



## Extension Agronomy

# eUpdate

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*04/15/2021*

These e-Updates are a regular weekly item from K-State Extension Agronomy and Kathy Gehl, Agronomy eUpdate Editor. All of the Research and Extension faculty in Agronomy will be involved as sources from time to time. If you have any questions or suggestions for topics you'd like to have us address in this weekly update, contact Kathy Gehl, 785-532-3354 [kgehl@ksu.edu](mailto:kgehl@ksu.edu), or Dalas Peterson, Extension Agronomy State Leader and Weed Management Specialist 785-532-0405 [dpeterso@ksu.edu](mailto:dpeterso@ksu.edu).

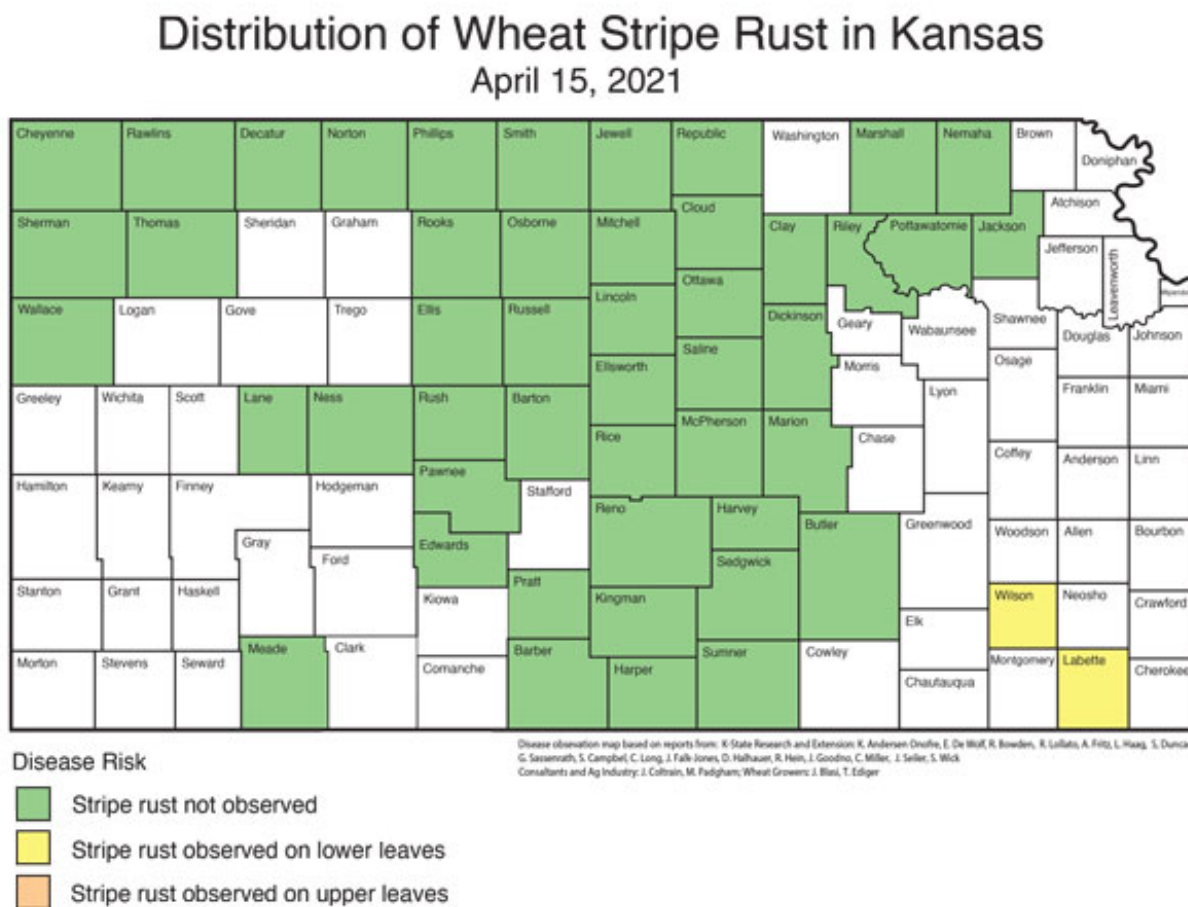
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<b>1. Time to start scouting wheat for stripe rust: First reports in southeast Kansas .....</b>	<b>3</b>
<b>2. Updated wheat fungicide publication for 2021 now available.....</b>	<b>7</b>
<b>3. Soybean seed treatments: Avoiding seedling diseases.....</b>	<b>11</b>
<b>4. Herbicide availability concerns for this growing season.....</b>	<b>14</b>
<b>5. Learn more about the brown marmorated stink bug.....</b>	<b>15</b>
<b>6. Survey: Herbicide application practices in Kansas .....</b>	<b>20</b>

