

Why Broadband Matters to Farmers

Kenny Sherin, Broadband Access and Education
Coordinator, NC Cooperative Extension
County Extension Director, Randolph County
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New Role for Cooperative Extension

Foreign Language Translator

Puzzle Piece Finder



Why Cooperative Extension?

Given the 100+ years of success of Cooperative Extension and its mission to help society adopt and to adapt new ways to **EARN**, **LEARN**, and **BE WELL**, Cooperative Extension is a natural place for the educators who would help meet this next great **NEED** in our society...a digital transformation!

NC State Extension Broadband [Webpage](#) Broadband [News Articles](#)



NC Agriculture Digital Alliance

Quarterly Meetings

- June 2022



NC STATE UNIVERSITY
Institute for
Emerging Issues



<https://communitydevelopment.ces.ncsu.edu/2022/02/nc-agricultural-digital-alliance-meeting-announcement/>



Connectivity generates Cash

Crop	% increase with doubling connectivity	NC Harvest Cash 2019	Cash Generated
Corn	3.6%	\$441,976,000	\$15,911,000
Soybeans	3.8%	\$456,024,000	\$17,328,000

Katherine LoPiccalo, "Impact of Broadband Penetration on U.S. Farm Productivity"
Released December 15, 2020, Updated February 19, 2021. OEA Working Paper 50, Office of Economics and Analytics. Federal Communications Commission, Washington, DC 20554

Connectivity Generates Cash

“I find, for example, that doubling the number of 10+/.768+ connections per 1,000 households is associated with an approximately **6.5% decline in fertilizer expenses** per operation and a **3.4% decrease in seed and plants expenses** per operation.”

Katherine LoPiccolo, “Impact of Broadband Penetration on U.S. Farm Productivity”

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In 2020, 990,000ac. of corn was planted in NC.

Avg. fertilizer \$/ac is \$150 = \$148.5 Million

At 6.5% cost savings = **\$9.65 Million**

Connectivity and Quality of Life

Farms have always had to transport crops to market

Farms grow data now too!
Transporting data!



Connectivity and Quality of Life

Broadband is a issue we suffer with daily in our area of Beaufort county. Many people believe that our equipment runs off of gps alone, and while it does for guidance, in order for efficiency to be maximized and the multitudes of data that we collect be effectively utilized it has to be moved by good ole cell towers or outdated methods such as flash drives (imagine downloading data from 20 tractor computers with avg download time at 5-10 min and then turning and uploading the data with avg upload time at 5 min, that's anywhere from 3-5 hrs a day just collecting data from our daily farm activities). (S.Archie Griffin)

Connectivity and Quality of Life

Over half (59 percent) of farm and ranch families received benefits through public sector employers (health, education and government).

“Public sector jobs, especially in rural areas often offer the highest wages and most generous benefits,” Inwood said.

<https://www.norc.org/NewsEventsPublications/PressReleases/Pages/new-uvm-study-health-insurance-costs-threaten-farm-viability.aspx.aspx>

Connectivity and Quality of Life

What if connectivity in rural areas could increase **remote working** opportunities (employer provided insurance) = more time to do the farm work.

- Less commuting more farming.
- The working spouse with the benefits could work from home and be more available to help

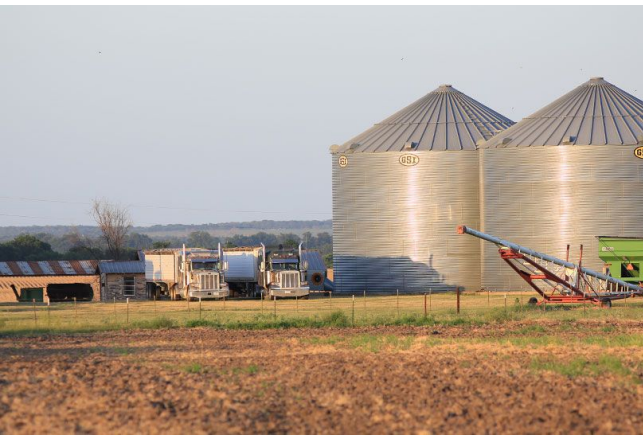
Connectivity Generates Cash and Quality of Life

Post-harvest Grain Storage

Reducing Spoilage increases profit

Knowing when to run the fans reduces energy cost

Controlling remotely saves many trips and time



Connectivity is the linchpin

www.telesense.com/index.html

Connectivity Generates Cash and Quality of Life

Calving Season in SD

Calving in cold weather is challenging

Regular checks are required

Windshield or Windows

Improves quality of life

and if it saves 1 calf it's paid for



When Connectivity then...

Farmers are some of the most innovative, inventive, and creative people in the world. When we can add connectivity to their toolbox they will rise to the challenge of meeting the world's growing food and fiber needs.

Broadband To Improve Ag



<https://www.youtube.com/watch?v=mrGbZyU-HGE>

Rural Connections: Broadband Connectivity to Improve Ag & Rural N.C.

404 views • Nov 9, 2021

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NC State Extension is helping demonstrate how new technologies can enhance agriculture and rural communities. This video highlights a demonstration at Harvey Farms in Kinston, showing how broadband connectivity enables emerging technology and farming techniques that provide faster,

Broadband To Improve Ag



Teaching Digital Literacy On the Farm

Broadband access has become a necessity in today's world, but as of the end of 2021, nearly 1.1 million North Carolina households (27% of the state) lacked access to high-speed internet.

