Assets and Opportunities to Advance North Carolina's Agtech Innovation Corridor

Amanda Rose, Naomi Taylor, Nora Curley
RTI International
On behalf of the Climate Responsive Opportunities for Plant Science (CROPS) initiative

Photo Source: Unsplash

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About This Report

This report examines the assets and opportunities for developing an agricultural technology (agtech) innovation corridor in North Carolina (NC), extending east and west from the globally recognized Research Triangle Park (RTP) innovation hub.

RTI International developed this report in support of the Climate Responsive Opportunities for Plant Science (CROPS) initiative. Led by NC Agricultural and Technical (NC A&T) State University, CROPS received a $1 million National Science Foundation (NSF) Regional Innovation Engines planning grant to develop a strategic plan for a 42-county agtech innovation corridor across NC. The vision of the CROPS initiative is to better connect under-resourced and small acreage farmers with research and technological innovations needed to overcome market entry barriers and adapt to factors such as increasingly variable and extreme precipitation, more frequent droughts, and changing pest and disease dynamics. CROPS also includes a strong workforce development focus aimed at highlighting existing agtech career pathways and expanding opportunities for agtech employment across the state.

The CROPS initiative brings together a collaborative network of partners, including NC A&T, Duke University, East Carolina University (ECU), NC Biotechnology Center (NCBiotech), the NC Community College System (NCCCS), NC State University's Plant Science Initiative, the University of North Carolina at Chapel Hill (UNC-CH), Wake Forest University, RTI, and Alamance Community College, along with specialists from NC Cooperative Extension.

Affiliated CROPS Partners

N.C. A&T State University · Duke University · ECU · North Carolina Biotechnology Center · NC Community Colleges (Creating Success) · NC State University · The University of North Carolina at Chapel Hill · Wake Forest University · RTI International · Alamance Community College

This report is…

- A good faith effort to identify place-based agtech innovation opportunities in NC.
- Rooted in stakeholder perspectives.
- A starting point to inspire thinking and build momentum across the state for the NC agtech innovation corridor.

This report is not…

- An exhaustive inventory of agtech assets and opportunities in NC.
- A comprehensive assessment of the agtech ecosystem of NC.
- A quantitative market sizing or valuation exercise.

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Executive Summary

Agriculture and innovation are core pillars of the NC economy; agtech sits at the intersection of these core pillars and presents substantial economic opportunity in terms of amplifying the state's infrastructure for innovation-based jobs and companies, while also accelerating productivity, market connectivity, and profitability of agricultural production. The variability and viability of these successes must endure annual and cumulative changes in variable and extreme weather, as well as market dynamics.

There are barriers that exist across the agricultural and agtech industries that ecosystem partners need to address to realize sustainable economic possibilities. The diversity of NC farms contributes to both opportunities and challenges. Most NC farms are family-owned and more than half are less than 50 acres,[1] presenting scalability challenges for both technology adoption and market access. Intentional efforts to bridge gaps and maximize resources—from large scale to smaller scale farms—are necessary to strengthen NC's position as a global agtech development and adoption leader, especially in ways that ensure the state's 34,600+ small acreage farmers and communities beyond the Research Triangle Region (RTR) benefit from agtech's full potential.

CROPS is an NSF-funded coalition of NC-based universities, industry associations, and nonprofits that envisions a vibrant agtech innovation corridor spanning from Greensboro to Greenville and beyond, ultimately broadening who participates in and benefits from agtech innovation activities. Following a stepwise place-based economic development approach, this landscape report seeks to highlight the many, often disconnected, agtech-related assets and initiatives that are currently active within NC. These assets have the potential to contribute to a robust, regional agtech innovation corridor, given intentional connections, incentives, and support. This analysis also presents opportunities and recommendations to accelerate NC's agtech innovation corridor, building on the many complementary efforts within the innovation and agricultural communities that are aimed at growing high-value innovation jobs and building agriculture-fueled prosperity across the state.

The report amplifies the following five opportunities to advance an NC agtech innovation corridor:

1. Bridge research to farm gaps
2. Translate research into commercially viable agtech solutions
3. Leverage agtech for improved market reach and positioning
4. Enable agtech ecosystem cohesion
5. Mobilize a job-ready agtech workforce

Actionable recommendations focus on next steps to mobilize the collective action needed to transform a 42-county NC agtech innovation corridor from concept to reality. Next steps include elevating a farmer-centered coordination hub and capitalizing on momentum from complementary agriculture and agtech strategic planning initiatives taking place within NC.

[1] North Carolina Department of Agriculture & Consumer Services (2024).

Advancing North Carolina's Agtech Innovation Corridor

A Place-Based Approach to Innovation Ecosystem Development

NC exhibits competitive research and innovation capabilities, with a globally recognized innovation hub in RTP.

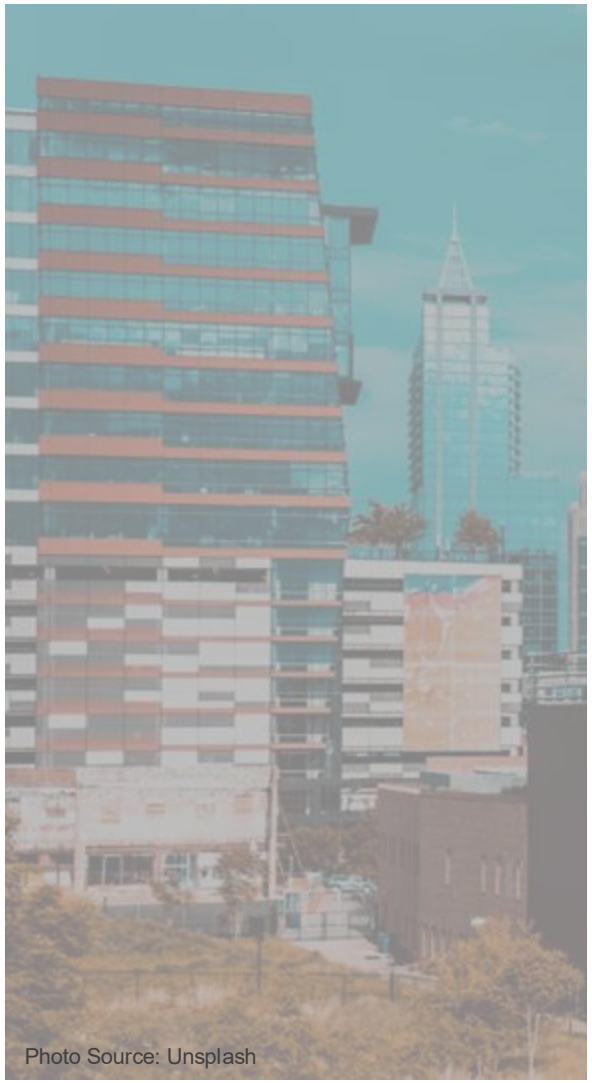


Photo Source: Unsplash

NC outpaces the United States (US) for growth in total research and development (R&D) expenditures

NC ranks **14th** in the nation with total R&D expenditures representing **3.0%** of Gross Domestic Product (GDP) (2022) and growing over twice as fast as the US GDP rate since 2000. Nearly 86% of R&D expenditures are occurring in RTP counties (i.e., Wake, Durham, and Orange).

NC is a top-10 state for business-performed R&D

NC ranks **10th** in the nation with business-performed R&D accounting for **2.7%** of private-industry output (2021) and has been growing almost twice as fast as the US average since 2000. Industry R&D performs at 98% of the US level, whereas academic R&D performs at 140%.

NC earns more Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR)[1] dollars per $1 million of GDP

NC ranks **14th** in the nation with **$222** SBIR and STTR dollars per $1 million of GDP, or 29% greater than the US (2020–2022). Since 2000, the ratio has increased by 254%, whereas all other states have averaged growth of 28.9%. This reflects NC's several activities to improve award rates.

RTP universities are home to NC-based inventors

NC ranks **18th** in the nation with **16.3** academic patents awarded per 1,000 science, engineering, and health (SEH)[2] doctorate holders in academia (2021) with little growth since 2000. The most patents between 2020 and 2022 went to Duke (41%) followed by NC State University and UNC-CH (with 22% each).

NC businesses have high R&D intensity

NC ranks **18th** in the nation with **6.9%** of business establishments being knowledge- and technology-intensive (KTI)[3] employment establishments (2022), at 115% of the US value. Since 2000, NC has experienced almost double the growth of the US.

Source of all data for this page: NC Department of Commerce (2024)

[1] SBIR and STTR programs award non-dilutive funding for small businesses to develop technologies; [2] SEH doctorates include those in computer sciences, mathematics, life sciences, physical sciences, social sciences, psychology, engineering, and health fields; [3] KTI industries are those with high and medium-high R&D intensity (the ratio of R&D expenditures to production).

At the same time, agriculture is a powerful economic driver across the state.

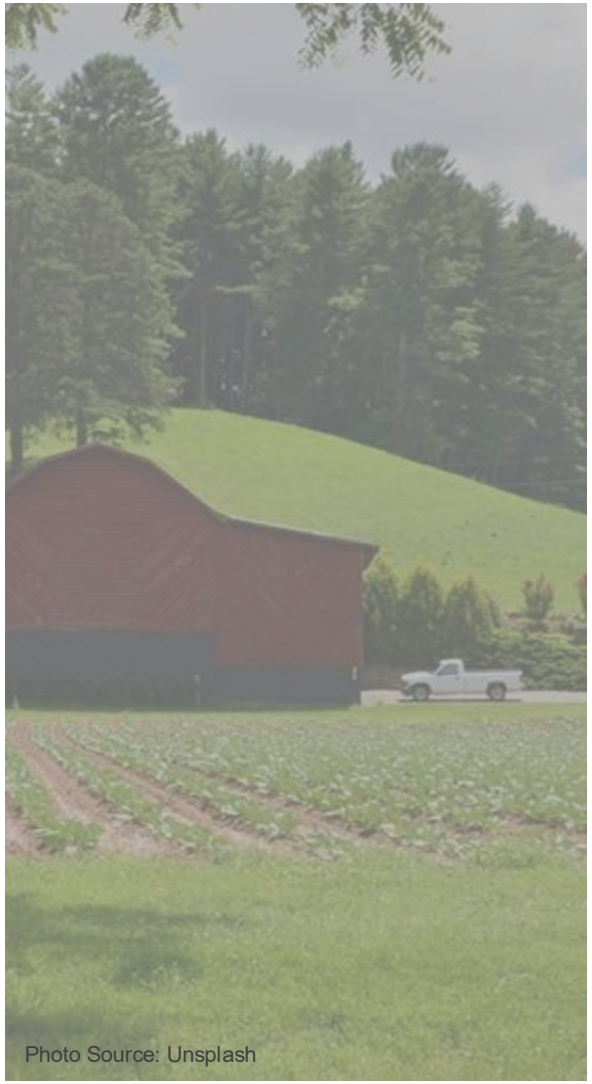


Photo Source: Unsplash

Agriculture is an important contributor to state GDP

Food, fiber, and forestry industries (farming, manufacturing, and wholesaling) contributed $79.2 billion to NC's gross state product in 2022. Farming alone makes up more than 25% of that total, or $20.8 billion of NC GDP.[1]

Agriculture employs an ample share of the NC workforce

There are approximately 72,500 agricultural producers in NC, of which approximately 43% name farming as their primary occupation.[2] In 2022, farms employed almost 30,000 permanent workers and more than 25,000 seasonal workers.[2]

Small family farms exemplify NC's diverse landscape

The average farm size in NC is 191 acres, which is 273 acres smaller than the US average as of 2023. Approximately half of NC farms are less than 50 acres, and approximately 84% of NC farms are individually or family owned.[3]

NC farmers are top producers in the US

As of 2023, NC is the #1 US producer of tobacco (all and flue-cured), sweet potatoes, and poultry and eggs compared with all other states. NC is ranked 3rd for cucumbers and peanuts.[3]

Home to a variety of crops; diversity is a key attribute

NC's varied geographies and climates produce more than 80 crop and commodity types.[4] After cotton, orchards (including apples, grapes, peaches, and pecans) had the largest increases in acreage from 2017 to 2022.[2]

More "digital natives" are entering farming

Although the average age of NC producers stayed consistent (58 years) from 2017 to 2022, the number of young producers increased. Farmers aged 24 years and younger grew by 20%, farmers aged 25 to 34 years grew almost 10%, and farmers aged 35 to 44 years grew approximately 12%.[2]

[1] NC State University (2024) [Retail was not included to avoid overstating agriculture's contribution to GDP]; [2] NC State University (2024);
[3] North Carolina Department of Agriculture & Consumer Services (2024); [4] NC State Extension (2025) [Data are derived from the USDA's National Agricultural Statistics Service (NASS) data.]

Agtech presents NC with growth opportunity at the intersection of innovation and agriculture.

What is agtech?

Agriculture technology, or "agtech," applies "the use of technology—especially software, machine learning and data—to optimize food production and help reduce the effects of variables like weather."[1]

These technologies typically focus on enhancing various aspects of the agriculture industry that include the following:

- Productivity
- Efficiency
- Sustainability
- Profitability

What are the trends in NC?

NC's agtech innovation is underpinned by the following multiple technological trends:

- Bundled solutions: Tailored solutions that integrate varied data sources and technology platforms to address more than one problem.[2,3]
- Artificial intelligence (AI): AI is becoming a "mainstream" expectation of investors in agtech innovation and is no longer a differentiator.[3,4]
- Genome editing: The sector is experiencing advances in crop genome editing, spurring the creation of NC State's Genome Editing Center.[3]
- Climate and weather: NC farms are experiencing environmental uncertainties and looking for ways to be more climate-smart and participate in carbon markets.[3]

[1] United Soybean Board; [2] McKinsey (2023); [3] CROPS focus groups finding; [4] AgFunderNews (2025)

Photo Source: Unsplash

NC is uniquely positioned to lead on the global agtech stage, thanks to its strong foundations in both innovation and agriculture.

Agtech is not a new area of focus for NC

NC is home to more than 180 agtech companies, including global leaders (e.g., Novonesis, Syngenta Crop Protection) and notable start-ups (e.g., Pairwise, Agerpoint)[1] employing more than 7,000 people in the RTR alone.[2]

An important subsector of agtech is agricultural biotechnology (ag biotech). NC ag biotech companies employ more than 5,000 people as of 2024, nearly a quarter of all biotechnology sector employment in the state.[3]

At a higher level, NC is a top 10 state for life sciences overall, ranking 7th for employment and outpaced for employment growth (+23% from 2019 to 2023) by only one other state (Massachusetts at +26%). The life sciences sector has a considerable economic impact in NC; for every $1 in direct output from the state's life sciences industry, an additional $0.59 is generated in the economy. In 2024, that impact was $82.1 billion.[3]

Photo Source: Unsplash

What makes NC's agtech cluster unique?

In addition to agricultural being historically, economically, and culturally substantial alongside a thriving innovation ecosystem, NC has characteristics that set its agtech landscape apart from the remainder.

- NC's RTR: A concentrated area of multiple universities, start-ups, and other research institutions in the heart of the state provides a rich environment for innovation and collaboration.
- A strong enabling environment: Many initiatives and incubators (e.g., Ag TechInventures [AgTI]) coupled with world-class facilities (e.g., Alexandria LaunchLabs, NC State University's Genome Editing Center, N.C. Plant Sciences Initiative) support agtech innovators' research and commercialization efforts.
- Room to grow: With two land grant universities, a network of 58 community college campuses, and 18 research stations, NC is well-positioned to drive emerging agtech solutions.

[1] NC Biotech Center; [2] Research Triangle Agtech Cluster; [3] TEConomy (2025).

Unlocking NC agtech's full economic potential requires overcoming several implementation and adoption challenges, including the inexhaustive list below.

