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In This Issue

Carefully Evaluate Forage Species and Varieties before Purchase

(Keith Johnson)

As the season transitions to fall, it is a good time to deliberate what should be done to improve your forage-livestock business.

To reach full potential of the forage part of the business, Mother Nature must comply with provision of excellent growing conditions, but the manager (you) must be part of a successful team with Mother Nature and professionals, too. Employing a proper soil fertility program, seeding at a proper time, using a correct seeding rate, and harvesting/grazing at the right growth stage are part of the decisions that need to be made. Crop scouting and following through with management decisions during the growing season are critical to success. But before all of the above can be done, deliberating what forage species and varieties within a forage species will be used to renovate an existing stand or establish a new hay or pasture field need to be done, too.

The things to consider when seeding perennial forages are yield, quality and persistence. Summer-annual forages can't survive winter temperatures, but potential yield and quality are critical to most success.

Regarding proper forage species selection, it is important to determine what the intended use of the forage will be and whether is best adapted to the soil type and soil drainage where the forage is to be sown. After the forage species are selected, it is time to select the varieties within the species. *Seek the help and advice of a seed company employee, consultant, or educator that has a passion for forages and has an understanding of forage agriculture.* I would be uncomfortable selecting a "VNS" variety. "VNS" stands for "Variety Not Stated". With these words there is no understanding of the genetic potential of the seed in the bag. Cost of seed purchased is an important decision, but don't let that drive the final decision without full consideration of potential yield, crop quality, and persistence of stand.

It has been reported through several sources that seed production in Oregon's Willamette Valley was substantially reduced this year. This is the major cool-season grass seed production area in the United States. If you have intention seeding forages next spring, begin deliberating what species and varieties you have interest in purchasing and get the transaction made sooner than later.

The importance of variety selection was very evident at the Purdue University Crop Diagnostic Training and Research Center. One orchardgrass variety had as much brown tissue as it did green. Leaf disease was abundant. Another orchardgrass variety was greener and more photosynthetically active. Yield and quality were obviously superior in the greener variety. Both were orchardgrass, but the difference in response to disease pressure was huge. Which would you rather be growing? Taking the time to learn about the differences in yield, quality and persistence among varieties is worth the effort! Start making forage species/variety selection and purchase decisions now; not on the day that seeding occurs!

Forage variety selection is an important consideration. The orchardgrass variety on the left has better leaf health than the variety on the right. Yield and quality is less with the more leaf diseased variety.
Photos contributed by Keith Johnson, Purdue University Extension Forage Specialist

Are Your Fields at Risk for Lodging? Now is the Time to Identify High Risk Fields, What is Causing the Reduced Stalk Integrity, and Management Decisions for Harvest.

(Darcy Telenko) & *(Dan Quinn)*

There are many factors that can contribute to stalk decline. There are both plant pathogenic causes and abiotic stresses factors that can play a role in reduced stalk integrity, such as drought and flooding. Either way, as stalk tissue becomes compromised below the main ear the stalk may become brittle or weak and be prone to lodging.

As the corn plant loses photosynthetic leaf area due to different stresses such as foliar disease and hot and dry conditions, the amount of carbohydrates available for dry matter deposition into the kernels is also decreased. Therefore, plants respond by remobilizing non-structural carbohydrates from the stalk to supply the demand required by the developing kernels on the ear. This response causes stalk

strength and integrity to decrease, and increases a corn plant's risk of lodging and infection from pathogens that cause stalk rot. Fields with large ear sizes and strong kernel set, which have a high kernel fill demand, may also be at the greatest risk.

There are a number of pathogens that can cause stalk rot including Anthracnose, Bacteria, Charcoal, Diplodia, Fusarium, Gibberella, and Pythium. Some of these stalk rots have very characteristic symptoms that can help identify the specific problem, while others may require laboratory diagnosis (Table 1).

In addition, our research has shown that fields severely blighted by tar spot may also have increased risk for lodging. One, two, or many factors in a field may lead to this risk. Therefore, it is important to get out and scout your fields.

What can you do now – check fields by using the **Push** or **Pinch Test** by evaluating 20 plants in at least five random areas in a field.

Pinch Test – grab the stalk somewhere between the lowest two internodes and pinch between your fingers to see if the stalk is strong enough to handle the force – if the stalk collapses, it fails.

Push Test – push the stalk to a 30 degree angle – if it pops back up when released, it passes the test. If not, it fails.

