

# Kentucky Fruit Facts

November-December 2022

<http://www.uky.edu/hort/documents-list-fruit-facts>

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**Note: We have ceased publishing Fruit Facts as a hard copy or mailed newsletter. If you would like to continue receiving Fruit Facts, please sign up for email delivery as described at the end of this newsletter or contact your County Extension Office to have them print a copy for you.**

## Fruit Crop News

Daniel Becker, U.K. Extension Associate

Like a light switch, temperatures have suddenly flipped from hot to cold. Summer-like conditions, with days in the 70's and 80's, of the past weeks are over and now highs are struggling to make it into the 40's. Many areas experienced their first snowfall on November 12 signaling an unofficial end to fall and start of winter.

With the turn to colder weather and nights in the teens and 20's, I have had a couple growers ask about covering plasticulture strawberries. Calendar-wise it is only two weeks until Thanksgiving, when many growers have decided to apply covers in the past. If there is a chance to get out in the field between now and then, covering a little early is probably not going to make much of a difference in growth for larger plants, especially if it stays cold. The growers I have talked to have commented on having smaller plant size, either because

of a later planting date, or stunting due to excessively dry soil conditions. If plants are on the smaller size going into winter, then covering up to 5-6 weeks earlier than normal will have the benefit of insulating them and pushing a little extra growth.

Growers who are using H-2A workers have probably already finished covering; their schedule is limited by when labor is available and when their workers head back home. Though I have always thought that these growers were maybe covering a little too early, it seems to have worked out well for them. None have complained about low yields so far. Fruit size is probably smaller than if plants were covered later, but since most of these growers are selling locally, this outcome is less important.

In other news about H-2A, the Department of Labor has made further changes to the H-2A temporary labor program regulations strengthening worker protections. Major changes to the rule as identified by the labor department: (1) Improves safety and health protections for workers housed in rental or public accommodations. (2) Streamlines and updates bond requirements for labor contractors to better hold them accountable and clarifies joint-employer status for employers and associations. (3) Clarifies the housing certification process to allow state and local authorities to conduct housing inspections. (4) Establishes explicit authority to debar attorneys and agents for their misconduct, independent of employer's violations. (5) Makes electronic filing mandatory for most applications to improve employers' processing efficiency. (6) Modernizes the methodology and procedures for determining the prevailing wage to allow state workforce agencies to produce more prevailing wage findings. The final rule became effective on November 12 and

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LEXINGTON, KY 40546



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accommodated  
with prior notification.

is available on the Federal Register: <https://www.federalregister.gov/documents/2022/10/12/2022-20506/temporary-agricultural-employment-of-h-2a-nonimmigrants-in-the-united-states>.

Looking back, apples and peaches in the UKREC orchard had a lighter than expected crop this year. Contributing factors likely included a heavy yield the previous year and reduced pollination this spring due to cool, cloudy weather during bloom. Billy Reid reported that, overall, the harvest season at Reid's Orchard in Owensboro was favorable. He had a good quality crop on strawberries, though volume was a little lighter than he would have liked. Young peach blocks had an abundant crop that required thinning, while an older block had a lighter crop with good fruit quality. Apples had about 80% of a full crop, flavor was excellent and pest damage was low, no doubt aided by dry weather during ripening. Johnathan Price of Jackson's Orchard in Bowling Green reported that peach and apples had a good crop; some drop of later cultivars did occur due to the dry weather, but color and flavor was excellent.

The pecan crop at the UKREC was largely a bust. After a light crop in 2021, dry conditions from May to June reduced set and the August to October drought led to a lot of shriveled nuts and stuck shucks. 'Oconee' had a small crop of harvestable nuts of good size, it remains to be seen how kernel fill will turn out when cracked.

I recently had the opportunity to update a publication, Orchard Chemical Suppliers – 2022, revised from a version completed in 2019. Several important suppliers have recently moved location and in the span of three short years many others are no longer in operation and have been removed from the list. This publication is available on the U.K. Horticulture Commercial Fruits and Nuts webpage (<https://www.uky.edu/hort/documents-list-commercial-fruit-nut>) under the Pest Control heading.

