



Corn & Soybean News

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



Are More Nodes the Key to Higher Soybean Yields?

A common belief among soybean producers is that more nodes are the key to higher yields. Since flowers and pods are produced at nodes, it's obvious that more nodes will result in more pods and higher yield, or so the story goes. This story, however, is not entirely true. Why doesn't this simple relationship, that seems so obvious, always work?

This story is appealing because we know that the number of nodes produced by a soybean plant is quite variable. Some of the variation results from the capacity of the soybean plant to add nodes by branching in favorable environments. Early planting will increase the number of nodes while late planting will decrease them. Late maturing varieties produce more nodes than early maturing varieties. Node number in these two examples is related to the length of the vegetative growth period (seedling emergence to growth stage R5); the longer the period, the more nodes are produced. Taller plants usually have more nodes and increasing population will increase nodes per acre. It's clear that management practices can affect the nodes on a soybean plant or the nodes per acre, making it tempting to postulate a consistent relationship between nodes and yield. Unfortunately, this variation in nodes does not necessarily translate into yield.

It's not the number of nodes, it's the growth capacity of a soybean field that ultimately determines the number of pods, seeds and finally the yield. So the key to understanding the node - flower - pod - yield relationship lies in the growth of the soybean field. Green plants use energy from the sun to fix carbon dioxide into simple sugars via photosynthesis and these simple sugars are the building blocks for all plant and seed tissues. Adequate supplies of solar radiation, nutrients and water from the



soil, the absence of disease and insect damage and optimum temperatures coupled with enough leaf area to intercept most of the solar radiation ensures rapid photosynthesis and growth, resulting in maximum yield. Any restrictions of these inputs and conditions during reproductive growth will reduce yield. Simply adding more nodes without an increase in photosynthesis will probably not increase yield.

We know that the number of pods (and seeds) produced by a soybean field is determined by the supply of simple sugars from the leaves during flowering and pod set (growth stage R1 to R5). Whether or not a flower or small pod will survive or abort is determined by the supply of these simple sugars from flower opening until the pod reaches its maximum length. This mechanism allows the pod load to adjust to environmental conditions so it matches the productivity of the environment resulting in maximum yield for that environment. A highly productive environment (plenty of sunshine, nutrients and water) results in rapid growth (a large supply of sugars) and many pods, while a poor environment (one with drought stress, for example) produces fewer pods because the supply of sugars is limited.

Adjusting the pod load to environmental conditions creates a balance between the pod load and the ability of the plant to fill the pods and seeds which usually results in normal sized seeds at maturity. I say usually because seed filling (growth stage R5 to R7), occurs after the pod load is established, and environmental conditions can change after growth stage R5 affecting seed filling. Improving weather conditions after growth stage R5 could result in larger than normal seed, while deteriorating conditions (lack of rain for example) could result in smaller than normal seeds. The soybean plant cannot predict future weather when it's setting the pod load any better than the National Weather Service, so sometimes it doesn't get the balance right.

Relating the pod load to the number of nodes instead of the growth rate uncouples the pod load from the productivity of the environment. An uncoupled plant could set too many pods without enough sugars to fill them, resulting in smaller seed. On the other hand, the uncoupled plant could set too few pods, increasing seed size and possibly reducing yield. The soybean plant works the best when the pod load matches the capacity of the plant to fill the pods.

There are always exceptions to every rule and the exception here occurs when soybean plants are very short when, for example, very early maturing varieties are used, drought stress occurs during early vegetative growth, when the crop is planted late in a double-crop system or the population is too low. In these situations the number of nodes can limit pod set and yield. Higher populations are often recommended for early maturing varieties or double-cropping systems to increase the number of nodes and pods per acre resulting in higher yield. But remember, the exception does not disprove the rule. Managing your soybean crop to simply maximize node numbers is not necessarily the path to high yields.



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Kentucky Crop Health Conference

Feb. 9, 2023 - National Corvette Museum - Bowling Green, Ky.

Speakers include University of Kentucky Extension Specialists and invited nationally prominent Extension Specialists from across the United States



Travis Faske
University of Arkansas
Topic: Frontline Tactics to Manage Southern Rust of Corn



Kelly Hamby
University of Maryland
Topic: Managing insect pests of grain using neonicotinoid seed treatments



Larry Steckel
University of Tennessee
Topic: Managing glyphosate-resistant and hard to kill grasses in Tennessee

Kiersten A. Wise
University of Kentucky
Topic: Tar spot in Kentucky: Is it time to panic?



Carl Bradley
University of Kentucky
Topic: What we have learned from nearly 2 decades of research on foliar fungicides of soybean

Travis Legleiter
University of Kentucky
Topic: Management of Italian ryegrass in a Kentucky grain crop rotation



Raul Villanueva
University of Kentucky
Topic: Mollusks: Frequency, biological control, and management in soybeans



Scan QR Code to register or visit:

Ticket sales end Feb. 1, 2023

Limited to 100 participants — Lunch included —

Credits — CCA: 5 (IPM); KY Pesticide Applicator credits: 2 General and 4 Specific CEUs for Categories 1A and 10; 1 Specific CEU for Category 4

Is Fungicide Resistance an Issue? Let Us know!

