Kentucky Fruit Facts

March-April Newsletter

https://www.uky.edu/hort/documents-list-fruit-facts

Daniel Becker, Editor

Delia Scott, Newsletter Designer

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Fruit Crop News

Daniel Becker, U.K. Extension Associate

I am pleased to announce that the UK Department of Horticulture has a new website. It has been redesigned and will be updated regularly. Included in the redesign are the resource pages for commercial and home growers with links to useful publication and instructional videos. You can still get to the old department website, but it is no longer being updated. For example, links to the 2022-23 Midwest Fruit Pest Management Guide and the 2023 Fruit and Vegetable Research Report have not been added. Links to existing Plant Pathology and Entomology publications may not work also.

The weather has been getting nicer recently, overcast days are becoming sunnier, and the daytime temperatures warmer. I have even caught myself walking around outside more than a few times without a coat. Pulling back straw around some raised bed strawberries I noticed erect leaves poking through (see masthead photo). This is a sure sign that the plants are beginning active growth. Matted row strawberries should have straw raked off beds when soil temperature in the upper two inches is above 40°F. Usually, raking is done about mid-March in Kentucky, but my guess is that this year it will happen a bit earlier. Leaving straw over the beds past the point when newly emerged light green leaves are present limits further growth and increases the risk of fruit and crown rots. Plasticulture strawberries should have row covers pulled when one to two new leaves have emerged from the crown and average weekly temperature begins to exceed 50°F. With the warm end to February, I expect covers to have mostly come off plantings across the state or will be taken off very soon. But be sure to keep those covers and any weights or stakes in the field ready for frost or freeze protection.

Other signs of oncoming growth include bud scales beginning to separate on blueberry bushes and peach trees. Buds on blackberries are becoming more apparent and with them leaves that have stuck around on canes through winter are beginning to fall (Figure 1). Some blackberry cultivars lose their leaves early on in winter while others retain some of their leaves and petioles until growth begins the following year. Since growth is still in the silver tip stage there is enough time to make a delayed dormant fungicide spray for control of anthracnose and cane blight.

Figure 1. *Blackberry buds at silver tip with attached petioles. (Photo by Daniel Becker, UK)*

Starting at bloom, plasticulture strawberry growers should think about collecting tissue samples

to see if their fertility program is meeting crop needs. Nitrogen is the main concern as it is required in the highest amount compared to other nutrients and has the biggest impact on fruit yield and quality. Petiole nitrate nitrogen is frequently used to assess plant nitrogen status as it is considered a better indicator than leaf tissue nitrogen. Target concentrations are low at first bloom, peak two to four weeks afterward, and then gradually decline through harvest.

To collect a tissue sample, select one leaf and petiole (stalk) per plant from 20 to 25 locations within a field. Select the most recently mature leaves, ones that have just attained full size and have a dark green coloration. A most recently mature leaf is often the third to fifth one behind the newest leaf emerging from the crown. Immediately separate the petiole from the leaf once collected to prevent nutrient transfer between the two parts and to allow for separate analysis. Place petioles and leaves in a sample bag and send to a laboratory for analysis along with a filled-out submission form. A list of laboratories that analyze tissue samples can be found in HortFact-3001. To interpret the results accurately, compare them to the target sufficiency range based on the weeks after first bloom when the sample was collected. Sufficiency ranges for petiole nitrate nitrogen and other leaf nutrients can be found here.

Adjust the fertility program depending on the results. Early corrective measures based on samples collected at the start of bloom have greater potential to positively impact yield compared to later samples collected during fruit development. Optimizing fertility during bloom can increase fruit set, weight, and quality at harvest. Adjustments made during fruit set and afterward may increase berry weight, sugars, and fruit firmness but not as dramatically. Spring fertility management does not have much affect on the number of flower buds per plant as most are initiated beginning in late summer though fall (September to December). Nitrogen should be maintained within the established sufficiency range but not in excess as this may negatively impact yield and quality through fertilizer burn and reduction in fruit firmness.

There are a few important meetings coming up in March that I wish to point out. The first is the KSHS Fruit Grower Orchard Meeting on Thursday the 7th at Stepping Stone Farm – Reed Valley Orchard. The full program can be found in the meetings section. On the 18th an Integrated Pest Management Training School will be held at the Warren County Extension Office in Bowling Green, KY. The horticulture session will start in the afternoon at 1:00 pm CT. Pesticide applicators who attend in-person or online will receive three category 1A CEU credits. Then, on the 26th UK Extension Specialists are hosting a webinar covering beginning farmer irrigation basics followed by two in-person workshops scheduled in April. Further details can be found in the meetings section and in the flier at the end of this newsletter.