Dr. John Strang informed me that Ray Armstrong, 91 of Shepherdsville passed away Thursday, November 3, 2022, at his home. While I never had the chance to meet Ray, those who did will remember him as an active participant and contributor to the Kentucky fruit industry. He also enjoyed his apple orchard and won many ribbons over the years at the state fair. Those who wish can read the full text of his obituary and send condolences at <https://www.mcfarlandtroutmanfuneralhome.com/obituary/Harold-Armstrong>.

This is the last Fruit Facts Newsletter for 2022. Have a happy holiday season and new year. I hope plenty of

people can attend the 2023 Kentucky Fruit and Vegetable Conference, there looks to be a great group of speakers and topics lined up for the meeting.

## Upcoming Meetings

*All times ET unless noted*

**Dec. 5-8. Eco-Ag Conference & Trade Show.** This meeting will take place at the Northern Kentucky Convention Center, 1 West Rivercenter Blvd., Covington, KY 41011. Sessions will have a strong soil health component. Visit <https://ecoag.acresusa.com/program/> to view the program and [https://www.eventsquid.com/contestant-reg.cfm?event\\_id=16573](https://www.eventsquid.com/contestant-reg.cfm?event_id=16573) to register; use the code KYVEGGRO to get 20% off registration.

**Dec. 6-8. Great Lakes Fruit, Vegetable & Farm Market Expo.** DeVos Place, Grand Rapids, MI. Register at <https://pheedloop.com/EVEWPKUTPMAPK/site/register/>. Visit <https://glexpo.com/> for more information.

**Jan. 3-4, 2023.** Kentucky Fruit and Vegetable Conference. Sloan Convention Center, 1021 Wilkinson Trace, Bowling Green, KY 42103. For more details on hotel reservation, to receive the conference room rate, and for a link to register for the conference, visit <https://kyhortcouncil.org/2023-kentucky-fruit-and-vegetable-conference/>. An advance program follows directly after this section, with a form for mail-in registration on Page 9.

**Jan. 5-8, 2023.** Southeast Regional Fruit & Vegetable Conference. Savannah Convention Center, Savannah, GA. For more details, visit <https://seregionalconference.org/>.

**Jan. 11-13, 2023.** From Food to Flowers: Everything Local (previously the Illinois Specialty Crops Conference). Crown Plaza Hotel, Springfield, IL. For more details, visit <https://www.ilfb.org/get-involved/events/everything-local-conference/>.

**Jan. 22-24, 2023.** North American Raspberry and Blackberry Conference. Hotel Alba, Tampa, FL. For more details, visit <https://www.raspberryblackberry.com/2023-narba-conference/>.

**Jan. 23-24, 2023.** Indiana Horticulture Conference & Expo. Beck Ag Center, 4550 US-52, West Lafayette, IN 47906. Register at <https://www.indianahortconference.org/>.

**Feb. 8, 2023. Southern Illinois Fruit and Vegetable School.** Doubletree Inn, Mt. Vernon, IL. Schedule TBD.

**Feb. 16-18, 2023. Pick Tennessee Conference.** Cool Springs Marriott, Franklin, TN. Register to attend at <https://www.picktnconference.com/>.

## 2023 Kentucky Fruit and Vegetable Conference

Dear Fruit and Vegetable Growers:

The 2023 Kentucky Fruit and Vegetable Conference will be held in-person at the Holiday Inn Sloan Convention Center, in Bowling Green, KY, on Tuesday and Wednesday, January 3 and 4, 2023. You may pre-register by mail or online (<https://2023KYFruit-VegConference.eventbrite.com>). The event will begin with a pre-conference Farmers Market Short Course, Farm Food Safety Plan Writing Workshop, and a Bringing the Farm to School Grower Training followed by Vegetable and Tree and Small Fruit Round Table Discussions.