## 1. Time to start scouting wheat for stripe rust: First reports in southeast Kansas

A few reports have come in this week from southeastern Kansas of stripe rust at very low incidence (Figure 1). Reports in Kansas are expected to increase in the coming weeks. There were a few more reports of stripe rust (Figure 2) in counties in Oklahoma. Reports from extension agents, crop consultants, and growers are indicating that stripe rust is not active yet in many parts of Kansas.



**Figure 1. Distribution of stripe rust in Kansas as of April 15, 2021. Map is based on observations of K-State Research and Extension, crop consultants, and wheat producers in the state. Map created by Kelsey Andersen Onofre, K-State Research and Extension.**



**Figure 2. Classic symptoms of stripe rust. Photo by Kelsey Andersen Onofre, K-State Research and Extension.**

With the wheat crop in south central and southeast Kansas approaching or already at the flag leaf



emergence stages of growth, growers are encouraged to be on the lookout for stripe rust and other diseases, such as tan spot. When people think of stripe rust, they often visualize the characteristic bright yellowish-orange lesions on adult plants (Figure 2). Symptoms of stripe rust on younger leaves are often less rectangular because the fungal growth within the plant is not limited by the veins of younger leaves (Figure 3).



**Figure 3. Symptoms of stripe rust on wheat plants that are still at the tillering or jointing stages of growth. Note that the yellowish-orange reproduction of the fungus is more clustered and less rectangular than symptoms on adult leaves. Photos by Erick DeWolf, K-State Research and Extension.**

### Scouting tips

When scouting wheat, it is important to look down within the middle layers of the crop canopy for disease symptoms. Wheat puts out new leaves rapidly during the vegetative growth prior to heading. In some cases, plants may add a new leaf every 7-10 days. These new leaves at the top of the canopy are less likely to express disease symptoms simply because it takes time (10-14 days) for the disease to develop. Focus on leaves that were present over the last 2 weeks. These leaves have a higher probability of infection than the new leaves at the top of the canopy.

More in-field observations will be happening over the next week. Stay tuned for additional detailed reports on the wheat disease status soon.

Please contact us if you detect stripe rust while scouting.

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## 2. Updated wheat fungicide publication for 2021 now available

With wheat at or approaching flag leaf in southern Kansas, producers are considering the use of fungicides to manage foliar diseases and protect the yield potential of their crop. Susceptible varieties are at highest risk for yield loss when environmental conditions are favorable for disease development. Variety resistance ratings can be checked in this publication: <https://bookstore.ksre.ksu.edu/pubs/mf991.pdf>. K-State research has found that a single application can result in a 4-13% yield increase in susceptible varieties relative to wheat that remained untreated.

Wondering about fungicide recommendations for different diseases? The publication *Foliar Fungicide Efficacy for Wheat Disease Management* has been updated for 2021 and can be found at: <http://www.bookstore.ksre.ksu.edu/pubs/EP130.pdf>. The recommendations in this publication reflect several years of head-to-head comparisons of products in Kansas and many other wheat producing states.

### **Considerations for managing foliar diseases**

Timely disease scouting is the first step in assessing the need for foliar fungicide applications. Important foliar diseases for Kansas wheat producers this year include stripe rust, leaf rust, tan spot, and leaf blotch. Producers should scout for symptoms of foliar diseases in the upper canopy, and particularly near the flag leaves of primary tillers. Damage to the flag leaf is most associated with reduced yield. If symptoms are present when scouting, a foliar fungicide application may be considered. There are many fungicides available in Kansas that provide very good to excellent control of foliar diseases and producers should consult the updated *Foliar Fungicide Efficacy for Wheat Disease Management* publication for details.