Potential agtech adopters

Problems of scale

Small, medium, and specialty crop farms experience barriers to market access that large farms and crops with critical mass may not.[1]

Climate pressures

From unprecedented economic losses after natural disasters to daily weather uncertainties, farms are facing increasing risks due to climate change.[1]

Continuing education

Beyond understanding the value of agtech, the older generation of NC farmers in particular need ongoing training on how to use new tools and overcome mistrust of data sharing.[1]

Agtech scientists and innovators

Disconnected data sources

Research communities and farmers lack avenues to share ideas and feedback so innovative solutions can be tailored to solve on-the-ground problems.[1,2]

Infrastructure needs

Input-intensive, collaborative research requires costly infrastructure, such as plant transformation facilities,[3] strategically located throughout the state.[1]

Skilled workforce needs

NC requires a workforce to meet the demand for technical, specialized skills in the lab and in the field, such as agrochemical formulations.[1]

Agtech investors

Political and regulatory uncertainties

Shifting landscapes from regulations to tariffs and wars are making investments globally increasingly risky business.[4]

Slow return on investment

Innovations, such as gene edited crops, take a long time to be commercialized, and robotics are expensive. Investors everywhere are looking for more capital-light business models.[4]

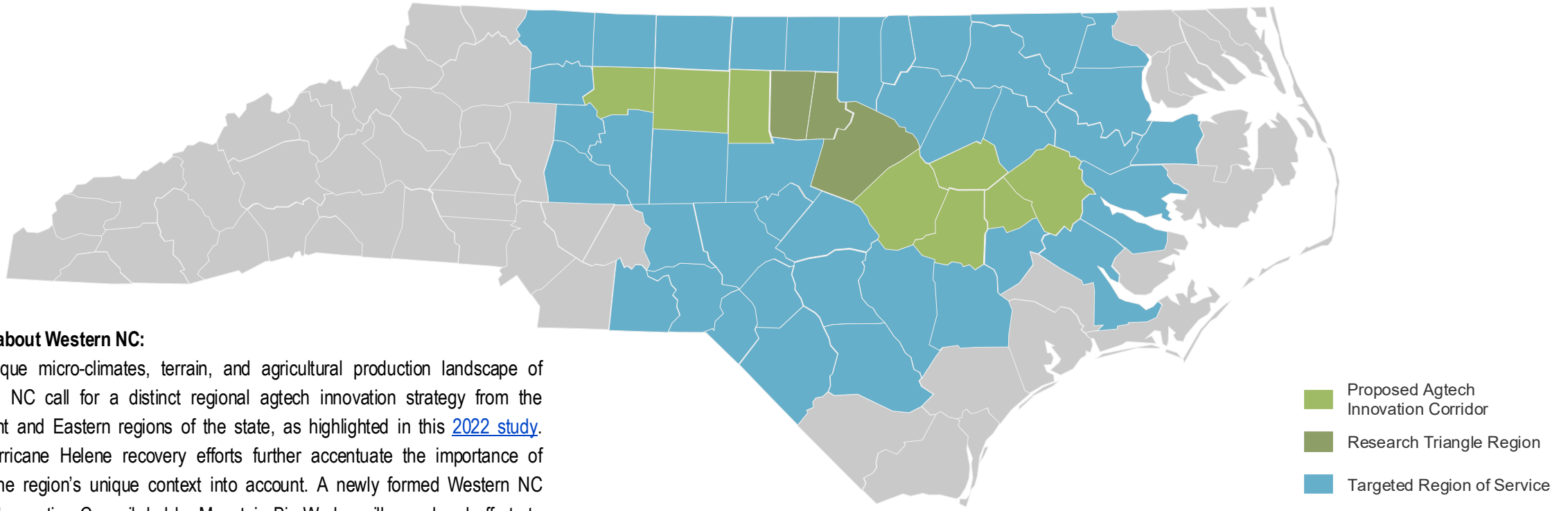
Some types of technologies are "overhyped"

Some technologies, such as water technology, are difficult to scale and monetize, and AI is overused as a selling point when the feature has become a basic necessity.[1,4]

[1] CROPS focus group finding; [2] Finding distilled through NC Ag Leads process; [3] For example, NC State's Genome Editing Center; [4] AgFunderNews (2025).

To realize NC's agtech potential, CROPS envisions building connections between traditional innovation hubs and agricultural communities.

North Carolina's agtech innovation has traditionally centered around RTP. Strategically expanding an agtech innovation corridor and broader "region of service"[1] east and west of RTP offers multiple benefits. These benefits include broadening who participates in and benefits from the state's agtech innovation efforts and providing new options for overcoming known agtech implementation and adoption challenges featured on page 10.



A note about Western NC:

The unique micro-climates, terrain, and agricultural production landscape of Western NC call for a distinct regional agtech innovation strategy from the Piedmont and Eastern regions of the state, as highlighted in this 2022 study. Post-Hurricane Helene recovery efforts further accentuate the importance of taking the region's unique context into account. A newly formed Western NC Agtech Innovation Council, led by Mountain Biz Works, will spearhead efforts to grow the region's agtech ecosystem through academic and industry partnerships.

[1] NSF funded the original 42-county innovation corridor region of service in early 2024 (NC A&T, 2024) through a Regional Engine planning grant; NSF defines a "region of service" as "the geographical area impacted by the NSF Engine's efforts and activities…[and] should be geographically contiguous. Examples might include commuting zones, labor market areas, metropolitan statistical areas, and areas defined by ecological or geological boundaries." (NSF, n.d.).

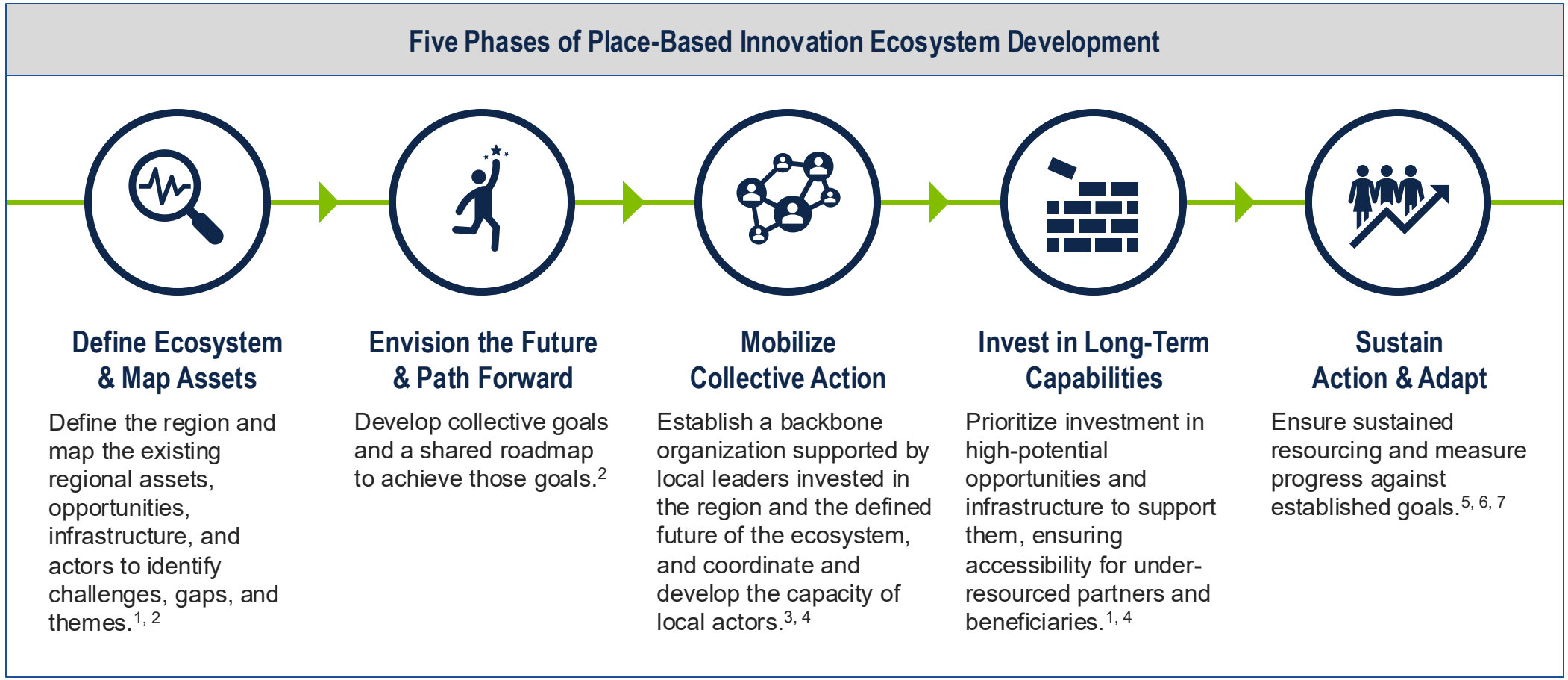
Successful NC agtech innovation corridor development requires a place-based approach that builds on regional assets, relationships, and needs.

Place-based ecosystem development offers a powerful framework for driving innovation and growth by aligning investments with the specific assets, needs, and strengths of a region.[2,4] Grounded in local contexts, such as existing industries, institutions, and community networks, place-based ecosystem development enables tailored solutions that foster inclusive growth, resilience, and long-term sustainability.[2, 3] This approach not only builds on the momentum of regional actors but also strengthens collaboration across sectors. A recent 2025 Brookings Institution report found that, for regions prioritizing place-based ecosystem development, "what could prove transformative…is the collaborative 'muscle' that regions built in this period: the coalitions that regions built and advanced around a shared vision for inclusive growth, and the capabilities they strengthened to deliver on it."[5] By centering investment strategies in place-based realities, this model unlocks the potential for innovation ecosystems that reflect and serve the people and locations they are rooted in.[2, 3]

[1] McKinsey (2023); [2] Scholars Strategy Network (2024); [3] Our Place (2023); [4] Federation of American Scientists (2023); [5] The Brookings Institution (2025).

Photo Source: Unsplash

A structured, phased approach to place-based innovation ecosystem development guides the CROPS initiative's planning efforts.



[1] RTI (2020); [2] MIT D-Lab (2019); [3] Our Place (2023); [4] Scholars Strategy Network (2024); [5] Resonance (2020); [6] Dart (2019); [7] Tamarack Institute (2017)

This report presents findings from the early planning phases initiated by CROPS, and it outlines recommendations for follow-on phases.

This report completes the first two stages for place-based ecosystem development and serves as a catalyst for the remainder:

1) **Define Ecosystem & Map Assets:** This report draws a proposed boundary around where NC's technological innovation and agriculture economy converge into a NC agtech innovation corridor. This report then maps the ecosystem's existing assets to serve as a jumping off point for identifying opportunities to further develop the ecosystem.
2) **Envision the Future & Path Forward:** The report creates a clear picture of the potential outcomes of a connected agtech innovation corridor and brings to light several opportunities for ecosystem leaders to rally around.

This report also provides actionable recommendations to **Mobilize Collective Action** as a next step. CROPS partners aim to seed planning and collaboration among statewide innovation and agriculture leaders to advance the NC agtech innovation corridor into implementation.

What is CROPS?

CROPS is an NSF-funded and NC A&T-led collaborative coalition and strategic planning effort steered by the vision of improved climate-resilience for NC farms, especially those managed by historically underrepresented farmers, culminating in a new generation of empowered and prosperous small- and mid-sized farms contributing to thriving rural communities. The major NC metropolitan Research Triangle and Piedmont Triad Regions have promoted technological innovation and economic opportunity in adjacent areas, but with limited economic impact in the under-resourced rural counties of Eastern and Central NC. CROPS proposes broadening access to innovation, research, commercialization, and technical resources through a **42-county NC agtech innovation corridor spanning** from Greensboro to Greenville. This report brings together innovation ecosystem assets and a vision for an agtech-enabled future for NC, guided by CROPS initiative's core priorities of advancing place-based research and innovation, growing a diversified agricultural workforce, implementing farmer-led input, and building long-term rural economic resilience.

Define Ecosystem & Map Assets

Reader Reminder: The assets included in this section are not intended to be an exhaustive list but rather demonstrate the broad swath of agtech sector actors at play and highlight notable examples.

"New farmers, underserved farmers, and those with small-scale acreage need information to develop farm management practices to implement methods that protect the environment, produce the highest quality food, and provide a reliable family income."

Dr. Gregory Goins, Associate Dean for Research
NC A&T College of Agriculture and Environmental Sciences
Principal Investigator, CROPS initiative

The combined contributions of key ecosystem actors representing diverse assets and efforts characterize NC's agtech innovation ecosystem.

Farmers & Farmer Organizations

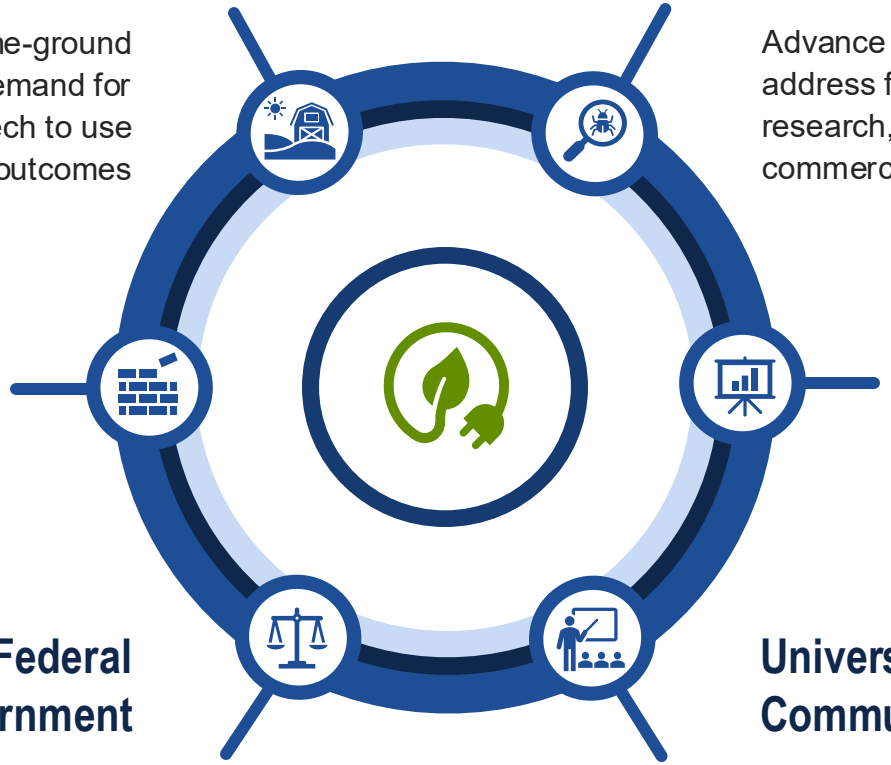
Provide insights to on-the-ground problems and demand for innovations and put agtech to use for improved agricultural outcomes

Start-ups, Small & Large Companies

Advance technical solutions to address farmers' needs through research, innovation, and commercialization of ideas

Economic Development Organizations

Enable support through development activities, such as networking, mentoring, and resourcing



Investors & Funders

Provide resourcing to support research, development, and commercialization of innovations

State & Federal Government

Foster innovation and uptake through funding, policy, and research initiatives and provide incentives and infrastructure

Universities & Community Colleges

Conduct research, prepare a skilled workforce, and facilitate partnerships to translate ideas into solutions

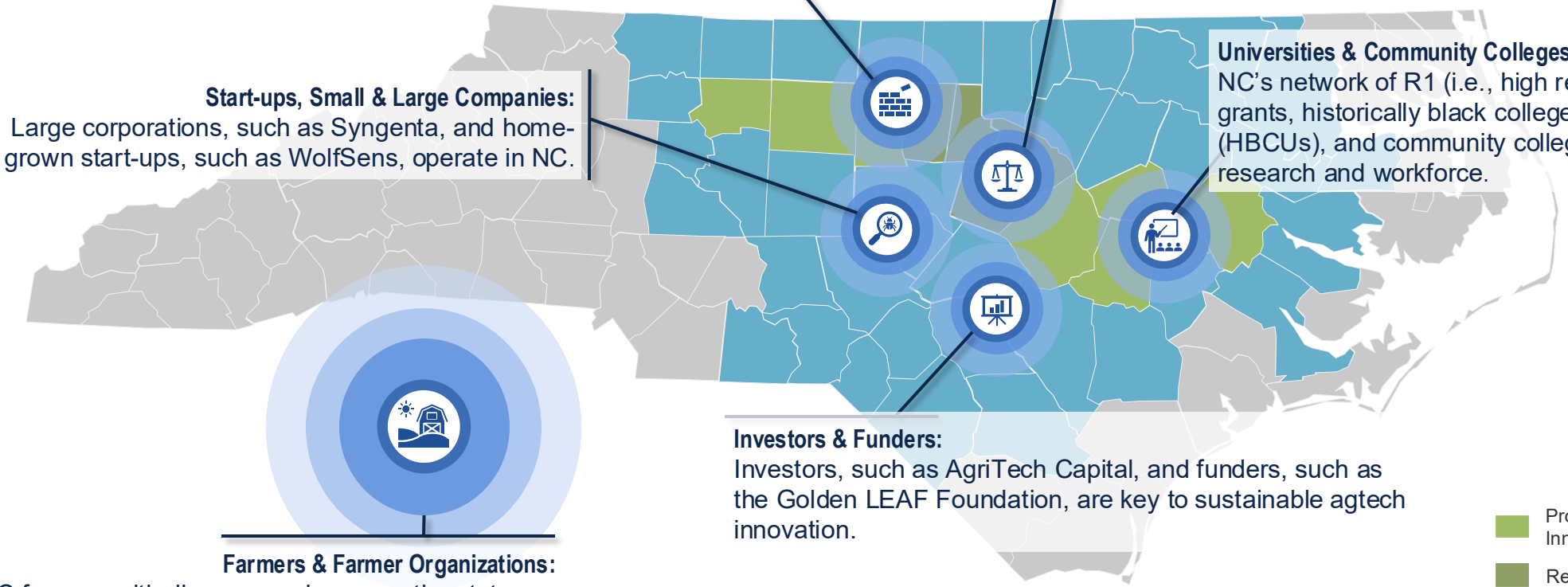
These place-based actors, assets, and initiatives exhibit complementarities that, if effectively harnessed, hold potential for outsized impact

Economic Development Organizations:
Organizations, such as NCBiotech and NC Idea, are catalyzing and accelerating agtech innovation across the state.