Conference sessions include Direct Marketing, Commercial Fruit and Vegetable Production, Organic Production, Protected Ag (High Tunnel) Production, Marketing and Business Management, a Cut Flower Short Course and more new educational tracks. We have many growers on the program as well as a number of excellent out-of-state speakers this year and our trade show will feature more than 60 exhibitors.

Note that registration includes the Exhibitor/Grower (Tuesday) and Conference (Wednesday) Luncheons planned featuring Kentucky Proud products. A Trading Post bulletin board will be available to sell used equipment, so bring along any descriptions containing your name, phone number, and the equipment price for posting.

PLEASE make your room reservations directly with the hotel at 1-800-HOLIDAY using the block code KfV or using the group booking link: Select a Room ([ihg.com](http://ihg.com)). Our block of rooms will be held until December 2, 2022. After this date, room prices will be higher. Be sure to let the hotel know that you will be staying for the Kentucky Fruit & Vegetable Conference to obtain our special room rate for a single or double of \$103.95. If you find that the block of rooms at our conference rate is full on or before December 2, please call Jade Mosgrove (270-393-8669) only to increase the number of rooms that we have blocked. The room cost includes an evening manager's reception with drinks and two breakfast vouchers. We encourage growers to stay at the Holiday Inn adjacent to the Conference Center to help cover meeting overhead expenses.

The \$50 meeting pre-registration fee or \$75 registration on site includes a year's membership in the KVGA, KSHS, or OAK and entrance into all educational sessions as well as lunch on both days. Pre-registration means your tickets and name tag will be ready for you at the registration table when you arrive at the meeting. Name badges will be required to enter meeting rooms. Pre-registration forms or online registrations need to be in our hands by Friday, December 16, 2022. After this date you may continue to register online or on-site at the conference at the \$75 rate. Phone registrations will not be accepted.

NOTE: we strongly urge you to pre-register as on-site registration will be \$75 and luncheon tickets may not be available.

If you would like to serve on the Kentucky Vegetable Growers Association (KVGA) or Kentucky State Horticultural Society (KSHS) boards of directors or would like to nominate another member, please designate this at registration.

If you are unable to attend and you would like to remain a member of the KVGA, KSHS, or OAK, please complete online registration or return the registration form with a check to KHC, PO Box 21736, Lexington, KY 40522-1736 to continue your association membership.

We are committed to hosting a safe and enjoyable Conference, so please check the Conference website (<https://kyhortcouncil.org/2023-kentucky-fruit-and-vegetable-conference/>) for additional information about meeting precautions and any meeting updates.

Sincerely,

Shubin Saha, President  
KY Vegetable Growers Association

Jonathan Price, President  
KY State Horticultural Society

### CONFERENCE OVERVIEW

#### Monday, January 2 Pre-Conference Sessions

- |                |   |
|----------------|---|
| 3:00-9:00 p.m. | Registration and Exhibitor Set-up   |
| 4-6            | Concurrent Sessions: (1) Bringing the Farm to School Grower Training, (2) Farmers Market Short Course, (3) Farm Food Safety Plan Writing Workshop |
| 6:00-9:00      | Urban & Small Farms Meet & Greet  |
| 6:30-7:30      | Vegetable Round Table Discussion  |
| 7:30-8:30      | Tree & Small Fruit Round Table Discussion   |

## Tuesday, January 3 Morning General Session

- 8:00 a.m. Exhibits and Registration Desk Open  
9:00 2023 Fruit & Vegetable Conference Welcome  
9:10 Kentucky Horticulture Council Update  
9:25 University of Kentucky Horticulture Department Update  
9:35 Kentucky State University Update  
9:45 Kentucky Department of Agriculture Update  
10:00 Farm Food Safety and FSMA Updates  
10:10 Kentucky State Parks  
10:30 Cider/Coffee Break and Visit Exhibits  
11:00 Farmer Feature – Need More Acres: Second Generation  
11:30 The Food Connection  
12:00 p.m. Exhibitor/Grower Luncheon, KSHS and KVGA Board Meetings