Threshold: If 10% or more of the stalks (2 out of 20 stalks) fail, then consider early harvesting to avoid risk for lodging.

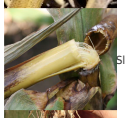
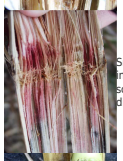
In addition, for those stalks that fail the push or pinch test, it is time to cut them open and determine the root cause, which could be one or many issues. I was just in a field with severe tar spot, but when I cut open the stalks, every one had pink and/or white discoloration in the pith indicating most likely a Gibberella and/or Fusarium infection (the samples are currently being processed for confirmation).

Figure 1. Severe lodging many stalks with symptoms of Fusarium and Gibberella stalk rot in addition to the field having severe tar spot. Photos Darcy Telenko.

What can you do in the future – management options will depend on the specific disease (see table 1). Production practices that promote good plant health including balanced fertilization, appropriate plant populations, and good water management can reduced stresses that might predispose corn to stalk rot. In addition, these key management tools can help mitigate future stalk rot issues.

1. **Properly diagnosis the stalk rot pathogen.** (Samples can be submitted to the Purdue Plant and Pest Diagnostic Lab (https://www.extension.purdue.edu/extmedia/BP/BP-89-W.pdf has a more detailed description of each stalk rot)
2. **Select hybrids with resistance** if available.
3. **Crop Rotation** – rotating to non-host crop will help reduce stalk rot potential in a field. Note that Charcoal rot and Gibberella stalk rot can infect other rotational crops in Indiana
4. **Tillage –** burying infected crop residue will encourage more rapid desiccation and help reduces risk of overwintering in crop residue.
5. **Good soil drainage and reduced compaction**.
6. **Foliar Fungicides** – applying foliar fungicides can help protect crop from foliar diseases that could predispose plant to stalk rot when present, but devoid of foliar disease pressure fungicides applications have not consistently been found to help reduce stalk rot.

Table 1. Stalk rot pathogens, identifying characteristics, and management options.

Stalk rot	Image	Characteristics	Management options [z] Resistance[y]	Rotation[x]	Tillage[x]	Other
Anthracnose		Distinctive blackening of the stalk rind, loss of pith leads to shredded interior	x	x	x	Strong stalks, reduced susceptibility to foliar diseases, and production practices that promote good plant health may reduce potential for lodging
Bacteria		Slimy, water soaked outer rind and pith			Fall	Good drainage and plant health practices
Charcoal		Silver grey rind, peppered with microsclerotia – grainy, gray in color	x			Many hosts. Rotation not as effective since microsclerotia can survive for many years
Diplodia		Many small, black pycnidia embedded in rind of lower internode- that cannot be scrapped off with thumbnail, white mold might appear in wet conditions, shredded pith	x	x	x	Strong stalks, reduced susceptibility to foliar diseases, and production practices that promote good plant health may reduce potential for lodging
Fusarium		Dark lesions, external brown streaks on lower internode, internal shredding, sometimes a pale-pink to salmon color on rotted tissue	x	x	x	Strong stalks, reduced susceptibility to foliar diseases, and production practices that promote good plant health may reduce potential for lodging
Gibberella		Small, black spots (perithecia) on internodes and nodes – these can be scrapped off with thumbnail, pink discoloration and shredding in pith	x	x	x	Strong stalks, reduced susceptibility to foliar diseases, and production practices that promote good plant health may reduce potential for lodging
Physoderma		Infected nodes will snap when pushed, node is black and rotten.		Maybe	Maybe	Strong stalks, reduced susceptibility to foliar diseases, and production practices that promote good plant health may reduce potential for lodging
Pythium		Decay of first internode about soil – soft, brown, water-soaked pith. Stalk may twist. Typically no odor.				Strong stalks, reduced susceptibility to foliar diseases, and production practices that promote good plant health may reduce potential for lodging

Reference: Freije and Wise. Stalk rots. Purdue Extension BP-89-W. https://www.extension.purdue.edu/extmedia/BP/BP-89-W.pdf
Image sources: D. Telenko, Purdue PPDL, and K. Wise. [z] Management options that could be considered for future crops.
[y] Resistance may be available in some hybrids for the specific disease. [x] Rotation and tillage can reduce inoculum potential in the field.

Will La Niña return again this winter?