State & Federal Government:
From the NC Department of Agriculture and Consumer Services to the US Department of Agriculture, multiple government partners support farmers and entrepreneurs.

Start-ups, Small & Large Companies:
Large corporations, such as Syngenta, and home-grown start-ups, such as WolfSens, operate in NC.

Universities & Community Colleges:
NC's network of R1 (i.e., high research activity), land grants, historically black colleges and universities (HBCUs), and community colleges contributes to agtech research and workforce.



Investors & Funders:
Investors, such as AgriTech Capital, and funders, such as the Golden LEAF Foundation, are key to sustainable agtech innovation.

Farmers & Farmer Organizations:
NC farmers with diverse needs across the state are the backbone of the agtech innovation ecosystem.

Proposed Agtech Innovation Corridor

Research Triangle Region

Targeted Region of Service

Created with paintmaps.com

A variety of farmer-focused organizations support NC farmers from field to market.

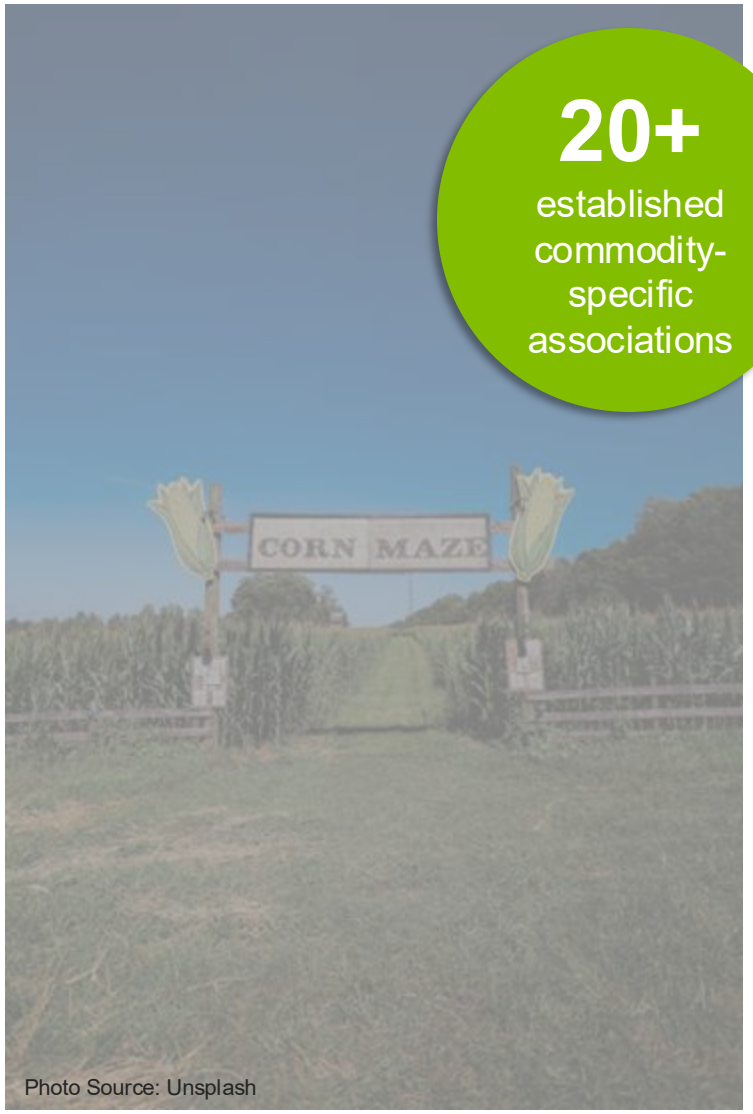


Photo Source: Unsplash

20+ established commodity-specific associations

In addition to more than 20 established commodity-specific associations and other emerging and niche areas, NC farmers benefit from numerous other long-standing and new organizations:

Formed in 1936, the North Carolina Farm Bureau has offices in all 100 NC counties and provides educational, economic, marketing, and advocacy services for its 500,000+ members.[1]

NC Ag Leads was a participatory strategic planning effort funded and overseen by the Golden LEAF Foundation with leadership from the NC Department of Agriculture and Consumer Services, NC Farm Bureau, and the NC Chamber. After gathering the perspectives of hundreds of NC ag sector players, the project identified actionable priorities to further the ag industry.[3]

The North Carolina Farmers Market Network (NCFMN) formally became a nonprofit in 2023 after the US Department of Agriculture (USDA) Farmers Market Promotion Program awarded a capacity building grant to NCFMN in 2022. NCFMN has been supporting NC farmers markets since the COVID-19 pandemic.[2]

Established in Clinton in 2003, the North Carolina Agritourism Networking Association serves as a state-wide professional network to help NC farmers diversify their income by opening their farms to the public for ag-based activities.[4]

[1] NC DNCR (2016); [2] NCFMN | NC State Extension (2023); [3] NC Ag Leads (2025); [4] NC-ANA.

Farmer organizations work at all levels across the state, from county to region and land ownership to market access.

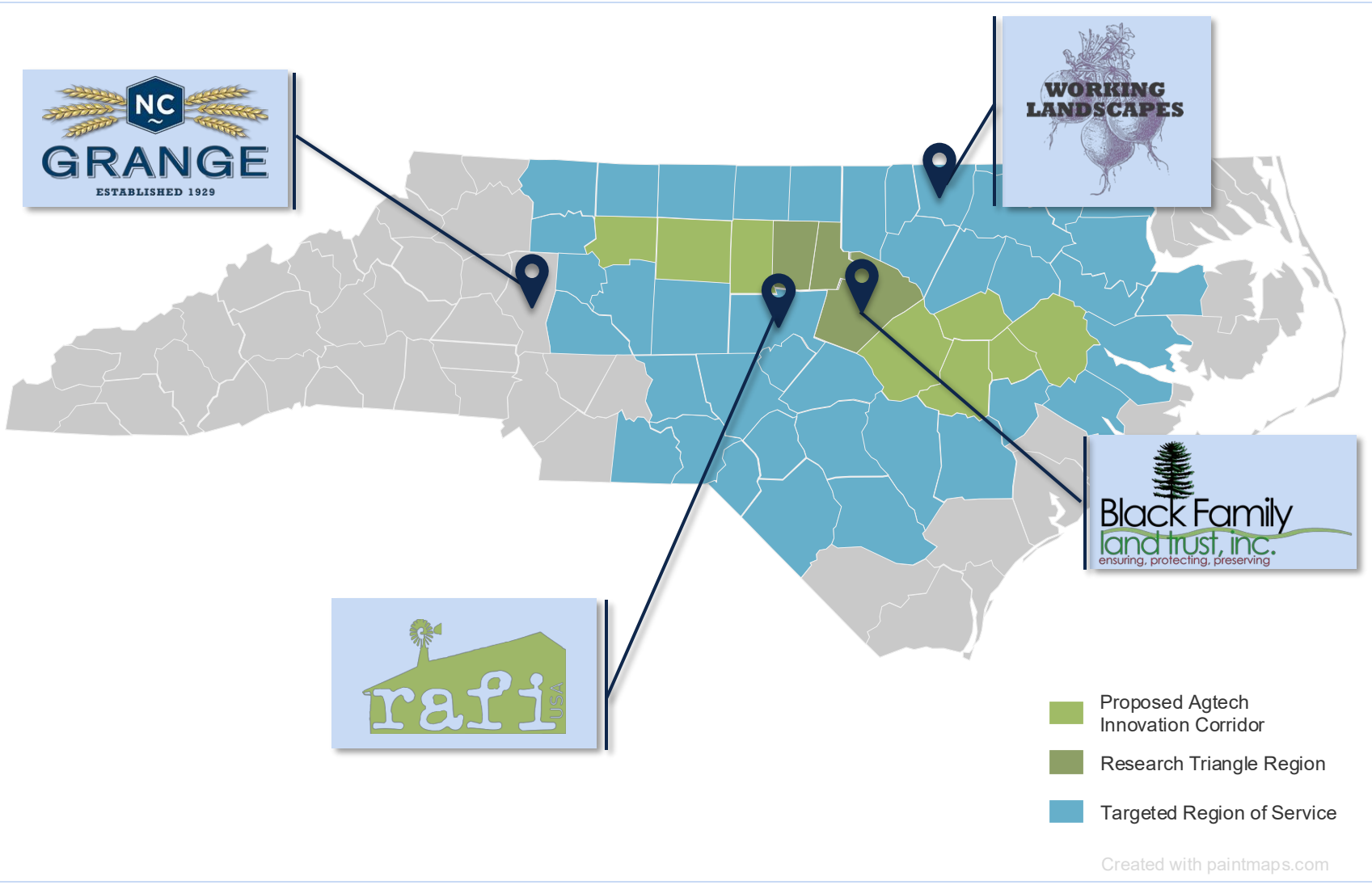
Black Family Land Trust, Inc: This organization dedicates services to historically underserved landowners across the Southeast, including providing tools to help landowners make informed decisions about their land and its use.

NC Commodity-Specific Associations: These associations support their respective agricultural commodity sectors, from row crops such as corn and soybeans to tomatoes and apples, through research, advocacy, education, and marketing.

NC Grange: This organization serves member farmers across NC through offices across the state with various programs, including education, policy advocacy, and community events.

Rural Advancement Foundation International-USA (RAFI): RAFI works out of Pittsboro via coalitions, using a whole-system approach across agricultural sectors to provide services and policy advocacy for farmers in support of just and equitable food systems.

Working Landscapes: This company partners with Warren County farmers to help them access trainings, resources, and market opportunities through a community Food Hub, research collaborations, and a climate-smart initiative.



NC is home to more than 180 agtech companies spanning various sizes and specialized domains.

Photo Source: Unsplash

NC has a world-leading agtech cluster in plant gene editing[2] and substantial commercial activity in biologics and data management and modeling:

AVALO

Avalo is a Durham-based start-up using AI to help develop climate-resistant crops. In early 2025, Avalo secured $11 million Series A funding.[3]

pairwise®

In 2024, global agtech company Corteva made a $25 million equity investment[4] in NC-based Pairwise, which uses CRISPR[5] technology to accelerate crop innovation.

novonesis

A global biosolutions company, Novonesis has two locations in NC that are focused on innovations in crop protection and natural fertilizers.

agerpoint

Previously headquartered in Florida, Agerpoint moved to NC in 2024 to advance its AI-enabled plant health monitoring innovations.[6]

[1] NC Biotech Center (2025); [2] RTRP (2019); [3] NC Biotech Center (2025); [4] Corteva (2024); [5] Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) is a novel genetic engineering technique; [6] Agerpoint (2021).

Although agtech companies tend to cluster around RTP, several companies operate outside of RTP.

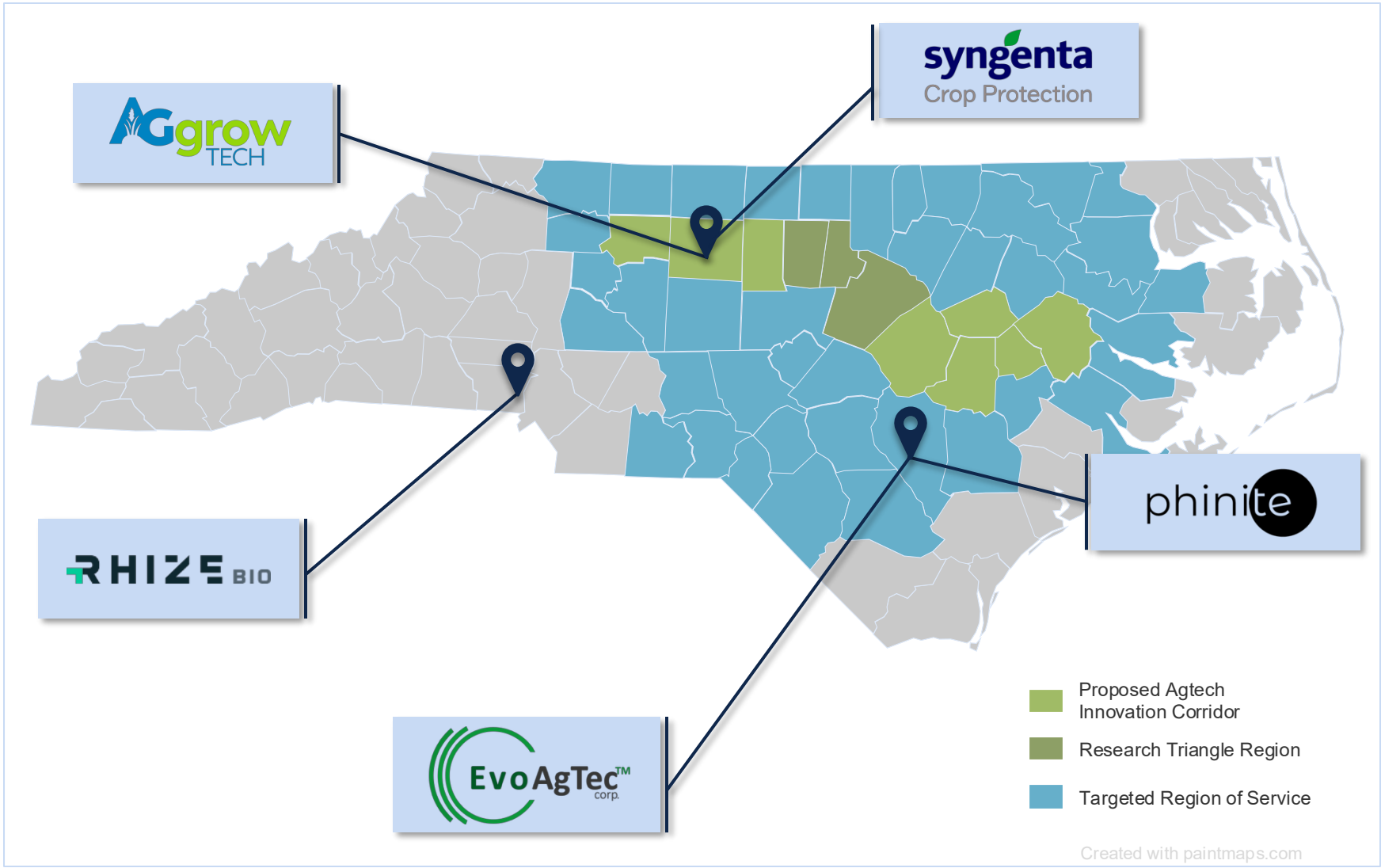
AGgrow Tech: This company specializes in agricultural and technology sectors, focusing on sustainable practices. The company's main services include the production of carbon negative feedstocks intended for use in the bioeconomy.

EvoAgTec: This company provides products to boost soil microbials and increase soil productivity, promoting green technology solutions for agricultural activities.

Phinite: This organization develops sustainable manure-to-fertilizer systems to enhance soil health and reduce nutrient waste. The $5.5 million facility is the largest animal waste drying operation in NC that promotes sustainable agriculture.

RhizeBio: This company offers biological soil analysis and AI-powered insights to help improve soil health and advance regenerative agriculture practices through its innovative approach to soil health.