The University of Kentucky is inviting you to take part in a survey of current understanding of fungicide resistance issues. Fungicide resistance is a growing concern in agriculture and also in human fungal pathogens. Improving our understanding of knowledge gaps in understanding of fungicide resistance will help us provide better extension resources to clientele. Although you may not get personal benefit from taking this survey, your responses may help us understand more about how the University of Kentucky can best serve agricultural clientele now and in the future. This survey should take about 10 minutes to complete.

If you are interested in participating, complete the survey:

https://uky.az1.qualtrics.com/jfe/form/SV_00MNKePBFL6rDG6

If you do not want to participate, you do not need to take the survey. If you do not feel comfortable answering certain questions, you may skip them and/or discontinue the survey at any time. You will not be penalized in any way for skipping questions or discontinuing the survey. Participation in the survey is voluntary and your decision on whether or not to participate will not affect your affiliation with the University of Kentucky. Please fill out the survey only if you are 18 years of age or older. Your response to the survey is anonymous which means no names, IP addresses, email addresses, or any other identifiable information will be collected with the survey responses. We will not know which responses are yours if you choose to participate. We will make every effort to safeguard your data, but as with anything online, we cannot guarantee the security of data obtained via the Internet. Third-party applications used in this study may have Terms of Service and Privacy policies outside of the control of the University of Kentucky.

Please fill out the survey to the best of your knowledge. If you have questions about the survey, please feel free to contact Kiersten Wise at Kiersten.wise@uky.edu.



Dr. Kiersten Wise
Extension Plant Pathologist
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REMINDER...

Changes in Pesticide Applicator Programs

2023 Changes in the Kentucky Commercial Applicator & Kentucky Private Applicator Program have come into effect January 1, 2023. Please see highlights below. For more detailed information see our December issue at <https://www.kygrains.info/corn-and-soybean-news>

Commercial Applicator Program changes include:

- New Category Structure and Recertification
- General CEUs Eliminated
- Annual CEU Requirement
- License Renewal Grace Period Shortened - *grace period has been shorted to 31 days past the expiration of the license.*
- Penalty for not Earning CEUs - *subject to a \$200 recertification fee.*

Private Applicators changes

- Age and Identity
- Non-certified Applicator (NCA) Under Direct Supervision of a Certified Applicator
- Fumigation and Aerial Application Training
- Terms of Certification
- New Core Competency Standards



Ric Bessin
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Welcome Dr. Grant Gardner



We would like to welcome Dr. Grant Gardner, new Extension Specialist in Agriculture Economics at the University of Kentucky.

Dr. Gardner was born and raised on a corn and soybean operation in southwestern Indiana. He received his B.S. in Agribusiness from Purdue University, his M.S. and Ph.D. in Agricultural Economics from the University of Nebraska-Lincoln and Kansas State University respectively.

Grant has experience working on both traditional grains and produce operations. He has a passion for aiding farm producers and the agricultural industry, which he attributes to his upbringing in a rural farm community.

His mission through the University of Kentucky is to provide economic opportunities for Kentucky producers by conducting research related to commodity marketing, risk management, and farm management. He is building an extension program focused on commodity markets, crop

insurance, and other applicable subject matter. Follow on twitter: https://twitter.com/KY_GrainMarkets

Dr. Gardner's Contact Information:

859-257-7280 (Office)

812-890-3455 (Cell)

Grant.Gardner@uky.edu

2023 IPM Training School

This year the Integrated Pest Management School meeting will take place at the McCracken County Extension Office, Paducah on March 8th. Virtual attendees can access the meeting through Zoom, both audiences require [registration](#) via Zoom. Onsite registration will be also available for live attendees. Eight UK extension specialists in diverse areas of field crops will speak in the morning session. The topics include updates on pesticide certification and training, herbicide and fungicide resistances, corn and soybean diseases management, stink bugs and caterpillars in soybean, and soil analysis and recommendations. In the afternoon, six horticulture specialists will talk about advanced concepts in fungicides, diseases in forest trees, root-knot nematode management in the field and protected crop productions, soil water monitoring, invasive insects, and wildlife management in Kentucky. This event offers CEUs to pesticide applicators and certified consultant advisers for each session.