### **Managing tan spot and stripe rust**

Tan spot and other leaf spot diseases (such as *Septoria tritici* blotch), are starting to show up in the lower canopy in parts of Kansas that have received rainfall over the past several weeks (Figure 1). They may be most problematic in fields with wheat residue, as these pathogens survive through the winter in wheat straw. When it rains, spores will be splashed from residue onto the canopy. This is why we typically see symptoms on the lower leaves first. Tan spot will only be a problem for yield when the upper leaves, particularly the flag leaves of primary tillers, become infected. Fungicide applications should be held until flag leaf emergence (Feekes 8) to fully maximize benefits. Several products in the updated *Foliar Fungicide Efficacy* ratings document are rated very good to excellent for tan spot control (<http://www.bookstore.ksre.ksu.edu/pubs/EP130.pdf>).



**Figure 1. Characteristic symptoms of tan spot on the lower leaves. Symptoms start as a small, round or diamond-shaped brown spots. As symptoms progress, a yellow halo will form around spots and spots may coalesce. Photo by Kelsey Andersen Onofre, K-State Research and Extension.**

Stripe rust has recently been reported at very low levels in Southeast Kansas, but there have been no reports of stripe rust moving into the upper canopy yet (Figure 2). Similar to tan spot, stripe rust fungicide applications are most beneficial when made between flag leaf emergence (Feekes 8) and heading (Feekes 10) to a susceptible variety. There are many products that are rated very good or excellent for stripe rust control, but it is important to know that fungicides in the strobilurin family (Group 11) are not as effective when applied after symptoms have already appeared.

It is important to carefully consult fungicide label recommendations prior to product application.





**Figure 2. Characteristic symptoms of stripe rust. Stripe will start as yellow flecking on leaves, but soon orange pustules will erupt on the leaf surface containing classic orange spores. Pustules will typically form in lines, or stripes, on the leaf surface. Photo by Kelsey Andersen Onofre, K-State Research and Extension.**

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### 3. Soybean seed treatments: Avoiding seedling diseases

As producers start planting soybeans in Kansas, it is important to consider common causes of seedling damping off and potential management strategies.

#### **What causes poor soybean stand establishment?**

Although there are a few diseases that may cause poor stand establishment, it is important to also consider other factors that may be causing poor stand establishment including herbicide damage, soil compaction, high residue, flooding, cold stress, drought, planting depth, and seed quality. The proper identification of what is causing poor stand establishment will be crucial for current and future management decisions.

#### **What are the main soybean seedling diseases in Kansas and what seed treatments are effective?**

The most common pathogens causing seedling diseases in Kansas are: *Phytophthora*, *Pythium*, *Fusarium* and *Rhizoctonia*. Although they have different names, the symptoms can be similar. Each of these may result in post-emergence damping off (Figure 1). Although there are seed treatments that are effective against each of these diseases, it is important to remember that these species often require different fungicide products. It is important to carefully check the label of seed treatments and to select a seed treatment product with multiple active ingredients that have efficacy against these common pathogens.

For example, if *Phytophthora* and *Pythium* have been a problem in the past, products should be selected with the active ingredients mefenoxam, metalaxyl, or ethaboxam. For *Rhizoctonia*, the active ingredient sedaxane has shown excellent efficacy. Strobilurin active ingredients such as azoxystrobin, trifloxystrobin, or pyraclostrobin are effective against other fungal pathogens.



**Figure 1. Characteristic symptoms of Pythium damping off. Photo: Kiersten Wise, University of Kentucky.**

Seed treatments are not the only tool in the toolbox for managing seedling diseases. Variety selection, crop rotation, high seed quality, proper drainage, and seed treatments all make up the best management practices for seedling diseases in Kansas. A combination of these factors will help ensure a high quality soybean stand.

#### **What conditions favor seedling diseases?**

Each disease has slightly different environmental requirements, but in general, seedling diseases are favored by planting into cool soil with poor drainage. Spotty occurrences of infected plants may be most pronounced in low or poorly drained portions of the field. Soybeans planted early, when soil temperatures are cool, should always consider a seed treatment to avoid early-season losses.

