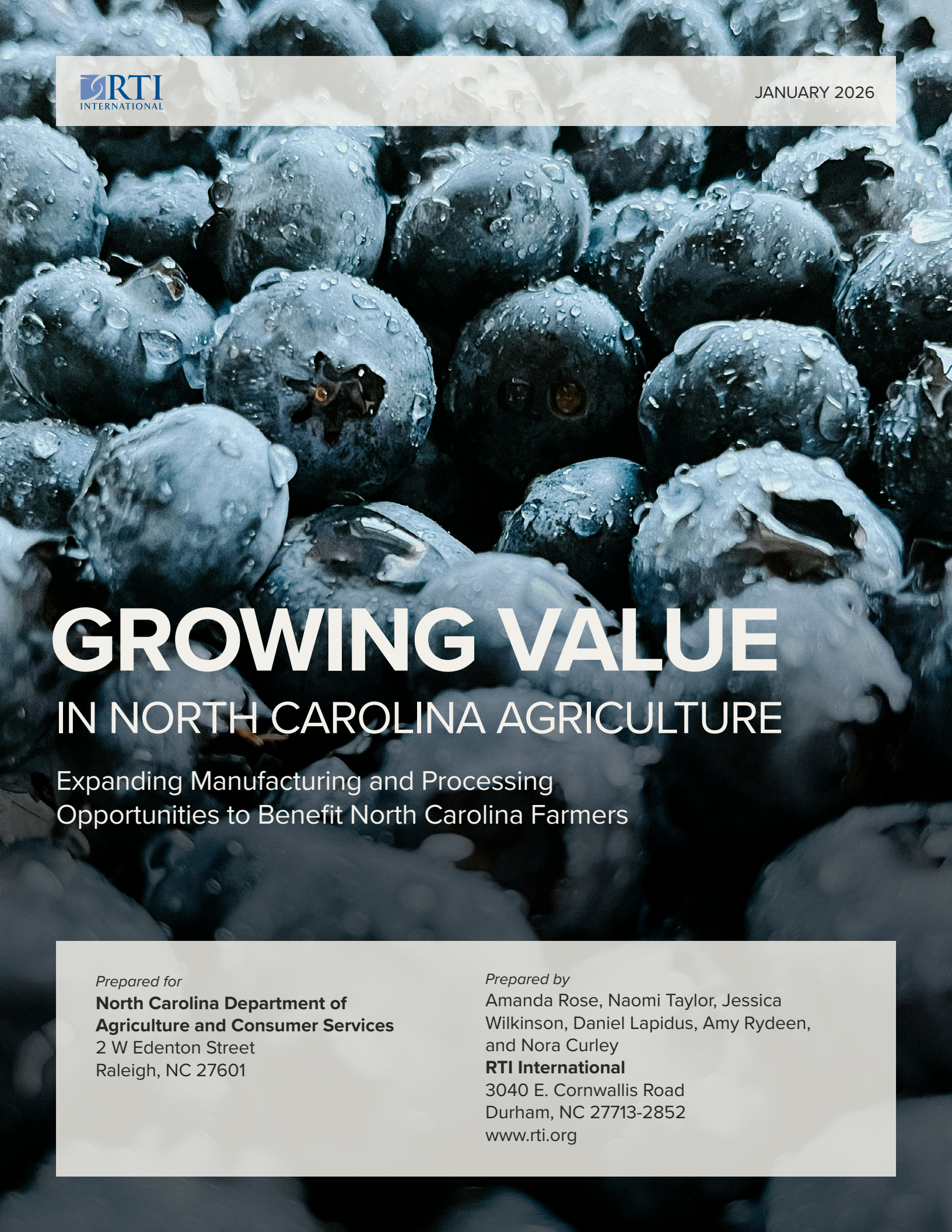

RTI INTERNATIONAL

JANUARY 2026

GROWING VALUE
IN NORTH CAROLINA AGRICULTURE

Expanding Manufacturing and Processing Opportunities to Benefit North Carolina Farmers

Prepared for
North Carolina Department of Agriculture and Consumer Services
2 W Edenton Street
Raleigh, NC 27601

Prepared by
Amanda Rose, Naomi Taylor, Jessica Wilkinson, Daniel Lapidus, Amy Rydeen, and Nora Curley
RTI International
3040 E. Cornwallis Road
Durham, NC 27713-2852
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RTI Project Number 37141_1.1

Table of Contents

About NCAMPI

The purpose of the North Carolina Agriculture Manufacturing and Processing Initiative (NCAMPI) is to "fund and promote the establishment of value-added agricultural manufacturing and food processing facilities across North Carolina." NCAMPI is intended to "fill existing gaps in the processing of agricultural products and to create a diverse and economically competitive array of high value-added goods and products manufactured in North Carolina from agricultural products grown or produced in North Carolina."[1]

The initiative was established in 2023 by the NC General Assembly and is administered by the NC Department of Agriculture and Consumer Services (NCDA&CS).

To date, NCAMPI has awarded 24 grants valued at approximately $26.6 million across three rounds of grantmaking to support the creation and expansion of agricultural manufacturing and food processing facilities across North Carolina. The first round in August 2024 provided $12.4 million across eight projects, leveraging over $63 million in private investment.[2] The second round in December 2024 distributed $6.6 million across six projects.[3] The most recent round of funding in January 2026 allocated $7.6 million across 10 projects focused on communities recovering from the impacts of Hurricane Helene.[4]

THE NCAMPI PROGRAM IS INTENDED TO[1]

1. **Provide support for agricultural processing opportunities** that increase jobs and local property tax bases across the state and/or reduce costs and increase profit options for North Carolina farmers and ranchers.
2. **Identify and assess opportunities** to increase value-added processing of commodities produced in the state and fill geographic and commodity gaps across the state.
3. **Market and recruit facilities** to fill such gaps and meet such opportunities.
4. **Support eligible entities with funding** for eligible costs necessary to create or expand North Carolina agricultural manufacturing facilities and projects related to increased demand for agricultural products.

About This Report

This report aims to inform the strategic priorities of NCAMPI and other North Carolina-based efforts to strengthen agricultural manufacturing and processing (M&P) capacity in the state. It takes a purposefully wide look at the agricultural production and M&P landscape of North Carolina across all regions and many commodities, including crops, livestock, and forestry. The report highlights commodity-specific opportunities, identified through an evidence-based prioritization process, where NCAMPI is poised to make an impact. It draws on extensive secondary research and data aggregated across 45+ primary interviews from both North Carolina agricultural experts and national stakeholders with expertise on how global consumer, food manufacturing, and market trends can shape the state's agricultural M&P landscape.

THIS REPORT IS

- Focused on identifying and assessing commodity-specific agricultural M&P opportunities and key entry points for NCAMPI that exhibit (1) potential to return benefits to North Carolina farmers and (2) near-term investment readiness
- Focused on agricultural M&P opportunities involving enterprise-level operations serving multiple farmers
- Rooted in stakeholder perspectives and existing North Carolina agricultural production and M&P data

THIS REPORT IS **NOT**

- A comprehensive review of North Carolina's agricultural M&P sector or inventory of the state's agricultural M&P assets and opportunities
- A full stock-taking of the agricultural sourcing needs and requirements of large M&P companies operating in North Carolina
- A quantitative market sizing, economic, or financial valuation exercise
- Focused on on-farm value addition opportunities benefiting single farmers or operations
- A set of site-specific investment recommendations

Executive Summary

The North Carolina Agricultural Manufacturing and Processing Initiative (NCAMPI) aims to strengthen the state's agricultural manufacturing and processing (M&P) capacity via grants to private businesses that source from or serve multiple farmers. NCAMPI investments seek to amplify North Carolina's production agriculture sector and broader food, fiber, and forestry industries through local value addition. Intended outcomes include enabling farmers to access higher-value and more reliable markets; helping processors and food manufacturers achieve efficiencies and supply assurance through local sourcing; and strengthening local communities through increasing agricultural M&P jobs and local food spending.[5]

Maximizing farmer benefits is especially critical for NCAMPI given the uncertainty of global commodity markets and mounting financial pressures on farmers.

While agricultural M&P investments have the potential to benefit farmers, such benefits are not guaranteed.[6, 7, 8] NCAMPI investments must be intentionally designed to ensure farmers capture value from these investments. Potential benefits include higher-value and more reliable market access, reduced logistics costs and time burden, increased leverage in the supply chain (e.g., more control over timing of output sales), and product differentiation. Intentional design is especially important in a state like North Carolina, where the scale and diversity of agricultural production, as well as regional differences, impact how viable and beneficial agricultural M&P investments will be for farmers.

Over half of North Carolina farms are less than 50 acres, and most are family or individually owned.[5] North Carolina "boasts the third most diverse agricultural economy in the U.S." with a large vertically integrated animal agriculture industry and over 80 crops grown commercially.[7]

In 2025, the North Carolina Department of Agriculture and Consumer Services (NCDA&CS) commissioned RTI International, an independent research institute, to conduct a commodity study identifying agricultural M&P investment opportunities with high potential to (1) deliver farmer benefits and (2) be investment ready in the near-term.

RTI used a prioritization process informed by more than 45 stakeholder interviews, secondary research, and participatory workshops to identify 11 high-potential near-term agricultural M&P opportunities from an initial set of 70 candidates. The report also features four emerging opportunities that are aligned with current market and consumer trends but require further development of farmer benefit pathways.

This report profiles each prioritized agricultural M&P opportunity with information on the potential benefits to farmers, relevant market trends, North Carolina's existing strengths, and strategies for advancing each opportunity. The profiles include North Carolina-specific industry context and insights drawn from interviews with industry experts.

Table 1. Prioritized Agricultural M&P Opportunities

Commodity	Opportunity Title and Description
Near-Term Opportunities	
Apples	**Juice, puree, or cider processing for legacy processing varieties:** *Incentivizing apple processors to establish operations in Western North Carolina would fill the market gap left by decreasing anchor processor demand.*
Peanuts	**Farmer-owned storage for extended sales options:** *Peanut farmer ownership and access to storage would enable increased flexibility and leverage, lower transaction costs, and allow time to find markets for excess peanuts.*
Soybeans	**Scalable, modular extruder plants for animal feed and other input:** *Scalable, modular soybean extruder plants would provide additional delivery points and processing opportunities for soybean farmers, as well as provide feed for livestock producers.*
Sweetpotatoes	**Gluten-free flour and pet food manufacturing for excess and Grade B crop:** *Tapping into growing markets for gluten-free foods and grain-free pet foods would enable farmers to capture value from excess sweetpotatoes.*
Oysters	**Freezing and value-added processing for excess and large-sized crop:** *Shared facilities for oyster freezing, processing, and storage would allow farmers to capture value from excess product that would otherwise go to waste.*
Red Meat	**Value-added processing of jerky, hotdogs, and smoked meats:** *Value-added processing for meats would diversify farmer and rancher market options and fulfill unmet customer demand at existing processing facilities.*
Poultry	**USDA-inspected processing for independent farmers:** *Increasing independent poultry processing would save farmers time and transportation costs and provide a North Carolina-based processing option where none currently exists.*
All Meat	**Rendering for value-added fats and other outputs:** *Additional rendering capacity would provide independent livestock producers with additional options to capture value from meat by-products and waste.*

Commodity	Opportunity Title and Description
Near-Term Opportunities	
Forestry	**Forestry: Supporting existing mills, locally made products, and oriented strand board (OSB) for hardwood in Western North Carolina:** *Strengthening existing mills, expanding local hardwood product markets, and supporting the development of OSB production would help preserve market outlets for Western North Carolina's timber farmers.*
Cross-Commodity	**Technical support and incentives for North Carolina processors to source locally:** *Targeted technical support to differentiate production, strengthen cooperatives, and foster mutually beneficial cross-value chain relationships would improve farmers' leverage and agency amidst increasingly globalized, price-sensitive markets.* **Cold and freezer storage for fresh fruits and vegetables (F&V):** *Commingled cold and freezer storage, coupled with expanded F&V processing, would simplify aggregation and extend seasonality of produce, making seasonal F&V profitable year-round.*
Commodity	**Opportunity Title and Description**
Emerging Opportunities	
Soybeans	**Fermentation processing for diversified products:** *Investing in soy processing technologies—such as fermentation, oil and bioactive extraction, and protein isolation, concentration, or texturization—that expand the range of value-added products derived from local soybeans.*
Cross-Commodity	**Precision fermentation inputs for high-value ingredients:** *Supporting growth in North Carolina's precision-fermentation infrastructure would position the state to capture a rapidly growing global market for high-value food and agricultural inputs while creating steady demand for locally grown or manufactured feedstocks.* **Advanced data systems and infrastructure for supply chain optimization and traceability:** *Equipping local supply chains with Artificial Intelligence, Internet-of-Things-enabled data systems and infrastructure would enable value chain actors to optimize manufacturing processing systems, reduce waste, improve food safety, and enable traceability.* **Packaging and preparation of ready-made meals:** *Expanding capacity to source North Carolina products for and manufacture conveniently prepared and packaged meals would provide farmers with an additional market channel befitting North Carolina's diverse, local food production base and consumer marketplace.*

Cross-cutting takeaways from the study highlight considerations for NCAMPI and other actors seeking to deliver farmer benefits via agricultural M&P investments.

- **Agricultural M&P investments provide a path to increase farmer benefits if intentionally targeted and designed.** Without an explicit farmer-centric approach and local sourcing strategy, the state's agricultural M&P capacity may continue to grow without meaningful, positive impact for North Carolina farmers and ranchers.

- **Distinctions across commodities, regions, and value chain structures require assessing the underlying economics of each agricultural M&P opportunity.** No two agricultural M&P investment opportunities are alike; differences in value chain realities, downstream customer preferences, and other factors help determine whether a specific agricultural M&P opportunity is likely to be economically viable and sustainable over time.

- **NCAMPI can enable progress but is not sufficient to fully deliver farmer benefits from agricultural M&P investments.** NCAMPI investments can support but not fully create the types of incentives and value chain structures needed to significantly increase farmer benefits delivered through agricultural M&P. Deepened coordination between state agencies and others is needed to advance this broader ambition.

Actionable ways for NCAMPI and other North Carolina stakeholders to advance agricultural M&P to benefit farmers include:

- **Ensuring "local food" support extends to local sourcing for M&P.** North Carolina's robust local food ecosystem spans local and regional food markets, direct-to-consumer sales channels, and more. These local food channels primarily focus on aggregating and distributing fresh food. However, it is unclear the extent to which this local food infrastructure is deployed to meet the local sourcing needs of new and existing food manufacturers operating in the state. Explicit incentives and enabling mechanisms to connect the state's existing local food ecosystem with North Carolina's growing food manufacturing industry base would fill a key market facilitation gap.

- **Derisking differentiated production and promoting values-based supply chains.** Expanded agricultural M&P capacity can deliver meaningful farmer benefits under the right business conditions. Many North Carolina farmers operate in undifferentiated, price-sensitive supply chains where they are treated as "interchangeable suppliers."[9] Transitioning to values-based supply chains—where farmers are treated as equal partners and rewarded for differentiated outputs and production practices—requires coordinated action and risk sharing arrangements among farmers, processors and manufacturers.[9] Examples identified from across the state – spanning berries, grains, cotton, and meat – offer models from which to learn and scale.

- **Investing in farmer-owned value addition, including via cooperatives.** Not all farmers have interest or ability to engage in value-added steps beyond production, but for those that do, farmer-owned, cooperatively managed M&P presents a promising pathway to improve farmer economic benefits and for farmers to gain leverage in agricultural supply chains. Interviewees point to the need to shore up North Carolina's cooperative infrastructure amidst renewed farmer interest.

1

North Carolina's Agricultural Manufacturing and Processing (M&P) Investment Context

Increased agricultural manufacturing and processing (M&P) capacity has the potential to improve value-added benefits for North Carolina farmers, building upon the state's production agriculture sector (see **Appendix C** for more details) and recent growth in the state's food and beverage industry.[5] The North Carolina Agricultural Manufacturing and Processing Initiative (NCAMPI) aims to strengthen the state's agricultural M&P capacity via grants to private businesses that source from or serve multiple farmers. NCAMPI centers on the core hypothesis that improved agricultural M&P capacity can deliver benefits to wide array of North Carolina stakeholders including farmers, processors, manufacturers, and communities. These investments can help farmers tap into higher-value and more diverse markets; enable North Carolina-based processors and manufacturers to gain efficiencies and assurances via local supply access; and support local communities by increasing agricultural M&P jobs and local spending. According to a recent survey, North Carolina farmers view value-add as key to their profitability.[10]

1.1 Potential Benefits for Farmers and Beyond

Increasing local agricultural M&P capacity and sourcing from North Carolina holds potential to deliver farmer benefits[6,11,12,13] by:

- Reducing transport and logistic costs and burdens
- Diversifying market outlets and selling points
- Providing ways to reap value from crops and livestock that do not meet Grade A market standards (e.g., for fresh fruits and vegetable) and/or excess production
- Smoothing the seasonality of production
- Capturing premium price for quality-differentiated product in some markets (e.g., increased freshness, reduced risk of damage during transport)
- Reducing uncertainty of global trade dynamics that come with commodity crops
- Enabling direct relationship with farmers and building supplier loyalty and trust

Maximizing these benefits is especially critical at a time when global markets are highly unpredictable and financial pressures are mounting for most North Carolina farmers.

Increased agricultural M&P capacity in the state also holds potential to deliver benefits to North Carolina primary and secondary processors, food manufacturers, and others by:

- Allowing them to source the diverse array of crops that can be grown in North Carolina's multiple climates and topographies
- Lowering transport and logistical burdens in sourcing key inputs
- Fostering long-term relationships and building social capital with farmers
- Enabling them to differentiate products as "local" and capture a premium

Benefits can accrue to a larger set of North Carolina agricultural market participants by:

- Keeping the positive indirect and induced benefits of expanding agricultural value chains in state; these benefits could include more jobs and economic growth from sourcing inputs and spending in rural areas where food is primarily grown and processed

- Supporting supply chain resilience and efficiency by buffering North Carolina from outside market, social, or environmental shocks

1.2 Intentional Design is Needed to Ensure Farmer Benefits

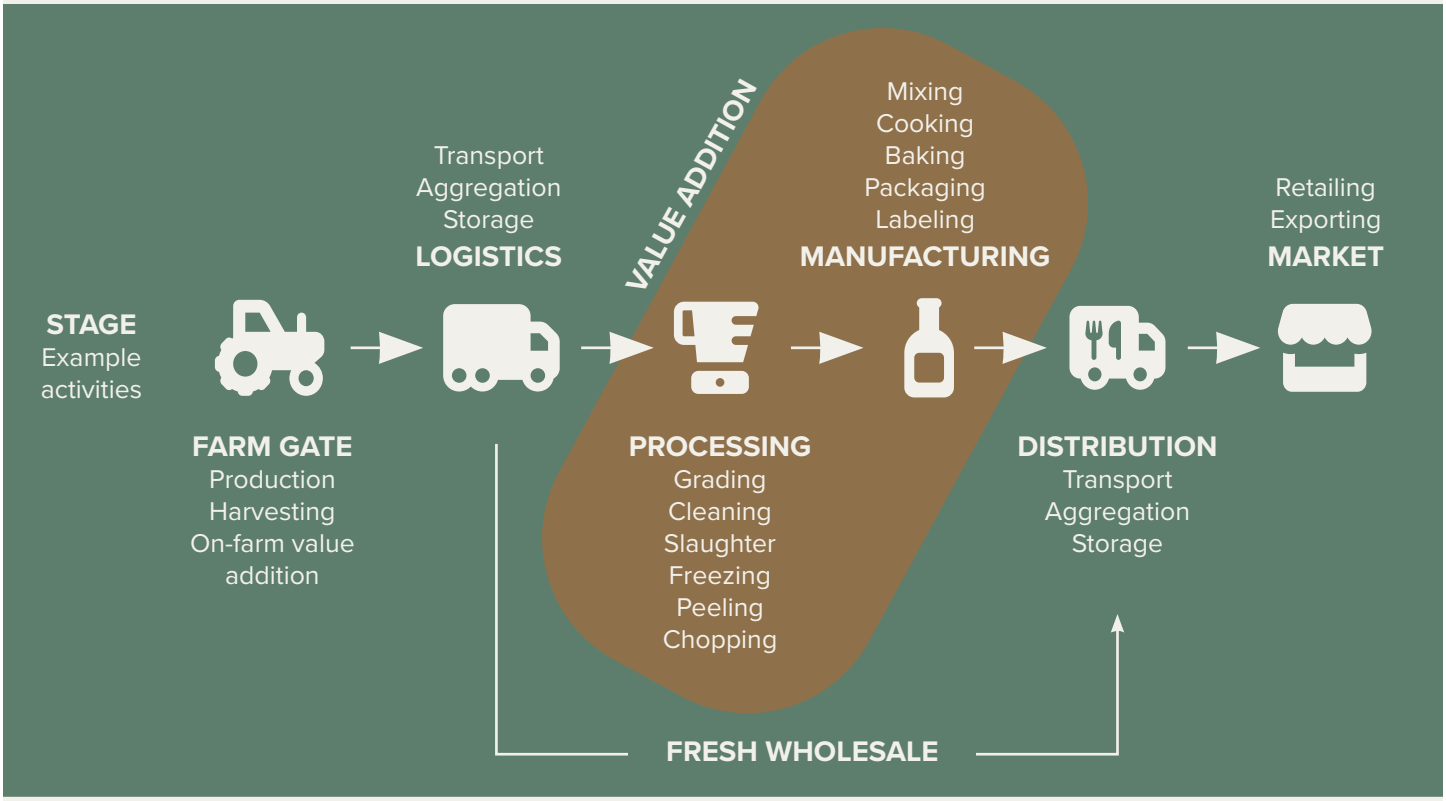
While these many benefits are possible in theory, they are not guaranteed. The literature on supporting agricultural value chains and local food systems makes clear that value-added M&P investments do not always provide these benefits and depend on many factors.[6,7,8] It takes intentional design and purposeful investment to ensure that agricultural M&P capacity improvements actually deliver on these benefits, especially for farmers who are often price-takers with limited leverage among buyers such as processors and commercial aggregators. The prevailing model of agricultural M&P in North Carolina, like in many states, has been largely driven by increasing supply efficiency and price sensitivity. This presents challenges to farmers who are facing increasing production costs and when processors and manufacturers offer prices that are below the farmers' cost to harvest. While North Carolina is home to 1,275 food and beverage manufacturers, contributing $15 billion to the state's gross domestic product in 2021, there is no reliable way to estimate how many of these businesses sourced their raw agricultural inputs from North Carolina farmers.[14]

No one-size-fits-all approach to agricultural M&P will work for a state as geographically, culturally, and economically diverse as North Carolina. The state's scale and diversity of production, as well as regional differences, inform the viability and cost-benefit potential of agricultural M&P for farmers. Over 50% of North Carolina farms are less than 50 acres, and over 80% of farms are family or individually owned.[15] North Carolina "boasts the third most diverse agricultural economy in the U.S." with a large vertically integrated animal agriculture industry* and over 80 crops grown commercially.[16] Agriculture in Western North Carolina varies greatly in terms of production scale and outputs than in the Piedmont and Eastern regions of the state.

