season!

[Clair Keene](#)

Extension Cropping Systems Specialist
NDSU Williston Research Extension Center

**WEATHER FORECAST****The April 29 to May 4, 2021 Weather Summary and Outlook**

As we begin a new growing season, I wanted to pass along a few links that may be useful during the next several months. The NDAWN team has created a new website with current data and rainfall for the past seven days at <https://ndawn.info>. An example of what those maps look like is displayed in Figure 1. That site will have current data and rainfall for all NDAWN stations, including several sites in northwestern North Dakota that are rain gauge only stations. Included on that website are links to more detailed maps in northwestern North Dakota associated with our "WISERoads" Project and a zoomed in map of current conditions in central Minnesota associated with NDAWN's cooperative work with the Minnesota Department of Agriculture (MDA). That website also contains links to the camera images that are available at approximately 50 stations.

Another website that would be useful for many of you is <http://cloud.ndawn.org>. That gives personal links to all NDAWN stations, including links to soil moisture data at stations with such information. Approximately 50 NDAWN stations have soil moisture information available, with several more sites expected to be added this summer. Plus, don't forget about our main website at: <https://ndawn.ndsu.nodak.edu>. Several stations are expected to be added to that

site in the next week or two, plus that is the website to get crop disease data, growing degree day information and other pertinent information. Also, a reminder about our two mobile apps. The inversion app to give you real time inversion alerts during spray season and for potato growers our potato late/early blight app. Both of those apps are available on the App Store for iPhone users and in Google Play for Android users.

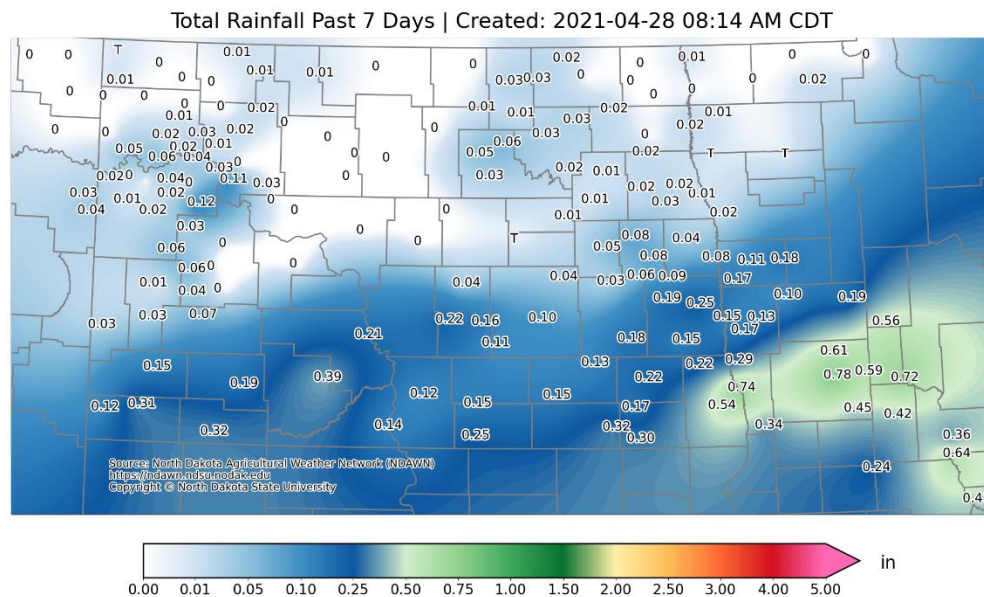


Figure 1. 7 Day (168 hours) Rain Totals at NDAWN station through 8:00 AM, Wednesday, April 28, 2021

The rain and snow that fell over the past week mostly impacted the southern one-third of North Dakota into west central Minnesota (Figure 1). The next potential wide spread precipitation occurrence looks to be early next week. My strong suspicion is like many rain/snow systems in recent weeks the moisture that does fall will probably not impact all areas and amounts will mostly on the light side with the potential of localized higher amounts. If you thought the past week was on the chilly side, it was not your imagination. Average temperatures for the period between April 21 through April 27 were mostly in the 10 to 5 degrees below average range (Figure 2). This upcoming 7-day period looks much warmer.

This warmer air will move into western North Dakota on Friday where temperatures may reach the lower 80s. Eastern North Dakota may record temperatures near 80° or higher on Saturday. Of note, both Friday and Saturday in particular, fire danger will likely be high as those warmer temperatures will come with low humidity and a strong wind. Cooler temperatures will return early next week with the threat of rain mentioned earlier, but indications are that after a couple of days, by the end of next week, temperatures should once again get to or above average for temperatures.