The Department of Labor has updated the reimbursement rates that employers must pay H-2A and H-2B workers for travel and subsistence costs, including for meals and lodging. Further information can be found on the Department of Labor website.

Upcoming Meetings

*Times are listed in Central Time (**CT**) or Eastern Time (**ET**) depending on location.*

Mar. 7 (Thursday). Fruit Grower Orchard Meeting at Stepping Stone Farm – Reed Valley Orchard. The meeting will be held at Stepping Stone Farm Market. 1674 Cynthiana Rd., Paris, Ky 40361. Website: https://www.steppingstonefarmky.com/.

Program: (*All times ET)*

10:00 a.m. Registration

10:15 a.m. Tour of Stepping Stone Farm – *Brandon Barnett and Dana Reed*

11:30 a.m. Rust Diseases of Apple and Pear – *Nicole Gauthier*

12:00 p.m. **Lunch will be available at cost for those that pre-register.**

Please pre-register to ensure that we have enough!

Preregister for lunch by emailing or calling Delia Scott, delia.scott@uky.edu, 859-257-8605 **by Tuesday, March 5**

12:30 p.m. When Secondary Pests are Your Primary Concern – *Ric Bessin*

1:00 p.m. Topics in Tree Fruit Production in 2024 – *Brent Arnoldussen*

1:30 p.m. Drone Demonstration for Pesticide Application – *Taylor Marret*

2:00 p.m. Grower Round Table Discussion – *Kevan Evans*

Mar. 18. IPM Training School. Horticulture sessions from 1:00-3:20 PM **CT**. Warren County Extension Office, 5162 Russellville Rd., Bowling Green, KY 42101. A program is available at 2024 IPM Training School | Kentucky Pest News (wordpress.com) with a link to register to attend in-person or online.

Mar. 26. Beginning Farmer Irrigation Basics Webinar. 12:00-1:30 PM **ET**/11:00-12:30 PM **CT**. This series will focus on irrigation basics for high tunnel, field, and orchard production. Pre-registration for the webinar is required and attendance is necessary to participate in one of the in-person workshops on April 23 and April 30. Register using this link.

Mar. 26. Tech Tuesday – Improving Your Integrated Pest Management Program. 12:00 PM **ET**/ 11:00 **CT**. This webinar is part of an informational series that will showcase a variety of technologies, companies, and industry-related research projects geared towards both active and prospective greenhouse growers. Link to register. For questions, contact Dani Zwishenberger, dani.z@kyhortcouncil.org.

Apr. 30 (Tuesday). KSHS Fruit Grower Orchard Meeting. Eckert's Country Store and Orchard. 1390 Pickard Pike, Versailles, KY 40383. Megan Fields hosting. https://eckerts.com/location/versailles-orchard/

Program: (*All times ET)*

10:00 a.m. Registration

10:15 a.m. Tour of Eckert's Orchard – *John Strang, Megan Fields, Brent Arnoldussen*

11:30 a.m. Rust Diseases of Apple and Pear – *Nicole Gauthier*

12:00 p.m. **Lunch will be available at cost <u>for those that pre-register</u>.**

Please pre-register to ensure that we have enough!

Preregister for lunch by emailing or calling Delia Scott, delia.scott@uky.edu, 859-257-8605 **<u>by Friday, April 26</u>**

12:30 p.m. Wildlife Control – *Matt Springer*

1:00 p.m. BMP's for Insect Management: Putting it All Together – *Ric Bessin*

1:30 p.m. Considerations for Tree Fruit – *Brent Arnoldussen*

2:00 p.m. Grower Round Table Discussion – *Kevan Evans*

Newly Released Fruit Videos

Cheryl Kaiser, Plant Pathology Extension Support, and Nicole Gauthier, Plant Pathology Extension Specialist

Dr. Nicole Gauthier, Plant Pathology Extension Specialist, has released three new videos related to fruit and vegetable diseases (Figure 1). Each title, along with a summary of Dr. Gauthier's presentation, video run time, and Web link, are listed below.

Figure 1. *Screen shot of the Strawberry Leaf Diseases video presented by Dr. Nicole Gauthier. (Photo by Cheryl Kaiser, UK)*

Strawberry Leaf Diseases – Identification and management of common foliar diseases of strawberry

(leaf spot, leaf scorch, and leaf blight) are discussed. Link to video.

Cane Blight of Brambles – Common cane blight diseases of brambles (anthracnose, cane blight, and spur blight) are discussed collectively. The video emphasizes disease management by following a rigid pruning schedule and sanitation. Link to video.