These factors, as well as the processing and manufacturing businesses' own ability to execute expanded and improved agricultural M&P offerings, matter in terms of identifying agricultural M&P opportunities that are poised to work with and for farmers.

* Interviewees acknowledged that North Carolina's large vertically integrated animal industry is not well-suited to external agricultural M&P investments due to the industry's tightly managed supply-demand and processing economics; as such, all livestock opportunities featured in the study emphasize independent animal production and processing.

WHAT IS AGRICULTURAL MANUFACTURING AND PROCESSING?



Agricultural manufacturing and processing (M&P) encompasses the many value-addition activities that occur downstream of production, as shown in the diagram, which ultimately result in finished products ready for distribution and marketing. In this report, a value-added agricultural product is any agricultural commodity that "has undergone a change in physical state" via M&P activity. Through value-added processing and manufacturing, "the customer base for the Agricultural Commodity is expanded" and "a greater proportion of the revenue derived…is available to the producer of the commodity."[†,17]

Agricultural manufacturing or agricultural processing can be further distinguished in part by the output of the activity. Food processing results in "semi-processed ingredients (e.g., flour, pasteurized milk)," whereas food manufacturing results in "fully processed, packaged foods (e.g., bread, canned soup)."[18] Other agricultural commodities can be processed and manufactured into non-food products, such as soybeans into industrial oils and timber into building materials, respectively.[19]

[†] This report's definition of "value-added agricultural product" is sampled from the U.S. Department of Agriculture's broader definition in the Modernizing Grant Program Regulation.[16] The broader definition is outside the scope of this report.

2

Prioritized Opportunities for Agricultural M&P in North Carolina

Understanding which agricultural M&P opportunities—across all North Carolina commodities and regions—held high potential to (1) deliver farmer benefits and (2) be investment ready in the near-term—served as the overarching goal of this analysis.

RTI employed a two-step prioritization process informed by over 45 stakeholder interviews, secondary research, and participatory workshops to identify such opportunities.

1. **Opportunity surfacing and prioritization against defined criteria:** We screened an initial set of 70+ agricultural M&P opportunities surfaced through primary and secondary research for feasibility and alignment with NCAMPI objectives using pre-defined prioritization criteria (see textbox). We identified 32 opportunities across 15 commodities that met the prioritization criteria; see **Appendix D** for this full list.

2. **Additional review for farmer benefit and investment readiness potential:** We further refined this list to 11 agricultural M&P opportunities based on relative potential to (1) deliver farmer benefits and (2) be investment ready in the near-term via participatory workshops. In the workshops, stakeholders identified an additional four emerging opportunities that exhibit promise due to their alignment with current market and consumer trends but require further development of farmer benefit pathways; these are also profiled in the following section.

These are not the only agricultural M&P opportunities that could lead to durable benefits in North Carolina, and certainly not the only opportunities worthy of NCDA&CS and other's consideration. Rather, when reviewing opportunities from the lens of (1) durable farmer benefit and (2) near-term investment readiness, these 11 rose to the top of the list. Further details on the methodology we employed are provided in **Appendix A**.

Table 1 presents a short list of agricultural M&P opportunities identified through this research, organized by commodity. A cross-cutting opportunity pertains to multiple commodities.

PRIORITIZATION CRITERIA

RTI reviewed the 70+ agricultural M&P opportunities surfaced through primary and secondary research against the following criteria:

Does the agricultural M&P opportunity:

- Provide a necessary, value-added step between production and retail
- Have improved economics over single-farm or out-of-state execution
- Fill a gap in market access for North Carolina farmers
- Support business models that have expected returns for North Carolina farmers

If an opportunity met all these criteria but represented a commodity that was not well established in North Carolina, then it was further screened to ensure it was supported by a strong enabling environment in the state and that it could be complemented or paired with M&P infrastructure that supported other commodities.

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OPPORTUNITY PROFILES

The following sections describe each opportunity in depth, with each opportunity profile highlighting

1. **The opportunity in context**
2. **Ways this opportunity might deliver farmer benefits**
3. **Market insights that provide information on the extent or need and/or market signals informing prioritization**
4. **North Carolina assets and strengths this opportunity leverages**
5. **Ways NCAMPI and other initiatives can advance this opportunity**

These descriptions are necessarily high-level and capture general themes and takeaways but are not fully detailed and may be missing some nuances.

Note: Unless otherwise noted, all production data are sourced from the US Department of Agriculture (USDA) National Agriculture Statistics Service (NASS) 2022 Agricultural Census, which relies on self-reported survey data; the most representative, available data were used. All information in opportunity profiles is sourced from key informant interviews unless otherwise noted.

Apples
Juice, Puree, or Cider Processing for Legacy Processing Varieties

Description

Incentivizing apple processors to establish operations in Western North Carolina would fill a market gap left by decreasing anchor processor demand.

OPPORTUNITY AT A GLANCE

Potential farmer benefits

- Growers of legacy processing varieties (e.g., Rome apples) need additional outlets for processing apples not well suited for fresh markets and might otherwise go wasted
- Reliance on out-of-state processors and manufacturers like Gerber puts apple farms at risk if demand drops[20]

Market insights

- Demand for apple-based beverages and purees is growing as consumers favor natural, low-sugar, and locally sourced products[23]
- Unexpected apple processor closures and changes to out-of-state processor sourcing strategies have put pressure on the local apple market[20]
- New or renewed M&P capacity could help retain value within the state and strengthen Western North Carolina's apple sector

North Carolina strengths to build upon

- Concentrated and consistent apple supply
- Proximity to regional markets and access to export infrastructure
- Strong regional marketing and tourism[27,28]

Ways to advance the opportunity

- Support business models that prioritize cooperative, farmer-owned processing
- Connect potential businesses to diverse local market outlets, such as various institutions and grocers
- Enable purchases and sustainability of capital-intensive equipment

OPPORTUNITY IN CONTEXT

The Western North Carolina apple industry has changed over the last two decades: While North Carolina ranks seventh among states for apple production, farmers have struggled to keep up with changes in processor demand. From 1959 to 1998, Gerber's Asheville plant sourced apples largely from Henderson County.[20] Since the plant's closure, processing options have lessened, and farmers are growing different apple types to meet different and changing markets. For example, Lassonde Industries acquired Henderson County's Clement Pappas plant in 2011[21]; as the company uses only concentrates, the facility no longer sources apples from local farmers. In 2024, Hurricane Helene destroyed much of the apple crop plus other equipment and assets in the region.[22] Then in 2025, Apple Wedge Packers & Cider's Henderson County packing facility burned down; the facility packed for 25% or more of the county's apple farmers.[22]

> "If [farmers] don't have some type of facility or value-added [option], apple orchards will turn into housing developments. You're losing [an] ag base if you don't provide some type of way to keep the product close, made here locally."
>
> *Western North Carolina apple farmer*

POTENTIAL FARMER BENEFITS

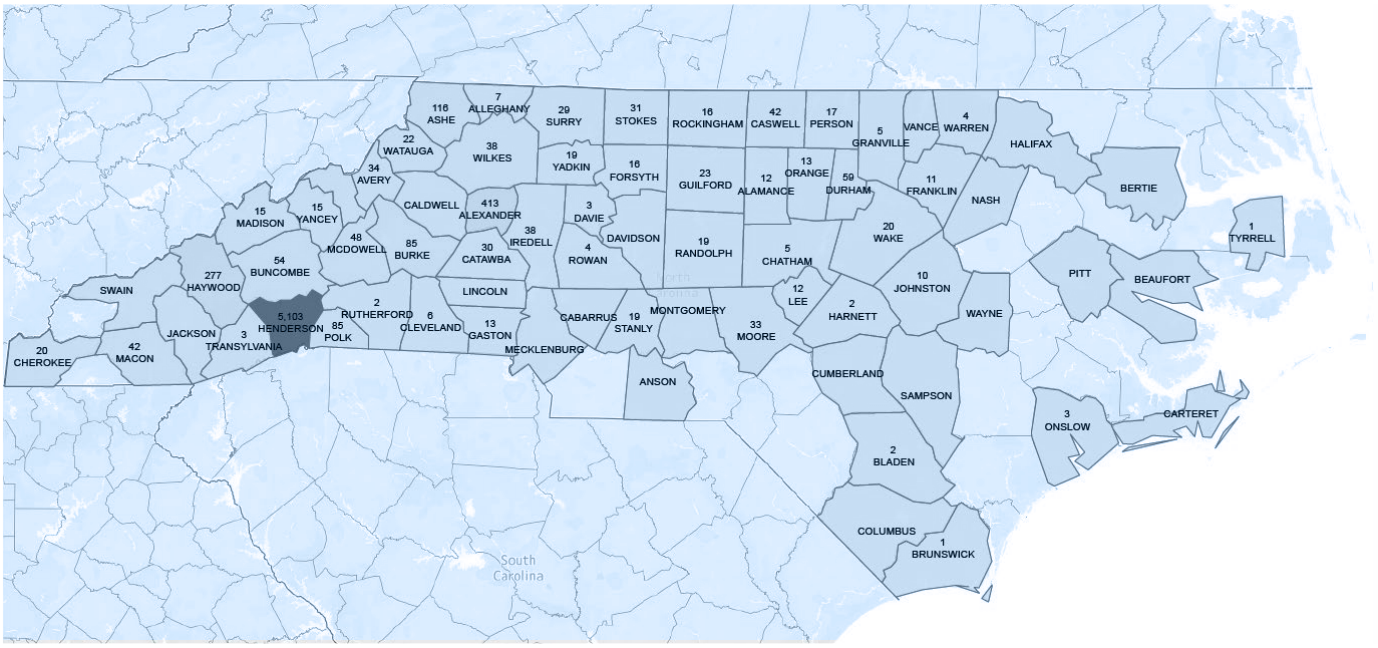
Many Western North Carolina apple farmers rely on processing for profitability: Many North Carolina farmers planted apple varieties that Gerber had once requested (e.g., Rome); with processing facilities dwindling, there is not a sufficient offtake market for those legacy varieties as they differ from those demanded for fresh retail markets. Many apples are now sold at a lower wholesale price, through agrotourism apple-picking experiences, or seasonally to cider manufacturers in Georgia. Farmers interviewed expressed concern that if Gerber were to stop sourcing apples for their out-of-state processing plants altogether, farmers would have to sell their land. Bringing in a local juicer, puree, or cider operation to source Western North Carolina apples could help keep apple farmers in business.

> "Where we lack is equipment, manufacturing…I could probably make [an apple processing business] work with the right incentives, but there's not really a way to help farmers such as myself get into sophisticated long-term markets."
>
> *Western North Carolina apple farmer*

$18.5M	774
total value of North Carolina apple production, 2022	**North Carolina apple farms, 2022**

PRODUCTION MAP

Apples acres bearing & non-bearing, 2022



MARKET INSIGHTS

Global demand for apple-based beverages and ingredients is accelerating even as North Carolina loses apple processing capabilities. Rising awareness of sugar content and interest in clean-label products are driving steady growth across the juice, puree, and cider markets. The global apple juice market is valued at almost $19 billion in 2024, expected to grow at about 5% compound annual growth rate (CAGR) over the next decade.[23] Meanwhile, the apple puree segment is much smaller, only projected to reach about $1.6 billion by 2033 at about 4% CAGR.[24] The cider market is expanding more quickly in the United States than globally; forecasts show the U.S. market will grow at about at 17% CAGR compared to the global 3% CAGR through 2035.[25,26] Together, these trends highlight a growing preference for value-added fruit processing and beverage innovation.

KEY NORTH CAROLINA STRENGTHS AND RESOURCES TO BUILD UPON

- **Concentrated and consistent ingredient supply:** Most apple production is concentrated in the western part of the state, including Henderson, Alexander, Haywood, Ashe, Polk, and Buncombe counties, which helps streamline siting facilities and sourcing inputs.
- **Proximity to regional markets and export infrastructure:** Western North Carolina's apple farmers are a relatively short drive to millions of consumers in metropolitan areas

like Charlotte, Atlanta, Nashville, and Raleigh, with access to I-26 and I-40 corridors and the mid-Atlantic Port of Wilmington for export.

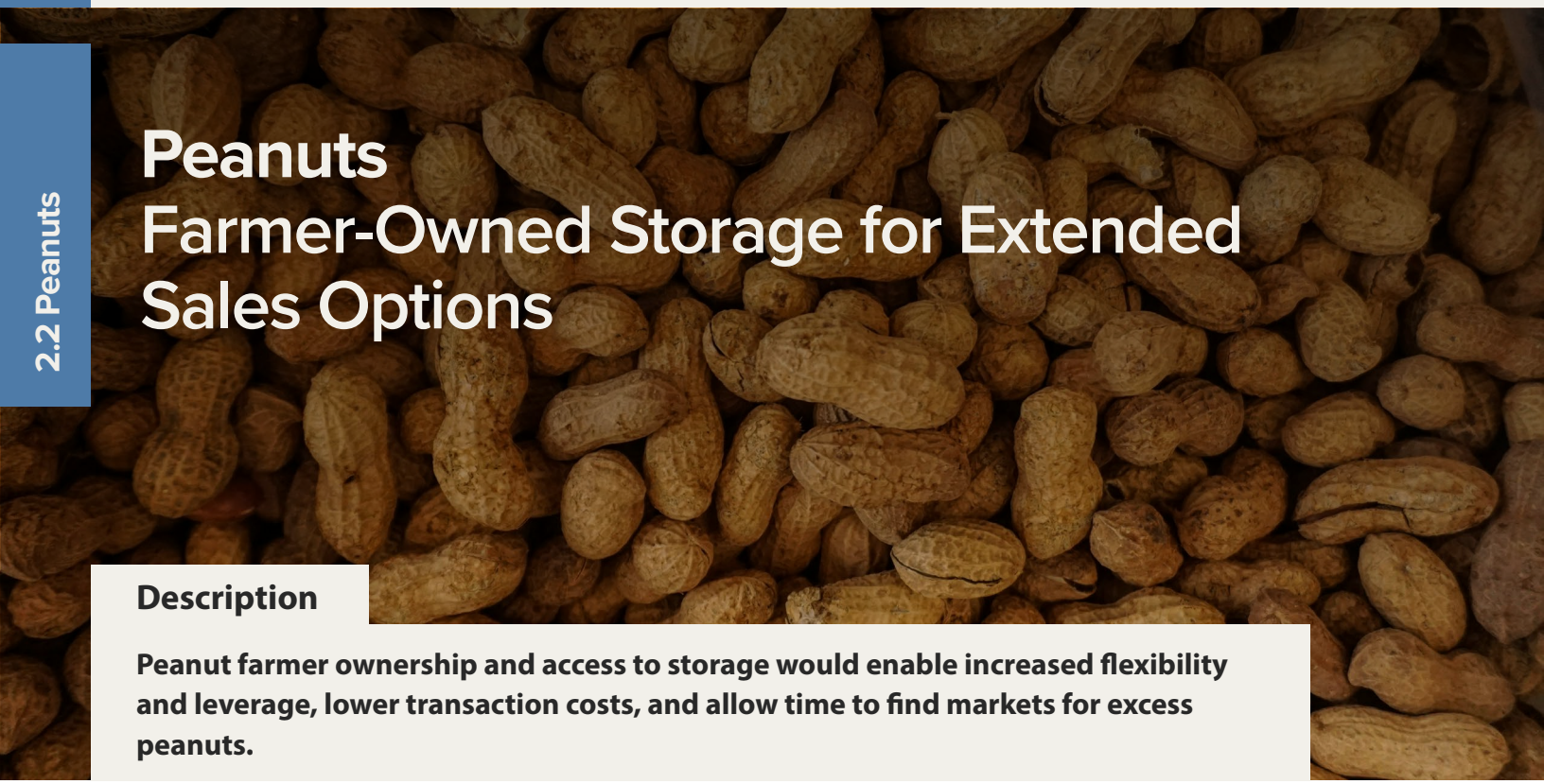
- **Strong marketing and tourism:** Western North Carolina has a culture and brand unique to the United States. The "Appalachian Grown"™ logo on Western North Carolina food products can be a draw for the growing local food movement,[27] and visitors spend millions of dollars on food and beverage in the area each year. Buncombe County alone, known for its breweries and cideries, earned $787 million in food and beverage tourism in 2023.[28]

WAYS TO ADVANCE THIS OPPORTUNITY

1. **Support business models that prioritize cooperative, farmer-owned processing:** Farmers are eager to cooperatively share in the value-added step of the apple value chain. This would put more power in the hands of the farmers, from the types of apples grown and processed to what downstream markets they enter. With shared marketing, equipment, infrastructure, and more control, farmers stand to benefit from market access and higher margins.

2. **Connect potential businesses to diverse local market outlets:** Out-of-state processors and manufacturers with growing markets that buy from the area buy less than they might due to transport costs. Connections to the state's farm-to-school program, other institutional buyers like hospitals, and regional grocery chains could help incentivize existing processors and manufacturers to locate in Western North Carolina. Interviewees expressed challenges in brokering supplier contracts with in-state retailers, citing support needed to facilitate engagement with retailers.

3. **Enable purchases and sustainability of capital-intensive equipment:** Western North Carolina apple farmers and processors expressed needing access to additional infrastructure and equipment to grow processing capabilities. For example, local breweries could use mashed apple but there are no local mash facilities. Furthermore, necessary equipment like pasteurizers and cold storage are capital intensive to run, but improved freezer access would enable year-round fresh cider.



Peanuts
Farmer-Owned Storage for Extended Sales Options

Description

Peanut farmer ownership and access to storage would enable increased flexibility and leverage, lower transaction costs, and allow time to find markets for excess peanuts.

OPPORTUNITY AT A GLANCE

Potential farmer benefits

- Increasing farmer access to storage can relieve bottlenecks at grading points by spreading out grading needs over time
- Farmer-owned storage could provide farmers more time to connect excess crop to alternative markets

Market insights

- Market trends favor high-protein snacks like peanut-based products, with steady global demand
- North Carolina has 42 buying points owned by 4 shellers contracting farmers in the state and one new (summer 2025) buying point that is farmer-owned[33] North Carolina strengths to build upon:
- Concentrated and consistent supply
- State peanut heritage and culture[34,35]
- Strong industry and research organizations

Ways to advance the opportunity

- Enable farmer-owned storage
- Organize a group to support peanut retailers
- Advocate for scaling of improved grading technologies[36]

OPPORTUNITY IN CONTEXT

> "We are at the mercy of getting contracts from shellers; that is what determines the volume of production."
>
> *North Carolina peanut industry expert*

Resource-intensive contract-growing of peanuts is limiting one of North Carolina's top crops: North Carolina is the third-largest producer of peanuts by volume in the United States, thanks in part to the sandy soils of Eastern North Carolina, but rising input costs are putting pressure on already slim margins.[29] The primary way farmers make peanut growing economically feasible is by increasing their yields through state-developed varieties while cutting costs where possible.[30,31] The millions of pounds of peanuts grown in North Carolina each year are largely contract-grown, with 42 in-state buying points to grade and sell the crop, a time- and cost-intensive process. Peanuts produced over the contracted amount often have no assured market.

POTENTIAL FARMER BENEFITS

North Carolina peanut farmers need storage access to reduce transaction costs and give farmers more control in an increasingly consolidated market: U.S. Department of Agriculture (USDA)–inspected storage is critical to the success of the peanut supply chain, from warehouses to semitrailer trucks. The grading technologies in North Carolina's 42 buying points are outdated compared to improved peanut harvesting technologies; the combination of sparse buying points and inefficient grading leads to long wait times after farmers drive long distances for service. Furthermore, farmers must make multiple trips if they do not have enough truck storage to haul all their harvest, making grading point visits a time-intensive and costly process. Increasing farmer access to storage has

> "So much of our industry got bigger, got faster. But then some very critical things did not, like grading rooms and storage capacity."
>
> *North Carolina peanut industry expert*

608	42
North Carolina peanut farms	**peanut buying points in North Carolina, 2025**

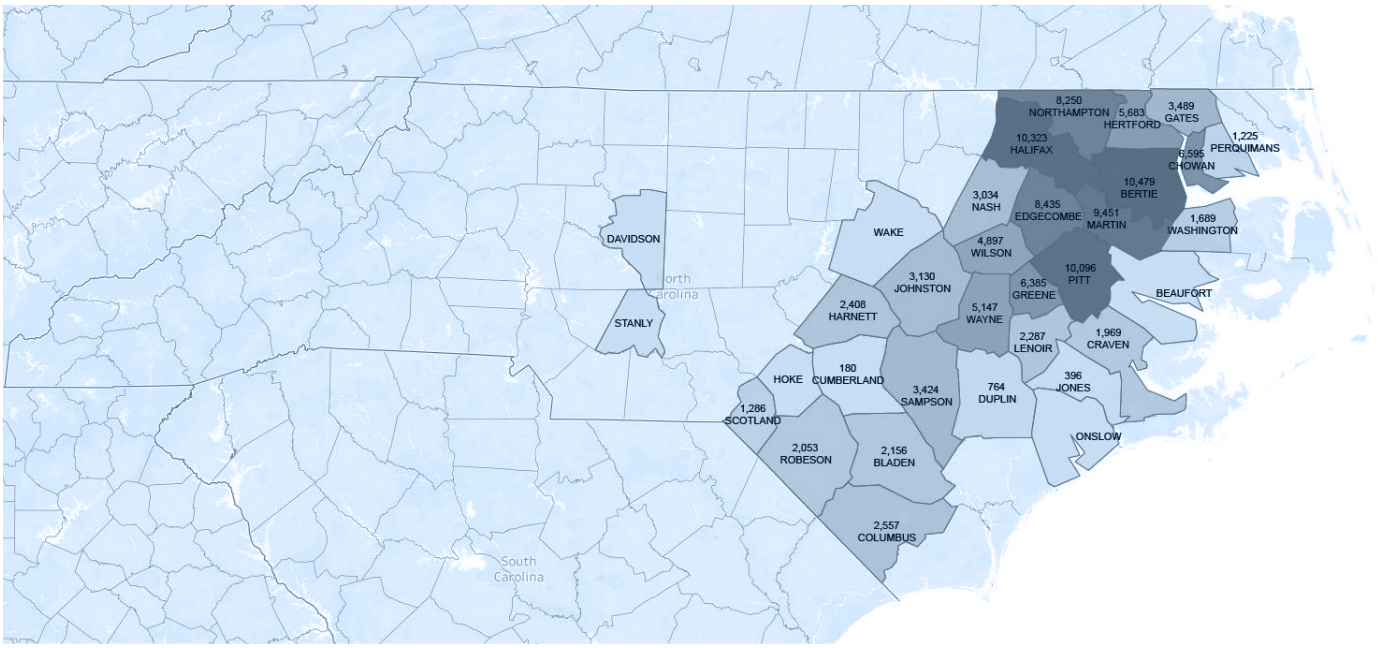
$105.5M
total value of North Carolina peanut production, 2022

the potential to relieve bottlenecks at grading points by spreading out grading needs over time. Farmer-owned storage could also give farmers more market leverage with shellers, as well as provide more time to connect excess crops exceeding contracted amounts to alternative markets.