Syngenta Crop Protection: This company is a global leader in agriscience and technology. Syngenta recently completed a $140 million expansion of its North American headquarters in Greensboro, thereby enhancing its R&D capacities to better serve farmers.[1]



[1] NC Biotech Center (2024).

Innovation and commercialization support organizations are essential to the fabric of NC's agtech ecosystem.

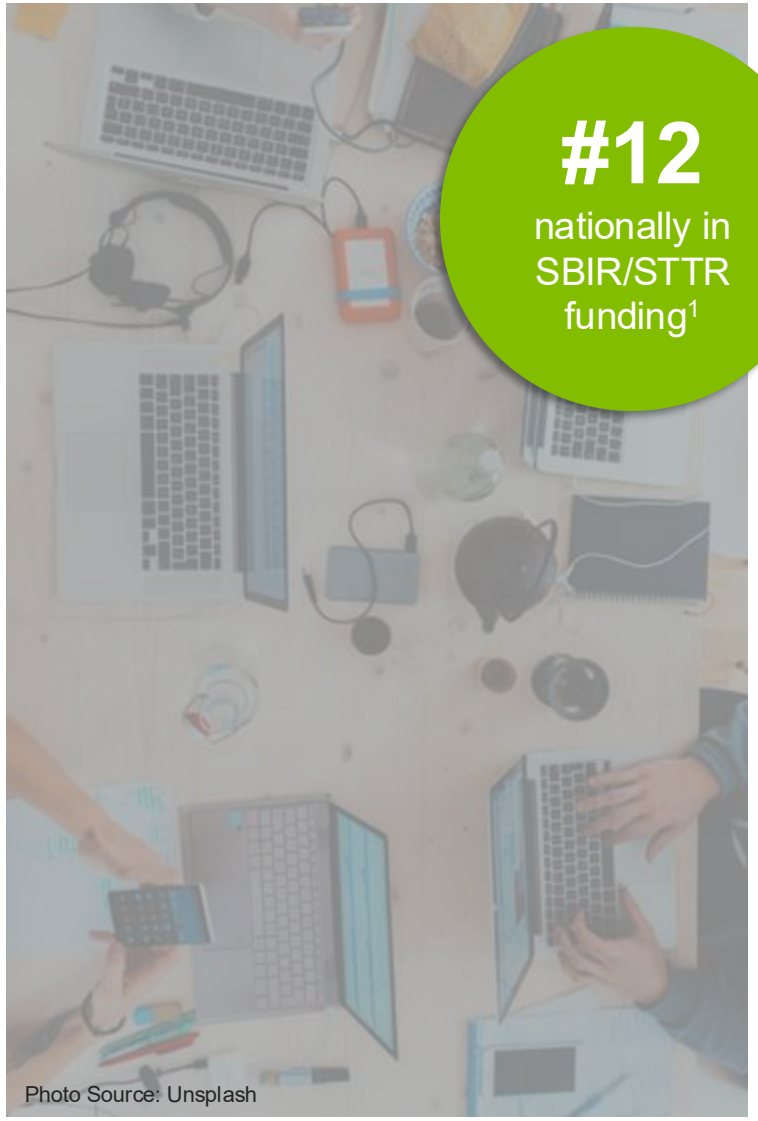


Photo Source: Unsplash

NC is a national leader in early stage innovation, with small businesses securing more than $173 million in SBIR and STTR[2] awards in 2023[1]:

NC IDEA is a Durham-based foundation advancing innovation and entrepreneurship. In 2025, NC IDEA awarded $1.7 million in grants, with more than $1.2 million dedicated to rural entrepreneurs and ecosystem-building efforts.[2]

First Flight Venture Center (FFVC) is a nonprofit science and technology incubator based in Durham that helps start-ups scale through mentoring, funding access, and commercialization programs. In 2024, FFVC entered a partnership with Bayer to accelerate a cohort of startups focused on tackling food security through agtech innovation.[3]

NCBiotech is a nonprofit life science economic development agency that has been supporting statewide innovation in biotech for more than 40 years. In early 2024, NCBiotech awarded $1.5 million in grants and loans to strengthen commercialization, research, and entrepreneurship.[4]

RIoT serves as a community hub for innovation, with an accelerator program that has supported more than 80 startups since 2018. RIoT is working with Wilson, NC, which won a $750,000 USDA grant, to develop a smart agriculture lab, an initiative to boost farm efficiency, create high-wage jobs, and support rural economic success.[5]

[1] NSF National Center for Science and Engineering Statistics (2024); [2] NC IDEA (2025); [3] First Flight Venture Center (2024); [4] NC Biotech (2024); [5] RIoT (2024).

These organizations provide specialized support to agtech companies and others across NC.

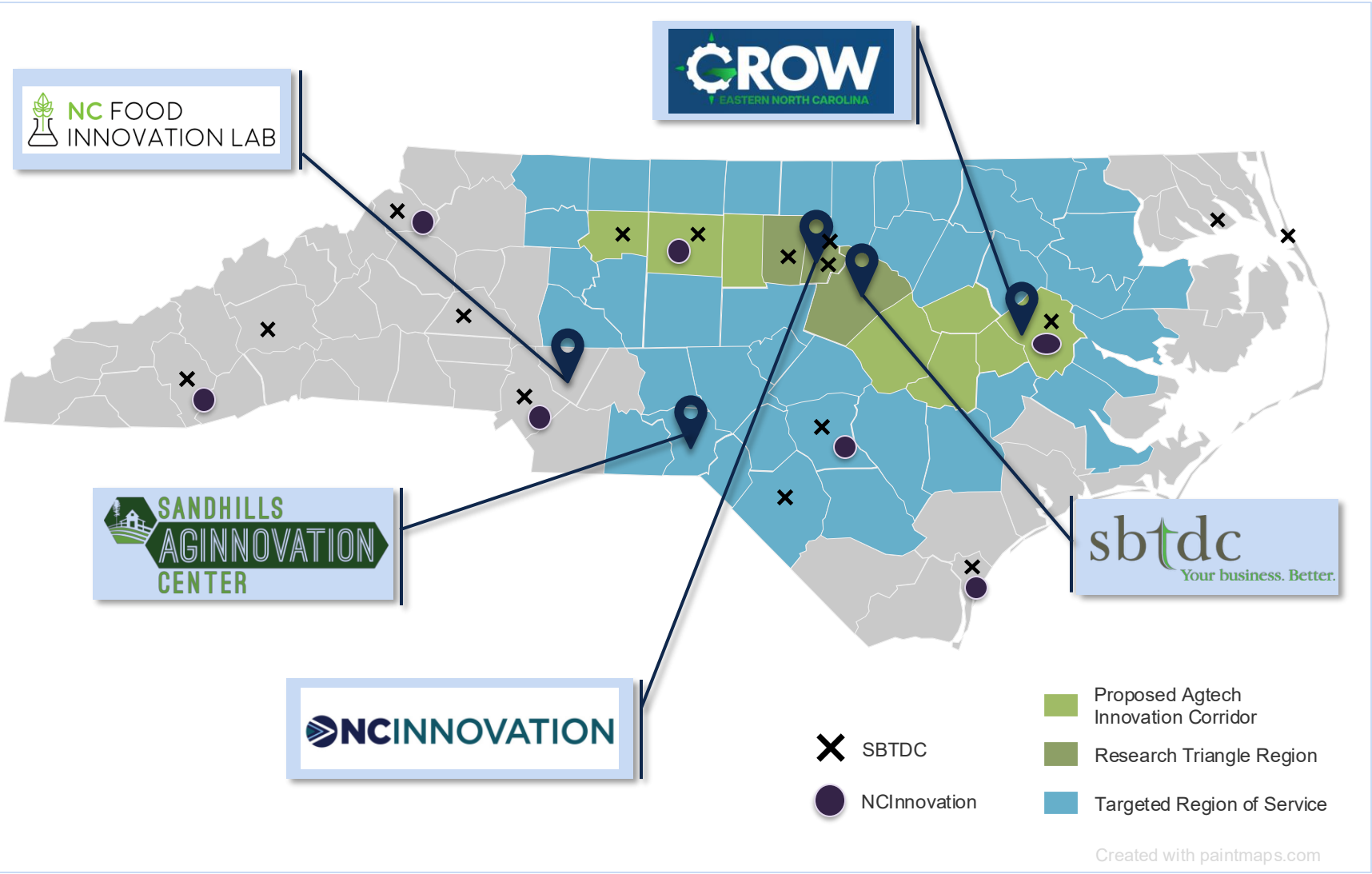
Grow ENC's Eastern NC Food Commercialization Center: It has a 30,000-ft^2 facility in Ayden that provides processing, packaging, and co-manufacturing services to help farmers and food entrepreneurs scale products across a 7-county region.

NCInnovation: This organization supports commercialization of high-potential university research statewide, helping to expand innovation beyond the Triangle Region backed by $500 million from the state and $25 million in private funds.

NC Food Innovation Lab: This state-of-the-art pilot plant helps food companies scale up plant-based products from bench to market, offering R&D, processing, and commercialization support to drive food innovation in NC.

Sandhills AGInnovation Center: The Center helps regional farmers grow their businesses through value-added processing, aggregation, and distribution since 2017 in Ellerbe with support from a $475,000 Golden LEAF Foundation grant.[1]

Small Business and Technology Development Center (SBTDC): SBTDC has helped more than 125,000 place-based entrepreneurs access capital, mentorship, and growth tools with its 16 offices across NC.



[1] Charlotte Urban Institute (2019).

Place-based economic development organizations promote regional and state-wide business support and economic growth.

Photo Source: Unsplash

80 of NC's 100 counties are classified as rural[2], underscoring the critical role of place-based economic actors in driving statewide development:

RESEARCH TRIANGLE REGIONAL PARTNERSHIP

RTRP connects businesses with opportunities across 14 central NC counties. RTRP promotes the region's innovation assets, including within the Research Triangle Agtech Cluster.

NC CAROLINA CORE
YOUR NEXT BIG MOVE

Anchored in Greensboro but spanning more than a 150-mile corridor between Winston-Salem and Fayetteville, the Carolina Core is focused on attracting businesses and creating jobs. Between 2018 and 2024, the Carolina Core garnered more than $20 billion in capital investments and created more than 50,300 jobs.[3]

NC RURAL CENTER

The NC Rural Center in Raleigh supports all 80 of the state's rural counties through capital access, small business programs, and leadership development.

NORTH CAROLINA'S SOUTHEAST
Regional Economic Development Partnership

North Carolina's Southeast is a public–private partnership dedicated to economic development across 18 southeastern counties. From 2014 to 2019, North Carolina's Southeast helped attract more than $1 billion in investments and more than 4,700 new jobs.[4]

[1] NC Commerce (2024); [2] NC Spin (2025); [3] Wstoday (2024); [4] North Carolina's Southeast.

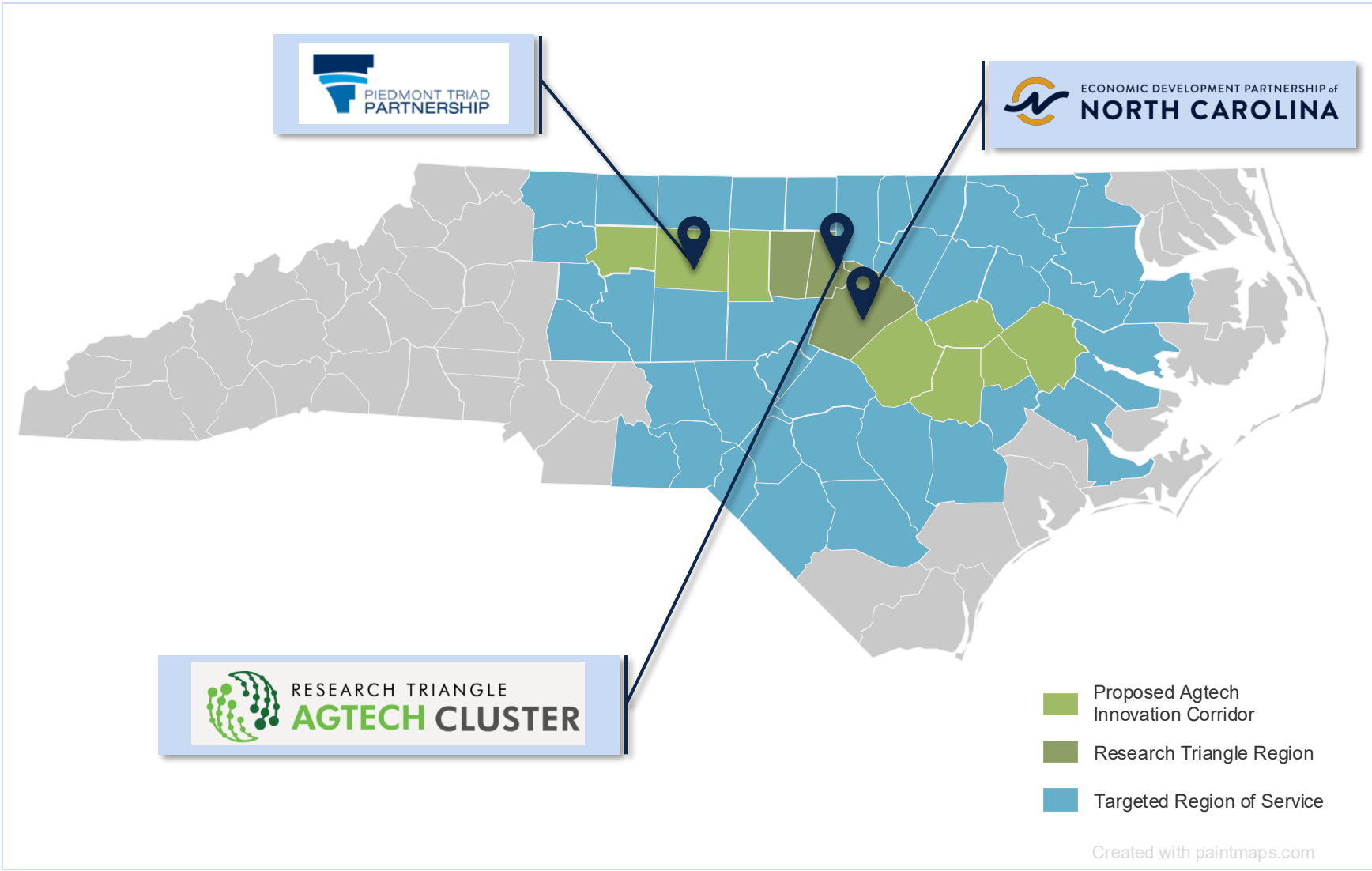
Place-based economic development actors operate at different scales and support diverse objectives.

County Economic Development: Many NC counties have dedicated economic development departments or partnerships to advance innovation and support place-based investments.

Economic Development Partnership of North Carolina (EDPNC): EDPNC operates statewide economic development strategy out of the state's capital, attracting businesses and capital to NC across numerous industries.

Piedmont Triad Partnership (PTP): The PTP leads economic development across 12 north-central counties with agricultural roots and food manufacturing activity. The PTP promotes sectors, such as food manufacturing, processing, and logistics, through innovation and supply chain growth.

Research Triangle AgTech Cluster: Hosted by RTRP, this industry-led initiative unites more than 100 AgTech companies, research intuitions, and government partners to drive innovation. The Research Triangle AgTech Cluster supports local economic development by linking startups, talent, and investors across 14 counties in central NC.



NC's internationally recognized universities and research institutions drive agtech innovation through specialized expertise and programs.

Photo Source: Unsplash

North Carolina's $79.2 billion[2] agriculture industry is supported by statewide research infrastructure, with NC Cooperative Extension serving all 100 counties and the Eastern Band of Cherokee Indians[1]:

NC State University is a public land-grant research university in Raleigh. The university is preparing to launch a Genome Editing Center for Sustainable Agriculture, which aims to accelerate the pace of gene editing research in plants and promote climate resilience in agriculture.

The Center for Environmental Farming Systems (CEFS) is a statewide leader in sustainable agriculture and helped launch numerous innovative programs, including the NC Farm to School Program. CEFS conducts applied research on climate-resilient practices, food system equity, and soil health across its 2,000-acre research farm in Goldsboro.

NC A&T is a public Historically Black College and University (HBCU), land-grant research university in Greensboro, contributing to the research community since 1891. NC A&T Cooperative Extension, USDA, and other stakeholders partner on the Small Farm Research and Innovation Center, which connects small-acreage farmers with research, education, and tools to strengthen local food systems and agricultural innovation.

