AG ALERT

NDSU EXTENSION SERVICE GRIGGS COUNTY

Issue #4

Friday, May 26, 2017

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Rainfall and Growing Degree Days (GDD)

Location	Cooperstown	Finley	McHenry	Pillsbury
Barley/Wheat GDD (Plant date: 4/15/2017)	608	633	643	655
Compared to 2016	-149	-134	-94	-104
Corn GDD (Plant date: 5/1/2017)	182	183	184	210
Compared to 2016	-68	-59	-37	-42
Rain Since 4/15/2017	3.53	3.67	2.57	2.18

Note: Actual rain amounts may vary.

WEATHER

The May 25 through May 31, 2017 Weather Summary/Outlook

Most of the North Dakota Agricultural Weather Network (NDAWN) stations recorded temperatures between 5° to 10° below average during the past week. An exceptionally cool week for the time of year. Although I did not get any reports of snow in North Dakota, there was snow, even enough to accumulate, in the higher terrain in northeastern South Dakota this past Saturday Night.

The precipitation this past weekend was associated with an area of low pressure that stalled and in turn brought several days of cloudy cool weather, especially to eastern North Dakota. Although there was some rain reported on Sunday and Monday, most of the rain that fell in the past week occurred on Saturday afternoon through Saturday Night. Rainfall amounts averaged around one-half inch in the eastern one-third of North Dakota and into northwestern Minnesota at the NDAWN weather stations.

Rain in the next seven days is expected to be highly variable and mostly on the light side, with amounts expected to be near or below one-third of an inch during this period in most locations. There will be some rain today (Thursday), as a cool front system moves through the s

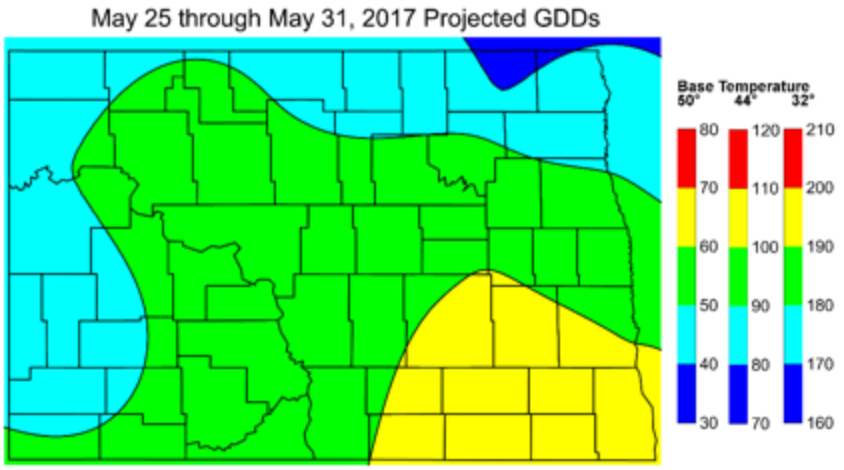
That cool front will not necessarily cause a noticable shift in the air temperature, but it will reinforce the cool air already in place. Besides the rain today, there will be afternoon showers forming during the Memorial Day Weekend. These showers triggered by the sun will be the reason that the rain amounts will be highly variable during this forecast period, as not all areas will record a shower each day, plus these showers will be mostly producing under 0.1 inch of rain in those localized areas. What the showers will mostly do is keep the temperatures lower as they otherwise would be.

The rest of this month will not be as cool as this past week, but temperature will still be below average, meaning fewer growing degree days than normal for the time of year. The projected Growing Degree Days (GDDs) for the next 7 days, Base 32°, 44° and 50° are presented below.

Using May 10, 2017 as an average planting date, the number of corn growing degree accumulated this season is depicted below. The exact numbers based on your actual planting date(s) can be found

here: https://ndawn.ndsu.nodak.edu/corn-growing-degree-days.html Other agricultural tools can be found in the applications tab in the menu on the left side of the ndawn.org website.