## Tuesday, January 3 Afternoon Concurrent Sessions

- 1:30 p.m. (1) and 2:00 (2) Presentations  
2:30 Cider/Coffee Break and Visit Exhibits (All Sessions)  
3:10 (3), 3:40 (4), 4:10 (5), and 4:40 (6) Presentations  
5:00 Exhibits Close  
5:20 KY Strawberry Association Meeting  
6:00-7:30 AgVets Meet & Greet

## DIRECT MARKETING

- (1) Social Media... Tips, Tools and Tricks for Improving your Social Media Marketing
- (2) Value Added... What is it? How to do it? Do I need permits?
- (3) Producer Panel Discussion: Sharing Our Secrets
- (4) Continued
- (5) Budgeting the Farm
- (6) Marketing Programs and Opportunities

## TREE FRUIT PRODUCTION

- (1) Plum Curculio
- (2) Fertilizer Application Technology
- (3) Invasive Ambrosia Beetle
- (4) 2022 Grower Perspective
- (5) Climate Change and Fruit Production
- (6) Dwarf Apple Rootstocks for Kentucky

## VEGETABLE PRODUCTION FOR EXPERIENCED GROWERS

- (1) Fusarium Rot in Pumpkins and Winter Squash
- (2) Grower Perspectives: Collaborating with Researchers for On-Farm Research Trials
- (3) Managing New Invasive Pests and What to Look For
- (4) Grafting on Watermelons
- (5) Irrigation and Fertility Management in Watermelon
- (6) Continued

## BEGINNING FARMER BASICS

- (1) Business Management Basics
- (2) Pesticide Basics
- (3) Marketing Basics
- (4) Wildlife Management for Beginners
- (5) Production Considerations and Funding Sources

## Wednesday, January 4 Morning Concurrent Sessions

- 8:00 a.m. Exhibits and Registration Desk Open  
8:00 KVGA Annual Business Meeting  
8:30 (1), 9:00 (2), and 9:30 (3) Presentations  
10:00 Cider/Coffee Break and Visit Exhibits (All Sessions)  
10:40 (4) and 11:10 (5) Presentations  
11:45 Luncheon

## ORGANIC PRODUCTION

- (1) Solway Farms: Selling Online, Finding a Niche & Year-Round Market Garden
- (2) Climate Change and Organic Farming: What Do We Know?
- (3) Counting Bugs and Action Thresholds
- (4) Integrated Nutrient Management for Organic Farms: Introduction to Nutrient Budgeting
- (5) Soil Testing and Soil Health in Diversified Production Systems

## TREE FRUIT PRODUCTION FOR EXPERIENCED GROWERS

- (1) 2023 Spray Guide Update
- (2) Wolf on the Border; Spotted Lantern Fly in Kentucky
- (3) Orchard Vole Control
- (4) Tree Fruit Observations
- (5) KSHS Annual Business Meeting

## BEGINNING VEGETABLE PRODUCTION

- (1) The Basics of Cover Cropping with Vegetables
- (2) Grower Panel: What I Wish I Knew When I Started Farming
- (3) Continued
- (4) Pest Management in Sweet Corn
- (5) Biocontrol 101

## CUT FLOWER SHORT COURSE

- (1) Designing an Effective On-Farm Workshop
- (2) Evaluating Profitability of Different Sales Channels
- (3) What We learned from a Florist Survey
- (4) Record Keeping: Is Your Crop Worth the Space
- (5) The Kentucky Cut Flower Calendar

## BUSINESS MANAGEMENT

- (1) Managing Farm Stress
- (2) Importance of Emergency Preparedness for Produce Farms
- (3) Crop Insurance for Specialty Crop Growers
- (4) H2A Overview and Best Practices
- (5) H2A Best Practices: Grower Perspective