> **"Without more semi-trucks and more storage, you end up with a line of people trying to get their peanuts to the grading point."**
>
> *North Carolina peanut industry expert*

PRODUCTION MAP

Peanut acres harvested, 2022



MARKET INSIGHTS

Global peanut demand is expanding alongside growth in plant-based proteins and snack innovation: The global peanut market is valued at $81 billion in 2025 and projected to reach $98 billion by 2030, growing at about 4% CAGR.[32] Retail peanut sales in the United States reached $5.2 billion in 2024, reflecting steady customer demand for sustainable, high-protein snacks even as peanut volumes declined almost 3%. Trends in flavor innovation, packaging, and sustainable sourcing for peanuts also characterize the peanut market.[32]

North Carolina has 42 buying points owned by four shellers contracting farmers in the state and one new buying point that is farmer-owned in Edgecombe County. A family-owned peanut storage company, C.A. Perry & Son, Inc., highlights the diverse needs of the state's long-standing peanut industry, providing peanut warehouse storage and trucking

services since its founding in 1956.[33] Expanding farmer-owned storage and buying capacity could increase market leverage and position state farmers to benefit from rising demand for value-added and specialty peanut products.

KEY NORTH CAROLINA STRENGTHS AND RESOURCES TO BUILD UPON

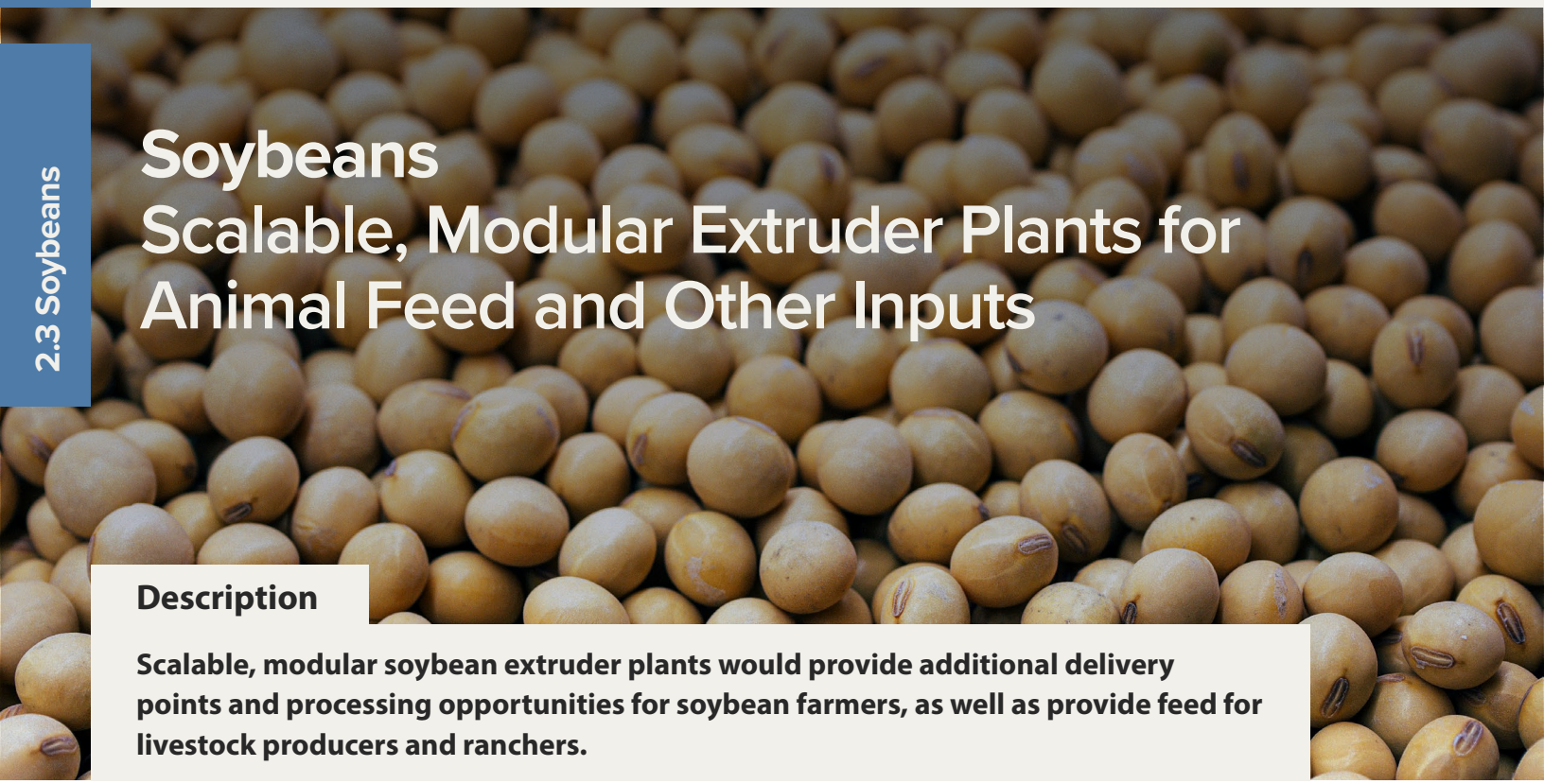
- **Concentrated and consistent supply:** State peanut production is concentrated in Eastern North Carolina for the sandy soils of the Coastal Plain region, with much of the production happening closest to the majority of buying points in northern counties like Halifax, Bertie, Pitt, Martin, and Northampton.
- **North Carolina peanut heritage and culture:** North Carolina has grown peanuts since their introduction in the 1800s and is home to the Peanut Capital of the World in Smithfield and the annual North Carolina Peanut Festival in Lexington.[34] Over 90% of state peanuts grown are the snack and in-shell variety called Virginia, popularly served at America's favorite pastime across the country: baseball games.[35]
- **Strong industry and research organizations:** The North Carolina Peanut Growers Association (NCPGA) has represented the over 600 peanut farmers in the state for more than 70 years, furthering peanut advocacy, research, and consumer education. NCPGA estimates that every dollar invested in peanut research returns $6 to the farmer,[35] including breeding, agronomic, and other research that state institutions like NCDA&CS's 18 research stations support in cooperation with partners like NC State University.

WAYS TO ADVANCE THIS OPPORTUNITY

1. **Enable farmer-owned storage:** Farmers would most directly benefit from ownership and access to storage solutions, including warehouse space and truck space. For example, the one buying point in Lenoir County is known to get so backed up, farmers are driving to further buying points to drop off their harvest; given more storage, farmers could hold onto their peanuts until wait times drop. However, storage establishment needs technical support in addition to financial support since it must be USDA-inspected; a past NCAMPI grantee cannot open their warehouse because an inspector has been unavailable to come out to the rural area.

2. **Organize a group to support peanut retailers:** While farmers are strongly represented by the industry organization NCPGA, there is no such group for peanut retailers. Supporting a retailer-specific industry organization could have knock-on effects for the whole value chain, including farmers looking for new markets.

3. **Advocate for scaling of improved grading technologies:** The state buying points' grading equipment is outdated and unable to keep up with the growing volume of peanuts and farmer needs. North Carolina has a large network of research organizations that could or are supporting research for the improvement of grading technologies, like the NC Plant Sciences Initiative.[36] However, new technology adoption is hindered by the need for federal approval and sheller buy-in for equipment investment.



Soybeans
Scalable, Modular Extruder Plants for Animal Feed and Other Inputs

Description

Scalable, modular soybean extruder plants would provide additional delivery points and processing opportunities for soybean farmers, as well as provide feed for livestock producers and ranchers.

OPPORTUNITY AT A GLANCE

Potential farmer benefits

- More local options for processing
- Lower transportation costs for animal feed
- Additional feedstock sources for local livestock producers and ranchers

Market insights

- The soybean processing sector is expanding globally as demand for plant-based protein and feed ingredients accelerates[37]
- In North Carolina, growing feed demand and industry changes are creating space for smaller, modular processing capacity closer to farmers and ranchers[39,41]

North Carolina strengths to build upon:

- Producer of both soybeans and livestock
- Established agribusiness infrastructure and logistics
- Existing research can help inform site location for processors[41]

Ways to advance the opportunity

- Enable modular extruder/expeller plants
- Support business models that maximize benefits for farmers, including farmer-owned and cooperative-owned plants
- Continue to assess demand for additional processing

OPPORTUNITY IN CONTEXT

> "[Extruder plants] would give farmers an additional place to deliver... it could be replicated at different places across the state...it's not an investment that's insurmountable."
>
> *North Carolina soybean industry expert*

North Carolina does not have the capacity to meet the state's animal feed needs: North Carolina farmers grow soybeans in 88 of 100 counties in the state, and soybeans are in the top five commodities by cash receipts in North Carolina. This accounts for 1.7 million planted acres of soybeans and 65 million bushels harvested in the state in 2022. However, North Carolina does not produce or process all the soybeans needed to feed the significant number of animals raised in the state. Livestock producers and ranchers rely largely on animal feed inputs transported in from other parts of the country; filling a local processing gap could help better connect North Carolina soybean production with the state's animal feed input needs.

POTENTIAL FARMER BENEFITS

> "We will buy every bit of local grain we can buy. And we'll pay a premium for it versus railing it in from elsewhere."
>
> *North Carolina livestock industry expert*

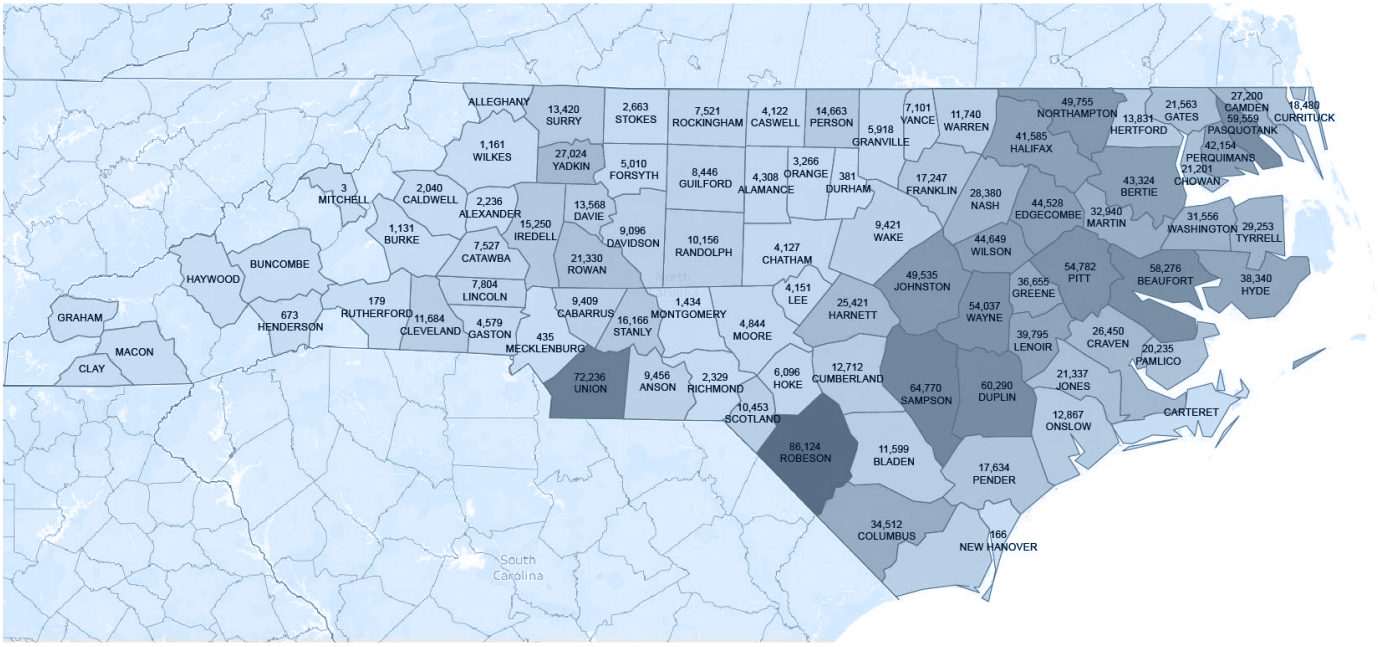
Establishing soybean extruder plants can save farmers money on logistics and provide livestock producers with more feedstock options: Many North Carolina soybean farmers currently rely on a soy crushing facility in Fayetteville, North Carolina, while those in the northeastern counties may send soybeans to processors in Cofield, North Carolina or Chesapeake, Virginia. The recent closure of a South Carolina plant that had served many farmers in the Charlotte and Piedmont regions has left them with fewer processing options and higher transportation costs. New, scalable extruder plants would give farmers more accessible locations for delivering and processing their beans, while modular, batch-production systems can handle commodity and specialty soy and expand as demand grows. More local processing capacity would also increase feedstock availability for local livestock producers.

5,683	2
North Carolina soybean farms, 2022	**North Carolina soybean crushing facilities**

$919.2M
total value of North Carolina soybean production, 2022

PRODUCTION MAP

Soybean harvested acres, 2022



MARKET INSIGHTS

The soybean processing sector is expanding globally as demand for plant-based protein and feed ingredients accelerates: The market is projected to grow from roughly $92 billion in 2024 to up to $139 billion in 2029, reflecting a 9% CAGR.[37] Growth is driven by rising global protein consumption, sustainability priorities, and innovations in meat analogs, feed, and specialty food products. The extrusion equipment market alone reached $543 million in 2024 and is expected to maintain nearly 8% CAGR through 2033.[38]

In North Carolina, growing feed demand and industry changes are creating space for smaller, modular processing capacity closer to farmers and ranchers. Cargill's recent $25 million expansion of its Fayetteville plant reflects renewed momentum in local soybean processing.[39] Efforts by the NC Soybean Producers Association to explore sites for small-scale extruder or expeller facilities could further strengthen in-state feed supply chains, helping farmers save on transport costs while adding value within the region.[39]

KEY NORTH CAROLINA STRENGTHS AND RESOURCES TO BUILD UPON

- **Producer of soybeans and meat:** Soybeans are grown in most counties in North Carolina, with major production counties in the Coastal Plain, where most livestock production also takes place. The North Carolina livestock industry sources much of the soy produced in the state for feed products.[40]

- **Established agribusiness infrastructure and logistics:** North Carolina has well-developed infrastructure for shipping by rail, trucks, or ship that can support transport of soybeans and soybean products across the state to where the demand is located.
- **Existing research can help inform location for processors:** In 2024, the NC Soybean Producers Association commissioned a report by Centrec to identify counties suitable for small-scale soy extruder/expeller plants in the state. This report lays a foundation for siting these plants and suggests continuing to explore local demand for them.[41]

WAYS TO ADVANCE THIS OPPORTUNITY

1. **Enable modular extruder/expeller plants:** Additional points of delivery and processing benefit soybean farmers by providing them with more locally available options as well as potentially lowering their transportation costs. The discrete, relatively affordable, and modular nature of extruders and expellers makes it a promising opportunity for farmers and small-scale enterprises to increase processing options for soybean farmers in the state. Extruders process raw materials (like whole soybeans or corn) by using a rotating screw to blend, heat, and apply pressure within a barrel. This process turns soybeans into a cooked soybean meal. Expellers press the cooked meal to separate liquid oils from the solid meal creating what is called a “press cake.” This extruder/expeller technology is operable by farms and small-scale enterprises, able to be located in many existing spaces, delivered on trucks, and moved on forklifts, as opposed to the hexane processing technology used at larger facilities.

2. **Support business models that maximize benefits for farmers, including farmer-owned and cooperative-owned plants.** Encourage and support initiatives led by farmers or farmer cooperatives to participate directly in processing activities. Greater involvement in processing allows farmers to capture more value within the value chain and strengthen their long-term economic resilience.

3. **Continue to assess demand for additional processing:** Work with the NC Soybean Producers Association, local soybean farmers, and potential processors to understand the level of demand across the state for additional processing, especially with the livestock industry.

Sweetpotatoes Gluten-Free Flour and Pet Food Manufacturing for Excess and Grade B Crop

Description

Tapping into growing markets for gluten-free foods and grain-free pet foods would enable farmers to capture value from excess sweetpotatoes.

OPPORTUNITY AT A GLANCE

Potential farmer benefits

- Offers a way for farmers to capture returns for excess sweetpotatoes and diversify market outlets[42,43]
- Lower transport and logistics costs by delivering sweetpotatoes to in-state processors and manufacturers

Market insights

- Expected growth in global market for gluten-free foods, including for products like sweetpotato flour and grain-free pet food, over the next several years[44,45,46,48]
- Evidence of pet food manufacturers establishing operations in North Carolina due to sweetpotato supply access[47,50]
- Sweetpotato flour itself serves an important input to other North Carolina industries like pet food manufacturing and bakeries[47]

North Carolina strengths to build upon

- Concentrated and consistent supply
- Established sweetpotato processing facilities for supply chain integration[46,47]
- Robust trade linkages with Europe and Asia for sweetpotato product exports[50]
- Strong industry groups and branding[51]

Ways to advance the opportunity:

- Support business models that align farmer production costs and prices paid by processors and manufacturers
- Address storage needed for surplus sweetpotato[52]
- Improve processing efficiency and throughput via technology upgrades[53]

OPPORTUNITY IN CONTEXT

North Carolina is the global leader in sweetpotato production: North Carolina is the top U.S. producer and leading exporter of sweetpotatoes, accounting for about 60% of the nation's supply each year.[42] Most are sold fresh on the wholesale market, and most of those are exported to Europe and other places. Fresh markets bring the top price for their sweetpotatoes, but strict quality standards mean that a significant number of sweetpotatoes are left unharvested.[43] Sweetpotatoes can be processed for both human- and pet-grade foods, including products such as sweetpotato flour and gluten-free pet food. Other sweetpotato products include juices, sweetpotato fries, chips, baby food, and sweetpotato prepped and packaged for convenience.

"Sweetpotato in the pet food market is a big deal...They are equally nutritiously valuable for our pets as they are for us. As we spend more and more on our pets, this is an opportunity."

North Carolina sweetpotato industry expert

"[Sweetpotato] growers need to be educated on the expectations of the processors, what the processor needs. Processors need to be clear on what they need and be willing to pay for what they need."

North Carolina sweetpotato industry expert

"A burgeoning opportunity that hasn't quite come to fruition yet is sweetpotato flour. If you're gluten intolerant, it is a great alternative... I often get calls for sourcing sweetpotato flour."

North Carolina sweetpotato industry expert

POTENTIAL FARMER BENEFITS

Gluten-free foods, a growing market, offers a secondary outlet for excess sweetpotatoes: Sweetpotato processing could leverage existing North Carolina-located companies and facilities for locally processed products (e.g., sweetpotato flour) and locally manufactured products (e.g., pet foods). Promoting local sourcing of sweetpotatoes for products such as flour or pet food products offers a way to ensure farmers (1) secure some return for their sweetpotatoes that do not meet quality standards for wholesale markets, and (2) diversify market channels and build more robust local supply chains. Farmers that currently sell sweetpotatoes to out-of-state processors and manufacturers (e.g., sweetpotato fry manufacturers in Michigan) capture lower prices due to transport and logistics costs.

528 sweetpotato farms, 2022

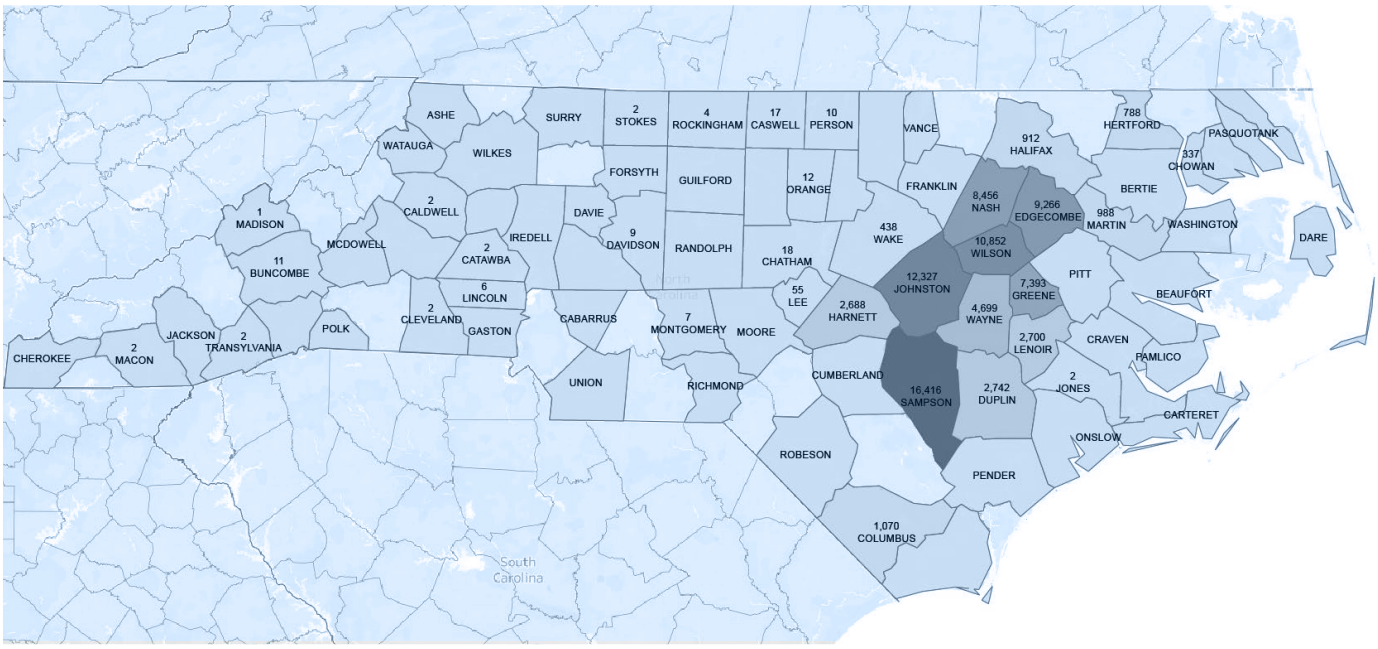
$298.5M total value of North Carolina sweetpotato production, 2022

2 primary sweetpotato flour processors in North Carolina, 2025

3 major pet food manufacturer openings in North Carolina since 2021

PRODUCTION MAP

Sweetpotato harvested acres, 2022



MARKET INSIGHTS

Sweetpotato flour has room to grow: Sweetpotato flour is a growing segment of the estimated $8 billion gluten-free food market,[44] projected to grow by almost 5% CAGR over the next decade as consumers become more familiar with the health advantages associated with eliminating gluten in their diets.[45,46] Sweetpotato flour is also a key ingredient for pet food manufacturing.[47] Two major sweetpotato flour processors operate in Pitt and Robeson Counties.

