

IPM NEWSLETTER

Update for Field Crops and Their Pests

No. 6

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Reminder: **Cotton Scout School** will be held, as usual, on the last Friday of May (29th) at the West TN Research & Education Center. This will be a morning program with an after lunch, go-to-the-field session for those interested. Preregistration is NOT required.

Wheat Head Scab Update (Melvin Newman, Extension Plant Pathologist)

Head scab caused by the fungus *Fusarium* spp. might be a problem in the coming few days. Infection occurs when wheat is in the flowering stage (Feeke's scale 10.5.1). Most wheat fields are probably now at this stage or even later. Continuous wet weather for several days is usually required for severe infection. Foliar fungicides such as Folicur, Prosaro and Carmaba are labeled for **suppression** of head scab. However, head scab control data is very limited in Tennessee for any of these fungicides. **If producers** still have not sprayed their wheat for diseases and still would like to spray, it would now be the time to spray one of the above fungicides for head scab since wet weather is on the way (according to the weather man). But, don't expect complete control of head scab, since it is very difficult to get the right timing and weather conditions for even some control.

Remember: Most foliar fungicides require a 30 day minimum time from application to harvest (PHI). Be sure to read the label for specific requirements. Users are required to read and follow all label instruction for any of these fungicides.

WHEAT FOLIAR FUNGICIDES				
Chemical Name	Trade Name	Formulation	Rate/A per Application	Diseases Best Controlled
Pyraclostrobin	Headline (BASF)	23.6 % EC	6 to 9 fl oz	Glume blotch and Septoria leaf spot, rust diseases, tan spot,
Propiconazole	PropiMax (Dow)	41.8 % EC	4 fl oz	Rust diseases, powdery mildew, leaf blight and glume blotch and tan spot
Tebuconazole	Folicur (Bayer)	3.6 lbs/gal.	4 fl oz	Rust, glume blotch, powdery mildew, head blight suppression.

Metconazole	Caramba (BASF)	8.6 % F (0.75 lbs./gal.)	10 to 14 ozs/a (13.5 to 17 ozs/a for scab)	Rust, powdery mildew, glume blotch, tan spot, Septoria leaf and glume blotch, and head scab suppression.
Prothioconazole + Tebuconazole	Prosaro (Bayer)	1.76 lbs/gal. + 1.76 lbs/gal	6.5 to 8.2 fl oz	Rust, glume blotch, powdery mildew, head blight suppression
Azoxystrobin	Quadris (Syngenta)	22.9 % F	4- 12 fl oz (general use: 6-9 fl oz)	Glume blotch and leaf blight, rust diseases, tan spot
Propiconazole	Tilt 3.6 (Syngenta)	41.8% EC	4 ozs.	Rust, glume blotch, rust diseases, powdery mildew, glume blotch and leaf blight.
Azoxystrobin + Propiconazole	Quilt (Syngenta)	7 % + 11.7 % F	10.5 to 14 fl oz	Rust diseases, powdery mildew, glume blotch and leaf blight, tan spot.
Propiconazole + Trifloxystrobin	Stratego (Bayer)	11.4 % + 11.4 %	10.0 fl oz	Glume blotch and leaf blight, powdery mildew, rust disease, tan spot

Weed Control (Larry Steckel, Weed Specialist). Most of the calls of the week center on problems about way too much rain. The most frequent question is how much atrazine is still present in corn fields that have seen large amounts of rain and/or were flooded. My experience has been that most fields experiencing this much rain (3-11") will lose most atrazine and flooded corn fields typically lose all atrazine. This added to the fact that we have seen a major flush of grasses and in many fields Palmer pigweed means we will need a follow-up application. We are seeing stunted corn in low areas of the field in some cases which can make timing post emergence applications a challenge. Determining the maturity of corn on its height alone after it has endured water logged stress can be misleading. The best way to determine corn maturity is to count the number of fully opened leaves (leaf collars) rather than the plants' height. Listed below are some of the corn maturity cutoff stages for the more popular post applied herbicides.