"Do you care about the environment or the food you eat or the clothes you wear? Because connectivity and technology on the farm impacts your everyday life in more ways than you might think," said Jason Ward, NC State Extension specialist in agricultural engineering. "If we don't have good connectivity, people in our rural communities, who have great insight and innovation to share, may not have the ability to deliver meaningful solutions in a meaningful way."

Federal and state grants are helping to add infrastructure and connect more communities, but that's only part of the solution.

"The other part is we need a toolkit for digital literacy and skills," said Kenny Sherin, director of Extension's Randolph County Center. "You can get the connectivity, but it's not going to do any good if people don't know how to use it. Farmers, ranchers, they're going to need to learn new digital skills to use the technology being deployed all around them."

In March 2021, Sherin became Extension's first Broadband Access and Education Coordinator, a position added primarily to help farmers bridge the digital divide, innovate the food supply and efficiently get their goods to market.

Extension's digital literacy toolkit includes lessons in productivity tools such as accounting software, spreadsheets, online banking, email marketing, website building and even advanced skills like coding and cybersecurity. It also encompasses exciting, cutting-edge technology such as automated moisture meters in grain storage facilities, using data from drones to monitor crops, and temperature and air quality sensors in swine and poultry production.

"Farmers are some of the most creative and innovative people," Sherin said. "They're going to be able to use these resources to make their products better."

Discover more at go.ncsu.edu/TeachingDigitalLiteracy.

https://issuu.com/tjmoore3/docs/2021extensionannualreport-web_version-reduced




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[Selected Current Projects](#)

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Quantifying Crop Lodging Damage with UAS Imagery

In North Carolina, harvest season is hurricane season. The possibility for weather-related crop damage is a real danger for producers. After a severe weather event, crop health must be quickly assessed for the amount and severity of damage. Producers, insurance providers, and emergency managers need timely and accurate information to understand the scope of crop damage. The objectives of this study are to compare specific measurement technologies to find the best suite of tools to quantify the severity of damage and area of impact. Recently, multiple different deep learning object detectors were compared for their ability to automatically detect simulated lodged corn. Traditional vegetative indices and machine learning techniques are being explored to identify the most efficient tool. The measured impacts will be compared to the physiological impacts on the crop. Finally, a best method of federal or commercial reporting and securing that data to current standards will be developed.

<https://www.bae.ncsu.edu/people/jkward2/>



Task Force for Reviewing the Connectivity and Technology Needs of Precision Agriculture in the United States

About the Precision Ag Connectivity Task Force

The Task Force for Reviewing the Connectivity and Technology Needs of Precision Agriculture in the United States (Precision Ag Connectivity Task Force or Task Force) will provide advice and recommendations for the FCC on how to assess and advance deployment of broadband Internet access service on unserved agriculture land to promote precision agriculture. Congress directed the FCC, in consultation with the Secretary of the Department of Agriculture, to establish the Precision Ag Connectivity Task Force in the Agricultural Improvement Act of 2018 (2018 Farm Bill).

The Task Force will perform duties and submit reports consistent with section 12511 of the 2018 Farm Bill. All information related to the Task Force will be available on this webpage.



DIGITAL ACCESS CONTINUUM



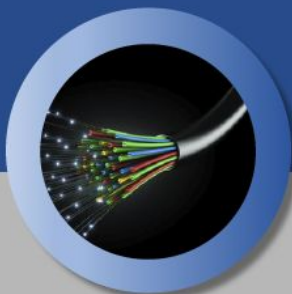
← AWARE

Being **AWARE** of the how broadband can be used as a resource



AVAILABLE

Having **AVAILABLE** broadband infrastructure



ACCESS

Having a computing device capable of effectively providing **ACCESS**



ADOPT

Choosing to **ADOPT** or subscribe to an internet service



→ ADVANCE

Using broadband service to **ADVANCE** quality of life outcomes



Broadband In Randolph County

RANDOLPH  COUNTY

DIGITAL ALLIANCE

EARN · LEARN · BE WELL

RCDA Mission and Vision

Vision Statement

In Randolph County, every household and business will have the opportunity to **EARN**, **LEARN**, and **BE WELL** by accessing needed digital resources.

Mission Statement

The Randolph County Digital Alliance will work with organizations to eliminate the digital divide by helping improve access, adoption, and utilization of digital resources.

Average Internet Usage

June 2021 the average American home downloaded **405 GB** and uploaded **28 GB**

Connection Mbps	Download Time (hours)	Upload Time (hours)	Total (hours)	Lost Productivity Cost (\$15.23/hr) avg wage in Asheboro
10/1	90	62	152	\$2,314.96
25/3	36	21	57	\$868.11
100/20	9	3	12	\$182.76
1000/100	0.9	0.6	1.5	\$22.85

Digital Literacy and Skills Coordinator

The NC Cooperative Extension -Randolph County Center Digital Literacy and Skills Coordinator will provide opportunities and experiences for Randolph County residents to increase their knowledge and skills for using digital resources to help them **EARN, LEARN** or **BE WELL**. The Coordinator is a subject matter resource for current and emerging digital technologies.

Thank You

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<https://randolph.ces.ncsu.edu/profile/kenneth-sherin/>