Recent pet food manufacturing facility openings indicate an established environment for the industry: Sweetpotato is a key input for pet food, especially as pet food manufacturers look to diversify from grain-based formulations. Global market reports predict an over 7% CAGR for gluten-free pet food over the next several years as pet ownership grows.[48]

In 2021, the former Carolina Innovative Food Ingredients sweetpotato flour processing plant was acquired by pet food manufacturer and sweetpotato processor Crump Group USA.[49,50] The company named the abundance of sweetpotatoes as a top reason for choosing Nash County for their facility.[50]

KEY NORTH CAROLINA STRENGTHS AND RESOURCES TO BUILD UPON

- **Concentrated and consistent ingredient supply:** The majority of North Carolina sweetpotato production is concentrated in a few eastern counties, including Sampson, Johnston, Nash, and Wilson, which helps streamline siting facilities and sourcing inputs.

- **Linkages to adjacent industries and export markets:** North Carolina has established trading partners in Europe and Asia for sweetpotato products, where the global market for sweetpotato flour is fastest growing. Additionally, other growing industries in North Carolina like pet food manufacturing and bakeries use sweetpotato flour for their gluten-free products.
- **Established sweetpotato processing facilities for supply chain integration:** North Carolina pet food manufacturers can use former sweetpotato processing spaces or source from existing sweetpotato processors. For example, Crump Group USA acquired the former Carolina Innovative Food Ingredients facility in Nash County in 2021, where they process sweetpotatoes for natural pet food and treats.
- **Strong industry groups and branding:** The North Carolina Sweetpotato Commission (NCSC) is a nonprofit organization of over 400 sweetpotato farmers and packers, processors, and businesses, supporting the industry and promoting sweetpotato consumption since 1961.[51] NCSC and other local commodity groups can help with farmer aggregation, quality standards, and marketing.

WAYS TO ADVANCE THIS OPPORTUNITY

1. **Support business models that align farmer costs and prices paid by processors:** Farmers utilize manual harvesting, which is labor-intensive and costly, because mechanized harvesting risks damaging the flesh and making the sweetpotato unsellable on the fresh wholesale market. Scaling operations to harvest more sweetpotatoes may only be possible given the right price from processors and low transaction costs. Interviewees point to the need to facilitate mutually beneficial sourcing arrangements between North Carolina farmers and local processors.
2. **Address storage needed for surplus sweetpotato:** Farmers harvest sweetpotatoes once in the fall, so sweetpotatoes must go through a process called curing and then be stored until they are used to maintain freshness for year-round processing needs.[52] Farmers and processors may need additional storage to support harvesting additional sweetpotatoes for processing.
3. **Improve processing efficiency and throughput via technology upgrades:** Although U.S. processor-grade sweetpotato standards are more flexible than fresh retail grades, they still specify size and defect limits.[53] Many processors also prefer certain sizes for efficiency. Current and new-to-North Carolina sweetpotato flour and other sweetpotato ingredient processors may need equipment and technology improvements to better utilize lower-grade sweetpotatoes of varying shapes and sizes.

Oysters
Freezing and Value-Added Processing for Excess and Large-Sized Crop

Description

Shared facilities for oyster freezing, processing, and storage would allow farmers to capture value from excess product that would otherwise go to waste.

OPPORTUNITY AT A GLANCE

Potential farmer benefits

- Provides a way for oyster farmers to capture value from excess product (e.g., oysters that are too large for the half-shell market)
- Cold storage provides a place to keep fresh and value-added products until they are ready to sell, which can help smooth seasonality and price fluctuations during peak season

Market insights

- Global demand for oysters continues to rise[57]
- The oyster industry has emerged as a growing industry in Eastern North Carolina[59]

North Carolina strengths to build upon

- Strong state support and infrastructure for oyster production[60,61,62]
- North Carolina's natural assets, like climate, are well suited for oyster production
- Existing aquaculture expertise and research takes place at many state institutions[63,64,65]

Ways to advance the opportunity:

- Provide oyster farmers with processing- and retail-focused technical assistance
- Enable farmer access to freezing and processing equipment
- Conduct market research and identify then grow markets for processed oyster products
- Increase freezer storage available to oyster farmers

OPPORTUNITY IN CONTEXT

Aquaculture is a growing industry and statewide priority in North Carolina, but storage access is an issue: From 2013 to 2023, oyster sales increased 34% annually. Initiatives like the North Carolina Oyster Trail, developed through partnerships between North Carolina Sea Grant, the Coastal Federation, and the Shellfish Growers Association, are strengthening in-state branding, promoting local seafood purchasing, and connecting coastal farmers with new market opportunities within and outside of the state.[54] However, oyster farmers are missing out on additional value for their excess oysters due to their short shelf life and the specific size requirements for the half-shell restaurant market. Some farmers struggle to find adequate storage for their excess oysters in the eastern part of the state.

> "[Oysters] start to hit that marketable size for restaurants. [Farmers] sell what they can, but then those oysters don't stop growing… they're too big, so what do they do with them? … The state maybe should buy a processing plant that is basically available for hire for all these scenarios."
>
> *North Carolina oyster farmer and processor*

POTENTIAL FARMER BENEFITS

Additional cold storage and value-add opportunities could provide oyster farmers with more market outlets and income for their excess products: In recent years, oyster farmers report producing excess oysters that are oversized for the half-shell market. Cold storage and value-add opportunities allow farmers (1) more options, with less pressure to sell immediately; (2) ways to diversify market outlets and spread risk; and (3) more control over when they sell to gain a better market price (i.e., not selling when market is glutted). Potential value-add opportunities include frozen, canned, dried, and soup stock, though these may require additional market development supports.

> "Oysters would be, I think, high on the list of commodities to work with for creating value-added products, whether it's shucked half shell, frozen oysters, whether it's maybe canned oysters, soup, stock, dried product, a lot of things can be done depending on if there's a market for it."
>
> *North Carolina aquaculture processing expert*

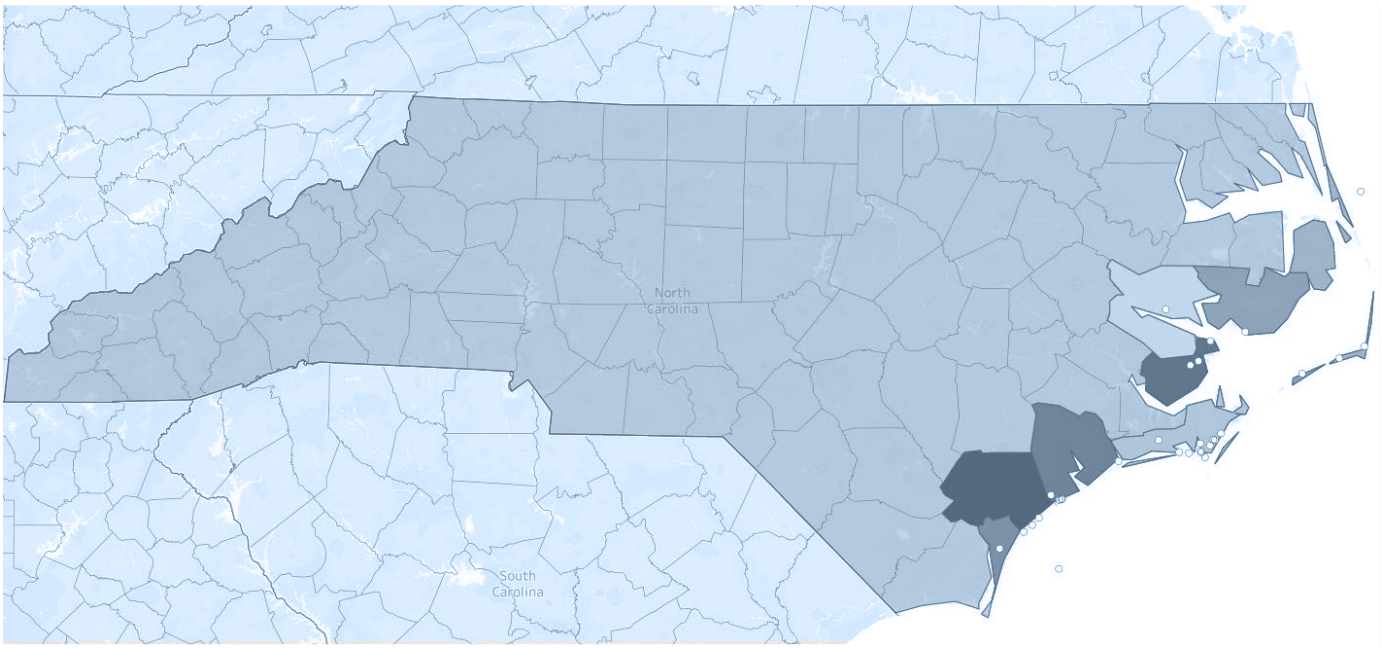
~70	499
North Carolina oyster farms‡	**North Carolina oyster leases for cultivation[55]**

$5.6M
total farmgate value of North Carolina oysters‡

‡ E. Herbst, Coastal Aquaculture Specialist at NC Sea Grant (personal communication, December 22, 2025).

PRODUCTION MAP

North Carolina Shellfish Growers Association members map, 2021[56]



MARKET INSIGHTS

Global demand for oysters continues to rise: The global oyster market was valued at around $116 billion in 2024 and is projected to reach up to $159 billion by 2033, growing at about 4% CAGR.[57] This is driven by health-conscious and sustainability minded consumers, and demand increases in raw bars and high-end restaurants, as well as for products like canned or smoked oysters, and frozen "top off" and oven-ready items.[58] In the United States, the 2023 oyster market was valued at $327 million, with 32% from aquaculture, 26% from wild harvest, and 41% from imports, signaling continued opportunity to expand domestic supply chains.

The oyster industry has emerged as growing industry in Eastern North Carolina, contributing to roughly $1.4 million to the state economy in 2023 and supporting 283 jobs statewide.[59] This reflects a strong market potential for locally sourced shellfish.

KEY NORTH CAROLINA STRENGTHS AND RESOURCES TO BUILD UPON

- **Strong state support and infrastructure for oyster production:** North Carolina has sought to grow its oyster industry over the last decade. This includes strategic planning such as the North Carolina Strategic Plan for Shellfish Mariculture: A Vision to 2030,[60] the Oyster Restoration and Protection Plan for North Carolina,[61] and the North Carolina Oyster Trail.[62]
- **North Carolina's natural assets well suited for oyster production:** North Carolina's mild climate, clean waterways, and salinity gradients make it possible for nearly year-round farming and harvesting of premium oysters.

- **Existing aquaculture expertise and research taking place at many state institutions:** North Carolina is home to many aquaculture-focused research centers including NC State's Aquaculture Research and Extension facilities,[63] the Duke Aquafarm,[64] and Cape Carteret Community College's Aquaculture Technology Program.[65]

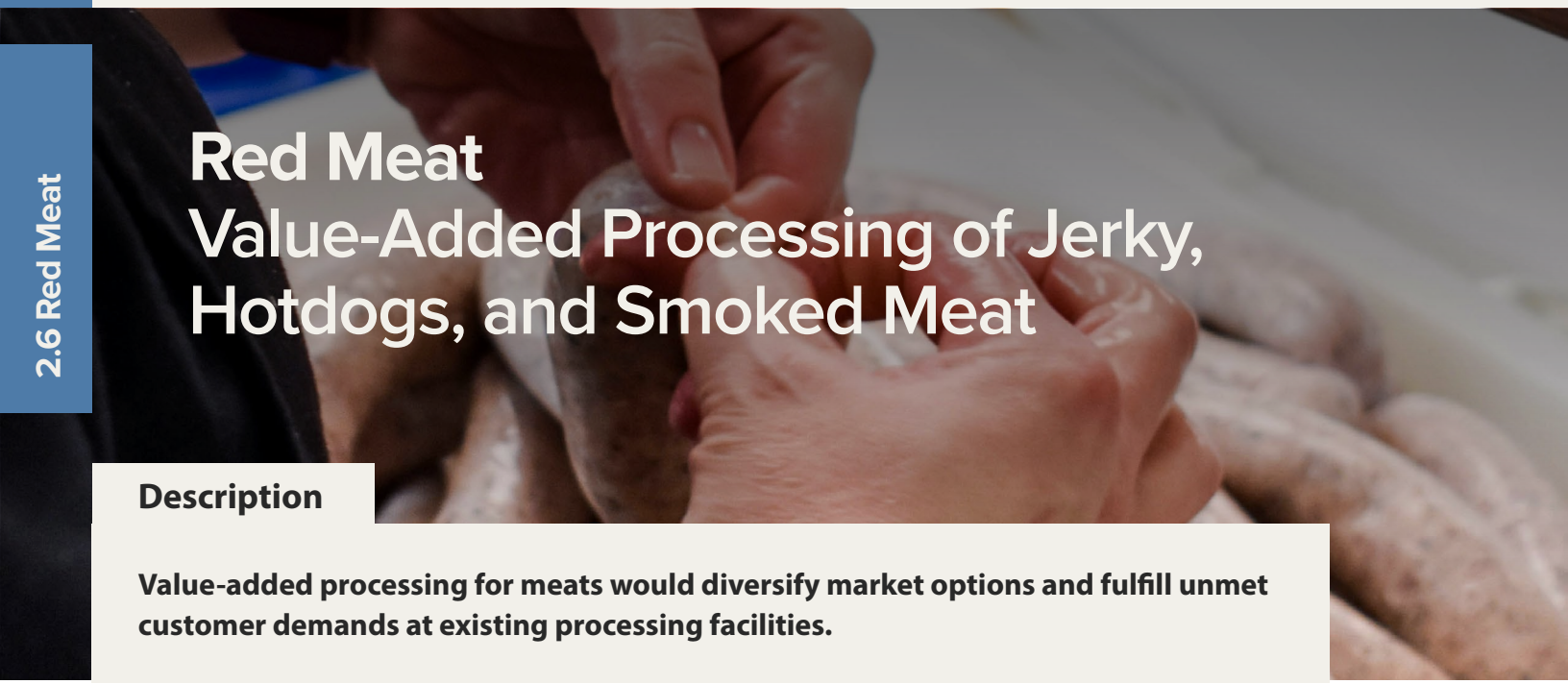
WAYS TO ADVANCE THIS OPPORTUNITY

1. **Provide oyster farmers with processing- and retail-focused technical assistance, including aggregation of supply and demand:** Requirements for growing and selling oysters for the half-shell market are different from requirements for freezing, storing, distributing, and selling processed oysters. One farmer and processor noted that freezing and selling their excess oysters allows them to capture value from their excess oysters but that it is not a simple task: "Our company is doing all of the above, and it's not easy. The more [the market] gets fragmented with individuals, the harder it gets."

2. **Conduct market research to identify and grow markets for processed oyster products:** Oyster experts and farmers highlight the need to develop alternative markets for value-added oyster products such as frozen, canned, soup, stock, and dried products. While fresh/live oysters continue to dominate the market (~70% of the market in 2024), frozen, canned, and other processed oysters offer an important way for farmers to capture value from excess product and smooth production seasonality.[66]

3. **Increase cold storage availability for oyster farmers:** Increasing storage options for oyster farmers ensures that they have a place for their frozen products until they are sold, decreasing waste and providing an opportunity for farmers to capture value for their products once they have identified markets and purchasers. While North Carolina's cold storage infrastructure continues to expand (see commingled cold storage opportunity on page 60), needs persist in terms of (1) helping farmers know what storage options are available, and (2) ensuring cold storage options are available and accessible near oyster production hubs.

4. **Enable farmer access to freezing and processing equipment:** Farmers are willing to pay for freezing and processing services, which would allow them to store excess product and sell it when market conditions are more favorable. However, the equipment required for freezing and processing is expensive and often out of reach for individual farmers or smaller processors looking to expand. Businesses that already freeze and process other products may be better positioned to absorb the seasonal nature of oyster growth and harvest cycles, making them strong candidates for providing these services.



Red Meat
Value-Added Processing of Jerky, Hotdogs, and Smoked Meat

Description

Value-added processing for meats would diversify market options and fulfill unmet customer demands at existing processing facilities.

OPPORTUNITY AT A GLANCE

- **Potential farmer benefits**
  - Builds alternative markets and new product lines for North Carolina-grown hogs and beef cattle
  - Helps livestock producers and ranchers capture a price premium for value-added products
  - Extends shelf life and provides alternative to cold storage for livestock producers and ranchers who do on-farm processing
- **Market insights**
  - Processed and ready-to-eat meats are experiencing steady market growth[70,71]
  - Beef prices are especially high currently due to drought-related pasture losses, global and domestic supply chain constraints, and elevated input costs
  - Local consumers often ask existing processors for value-added products like bacon or jerky, yet few facilities across the state, especially in Eastern and Western North Carolina, offer the service[73]
- **North Carolina strengths to build upon**
  - Strong base of existing independent meat processors and manufacturers in the state who can expand into new products
  - Collaborative Infrastructure for Value-Added Meat Processors
- **Ways to advance the opportunity:**
  - Support facility expansion or equipment procurement for value-added meat products for existing processors and manufacturers
  - Train interested processors on curing or smoking meat at commercial scale
  - Educate farmers and ranchers interested in value-added processing about options and input requirements

OPPORTUNITY IN CONTEXT

> "There's a very, very small pork processor I've talked to recently in Alexander County or Wilkes County, and they're interested in making hotdogs…but their capacity is so small they can't even think about purchasing the equipment for the hotdogs, but they have a market for it."
>
> *North Carolina meat processors group*

Existing processors report demand for value-added products: North Carolina is home to approximately 160 meat and poultry processing plants and approximately 68 businesses making jerky, sausages, and other prepared meats.[67,68] However, most of these 68 businesses are small—such as hobby or part-time businesses employing one to two people—and have limited capacity. There is currently only one USDA-inspected facility in Western North Carolina that can provide fully smoked products, and very few in the eastern part of the state.[69] Existing processors note that they are often asked by customers for value-added pork and beef products like jerky, hotdogs, and smoked meat. Processors who do smoke meats cannot keep up with the demand from their customers, and other processors who do not currently have these capabilities note the lack of space, capacity, equipment, and/or training to create these products.

POTENTIAL FARMER BENEFITS

> "I would say for sure there is an opportunity for growth for further processing in the state, because a lot of our customers do ask if we smoke stuff or season things… all the time. Like beef sticks and jerky. We currently don't, but have aspirations to do so."
>
> *North Carolina meat processor*

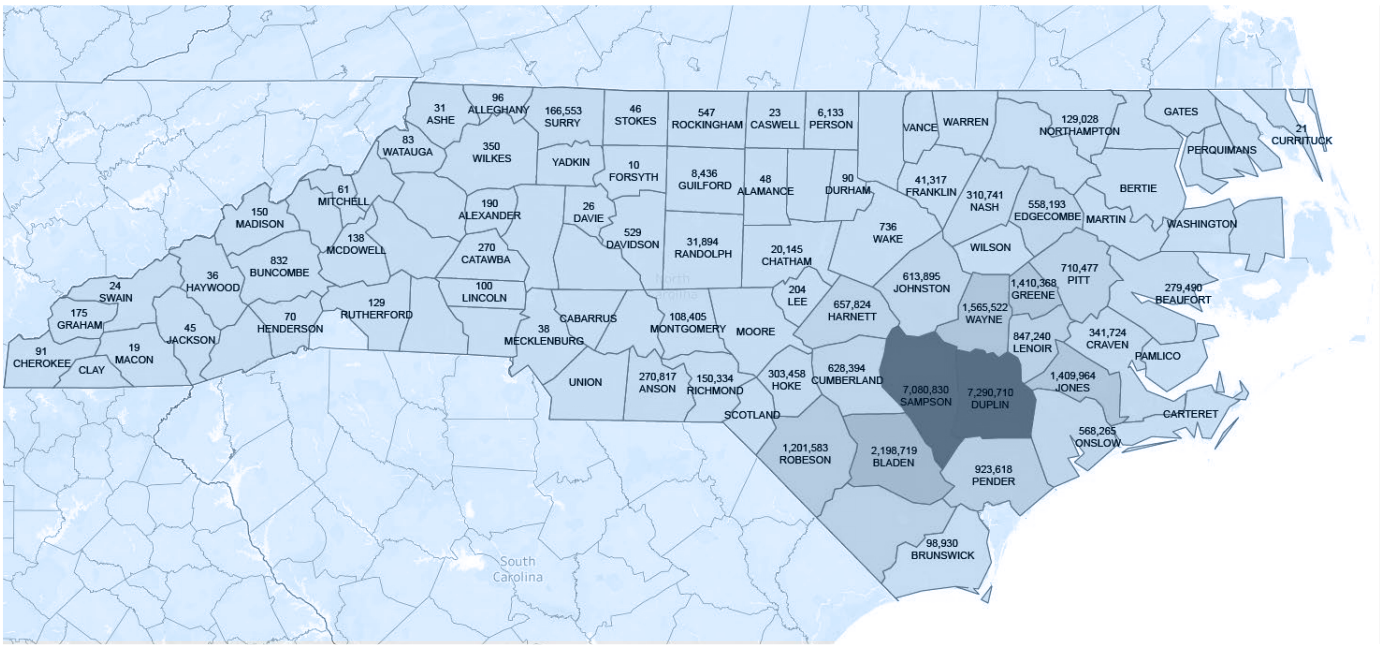
Increasing processing of value-added meat products strengthens markets for North Carolina-grown hogs and beef cattle, allowing processors, livestock producers, and ranchers to capture higher premiums and expand sales. Local growth in items like jerky, hot dogs, and smoked meats boosts demand for locally raised livestock and creates new income opportunities for farmers and ranchers. Additional processing adds value and can improve margins, especially when paired with the right business model. For producers and ranchers who process meat for other producers, offering shelf-stable products like jerky and smoked meats also provides a valuable income stream that doesn't require costly additional cold storage.