<u>Herbicide</u>	<u>Corn Leaf Collar Stage</u>	<u>Corn Height</u>
Accent	6	20"
Atrazine (Bicep, Degree Xtra, Lexar, etc.)	--	12"
Capreno	Post only up to 6	--
Clarity (16 oz/a)	5	8"
Callisto	--	30"
Corvus	2	--
Halex GT	8	30"
Impact	45 day Pre Harvest Interval	
Laudis	8	--
Resolve DF	6	12"

Resolve Q	7	20"
Roundup PowerMax	8	30"
Status	Post 2 to 10	4 to 36"
Steadfast	7	20"
2,4-D	--	8"

You may notice there are two premixes Corvus and Halex GT that have just been introduced over the last 2 years. Both of these products are premixes designed strictly for post application in corn. The Corvus contains Laudis + thien-carbozone methyl (ALS inhibitor) + a safener and Halex GT contains Callisto + Dual Magnum + Touchdown. We have looked at both these products and have found them to provide good weed control. The thing I like most about them is that they are a simple way to manage weed resistance as they have multiple modes of action in the same jug.

Insect Control Considerations (Scott Stewart, IPM Specialist)

Wheat. True armyworm numbers have increased to above threshold level in some areas with reports ranging from 1-20 larvae per square foot. UT's threshold of 6-8 larvae per square foot is plenty aggressive. Use this threshold if the wheat is still in the milk stage. Once you enter the soft dough stage, you can increase this threshold dramatically unless significant head clipping is observed. Indeed, research done in Arkansas a few years ago showed little or no yield loss resulting from armyworm infestations once wheat was in the dough stage (even when nearly complete defoliation resulted).



A little about true armyworm biology and behavior: larvae are most active at night, but they are not strictly nocturnal, especially in wheat because it offers good, shaded cover. But they will hide under debris, especially during hot sunny days. I'll bet 10 people have asked me if we can kill the worms on the ground. Remember, they climb up the plants to feed at night and even during the day. However, they drop to the ground instantly when they "feel" your presence. This is self defense, probably to keep from becoming bird food. Watch fields next to wheat. Larvae will sometimes migrate in armyworm fashion into surrounding crops, acting like cutworms on emerging seedlings.

I have finally seen a wheat field requiring treatment for cereal leaf beetle, with probably 40-50% defoliation in parts of the field. This pest is typically a nuisance more than a serious problem, but never say never. UT's threshold for cereal leaf beetle is one larva (or adult) per stem, although you will find mostly larvae at this time. Published thresholds vary widely from 1 per plant, 1 per tiller to 1 per 4 tillers, and I don't have enough experience to really know where the true number lies. The truth - it probably depends upon the stage



of the wheat. Like true armyworm, infestations are likely to cause the greatest yield loss when they start early. Adults prefer to lay eggs in late maturing, thinly sown wheat or in weak spots. Cereal leaf beetles are not difficult to control with pyrethroid insecticides, and one application should be sufficient because there is only one generation per year.

Insecticide recommendations: http://www.utextension.utk.edu/fieldCrops/cotton/cotton_insects/InsectBook.htm

Cutworms. It continues to be a bad year for black cutworms. Reports of problems are widespread from Arkansas north of I-40 across to Middle Tennessee. They are clearly more common than usual and causing havoc in a few fields of corn and early planted cotton. However, serious infestations are still spotty. Fortunately, many folks opt to use a preventative insecticide application near planting. Very economical rates of pyrethroid insecticides applied within 10 days of planting, at-planting or before emergence will go a long way in preventing potential problems; e.g., Karate/Warrior, Mustang Max, Baythroid XL, Asana XL, Brigade, Prolex, Ammo (in cotton only). This is recommended unless you have confidence that cutworms infestations are unlikely problem; such as in recently tilled ground or in situations where herbicides were used to keep a field weed free for at least two weeks before planting (effectively starving the larvae). “Weed free” means just that, the vegetation is stone dead – not dying, almost dead, partially dead, etc. This is hard to pull off and even tougher during a wet spring. None of the insecticide seed treatments will provide adequate protection against a serious cutworm infestation. Poncho 250 ® in corn offers some suppression. Aeris® in cotton may provide some suppression, but just this week, I’ve saw a treatment-level infestation of cutworms in a cotton having an Aeris seed treatment

