



Wheat Science News

Research & Education Center
Princeton, KY 42445



What Would Discontinuation of the Black Seas Grain Deal and Poor Wheat Conditions Mean for Wheat Price?

Dr. Grant Gardner— Marketing Extension Specialist

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In this article, I point out the reasons for the rise in Wheat prices during the beginning stages of the Ukraine-Russia war and what has caused prices to decline since May. More importantly, I point out two factors that could increase wheat prices in the short term: Russia ending the Black Sea Grain Deal and drought in the western United States. I discuss additional information on both factors and explanations on why they could push the wheat price upward.

Wheat prices began increasing on February 14, 2022, due to speculation that Russia would invade Ukraine. The invasion occurred on February 24, disrupting the wheat supply and causing export issues for Russia and Ukraine, the first and fifth largest wheat exporters in 2021 (Workman, 2022). Due to both countries' significant impact on the world wheat supply, a record wheat price occurred in March of last year. However, the highest monthly average price occurred in May, pre-dating the winter wheat harvest in June. In July, the new crop supply pushed prices below the \$10.00 mark (Figure 1).

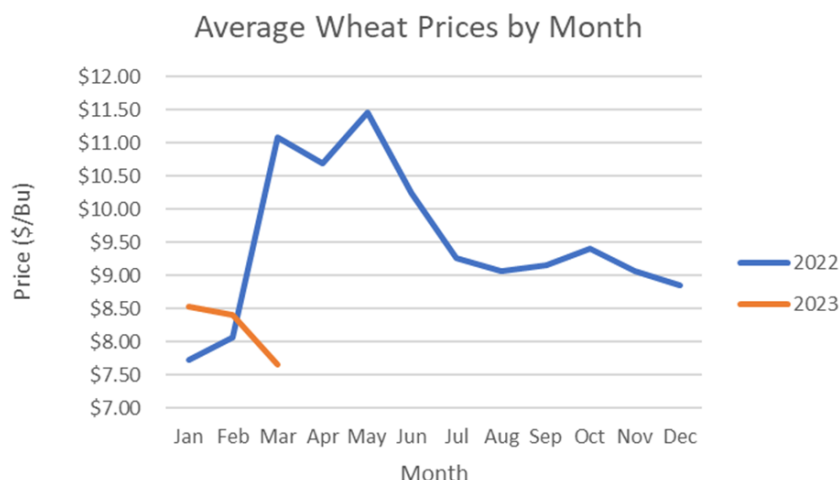


Figure 1: Average Wheat Price by Month
Source: Macrotrends.net

Since July, prices have followed a downward trajectory and were below pre-war levels in March due in part to increased exports from Ukraine and Russia. Figure 2 indicates that port activity stoppages restricted Ukrainian exports from March until August (Swearingen, 2023). In August 2022, the Black Sea grain deal was enacted to combat worries over food security and increase Ukrainian and Russian wheat exports to Africa and Europe (Hayatsever & Nichols, 2023). After two extensions to the grain deal, Russia currently threatens to end the agreement, which expires on May 18 (Hayatssever & Faulconbridge, 2023). If the agreement ends, Russian and Ukrainian wheat exports will likely slow, cutting world supply and possibly pushing the wheat price upward.