## PROTECTED AGRICULTURE

- (1) High Tunnel Cucumber Production
- (2) Sclerotinia Management in Lettuce
- (3) Protect Your Investment: Prevent Damage and Extend the Life of Your Tunnel
- (4) Managing Root-knot Nematode in Kentucky High Tunnels
- (5) Soil Solarization in High Tunnels: Temperature, Moisture, Pathogens, and Weeds

## Wednesday Afternoon, January 4 Concurrent Sessions

- 1:30 p.m. (1) and 2:00 (2) Presentations  
2:30 Cider/Coffee Break and Visit Exhibits (All Sessions)  
3:00 Exhibit Hall Closes  
3:10 (3), 3:40 (4), 4:10 (5), and 4:40 (6) Presentations

## MARKETING

- (1) Economic Feasibility and Consumer Acceptance of Potted Strawberry Plants as an Additional Offering in Fall Mum Sale
- (2) Forecasting Yield for Wholesale Markets
- (3) What do Retail Buyers Want?

- (4) KDA and Farm Produce Purchasing Programs
- (5) Farmer Panel: Business Models to Increase Market Share

## SMALL FRUIT PRODUCTION

- (1) KSU Organic Primocane Fruiting Blackberry Production
- (2) Practicality of Exclusion Netting in Blueberry and Raspberry Production
- (3) Elderberries
- (4) Containerized Blueberry Production
- (5) Plasticsulture Strawberry Production

## URBAN AND SMALL-SCALE FARMING

- (1) Microgreen Production on an Urban Farm
- (2) Marketing Your Urban Farm on Social Media
- (3) USDA Program Opportunities for Urban and Small-Scale Producers
- (4) The AppHarvest Urban Farm Model
- (5) Urban Farmer Grower Panel

## SPECIALTY CUT FLOWER SHORT COURSE

- (1) Cut Flower Fertility Do's & Don'ts
- (2) My Top 5 Cut Flowers
- (3) Drying Cut Flowers to Extend Your Season
- (4) The Kentucky Flower Market
- (5) KY Cut Flower Grower Panel

## SPECIALTY CROP BLOCK GRANT PROJECT REPORTS

- 1:30 p.m. Tomato Grafting for Plant-Parasitic Nematode Management in Kentucky High Tunnels  
1:45 Cultivate Kentucky Partnership Quality Initiative  
2:00 Developing New Specialty Crop Markets: Super Snax Fruit & Vegetable Program  
2:15 Kentucky's Small Fruit Industry Assessment to Increase Grower Competitiveness  
3:15 Plate It Up! Kentucky Proud: Sustainability Project  
3:30 Developing Management Strategies Against Invasive Ambrosia Beetles Affecting Apples and Nurseries in Kentucky  
3:45 Expanding Local Specialty Crop Availability in South Central Kentucky  
4:00 Applying for the Kentucky Specialty Crop Block Grant: Tips for Success

## **Expected Changes to the Private Pesticide Applicator Program in 2023**

*Ric Bessin, U.K. Entomology Extension Specialist*

On December of 2016, the Environmental Protection Agency (EPA) published the final rule to improve pesticide applicator certification and training standards. Implementation of this plan has been plagued by delays, but a new plan for Kentucky has been reviewed and approved, and its use is set to begin at the start of 2023. This is the most significant change to the program since 1978. There are some substantial changes in how Kentucky operates the program that I will outline in this article.

### ***Age & Identity***

Only persons 18 and older are qualified to become private applicators. The EPA requires that applicators present a government issued photo ID in order for county agents to verify age and identify. County agents must use this to verify age and identity, but do not need to record this information. For those who do not have a government issued photo ID due to some specific reasons, there are some alternative methods of verification that can be used.