<i>Symptoms of Black Cutworms</i>
Plants are cut, typically the mainstem at ground level up to 2-3 inches
There are often several cut plants in sequence
The top portion of the plant is often, but not always, missing (eaten)
The cut tops may be completely or partially pulled underground
Some plants will just have parts of their leaves fed upon, normally along leaf margins
Larvae found underground near injured plants

<i>Other Pests Causing Similar Damage</i>
<u>Slugs</u> – similar to cutworms but slugs will be found under debris and in cracks of soil. Leaf margins may be feed upon but round and irregular holes are also present. Almost exclusively no-till, especially following corn or sorghum.
<u>Vegetable weevil</u> – primarily cotton. Mainstem cut similar to cutworms but cut top is almost always present next to stem. Little leaf feeding. Exclusively no-till.



Larvae of Black Cutworm and Cut Plant Pulled Partially Underground

Corn Update (Angela Thompson McClure, Corn & Soybean Specialist). Heavy rains have shut everything down again this week. Some areas reported as much as eight inches of rainfall over this past weekend with many areas receiving over an inch additional rain from Tuesday night. We have corn fields that are covered with water or very saturated, which has led to several calls about corn survival and fertilizer loss.

Early Season Ponding or Flooding Injury in Corn

Wet Feet Fields that did not go under water are in pretty good shape, especially where corn is already out of the ground, although there are concerns about nitrogen leaching and denitrification (see below). Corn can tolerate wet feet for a short period of time, as long as soil does not stay fully saturated more than 3 days. Soil oxygen depletion is a concern after 2 days in this case, particularly where temperatures are above 80 degrees F. Another concern with continuous wet soils early season is that root development is reduced which can affect plants later this summer. Where seed have not germinated and it has been 7 days since planting, check for signs of seed rot.

Flooding Injury Most of our emerged corn is less than 4 collars in size, meaning the growing point is below the soil surface and the crop is more vulnerable to flooding injury. When temperatures are warm (above 77 degrees F) water covered plants may survive 1 or 2 days, while at cooler temperatures corn can live up to 3 days under flooded conditions. Check plant survival 3 or 4 days after water has drained off the field, by checking the color of the growing point. The growing point should be white to cream colored, while a darkening and/or softening usually precedes plant death. Also, a healthy plant should produce new leaf growth 3 to 5 days after water drains from the field. Sometimes the growing point is killed by bacterial infections during and after flooding, but plant growth continues in the form of non-productive tillers (suckers). Disease problems that become greater risks due to flooding and cool temperatures include corn smut, and crazy top. The fungus that causes crazy top depends on saturated soil conditions to infect corn seedlings. There is limited hybrid resistance to these diseases and predicting damage from corn smut and crazy top is difficult until later in the growing season.

Replanting Corn Some fields that have been wiped out by flooding or seed rot will need to be replanted to corn or sorghum where atrazine has been used or full rates of nitrogen have gone out. To make the most of late planted corn, plant a hybrid with Bt cornborer protection and some resistance to Gray Leaf Spot. Keep an eye on these late fields this season and consider a foliar fungicide at tasseling if conditions are good for disease development.

Fertilizer Management in Waterlogged Fields (Hugh Savoy Extension Soil Fertility Specialist).