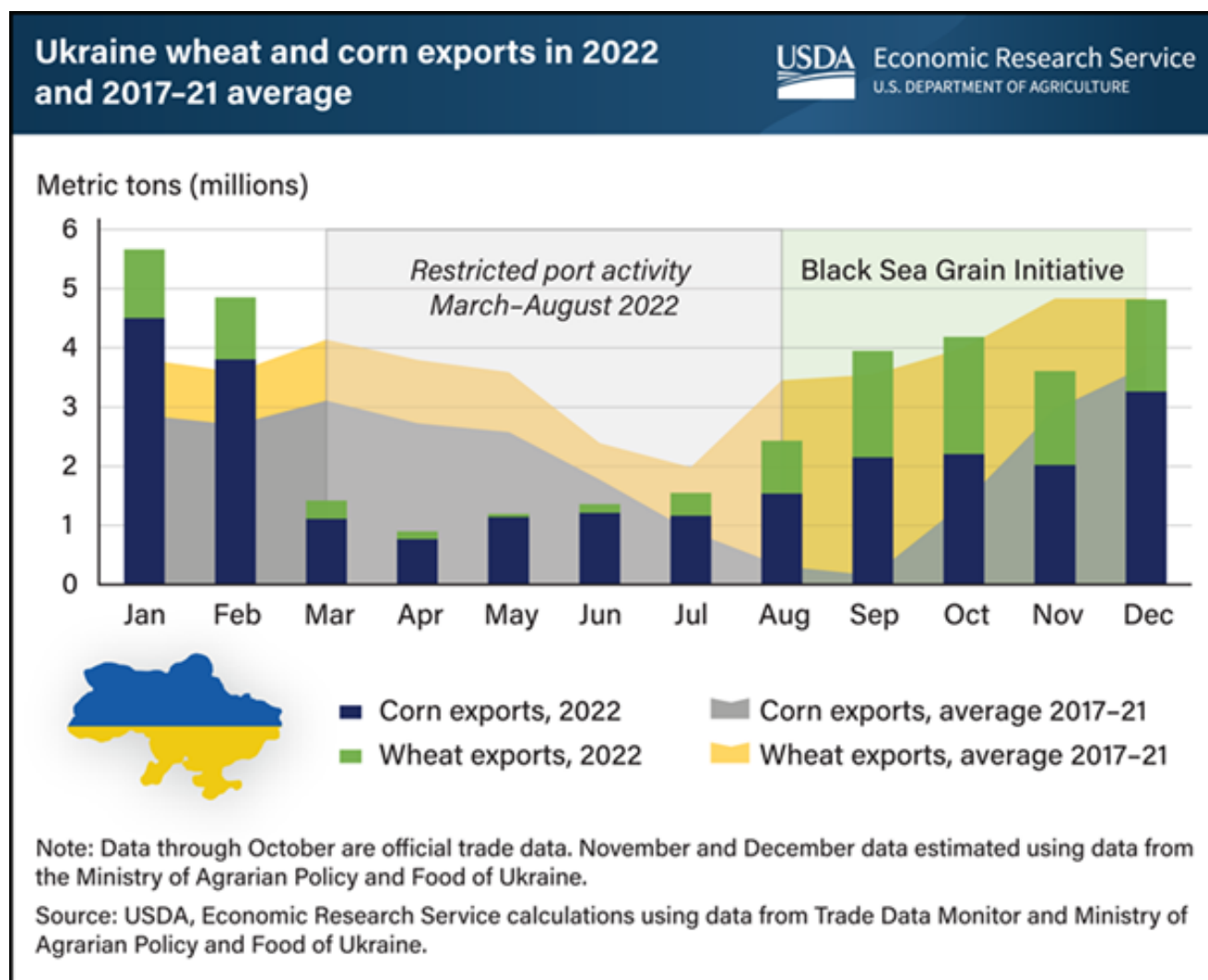


Figure 2: Ukraine Wheat and Corn Exports in 2022

Source: USDA ERS

Another factor which could increase the price of wheat is drought in the Western United States (Figure 3). Only 28% of winter wheat is rated “good” or “excellent”, down 2% from last year. Fortunately for Kentucky, SRW has fared much better than HRW (Greder, 2023). The HRW shortage has caused May HRW futures to increase since March, while May SRW futures have stagnated. Past research has shown that HRW and SRW are economic substitutes, meaning a shortage of HRW could indicate an SRW price increase (Marsh, 2005). The May HRW futures premium, caused by higher protein content, is near an all-time high, and May SRW futures may be waiting for a tipping point. The USDA wheat balance sheet did not indicate

a drop in production in March; however, a new report will be released on April 13, which could better tell whether drought in the west will influence wheat futures and prices (Sowell and Swearingen, 2023).

