NC Cooperative Extension - Perquimans County Center

April 11, 2022

Time to Scout Wheat

I've started to see powdery mildew in wheat so now would be a good time to start keeping an eye on your crop. Below is scouting and management information below from the NC Small Grains Production Guide:

Fungicide Timing

As we approach the flag leaf stage and start to have some disease presence, the question becomes: do you spray for leaf diseases now and come back for a second pass with a head scab product? Or do you hold out and just spray once at flowering? The answer can depend on these factors:

1. The prevalence of diseases that are currently being observed on the top wheat leaves;
2. The susceptibility of the cultivar planted; and
3. Current weather and near future forecast.

For powdery mildew, the guideline we generally use is to apply a fungicide if 5-10% of the upper leaves have mildew pustules.

It's also the case that daytime highs of 80+ deg F shut mildew down. If you have a lot of mildew on the upper leaves, your variety is probably susceptible, and you may want to apply a fungicide now. If you are seeing a little mildew but the variety is rated MS or MR, you might wait until next week to see if the 3 days of hot weather will put an end to mildew development.

Some NC wheat varieties have mildew resistance ratings here. You can also find ratings by using the NC OVT Variety Selection Tool. I'll be happy to look up your variety to check it's resistance if needed.

In the attached table, you see none of the fungicides are Excellent for powdery mildew, but several are Very Good. This includes Tilt, which is cheap. If your wheat is at or past flag leaf, I would avoid a strobilurin either by itself or as a combo due to increasing the risk of head scab. Our scab risk is low right now due to the dry weather, but that could change and can be found here: Fusarium Risk Tool.

If rain is prevalent in April and early May around the time of flowering, scab risk can be elevated and should be monitored with the risk tool. If the risk is high, fungicides such as Miravis Ace, Prosaro, Caramba, and Proline are most effective. Application of these fungicides are most effective at flowering or up to six days later for wheat.

Stagonospora Nodorum Blotch (SNB) is another fungal disease to be scouting for in April. Wheat residues harbor the fungus, so no-till wheat planted directly behind double-cropped wheat/soybean can be a high risk area. Wet, windy weather favors spore dispersal while dry periods will slow disease development. No wheat variety is completely immune, but there are varieties with good levels of partial resistance. Moderately resistant varieties are unlikely to need a fungicide for SNB control, even in a wet spring. There are no reliable thresholds but the goal is to keep the disease off of the upper leaves and developing heads. All strobilurin fungicides, combinations of strobilurins and triazoles, and mancozeb are effective for SNB control. Headline is often the most effective. See the image of SNB below.

Also below, find information on Cereal leaf beetle as peak larval populations tend to occur in mid-April to early May. Scout after flag leaves emerge and treat if there are 25 or more larvae plus eggs on 100 stems.

For any questions, contact Dylan Lilley at 252-426-5428.

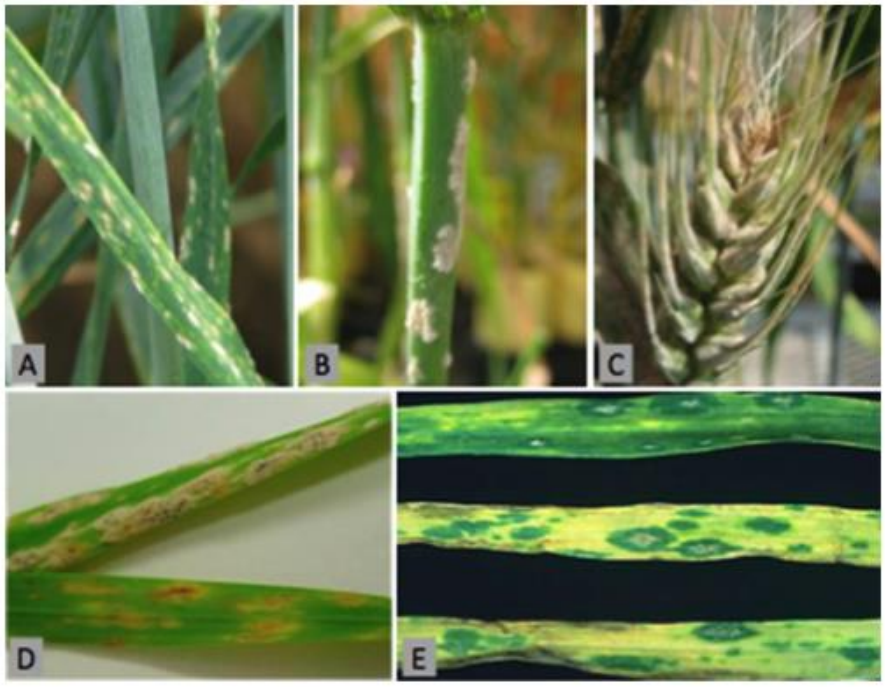

Photo 12-7. Powdery mildew: (A) pustules are first noticeable as white, powdery spots on the lower leaves and (B) stems; (C) pustrules may also be on the heads; (D) older pustules become darker, sometimes grey or salmon-colored with dark spots which are fruiting bodies; (E) mildew pustules on the leaves of stressed wheat plants can appear in "green islands".