### ***Non-certified Applicator (NCA) Under Direct Supervision of a Certified Applicator***

A new category of applicator has been created to work under the supervision of certified private applicators on farms. This is the “Non-certified Applicator under the Direct Supervision of a Certified Applicator.” These applicators must be trained annually and be supervised while applying general use pesticides. They cannot apply restricted use pesticides. There are a number of responsibilities for the supervising certified applicator beyond training and supervision. While any certified applicator can conduct the annual training of non-certified applicators, there is specific content that must be covered in each annual training. A Non-Certified Applicator card is being developed that can be issued from the county office for NCAs to carry to verify their training.

### ***Fumigation and Aerial Application Training***

The EPA now requires specialized training and certification for fumigation and aerial applications. As such, applicators using fumigation or applying pesticides aerially, either manned aircraft or drone applications, will need to be certified in the appropriate commercial category. Through Kentucky statutes, farmers applying

general use pesticides to their own land or land they rent using ground equipment are exempt from needing to become certified private applicators, but this exemption does not apply to aerial applications. So, drone applications of any type of pesticide must be done by category 11 applicators. Persons using fumigation will need to certify in one of the commercial categories for fumigation depending on what they are treating: soil, non-soil, or structures.

### ***Terms of Certification***

The KDA has brought the length of the certification for private applicators in line with commercial applicators. Both of these groups will be certified for up to three years, which includes the year they were trained. Previously, private applicators were given three years plus the year they were trained. There is no fee charged to those certified as private applicators.

### ***PATIM***

PATIM is used by county agents to certify private applicators and issue their certification cards. Historically unique numbers are used to identify private applicators; in the past, this could have been social security numbers, then driver’s license numbers. Due to risks of properly securing this data, it has been decided to drop this from the data collected when someone becomes a certified private applicator. PATIM is undergoing a rebuild during the fall of 2022 and may look a little different in 2023.

## **Fruit, Orchard, and Vineyard Sanitation: Cleaning Up Today May Keep Disease Away**

*Kimberly Leonberger, U.K. Plant Pathology Extension Associate, and Nicole Gauthier, U.K. Plant Pathology Extension Specialist*

Autumn has arrived in Kentucky, and it is time to focus on fruit, orchard, and vineyard sanitation. Good sanitation practices can help reduce disease-causing pathogens. Good sanitation practices can help reduce disease-causing pathogens. These organisms can survive for months or years on dead plant material or in soil, causing infections in subsequent years. Elimination of disease-causing organisms reduces the need for fungicides and can improve the effectiveness of disease management practices. Following these sanitation practices both in autumn and throughout the growing season can reduce disease pressure in home and commercial fruit plantings.

### Sanitation Practices

- Remove diseased plant tissues from infected plants. Prune cankers (Figure 1) by making cuts well below visible symptoms. Clean tools between each cut with a sanitizer, such as rubbing alcohol or household bleach.
- Rake and remove fallen buds, flowers, fruit, twigs, and leaves (Figure 2).
- Collect all fruit from trees, bushes, and vines. Discard diseased fruit since it can serve as a source of inoculum in subsequent growing seasons (Figure 3).
- Above and below ground portions of severely infected trees, bushes, and vines should be completely removed and destroyed.
- All discarded plant material should be burned, buried, or removed with yard waste. Do not compost diseased plant material.
- Remove weeds, including roots, which may serve as alternate hosts for pathogens.
- When treating infected plants with fungicides, remove infected tissues prior to application.



Figure 1. Cankers can provide an overwintering site for plant pathogens. (Photo: Nicole Gauthier, UK)



Figure 2. Debris is a major source of infective propagules. Gather and discard fallen buds, flowers, fruit, twigs, and leaves. (Photo: Kim Leonberger, UK)



Figure 3. Diseased fruit, whether on the ground or attached to the tree, can serve as a source of inoculum during the current and future growing seasons. (Photo: Nicole Gauthier, UK)

### Additional Information

- Fruit, Orchard, and Vineyard Sanitation (<http://plantpathology.ca.uky.edu/files/ppfs-gen-05.pdf>)
- Plant Pathology Publications (<http://plantpathology.ca.uky.edu/extension/publications>)