Extremely heavy rains in late April and early May have created much concern that fertilizers that were already applied prior to or at planting may be lost. **Fortunately, while P and K fertilizers are water soluble and move into the soil profile fairly rapidly, they generally stay in the upper 3 inches of the soil profile and should still be available for plant uptake this season.**

How Much N Did we Lose?? Nitrogen can be lost due to leaching, runoff and denitrification. The amount of nitrogen lost to leaching and runoff is difficult to quantify, and a guess as to how much to add back is the best we can do. Well drained soils lose less N because they do not stay heavily saturated as long as poorly drained fields. Fields that are flooded more than 3 days may lose the majority of nitrogen applied. Fields that did not flood but are saturated can lose some nitrogen through denitrification where nitrogen in the **nitrate (NO₃) form** is converted to nitrogen gas by bacteria in the

soil. The amount of denitrification increases with the amount of time a field is water logged (soil needs to be saturated for at least 2 days in order for the bacteria to start the denitrification process). In fields where some or all nitrogen fertilizer has already been applied, estimating the amount of N loss depends on the 1) nitrogen source used 2) how long the nitrogen has been on the field and 3) duration of flooding if water is standing in the field. Below is a table utilizing some information that Univ. of Kentucky included in their recent newsletter with some commonly used N sources and the percentage of fertilizer that is likely available as nitrate nitrogen at different times after application.

N Source	Weeks After Application of N Fertilizer		
	0	3	6
	% of Fertilizer as Nitrate Nitrogen		
Urea	0	50	75
UAN solution	25	60	80
Ammonium Nitrate	50	80	90
Anhydrous Ammonia	0	20	65

An estimate of denitrification loss is 3-4% loss of nitrate nitrogen for each day soil stays saturated beyond 2 days. As an example: Ammonium nitrate is applied at 180 lbs actual N/Acre before heavy rains where fields will stay saturated for 5 days.

- Example 1: ammonium nitrate is applied 3 weeks before heavy rains. At 3 weeks ammonium nitrate will be at 80% nitrate form (180 lbs N/acre x 80% = 144 lbs nitrogen/acre). With 5 days saturated soils minus 2 days for bacteria to begin causing denitrification = 3 days that denitrification loss will occur. At 4% loss/day x 3 days = 12% loss has occurred (144 lbs nitrogen/acre x 12% loss = 17.3 lbs nitrogen/acre lost).

How Much N do I need to Add?? After denitrification loss is estimated, additional N should be added to cover leaching loss as most areas have received 6 inches or more rainfall recently. Most supplemental nitrogen is applied at **40 to 75 lbs N/acre**. The higher rate should be considered where fields flooded 1 or 2 days. Fields that flooded for 3 or more days probably lost the majority of nitrogen applied and replanting to soybeans should be considered. Generally in Tennessee about 1 to 1.1 lb of nitrogen is needed per bushel of corn produced. Whether the nitrogen loss calculated as in the above example will result in a lower grain yield depends upon (1) sufficient healthy plant population and weed control still being present (2) how close the amount of nitrogen already applied matched the field needs (what are your long term yield averages in this field or management area and does the nitrogen rate you used match or exceed this??) For example if the nitrogen rate applied greatly exceeded the field yield potential (field average is only 130 bushels/acre, but you've applied 180 lbs N/acre) then a calculated loss of 17 lbs N/acre is probably not a problem that needs to be addressed.

Side dress nitrogen applications should be made before the V6 stage of corn, but can be economical up to tasseling in some situations. If no nitrogen was applied at planting or some was lost due to flooding, side dress nitrogen should be applied as soon as practical after V3 corn. Leaf burn from nitrogen fertilizer will not harm yield.

Tissue Testing for N Deficiency. Growers who applied their fertilizer at planting, didn't have flooded fields but had several inches of rain may be very uncertain as to how deficient their corn might be. An option they may want to consider is to wait until **after V6-V8** corn and use a tissue test to determine if corn is N deficient during the season. Plant analysis may be used to assist the grower with a side dressing decision after growth stage V6 and up to tassel. Eighteen to twenty of the first fully mature

leaves below the whorl should be collected from the affected area (no larger than 10 acres) and sent to the Soil, Plant and Pest Center in Nashville (see: <http://soilplantandpest.utk.edu/>) for Total N determination. Total N in the leaf during this time should be between 3.00 and 3.5 percent for adequate N. The drawback to this option is fertilizer material will have to be flown on if a high clearance spreader is not an option, and if material is not applied in a timely manner, corn yield can be affected. In other words, don't wait until the field turns pale yellow to tissue test!!

