

## Local Couple's Grandson Involved In Project High-Tech Farming: Drone Research Supports Organic Efforts At Farm In South Carolina

**EDITOR'S NOTE:** This is an article about the grandson of Ed and Kay Thomas of Paris. Andrew Freeland, a senior at Furman University in Greenville, SC, has done research using drones to help small scale farmers raising cattle on pastures, find crucial information that equates to meat production from the animals. We hope the information may be pertinent to Bourbon County farmers.

by Kelley Bruss, Contributing Writer

A drone may not be the first piece of equipment you'd associate with organic farming.

But a new Furman research project demonstrates that cutting-edge technology has its place on the pasture.

Andrew Freeland '21 is conducting research in precision agriculture with Greenbrier Farms of Easley, South Carolina. He's using a drone equipped with a Multispectral camera, which Furman purchased this summer through a grant from South Carolina Independent Colleges and Universities and additional support from the John M. Garihan Endowed Fund.

Each snap from the drone's built-in camera system is composed of six images. Software weaves the images from hundreds of shots into a single large photograph. These photographs can then be used for reference as base layers for other data sets, such as soil samples, as well as to assess intra-field differences in pasture health and productivity.

Because of COVID-19 campus restrictions, Suresh Muthukrishnan, professor and department chair for earth, environmental and sustainability sciences, piloted the first summer flights while Freeland worked with the data at his home in Nashville, Tennessee.

"On the images I've produced, you can see differences," said Freeland, who is eager to move back to campus in mid-August and fly the drone himself.

Muthukrishnan first used a drone for a class several years ago in a freshman seminar that examined the ways generations of humans have pursued seeing things from the skies. From there, he began to incorporate drones into his Geographic Information Systems (GIS) class and to use them for research.

In GIS, "we plot information and try to make more sense of the data by looking at the geographic patterns and trends over time," Muthukrishnan said. "It's not just the pictures. We can

convert the photographs into data and then we can use the data for decision-making."

Freeland has had a personal drone since high school, but it was a hobby until he started to realize it could be much more.

"There's a lot more responsibility than a video game, but it is a controller with two joysticks and buttons and a screen in front of you," he said.

With the new drone, Freeland and Muthukrishnan can program a flight path, and the drone will fly itself, taking hundreds of pictures as it goes. They also use a GPS ground station that provides centimeter- to millimeter-level accuracy for the data collected.

Freeland created flight plans for the research site, tested them with his own drone at a Nashville site and then sent them for implementation at Greenbrier.

The new drone has six built-in cameras which take photos in full color, only blue, only green, only red, near infrared and middle infrared wavelengths. These wavelengths are specifically selected to study vegetation health and stress. When the photographs are "stitched" together, photo after photo, they reveal patterns and issues that often wouldn't be detectable from the ground.

"If we can identify the plant stress before it's visible to the human eye, we can address the stress appropriately," Muthukrishnan said. "How can we tweak things around where the production is a little less than optimal and make it better?"

Using sophisticated algorithms, the same photographs can be used to calculate total amount of biomass or crop yield. For small scale farmers, raising cattle or goats on these pastures, that's crucial information that equates to meat production from the animals.

But it's much more than just farming. "Agriculture is not the only application," Freeland said. Drones are part of infrastructure inspection, parcel delivery, forest management, traffic monitoring and more. In developing countries, "drones are frequently being

used to send blood samples or critical vaccines to remote villages as well as for relief operations during major disasters," Muthukrishnan said.

He said the demand for trained drone pilots and researchers is only going to grow as more industries and organizations find ways to apply the data drones can collect. "They are going to fill the sky, whether we like it or not," Muthukrishnan said.



Andrew Freeland '21.



Jane Johnson, Deacon Jones and Deacon Marks

### First Baptist Celebrates 163rd Anniversary

The First Baptist church on West Eighth Street celebrated its 163rd church anniversary. The service took place on Sunday, August 9 during morning worship service. It was a very joyous time.

