Corn & Soybean News

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COLLEGE OF AGRICULTURE, FOOD AND ENVIRONMENT
Grain and Forage Center of Excellence

University of Kentucky

Grasshoppers may Affect Soybeans Under Current Drought Conditions

It seems that some insect pests have taken advantage of the dry conditions maintained during the last month in western Kentucky. Since insects depend on certain thermal conditions to activate their metabolism, it is not surprising that the persistent warm temperatures are triggering the populations of different insects in the field. Immature individuals (known as nymphs) of short-horned grasshoppers have been observed feeding on both full-season and double crop soybeans in Lyon and Caldwell counties (Figure 1). Populations of these insects seem to be increasing and damage is already present (Figure 2).

Figure 1. Aggregation of short-horned grasshoppers on V2 soy-

Figure 2. Damage on soybean leaf produced by grasshoppers. (Photo: Armando Falcon, UK)

Most grasshoppers found during the last week of June in western Kentucky are still in the immature (1st to 3rd instar nymphs) stage and the damage on soybean leaves (irregular holes in the leaves) did not exceed 30%, which is considered the threshold for the vegetative stages. Usually in the case of soybeans, if an average of 30 to 45 nymphs or 8 to 14 adults per square yard are found (average of 20-sample sites), insecticides may be used a. Before doing any spraying, it is important to keep tracking the number of grasshoppers in the field as grasshoppers are insect to move easily and prefer field edges. Visual scouting is recommended to determine whether treatment is needed.

Finally, due to the rainfall during the last weekend of June in the western counties, chances are that soybeans may be visited by other pests, such as defoliating caterpillars, Japanese beetles, and bean leaf beetles.

IPM Techniques and Scouting

The information below was taken from a University of Kentucky publication (Grasshoppers in Soybeans) and it provides valuable information for scouting grasshoppers.

•In no-till fields it is important to scout for grasshoppers from cotyledon stage to first trifoliate. Under no-till conditions, grasshoppers may occur very early in the season and be distributed across the field. For conventional tilled fields, grasshoppers usually are not a problem until mid-summer but will be present all season. Grasshoppers tend to be more of a problem during dry weather.

•Grasshopper populations are very hard to estimate. When counting grasshoppers in a field do not walk in a straight line.

•Change the direction of your walk as you count so that the grasshoppers do not continually jump in front of you causing an overestimation of the population.

•Watch for large numbers of hoppers as you move through the field and watch for defoliation. The number of sites you need to examine in a field is based on the size of the field.

•Field borders should also be checked since grasshoppers tend to move into soybeans fields from the edges and spread across the field.

•Naturally occurring fungal diseases can drastically reduce grasshopper numbers. Dead and or dying grasshoppers may be found clinging to foliage.

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Assessing Potential Corn Yield Losses from the Drought

Even with the rains near the end of last week, corn in some fields has been severely damaged by a lack of water. Some farmers are calling insurance adjusters trying to decide if they can cut the corn for silage to get something from their crop. In most cases, the farmer would have to leave a strip or strips of corn in the field for yield estimates later. The concern with this is that the corn could end up doing better than expected. A farmer's worst-case scenario is cutting the corn for silage, leaving those strips of standing corn, and having rains that turn the crop around and yield 71% of the 5-year average, and the field was insured at 70% of the 5-year average.

If possible, let the corn get through pollination. Corn ears with less than 400 kernels per ear likely have yield loss. Corn with 300 kernels or less will likely have yield losses that trigger crop insurance. Table 1 below lists the yield components that make yield, including ears per acre, kernels per ear and kernel size (listed as kernels/bushel). Ears per acre and kernels per ear determines the number of kernels per acre. Kernels per acre divided

Table 1. *Corn yield estimates for two plant populations, 200 to 600 kernels per ear and three kernel sizes.*