Using a plantiing date of May 1, 2017, the number of wheat growing degree days accumulated so far this season is presented below. The exact numbers based on your actual planting date(s) can be found here: https://ndawn.ndsu.nodak.edu/wheat-growing-degree-days.html



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ENTOMOLOGY

Alfalfa Weevil Active

Adult alfalfa weevil (Photo by P. Beauzay, NDSU)

Alfalfa weevil larvae from bucket sampling method (Photo by P. Beauzay, NDSU)

Defoliation caused by alfalfa weevil (Photo by P. Beauzay, NDSU)

Alfalfa weevil adult and larvae have been reported defoliating alfalfa in Bowman County in southwest ND. Since fairly large larvae are already being observed, eggs probably successfully overwintered in the southwest last year. Adults are about ¼ inch long and brown-golden with a blunt snout and a dark brown longitudinal stripe in the center of the back. Antennae are elbowed and clubbed. They overwinter in debris and alfalfa stubble. Eggs are laid inside the stems of alfalfa, and are small and cream colored. Mature larvae are about ⅜ inch long with a black head capsule and a green-wrinkled body. A white stripe, running lengthwise, can be observed across the top.

Scouting should begin immediately after egg hatch, and fields should be scouted weekly up through the first cutting. Fields should be scouted in a “W” pattern or by selecting random sites in the field, with a minimum of five sampling sites per field.

At each sampling site in the field, select a minimum of 30 stems and cut them off at the base. Invert the cut stems into the 5-gallon pail and vigorously beat the plants in the pail to dislodge the larvae. First-instar larvae feeding in rolled leaf tips won’t dislodge easily, so be sure to examine leaf tips for larvae.

Count and record 1) the number of stems sampled, 2) the total number of larvae counted and 3) the height of the alfalfa at the sampling sites. Repeat this procedure for all sampling sites within the field. When finished, total the number of larvae found and divide by the total number of stems sampled to calculate an average number of larvae per stem for the entire field. Then, calculate average plant height for the field.

Several factors must be considered when making alfalfa weevil management decisions. Plant height, estimated yield, crop market value, management costs and plant injury based on the number of larvae per stem are the factors affecting the economic threshold.

Threshold numbers in Table 1 are the average number of larvae per stem sampled in the field using the 30-stem sampling method. These economic thresholds apply prior to the first cutting only.

Table 1. Recommended economic thresholds for control of alfalfa weevil larvae for North Dakota prior to the first cutting. [Average number of larvae per stem using the 30-stem sampling method.]

		Crop Value ($/ton)						
Plant Growth Stage (Height)	**Treatment Cost**	**$50**	**$75**	**$100**	**$125**	**$150**	**$175**	**Management Decision**
50% bud or greater								Cut early
Early bud (>20 inches)	$7/acre	4.0	2.7	2.0	1.6	1.3	1.2	Cut early, or use a short Pre-harvest interval (PHI) / Pre-grazing Interval (PGI) product
	$8/acre	4.6	3.1	2.3	1.8	1.5	1.3	
	$9/acre	5.2	3.5	2.6	2.1	1.7	1.5	
	$10/acre	5.8	3.8	2.9	2.3	1.9	1.6	
	$11/acre	6.3	4.2	3.2	2.5	2.1	1.8	
	$12/acre	6.9	4.6	3.5	2.8	2.3	2.0	
Late vegetative (16-20 inches)	$7/acre	3.8	2.4	1.8	1.4	1.1	0.9	Use a short to mid-PHI/PGI product
	$8/acre	4.4	2.8	2.1	1.6	1.3	1.1	
	$9/acre	4.9	3.2	2.4	1.8	1.5	1.2	
	$10/acre	5.5	3.6	2.6	2.1	1.7	1.4	
	$11/acre	6.1	4.0	2.9	2.3	1.9	1.6	
	$12/acre	6.7	4.4	3.2	2.5	2.1	1.7	
Mid-vegetative (10-15 inches)	$7/acre	3.6	2.2	1.5	1.1	0.9	0.7	Use a long-residual product
	$8/acre	4.1	2.6	1.8	1.4	1.1	0.8	
	$9/acre	4.7	3.0	2.1	1.6	1.2	1.0	
	$10/acre	5.3	3.4	2.4	1.8	1.4	1.2	
	$11/acre	5.9	3.7	2.7	2.1	1.6	1.3	
	$12/acre	6.4	4.1	3.0	2.3	1.8	1.5	