The NC Department of Agriculture and Consumer Services' (NCDA&CS) Research Stations Division, in partnership with NC State University and NC A&T, has established 18 statewide locations, each featuring unique climate and soil conditions to act as living labs for researchers.

[1] NC State University; [2] NC State University (2024) [Excludes retail].

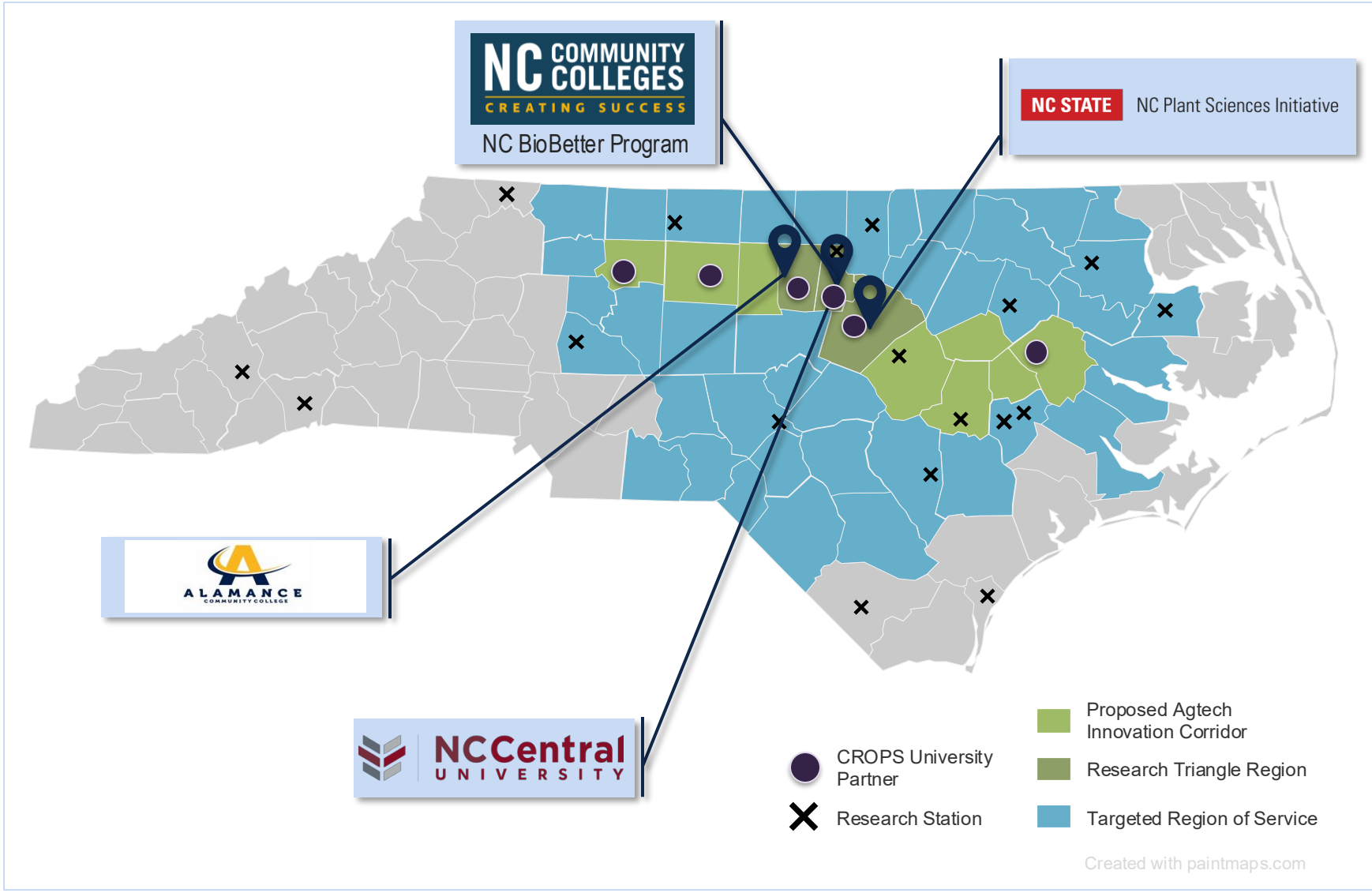
These organizations are central to driving agtech innovation and equipping the next generation of agtech talent.

Focused Workforce Development: Multiple NC community colleges host agriculture and AgTech workforce programs across NC. For example, Alamance Community College offers training in AgTech, agricultural biotechnology, horticulture technology, and complementary applied engineering specializations.

NCCCS NC BioBetter Program: This program is a $16.3-million 3-year workforce and research initiative focused on growing NC's talent pipeline in ag biosciences and biomanufacturing. Led by NCCCS, the program supports hands-on training in bioprocesses, helping to meet talent needs for companies in rural and urban regions.

NC Plant Sciences Initiative: This initiative connects researchers, industry, and extension agents to translate advanced plant science into practical solutions for farmers and agribusinesses across NC. With a $160-million research facility and partnerships across academia and industry, the initiative focuses on precision agriculture, data-driven crop improvement, and climate resilience.

North Carolina Central University (NCCU): NCCU is an HBCU providing education and research in Durham for more than a century. The HBCU and Historically American Indian University (HAIU)[1] Coalition, led by NCCU, received a portion of funding through a $25 million Build Back Better grant in 2024 to expand biomanufacturing training across six minority-serving institutions in NC.[2]



[1] In NC, the sole HAIU is UNC Pembroke; [2] NC Biotech Center (2023).

Strategic investment capital plays a key role in supporting NC agtech companies and innovators.

Photo Source: Unsplash

In 2024, North Carolina's venture capital funding nearly doubled to $3.1 billion, with the technology sector—encompassing agtech—accounting for more than 79% of that total[2]:

NovaQuest Capital Management is a Raleigh-based private equity firm that has made 27 investments and raised 8 funds since its founding in 2010. The company's portfolio includes investments in healthcare, biopharma, and late-stage animal health such as Covenant Animal Health Partners.[3]

2ndF is a Raleigh-based family office launched in 2022 that focuses on early-stage investments in science-driven startups. With 33 investments to date, 2ndF backs companies commercializing Triangle-based research, typically investing $200,000 to $450,000 to accelerate innovation.[4]

KdT Ventures is a venture capital firm based in Black Mountain. The firm seeks to invest in seed, early stage, and later stage companies, focused on agriculture, healthcare technology, pharmaceuticals, biotechnology, and life sciences sectors.[5]

Syngenta Group Ventures is the venture arm of the Syngenta Group and has deployed more than $100 million across more than 15 agtech companies since 2006.[5] With 78 investments globally, Syngenta Group Ventures' portfolio includes NC-based Vesteron, a sustainable peptide-based crop protection company headquartered in Durham.[6]

[1] NC Rural; [2] Venture Connects (2025); [3] NovaQuest Capital Management; [4] 2ndF; [5] North Carolina Biotechnology Center; [6] Syngenta Group Ventures.

NC-based agtech investors are important to fostering innovative solutions that are tailored to NC contexts.

Alexandria Venture Investments: This firm focuses on investing in disruptive life science companies, including in the agriculture technology sector. The firm has backed companies such as Avalo (in Durham), focused on climate-resilient crops.

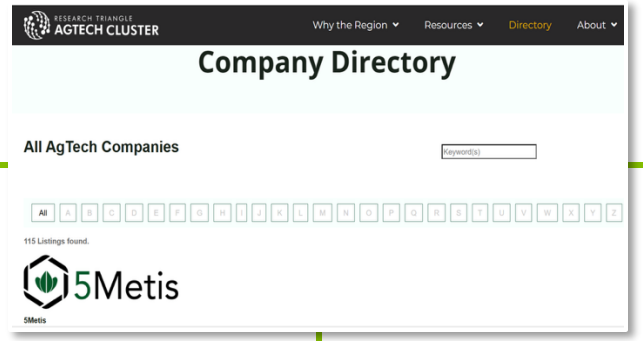
LeVert Ventures: A specialized Pappas Capital fund, this firm is dedicated to AgTech innovation investments and has offices in RTP and Asheville. Focus areas include animal tech, controlled environment ag, precision ag, and biological crop protection.

Oval Park Capital: Oval Park Capital is an early-stage venture capital firm focusing on deep technology startups in the Southeast, including Raleigh–Durham. Example investments include chemicals in poultry production and sensors and software that reduce produce spoilage.

Plesion Capital: This firm invests in NC-based technology and science start-ups, supporting companies at the intersection of ag innovation and regional development.

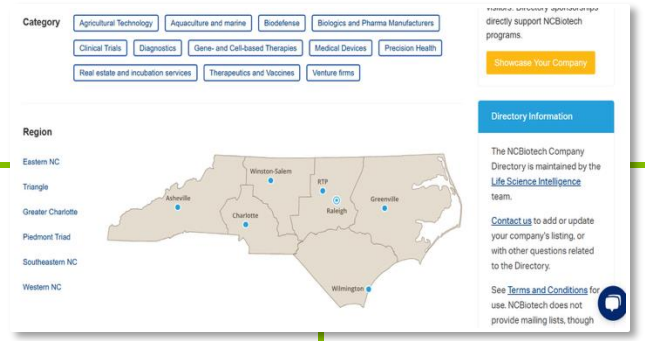
Wolfpack Investor Network (WIN): An angel and co-investment fund for NC State-affiliated startups, WIN invests across multiple sectors, including AgTech, with past support for companies such as Improved Nature.

Existing repositories offer additional assets characterizing NC's agtech innovation ecosystem.



The Research Triangle Agtech Cluster

- Serves as a tailored RTP agtech company directory.
- Highlights regional innovation and showcases companies across different stages and specializations highlighted.
- Provides a tool to identify innovative partners.



North Carolina Biotechnology Center

- Provides an interactive company directory searchable by location, size, and sector.
- Features life science companies across ag, pharmaceutical, and environmental domains.
- Helps locate biotechnology partners and investors.

CROPS Asset Database

- Includes a searchable database of 357 assets in NC.
- Maps agtech-relevant institutions and organizations, with an emphasis on assets outside of RTP.
- Provides access upon request.

Envision the Future & Path Forward

Reader Reminder: The opportunities included in this section are NC agtech-stakeholder identified starting points to inspire thinking and build momentum in the space, not a quantified market sizing exercise.

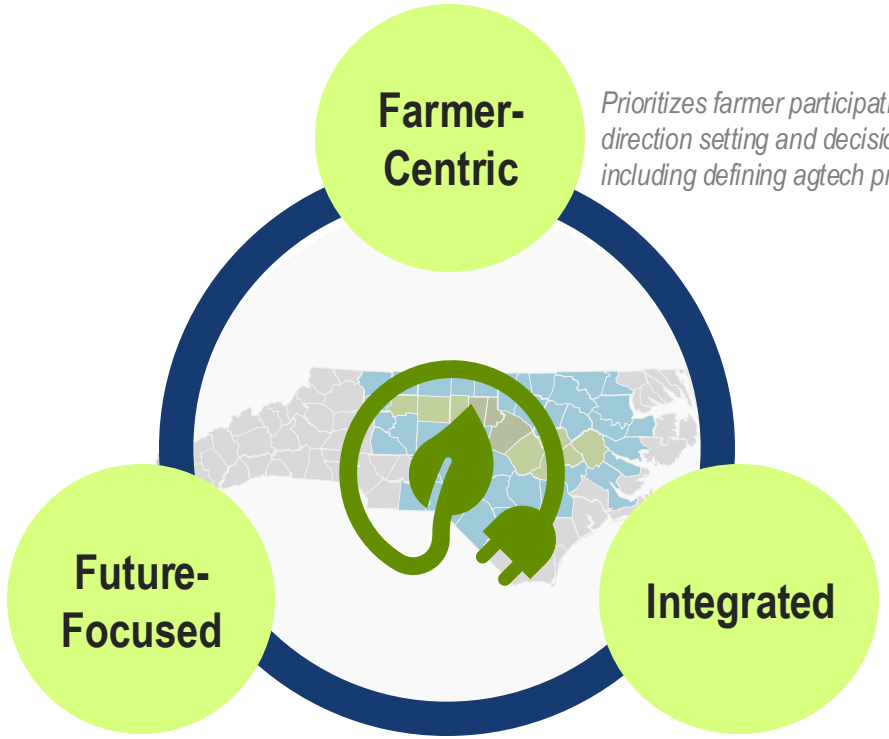
CROPS envisions a resilient agricultural future for NC enabled by the integrated 42-county agtech innovation corridor.

The Vision:

The CROPS initiative envisions a resilient agricultural future for North Carolina, enabled by a 42-county agtech innovation corridor extending east and west from RTP, home to a globally recognized innovation hub.

As envisioned, this focused corridor will deliver timely, accessible agricultural solutions through strategic collaborations between farmers and researchers. Success depends on developing a skilled agtech workforce and fostering a dynamic innovation ecosystem that delivers shared benefits to diverse stakeholders across the corridor.

As envisioned, the NC Agtech Innovation Corridor is:



Prioritizes farmer participation in strategic direction setting and decision-making, including defining agtech priorities.

Emphasizes building upon capabilities and capturing emerging trends to amplify NC's future agricultural and innovation competitiveness.

Intentionally builds connections across NC's agriculture and innovation sectors, as well as between rural and urban regions of NC.

Photo Source: Unsplash

NC stakeholders point to five key opportunities needed to advance the NC innovation corridor and unleash the state's agtech potential.

1. **Bridge Research to Farm Gaps** — Link farmer insights directly with agricultural research through strategic partnerships between producers, scientists and technology developers.
2. **Accelerate Commercialization** — Strengthen support for identifying and commercializing promising upstream research and innovation poised to deliver economic value for farmers and industry.
3. **Connect to Market Opportunities** — Equip farmers with tailored agtech products and services that open new market channels and strengthen positions in existing markets.
4. **Integrate Resources & Networks** — Break down silos across organizations, regions, and sectors to improve the flow of knowledge, resources, and capital across the corridor.
5. **Develop an Agtech Workforce** — Build the robust pipeline of job-ready workers and employment pathways needed to enable agtech development and adoption in NC.

Photo Source: Unsplash

Photo Source: Unsplash

About the Opportunities

These opportunities emerged from consultation with NC agtech stakeholders, including CROPS initiative partners and NC Ag Leads working group leaders.

The opportunities build upon existing agriculture and innovation ecosystem analyses and planning efforts to amplify key messages. Many underscore recommendations shared by other strategic planning efforts such as the 2022 assessment of NC's innovation ecosystem and the 2024–2025 NC Ag Leads agriculture sector strategic planning effort.

Each opportunity is detailed with the following:

- ✓ A high-level description of the opportunity with supporting rationale.
- ✓ A non-exhaustive mapping of relevant NC-based resources and other components needed to advance this priority.
- ✓ An NC-based case study illustrating existing progress in this area.

Opportunity 1: Bridge research to gaps

Description: Cultivate mutually beneficial, strategic partnerships among farmers, researchers, and agtech developers through collaborative and efficient mechanisms. These partnerships enable streamlined information sharing between stakeholders to match agtech supply to agtech demand.

Rationale: A persistent challenge identified in the NC ag landscape is that "Agtech is innovating without farmers."[1] Agtech ecosystem actors currently work in silos; agtech developers and researchers have few avenues to understand on-the-ground farmer realities, and farmers have limited resources to learn what solutions are available and how to optimally reap their benefits.

These silos perpetuate misalignment: unclear return on investment is one of the biggest limiting factors to successful agtech adoption by farmers, and small and medium farms are far less likely to use agtech solutions than large farms.[2] Agtech innovators need farmer feedback to make their technologies more relevant and accessible to farmers. Furthermore, growers need regular exposure to new technologies and tailored advice on how to integrate them into their businesses.

Key elements:

- Farmers and agtech developers have shared incentives and timely feedback mechanisms that enable productive collaboration.
- The platform has low transaction costs for researchers, agtech developers, and farmers to provide and receive relevant information.
- Methods effectively use trusted, specialized intermediaries, such as ag extension agents, to gather farmer feedback on emerging agtech and share the latest research and guidance.
- A mutually beneficial model regularly assesses farmer needs and ideas to inform and accelerate viable product development and commercialization.

Photo Source: Unsplash

[1] This is a finding distilled through Phase 1 of NC Ag Leads, as well as in CROPS focus groups; [2] McKinsey (2023).