(Beth Hall)

Last winter, earth was in a La Niña phase. While the relationships between El Niño – Southern Oscillation (ENSO) phases and Midwest climate are not strong, historically the La Niña phase has been weakly associated with milder and wetter winters. Timing is everything, though, and winters are climatologically defined as December, January, and February. When that 3-month season is broken down further during La Niña events, this tends to favor and milder (i.e., warmer and drier than normal) December and early January and more active (i.e., snowier and

colder than normal) late January and February. The 2020-2021 winter seemed to follow this pattern where the greatest snowfall events occurred in February, December and January were warmer than normal, and February ended up being significantly colder than normal. Will the 2021-2022 winter season be the same? While a La Niña is predicted to peak sometime around November or December, most models have its strength being relatively weak. This suggest much more uncertainty on whether or not classic La Niña impacts will prevail again this winter. We will just have to wait and see.

The most recent climate outlooks for the October through December period is slightly favoring above-normal temperatures (Figure 1) with equal chances for above-normal, below-normal, or normal precipitation across Indiana (Figure 2). The climate outlooks for October are more strongly favoring above-normal temperatures across the state with precipitation being only slightly favored for the northeastern part of the state. The rest of Indiana's precipitation outlook was too uncertain to favor either above- or below-normal conditions. Given these outlooks, it may be tempting to assume that the first hard freeze will be late this year. However, short-lived, yet damaging freeze events can pass through and not be picked up in the longer period climate outlooks. Therefore, at this point it is too uncertain when the first hard freeze event will occur. Figure 3 illustrates the average date of the first hard freeze (28°F) across Indiana.

Accumulated modified growing degree-days (MGDDs) for April 1 through September 15, 2021 range from around 2700 units in northern Indiana to around 3400 units in southern Indiana (Figure 4). This is slightly ahead of climatological normal accumulations for the northern two-thirds of the state and slightly behind in the southern part of the state. Figure 5 compares this year's accumulated MGDDs to recent years.

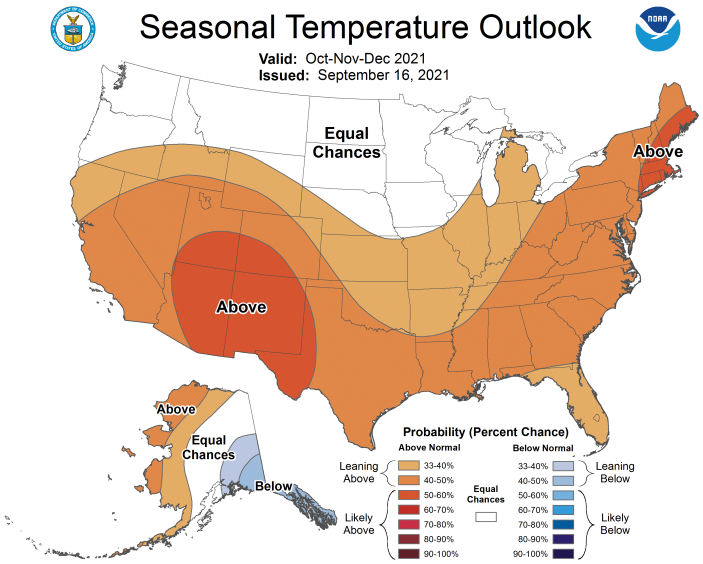


Figure 1. Three-month climate outlook for temperature representing October through December.

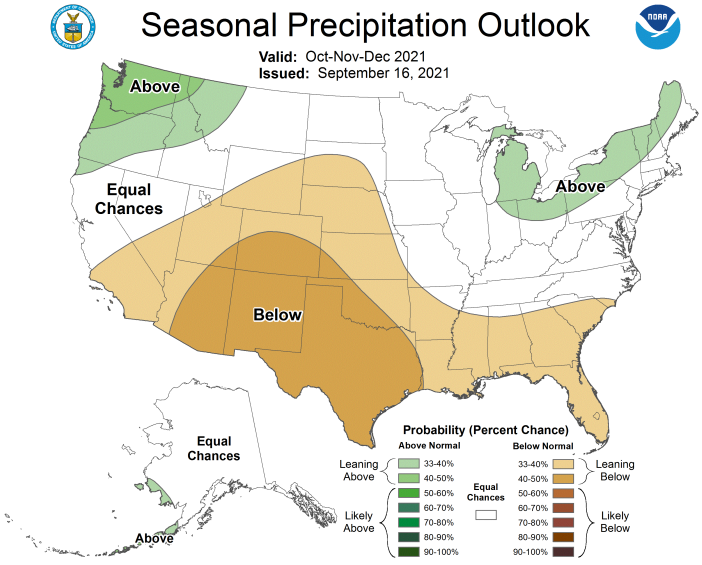


Figure 2. Three-month climate outlook for precipitation representing October through December.