Farm Management (Chuck Danehower, Area Specialist - Farm Management). Forward pricing is a familiar marketing tool for most producers. Combining forward pricing with crop insurance can result in pricing a higher percent of your crop at favorable prices.

Crop insurance is primarily used as a production risk management tool, where a drop in yield depending on the level of coverage will result in an indemnity payment. The revenue based crop insurance products such as Crop Revenue Coverage (CRC) and Revenue Assurance (RA) also protect producers on a combination of a drop in yield and price decline, hence the revenue coverage or revenue assurance in the products name.

An underutilized benefit of crop insurance can be using the level of coverage as determining factor of how much of the crop to forward price. The majority of the time, the best prices occur before harvest when there is uncertainty in the crop. Unless a weather market develops, this will happen before summer. This year is shaping up to be more along the normal seasonal price pattern particularly in soybeans. It is expected that more soybeans will be planted than was reported in the USDA March 31 Prospective Plantings report. If that is the case then the soybean prices could be cheaper in the fall. Without crop insurance or at least a higher level of buy up coverage, producers tend to feel comfortable forward pricing 20% - 30% of their crop. A producer with crop insurance at a 65% level of coverage should feel comfortable pricing up to that same level of coverage. If the producer were to have a production shortfall, then crop insurance indemnity payments could be used to offset any forward price contracts that went unfilled.

Looking at an example can help indicate how crop insurance and forward pricing can work together. The insurable yield is 39 bushels per acre. The average forward price received is \$9.00 bushel and the harvest price received is \$7.00 bushel. A producer with a 39 bushel per acre average and a 65% level of crop insurance coverage could forward price up to 25 bushels per acre (.65 X 39). If the average price booked is \$9.00 acre then that generates \$225 (25X\$9.00). The remaining production of 14 bushels would be priced at \$7.00 for \$98. The per acre gross is \$323. A producer who prices 25% of the crop would generate \$87.75 (.25X39X\$9.00). The remaining bushels at harvest would be priced at \$7.00 bushel generating \$204.75 for a total gross per acre of \$292.50 per acre. The difference between pricing at 65% and 25% is \$30.50 per acre with pricing at the higher percentage generating the greater revenue.

If there is a production shortfall below the level of coverage, then the crop insurance indemnity payment can be used to pay the difference on the forward price contract. Using crop insurance in a marketing plan can work extremely well in years where higher prices are received in the spring – early summer and then trend down into harvest. Depending on the actual acreage planted, soybeans are setting up for this type of market. This type of strategy can help producers fully utilize their crop insurance policy.

Marketing information on-line, <http://economics.ag.utk.edu/cropcomm.html>
Crop insurance on-line, <http://www.rma.usda.gov/>

Tennessee Pheromone Moth Trapping Summary - Trapping efforts are funded in large part by the Tennessee Cotton Incorporated State Support Program.

Numbers of Moths per Week (Week 1, Ending 5-6-09)

Trap Location	Tobacco Budworm	Corn Earworm (Bollworm)	Beet Armyworm	Southwestern Corn Borer
Hardeman (Bolivar)	0	2	0	---
Fayette (Whiteville)	0	0	---	---
Fayette (Somerville)	0	0	0	1
Shelby (Millington)	1	1	0	---
Tipton (Covington)	1	2	---	1
Tipton (North)	1	0	0	---
Lauderdale (Goldust)	0	0	0	---
Haywood (West)	*	*	*	---
Haywood (Brownsville)	0	1	---	---
Madison (WTREC)	1	10	0	1
Madison (North)	0	4	1	---
Crockett (Alamo)	0	2	1	---
Crockett (Maury City)	0	4	0	0
Dyer (Dyersburg)	0	3	0	---
Dyer (Newbern)	0	4	1	0
Lake (Ridgley)	0	0	0	---
Gibson (Kenton)	0	4	0	---
Gibson (Milan REC)	0	0	0	0
Carroll (Coleman Farm)	0	1	1	---

An asterisk (*) indicates trap was missing or knocked down.

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