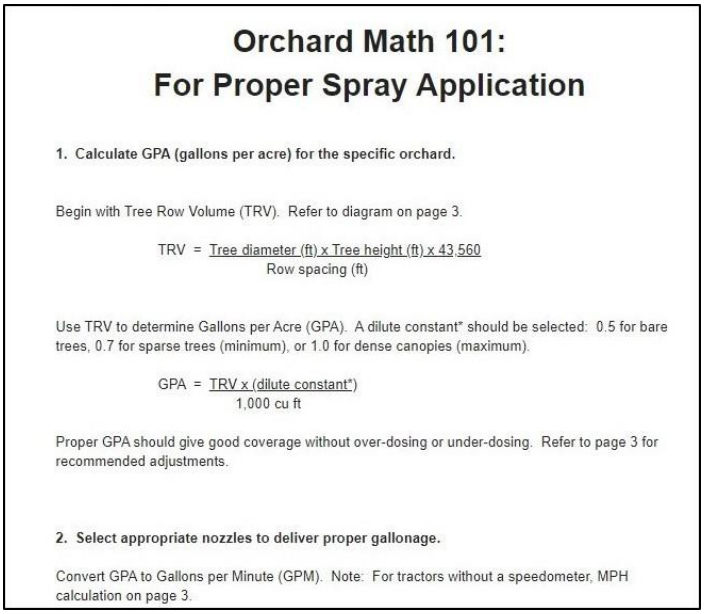
For other publications on fruit and vegetable diseases, visit the UK Plant Pathology Extension Publications webpage. Additional videos by Dr. Gauthier may be found here.

Orchard Math 101: An Explanation of Proper Spray Calculations

Nicole Gauthier, Plant Pathology Extension Specialist, and Kim Leonberger, Plant Pathology Extension Associate

Calculations for the application of fungicides and insecticides to commercial orchards are often complicated and can be downright confusing. While these mathematical exercises may leave many scratching their heads, they are critical to the success of a spray program. Over-application of products may result in increased costs, phytotoxic effects, and/or negative environmental impacts, while under-application opens the door for disease, insect, and weed problems.

Dr. Nicole Gauthier, UK Plant Pathology Specialist and Dr. Ric Bessin, UK Entomology Extension Specialist, have developed the "Orchard Math 101: For Proper Spray Application" worksheet (Figure 1). This document assists growers with calculations for gallons-per-acre calculations, nozzle selection, and other components for spray coverage. The "Orchard Math 101" document is available online. For additional assistance or information about pesticides, contact your local county Extension office.



Orchard Math 101:
For Proper Spray Application

1. Calculate GPA (gallons per acre) for the specific orchard.

Begin with Tree Row Volume (TRV). Refer to diagram on page 3.

$$TRV = \frac{\text{Tree diameter (ft) x Tree height (ft) x 43,560}}{\text{Row spacing (ft)}}$$

Use TRV to determine Gallons per Acre (GPA). A dilute constant* should be selected: 0.5 for bare trees, 0.7 for sparse trees (minimum), or 1.0 for dense canopies (maximum).

$$GPA = \frac{\text{TRV x (dilute constant*)}}{\text{1,000 cu ft}}$$

Proper GPA should give good coverage without over-dosing or under-dosing. Refer to page 3 for recommended adjustments.

2. Select appropriate nozzles to deliver proper gallonage.

Convert GPA to Gallons per Minute (GPM). Note: For tractors without a speedometer, MPH calculation on page 3.

Figure 1. *A portion of the Orchard Math 101 worksheet (Nicole Gauthier, UK).*

New Payment Deadline for Pesticide Licensing!

Ric Bessin, Entomology Extension Specialist

While we have just completed the first year under the new recertification rules for pesticide licenses, there is one new deadline for relicensing that comes up at the end of this month. The new regulations have shortened the grace period to pay your annual license fee. Although the deadline to pay license fees is the end of the year, there is a grace period to pay the fee before the license is suspended. In the past, the grace period was three months into the new year. But with the new training and certification rules, annual licensing fees must be paid by the end of January. Applicators not paying their fees by the end of this month will have their license suspended until the fees are paid. Applicators cannot apply pesticides with a suspended license. To pay your license fee on the KDA website, register as a user, and pay your fee online.

Unpaid certifications will be cancelled on November 30 and the applicator must retest. Persons retesting due to a cancelled license will be subject to a $200 fine to relicense, an exam fee, and possibly an online testing fee if they chose to take the test online.