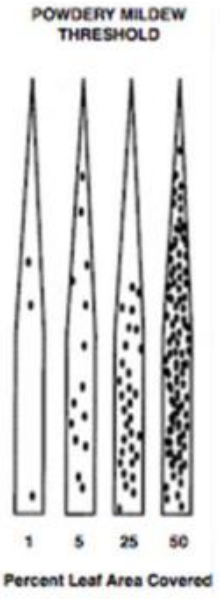

Figure 12-8. A fungicide is recommended if powdery mildew covers 5 to 10% of the upper leaves.

Fungicide Efficacy for Control of Wheat Diseases (2021 FINAL)

The North Central Regional Committee on Management of Small Grain Diseases (NCERA-184) has developed the following information on fungicide efficacy for control of certain foliar diseases of wheat for use by the grain production industry in the U.S. Efficacy ratings for each fungicide listed in the table were determined by field testing the materials over multiple years and locations by the members of the committee. Efficacy is based on proper application timing to achieve optimum effectiveness of the fungicide as determined by labeled instructions and overall level of disease in the field at the time of application. Differences in efficacy among fungicide products were determined by direct comparisons among products in field tests and are based on a single application of the labeled rate as listed in the table. Table includes most widely marketed products, and is not intended to be a list of all labeled products.

Efficacy of fungicides for wheat disease control based on appropriate application timing

Fungicide(s)												
Class	Active ingredient	Product	Rate/A (fl. oz)	Powdery mildew	Stagonospora leaf/glume blotch	Septoria tritici blotch	Tan spot	Stripe rust	Leaf rust	Stem rust	Head scab[4]	Harvest Restriction
Strobilurin	Picoxystrobin 22.5%	Aproach SC	6.0 – 12.0	G[1]	VG	VG[2]	VG	E[3]	VG	VG	NL	Feekes 10.5
	Pyraclostrobin 23.6%	Headline SC	6.0 - 9.0	G	VG	VG[2]	E	E[3]	E	G	NL	Feekes 10.5
	Azoxystrobin 22.9%	Quadris 2.08 SC	4.0-12.0[5]	G	VG	VG	E	E	E	VG	NL	Feekes 10.5.4
Triazole	Metconazole 8.6%	Caramba 0.75 SL	10.0 - 17.0	VG	VG	--	VG	E	E	E	G	30 days
	Tebuconazole 38.7%	Folicur 3.6 F[6]	4.0	NL	NL	NL	NL	E	E	E	F	30 days
	Prothioconazole 41%	Proline 480 SC	5.0 - 5.7	--	VG	VG	VG	VG	VG	VG	G	30 days
	Prothioconazole19% Tebuconazole 19%	Prosaro 421 SC	6.5 - 8.2	G	VG	VG	VG	E	E	E	G	30 days
	Propiconazole 41.8%	Tilt 3.6 EC[6]	4.0	VG	VG	VG	VG	VG	VG	VG	P	Feekes 10.5.4
Mixed modes of action[7]	Tebuconazole 22.6% Trifloxystrobin 22.6%	Absolute Maxx SC	5.0	G	VG	VG	VG	VG	E	VG	NL	35 days
	Cyproconazole 7.17% Picoxystrobin 17.94%	Aproach Prima SC	3.4 - 6.8	VG	VG	VG	VG	E	VG	--	NR	45 days
	Prothioconazole 16.0% Trifloxystrobin 13.7%	Delaro 325 SC	8.0	G	VG	VG	VG	VG	VG	VG	NL	Feekes 10.5 35 days
	Pydiflumetofen 13.7% Propiconazole 11.4%	Miravis Ace SE	13.7	VG	VG	VG	VG	VG	VG	VG	G[8]	Feekes 10.5.4
	Fluxapyroxad 2.8% Pyraclostrobin 18.7% Propiconazole 11.7%	Nexicor EC	7.0 - 13.0	VG	VG	E	E	E	E	VG	NL	Feekes 10.5
	Fluxapyroxad 14.3% Pyraclostrobin 28.6%	Priaxor	4.0 - 8.0	G	VG	VG	E	VG	VG	G	NL	Feekes 10.5
	Propiconazole 11.7% Azoxystrobin 13.5%	Quilt Xcel 2.2 SE[6]	10.5 - 14.0	VG	VG	VG	VG	E	E	VG	NL	Feekes 10.5.4
	Prothioconazole 10.8% Trifloxystrobin 32.3%	Stratego YLD	4.0	G	VG	VG	VG	VG	VG	VG	NL	Feekes 10.5 35 days
	Benzovindiflupyr 2.9% Propiconazole 11.9% Azoxystrobin 10.5%	Trivapro SE	9.4 - 13.7	VG	VG	VG	VG	E	E	VG	NL	Feekes 10.5.4
	Flutriafol 18.63% Azoxystrobin 25.30%	Topguard EQ	4.0-7.0	VG	NL	VG	VG	E	E	VG	NL	Feekes 10.5.4 30 days