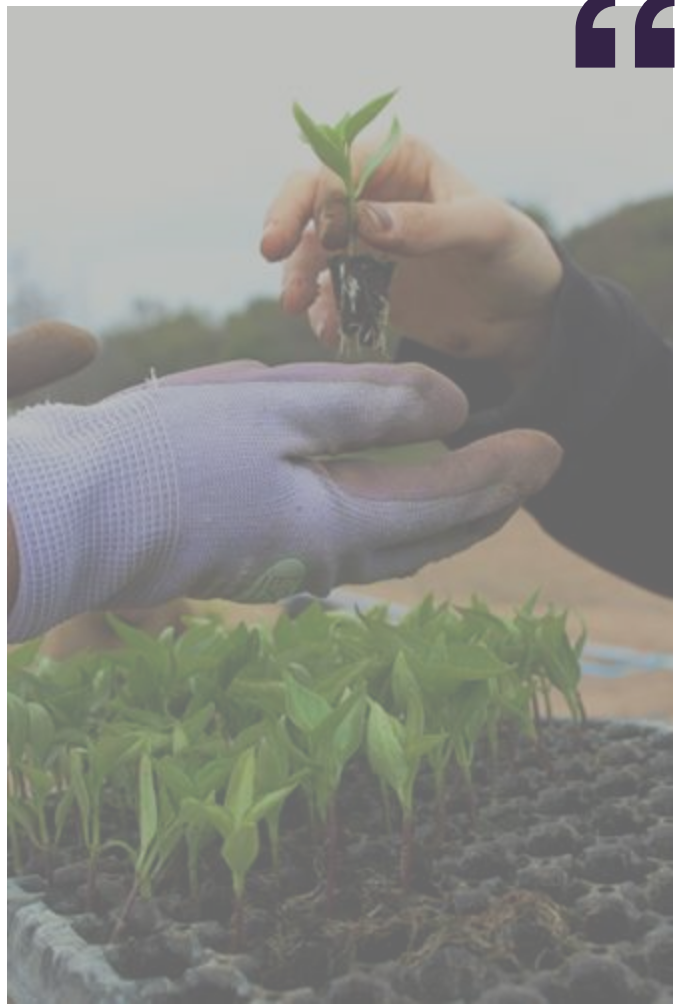
Opportunity 1: Bridge research to farm gaps

NC strengths to build upon:

- NC has a widespread network of institutions to draw upon for improved farmer, researcher, and technology developer relationships, from universities to research stations and more.
- The Interstate-40 corridor eases place-based engagement and ecosystem connectivity across regions, including the centrally located RTP and NC's agtech cluster.
- NC Cooperative Extension agents connect farmers with research and innovation through partnership with all 100 county governments and the Eastern Band of Cherokee Indian Tribal leadership.
- NC has numerous historical successes to draw upon, such as the collaboration between NC State, NC A&T, and farmers to innovate in sweet potato storage.

Future impact scenario

Javier, who is a sweet potato grower from Eastern NC, teamed up with Priya, who is a data scientist and agtech innovator, to revolutionize root crop farming. Supported by a dynamic platform that connects researchers, technology developers, and farmers in real-time, they co-developed a soil health sensor system powered by machine learning that adapts irrigation and nutrient inputs based on hyperlocal conditions. The platform fostered trust and shared ownership among stakeholders, accelerating innovation from the lab to the field. Their collaboration led to a 40% increase in yield with reduced environmental impact and became one of many examples showcasing NC's transformation into a resilient, tech-empowered agricultural ecosystem.



> Today's challenging commodity markets create an emergent need for innovators and farmers to work together to advance technology, science, and practices that deliver net farm income.[1]

[1] AgFunderNews (2024).

Photo Source: Unsplash

The Extension Agent Network fosters connections between farmers and agtech innovators and enables agtech beta testing.

The first cohort of the Extension Agent Network, a program from the North Carolina Plant Sciences Initiative (PSI), launched in 2023 with the mission to connect farmers to emerging technologies and innovators to reliable feedback. Extension agents selected for the Extension Agent Network cohorts participate in trainings on how to work with farmers to beta-test PSI-developed and, more recently, technologies developed by start-up companies. The program benefits many NC ecosystem actors by further developing extension agent skillsets, supporting farmers in learning how to use new technologies, and providing cost-effective, localized feedback to agtech developers and researchers for finetuning their innovations. “There’s a lack of connectivity to the farmers from technology developers, so we needed a way to connect PSI across the state and extension agents were the perfect conduit to do that,” shared Rachel Vann, the PSI’s Extension, Outreach, and Engagement Platform Director. This approach aligns with broader statewide strategies, such as the NC Ag Leads Align initiative, which recommends embedding tech agents within the Cooperative Extension system to improve technology diffusion.[2]

Key features:

- The program uses a cohort model, with each of the five cohorts focused on a specific area such as cover crops or sensor development and led by a PSI faculty member.
- Stakeholder engagement meetings elevate agent voices and leverage agent expertise to identify research goals.
- Extension agents are compensated for the additional responsibility with an annual $5,000 stipend and training about innovative technologies.
- The program is funded by the NC Soybean Producers Association, the NC Corn Growers Association, the NC Small Grain Producers, Interagency Digital Equity Funds, the NC Tobacco Trust Fund Commission, the N.C. PSI, and private donors.

Photo Source: Dee Shore, NC PSI

Partner spotlight

The Extension Agent Network has partnered with Agerpoint, a private agtech company based in Durham.[1] Agents are evaluating the Agerpoint Capture mobile app, which was developed to capture digital samples from row crop production fields to quantify plant emergence and early season canopy vigor, important metrics to guide management decisions.

[1] The Extension Agent Network cohort testing the Agerpoint Capture mobile app is funded through the CROPS NSF planning grant; [2] NC Ag Leads (2025).

Opportunity 2: Translate research into commercially viable agtech solutions

Description: Enable accelerated commercialization of promising research into fit-for-purpose agtech products that meet farmer and market needs. Commercialization at scale leverages mechanisms that provide access to resources, including mentorship, funding, and networking.

Rationale: NC performs well at research, but less so on turning that research into commercialized products to benefit end users, such as farmers. Despite exceeding the national averages for science and engineering R&D funding and expenditure variables, NC lags the national average on patents awarded per 1,000 individuals in science and engineering occupations (71%, 2020) and venture capital dispersed per $1 million of GDP (70%, 2022).[1] Additionally, three RTP-based universities (Duke, UNC-Chapel Hill, and NC State University) generate the overwhelming majority of the state's academic R&D and total patenting activity (86% and 80%, respectively, between 2018 and 2023), though with differential emphasis on agriculture-focused innovation.[2]

Commercializable agtech innovations need to balance farmer needs and investor perspectives. Farmers cite high costs of technologies as a top barrier to adoption.[3] Simultaneously, investors are seeking to invest in more capital-light business models, naming robotics and water technologies as examples of solutions that are too expensive and difficult to scale.[4]

Agtech commercialization in NC is further limited by the lack of some necessary infrastructure to push the scientific frontier, such as plant transformation facilities, such as the Genome Editing Center in development at NC State University.[5]

Key elements:

- Innovators leverage platforms and channels to solicit farmer input and ensure solutions reflect the real-world challenges, workflows, and goals of its customer base.
- A commercialization-friendly enabling environment offers appropriate-sized infrastructure, flexible funding models, and supportive policy.
- Technical assistance de-risks start-ups and attracts different stages of capital through business model refinement, go-to-market strategy, regulatory advice, and customer discovery.

Photo Source: Unsplash

[1] NC Department of Commerce (2024); [2] NCInnovation (2024); [3] McKinsey (2023); [4] AgFunderNews (2025); [5] CROPS focus group finding.

Opportunity 2: Translate research into commercially viable agtech solutions

NC strengths to build upon:

NC is home to specialized innovation accelerators such as the FFVC, the NCBiotech Crop Commercialization Program, and AgTI.

Numerous agtech investors reside in NC and are more familiar with NC's agricultural landscape.

NC's 18 Research Stations and 68 microclimates present opportunities for diverse technology testing environments, with the NC Ag Leads Align strategy working to better coordinate and leverage these statewide assets.[2]

Future impact scenario

Malik, who is an organic grain farmer in eastern NC, adopted a precision planting system originally developed in a university lab and brought to market through the state's Agtech Commercialization Network—a public–private initiative designed to accelerate farmer-driven innovations. The system uses adaptive AI and local data to optimize seed spacing and reduce input use. Thanks to the Network's support with on-farm trials, licensing, pilot funding, and investor matchmaking, the technology scaled rapidly across the southeast. Malik's yields improved by 35%. His success became one of many across NC, where research no longer sits on the shelf—it drives real-world impact, economic growth, and climate-smart farming at scale.

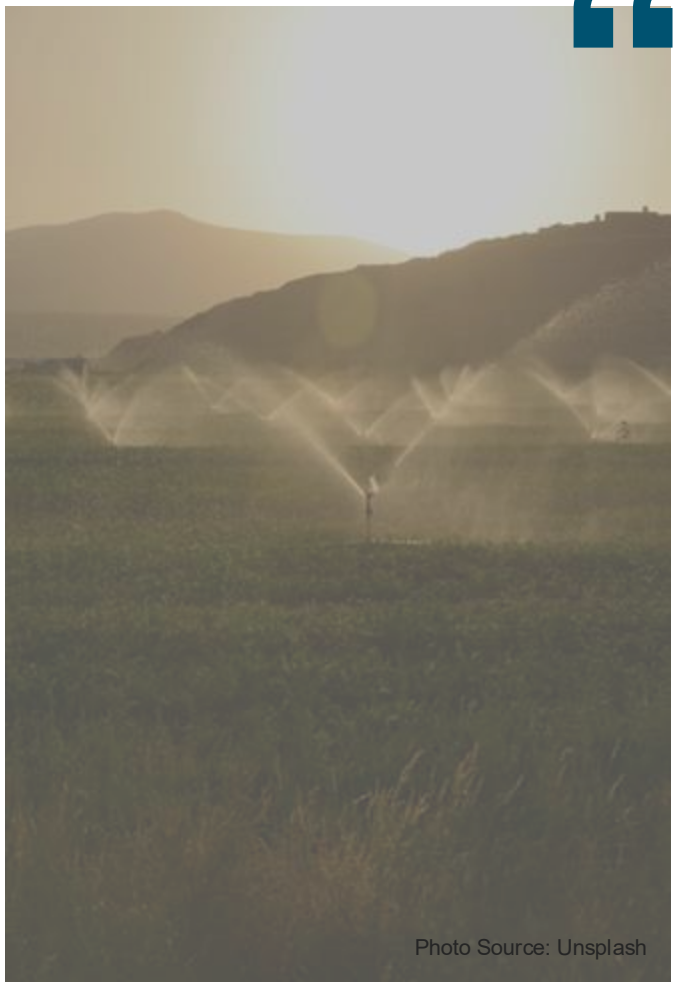


Photo Source: Unsplash

> North Carolina has a historic opportunity to build upon its world-class R&D base by realizing its untapped potential to commercialize innovations and create high-growth start-ups.[1]

[1] TEConomy Partners (2022); [2] NC Ag Leads (2025).

NC has a need for a hybrid, sustainable solution that addresses agtech commercialization from all sides.

A successful commercialization model for NC agtech innovation incorporates experienced talent, funding, and industry partners for market pull. Based on a model[1] born of a key revelation about how research gets stuck in university labs, co-founder Karen LeVert launched AgTI in 2014 to focus on the promising agtech sector. AgTI is an innovative model of identifying promising technologies that need further development and experienced talent. The innovation lab's most unique ingredient is its network of experienced operators coupled with relationships with industry. Where the challenge comes, according to LeVert, is securing the necessary funding and ensuring farmer involvement, something Tennessee-based accelerator AgLaunch does well. AgLaunch's model combines farmer expertise, coordinated field trials, and strategic investment "to support agtech startup companies from idea-to-scale."[2] A dedicated hybrid of these models would help accelerate NC agtech commercialization.

Key features (combined from AgTI and AgLaunch):

- Partnerships between accelerators, industry experts, and farmers ensure that the most commercially viable research receives support.
- A dedicated management team of mentors complements the scientific team to provide industry knowledge, contribute business savviness, and steer strategic decision-making.
- A platform thoughtfully and thoroughly incorporates farmers at all stages, from ideating to investing and scaling.
- Intentional communication keeps relevant investor networks abreast of promising company and technology developments.

Photo Source: Karen LeVert via WRAL News

Startup spotlight

IngateyGen

One of AgTI's successful spin offs, IngateyGen is using CRISPR to produce low-allergy peanut varieties. The company moved from Elizabeth City to RTP's FFVC in 2023 after receiving a $200,000 loan from NCBiotech to expand its technical and human resources.[3] In 2025, the AgLaunch Farmer Network selected IngateyGen as one of eight startups to enter the AgLaunch365 Accelerator Program.[4]

[1] Southeast TechInventures, Karen LeVert's first innovation lab focused on medical research, launched in 2003; [2] AgLaunch; [3] NCBiotech (2023); [4] Farm Progress (2025).

Opportunity 3: Leverage agtech for improved market reach and positioning

Description: Innovate market-aligned agtech solutions that enable farmers to tap into new business opportunities along the value chain and enable improved positioning and profitability in existing markets.

Rationale: "Farmers are increasingly concerned about how to get what they are producing to the consumer."[1] Approximately 70% of NC farms are under 100 acres,[2] making aggregation, processing, and distribution challenging[1]; less than 4% of farms sold commodities directly to consumers or retailers, and less than 3% of farms sold value-added products in 2022.[2] That same year, only 40% of NC farms had net positive income, and fewer than 10% of farms made up 90% of gross farm receipts.[3] Agtech could contribute to closing the income gap with innovations in agribusiness marketplaces and other value chain-connecting technologies.

Farmers, as consumers of agtech and other production inputs, require customized products and experiences to optimally address diverse market needs and maximize returns. Farmers cite both a lack of customer service and a lack in customized recommendations as top challenges in accessing digital agtech.[4] Innovators also need to overcome farmer mistrust of data sharing to address these needs.[4]

Key elements:

- Affordable, tailored products can leverage trusted market intelligence packaged to inform farm-level decisions and enable farms of varying sizes to fill supply chain gaps.
- Localized insights on changing consumer preferences and behaviors around health, food safety, and traceability help producers respond effectively to demand.
- Shared resources and services that improve access, reduce costs, and improve bargaining power support farmers through collaborative business models.

Photo Source: Unsplash

[1] This is a finding distilled through Phase 1 of NC Ag Leads; [2] North Carolina Dept of Agriculture & Consumer Services (2024); [3] The State of Agriculture in North Carolina (2024); [4] McKinsey (2023); [Data are derived from the USDA NASS Census of Ag].

Opportunity 3: Leverage agtech for improved market reach and positioning

NC strengths to build upon:

- NC's proximity to ports, logistics hubs, and a growing food and beverage sector positions the state to connect farmers with regional, national, and global markets.
- NC Cooperative Extension and local organizations, such as the Sandhills AGInnovation Center, have established trust-based relationships and infrastructure that improve farmer outreach and connectivity.
- NC farmers produce more than 80 crop and commodity types, creating diverse supply chains that can address diverse consumer demands.

Future impact scenario

Sarah, who is a small-scale produce farmer in NC's Piedmont Region, grew her business by tapping into AgLink NC, which is a digital marketplace innovation created by Amir, who is a software developer based in Charlotte. Designed with input from farmers across the state, the platform provided tailored market insights, buyer-matching tools, and seamless access to logistics and value-added services. For Sarah, AgLink NC meant she could anticipate local demand trends, price her vegetables competitively, and connect directly with farm-to-table restaurants and food cooperatives—without relying on intermediaries. AgLink NC's farmer-informed design made it especially powerful for small-acreage producers looking to grow strategically.

Photo Source: Unsplash

> "[A farmer I talked to said], 'I've got cold storage that stays empty for months of the year and I'd be willing to sell the capacity.' You need to understand where assets are; there is a market for them.[1]"

[1] Stakeholder interview.

A family of brands operates and innovates to “bridge the gap between farm excess and food access” with a forthcoming end-to-end market platform.