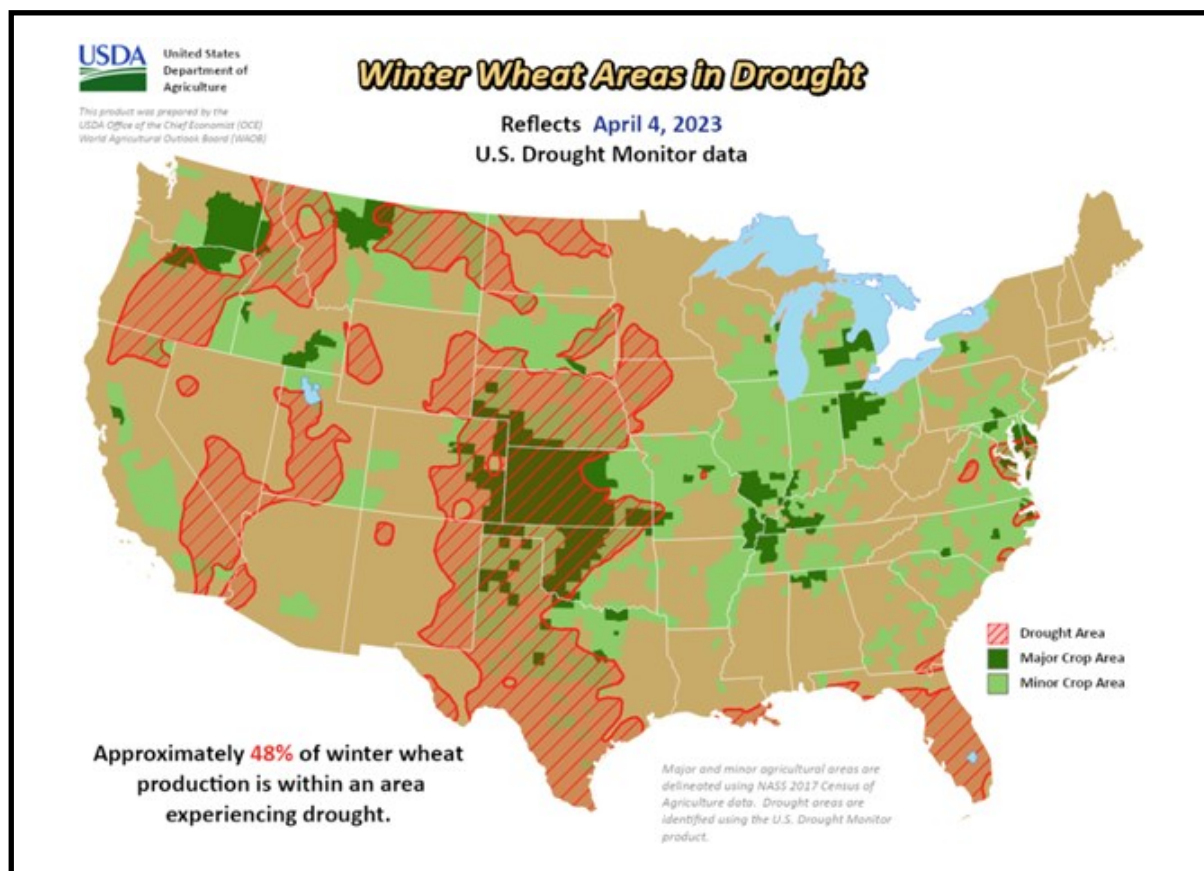


Figure 3: Winter Wheat Areas in Drought
Source: U.S. Crops and Livestock in Drought

Eighty-four percent of 2022 wheat is estimated to have been sold, but if you have spare bushels, you should pay attention to the Black Sea Grain deal and the 2023 crop balance sheet to better inform your marketing decisions (Sowell and Swearingen, 2023). Russia ending the Black Sea Grain Deal or a production shortage could provide price support to May sales and 2023 contracts.