Cultural Calendars for Fruit Production

Integrated pest management (IPM) includes the combination of biological, cultural, physical, and chemical tools in efforts to manage diseases and pests while minimizing risks associated with pesticides. Cultural practices are an integral part of an IPM program and should be incorporated into all commercial systems whether large or small, conventional or organic. The publications below provide recommended practices at approximate growth stages and/or production periods. Please note that the timelines are approximate and may require adjustment for particular conditions. These cultural guides serve as supplements to published spray guides and scouting guides.

Cultural Calendar for Commercial Apple Production: PPFS-FR-T-25

Cultural Calendar for Commercial Peach Production: PPFS-FR-T-26

Cultural Calendar for Commercial Blueberry Production: PPFS-FR-S-29

Cultural Calendar for Commercial Bramble Production: PPFS-FR-S-28

Cultural Calendar for Commercial Strawberry Production: PPFS-FR-S-30

Biostimulants Did Not Affect Crop Yield and Postharvest Strawberry Fruit Quality

Jayesh Samtani, Patricia Richardson, Baker Aljawasim, Guillaume Pilot, School of Plant and Environmental Sciences, Virginia Tech, in Small Fruit News, 10-23-2023

In the past few years, there's been an increased interest in the use of biostimulants for improved crop production. Biostimulants are materials that can promote plant growth when applied in amounts so small that they do not provide much nutrition. These are composed of different organisms, compounds or plant extracts; they include beneficial fungi and bacteria, humic and fulvic acid, seaweed extracts, and protein hydrolysates.

During the 2022-23 growing season we evaluated three different biostimulant products in annual hill strawberry plasticulture production. 'Ruby June' plants were transplanted on 24 Oct. 2022 on non-fumigated beds and were maintained as per grower standard practices. Treatments were as follows (i) no biostimulant (ii) preplant AminoSalmon (220 lb/A) applied during bed making (3) plugs dipped for 20 seconds in TerraGrow Liquid (TGL, 3ml/10 gal) prior to transplanting followed by a foliar spray and a drip application (20 fl. oz/A) at one (10/25/2022), fourteen (11/7) and thirty (11/21) days after transplanting, resuming monthly during spring (4/13/2023 and 5/11); and (iv) EZ-GRO 16-0-0 (3.5lb/A) drip application 14 days after transplanting (11/7) and every 14 days during fall (11/21 and 12/9), resuming during spring (4/13, 4/27, 5/11 and 5/25). All non-treatment irrigation valves were closed during treatment injection through the drip lines. After treatments were injected, the lines were flushed then these valves were closed, and the others opened to irrigate for the length of time used to inject treatments.

Preventative fungicide was applied as a foliar spray three times in the fall, beginning with Captan then rotating with Elevate and Thiram at the recommended rates. During the spring, Captan was applied twice, then rotated with Luna Sensation and Abound/Thiram due to high incidence of anthracnose fruit rot. Row covers (1.2 oz) were utilized once in the winter on 23 December to 3 January, then again in early spring from 14-22 March. Acramite miticide was applied twice on 21 December and 4 April. Weekly spring fertigation began on 27 March at the rate of 7lbN/acre. Tissue samples were collected on 4 April to determine fertilizer needs, prompting the addition of Epsom salts at 1.5lb S/acre to the fertigation regime on 20 April and 4 May. Ripe fruit was harvested beginning 31 March and continued twice a week until 16 June (Figure 1).

Figure 1. *Study of the different biostimulant beds during the harvest season (Credit: Authors).*

Fruit from each harvest was graded marketable and non-marketable (less than 10g, deformed, damaged or diseased) and weighed by category. Fruit size was estimated as g/fruit by weighing 10 marketable fruits weekly. Five marketable fruits were measured weekly for firmness using a penetrometer then stored at -20 °C for later analysis of pH and total soluble solids (°Brix) using a digital refractometer.

Result and discussion

For total yield and marketable yield, no treatment differences were found. However, the plots treated with TGL showed slight increases in the total and marketable yields compared to the other treatments and the untreated control (Figure 2). The TGL product contains five different *Bacillus* species that typically protect the plant from harmful microbes and make nutrients available to plants, which may help to improve the total yield and markable yield. Although there were several diseases diagnosed during the season, such as anthracnose fruit rot (AFR), botrytis rot, and other diseases, the treatments did not affect the weight of diseased fruits per bed (data not shown). For strawberry fruits, quality, firmness, total soluble solids (TSS), and pH are important factors affecting fruit quality and customer acceptance, with sugars being the primary soluble metabolites impacting taste and ripeness. While fruit firmness and pH were not influenced by treatments, the application of both the amino salmon and EZ-GRO biostimulants significantly improved TSS values compared to the untreated control (Figure 3). In conclusion, during this first growing season, none of the biostimulant treatments stood out. We will be repeating this study with the same treatments and adding two more biostimulant products, namely iQForte and PVent Microbial WP.