(Source: NDSU Extension *E1676 Integrated Pest Management of Alfalfa Weevil in North Dakota*)

Janet Knodel
Extenion Entomologist

PLANT SCIENCE

Growth Staging Wheat for Plant Growth Regulator Applications

The recent cool weather has prolonged the emergence of recently planted corn and soybeans and slowed the development of small grains. Nevertheless, this weather has been favorable for yield potential development in the small grains, particularly in the earlier planted crops. Cool weather in the absence of other stresses, enables the development of more and larger spikes. There has been growing interest in the use of plant growth regulators (PGR) in recent years, particularly in the high yielding environments where lodging can be a problem.

PGRs are not as commonly used in our region as they are in Europe and other regions of the Americas (Chile, for example), where yields are typically considerably higher than ours. PGRs are synthetic compounds that either mimic plant hormones or interrupt biosynthesis of plant hormones, thereby altering the growth and development of the plant. They reduce overall plant height, thereby making the plant less prone to lodging. PGRs do not increase yield potential in wheat, barley, or oats but rather allow yield potential to be maintained by reducing the risk of lodging. PGRs will be profitable only if they reduce lodging and thereby reduce yield losses that might occur from lodging. Dr. Jochum Wiersma, UMN Extension Agronomist, put together a decision tree to help growers determine the likelihood that a PGR might be profitable (see article at http://blog-crop-news.extension.umn.edu/2016/05/can-i-reduce-risk-of-lodging.html).

In a dataset from five locations in North West Minnesota in 2016, a 3.0 bu/ac yield increase was found with an application of 12 oz /acre of Palisade at the Feekes 7 timing, compared with no treatment. The environment for these locations was low to medium lodging. Considering $5 wheat and application costs of $28.40 per acre ($12 chemical, $8.40 sprayer tracks lost wheat, $8 time and machinery), this application lost $14 per acre.

Many factors in these calculations could change, but given a more lodging prone environment where greater yield differences might occur between treated and untreated, this application could become break even or profitable. These calculations also don't take into consideration potential lost time by slower combining of lodged wheat, which could impact the profitability of a PGR application.

Currently, the only registered PGR in North Dakota is trinexapac-ethyl which is sold as Palisade EC™. Research in HRSW has demonstrated that Palisade has good crop safety, a relative wide window of application, and reduces plant height and lodging. The improvement in lodging scores have been about 1 to 2 points on the 1 to 9 scale commonly used by breeders. Palisade can be applied as a single application any time between Feekes growth stage 4 and before Feekes 8, or as a split application with the first application at Feekes 4 to 5 and the second at Feekes 7.

The green bar(left) indicates average height for the Palisade treated plots, and the red bar(right) indicates height for the untreated plots, near Hendrum, MN, 2016.

In some of the earliest planted fields we are not far away from the first potential application timing. Feekes 4 occurs as the plant is completing tillering, the leaf sheaths begin to thicken and the plant begins to grow upright. Since the growing point is below the soil surface at this point, the stem of the plant is just a pseudo-stem formed by the leaf sheaves holding the plant upright. At Feekes 5 the pseudo-stem becomes more erect and at Feekes 6 the first node appears, and the true stem begins to elongate. Feekes 7 occurs when there are two visible nodes above ground, and Feekes 8 when the flag leaf (the last leaf) begins to emerge from the whorl.

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PLANT PATHOLOGY

Wheat Streak Mosaic Update and Other Causes of Yellow Wheat

Extension specialists in Kansas, Nebraska and South Dakota have reported a widespread occurrence of wheat streak mosaic (WSM) in winter wheat fields. Although it is early in the growing season, very few WSM cases have been reported in North Dakota. Given the warm fall, mild winter and adequate snow cover, the survival of grassy weeds and small grain volunteers was projected to be high increasing the risk for WSM. However, the warm temperatures in February and March followed by freezing temperatures, likely reduced the survival of host plants and the wheat curl mite (vector). Small grains that were seeded into volunteers (Figure 1) or grassy weeds are at greatest risk for the development of WSM. Therefore, it is important to destroy volunteers and grassy weeds for a full two weeks before planting (breaking the green bridge).