[1]Efficacy categories: NL=Not Labeled; NR=Not Recommended; P=Poor; F=Fair; G=Good; VG=Very Good; E=Excellent; -- = Insufficient data to make statement about efficacy of this product.

[2]Product efficacy may be reduced in areas with fungal populations that are resistant to strobilurin fungicides.

[3]Efficacy may be significantly reduced if solo strobilurin products are applied after stripe rust infection has occurred.

[4]Application of products containing strobilurin fungicides may result in elevated levels of the mycotoxin Deoxynivalenol (DON) in grain damaged by head scab.

[5]Label rate for powdery mildew is 7.5-11.0 fl. oz/A.

[6]Multiple generic products containing the same active ingredients also may be labeled in some states.

[7]Products with mixed modes of action generally combine triazole and strobilurin active ingredients. Miravis Ace, Nexicor, Priaxor, and Trivapro include carboxamide active ingredients.

[8]Based on application timing at the beginning of anthesis (Feekes 10.5.1).

(*NC Ag Chem Manual:* https://content.ces.ncsu.edu/north-carolina-agricultural-chemicals-manual/disease-control

Scouting Method

- Take samples at a minimum of 10 random sites in the interior of the field (avoid the edges). At each site, examine 10 stems for eggs and larvae. This will result in 100 stems per field being examined.
- Eggs may be on the leaves near the ground. Record the number of eggs and larvae counted at each sample site and then calculate the total number of eggs and larvae found in the field.
- If there are more eggs than larvae, scout again in five to seven days. This is important because egg mortality can be very high. A large number of eggs does not necessarily mean there will be a high larvae population.
- If there are more larvae than eggs, there is no need to scout again. A decision about applying an insecticide for control can now be made.

Photo 8.9. Wheat leaf damage caused by cereal leaf beetle larvae feeding.

Threshold

When the scouting results show that there are more larvae than eggs, peak egg laying has passed and it is the correct time to use the spray threshold. If there are 25 or more eggs plus larvae on 100 stems, the threshold has been met.

Management Tips

Cereal leaf beetle adults are attracted to dense highly-tillered wheat fields, but more larvae per tiller are found in poorly-tillered fields. Management practices that lead to densely tillered stands by mid-February can help to reduce the risk of having a cereal leaf beetle infestation. These practices include planting on-time, using high quality seed planted at recommended seeding rates, making sure that preplant fertility is adequate for rapid fall growth, and applying a split nitrogen application in February and March if additional tillering is needed in the spring.

Photo 8.10. A wheat field severely damaged by cereal leaf beetle feeding.

Cereal leaf beetle is easily controlled with low rates of many insecticides if they are applied when the threshold is met. Because only one generation hatches per year, if insecticides are applied based on the use of thresholds, one application will give adequate management. However, if insecticides are applied early before

Table 8.2. Insecticides labeled for cereal leaf beetle management (2020). Although they may be as effective as the chemicals listed here, generic formulations are not listed nor are pre-mixed products with multiple insecticide classes.

Insecticide Class	Active Ingredient	Trade Name	Formulation/A
Carbamates	methomyl	Lannate LV	16 to 32 fl oz
		Lannate SP	0.25 to 0.5 lb
	carbaryl	Sevin brand XLR PLUS	16 fl oz
Pyrethroids	beta-cyfluthrin	Baythroid XL	1.0 to 1.8 fl oz
	gamma-cyhalothrin	Declare EC	1.02 to 1.54 fl oz
	lambda-cyhalothrin	Warrior II	1.92 fl oz
	zeta-cypermethrin	Mustang Maxx EC	1.6 to 4.0 fl oz

threshold levels are met (such as with top-dress nitrogen), reduced application rates may not be adequate. And even when full label rates are used, a second application may be required later in the season.