1,157	~160
North Carolina independent hog farms, 2022[41]	**independent meat and poultry processors in North Carolina, 2025[67]**

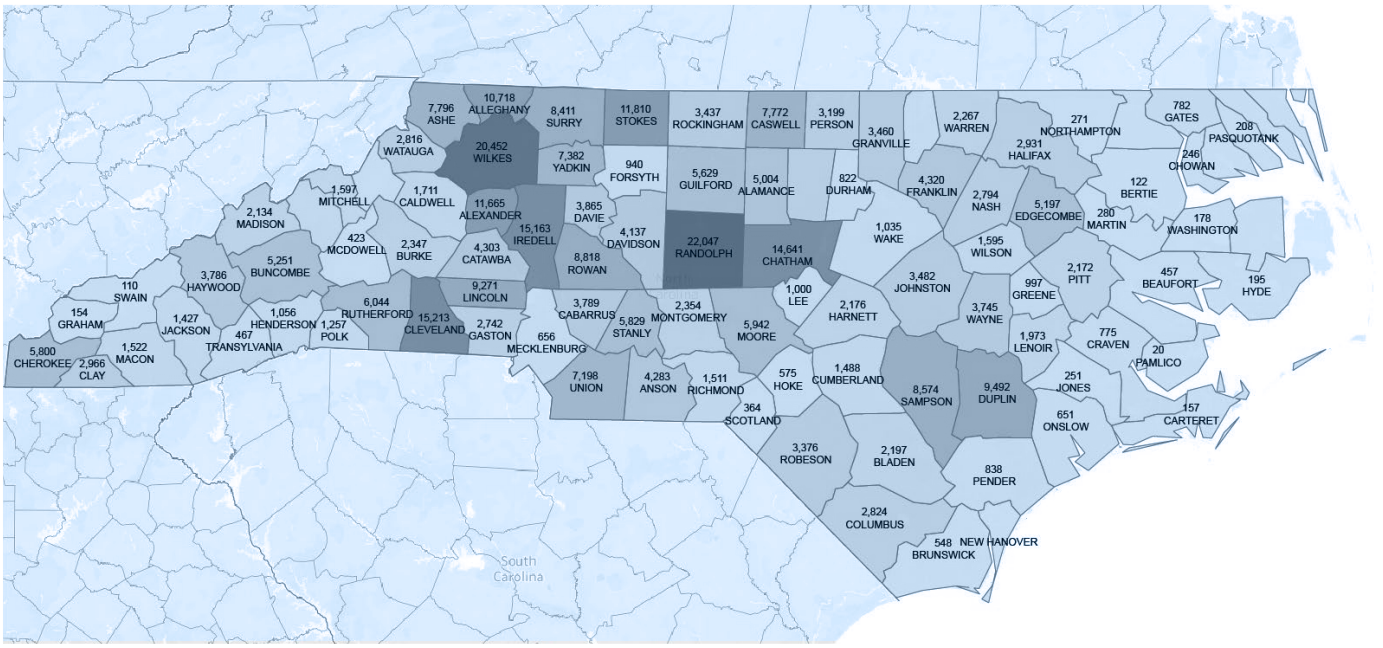
~68
jerky, sausage, prepared meat, and ham smokers in North Carolina, 2025[68]

PRODUCTION MAP

Hogs, sales measured in head, 2022



Cattle, sales measured in head, 2022



MARKET INSIGHTS

Consumer demand for processed and ready-to-eat meats is driving steady market growth: The global processed red meat market was valued at around $251 billion in 2023 and is projected to reach about $380 billion by 2032, growing at almost 5% CAGR.[70] Growth is supported by rising urban populations and shifting dietary preferences toward convenience foods such as jerky, hot dogs, and smoked meats.[70] North America remains a key driver of this trend, supported by strong consumer demand for high-protein, easy-to-prepare meat products.[71]

In North Carolina, pork and beef production continue to anchor the state's meat economy, generating more than $10 billion in annual output, and supporting over 44,000 jobs statewide.[72] While vertically integrated supply chains contribute the majority of this output, North Carolina does have smaller independent processors. Value-added facilities that do exist, such as Hickory Nut Gap Farms, are expanding into clean-label, value-added products to meet growing consumer demand for minimally processed, branded regional meats.[73]

Beef prices are especially high this year due to drought-related pasture losses, global and domestic supply chain constraints, and elevated input costs. As a result, processors are facing increased competition from auctions and other outlets for available cattle, making it more difficult to source beef locally and squeezing processor margins. At the same time, ranchers are generally benefiting from higher cattle prices, with the animals they bring to market selling for more than in previous years.[74]

KEY NORTH CAROLINA STRENGTHS AND RESOURCES TO BUILD UPON

- **Existing processors and manufacturers who can expand value-added offerings:** North Carolina's existing processors and manufacturers are poised to expand into additional value-added products. Established processors and manufacturers have an existing customer base, value chain expertise, and proven business track records provide a foundation for investing into value-added products.
- **Collaborative infrastructure for value-added meat processors:** Programs like NC Choices and MeatSuite already help to create a supportive ecosystem for meat producers and processors. NC Choices connects farmers and processors with technical assistance, market development support, and supply chain coordination.[75] MeatSuite improves transparency and access to processing by linking livestock producers with available processing capacity.[76] These programs work to lower barriers to entry, reduce coordination challenges, and strengthen relationships across the meat value chain.

WAYS TO ADVANCE THIS OPPORTUNITY

1. **Support facility expansion or equipment procurement for value-added meat products:** Processors and manufacturers seeking to expand into value-added meat production may face high costs to expand their facilities as well as to procure essential equipment, including sanitation systems, portioning tools for ham, and machinery for beef or sausage patties, hot dogs, or jerky. Supporting existing processors and manufacturers that want to diversify into additional value-added products presents a lower-risk investment than creating new facilities, and investing in producers and ranchers looking to expand into processing offers a high potential return for producers and ranchers. Interviewees noted that some hog producers wish to produce bacon and other products as a business but are limited by startup costs.

2. **Train interested processors on curing or smoking meat at commercial scale:** Processors noted that, although they are interested in expanding into other value-added products and see market demand, they often lack the technical expertise required to expand into producing value-added products (bacon, jerky, etc.). As established business operators, they may not have the flexibility to experiment and learn in the same ways a new business might. Connecting existing value-added processors and manufacturers with those seeking to expand their operations, to share advice and good practices, offers another potential support mechanism.

3. **Educate farmers and ranchers interested in value-added processing about options and input requirements:** Processing value-added meat products at a commercial scale is capital intensive and can be technically demanding, particularly for new businesses entering the market. While supporting producers and ranchers who want to expand into processing can return the highest economic benefit to producers, it also carries more risk than investing in existing processors seeking to add new products. Identifying producers and ranchers seeking out this business opportunity and offering technical support to help them understand the value-added processes, equipment, food safety, marketing, potential business models, and other considerations involved stands as another potential path to return benefits to producers and ranchers through this opportunity.

Poultry
USDA-Inspected Processing for Independent Producers

Description

Increasing independent poultry processing would save producers time and transportation costs and provide a North Carolina-based processing option where none currently exists.

OPPORTUNITY AT A GLANCE

Potential farmer benefits

- Additional processing options in North Carolina would lower transportation and logistics costs for independent poultry farmers
- Expanding poultry processing options in North Carolina would give farmers greater choice in the market

Market insights

- Global poultry demand is expected to double over the next several years[77]
- Consumers are looking for higher protein and more convenient meat products[77]

North Carolina strengths to build upon

- Robust poultry production ecosystem with existing knowledge base of poultry and meat processing[78]
- Established independent poultry producers and processors with hands-on experience in poultry processing
- Strong branding for local poultry products[79,80]

Ways to advance the opportunity:

- Support up-front costs for independent processing facilities[79]
- Provide technical assistance to help small- and mid-sized processors comply with USDA inspection requirements
- Ensure economic feasibility of processing

OPPORTUNITY IN CONTEXT

There are no independent USDA-inspected poultry processing operations in North Carolina: North Carolina was the largest and second largest producer of broilers in 2022 and 2023. Up to 98% of broilers are raised and sold under contracts through vertically integrated operations. For independent poultry producers outside of this vertically integrated system, there are no USDA-inspected processing options in North Carolina. An estimated $19.5 million in independent broiler sales were produced in 2022.[41]

POTENTIAL FARMER BENEFITS

Additional processing options in North Carolina would lower logistics costs and burdens and expand market choices for independent poultry farmers: Currently, independent poultry farmers are driving out of state, up to four hours each way to access USDA-inspected processing facilities in South Carolina and Georgia. Expanding processing options within North Carolina would shorten travel times and lower operating costs. Furthermore, having few options means farmers are generally price-takers with little bargaining power. Additional processing outlets would give them greater leverage and choice, and greater potential to realize higher returns.

> "In our town there used to be a large poultry plant that shut down and left a lot of poultry farmers with chicken houses and infrastructure and nothing to do with them. We built a plant... We had a lot of interest... We were doing quite a bit of birds...But our obstacle was inspection. USDA would regulate us the same way they would regulate a plant doing 1,000 birds an hour and we were doing 1,000 birds a day. We have multiple requests from the USDA every year to reopen our facility."
>
> *North Carolina meat processor*

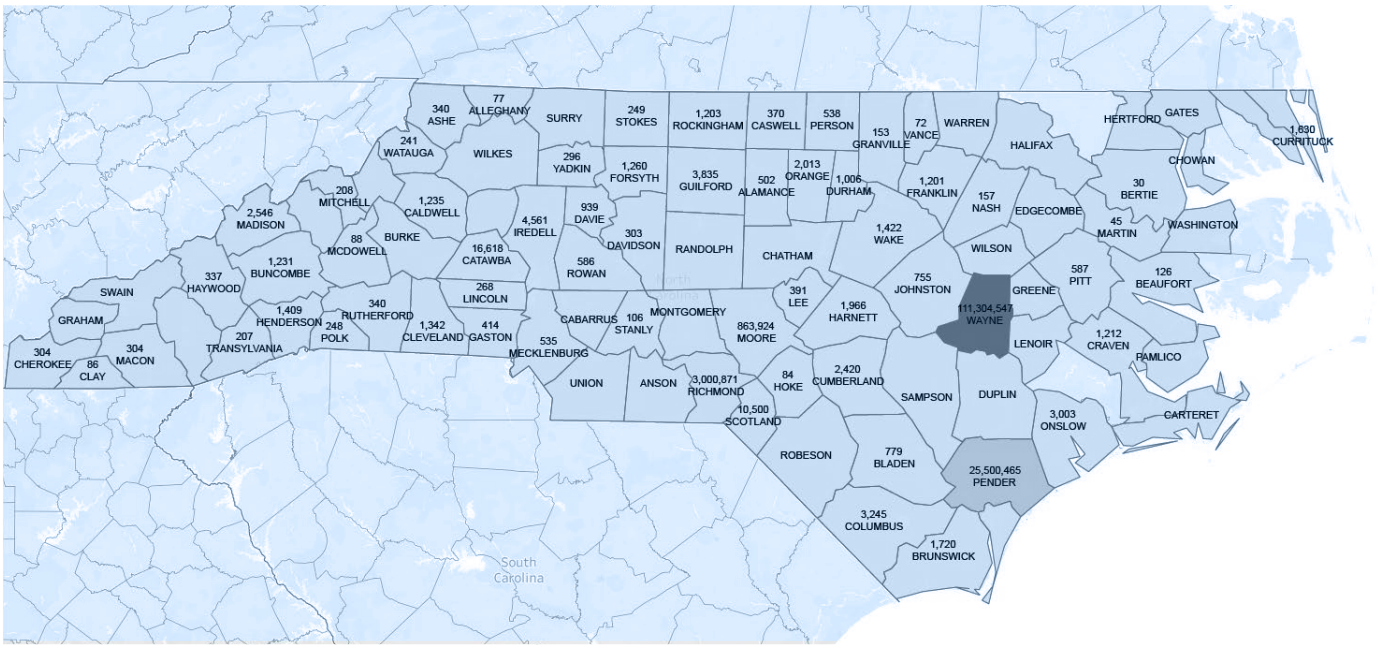
> "The strongest priority for the farms we work with would probably be inspected poultry processors. Over the last seven years we've not had any inspected processing... The per animal cost is not the issue. It's the coming up with the $2 million [in startup costs]."
>
> *North Carolina meat production and processing expert*

$19.5	393
million North Carolina independent sales of broilers, 2022	**North Carolina independent broiler farms, 2022**

0
USDA-inspected processors for independent poultry farmers

PRODUCTION MAP

Poultry totals, hatched measured in heads, 2022



MARKET INSIGHTS

Global poultry demand continues to grow while small- and mid-sized processors face barriers to participation: The processed poultry market was valued at $381 billion in 2024 and is projected to double by 2032, expanding at a 9% CAGR.[77] North America accounts for over 40% of the total market share, driven by steady consumer demand for affordable, high-protein foods and convenient meat products as well as locally sourced animal products. However, smaller independent processors remain limited by the costs of inspection, equipment, and compliance, leaving much of the sector concentrated under large integrators.

Margins can be thin, and pasture-raised poultry processing is often seasonal, operating about eight months of the year, which constrains profitability and may require diversification to offset off-season losses. Previous efforts to expand independent processing in North Carolina highlight challenges around capital costs, facility management, and seasonal operations that can inform future models.

KEY NORTH CAROLINA STRENGTHS AND RESOURCES TO BUILD UPON

- **Robust poultry production ecosystem with existing knowledge base of poultry and meat processing:** North Carolina is one of the top poultry-producing states in the country and has a well established poultry ecosystem. The state is home to poultry farmers (many of whom have experience processing their own birds at smaller scales), processors, equipment suppliers, extension agents, and service providers who understand the operational, regulatory, and market dynamics of the poultry sector. For

example, NC State University has expertise available to producers through its Poultry Science Department, Extension programs, research farms, food safety expertise, and workforce training initiatives.[78]

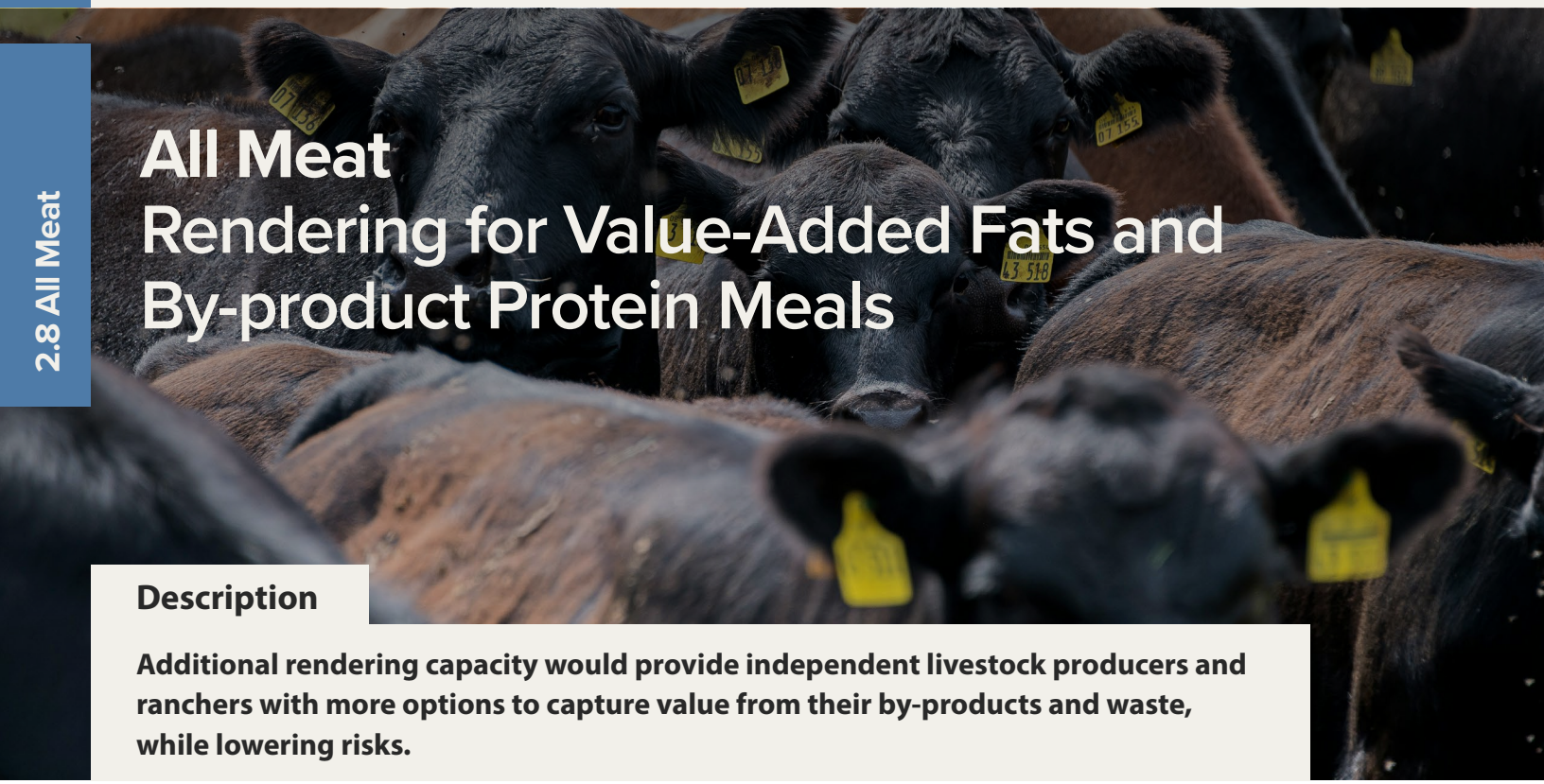
- **Strong branding for local poultry products:** North Carolina branding like the "Got to Be NC" logo is a strong differentiator in retail settings for locally processed poultry products.[79] There is growing demand for locally grown products, and more consumers are finding the idea of buying from small businesses appealing.[80]

WAYS TO ADVANCE THIS OPPORTUNITY

1. **Support up-front costs for processing facilities:** Launching or expanding an independent poultry processing operation requires significant capital investment. Many independent poultry farmers and existing processors lack the cash flow to cover startup costs for space or equipment. Some of these farmers may be interested in expanding into custom processing for other farms if startup and equipment costs were reduced. In addition, North Carolina has experienced meat processors who may be open to adding poultry processing to their operations with the right technical and financial support. Lowering the financial barrier to entry would enable more processors to come online. Keeping a sharp focus on local market supply-processing demand requirements will help ensure processors can operate at sustainable volumes and price points once established.

2. **Technical assistance to help small- and mid-sized processors comply with USDA inspection requirements:** Small- and mid-sized facilities are held to the same USDA inspection standards as large processors. Meeting these requirements can be costly and impact margins. Providing expert technical assistance, facility layout guidance, and compliance support would help processors navigate these challenges. Supporting dialogue and coordination with USDA could also help identify requirements that maintain food safety while supporting the viability of independent processors.

3. **Ensure economic feasibility of processing:** Experts emphasized that the financial viability of poultry processing depends on careful, realistic planning. Facilities must grow at pace with local supply and market demands, select equipment that matches their expected throughput, and avoid unnecessary complexity. Several examples were shared of processors purchasing equipment that was too large or specialized, resulting in wasted money and time. Providing technical support can help processors make sound decisions, troubleshoot problems early, and stay financially sustainable. Another key to economic feasibility is to provide new and existing producers with technical support for production through market development. This helps to ensure steady supply and efficient operations for processors and manufacturers.



All Meat
Rendering for Value-Added Fats and By-product Protein Meals

Description

Additional rendering capacity would provide independent livestock producers and ranchers with more options to capture value from their by-products and waste, while lowering risks.

OPPORTUNITY AT A GLANCE

Potential farmer benefits

- Provides a way to convert animal by-products and waste into revenue or cost savings
- Reduces animal health and environmental risks

Market insights

- The global rendering market is slowly growing[83]
- Vertically integrated companies have made recent investments in rendering capacity[84]

North Carolina strengths to build upon

- High-volume animal production for consistent supply of animal waste and by-products
- Strong livestock networks and technical expertise across the state[85,86,87,88,89]
- Proximity to major feed, pet food, and fertilizer manufacturers for uptake of by-product protein meals, fats, and protein solids

Ways to advance the opportunity

- Expand the capacity of existing rendering facilities
- Support the startup of new rendering facilities and businesses
- Promote policies to support independent renderers

OPPORTUNITY IN CONTEXT

> "We don't have adequate rendering in NC. If one plant goes down, then we have a serious problem for the poultry and pork industries."
>
> *North Carolina rendering expert*

Independent meat producers have few options for rendering services in North Carolina: Rendering is the process of converting animal by-products and waste (e.g., fat, bones, feathers, offal, protein solids) into usable materials such as animal fats (e.g., preserved animal fat, chicken fat, beef tallow) and by-product protein meals (e.g., pet food grade chicken or pork by-products meal, meat and bone meal) typically for pet food and industrial purposes.[81] Independent livestock producers and ranchers in North Carolina have very few options for rendering their by-products and waste. While there are eight facilities that render in North Carolina, only two service independent producers and ranchers outside of vertically integrated systems, and they both operate at capacity. Some independent livestock producers and ranchers are unable to access rendering services when they need them due to a lack of capacity across the state.

POTENTIAL FARMER BENEFITS

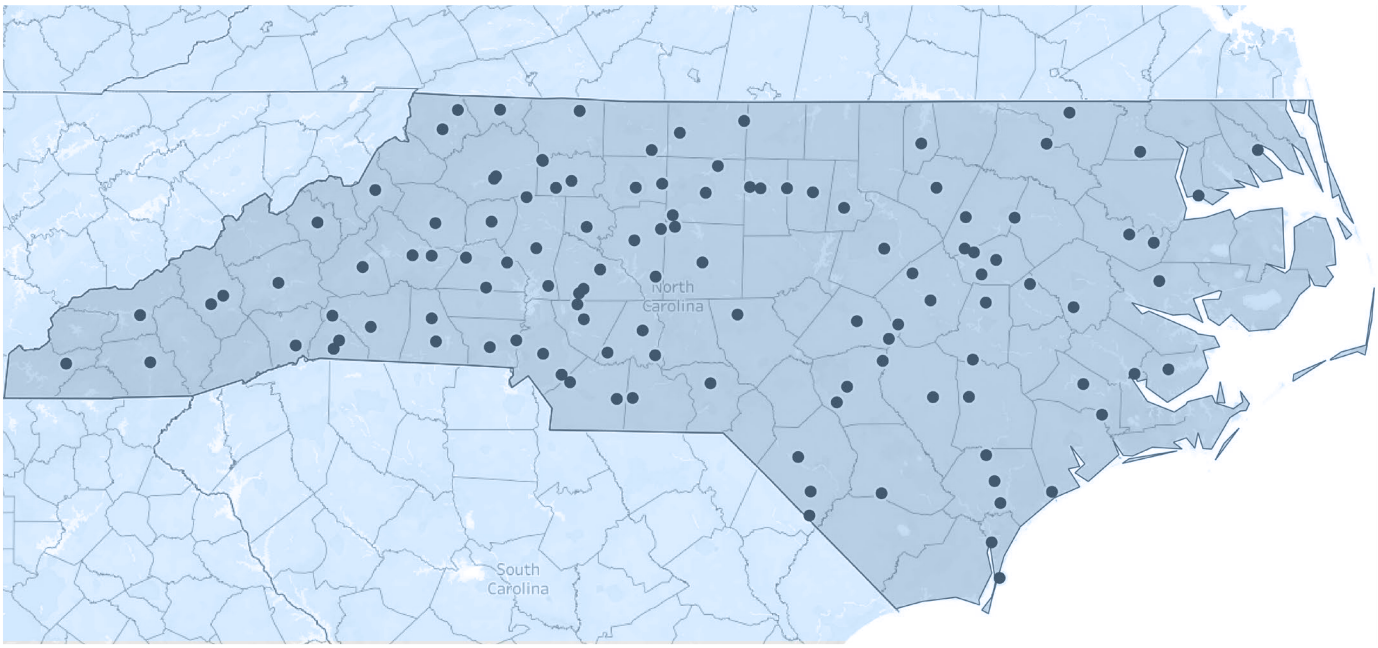
> "We have 0% excess [rendering] capacity in NC."
>
> *North Carolina rendering expert*

Rendering provides an additional source of income for livestock producers and reduces animal health and environmental risks: Rendering can be an important source of income during challenging years or to recoup losses from sick livestock or livestock otherwise not appropriate for sale. It also plays a critical role in reducing animal health and environmental risks by giving producers and ranchers a safe and reliable way to remove sick animals before they die, infect other livestock, or spread disease after death. Rendering prevents these by-products from ending up in water sources or requiring on-farm burning or burial. Currently in North Carolina, livestock producers and ranchers are sometimes turned away when plants are at capacity. One company services most independent livestock producers and ranchers, so with limited choices, they are effectively price-takers. With additional rendering capacity, livestock producers and ranchers can better plan ahead, knowing that their by-products and waste will have a place to be processed—and that they can realize additional income while protecting herd health and the environment.