Figure 1. Winter wheat volunteers are a preferred host of the wheat curl mite and the viruses responsible for WSM.

Figure 2. Severe WSM in a winter wheat field in Montana. Notice the pockets yellowing and streaking of the plants across the field (Photo courtesy of Dr. Mary Burrows – Montana

Wheat streak mosaic symptoms include stunting, yellowing and streaking of leaves (Figure 2). These symptoms can also be associated with nutrient disorders (ie: nitrogen deficiencies), abiotic injury (i.e.: herbicides) and environmental stressors (i.e.: water). Positive identification of the viruses (*Wheat streak mosaic virus, Wheat mosaic virus and Triticum mosaic virus*) responsible for WSM is accomplished with laboratory testing offered at the NDSU Plant Diagnostic Lab.

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APPS for AG

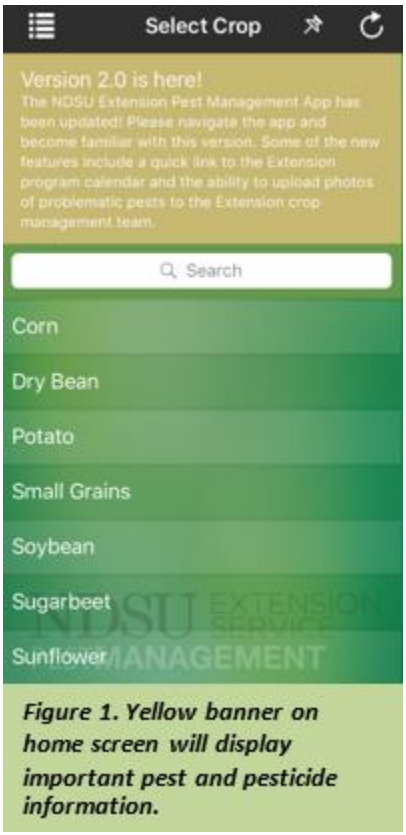

Figure 1. Yellow banner on home screen will display important pest and pesticide information.

New Features for NDSU Extension Pest Management App

The NDSU Extension Pest Management App (which houses information from the Plant Disease Management Guide, Insect Control Guide and Weed Control Guide) has recently been updated with new features. These features include a banner, a pest identification help tool and calendar function. The banner is displayed on the home screen of the app and will highlight important pest and pesticide information throughout the growing season (Figure 1). The pest identification help tool allows for digital diagnosis of pests through photos submitted by app users (Figure 2). This will help with preliminary assessments of pests, but for a more complete diagnosis, individuals may be asked to submit samples to the NDSU Plant Diagnostic Lab. The calendar function provides information on upcoming Extension events (Figure 2).

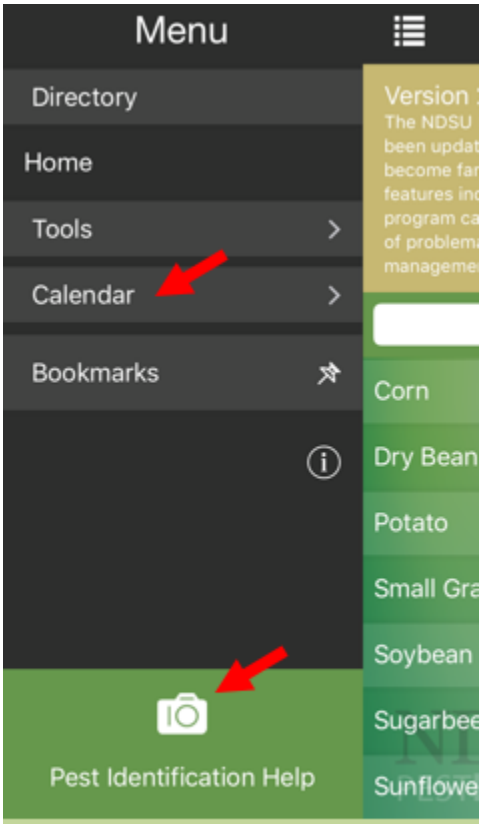

Figure 2. The NDSU Extension calendar and a pest identification tool are now available in the app.

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