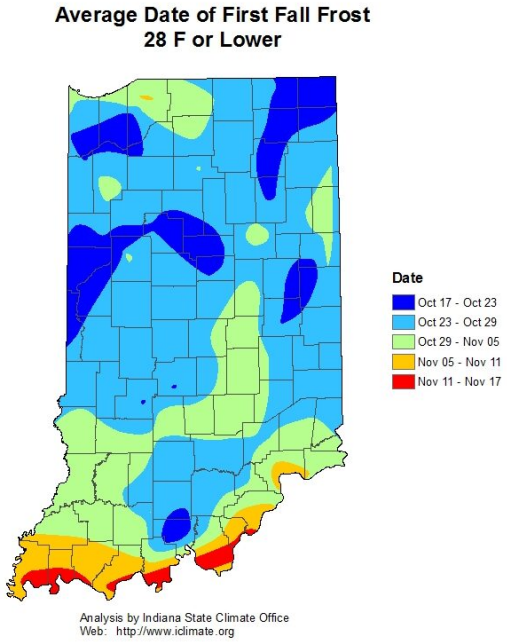


Figure 3. Average date of the first hard freeze in the fall.

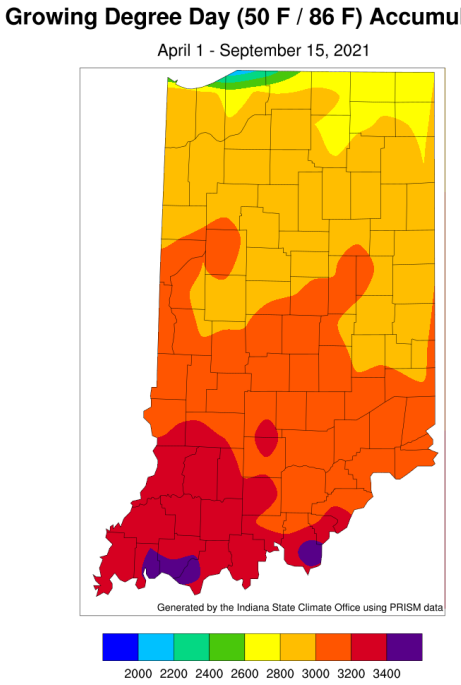


Figure 4. Modified growing degree day accumulations from April 1 to September 15, 2021.

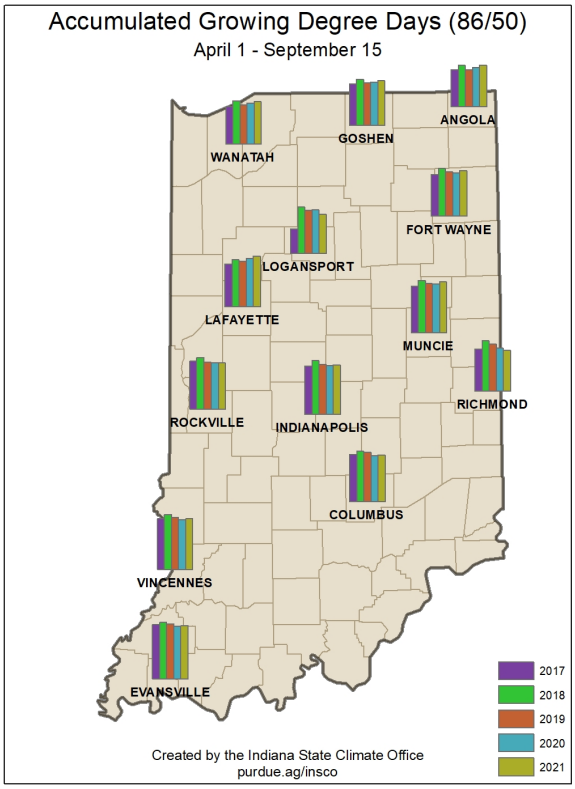


Figure 5. Comparison of 2021 modified growing degree day accumulations from April 1 – September 15 to the past four years.

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