A. Yield Estimates for Average Kernel Size (80,000 kernels per bushel)						
ears/acre	**x**	**kernels/ear**	**÷**	**kernels/bushel**	**=**	**Bu/A**
25,000	x	200	÷	80,000	=	63
25,000	x	300	÷	80,000	=	94
25,000	x	400	÷	80,000	=	125
25,000	x	500	÷	80,000	=	156
25,000	x	600	÷	80,000	=	188
30,000	x	200	÷	80,000	=	75
30,000	x	300	÷	80,000	=	113
30,000	x	400	÷	80,000	=	150
30,000	x	500	÷	80,000	=	188
30,000	x	600	÷	80,000	=	225
B. Yield Estimates for Small Kernel Size (90,000 kernels per bushel)						
ears/acre	**x**	**kernels/ear**	**÷**	**kernels/bushel**	**=**	**Bu/A**
25,000	x	200	÷	90,000	=	56
25,000	x	300	÷	90,000	=	83
25,000	x	400	÷	90,000	=	111
25,000	x	500	÷	90,000	=	139
25,000	x	600	÷	90,000	=	167
30,000	x	200	÷	90,000	=	67
30,000	x	300	÷	90,000	=	100
30,000	x	400	÷	90,000	=	133
30,000	x	500	÷	90,000	=	167
30,000	x	600	÷	90,000	=	200
C. Yield Estimates for Very Small Kernel Size (100,000 kernels per bushel)						
ears/acre	**x**	**kernels/ear**	**÷**	**kernels/bushel**	**=**	**Bu/A**
25,000	x	200	÷	100,000	=	50
25,000	x	300	÷	100,000	=	75
25,000	x	400	÷	100,000	=	100
25,000	x	500	÷	100,000	=	125
25,000	x	600	÷	100,000	=	150
30,000	x	200	÷	100,000	=	60
30,000	x	300	÷	100,000	=	90
30,000	x	400	÷	100,000	=	120
30,000	x	500	÷	100,000	=	150
30,000	x	600	÷	100,000	=	180

Table 1 includes three kernel sizes, 80, 90, and 100 thousand kernels per bushel. Good weather during seed fill will usually get most cornfields close to 80 thousand kernels per bushel. Very stressful conditions will result in smaller kernel sizes and get cornfields closer to 100,000 kernels per bushel.

A corn crop cannot makeup yield for very low kernel numbers. For example, if a corn field only has 200 kernels per ear, but has a good seed filling weather, it may have larger kernels. However, yields may only get to 75 bushels per acre. Conversely, if a corn field has 400 kernels per ear, but poor seed fill conditions, the field might yield 120 bushels per acre.

Estimating yield is not an exact science. The farmer probably needs to grab 20 or more ears in a field to estimate kernel numbers per ear. The estimate is only as good as sampling area. If the farmer choses the worst spot of the field or the best spot of the field, that will skew the estimate yield one way or the other.

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Corn and Soybean Field Day and Farm Tour set for July 26

The summer field days have been cancelled at Princeton however, this gives the UK Grain Crops Group an opportunity to showcase some of our research being conducted on other farms in Kentucky. The tour will start at Fresh Start Farms in Larue County where Ryan Bivens will host us at the main driveway to the farm. Then, we will move to a field of Richard Preston Farms in Hardin County. Our final slate of speakers will be at the Hardin County Extension Office where we will also enjoy lunch. The farm tour gives each of you a chance to see some crops on other farms in Kentucky. Most of the research being discussed at the field day tour was funded in part by the Kentucky Soybean Board and the Kentucky Corn Growers Association.

Ky Soybean Promotion Board Chairman, Larry Thomas said, "We know as famers that we have to continuously adapt in order for our operations to survive and grow. Weather, crop conditions, technology – farmers are the best I know at overcoming obstacles and adapting to change. I'm glad, but not surprised, to see the University adapting and overcoming its challenges to provide research findings to the farmers even after the December tornado. Hosting on-farm research tours and then getting everyone together for a presentation on next steps moving forward with the rebuilding of the Grain and Forage Center of Excellence is a smart move, and I look forward to seeing everyone back in Princeton next year.."

We hope you can join us on July 26th.