#### **Are there any other diseases to consider when using seed treatments?**

Seed treatments are not only effective against the pathogens that cause early-season emergence problems. There are two products on the market, ILEVO® and SALTRO™, that also provide protection against sudden death syndrome (Figure 2) and soybean cyst nematode. These products should be considered for fields with a previous history of either of these diseases.

To know if soybean cyst nematode is a problem in your field, take advantage of the soybean cyst nematode testing program offered by K-State Research and Extension. Contact your local extension

agent for more sample submission information.



**Figure 2. Classic foliar symptoms of soybean sudden death syndrome. Infection typically occurs early in the season, but foliar leaf scorch symptoms are most visible at reproductive growth stages. Photo: Rodrigo Borba Onofre, Kansas State University.**

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#### 4. Herbicide availability concerns for this growing season

There has been considerable talk about limited availability of herbicides for the summer of 2021.

Recent conversations with company representatives and other weed scientists about the possibility of disruptions in herbicide supplies resulted in a range of responses. Many cited COVID-related issues related to shipping at various stages in the production/retail process. Most indicated that the initial deliveries to retailers this winter were complete, but product availability is likely to be limited as we move later into the growing season.

##### **What can you do in response to this situation?**

**Purchase products early.** I am not advocating stock-piling products or a panicked response in any way. I am strongly encouraging responsible attempts to acquire the product you will need this summer at the earliest possible date. It is likely that that product you need is available somewhere, but will take considerably longer than usual to deliver. If you are able to secure product ahead of time, be sure you have adequate storage space. One consideration that could simplify storage concerns would be to opt for dry formulations rather than liquids.

**Be proactive with herbicide applications.** Using effective residual herbicides and making properly-timed applications to emerged weeds will reduce the chances that you will need to make unplanned applications later in the season.

**Use diverse weed management strategies.** Using multiple effective herbicides with each application is recommended to manage herbicide resistance, but could prevent a weed control failure if one of the effective products is unavailable. Also, remember the value of good agronomic practices for a crop that can canopy early and effectively compete with weeds.

**Have a backup plan.** Know what you will do if your preferred product is not available. Is there an alternative with the same or similar active ingredient? The [K-State Chemical Weed Control Guide](#) can be a valuable reference to identify alternative products.

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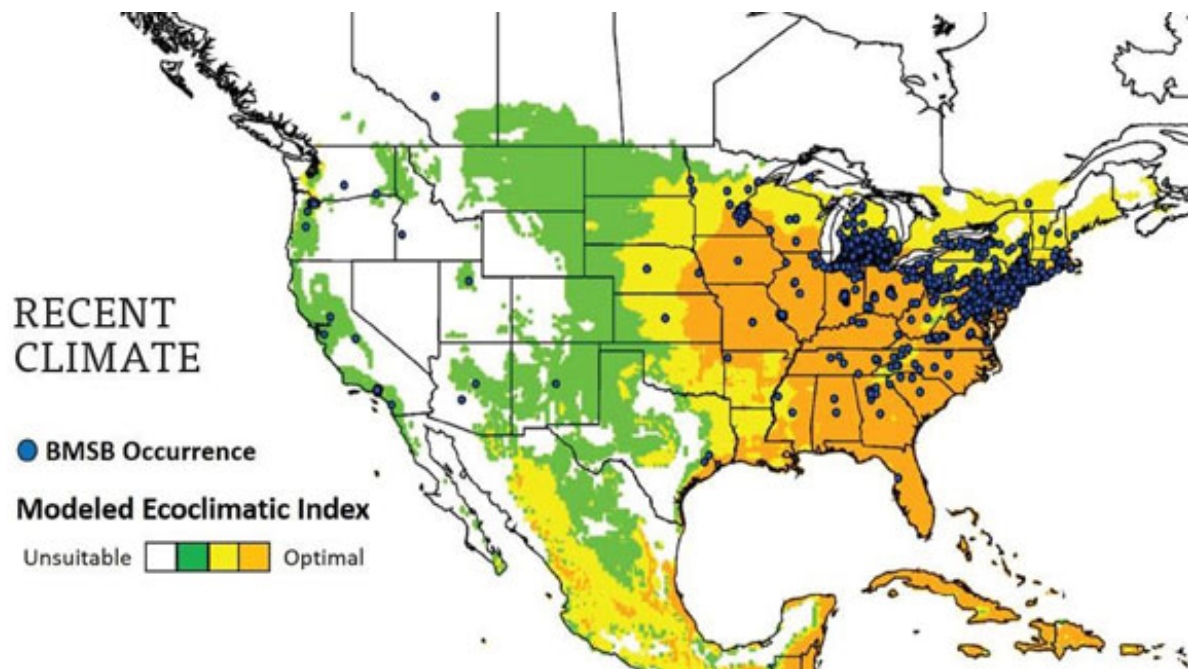
## 5. Learn more about the brown marmorated stink bug