## 2022 Results from the 2019 NC-140 ‘Buckeye Gala’ Apple Rootstock Trial at Princeton, KY

*Dwight Wolfe, U.K. Research Specialist*

A new apple rootstock trial was planted April 11, 2019, at the UKREC orchard, Princeton, KY. The trial consists of ‘Buckeye Gala’ as the scion grafted onto seven different rootstocks. These are: M.9 NAKBT-337, M.26 EMLA, G.41, G.814, and G.969, B.10, and one New Zealand rootstock (NZ.2) that is purported to have M.9 vigor, high yield efficiency, and tolerance to aphids and fire blight (possibly immune). Three trees of each rootstock were planted in each row (replication) in a randomized complete block design and trained to the tall spindle system. To eliminate the effect of more vigorous stocks competing with the less vigorous ones,

only the center tree (the “data tree”) of each of the three-tree subplots is evaluated. Thus, the confounding effect due to different rootstock sizes adjacent to one another is eliminated in this trial.

All trees in this trial are currently alive except for one data tree of G.814, which broke off at the graft union. The average tree height, average canopy width across the row, average weight/fruit, and the number of root suckers/tree did not vary significantly among the seven rootstocks. Trunk Cross-sectional area (TCSA) at 30 cm above the graft union, was significantly different among the seven rootstocks (Table 1) as were yield (fruit number and

weight), and cumulative yield (the sum of the three annual yields from 2020 thru 2022) for the “data” trees in this trial (center tree of each three-tree replicate). When both the “data” trees and guard trees of each replicate were included in the analysis, cumulative yield was still statistically significant, but yield in 2022 was not. This result is indicative of the amount of variability in yields observed among trees this past season. Poor fruit set could be due to several factors from light bee activity during a cool bloom period to difficulties in training trees in a tall spindle system without removing a substantial number of fruit buds.

The expected vigor of these rootstocks as a percent of standard is approximately 35% for M.9 NAKBT-337, NZ.2, G.41, and B.10; 40% for G.814; 45% for M.26 EMLA; and 65% for G.969. But to date, G.814 has consistently been the most vigorous rootstock in this trial. Likewise, NZ.2 has been consistently more vigorous than M.26, and B.10 has been the least vigorous. G.41 and M.9 appear to be very similar in vigor.

Currently, evaluation of this trial is planned to continue through 2028. Consequently, these results are preliminary and future data from this work will be needed before coming to any final conclusions.

**Table 1. 2022 results<sup>1</sup> for the 2019 NC-140 apple rootstock trial, Princeton, KY.**

Rootstock <sup>2</sup>	Survival (%) <sup>4</sup>	TCSA (sq. in.)	Height ft./tree	Width <sup>5</sup> ft./tree	Fruit Weight (ounces /fruit)	Yield (# fruit /tree)	Yield (lbs./tree)	Yield for all trees (lbs./tree) <sup>6</sup>	Cumulative Yield (lbs./tree)	Cumulative Yield for all trees (lbs./tree) <sup>6</sup>	Number of root suckers
G.814	80 (93.3)	3.62	12.9	7.1	6	8.8	3.1	5.8	29.8	38.9	2.5
G.969	100	3.32	12.6	6.7	4.9	27.6	8.2	7.2	39.6	39.5	0.4
NZ2	100	3.08	12.4	6.7	6	14.8	5.1	7.3	45	47.6	1.8
M.26 EMLA	100	2.83	12.5	6.5	4.7	25.6	7.4	6.3	37.3	34.8	0
G.41	100	2.38	12.4	7.3	5.2	16.8	5.4	5.1	38.1	33.8	0.4
M.9 NAKBT337	100	2.36	12	6.2	4.3	9.8	3.1	4.9	22.6	28.9	1.2
B.10	100	2.22	11.8	5.5	5	20.6	6.2	6	29.4	31.7	0.2
Means	97.1 (99.0)	2.8	12.4	6.6	5.1	18	5.6	6.1	34.7	36.4	0.85
LSD (5%) <sup>3</sup>	22.1 (7.1)	0.61	0.9	1.3	1.6	12.2	3.4	3.3	11	7.9	2.93
HSD (5%)	34.3 (10.7)	0.95	1.4	2.1	2.5	19	5.3	5.1	17.1	12.2	4.56
ANOVA (5%)	NS	0.001	NS	NS	NS	0.016	0.02	NS	0.004	0.001	NS

<sup>1</sup> Unless otherwise noted, all data is based on the center trees of three-tree replicates as described in the materials and methods.