Cooperative Extension Service
Agriculture and Natural Resources
Family and Consumer Sciences
4-H Youth Development
Community and Economic Development

UK Corn and Soybean Field Day & Farm Tour

July 26, 2022

8:00 a.m. – 1:00 p.m. EST

Join Extension specialists and researchers for talks and discussions on topics related to corn and soybean production. The field day tour will begin at the Biven's Fresh Start Farm, followed by a visit to Preston Farms and will conclude at the Hardin County Cooperative Extension office.

Sessions and Stops

Location	Topic and Presenter
Fresh Start Farms	Foliar fertilizers effect on soybeans across several states – Chad Lee
	Soybean Disease Update – Carl Bradley
	Status of Insect pests in Corn & Soybeans in 2022 – Raul Villanueva
	Effect of Current Weather on the Soybean Crop – Conner Raymond
Preston Farms	2022 Weed Control Update – Travis Legleiter
	From the ground up: Soil nutrient and water dynamics in systems with continuous living cover – Hanna Poffenbarger
	Making the Most from VRN – Josh McGrath
Hardin County Cooperative Extension Office	Preserving Grain Value after Harvest – Sam McNeill
	Current status of carbon programs for row crop producers – Jordan Shockley
	Corn Disease Perspectives for 2022: Focus on Tar Spot – Kiersten Wise

Approved Educational Credits

CCA: 1 NM, 1CM, 0.5 IPM

PESTICIDE CEU: 1 General and 1 Specific CEUs for Categories 1A and 10

Scan the QR code for farm locations and to pre-register for lunch by July 18.

For additional information, visit https://www.kygrains.info/events

Thank you to our sponsors Kentucky Corn Growers Association & Kentucky Soybean Promotion Board!

A Rare Snail Outbreak During Drought Affecting Soybeans

In a farm in Lyon County, a study was being conducted to evaluate the management of slugs in soybeans. By mid-May a couple of slugs were found, and a laboratory colony was started.

However, the slugs in the field vanished due to drastic environmental conditions (absence of rains and temperatures above 85^0 F). Later on, the farmer complained about soybean plant damage in some areas of his farm. Plants with at least two to three true leaves were completely destroyed, leaving blank spots in the field (Figure 1). At first, it was hard to believe that mollusks could be the cause of this damage, especially when the area has been experiencing a drought period and warmer temperatures; however, they were. In this case, the perpetrators causing this damage were snails.

Figure 1. Soybean plants completely consumed by snail in a field with abundant corn stalks, husks, and cobs from plants cultivated in 2021 (Photo: Raul T. Villanueva).

In this case, it seems that the abundant organic matter left from the previous crop provided a refuge for the snails. I visited other locations with this type of abundant organic matter, but snails were not present. At the Lyon County farm, the presence of a slope, a creek at the bottom of the field, and accumulation of moisture in the lower part of the field may have provided proper conditions for the outbreak of snails. In this location, there were sampled areas where there were between 10 and 80 snails per 2 square feet (Figure 2) were found.

Figure 2. Between 10 and 80 snails per 2 square feet were found under stalks, husk, and cobs of corn planted the previous season. (Photo: Raul T. Villanueva, UK).

Pest Description & Damage

Snails differ from slugs by the presence of the spiral shell that is carried on its back. The shell is a hard structure composed of calcium carbonate, which protects their soft body and internal organs. Slugs and snails do not have legs. However, snails have a "foot" that allows them to move and slide along easily with the help of the mucus it secretes. Snails can live up 2 to 3 years. As this is a work in progress, UK entomologists have not identified the snail species yet and are conducting studies to understand this type of presence in soybean fields planted after corn.

Management

There is no curative control for slugs or snail damage. Populations may be reduced with vertical disking to decrease the amount of organic matter left by corn. Replanting soybean is one of the solutions conducted by some farmers. There are molluscicides used to control slugs as a preventative tool. These are metaldehyde or iron phosphate-based products. Due to the high numbers, UK Entomology is testing different types of molluscicide formulations and baits to manage this pest, as well running some bioassays to conduct further evaluations.

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2022 Upcoming Events

Date	Event
July 26	Corn & Soybean Field Day and Farm Tour

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LEXINGTON, KY 40546