The brown marmorated stink bug is one that may have fallen “off the radar” of farmers in Kansas. In recent years, this insect has been slowly making its way further west. Learn more about this potentially problematic pest, including how to identify it in the field and how to report sightings.

### Origin

Native to Japan, Korea and China, the brown marmorated stink bug (BMSB) was first detected in 1998 in Pennsylvania. Over the last two decades it has become a significant structural nuisance, congregating in large numbers on and in houses in the fall. More importantly, in eastern North America, it has established itself as a major fruit, vegetable, and crop pest. Its range continues to expand and climate models show an increase in regions suitable for its establishment (Figure 1).

The BMSB was first reported in Kansas at a gas station in 2011 in Douglas County. Since then, sightings have been limited mainly to far eastern Kansas, however in 2021 BMSB was identified further west in Reno County.



**Figure 1. Brown marmorated stink bug modeling shows the potential for further range expansion across the U.S., particularly in the Central and Southern states. The blue circles designate recorded BMSB occurrences. Source: Erica Kistner 2017, Environmental Entomology**

### Life Cycle

After emerging from overwintering sites in spring, BMSB adults begin mating and laying eggs on trees and host plants. In most of its range, BMSB completes one to two generations per year, developing through an egg and 4 nymphal stages before adulthood (Figure 2). In the fall, adults congregate in various overwintering sites including homes and other structures.



**Figure 2. Four nymphal stages and adult male and female BMSB.**

### **Economic Impact**

Capable of flying over 70 miles per day, BMSB has proven to be a landscape-level problem. With 70 known host plants in North America, significant economic losses have been reported. In 2010, a brown marmorated stink bug outbreak was the cause of over \$37 million in losses to tree fruit producers in the mid-Atlantic region. In addition to numerous fruit and vegetable operations, field corn, soybeans and sunflowers are among commercial crops that could be at risk in Kansas (Figure 3).



**Figure 3. BMSB feeding damage in various crops.**

### **Control Options**

Naturally occurring egg parasitoids are effective at keeping native stinkbugs in check, but native egg parasitoids in north America do not develop well on BMSB eggs. Various pyrethroid insecticides have been shown to provide control in eastern states, but these products also impact natural enemies and there are concerns over the development of resistance due to the need for repeated sprays during the season.

### **Reporting Sightings**

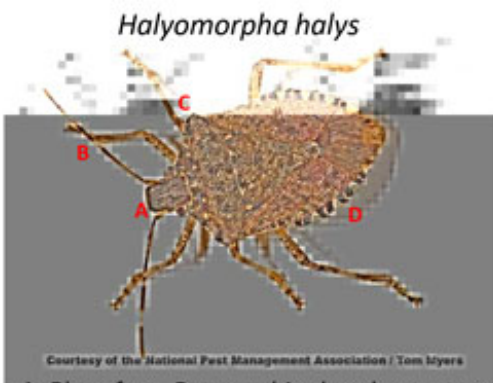
Given the potential for BMSB to become a serious pest, it is important to track its occurrence and population status in Kansas. Report any sightings to your local K-State Extension professionals or the Kansas Department of Agriculture. For identification of BMSB and comparison to similar stink bugs, please see the included document "Identification of the Brown Marmorated Stinkbug, *Halyomorpha halys*".