IPM Training School

March 8, 2023

McCracken County Extension Office
2025 New Holt Road Paducah, KY 42001



Program

8:00 AM	Registration
8:15 AM	Welcome

Field Crop

8:25 AM	Changes to Pesticide Certification and Training	Dr. Ric Bessin
8:50 AM	Herbicide Resistance in KY Weeds	Dr. Travis Legleiter
9:15 AM	Old Foes and New Challenges: Managing Corn Diseases	Dr. Kiersten Wise
9:40 AM	Fungicide Resistance and Management of Foliar Pathogens of Soybean	Dr. Carl Bradley
10:05 AM	COFFEE BREAK	
10:20 AM	Updates on the Control of Stink Bugs Attacking Soybeans in Western Kentucky	Dr. Armando Falcon-Brindis
10:45 AM	Description of Caterpillars in Soybean and Efficacy of Insecticides for their Management	Dr. Raul Villanueva
11:10 AM	Soil Sampling, Testing and How Recommendations Are Made	Dr. Edwin Ritchey
11:35 AM	After the Recommendation: What to/not to Do?	Dr. John Grove

12:00 PM LUNCH BREAK

Horticulture

1:00 PM	Advanced Concepts in Fungicides	Dr. Paul Vincelli
1:25 PM	Forest Health Update	Dr. Ellen V. Crocker
1:50 PM	Management Options for Root-Knot Nematode	Dr. Rachel Rudolph
2:15 PM	COFFEE BREAK	
2:30 PM	Soil Water Monitoring Options for Horticulture Crops	Mr. Daniel Becker
2:55 PM	Wolves on the Border: New Invasive Species and Kentucky	Dr. Jonathan Larson
3:20 PM	Current Wildlife Management Issues in Kentucky	Dr. Matt Springer

To register to attend the in-person or online meeting click [Here](#)



CEUs **Pesticide Applicator:** 4 specific categories 1A and 10; 2 specific for category 2 and 1 specific for category 3. (2 sessions)
Certified Crop Adviser: Integrated Pest Management: 5.5; Soil and Water Management: 0.5; Nutrient Management: 1. (2 sessions)

Contacts

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Ric Bessin r. bessin@uky.edu, Phone: (859) 323-1120

UK Plant Disease Diagnostic Lab – Sample Submission in 2023

The UK Plant Disease Diagnostic Lab (PDDL) staff have had a busy year of samples in 2022 and look forward to providing diagnostic resources to Extension personnel and stakeholders in 2023. At present, our anticipated procedures for sample submission in 2023 are as follows:

- All samples requiring **physical examination** for disease diagnosis should be submitted to the local County Extension Office where they can then be sent to the PDDL in Lexington as needed. Although walk-in clients are not turned away at the PDDL, diagnosis is often possible at the county office. The local Extension agent can make the determination on whether samples need to be referred to the PDDL and may decide to make a site visit or otherwise advise stakeholders on sample collection. Extension agents and office staff who have questions about the correct forms and mailing address/delivery location may contact PDDL personnel directly for additional assistance.
- Facilities and personnel at the UK Research and Education Center (UKREC) in Princeton are not set up to accept samples for the foreseeable future. Walk-in and mailed samples to the UKREC will not be processed.
- Commercial samples are prioritized during the busy summer season. We appreciate extra patience regarding the diagnosis of residential samples and will process those as quickly as possible.
- Plant samples often have insect or abiotic disorders (soil fertility issues, herbicide drift, etc.). Agents may wish to contact Extension specialists in Entomology, Horticulture, Plant and Soil Sciences, and Forestry as an appropriate first step when non-disease issues are suspected. These specialists can also help determine if a physical sample needs to be submitted to the PDDL.
- For consultation on commercial samples with suspected disease, Extension agents should consider contacting the appropriate Extension Plant Pathology Specialist for help determining whether a physical sample should be submitted to the PDDL. Specialists' commodity responsibilities are listed below:
 - ◇ Corn, sorghum, forages: Kiersten Wise, (859) 562-1338, kiersten.wise@uky.edu
 - ◇ Soybean, small grain crops (i.e. barley, rye, wheat), canola: Carl Bradley, (859) 562-1306, carl.bradley@uky.edu
 - ◇ Tobacco: Currently no specialist with pathology responsibilities for tobacco
 - ◇ Fruit, vegetables, hemp: Nicole Gauthier, (859) 218-0720, ngauthier@uky.edu
 - ◇ Ornamentals and turfgrass: Paul Vincelli (limited basis), (859) 218-0722, pvincell@uky.edu

Julie Beale, Plant Disease Diagnostician

Sara Long, Plant Disease Diagnostic Assistant



College of Agriculture,
Food and Environment

In-Depth Pesticide Mode of Action



Feb 23, 2023

9:00 am to 12:30
(sign in at 8:30)

Caldwell County Cooperative
Extension Office
1025 US 62, Princeton, KY
42445

Topics:

- How does herbicide resistance occur
- How do herbicide kill weeds
- Understanding how fungicides work to make them work for you
- Importance of insecticides mode of action and biorational approach for their use in IMP



Pre-registration is required at:

<https://KATSmodeofaction23.eventbrite.com>

Registration cost: \$60

Lunch will be provided



CCA: 4 CEUs

PAT: 4 CEUs Categories 1A, 10

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



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LEXINGTON, KY 40546

UPCOMING EVENTS

Jan 19, 2023	KY Commodity Conference - Bowling Green
Feb 9, 2023	Kentucky Crop Health Conference - Bowling Green (IPM—Grain Crops)
Feb 23, 2023	KATS In-depth Mode of Action
March 8, 2023	IPM Training School
March 9, 2023	KATS Soil Fertility and Assessment
March 9-11, 2023	National Commodity Classic - Orlando FL
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