Insecticides labeled for cereal leaf beetle control in small grains are listed in Table 8.2. To be most effective, insecticides must be applied by early head-fill, before the larvae cause significant yield-reducing defoliation. In making a choice about insecticides, consider the presence of aphids or armyworms. Both carbamates and pyrethroids kill aphid parasites and predators. Carbamates can sometimes allow a serious aphid increase. Therefore, a carbamate should not be applied against cereal leaf beetle if aphids are a potential threat. Carbaryl, beta-cyfluthrin, gamma-cyhalothrin, lambda-cyhalothrin, and zeta-cypermethrin provide excellent management, with good residual effects at least 14 days after treatment. Spinosad provides adequate management under normal situations, with minimal residual effects. Under heavy pressure situations, however, using spinosad is equivalent to doing nothing.

Yield Optimizing Tip

Scout for cereal leaf beetle after flag leaf emergence. Spray if there are 25 or more larvae plus eggs on 100 stems.

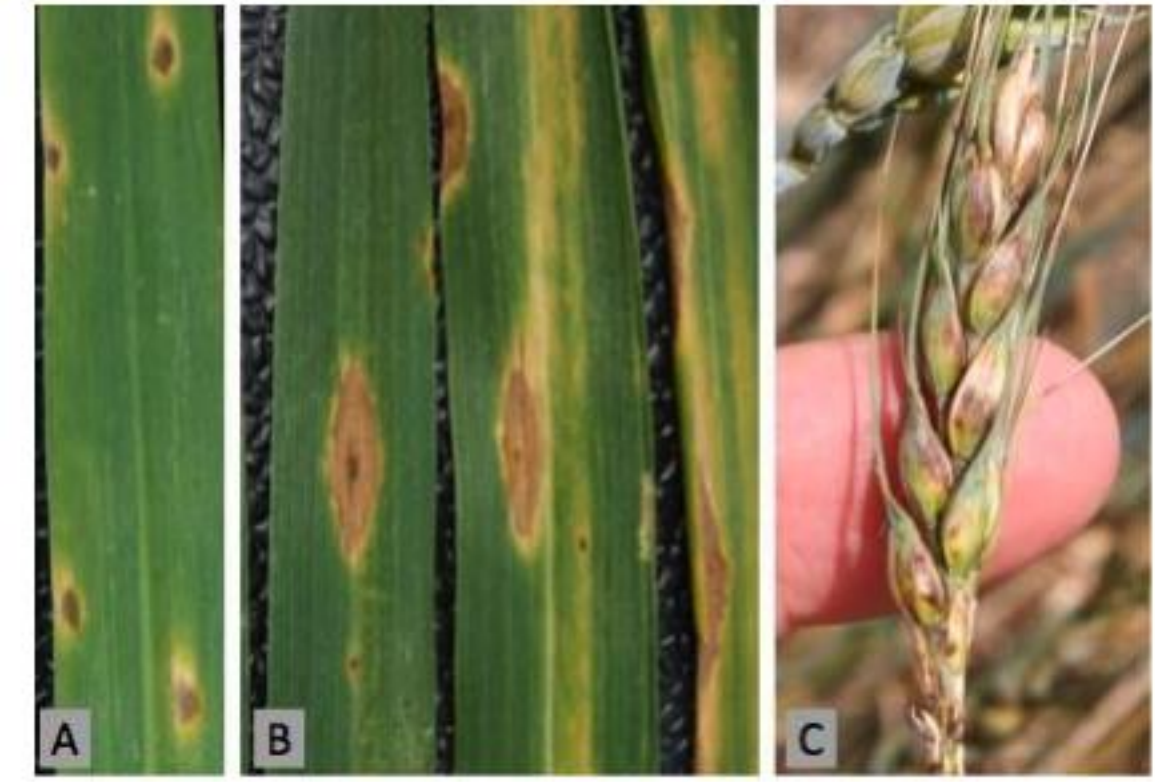

Photo 9.9. Stagonospora nodorum blotch: (A) the youngest lesions will appear as dark-chocolate dots; (B) as lesions age they expand and in older lesions there are often small, dark, pimple-like spots known as pycnidia; (C) if rain splash reaches heads, lesions can appear on them as well.

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