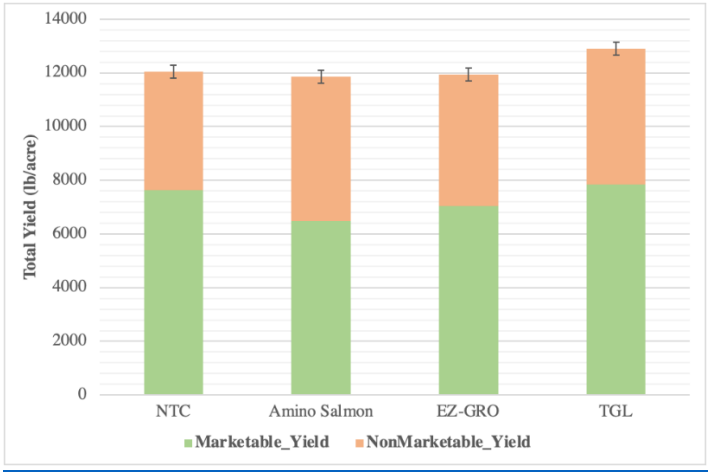


Figure 2. *Effect of Amino Salmon, EZ-Gro, and TerraGrow Liquid on total yield. NTC (untreated control), Amino Salmon (preplant), EZ-Gro 16-0-0 at 3.5lb/A drip application, and TGL (TerraGrow Liquid at 20 fl. oz/acre foliar and drip). The total yield was calculated based on 12,432 plants/acre.*

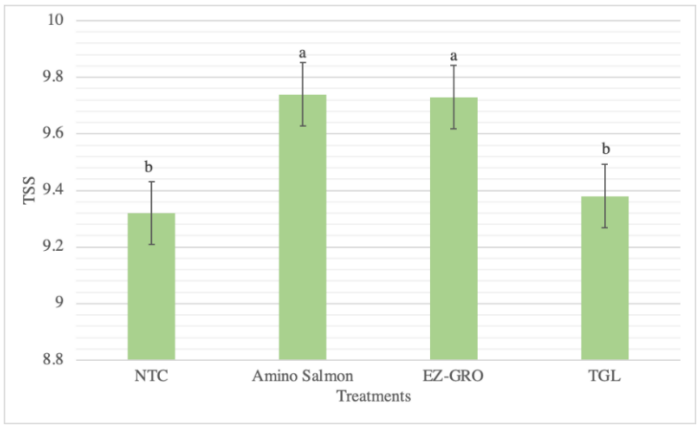


Figure 3. *Effect of application of Amino Salmon, EZ-G, and TerraGrow Liquid on the total soluble solids (TSS). NTC (untreated control), Amino Salmon (preplant), EZ-Gro at 3.5lb/A drip application, and TGL (TerraGrow Liquid at 20 fl. oz/acre foliar and*

drip). The total yield was calculated based on 12,432 plants/acre.

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Acknowledgments. The authors would like to thank Rob Holtz, Gabriel Kwesi Yeboah, Jacques F. Pouliquen, and Abigail Craige for assistance with field research.

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IRRIGATION BASICS FOR BEGINNING FARMERS

Join UK Extension Specialists for a webinar and workshop series this spring! This series will focus on irrigation basics for high tunnel, field, and orchard production. The March webinar will be followed by in-person workshops in April. Pre-registration is required and attendance at the webinar is required in order to attend one of the in-person workshops.

Register here or scan the QR code below: https://uky.az1.qualtrics.com/jfe/form/SV_oueeuQweUWBREGy

BEGINNING FARMER IRRIGATION BASICS

WEBINAR:
MARCH 26
12 - 1:30 P.M.

UK HORTICULTURE RESEARCH FARM IN—PERSON WORKSHOP:
APRIL 23
1 - 3 P.M.

HINTON'S ORCHARD IN-PERSON WORKSHOP:
APRIL 30
10 A.M. - 12 P.M.

Cooperative Extension Service

TECH TUESDAY

A SERIES FOR
KY GREENHOUSE GROWERS

Improving Your Integrated Pest Management Program

with

Jarene Brown

of Koppert Biological Systems

Tuesday, March 26th
12 PM EST / 11 AM CT

Register at
bit.ly/khctechtuesday

Kentucky Horticulture Council

Martin-Gatton College of Agriculture, Food and Environment