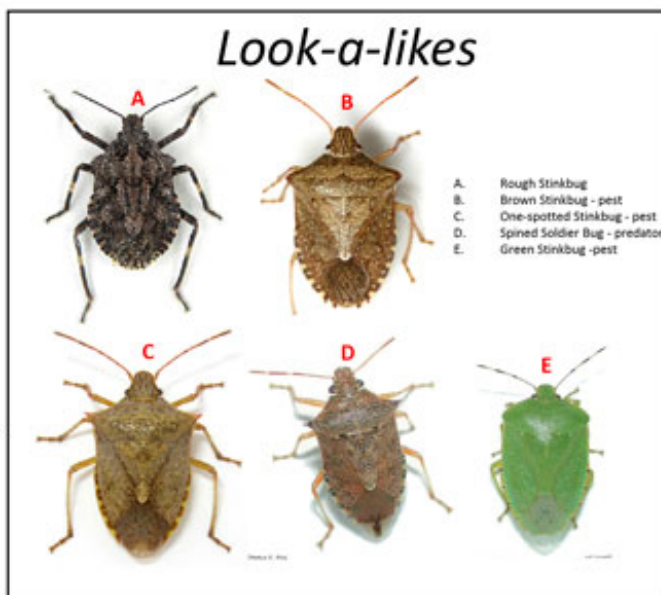
# Identification of the Brown Marmorated Stinkbug, *Halyomorpha halys*

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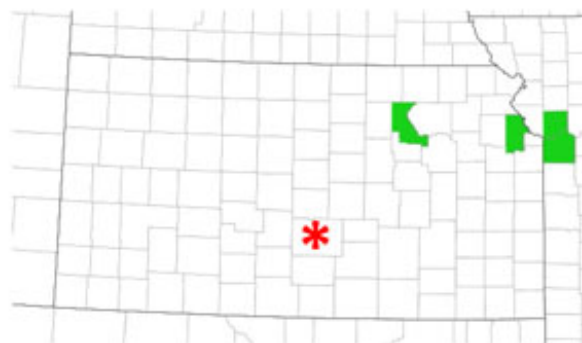
The brown marmorated stinkbug has a very large host range and can be a pest of many important commercial crops. Report any sightings to the K-State Department of Entomology or the Kansas Department of Agriculture.



A. Blunt face, B. two white bands on antennae, C. rounded shoulders, D. alternating colors on abdominal margins visible



Images above shows BMSB damage to soybeans and apple. The map to the right shows past observations in the Kansas City and Manhattan areas (green). BMSB has been detected in 2021 in Reno County (red).



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Sources for Figures 2 and 3:

<https://www.stopbmsb.org/stink-bug-basics/life-stages/>

[https://www.pioneer.com/us/agronomy/corn\\_brown\\_mar\\_stink\\_bug\\_cropfocus.html](https://www.pioneer.com/us/agronomy/corn_brown_mar_stink_bug_cropfocus.html)

<https://www.stopbmsb.org/where-is-bmsb/bmsb-damage-gallery/>

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## 6. Survey: Herbicide application practices in Kansas

Herbicide application practices such as sprayer speed and spray volume influence weed control as well as whole-farm efficiency. Weed science graduate students are currently investigating some of these interactions and we want the research results to have maximum value for Kansas farmers. achieve that goal, **we need your input!**

If you have already participated in this survey, thank you!! For those that have not, there is still time to provide your input! Please consider filling out a short survey on herbicide application practices. The survey can be accessed by clicking this [link](#) or copying the following address into your web browser: [https://kstate.qualtrics.com/jfe/form/SV\\_6myk7ed81Zdi5kF](https://kstate.qualtrics.com/jfe/form/SV_6myk7ed81Zdi5kF).

We anticipate it will take about 10 minutes to complete on your computer or mobile device. There are approximately 20 questions and your responses will be completely anonymous.

If you have questions or would like a paper copy of the survey questions, please contact Sarah Lancaster at [slancaster@ksu.edu](mailto:slancaster@ksu.edu)

Thank you from the K-State Weed Science Extension Team!