A very common question to me lately deals with my thoughts of when our last freezing temperatures may occur. Some of you may have recorded a frost or a freeze this morning (Thursday) with especially northeastern North Dakota and northwestern Minnesota having another potential tomorrow (Friday). One more frost or freeze potential looks to be occurring on Monday morning (May 3) during this forecasted period. With soils dry across much of the region, the potential would exist for a later than average freeze this year as drier soils allow for an increase in radiational cooling.

The projected growing degree days (GDDs) base 32°, 44° and 50° for the period of April 29 through May 5, 2021 can be found in Figure 3. Most of the heat units this week will occur Friday through Sunday, then again toward the middle of next week.

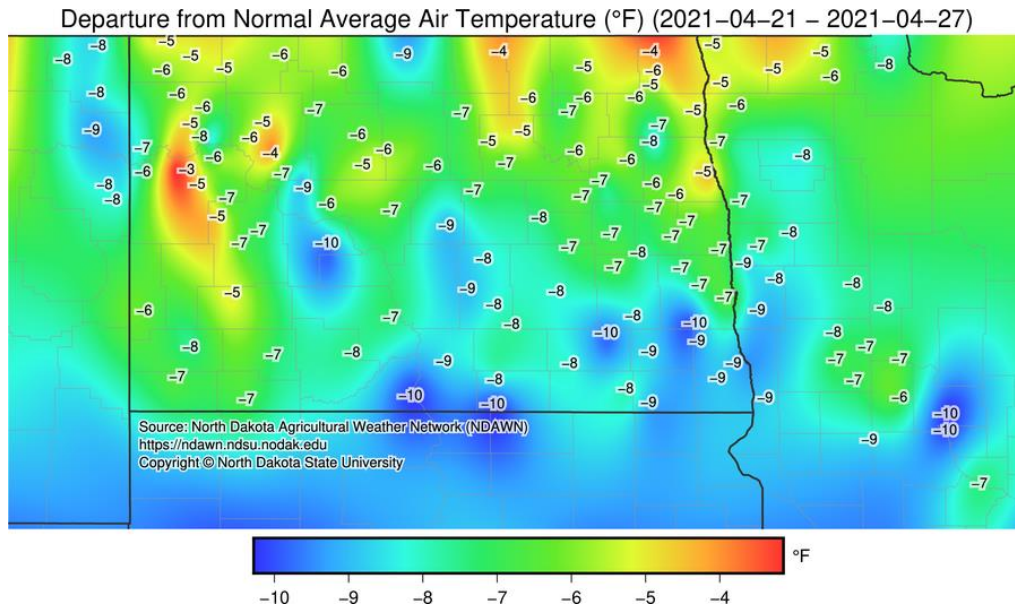


Figure 2. Departure from Average temperature at selected NDAWN weather stations for the period of April 21-27, 2021.

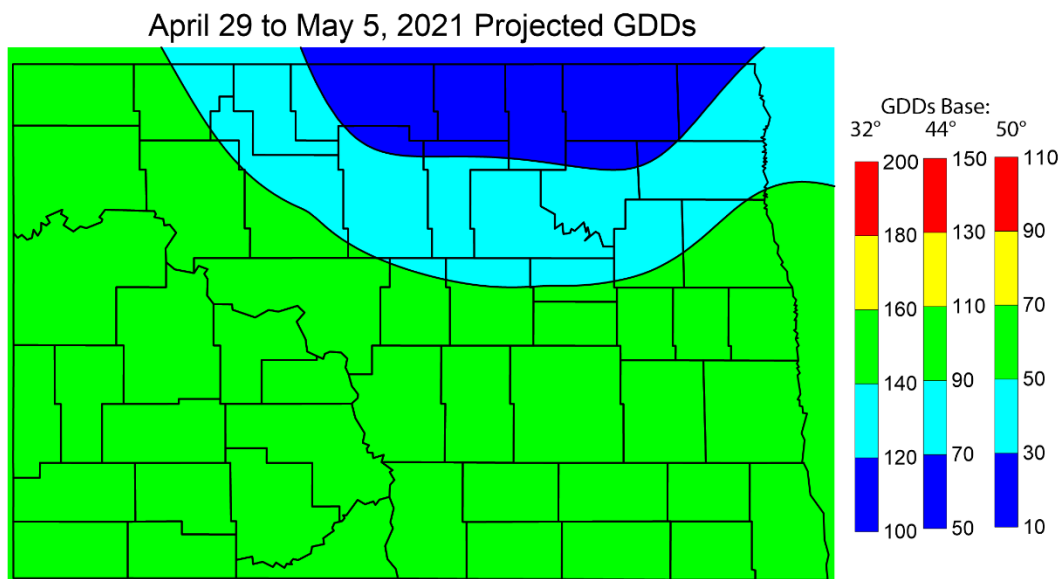


Figure 3. Projected Growing Degree Days, Base 32°, 44° and 50°, for the period of April 29 to May 5, 2021

Daryl Ritchison

Meteorologist

Director of the North Dakota Agricultural Weather Network

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