Sources:

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2023 WHEAT FIELD DAY

TOPICS INCLUDE:

Drone Regulations, Applications, and Economics

Dr. Josh Jackson & Dr. Tim Stombaugh
UK Extension Agriculture Engineers

Wheat Market Outlook

Dr. Grant Gardner
New UK Extension Marketing Specialist

UKY Oat and Rye Breeding

Dr. Lauren Brzozowski
New UK Small Grains Breeder

Wheat vs Weather: A Reoccurring Battle

Kinsey Hamby
UK PSS Graduate Student

Management of Fusarium Head Blight

Dr. Carl Bradley
UK Extension Pathologist

Wheat Agronomics

Conner Raymond
UK Grain Crops Extension Associate

Variety Trial Walk Through

Dr. Dave Van Sanford & Bill Bruening
UK Wheat Breeder & Researcher Specialist

Sustainable Management of Wheat for the Presence of Natural Enemies in Grain & Soybeans

Dr. Raul Villanueva
UK Extension Entomologist

May 9, 2023

UKREC Farm

**1205 Hopkinsville St.
Princeton KY 42445**

**9am – noon (Central time)
Registration: 8 am**



University of Kentucky
College of Agriculture,
Food and Environment
Cooperative Extension Service

Wheat Science

Lunch sponsored by:



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Certification Requirements for Aerial Pesticide Applications to Crops in Kentucky

Dr. Ric Bessin - Extension Entomologist

There has been a high level of interest in using unmanned drones to apply pesticides to crops in certain situations. There has also been some confusion in terms of what pesticide certifications are needed to make these aerial applications in different situations. The two common situations are when a farmer wants to use a drone to apply pesticides to their fields they own or rent, or commercial applications to crops grown by others. This article addresses the state requirements for aerial pesticide applications, but there are also Federal FAA requirements that are not addressed here.

There is an exemption in Kentucky that allows farmers to apply non-restricted use pesticides with ground equipment without needing to be certified. But this exemption does not apply to aerial applications, so even when applying a general use (unclassified) pesticide, the farmer applicator would need to be certified. Additionally, persons making aerial pesticide applications are required to have specialized training. This means that a Private Applicator Certification alone is not sufficient, they need to be certified as an aerial applicator. One additional consideration is that in Kentucky, the category 11 aerial application is not a stand-alone certification, it must be used with another certification that is consistent with the use of the application. So for a farmer to apply pesticides aurally to his own crops, at a minimum they would need their Private Applicator Certification and a Category 11 non-commercial license. This would help them to meet the State Laws and Regulations with respect to pesticide applications, but they would also need to meet Federal FAA requirements.



Aerial drone pesticide applications are being considered by some applicators.

For commercial application, the Private Applicator certification will not work, instead they would need to earn their Category 1A license as well as their Category 11 Commercial Applicators license. In situations where commercial applicators are making aerial applications in forests, to aquatic areas, or along Rights-of-ways, instead of the Cat 1A, they would need to earn their Cat 2, Cat 5, or Cat 6 licenses, in those respective situations.



College of Agriculture,
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2023

Field Crop Scouting Clinic

Ideal for agriculture interns, new and experienced producers, as well as a great refresher for others

- Corn and soybean diseases and growth staging
- Scouting for insect pests of corn and soybeans
- Weed ID
- Soil nutrients and their influence on crop growth

Credits pending

May 18, 2023

9:00 am to 4:00 pm

University of Kentucky
Research and Education Center
Princeton, KY 42445



Pre-registration is required and will close on May 16.