Although few in number, the spirit was not dampened. God said wherever two or three are gathered together in his name, he will be in the midst of them. The theme was: "Where there is no vision the people perish" Proverbs 29:18. Pastor Reese preached the morning message which was taken from the theme. It was a time to reflect and remember just how far we've come by faith.

From the dark crisis of the Dehumanization days of slavery and everything in between that were used as tools to hold us back, to the current global pandemic of COVID-19, First Baptist still stands, with its doors still open! During the morning message there were many shouts of amen, and thank you Jesus as we reflected and reminisced how God has kept us for the past 163 years. The service began with scripture, prayer and opening song. The Master of Ceremonies was Deacon Clyde Marks. The responsive reading was 1st Corinthians Chapter 2 in its entirety

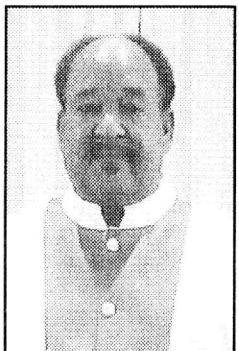
by Sis. Jane Johnson.

A memorial tribute was given by Sis. Lisa Johnson to all the members who have gone on before us. A discussion of the theme was delivered by Deacon William (Billy) Jones. As Pastor Reese preached, he couldn't help but to get happy when he thought about how we're still standing on the Promises of God. And, how he is standing on the shoulders of the 11 other pastors who have paved the way for him. Through many dangers, toils and snares, we've already come, and the Gospel is still being proclaimed from First Baptist West Eighth Street.

To God be the glory for the things He hath done.



Lisa Johnson offered a tribute to the deceased members



Pastor John E. Reese

**NOTICE OF SPECIAL MEETING**  
BOURBON COUNTY JOINT PLANNING COMMISSION  
THURSDAY, AUGUST 20, 2020 @ 6:30 P.M.  
**MEETING LOCATION:**  
Bourbon County Courthouse  
Second Floor Courtroom  
301 Main Street, Paris, KY 40361

Per the Bourbon County Judge-Executive Michael R. Williams and the Bourbon County Fiscal Court, all Planning Commission members, staff and all Attendees are required to wear protective face coverings/masks. Additionally, a six (6) foot social distance must be maintained by all present.

#### MEETING AGENDA

I. Call to Order

II. Consideration of Minutes

III. Agenda

1. DVP 20-03 Development Plan submitted by Harold Harpe for property located at 745 Georgetown Road, Paris, Bourbon County, Kentucky (Parcel ID 026-00-00-054.00). Property owned by Harpe Rentals LLC.

2. ZMA 20-02 Zoning Map Amendment request submitted by Hollie Marie Wilcher for property located on Georgetown Road, Paris, Bourbon County, Kentucky (Parcel ID - 026-70-05-049.00) to change zoning from B-2 Business to R-7 Residential. Property owned by Hollie Marie Wilcher.

IV. Review of Financials

V. Approval of Invoices

VI. Old Business

VII. Reports/Discussion

VIII. Adjourn

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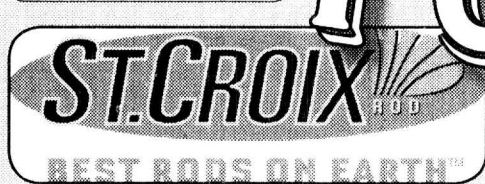
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### 7th Street Christian Church Celebrates 153 Years

On August 16th, 2020, Pastor William K. Garr and the members of Seventh Street Christian Church will be celebrating our 153rd Church Anniversary. Services will begin at 10:30 a.m. both in person and on Facebook Live at <https://www.facebook.com/seventhstreetchristianchurch/>.

Due to the restrictions in place, we will not have a guest congregation or speaker. We do invite you, however, either in person or virtually to join us in praising God for all the work He has done through the ministry of Seventh Street Christian Church over the past 153 years.

This year's Theme is, We're Still Standing, 1 Corinthians 15:58 & 16:13-14.

"The LORD has done great things for us; whereof we are glad" Psalms 126:3