Ripe Revival is working to solve NC’s most intractable food system challenges, including how to get fresh farm produce into the hands of processors and consumers. Founder and Chief Executive Officer Will Kornegay’s next big idea is in the works: a multi-faceted market technology platform that streamlines information and acts as a connector for stakeholders. More than a place for farmers and buyers to connect, the plan is to provide a customized decision-support tool. “The farmer invests the most and risks the most and has the least control over what return they get. What’s missing? The ability to give the farmer the upper hand. To maximize the yield and profitability of their crops, especially in a challenging market, it requires a set niche skills and experience that some farmers may not have (marketing, communication, networking, etc.) Technology fills that void because it creates a more streamlined and transparent resource accessible to all,” Kornegay shared. Ripe Revival’s market platform is currently in the testing phase before the technology goes public in the near future.

Key features:

- The platform will marry data, such as market trends and funding opportunities, with features, such as geo-tagging, to create a one-stop-shop experience.
- A key to success will be obtaining feedback to address concerns over trust, privacy, and data sharing.
- Blockchain will maintain ongoing records to provide accountability and keep an accurate record of variables that can be used to create guidance.
- The platform will be accessible to all, with premium paid features, such as data management, food safety, operational support, and logistics.

Photo Source: Ripe Revival

Company spotlight

Ripe Revival works through four brands with hands in production, processing, market access, and community. The organization partners with approximately 30 farms to buy 100% of their crop, aids in crop diversification, and provides value-added solutions. The nonprofit branch, Ripe for Revival, makes fresh and local food affordable and accessible to all, currently serving more than 100,000 families in 20 counties and growing.

Opportunity 4: Enable agtech ecosystem cohesion

Description: Enable a statewide convener of innovation and agricultural communities to implement a shared strategic direction and roadmap for sustained collective action.

Rationale: NC's agtech ecosystem is advancing innovation and talent but operates in disconnected silos. Although there are many sector-specific and regional committees across NC, no current statewide entity provides a unified strategy, tracking progress, or scaling success across regions—all essential for connecting the dots between innovation and economic outcomes for farmers. Coordinated innovation with shared strategic vision has been shown to drive greater adoption, investment, and cross-sector collaboration.[1]

Agtech activity remains highly concentrated within the metropolitan areas of NC; more than 74% of the workforce is supporting innovation in the RTR.[2] Meanwhile, most of NC's more than 42,000 farms operate in the rural counties (70% in 2022),[3] which highlights the need for an enabling environment that connects assets and distributes benefits statewide by bridging urban–rural innovation gaps.

Unity across agtech actors is especially important to address and adapt to a common problem: climate change. NC has experienced variable conditions between drought and extreme precipitation in recent years. In 2024, Hurricane Helene decimated huge swaths of Western NC farms and agricultural livelihoods, amounting to an estimated impact of $4.9 billion.[4]

Key elements:

- A strong convener that engages all parts of the ecosystem—including growers, start-ups, researchers, rural communities, and historically underserved voices—aligns funding, talent, and infrastructure to support scalable innovation.
- A clearly defined strategic direction aligns agtech innovation efforts across the corridor, reduces duplication, and mobilizes action on shared goals, such as climate change resiliency.
- A coordinated roadmap for collective action across the agriculture and innovation sectors helps clarify opportunities and define roles across partners and regions.

Photo Source: Unsplash

[1] Boston Food Tech (2023); [2] RTRP; [3] NC Rural Center (2025) [Data are derived from the USDA NASS Census of Agriculture]; [4] NC Office of State Budget and Management (2024).

Opportunity 4: Enable agtech ecosystem cohesion

NC strengths to build upon:

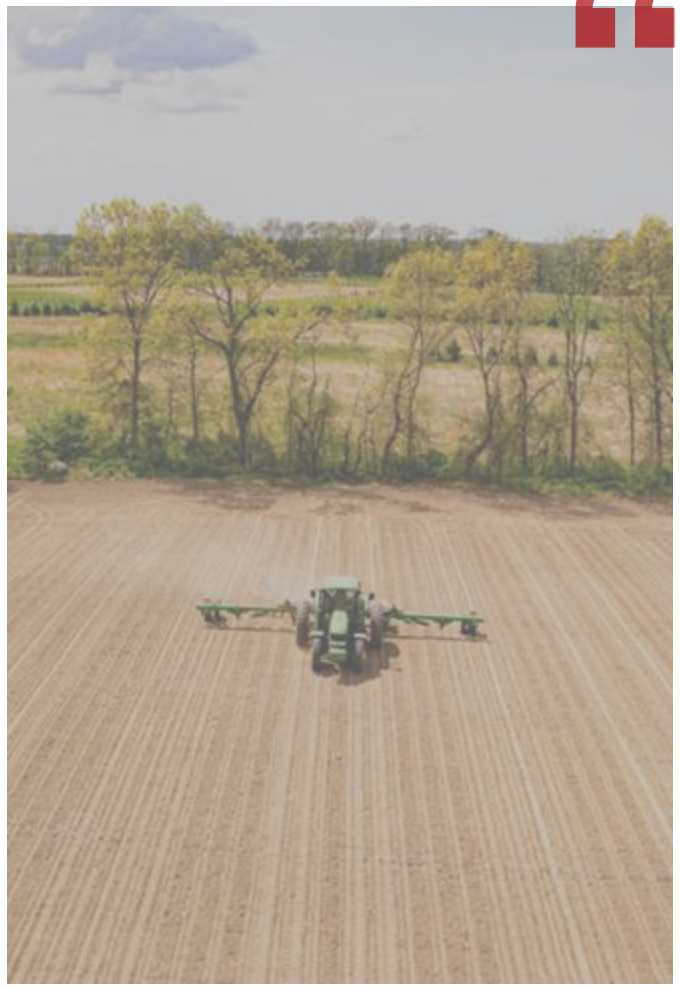
NC has existing convening models, such as the NC Agtech Council, the NC Ag Leads strategic planning process, NC State Growers Council, and the emerging agtech effort in Western NC, formalized as the Western NC Ag Innovation Council and led by Mountain BizWork, that can be activated to support coordination.

Institutional champions and funders, including NCInnovation, play a key role in statewide strategy and investment, alongside established anchors, such as NC A&T.

NC's agricultural diversity, from row crops and livestock in the east to specialty crops and forest products in the west, creates regionally rooted strengths that also represent complementarities.

Future impact scenario

Rosa, who is a third-generation farmer in Robeson County, used a statewide agtech innovation network to optimize her regenerative crop rotation with real-time data and drone technology. Built through a shared strategy connecting farmers, researchers, and start-ups, the network made advanced tools and training accessible across rural communities. With support from university extension agents and local partners, Rosa boosted yields and soil health, contributing to a resilient, climate-smart food system. Her story reflected a broader transformation—NC emerging as a national leader in inclusive agtech innovation, driven by coordinated investment and community-centered collaboration.



> We already have an incredible agtech cluster in RTP. [And] an incredible ag sector in NC. But the two don't interact that much…[they operate like] two ships in the night.[1]

[1] Stakeholder interview.

Photo Source: Unsplash

An evolving statewide agtech council has the potential to serve as NC's agtech ecosystem convener given the right mandate and resources.

The NC Agtech Council (Council) is the only statewide council on agtech in NC. Formed in 2010 with support from NCBiotech, the Council's membership and objectives have been evolving over time. What started as a group of approximately 30 leadership-level consultants from agtech companies, state government, and universities to advise NCBiotech has since transitioned to "to serve the North Carolina agricultural community by advocating and driving statewide agtech development," and now includes additional critical voices from across the value chain, such as growers, processors (e.g., NC Food Innovation Lab), distributors (e.g., Nutrien), and investors (e.g., LeVert Ventures). The Council currently meets three times a year to share news about the space and discuss opportunities. As the Council further evolves, Chair Toni Bucci, founder and Chief Executive Officer of Sable Fermentation, envisions a more programmatic Council: "Looking ahead, I envision the Council significantly expanding its brand presence and becoming a driving force in shaping and leading the North Carolina agtech ecosystem."

Key features (of a current- and future-state NC Agtech Council)**:**

- The Council regularly convenes representatives from all areas of the agtech ecosystem, including growers with diverse perspectives and needs.
- Members collaboratively create and implement a strategy that aligns funding, infrastructure, and workforce for inclusive NC agtech ecosystem development.
- The state publicly positions the Council as the go-to entity for streamlined relevant information, networking, raising awareness of emergent issues, solutioning, and more.
- Activities, including convenings and sponsorship of the NC Chamber Ag Allies Conference, are funded by NCBiotech.

Photo Source: The NC Biotechnology Center

Member spotlight

The current (2025) leadership committee members represent BASF Corp., Sable Fermentation, LeVert Ventures, N.C. PSI, Alexandria LaunchLabs, and NCBiotech. Other council members include agtech companies (Pairwise, Innatrix, and Novonesis), colleges (NC State University and NC A&T), government (NCDA&CS and NC Department of Commerce), and more (RTRP, NC Sweetpotato Commission, NC Chamber, NC Farm Bureau, SAS, and growers).[1]

[1] NC Biotech Center

Opportunity 5: Mobilize a job-ready agtech workforce

Description: Expand equitable outreach and education to prepare NC students for high-paying agtech careers in-state. Partnerships and programming nurture the NC talent supply to match industry demand.

Rationale: Agtech requires technical skillsets to develop, manufacture, use in the field, and perform maintenance, yet NC's current workforce pipeline is not meeting this demand. The state ranks below national averages in producing engineers (87%) and science, technology, engineering, and mathematics (STEM) graduates (93%) per capita,[1] limiting the technical workforce available to power innovation.

NC's workforce development system needs to operate with alignment between education, training, and job placement.[2] For example, agtech stakeholders have seen a demand in industry for ag formulations; in response, NC State University developed a new course on ag formulations that will be offered in fall 2025.[3]

Many rural and under-resourced communities still experience barriers to accessing clear, inclusive pathways into high-paying agtech careers. NC's rural counties are losing valuable population, stagnating economic growth; 18 rural counties lost population between 2020 and 2023 (it should be noted that 30% fewer counties lost population compared with the period from 2010 to 2020).[4] Specialized workforce-building infrastructure and programs are needed to grow and keep talent in rural NC.

Key elements:

- Cross-sector workforce partnerships between school systems, community colleges, universities, and industry align agtech education with real demand for service and products.
- Timely, accessible data on agtech careers, skill needs, and job openings support informed decisions by educators, learners, and employers.
- Inclusive outreach and mentoring efforts ensure that under-resourced communities are aware of and supported through clear career pathways in agtech.

Photo Source: Unsplash

[1] NC Commerce (2024); [2] TEConomy (2024); [3] CROPS focus group finding; [4] NC Rural Center (2024).

Opportunity 5: Mobilize a job-ready agtech workforce

NC strengths to build upon:

NC offers innovative educational opportunities, such as the NCCCS's BioNetwork's BioWork Certificate Program, which teaches students the skills they need for biotech and agtech careers, and the NC Department of Public Instruction's Career and Technical Education programs, which prepare students for career paths after high school.

There is a growing life science and biotech sector, with more than 103,000 life science jobs and rapid job growth (23% since 2019), fueling demand for technical talent.[2]

NC has regional assets such as the Accelerate NC Coalition's Build Back Better Regional Challenge talent pipeline efforts[3], specialization hubs, and public–private efforts such as NCBiotech's workforce initiatives.

Future impact scenario

Sylvester, who is a high school senior from rural Halifax County, joined an agtech apprenticeship program built through a statewide platform connecting educators, employers, and researchers. Designed to align training with real-world needs, the platform offered hands-on experience in ag-robotics maintenance and fast-tracked job placement with local farms. With targeted outreach, paid apprenticeships, and support services, it opened doors for students in under-resourced communities to access high-paying agtech careers. Sylvester's journey became one of many fueling a robust, inclusive talent pipeline that positioned NC as a national leader in agtech innovation and workforce readiness.

Photo Source: Unsplash

> "Thousands of North Carolinians could benefit from these jobs but are unaware that they exist or do not have a way to access training programs.[1]"

See Appendix page 58 for the CROPS-envisioned scope of workforce development.

[1] The Brookings Institution (2024).

An eastern NC initiative connects educators and employers to expand agtech career pathways in rural communities.

The NC East Alliance's STEM East Network has been expanding career-connected learning in eastern NC for over a decade, with a special focus on aligning kindergarten through 12th Grade (K–12) STEM education with regional workforce needs. With a focus on smart agriculture and other key industries, STEM East works to strengthen employer–school partnerships, support underserved students, and build local talent pipelines in economically distressed counties. STEM East also supports hands-on STEM learning for students, teacher training, and employer engagement activities across the region. Participating districts, representing more than 200,000 students and 50,000 jobs, receive support to further local talent development for high-wage, high-demand jobs. Year 2025 brought its inaugural Industry in Schools Week, an initiative to celebrate STEM education and workforce development with more than 40 events hosted in partnership with regional community colleges and industry leaders. As Executive Director of STEM East, Bruce Middleton notes that the goal is to "ensure that our students are equipped with the skills, knowledge, and opportunities they need to thrive in the workforce."[1]

Key features:

- STEM East has established more than 80 STEM centers in middle schools and a working alliance across 30 school systems and 15 community colleges in its 29-county region.
- The initiative is backed by more than $18 million in public and philanthropic funding, including support from Golden LEAF and a $15 million state appropriation.[2]
- STEM East incorporates equitable practices in its programming, such as reimbursement for school transportation to events, to maximize transformation.
- Smart Ag is one of six focus industries prioritized, showcasing NC's leadership in agtech careers, such as drone surveillance and data-driven resource management.

Photo Source: NC East Alliance

Partner spotlight

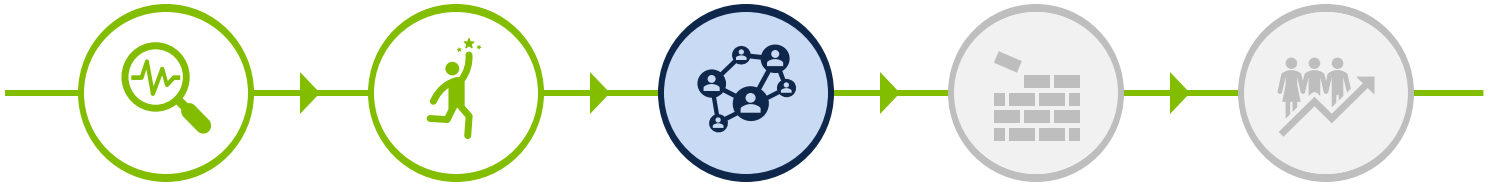
The Golden LEAF Foundation has invested more than $4 million in STEM East, helping to expand STEM education in 7 counties in eastern NC.[3] The Foundation prioritizes regional workforce development in rural areas and recognizes the value of building strong school-industry connections.

[1] NC East Alliance; [2] Golden LEAF Foundation (2024); [3] NC East Alliance (2016).

Mobilize Collective Action

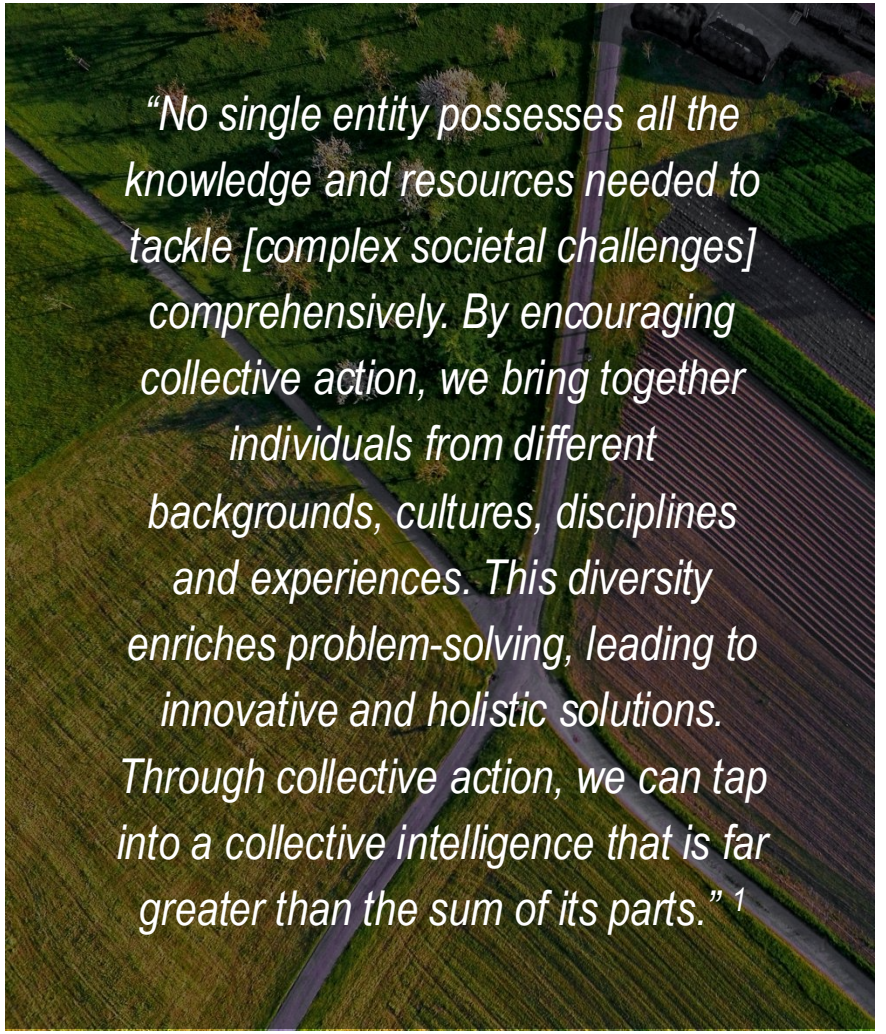
Reader Reminder: The CROPS initiative was an NSF-funded strategic planning effort. The recommendations included in this section need additional support and resourcing to translate these recommendations into action.