<https://2023KATScropscoutingclinic.eventbrite.com>

\$105 registration fee

Lunch will be provided



For more information contact Lori Rogers
270-365-7541 ext. 21317
(lori.rogers@uky.edu)

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LEXINGTON, KY 40546

Sustainable Management of Aphids in Wheat

Conducive to Natural Enemy Preservation

Dr. Raul Villanueva— Extension Entomologist

Insect pests on small grain

Aphids, wireworms, Hessian flies, and headworms are the most common pests of small grains. Hessian flies were a major concern in the past. The larval stages feed on internal stem tissues where they are well protected from insecticides. Even seed treatments may not work unless they are used at the highest rates recommended by insecticide manufacturers. Nowadays, they are effectively managed with fly-free planting dates corresponding to the different latitudes of Kentucky (Figure 1). In 2022, I found Hessian fly larvae and pupae only on wheat plot planted by mid-September (Figure 2), not a single Hessian fly larva was found on a wheat plant after October.

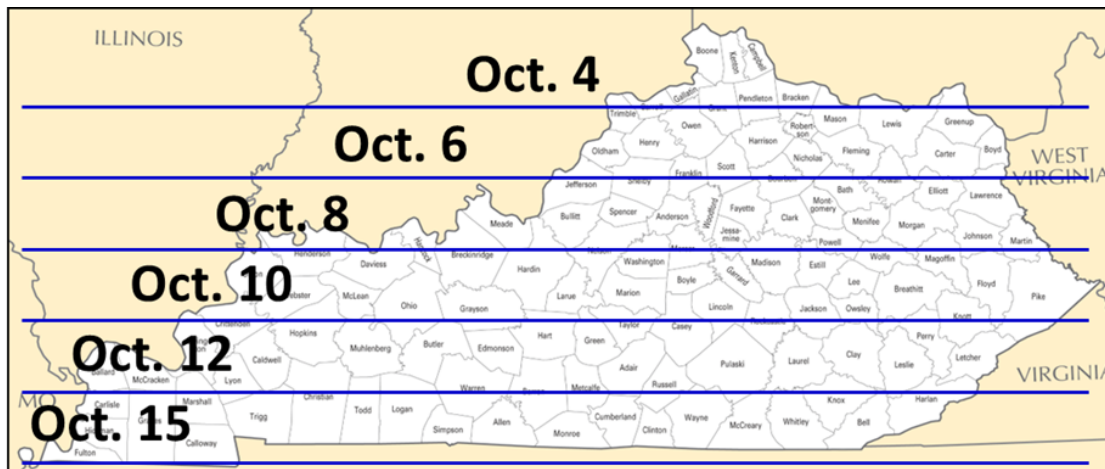


Figure 1. Fly-free dates to reduce the risk of Hessian fly infestations on wheat for different latitudinal zones of Kentucky.