1,157	**393**
North Carolina independent hog farms, 2022	**North Carolina independent broiler farms, 2022[41]**
8	**160**
rendering facilities in North Carolina, 2025[41]	**independent meat and poultry plants, 2025[67]**

PROCESSING MAP

Map of independent processing/slaughter plants, 2025[82]



MARKET INSIGHTS

The global rendering market is slowly growing as vertically integrated companies make investments in expansions: The rendered product market was valued at about $22 billion in 2023 and is projected to reach roughly $29 billion by 2032, expanding at a 2.9% CAGR.[83] Growth is being driven by the steady use of rendered fats and proteins in animal feed, specialty pet food, and renewable fuel production, with North America accounting for nearly half of global market share.

In North Carolina, new investment is helping ease long-standing capacity limits in rendering among vertically integrated companies. Darling Ingredients, in partnership with Butterball LLC, announced plans in 2023 to build a new poultry rendering plant in Mt. Olive, capable of processing 18 million pounds of material weekly once operational.[84] This investment indicates a need for more rendering in the state and a potential opportunity for the independent rendering industry.

KEY NORTH CAROLINA STRENGTHS AND RESOURCES TO BUILD UPON

- **High-volume animal production for consistent supply:** North Carolina ranks first and second nationally (respectively) for all poultry and eggs and annual pig crop, with livestock producers and ranchers in virtually every county. Outside of the vertically integrated meat production systems, North Carolina is home to independent poultry, beef, and pork producers and ranchers, who have expressed demand for increased rendering capacity in the state. The diversity of available livestock creates opportunities for rendering of specialty products.

- **Strong networks and technical expertise:** Organizations such as the NC Pork Council,[85] NC Poultry Federation,[86] and NC Cattlemen's Association[87] could provide channels for supply aggregation, communicating availability of rendering services, and coordination across value chain actors. Further technical expertise can be found in North Carolina's many research institutions, such as NC A&T State University's Livestock Extension Program[88] and NC State's Animal and Poultry Waste Management Center.[89]

- **Proximity to major feed, pet food, and fertilizer manufacturers:** Rendering outputs have many potential local customers. North Carolina is home to many large feed mills for the livestock industry, a growing number of pet food manufacturers, and fertilizer companies serving North Carolina farmers. Delivering products for local demand cuts down on transportation costs and streamlines supply chains.

WAYS TO ADVANCE THIS OPPORTUNITY

1. **Expand capacity of existing rendering facilities:** There is opportunity to work with the existing renderers in the state to expand their capacity. This could include investments in larger or more efficient processing equipment, facility upgrades to improve throughput, and modernization efforts that enhance energy efficiency or regulatory compliance. Strengthening existing facilities would allow the state to address bottlenecks in carcass disposal, reduce transportation distances for producers, and improve resilience during disease outbreaks or market disruptions.

2. **Support the startup of new rendering facilities:** Encouraging the development of new rendering facilities would increase geographic access and create more options for livestock producers, particularly small- and mid-scale farmers and ranchers who are not a part of vertically integrated systems. New facilities could be strategically located in livestock-dense regions to reduce logistics costs among farmers and ranchers. Expanding the number of renderers would increase overall capacity while fostering competition and resilience in the rendering sector.

3. **Promote policies to support independent renderers:** The current enabling environment in North Carolina is best suited for large, vertically integrated companies. To ensure long-term sustainability and growth of independent rendering facilities, policy frameworks may need to be reevaluated and updated. This could include reviewing zoning, siting, and permitting requirements; aligning environmental regulations with the scale and risk profile of smaller facilities; or creating targeted incentives for independent renderers. Strengthening the enabling environment would support livestock producers operating outside vertically integrated supply chains, enhance competition, and build a more diversified and resilient rendering infrastructure statewide.

Forestry
Supporting Existing Mills, Locally Made Products, and Oriented Strand Board (OSB) for Hardwood in Western North Carolina

Description

Strengthening existing mills, expanding local hardwood product markets, and supporting the development of OSB production would help preserve market outlets for Western North Carolina's timber farmers.

OPPORTUNITY AT A GLANCE

Potential farmer benefits

- Supporting existing small- and medium-scale sawmills and logging operations ensures farmers have reliable outlets for their timber
- OSB is a key outlet for low-value and small-diameter hard and softwood producers
- Supporting locally made niche wood products creates an additional market for timber producers

Market insights

- OSB continues to erode market share from plywood[100]
- North Carolina sawmill establishments are declining due to market forces[94]
- Specialized, custom wood products are seeing a resurgence[102]

North Carolina strengths to build upon

- Existing timber producers, loggers, furniture makers, and small mills[105]
- Concentrated hardwood in Western North Carolina offers consistent supply for processors and manufacturers
- Strong regional identity and interest in locally crafted goods[103,104]

Ways to advance the opportunity

- Promote a buy local campaign for Western North Carolina hardwood[27]
- Support new and upgraded equipment for existing mills
- Improve transportation and logistics
- Invest in OSB production locally or attract OSB manufacturers to the region

OPPORTUNITY IN CONTEXT

> "Small to medium local sawmills really need help in terms of updating their equipment, especially in hardwood areas like in Western NC... Also, what is very important... is to facilitate infrastructure like permitting, utilities, logistics."
>
> *North Carolina forestry industry expert*

The North Carolina timber sector is experiencing stabilization and some contraction after a record high in 2022. More recently, both timber producers and processors face hardships, especially in Western North Carolina: Today, North Carolina has about 18 million acres of timberland,[90] with softwood for residential and commercial construction products located primarily in the central and eastern parts of the state and hardwood for furniture, pallets, and mats located in the west.[91] Overall, NC's forest sector shrunk about 5% from 2022-2023 as a result of slowing housing markets and easing inflation.[92] Hurricane Helene in 2024 and the closure of the Pactiv Evergreen Mill in Canton in 2023 have left Western North Carolina with a glut of hardwood timber and fewer processing outlets.[93] At the same time, local sawmill companies continue to close due to many factors, including changing regulations and foreign competition.[94,95] In North Carolina, sawmill companies in the state dropped from over 200 in 2001 to approximately 130 over the last 20 years due to company closures, mergers, and other factors.[96] In some cases, Western North Carolina timber producers are traveling out of state to process their trees.

POTENTIAL FARMER BENEFITS

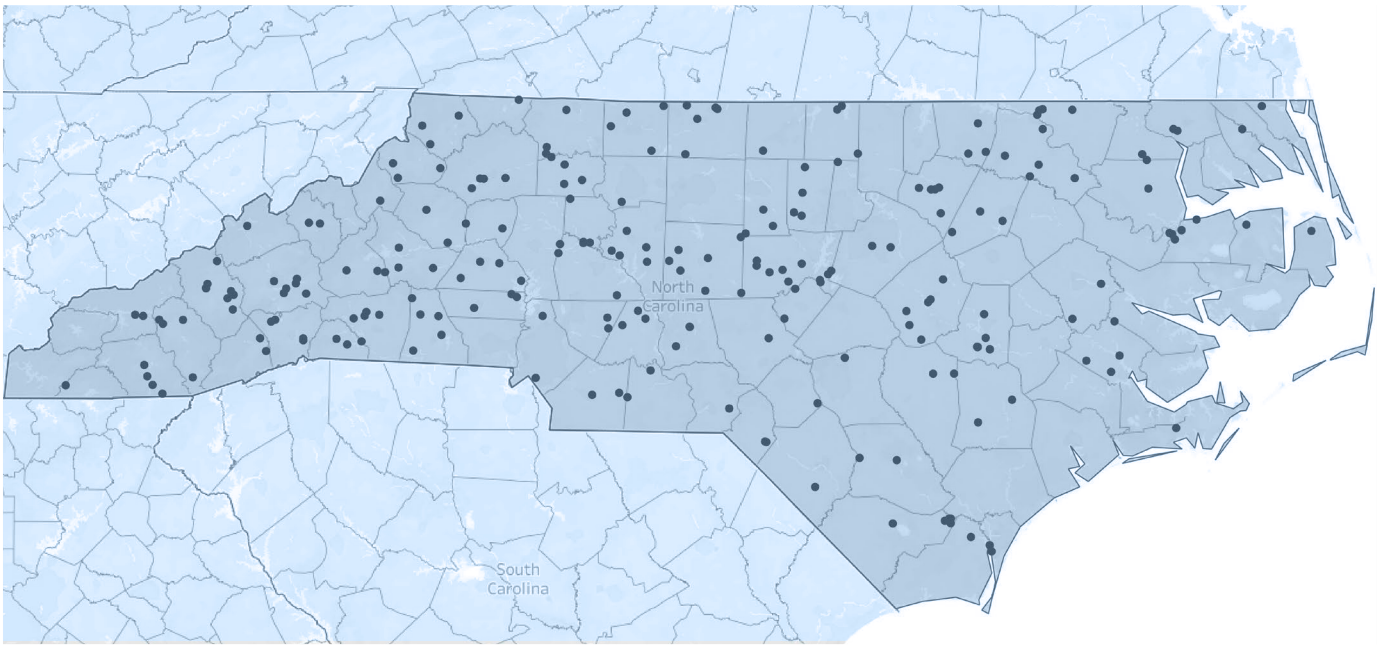
> "Residential construction, pulp and paper... those markets are shifting away... The best option is a wood chip mill and supplying low-value fiber to mills making particle board and OSB. Composite mills and pellets would be somewhat viable... And we could support logging businesses, small mom and pop chippers and loggers."
>
> *North Carolina forestry industry expert*

Supporting existing small- and medium-scale sawmills and logging operations in Western North Carolina ensures farmers have reliable outlets for their timber: Strengthening existing mills, expanding local hardwood product markets, and supporting the development of OSB production for hardwood offer a few pathways to sustain existing forest-based livelihoods and preserve market outlets for Western North Carolina's timber producers. A resurgent network of local mills would reduce the distance logs must be transported, lowering transaction costs for timber producers. Additionally, increasing the number and capacity of mills boosts competition, which can impact quality, speed, and prices paid for raw materials, and provide timber producers additional options for selling different log sizes and grades.

$611M	500K	571
total value of timber harvests, 2022	**families owning North Carolina timberland**	**wood product manufacturing establishments, 2023[97]**

PRODUCTION MAP

North Carolina primary wood processing mills, 2023[98]



MARKET INSIGHTS

OSB continues to erode market share from plywood: In 2023, the North American OSB market was valued at $13.88 billion and is projected to reach $19.92 billion by 2029.[99] OSB has increasingly captured market share from plywood in the United States over the last several years because it is more cost effective to produce. In 2022, OSB accounted for about 71% of structured panel production in North America, up from 55% in 2012.[100] New OSB mills in the United States have located in the southeastern region over the last year with mills opening, reopening, or expanding capacity in Texas, South Carolina, Louisiana, and Mississippi.[101]

Specialized, custom wood products are seeing a resurgence: While U.S. conventional furniture markets have steadily declined in recent decades due to offshoring and overseas competition, North Carolina remains a national leader in furniture making. The custom, niche sector is a growing market for locally made wood products. The global custom furniture market was valued at $16.11 billion in 2024 and expected to reach $24.32 billion by 2030.[102] This growth is driven by demand for unique, sustainable products. However, the market is limited by higher costs that are out of reach for many consumers. Western North Carolina has a market for boutique, highly specialized, and artisan-driven businesses that cater to luxury homes and designers.

KEY NORTH CAROLINA STRENGTHS AND RESOURCES TO BUILD UPON

- **Existing producers, loggers, furniture makers, and small mills:** Timber has been core to North Carolina's natural capital base for over 300 years, over time shifting from shipbuilding to furniture making and building construction. Though the number of mills has declined over the last 20 years, Western North Carolina is still home to loggers, mills, and niche furniture makers with demand for timber and market experience.
- **Concentrated hardwood in Western North Carolina offers consistent supply for processors and manufacturers:** Western North Carolina's forests are a reliable source of hardwood. Species such as oak, poplar, and maple are abundant, giving mills and secondary processors a steady, predictable supply of logs. Timber farmers are looking to process the influx of downed timber from Hurricane Helene.
- **Strong regional identity and interest in locally crafted goods:** Western North Carolina is home to consumers and tourists who value locally made products that reflect the region's heritage. This consumer interest can be leveraged to expand local hardwood production and marketing. Major institutions like the Southern Highland Craft Guild[103] and the Penland School of Craft[104] connect local artisans with consumers.

WAYS TO ADVANCE THIS OPPORTUNITY

1. **Promote a buy local campaign Western North Carolina hardwood:** As traditional markets such as furniture manufacturing have declined and housing markets remain volatile and increasingly reliant on softwood, locally made hardwood products represent a promising opportunity for growth. Expanding this niche sector in Western North Carolina can create a stable, asset-based market for regional hardwood producers. Similar to Western North Carolina's "Appalachian Grown" logo for local foods, promoting a regional brand for Western North Carolina's wood products may increase demand for locally sourced hardwood. A coordinated campaign can highlight the benefits of shorter supply chains, the craftsmanship of local furniture and cabinet makers, and the role of supporting timber producers and mill workers affected by the mill closure in Canton and Hurricane Helene.

2. **Support new and upgraded equipment for existing mills:** Many small- and mid-sized mills have aging infrastructure that limits their efficiency and competitiveness. Upgrades can be prohibitively expensive and complex for small- and medium-scale processors but can improve milling efficiency, reduce waste, open new revenue streams, and help mills process more hardwood species and log sizes. Strengthening existing mills through equipment upgrades can shore up the competitiveness of Western North Carolina's regional forest products industry and ensures timber producers maintain access to reliable outlets for their logs.

3. **Improve transportation and logistics:** In Western North Carolina, steep grades, long travel distances, and damaged roads—exacerbated by storms like Hurricane Helene—add cost to hauling timber. Investments in transportation and logistics infrastructure, especially rail access, can improve efficiency for producers and mills, lower costs, and make the region more attractive to future processors and manufacturers.

4. **Invest in OSB production locally or attract OSB manufacturers to the region**: OSB is engineered from small-diameter timber that is unsuitable for other types of lumber. Unlike some other building materials which primarily use softwood, OSB can use woodchips from either hardwood or softwood species and is often manufactured with both.[105] Establishing and expanding both sawmill and OSB mill capacities allows timber producers to sell their high-grade materials to sawmills and low-grade or surplus material to OSB mills. Currently, OSB also represents a more stable market than traditional sawtimber, with demand driven by construction and industrial uses. Investments can include incentives for OSB manufacturers to locate in the region, and support for locally owned OSB manufacturers to start or expand.

Cross-Commodity Technical Support and Incentives for North Carolina Processors to Source Locally

Description

Targeted technical support to differentiate production, strengthen cooperatives, and foster mutually beneficial cross-value chain relationships would improve farmers' leverage and agency amidst increasingly globalized, price-sensitive markets.

OPPORTUNITY AT A GLANCE

Potential farmer benefits

- Offers opportunities to be "treated as equal partners in the supply chain" rather than "interchangeable suppliers" in price-sensitive, undifferentiated supply chains
- Increases resilience amidst globalized and uncertain commodity markets
- Provides paths to diversify market outlets and receive premiums for differentiated outputs
- Increases transparency and personal connection across the value chain

Market insights

- Growing corporate and federal investment in regenerative and sustainable agricultural practices[106, 107, 108, 109, 110,111]
- Growing food and beverage industry, with notable recent announcements, that could be linked with North Carolina's agricultural community
- Examples of values-based supply chains in North Carolina illustrate what is possible

North Carolina strengths to build upon

- North Carolina farmers produce a wide range of agricultural commodities and niche products across the state
- North Carolina food sector actors have shown a willingness to try new things
- Strong innovation culture and supportive business infrastructure statewide
- Growing food and beverage manufacturing industry that could be directly linked with North Carolina's agricultural community

Ways to advance the opportunity

- Derisk farmers' transition to differentiated production
- Accelerate experimentation across value chains by strengthening linkages among farmers, processors, and manufacturers
- Strengthen the state's farmer cooperative infrastructure
- Convene and coordinate organizations working to expand agricultural M&P in the state

OPPORTUNITY IN CONTEXT

Currently, many North Carolina farmers participate in conventional supply chains in which they provide non-differentiated raw products into price-taking arrangements via contracts (e.g., in peanuts, tobacco, sweetpotatoes, pork, poultry) and commodity market sales (e.g., in cotton, soybean, grains). Farmers often see processing as an unattractive primary market channel due to low purchase prices paid by processors.

Values-based supply chains offer an alternative to conventional supply chains, in which values are embedded in: (1) **Relationships** in which farmers are "treated as equal partners in the supply chain" rather than "interchangeable suppliers" in undifferentiated, price-sensitive supply chains; (2) **Differentiated, locally grown products** that "contribute to the higher quality of foods" and goods available in local and regional markets; and (3) **Production practices** for which farmers receive "a premium above commodity prices for the environmental and/or social benefits" valued by downstream buyers, compared to alternative models.[9]

"We have to get back to bringing farmers to the table, not isolating them in the commodity world. We're not going to fix this through subsidies... [We need to be] educating the brands."

North Carolina cotton industry expert

"To diversify and lift up North Carolina's agriculture industry, there has to be more collaboration and transparency in production and opportunities. People need access to all the information. If industry works together, we will have better opportunities to share demand that exists for processing and make returns better for growers."

North Carolina fruit and vegetable industry expert

POTENTIAL FARMER BENEFITS

Expanding values-based supply chains offers a way to break traditional 'commodity loops' in which farmers are price-takers with limited leverage. Industry trends towards vertical integration and consolidation, coupled with increasingly globalized and uncertain commodity markets, underscore a sense of urgency to explore alternatives. Values-based supply chains are "increasingly seen as opportunities to create strategic business models for farmers and ranchers of the middle"—that is, small- and mid-size producers that are typically "too large for the short

~29,301

establishments in North Carolina food, beverage, tobacco, wood, fiber, and paper manufacturing sectors, 2024[97]

21 out of 50

of the largest food and beverage companies operate in North Carolina[112]

chain direct markets, but too small for the large commodity markets."[9] Small- and mid-size farmers dominate North Carolina's production base, making the state an opportune setting to pilot and scale values-based supply chains. The risk and financial investments farmers take on in order to transition to produce more diversified and quality-differentiated crops and livestock, and lack of processor and manufacturer awareness of their total supply chain costs serve as key constraints in expanding values-based supply chains according to interviewees.

~36

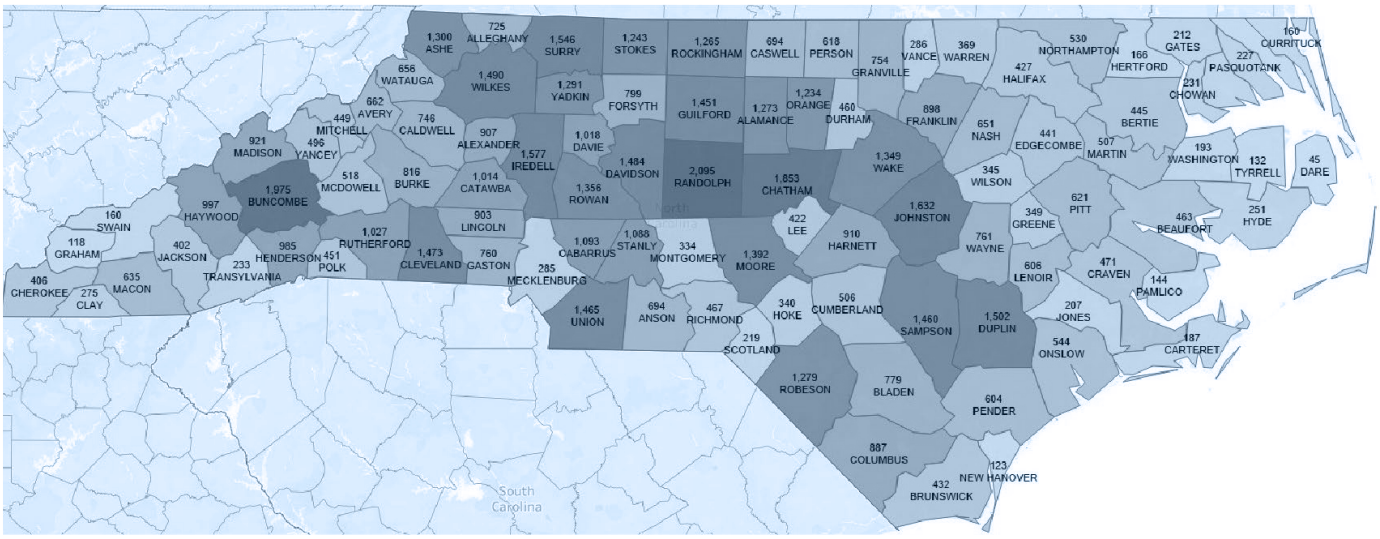
NC-serving agriculture commodity organizations[113]

~1300

extension agents serving farmers in all 100 North Carolina counties[114]

PRODUCTION MAP

Total producers, 2022



MARKET INSIGHTS

Recent commercial and federal investments highlight momentum towards incentivizing differentiated production, values-based sourcing and local agricultural M&P support: Recent announcements of large-scale regenerative agriculture programs by PepsiCo, Unilever, Mars, Kellanova, Cargill, Archer Daniels Midland and others indicate a growing willingness to experiment and support farmers in differentiating their production, including incentives to derisk farmers' uptake of regenerative practices.[106,107,108] These announcements indicate momentum towards more values-based relationships and production practices in agricultural supply chains, though the degree to which companies have updated their overall sourcing strategies remains unclear. Adding to this momentum, the U.S. Department of Agriculture announced the launch of a $700 million regenerative pilot program in late 2025, though timing and implementation details are still forthcoming.[109] These announcements build upon federal investments in 2024, when the

U.S. Department of Agriculture invested $26 million through the Local Agriculture Market Program and an additional $208 million for small and mid-sized processors under the Meat and Poultry Expansion Program, aiming to strengthen local agricultural systems.[110,111]

Alternatives to conventional supply chains exist in North Carolina, offering examples of how values-based supply chains already operate and can be expanded upon in the state. Examples surfaced through this study include a barley processor that sources directly from farmers and pays a guaranteed price for high-quality, differentiated grain even when prevailing crop prices drop; a textile company that sources directly from local cotton farmers to create small batch, custom t-shirts; multiple meat processors that provide customized services to owners of small- and mid-sized herds; and a jam maker that pays berry farmers a premium to offset freezer storage costs. These processors each emphasize (1) direct sourcing from North Carolina producers; (2) long-term and mutually beneficial relationships between farmers and processors; (3) premiums or price-guarantees paid for high quality and/or assured production volumes; and (4) a creative problem solving mentality to sustain positive business outcomes amid downstream customer or broader market realities.