Achieving CROPS' vision for a resilient agricultural future for NC, enabled by an expanded agtech innovation corridor, requires collective action.



Collective action involves the concerted, coordinated effort of individuals and organizations focused on achieving a common vision.[1] When such efforts are well-orchestrated, they create a multiplier effect by leveraging cross-sectoral resources, minimizing duplication of effort, and enabling platforms to drive policy change and long-term sustained investment.[1]

Such efforts do not happen by chance. Effectively mobilizing collective action requires inspired and sustained leadership, purposeful coordination, aligned incentives, and strong governance mechanisms enabling equitable participation and shared benefits among diverse stakeholders.



[1] The World Economic Forum (2023).

Photo Source: Unsplash

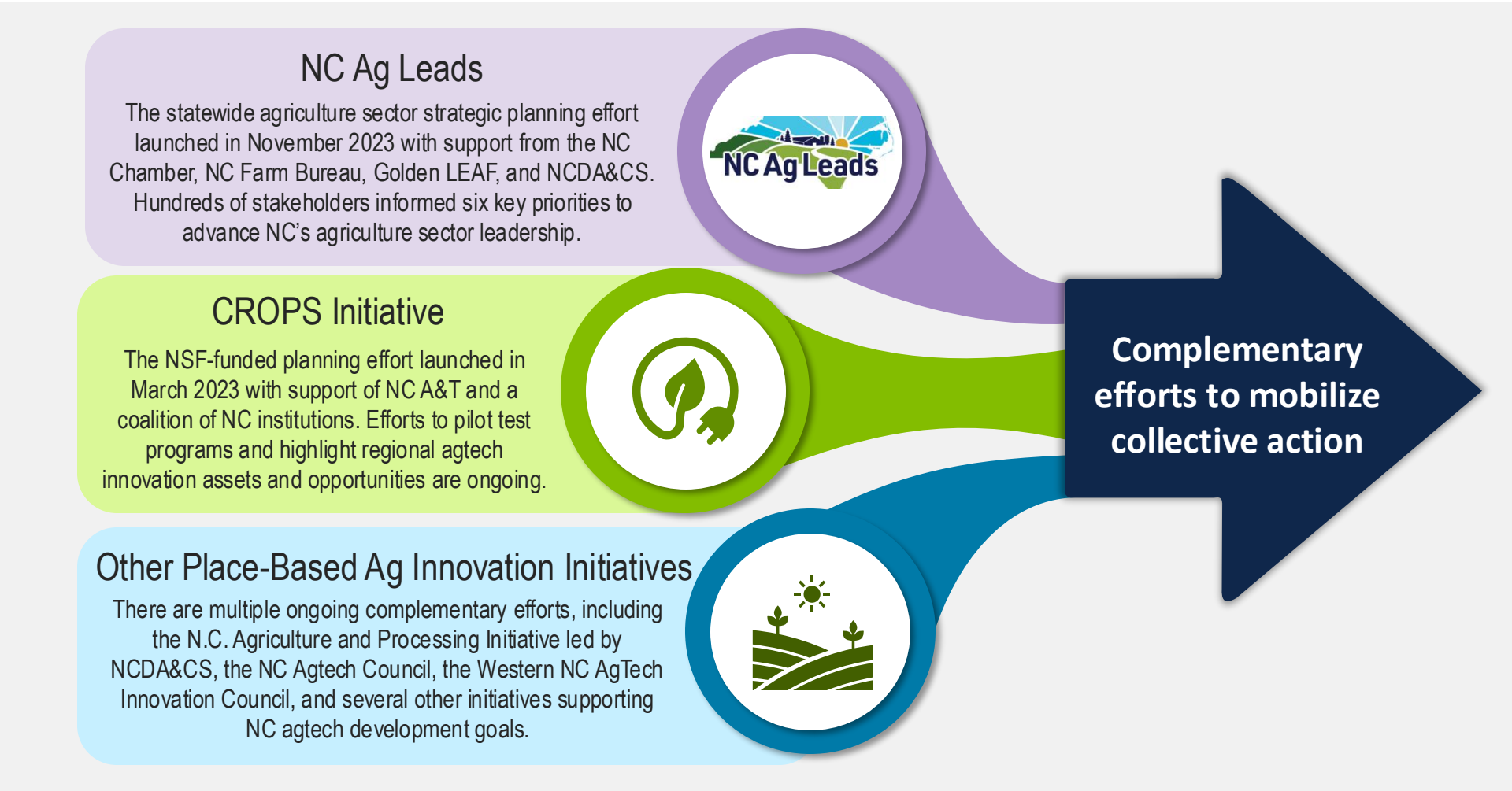
Moving from corridor concept to reality requires deepened cross-sector collaboration, industry engagement, and focus on farmer-centered results.

Recent analysis from The Brookings Institution finds that, "across the country, most regions still lack what they really need to transform: an inclusive and strong economic strategy development and implementation 'muscle' that can integrate input from a broad range of actors about economic priorities, assets, and gaps, but also set a clear direction and get organizations to stay on that path."[1] These capabilities "cannot, and should not be, contained within a single organization," which bodes well for NC as a state endowed with multiple anchor organizations with complementary capabilities and remits.[1] Defining shared priorities across the state's agricultural, innovation and economic development sectors—and supporting more robust farmer-centered strategy and implementation platforms—would fill keep gaps needed to advance *farmer-centered*, *place-based agtech innovation ecosystem development* across the *42-county region* envisioned by CROPS. Future efforts must also better integrate business leaders, from large corporate entities to emerging startups, and in between.

Complementary Capabilities Exist Across NC Agtech Innovation Actors; More Robust Collaborative Planning and Implementation Support Is Needed to Accelerate Regional Transformation.	Regional Agtech Organizations (e.g., Research Triangle Agtech Cluster, Western NC Ag Innovation Council)	Regional Economic Development Organizations (e.g., NC East Alliance)	Statewide Agtech Organizations (e.g., NC Agtech Council)	Statewide Agricultural Organizations (e.g., NC Department of Agriculture and Consumer Services)	Statewide Economic Development Organizations (e.g., NC Department of Commerce)	CROPS Partners							
						NC Biotech Center	NC A&T	NC State Plant Sciences Initiative	ECU	Duke	UNC-CH	Wake Forest	Community Colleges (Some)
Farmer outreach and engagement as a primary focus				●			●	●					
Place-based economic development, including workforce	●	●		●	●	●			●				●
Agriculture as priority sector focus	●	●	●	●	●		●	●					
Advanced plant science research/ specialized agtech focus	●		●			●	●	●		●	●	●	
Geographic reach across the corridor			●	●	●	●			●				●

[1] The Brookings Institution (2025).

In the near-term, state leaders can capitalize on momentum from complementary strategic planning efforts to promote common aims.



NC stakeholders can maximize long-term impact by coordinating across initiatives to:

(1) Identify common priorities;

(2) Strategically align investments; and

(3) Develop harmonized metrics to track progress toward shared agtech innovation goals.

Aligned priorities between CROPS and NC Ag Leads reveal clear entry points to advance the NC agtech innovation corridor through collective action.

Multiple CROPS-identified agtech opportunities align with NC Ag Leads 2025 implementation priorities.

CROPS Initiative

Bridge research to farm gaps

Translate research into commercially viable agtech solutions

NC Ag Leads

Farmer-engaged accelerator

The NC Ag Leads process identified the need to “align technology supply and demand” and is moving forward with an NC-based farmer-engaged accelerator model that adapts key features of Tennessee’s AgLaunch. This agricultural priority is also an agtech one; CROPS views NC Ag Leads’ proposed farmer-engaged accelerator as a well-aligned with its prioritized opportunities to bridge farmer-research gaps *and* to translate research into commercially viable agtech solutions.

CROPS Initiative

Mobilize a job-ready agtech workforce

NC Ag Leads

Talent Pipeline Management® strategy

Both the CROPS initiative and the NC Ag Leads project identified a critical gap in our agriculture- and agtech-workforce and the talent each industry requires to succeed now and into the future. Combined with place-based innovation ecosystem development, NC Ag Leads implementation of the Talent Pipeline Management framework will amplify career pathways and mobilize a job-ready workforce in both agtech and agriculture.

Acknowledgments

RTI extends special thanks to our **CROPS initiative collaborators** for their thought partnership and feedback that shaped this analysis:

- Duke University: Sharlini Sankaran and Lucia Strader.
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- **Case study contributors:** Toni Bucci (Sable Fermentation, NC AgTech Council), Sarah Dinger (NC State PSI Education and Extension Outreach), Trey Goodson (NC East Alliance), and Will Kornegay (Ripe Revival).
- **External reviewers:** Beth Pugh Farrell (NC Department of Agriculture and Consumer Services), John Hardin (NC Department of Commerce), Sarah Grace Lee (NC Ag Leads / NC Chamber of Commerce), and Karen LeVert (LeVert Ventures).
- **RTI subject matter experts:** Michael Hogan, Daniel Lapidus, and Jen Ozawa.

Appendix

Report Methodology

RTI International developed this report in support of the National Science Foundation (NSF)–funded Climate Responsive Opportunities for Plant Science (CROPS) initiative planning grant to develop a strategic plan for a 42-county agtech innovation corridor across North Carolina (NC).

Data collection: The report team leveraged primary and secondary quantitative and qualitative data collection.

a. Desk review: The report team used a desk review to collect secondary quantitative and qualitative data. These data informed the primary data collection approach in addition to deepening understanding and filling gaps for information raised during the primary data collection process.

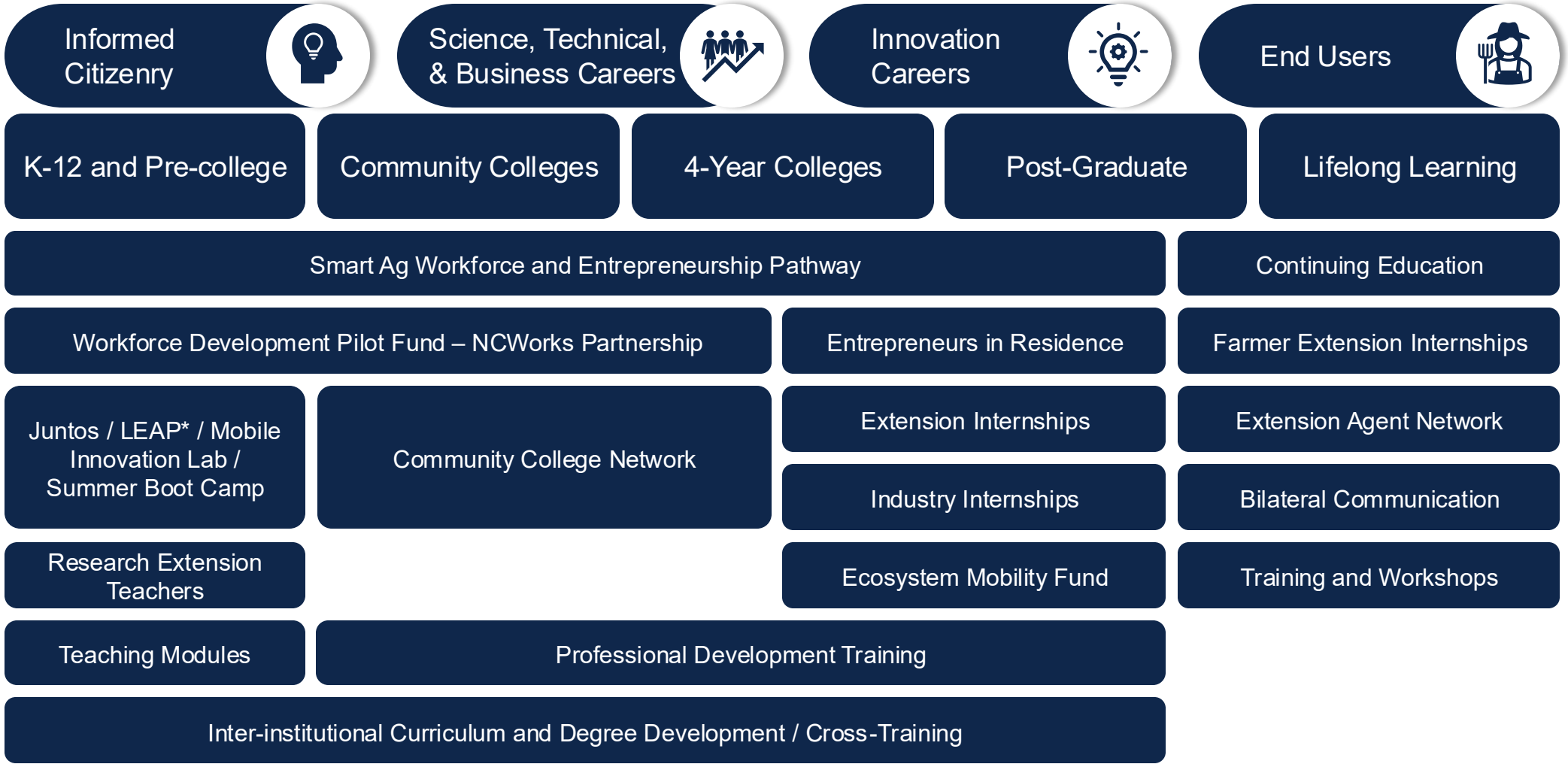
b. Focus groups: RTI led focus groups organized by area of expertise (upstream discovery [five participants], agtech enabling environment [four], agtech-farmer adoption interface [three]) to solicit opportunity areas, assets, and feedback from key CROPS partner institution representatives.

c. Interviews: The report team held eight semi-structured key informant interviews with stakeholders across the NC agtech landscape to validate desk review and focus group findings and to help draw linkages between NC agtech assets, challenges, and opportunities.

Data analysis: The report team systematically sorted and analyzed the primary and secondary data to identify and describe relevant trends, challenges, assets, and opportunities for the NC agtech sector.

Quality review: The report underwent multiple rounds of quality review, including a round by CROPS partner institution representatives and a round by external reviewers (see Acknowledgements on page 55).

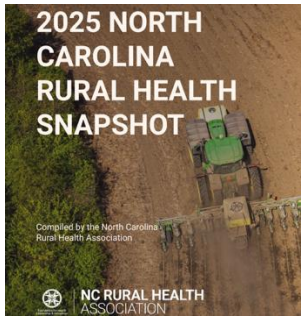
Effective ag- and climate-informed workforce development, as envisioned by the CROPS initiative, spans all stages of education.



*NC State Licensure in Education for Agricultural Professionals

Source: NSF Regional Innovation Engines Proposal, Workforce Development Pillar Team (2023).

For more information…



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Purdue University 2023:
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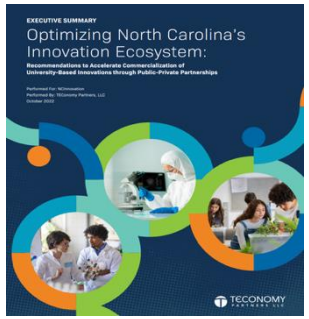
The Brookings Institution 2024:
Accelerating equitable growth in North Carolina's life sciences cluster

AgFunder 2024:
AgFunder Global AgriFoodTech Investment Report 2024

NC Ag Leads 2025:
A Strategic Plan for North Carolina Agriculture



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