<sup>2</sup> Arranged in descending order of the fall trunk cross-sectional area (TCSA) for each rootstock.

<sup>3</sup> Least significant difference (LSD) & Tukey’s HSD (P=0.05 for both tests). NS indicates ANOVA was not significant (P=0.05).

<sup>4</sup> Based on the number of “data” trees (center tree of each three-tree replicate) surviving out of 5 total planted at the beginning of the study. The number in parentheses are based on the percentage survival for all trees in each of the three-tree replications, out of 15 total.

<sup>5</sup> Width was measured across the row only.

<sup>6</sup> Yield for all trees in each of the three-tree replications.

**MAIL-IN REGISTRATION - 2023 Kentucky Fruit and Vegetable Conference**  
**Holiday Inn/Slone Conference Center, Bowling Green, KY**  
**January 3-4, 2023**

Online preregistration: <https://2023KYFruitVegConference.eventbrite.com>

Mark one:       REGISTRATION  
 I am not able to attend--please continue my membership(s) as listed below.

NAME (Please print) \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

PHONE: (    ) \_\_\_\_\_ OCCUPATION/FIRM \_\_\_\_\_

FAX: (    ) \_\_\_\_\_ E-Mail \_\_\_\_\_

**Please List Name(s) of Additional Registrants:** \_\_\_\_\_

I am interested in being considered as a board member in:  
 KSHS (fruit growers)     KVGA (vegetable growers)

Please let us know if you are a:

Grower  
 Extension Agent  
 Commercial Pesticide Applicator  
 Other

Please check if you are a US Veteran

What are your top 3 research needs?

1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_

*Registration is complimentary for students and children under 15 years of age. A SEPARATE FORM IS REQUIRED FOR EACH REGISTRANT EXCEPT FOR SPOUSE AND CHILDREN. Please copy form if needed. You can also print forms from the Conference website (<https://kyhortcouncil.org/2023-kentucky-fruit-and-vegetable-conference/>). Registration questions, call: 859-490-0889 or email: [info@kyhortcouncil.org](mailto:info@kyhortcouncil.org).*

**2023 MEETING REGISTRATION**

<i>Indicate the number of registrations and total amount.</i>		Number	Total
<input type="checkbox"/>	<b>Kentucky State Horticultural Society</b> <i>annual membership in KSHS (fruit growers) &amp; meeting registration</i>		
	Number attending x \$50 each	_____ X \$50	_____
<input type="checkbox"/>	<b>Kentucky Vegetable Growers Association</b> <i>annual membership in KVGA (veg growers) &amp; meeting registration</i>		
	Number attending x \$50 each	_____ X \$50	_____
<input type="checkbox"/>	<b>Organic Association of Kentucky</b> <i>annual membership in OAK (organic growers) &amp; meeting registration</i>		
	Number attending x \$50 each	_____ X \$50	_____
<input type="checkbox"/>	<b>Kentucky Horticulture Research Initiative</b>		
	<i>Voluntary, tax-exempt contribution to KHRI for industry research</i>		
	Write in donation	_____	_____

**TOTAL AMOUNT DUE**

*Please make checks payable to: KY State Horticultural Society (KSHS). Mail form and check to: Kentucky Horticulture Council, PO Box 21736, Lexington, KY 40522-1736.*

Check # \_\_\_\_\_

***Please note that the Conference is the first Tuesday and Wednesday of January and lunches are included in the registration fee***

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