KEY NORTH CAROLINA STRENGTHS AND RESOURCES TO BUILD UPON

- **North Carolina produces a wide range of agricultural products across the entire state, with existing statewide marketing and local sourcing support programs and incentives that could be leveraged:** Many of these products are considered heritage products, having been grown in the state for generations. Farms producing cotton, timber, tobacco, and apples are regionally located, providing a concentrated supply of produce for in-state processors and manufacturers to source. The “Got to be NC” marketing program and the NC ten percent campaign,[115] which aims to boost local food spending, represent statewide resources that could further amplify this opportunity. Programs like NC Choices,[116] which supports “local, niche, and pasture-based meat supply chain in North Carolina” and the MeatSuite platform[117] that helps consumers connect with local ranchers to buy meat in bulk represent existing resources in the independent livestock industry that are poised to facilitate values-based supply chain development, and could provide lessons learned to expand such resources to North Carolina crop farmers as well.

- **North Carolina farmers, processors, and manufacturers have shown a willingness to try new things:** Farmers, processors, and manufacturers regularly adopt new practices, technologies, and value-added opportunities, reflecting a willingness to experiment and diversify. Interviewees suggested that farmers and processors would welcome the opportunity to be better connected. Some processors and manufacturers would like to source more local products but do not necessarily have the incentives and capacity to do so without external support.

- **Strong innovation culture and supportive business infrastructure statewide:** More broadly, North Carolina's agricultural sector has a strong culture of innovation supported by a statewide network of resources, including the NC State Extension and NC A&T Extension systems, which provide technical assistance and training in all 100 counties.[118] The state's ample network of universities and industry associations are well positioned to support business model innovation and share learnings across the agricultural business community, including processors and manufacturers.

- **Growing food and beverage manufacturing industry, with notable recent announcements, that could be linked with North Carolina's agricultural community:** North Carolina's food and beverage manufacturing industry continues to gain momentum, adding ~13,000 food and beverage manufacturing employees from 2014 to 2024.[97] Recent company announcements highlight this growth, including Wow Bao's $6.45 million manufacturing facility in Forest City to produce specialty frozen foods[119] and the Crump Group's $85 million investment to expand their production of pet food.[120] Beverage producer Lassonde has also completed a significant expansion of its Hendersonville facility, adding new production and distribution capacity,[121] while Custom Flavors selected Concord for its East Coast production hub.[122] Together, these projects underscore North Carolina's rising profile as a destination for food and beverage manufacturing and innovation.

WAYS TO ADVANCE THIS OPPORTUNITY

1. **Derisk farmers' transition to differentiated production.** To seize values-based supply chains, support is needed to help farmers diversify their production away from bulk commodities that lock them into conventional supply chains with increased exposure to global trade dynamics and commodity price changes. Such transitions can add significant production risks and costs that farmers may not be able to absorb, especially amid current market realities, if such transitions are not derisked, financed, and facilitated by long-term relationships with downstream processors and retailers similarly committed to supporting this transition. Efforts in the Midwest to derisk farmers' transition to regenerative agriculture practices, for example, provide a roadmap for the technical, financial, market access, and other support needed to help farmers move from bulk commodity to differentiated production in values-based supply chains.[107]

2 **Accelerate experimentation by strengthening linkages among farmers, processors, and manufacturers:** Because farmers, processors, and manufacturers are focused on running their own operations, proactively seeking partnerships often falls by the wayside amid busy schedules and competing priorities. Facilitating conversations and increasing transparency across the value chain can help farmers identify contract opportunities, negotiate directly with processors and manufacturers for better pricing, and better understand the specific products and qualities processors and manufacturers need. NCDA&CS and commodity-specific industry groups stand out as key stakeholders in rallying the end-to-end approach needed to facilitate accelerated experimentation and scaling of values-based supply chains across commodities and regions.

3 **Strengthen the state's farmer cooperative infrastructure.** Multiple interviewees acknowledge North Carolina's uneven history with farmer cooperatives in the past. But they also underscore that past sentiments are changing, with farmers expressing more support for cooperative models given the market pressures and financial strains many farmers. Improved organizational and relational infrastructure to aggregate farmers' voices and interests, as well as outputs, is warranted amidst an increasingly globalized, price-sensitive, and consolidated industry. Additionally, strong cooperatives can help lower transaction costs for large corporates seeking to engage in more values-based supply chains.

4 **Convene and coordinate organizations working to expand agricultural M&P in the state:** North Carolina is home to numerous institutions that support growth in agricultural M&P, including the North Carolina Department of Commerce, the Economic Development Partnership of North Carolina, and the NCDA&CS. The agricultural business community is wide and diverse, with more than 1,200 food and beverage manufacturers operating in the state. Greater coordination among these institutions could help (1) identify mutually-beneficial local sourcing strategies for existing companies, (2) recruit and support companies that take a values-centered approach to their business relationships with farmers, and (3) increase transparency and enable more mutually beneficial supplier-buyer relationships across commodities.

Cross-Commodity Commingled Cold and Freezer Storage for Fresh Fruits and Vegetables (F&V)

Description

Commingled cold and freezer storage, coupled with expanded F&V processing, would simplify aggregation and extend seasonality of produce, making seasonal F&V production profitable year-round.

OPPORTUNITY AT A GLANCE

Potential farmer benefits

- Extends seasonality and meets processor demand
- Increases returns to farmers through value addition and waste reduction

Market insights

- Global frozen produce and cold storage markets are expanding rapidly[123]
- Rising consumer demand for convenient, year-round access to high-quality fruits and vegetables[124, 125]
- Expanding cold storage investments signal that actors have recognized this as a gap in the market [128, 129, 130, 131]

North Carolina strengths to build upon

- Widespread and diverse farms producing a variety of fruits and vegetables
- Ample food innovation ecosystem[132]
- Dynamic grocery store market

Ways to advance the opportunity

- Support different aggregation and storage models for different scales
- Leverage innovative cold storage technologies [135, 136]
- Signal supply availability to coordinate offtake

OPPORTUNITY IN CONTEXT

Thousands of North Carolina farmers are invested in seasonal businesses: The state's diverse microclimates and geographies make it ideal for growing a variety of fruits and vegetables, ranking North Carolina in the United States top ten for sweetpotatoes, cucumbers, bell peppers, blueberries, watermelon, pumpkin, and squash in 2022. Other crops North Carolina produces in abundance includes tomatoes, cabbage, peaches, apples, muscadine grapes, and various berries, like blackberries and elderberries. From fewer, larger-scale farms in the east to numerous, smaller farms in the west, thousands of North Carolina farms produce fruits and vegetables with short shelf life when sold fresh. Farmers must move quickly to sell millions of pounds of fresh produce once harvested.

POTENTIAL FARMER BENEFITS

Shared cold and frozen storage and processing can de-risk F&V production: Given the nature of North Carolina's diverse farms in terms of size and crop profile, North Carolina is unlikely to become a fruit and vegetable production state at the scale needed for traditional processing outlets, such as commercial canneries. As such, North Carolina stakeholders must think differently than other states with large, commercial production of fruits and vegetables when it comes to aggregation and right-sized processing possibilities. Cold storage has the potential to contribute to an aggregation solution; seasonality and relying on processor demand during harvest season makes fruits and vegetables a risky business without temperature-controlled storage and value-added processing. When processors do not buy all a farmer's produce upon harvest, the excess is often composted or thrown away. Access to cold storage allows farmers to hold onto their produce until processor demand increases. Connecting farmers to processors with the ability to aggregate and freeze produce provides an additional way to

> **"It's less about which crops and more about which producers are connected to buyers who won't back out."**
>
> *Agricultural industry expert*

> **"We need to be able to cool products down from summer heat and store them for longer, from mountains to sea."**
>
> *Agricultural industry expert*

> **"I lost $50,000 on 50 acres of cauliflower overnight because we grew it for a processor and they couldn't take it."**
>
> *F&V industry expert*

extend seasonality and increase returns to farmers. Climate-controlled storage is also a critical building block for the sweetpotato processing opportunity featured on page 29.

$826.3M

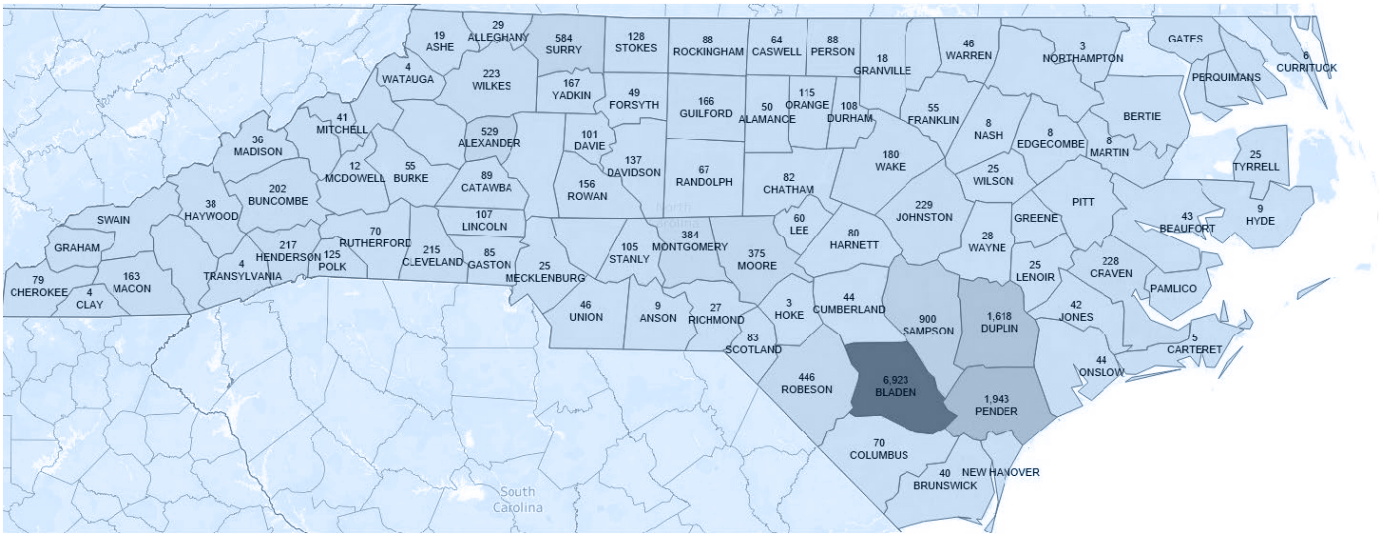
total value of North Carolina F&V production, 2022

6,034

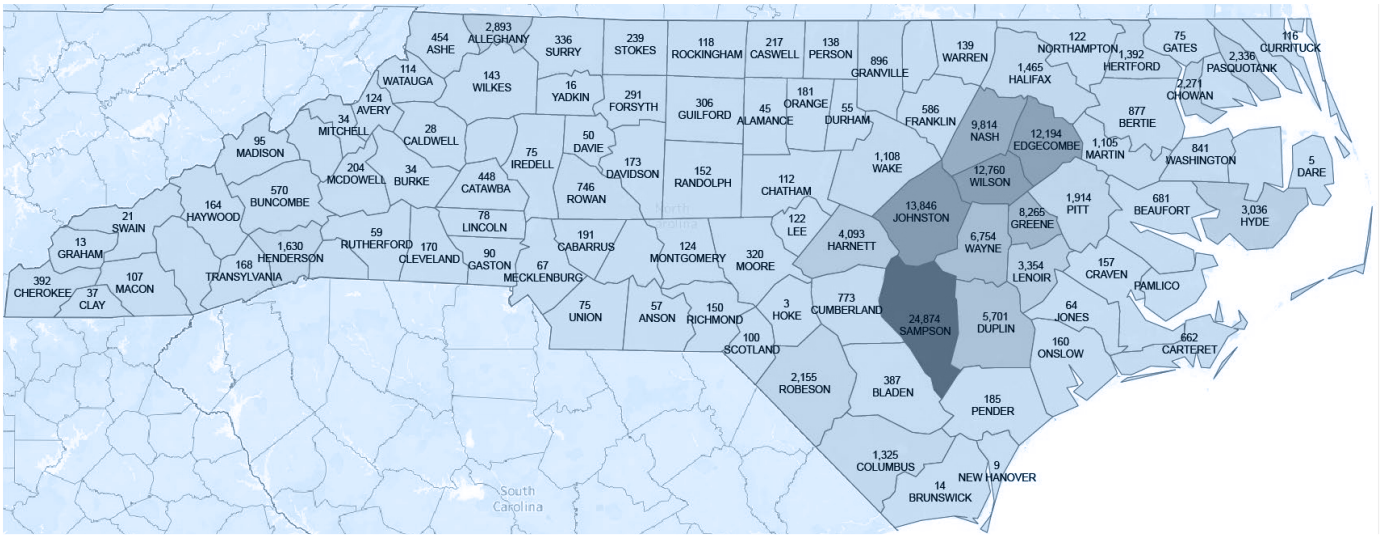
North Carolina fruit and/or vegetable farms, 2022‡

PRODUCTION MAP

Berry total acres grown + non-citrus fruit acres bearing and non-bearing, 2022



Vegetable total acres harvested in the open, 2022



‡ Value may be overstated if any farm produces both commodity groups.

MARKET INSIGHTS

North Carolina is well positioned to seize the market shift toward frozen and preserved produce: As food companies and consumers increasingly prioritize convenience, nutrition, and reduced waste, demand for cold storage and frozen foods is growing rapidly. The global cold storage market is valued at approximately $183 billion in 2024 and projected to surpass $445 billion by 2034, reflecting a 10.4% CAGR.[123] In terms of commodity markets, the frozen vegetable market is expected to reach about $27 billion by 2030 with a 5.9% CAGR.[124] Meanwhile, the frozen berries market is valued at almost $8 billion in 2023 and projected to grow at a 7% CAGR through 2030.[125] Together, these trends signal rising global investment in temperature-controlled infrastructure and the growing importance of value-added frozen produce.

In North Carolina, companies like Seal the Season and American Blueberries LLC freeze or cold treat locally grown fruit for extended shelf life and retail packaging.[126,127] Further need for infrastructure is reflected in recent investments in expanded cold storage, primarily in Eastern North Carolina. Notably, the Port of Wilmington's Cold Summit Development campus completed phase one of development in 2025: 300,000 square feet of new cold storage to handle fresh and frozen foods.[128,129] A fruit and vegetable processor and distributor is in the process of taking over a facility in Forsyth County, with plans to expand infrastructure for cold storage over the coming years,[130] and a cold storage management firm is building a new cold storage warehouse in Robeson County.[131] This emerging capacity demonstrates actor recognition of the importance of reducing spoilage, maintaining freshness, and creating higher-value markets for regional F&V farmers. Despite these positive investments, stakeholders note continued need especially in Western North Carolina.

KEY NORTH CAROLINA STRENGTHS AND RESOURCES TO BUILD UPON

- **Widespread and diverse farms:** North Carolina's different soils and microclimates present advantages across the wide state; for example, blueberry farms in one part of North Carolina may not experience the same frost that stunts blueberry production in another part of North Carolina. Processors can draw on many different farms and seasonal produce types to meet their needs and mitigate risks.
- **Ample food innovation infrastructure:** There are opportunities for processors to leverage North Carolina's various ongoing food innovation research and capacities in relevant areas like shelf stability and food transformation, such as product testing through NC State University's Plant Food Processing extension program and the NC Food Innovation Lab in Kannapolis, which serves as a food research accelerator.[132,133]
- **Dynamic grocery store market:** North Carolina ranks fifth in the nation for the number of grocery stores as of 2024.[134] The state is home to many local, regional, and national grocery retailers, with efficient access to metropolitan areas like Charlotte, Raleigh, Atlanta, and Nashville.

- **Robust local food infrastructure:** North Carolina boasts dozens of regional food hubs, with broader local food support coming through umbrella organizations such as the North Carolina Food Hub Collaborative. While these food hubs largely engage in fresh F&V aggregation and distribution, they represent an established network that could be leveraged for increased F&V sector coordination and value-addition support. This includes helping F&V producers interested in accessing cold storage and processing outlets to find best-available options.

WAYS TO ADVANCE THIS OPPORTUNITY

1. **Support different models for different scales:** Processors sourcing from farms in Eastern North Carolina (larger scale) will need different aggregation and sourcing models than those sourcing in Western North Carolina accounting for volume and variety of fruit and vegetable production. Similarly, processors may use different proven business models: higher quality produce with bespoke processing and packing delivered as local products to restaurants and specialty markets, or large packers distributing via a more systematic supply chain to larger retailers.

2. **Leverage innovative cold storage technologies:** Cold storage is capital intensive, and ineffective cooling can lead to uneven quality; this underscores the importance of farmer and processor access to increasingly efficient and compact technologies.[135,136] Innovations like individually quick frozen (IQF)[137] and a space-saving innovation spun out of NC State University[138] are providing new options for market actors. Farmers and processors could benefit from connections to private companies selling new technologies or institutions testing advances in pre-cooling and cold storage.

3. **Signal supply availability to coordinate offtake:** One of the biggest issues farmers contend with is inconsistent demand from processors and retailers. Similar to a proven method in Florida, state marketing teams and/or existing local food actors could provide outreach on behalf of farmers with approaching harvests and inform processors and other buyers of expected produce volumes. This step could help both farmers and processors make alternative marketing and buying plans.

4. **Connect farmers to available cold storage:** Farmers interviewed cited their inability to find available cold storage as a barrier. This is particularly an issue in Western North Carolina, as farmers are smaller and more dispersed than the existing cold storage opportunities. Stakeholders should prioritize not only establishing additional cold storage facilities but also innovating on ways to connect farmers to available cold storage in real-time.

Soybeans
Fermentation Processing for Diversified Products

Description

Investing in soy processing technologies—such as fermentation, oil and bioactive extraction, and protein isolation, concentration, or texturization—that expand the range of value-added products derived from local soybeans.

OPPORTUNITY AT A GLANCE

Context

- Builds on the soy extruder/expeller opportunity by expanding to a broader suite of modular processing technologies
- High-value processing can reduce risks associated with raw commodity price volatility, create new employment opportunities, and enhance farm profitability

Market insights

- Rising consumer demand for high-protein, plant-based foods
- Growing food producer demand for functional and bioactive ingredients[141]
- Rising concerns for food security and the demand for sustainable protein
- Recent processing plant closure that serviced North Carolina soybean farmers

North Carolina strengths to build upon

- Expansive geographic soybean production footprint[143]
- Existing small-scale bean fermenter serving local markets
- University expertise in bioprocessing and nutrition sciences[145]

Considerations when further exploring this opportunity

- Prioritize closing the crushing gap first
- Design with the entire soybean processing system in mind
- Optimize for zero waste[146]

OPPORTUNITY IN CONTEXT

Higher-value processing offers North Carolina a timely opportunity to position itself to meet growing consumer demand for healthy, sustainable, and plant-based foods and ingredients. This opportunity builds on the soy extruder/expeller opportunity (page 25), which would initially serve the state's livestock industry, by expanding to a broader suite of processing technologies. These include oil and bioactive extraction, protein isolation or concentration, and fermentation to produce soy oils, meals, and plant-based foods like tempeh, tofu and soy sauces. Together, these technologies provide entry points into fermentation for animal nutrition (currently more popular in Asia than in the U.S.) and higher-value specialty markets focused on human consumption.[139,140]

A strategic pivot toward high tech and diverse soy processing capabilities can reduce exposure to risks associated with raw commodity price volatility, create new employment opportunities, and enhance profitability for North Carolina's soybean farmers. This opportunity emphasizes a modular design to ensure adaptability, enabling the state to respond to market opportunities. For example, a modular facility could fluctuate from commodity products such as animal feed or renewable fuels to specialty products, like organic high-oleic oils and bioactive compounds such as isoflavones and vitamins, that attract a premium price. Transforming the soy processing sector stands as an opportunity to lean into experimentation with modular, batch-based, and flexible soy processing systems with a stable and predictable agricultural input produced across the state.

MARKET INSIGHTS

Consumer demand for high-protein, plant-based foods continues to rise globally. While not a traditional staple of Western diets, the growing number of consumers seeking plant-based, vegan or flexitarian diets is driving demand for high-protein, plant-based alternatives to animal products.[141] Fermentation enriches the bioactive compound profile of soybeans, including isoflavones, peptides, and vitamins that have been associated with gut health, bone health and immune function, while also enhancing the digestibility.[142] Recent technological development such as ultrasound-assisted extraction, microwave-assisted extraction, and cold plasma reflect a trend toward more efficient and environmentally friendly extraction of bioactive compounds from soybeans.[134] Globally, countries are promoting the domestic production of protein-rich crops, such as soybeans, to enhance food security and sustainability. Soy and fermented soy products are viewed as more sustainable protein source than animal agriculture.

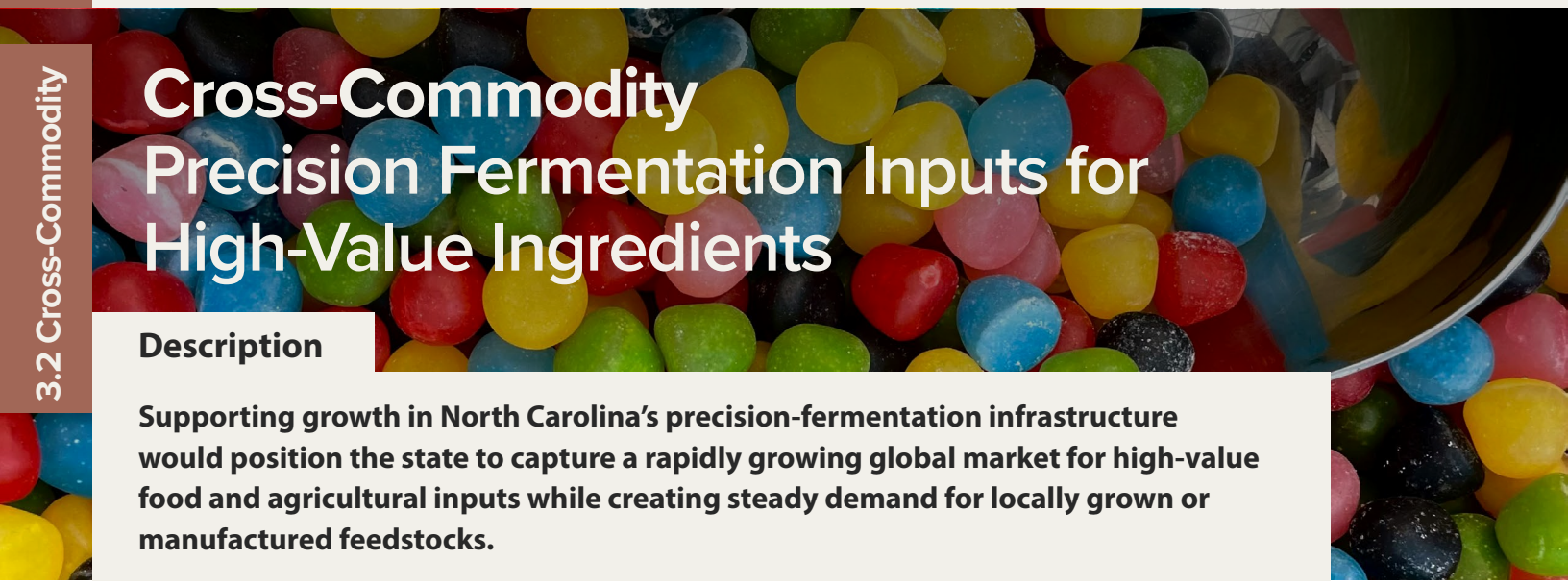
A large processor operated by Archer Daniels Midland (ADM) that crushed soybeans for animal feed closed recently. Now, many North Carolina soybean growers rely on a soy crushing facility in Fayetteville, North Carolina, while those in the northeastern counties send soybeans to processors in Cofield, North Carolina or Chesapeake, Virginia. This indicates an opening in the local processing market that could be filled by local champions.