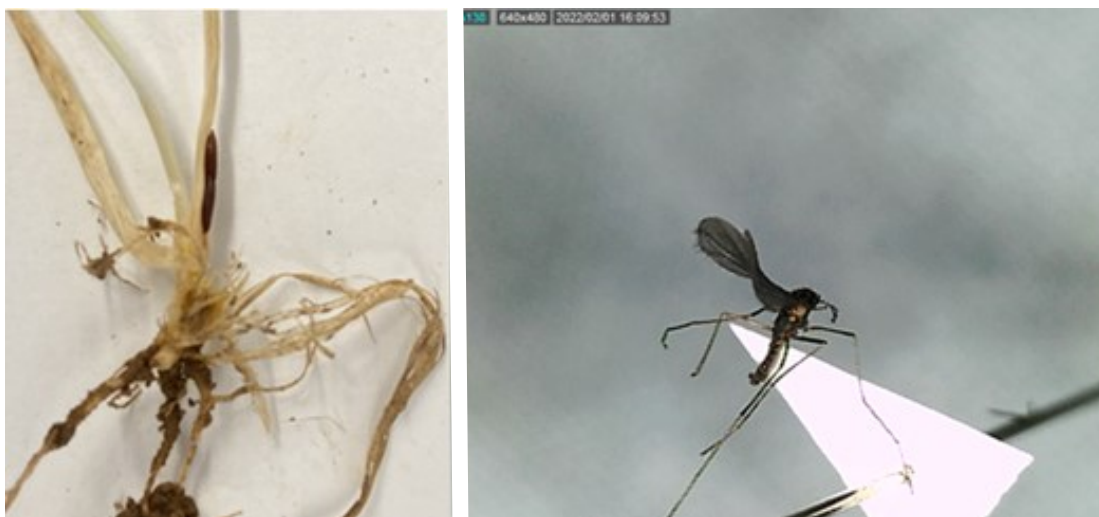


Figure 2. In 2022 Hessian fly larva and pupae were found only on wheat planted by mid-September. Hessian fly adult (right) eclosed from these pupae

Wireworms and headworms might be present occasionally. In fact, I have not seen outbreaks of these two pests in KY in the last seven years. In 2020, we set up traps with several baits to capture wireworms in pesticide treated plots and corresponding control plots (Figure 3). The number of wireworms collected were very low, thus no significant differences were observed.



Figure 3. Wireworm bait ball (baseball -size) made with a mixture of oats, honey and water. This was used in 2020 to capture wireworms. Very few wireworms were captured on insecticide and control plots in that study.

Aphid species

The key pest group for small grains is composed by several species of aphids (i.e., oat bird-cherry aphid, English grain aphid, corn leaf aphid, and the green bug). All these species are vectors of barley yellow dwarf virus (BYDV). Aphids acquire BYDV by feeding on infected plants and transmit the virus in subsequent feedings. Studies on aphid presence, during different plant developmental stages, have proved that during early life stages of wheat, the virus transmission is more damaging. In Kentucky, the most abundant and important are the bird cherry oat aphid, English grain aphid and corn leaf aphid (Figure 4). These aphid species overwinter as nymphs and can become active as soon as the temperatures are above 45° F. It is known that BYDV infections are more damaging when they occur in early growth stages of wheat plant. Thus, aphids have more opportunities to infect young plants under this climatological circumstance (temperatures higher than 45° F).



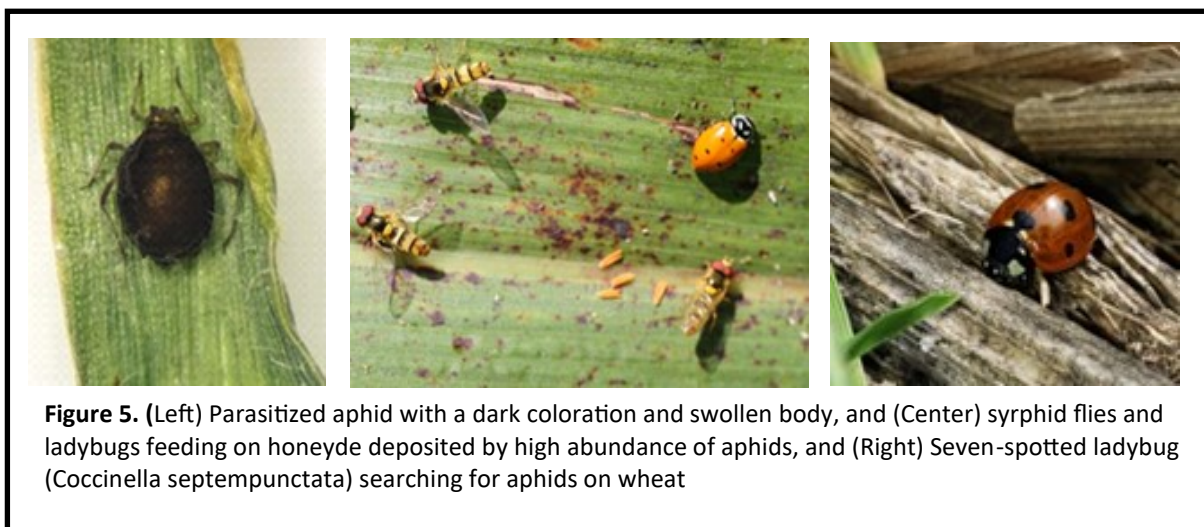
Figure 4. (Form Left to Right) Bird cherry oat aphid, English grain aphid, and Corn leaf aphid. The two first species were collected in wheat in February 2023

Wheat conditions in 2023

The unusually high temperatures in February 2023 showed the presence of aphids in some commercial wheat fields and cover crops. Also, some localized ladybeetles were observed where aphids were present. Some farmers conducted pyrethroid sprays, which not only reduced populations of aphids but also natural enemies. Scouting after pesticide spray showed that it took three weeks for ladybeetle population to find some lady beetle adults. A second preventative insecticide spray was conducted in March, despite the low aphid population. As an applied field entomologist, I would not have any objection to the first applications as farmers have to protect their investment. However, in many cases sprays for aphids are completed without considering tallies, such as the second spray conducted in March 2023. To reduce inputs and preserve populations of natural enemies it is essential to apply insecticide based on the economical threshold as it is available for aphids in wheat.

Natural enemies

Several species of natural enemies are observed in small grain fields, including lady bugs, parasitoids, lace wings, syrphid flies and spiders. Hymenopteran parasitoids lay eggs inside the body of the aphid. The aphid swells up and can change its color. Dead aphids become brownish or dark as the parasitic larva consumes the aphid internally. Aphids parasitized by wasps of the Aphelinidae family (i.e., *Aphelinus* sp.) turn aphid mummies into black color (Figure 5A), whereas aphids parasitized by the Braconidae family (i.e., *Lysiphlebus* sp.) turn aphids into brownish, or golden-brown mummies. Corn flies or syrphid flies are also present in wheat fields; adults are yellow and black, while larvae are voracious predators of aphids. There are several corn fly species in wheat. Similarly, several species of ladybugs have been observed. Usually when scouting is conducted, it is common to observed corn fly adults and larvae searching for aphid clusters (Figure 5). In addition, there are several species of green and brown lacewings that both adult and immature forms prey on aphids.



Sustainable management of natural enemies

In KY, the wheat production area is approximately 500,000 acres every year. If this acreage is conducted following sustainable management practices, many natural enemies described above may be preserved in these fields, then when corn and soybeans are planted, these natural enemies can be spread and target other pest species. Sustainability also includes the effective use of insecticides, for instance spray should be conducted after scouting and when populations of pests are near or just above established thresholds, practice rotation of insecticides with different mode of action, follow rates indicated by manufacturer, etc. There is no wheat cultivars with high levels of tolerance or resistance to BYDV, however varieties with different levels of susceptibility to this virus are available, thus a good strategy is to grow several wheat cultivars.

Save the Date

June 29, 2023



Pest Management Field Day

at the UKREC Farm

Location: 1205 Hopkinsville St., Princeton, KY 42445

Time: 8:30 a.m. CDT to 12:30 p.m. CDT — Sign-in begins at 8 a.m. CDT



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LEXINGTON, KY 40546



Disabilities
accommodated
with prior notification.

Upcoming Events

May 09, 2023 UK Wheat Field Day

May 18, 2023 KATS Crop Scouting Clinic

June 7-8, 2023 KATS Drone Pilot Certification Prep Course

June 29, 2023 Pest Management Field Day - Princeton (IPM-Grain Crops)

July 13, 2023 KATS Spray Clinic

Jul 25, 2023 UK Corn, Soybean and Tobacco Field Day



 University of
Kentucky
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UK Wheat Field Day
UKREC Farm, Princeton KY

Save the Date 05-09-2023

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