NORTH CAROLINA STRENGTHS TO BUILD UPON

- **Expansive geographic soybean production footprint:** Soybeans have the biggest footprint of any crop in the state in terms of acres across counties and ranked in the top five commodities by cash receipts in 2022.[143]
- **Existing small-scale bean fermenter serving local markets:** For example, By the Brook Ferments serves central North Carolina with tempeh products fermented by a mushroom culture using pinto beans, black-eyed peas, and other local beans.[144]
- **University expertise in bioprocessing and nutrition sciences:** NC State research programs focus on improved food products and ingredients, bioactive interventions, and food bioprocessing.[145]

CONSIDERATION WHEN FURTHER EXPLORING THIS OPPORTUNITY

- **Prioritize closing the crushing gap first:** A necessary first step would be to address North Carolina's immediate need for soybean crushing facilities to fill the gap left by the recent ADM site closure. As these extruder/expeller plants are modular, they provide the flexibility to adapt and add higher-value processing capacity as market demand grows.
- **Design with the entire soybean processing system in mind:** From primary oils and meals to by-products like hulls and higher-value products like fermented foods and texturized proteins, the opportunity set is expansive. Focusing on implementing cross-cutting technologies, such as fermentation and extraction, that can unlock multiple end products can help processors take advantage of different downstream product options.
- **Optimize for zero waste:** This is an opportunity to design soybean processing facilities such that the outputs of one processing stream become the inputs to another, reducing waste and maximizing value capture across the entire system.[146]



Cross-Commodity Precision Fermentation Inputs for High-Value Ingredients

Description

Supporting growth in North Carolina's precision-fermentation infrastructure would position the state to capture a rapidly growing global market for high-value food and agricultural inputs while creating steady demand for locally grown or manufactured feedstocks.

OPPORTUNITY AT A GLANCE

Context

- Transforms crops and agricultural waste into proteins and high-value products like natural colorants and alternative sweeteners
- Developing a locally grown sugar source could create benefits for North Carolina farmers including revenue diversification

Market insights

- The global precision fermentation ingredients market is projected to grow exponentially over the next 5 years[149]
- Federal pressure and increasing state bans on synthetic food dyes fuel demand for natural colorants that outpaces available supply[150]
- Sustainability continues to drive demand these inputs[151]
- U.S. shortages of mid-scale bioreactors have forced early- and growth-stage biomanufacturing companies to work internationally

North Carolina strengths to build upon

- Burgeoning contract development and manufacturing operation (CDMO) and pilot-scale industry supporting companies scale-up precision fermentation processes[153, 154]
- Existing companies use precision fermentation to produce high-value industrial foodtech, agtech, and cosmetic products
- Robust biotechnolgy and biomanufacturing ecosystem with specialized talent available
- Local production of agricultural feedstocks

Considerations when further exploring this opportunity

- Support precision fermentation business scale-up in North Carolina
- Enable use of North Carolina's crops, by-products, and agricultural residues as valuable feedstocks for microbial fermentation
- Support collaboration among sugar-containing feedstock producers, precision fermentation companies, and the state's universities to advance bioprocessing research

OPPORTUNITY IN CONTEXT

Precision fermentation is the use of engineered microorganisms (e.g., yeast, bacteria, algae) to manufacture high-value products such as food ingredients including proteins, fats, natural colorants, and alternative sweeteners. Precision fermentation is a form of processing that transforms crops, agricultural or food waste—including plastic waste, or even atmospheric CO_2 into proteins and other higher-value products. The industry holds the potential to reduce the land area required for food and feed production by up to three orders of magnitude[147]; it continues to gain growing investment reaching $637M total annual invested capital in 2024.[148]

Precision fermentation provides an opportunity for North Carolina's agricultural community to directly benefit from a burgeoning industry and strengthen its position in the bioeconomy. Currently, precision fermentation feedstocks are predominately composed of sugars derived from Midwestern corn. Developing a locally grown sugar source could create benefits for North Carolina farmers including revenue diversification by selling low-value or waste materials as fermentation feedstocks. Sweetpotatoes have already been identified as a promising candidate, though their potential is limited by current production volumes and the relative yield of usable carbon compared to other crop residues. Sugar beets are also being explored as an alternative source of fermentable sugars. Producers in North Carolina stand to benefit from the growing use of precision fermentation, especially as companies seek cost-effective, locally available feedstocks.

MARKET INSIGHTS

The global precision fermentation ingredients market is projected to grow exponentially over the next 5 years, from $5.0 billion in 2025 to $36.3 billion by 2030 at a CAGR of over 48%.[149] Federal pressure and increasing state bans on synthetic food dyes fuel demand for natural colorants that outpaces available supply; West Virginia is the first state to ban synthetic food dyes as the federal government works with the industry to remove them from the food supply.[150] Sustainability continues to drive demand for high-value, specialty ingredients and inputs like bioactive and functional ingredient, non-animal derived fats like omega-3 fatty acids, high intensity sweeteners, and crop protection inputs for the food, agricultural, and nutraceutical industry.[151] Meanwhile, shortages in the United States of mid-scale bioreactors force early- and growth-stage biomanufacturing companies to work internationally to scale their operations to capacity of about 20,000L to 50,000L.[152]

NORTH CAROLINA STRENGTHS TO BUILD UPON

- **Burgeoning contract development and manufacturing organization (CDMO) and pilot-scale industry supporting companies with scale-up of precision fermentation processes:** This includes North Carolina-based companies like Growth Curve Bio[153]

and Sable Fermentation[154] offering pilot-scale (1L – 200L) CDMO and Contract Manufacturing Operations services.

- **Existing North Carolina–based companies currently using precision fermentation to produce high-value industrial products across foodtech, agtech, and cosmetics sectors:** Companies like Zymtronix, which uses cell-free, multi-enzyme systems to produce high-value industrial products for agriculture and nutrition, and Ummimo, which uses precision fermentation to produce Hummino, an essential building block of human milk oligosaccharides.
- **Proximity to professional talent pools with specialized skills and expertise:** Talent is being developed through graduate and master-level programs at NC State, University of North Carolina, and Duke University in fields like biomanufacturing, chemistry, and biomedical engineering, alongside continuing education programs such as the BioWork Certificate program at Alamance Community College, Central Carolina Community College, and Durham Technical Community College.[155]
- **Robust biotechnology, biomanufacturing, pharmaceutical, and agtech ecosystem:** Companies in this field are located in the state within and beyond Research Triangle Park, and include Novonesis and Fujifilm Biotechnologies which have advanced capabilities and expertise.
- **Local production of feedstocks:** Co-location of fermentation facilities with feedstock production (including corn and sugar beets) is a major advantage due to cost reductions in transportation and drying.

CONSIDERATIONS WHEN FURTHER EXPLORING THIS OPPORTUNITY

- **Support scale-up of existing precision fermentation companies' capacity to grow their business in North Carolina:** North Carolina's legacy of agricultural innovation, combined with its emerging hub of biomanufacturing research, creates a conducive environment for growing small and mid-size fermentation companies via strategic partnerships with large, local players with the capacity to support scale-up operations.
- **Enable use of North Carolina's crops, by-products, and agricultural residues as valuable feedstocks for microbial fermentation:** North Carolina farmers stand to benefit from the growing use of precision fermentation, particularly as companies seek cost-effective, locally available sugar-containing feedstocks. Structuring mutually beneficial sourcing arrangements from the outset will help ensure farmer benefits are integrated into this burgeoning industry.
- **Support collaboration among sugar feedstock producers, precision fermentation companies, and the state's land-grant universities:** Such collaboration advances bioprocessing research into new and sustainable carbon sources and scaling locally produced sugar feedstocks.

Cross-Commodity
Advanced Data Systems and Infrastructure to Optimize Production, Waste Reduction, Food Safety, and Traceability

Description

Equipping local supply chains with advanced Artificial Intelligence (AI)– and Internet-of-Things (IoT)–enabled data systems and infrastructure would enable value chain actors to optimize manufacturing processing systems, reduce waste, improve food safety, and enable traceability.

OPPORTUNITY AT A GLANCE

Context

- Adoption of track-and-trace systems powered by IoT, including smart packaging and sensors, AI algorithms, and blockchain technologies, is becoming a strategic imperative for food and beverage companies[160, 161]
- The proactive adoption of AI and related digital technologies could make it more attractive for downstream buyers to source from North Carolina farmers and primary processors

Market insights

- Nearly half of food industry companies are prioritizing investments in AI and supply chain tracking[160]
- Growth in the food traceability market is expected to reach $57.2 billion by 2034[161]
- Walmart has piloted IBM's food tracking platform for pork supply in China[162]

North Carolina strengths to build upon

- Ongoing pilot-scale launches of traceability technology by incumbent food processors and manufacturers, such as Tyson Foods[164]
- Growing university-led experimentation in AI and IoT-enabling technologies, including by the North Carolina Plant Sciences Initiative and through a partnership between NC A&T, NC State University, and SAS Institute Inc.[165, 166]

Considerations when further exploring this opportunity

- Prioritize products where identity preservation drives premiums
- Target products with heightened food safety and compliance risks
- Focus on resource-intensive or waste-prone processing steps
- Do not go it alone
- Use data and technology to tell the North Carolina story

OPPORTUNITY IN CONTEXT

Downstream buyers of North Carolina agricultural products are undergoing a digital transformation to strengthen their supply chains, prepare for near- and long-term disruptions, develop recall management and food safety strategies, optimize operations through predictive analytics, and increase transparency via digitally enabled tracking and tracing technologies. These advancements are driven by digital tools that integrate real-time environmental, inventory, production, harvest, and market demand data to inform procurement and sourcing decisions.[156] The adoption of track-and-trace systems powered by IoT, including smart packaging, sensors (e.g., temperature, humidity, spoilage, or contamination biomarkers), AI/machine learning (ML) algorithms, and blockchain technologies, is becoming a strategic imperative for downstream food and beverage companies.[157, 158] Digital transformation in the food and agriculture supply chain is key to maintaining competitiveness and increases demands for collaboration and coordination across value chain actors.

> **"The future will be AI, if [North Carolina] isn't doing something there, they should be."**
>
> *Research and development strategy lead for a large food and beverage corporation*

North Carolina producers could face exclusion from markets as environmental, social, and governance risk and compliance platforms like Ecovadis continue to expand their reach and impact. These services assess suppliers in numerous industry value chains with scoring systems that consider resource efficiencies, among other sustainability metrics.[159] In an environment where downstream buyers are facing increased pressure to improve their transparency and sustainability practices, the proactive adoption of AI and related digital technologies in North Carolina-based value chains could make it more attractive for downstream buyers to source from North Carolina farmers and primary processors.

MARKET INSIGHTS

Nearly half of food industry companies are prioritizing investments in AI and supply chain tracking driven by goals to improve efficiency, cut costs, and make better decisions, according to research from the Institute of Food Technologists.[160] Growth in the food traceability market is expected to reach $57 billion by 2034 from about $21 billion in 2025, growing at a 12% CAGR.[161] For example, Walmart has piloted IBM's food tracking platform for pork supply in China to capture certificates of authenticity to the blockchain, with plans to roll out the system to more products and categories.[162]

NORTH CAROLINA STRENGTHS TO BUILD UPON

- **Ongoing pilot-scale launches of traceability technology by incumbent food processors and manufacturers:** Tyson Foods is part of the IBM Food Trust network to utilize block chain for improving traceability and enhance safety and quality by sharing information with consumers and partners on farming, processing, and distribution stages.[163,164]

- **Growing university-led experimentation in AI and IoT-enabling technologies:** The North Carolina Plant Sciences Initiative is developing advanced sensor technologies to enable early disease detection, monitor plant health, and provide alerts for harmful crop conditions.[165] The North Carolina General Assembly invested $1 million in an AI partnership between NC A&T, North Carolina State University, and SAS.[166]

CONSIDERATIONS WHEN FURTHER EXPLORING THIS OPPORTUNITY

- **Prioritize products where identity preservation drives premiums:** Not all processed products benefit equally from the transparency that track-and-trace technology provides. Focus first on markets where a certification of origin, authenticity, or sustainability fetches a market premium and strengthens competitive positioning.

- **Target products with heightened food safety and compliance risks:** High-risk food categories, such as processed meat and raw leafy greens, provide North Carolina an opportunity to become a trusted partner to food manufacturers that are modernizing their recall management plans and food safety strategies.

- **Focus on resource-intensive or waste-prone processing steps, such as removing vegetable or fruit peels, pits, and stems:** Apply advanced data and analytics to monitor resource usage, drive down waste, increase resource efficiencies, and enhance sustainability performance.

- **Don't go it alone:** Traceability and transparency require coordination across farms, processors, distributors, and retailers. Within complex supply chains, a single check point is insufficient; full transparency and traceability demands networked data sharing.

- **Use data and technology to tell the North Carolina story:** Consider how digital technology can reinforce a place-based identify, strengthen bonds within and between cooperatives networks in the state, and elevate the stories of agricultural stakeholders and authentic qualities of North Carolina agriculture, such as by leveraging the Got to Be NC brand.

Cross-Commodity Packaging and Preparation of Ready-Made Meals

Description

Expanding capacity to source North Carolina products for and manufacture conveniently prepared and packaged meals would provide farmers with an additional market channel befitting North Carolina's diverse, local food production base.

OPPORTUNITY AT A GLANCE

Context

- While competitive, ready-made meals is one of the fastest growing segments of the food sector[170, 171]
- Offers long-term potential to keep more value from in-state agricultural food products, create new markets for farmers, and expand local food processing

Market insights

- Global ready-made market projected to grow at 5% CAGR[169]
- Ready-made meal manufacturers are expanding capacity in North Carolina to meet growing regional and national demand[171,172]
- North Carolina's strong agricultural and logistics network, and dynamic grocery store market, makes it well positioned for ready-made meals

North Carolina strengths to build upon

- North Carolina produces many of the raw inputs needed to create ready-made meals
- North Carolina's geographic diversity allows a variety of products to be grown across the state
- North Carolina's robust local food ecosystem[173]
- Considerations when further exploring this opportunity:
- Support processors with technical assistance on seasonal menus and sourcing
- Strengthen connections between processors and ready-made meal manufacturers and retailers
- Explore innovative ways to navigate tight margins and utilize lower-grade excess farmer product

OPPORTUNITY IN CONTEXT

Although the ready-made food business is notoriously challenging, with tight margins and competition from national brands, it is also one of the fastest growing segments of the food economy.[167,168] Consumer demand for convenience, as well as for healthy and locally sourced foods, continues to rise,[169] creating openings for North Carolina manufacturers who can market their freshness, quality, and authenticity. For North Carolina, this sector offers long-term potential to keep more value from in-state agricultural food products, create new markets for farmers, and expand local food processing. While not an easy industry to enter, it represents an opportunity that could grow steadily over time as infrastructure, regional branding, and supply chain partnerships strengthen.

MARKET INSIGHTS

The global ready-made market was valued at roughly $144 billion in 2021 and is projected to reach $225 billion by 2030 with a 5% CAGR. In the United States, the market is expanding at about 4% annually, driven by demand for convenient, pre-cooked foods that fit faster-paced lifestyles and appeal to younger, working consumers.[170] Manufacturers are expanding capacity in North Carolina to meet growing regional and national demand. Hans Kissle Company invested around $42 million in Gaston County to produce premium refrigerated entrées and sides, while SO-PAK-CO committed $85 million to build a new processing and packaging plant in Scotland County for shelf-stable ready-to-eat meals, adding 440 jobs.[171,172] Despite potential, margins can be slim for ready-made meal manufacturers, often leaving little room for inefficiencies, ingredient variability, or unexpected costs. Small-scale operations in particular struggle to absorb the fixed costs of labor, equipment, packaging, and compliance with food safety regulations.

> **"It's really hard to get these corporate organizations to look at anything other than price. They'll tell you all day long that they want local but... it's a really hard thing to do to get any kind of volume with these retailers... It's extremely expensive and complicated and you have to get a lot of scale to make it work. It's very difficult."**
>
> *North Carolina F&V industry expert*

NORTH CAROLINA STRENGTHS TO BUILD UPON

- **North Carolina produces many of the raw inputs needed to create ready-made meals:** North Carolina is a major producer of proteins and produce that form the basis of many ready-made meals. The state has an established independent livestock industry, has a growing aquaculture sector, and produces a range of vegetables and fruits—from sweetpotatoes and leafy greens to apples, berries, and tomatoes. This diverse food basket provides processors with reliable, in-state access to ingredients. By building ready-made meal production around existing agricultural strengths, farmers can access new markets.

- **North Carolina's strong agricultural and logistics network makes it well positioned for ready-made meals:** The state's mix of crops, proteins, and produce supports local ingredient sourcing, and its food manufacturing base and regional transportation links provide efficient distribution to Southeastern markets. Continued investment in cold-chain and packaging technologies could strengthen North Carolina's competitiveness in this sector.

- **Existing local food initiatives to leverage:** North Carolina has a robust ecosystem of local food initiatives—such as Got to Be NC, the NC Local Food Council, and the Carolina Farm Stewardship Association's FarmsSHARE program—that help connect farmers to buyers and promote state-grown products.[173,174] These initiatives provide branding, aggregation, distribution support, and consumer education, and can be leveraged to expand markets for locally sourced ready-made meals.

> **"There's not really any infrastructure here in NC or regionally that is doing [ready-made meals] beyond commercial kitchens and some smaller nonprofits and food hubs that are making these frozen meals."**
>
> *North Carolina F&V industry expert*

CONSIDERATIONS WHEN FURTHER EXPLORING THIS OPPORTUNITY

- **Support processors with technical assistance on seasonal menus and sourcing:** Ready-made meal companies, especially new ones, may struggle to coordinate menus with what produce are available seasonally. There is opportunity to support processors and manufacturers by offering technical assistance that helps processors understand when different products are available, what types of products are good substitutes, and designing seasonal menus.

- **Strengthen connections between processors and ready-made meal manufacturers and retailers:** Retailers, especially large grocery chains, are highly price sensitive and selective about what they put on shelves. Ready-made meal companies may need assistance to identify appropriate retail partners and navigate the process of securing shelf space, which can be difficult for smaller or emerging brands.

- **Explore innovative ways to navigate tight margins and utilize lower-grade excess farmer product:** Margins are tight for both processors and ready-made meal manufacturers, leaving little room for production inefficiencies. While there is potential to use farmers' excess products, these items often fall outside a processor's standard specifications, which are typically matched to their equipment. Capturing benefits for farmers by providing a market for surplus product while offering processors a lower-cost input would likely require technical support and innovative research into more efficient technologies.

4

Key Takeaways

The following key takeaways highlight considerations for NCAMPI and other actors in supporting the identified opportunities and overall agricultural M&P across the state.

Cross-cutting insights spanning North Carolina commodities and production regions.

- **Agricultural M&P investments provide a path to increase farmer benefits if intentionally targeted and designed.** This analysis revealed multiple ways in which efforts to enhance the state's agricultural M&P capacity could have real and near-term benefits for farmers. However, intentionally prioritizing farmer benefits from the outset was required to identify such opportunities. Without an explicit farmer-centric approach and local sourcing strategy, the state's agricultural M&P may continue to grow without meaningful, positive impact for North Carolina farmers.

> "As an industry, to diversify and lift off NC's agricultural industry, there has to be more collaboration and transparency in production and [downstream] opportunities… If industry works together, we will have better opportunities to share demand that exists for processing and make returns better for growers."
>
> *NC F&V industry expert*

- **Distinctions across commodities, regions, and value chain structures requires assessing the underlying economics of each agricultural M&P opportunity.** No two agricultural M&P investment opportunities are alike; differences in value chain realities, downstream customer preferences, transport and logistics considerations, individual business operations, and other factors impact whether a specific agricultural M&P opportunity is likely to be economically viable and sustainable over time. Multiple interviewees recommended ensuring investments are based on sound business economics and market analysis for these reasons.

Stakeholders suggest grant programs like NCAMPI primarily prioritize support for existing businesses, given they have established ingredient supply chains, customer bases, and market understanding. As a complement to this approach, interviewees also suggest identifying promising new ideas and high-potential early-stage entrepreneurs via established channels (e.g., Blue Ridge Food Ventures in Western North Carolina, the New and Emerging Crops Program).

> "[We] need market analysis before buying processing equipment or [making] large scale investments…to get customer feedback…to understand whether processors can consistently source ingredients…to ensure processors understand logistics costs and strategy, etc."
>
> *NC processor*

- **NCAMPI can enable progress but is not sufficient to fully realize farmer benefits from agricultural M&P investments.** NCAMPI has a specific mandate to "fund and promote the establishment of value-adding agricultural manufacturing and food processing facilities across North Carolina." Such investments can support but not fully create the types of incentives and value chain structures needed to significantly alter the scale of farmer benefits delivered through agricultural M&P.

  Interviewees called for deepened coordination between state agencies (e.g., NCDA&CS, NC Department of Commerce), philanthropic organizations (e.g., GoldenLEAF, Dogwood Health Trust), and other organizations such as agricultural research and extension to advance this broader ambition. Indeed, this perspective was echoed in the 2016 Governor's Task Force on Food Manufacturing, from which the top recommendation was to "establish a statewide interdisciplinary and interagency North Carolina Food Manufacturing Leadership Team comprised of NC Department of Commerce, NC Department of Agriculture and Consumer Services, the Economic Development Partnership of North Carolina (EDPNC), key universities in the UNC System and the N.C. Community College System."[175] Multiple stakeholders highlighted past collaborative efforts in sweetpotatoes and peanuts, for example, from upstream variety research to downstream marketing, as central to North Carolina's competitive position in those markets.

> "[North Carolina] may be missing larger opportunities due to lack of coordination... [a large food manufacturer] built in South Carolina, and I'm sure there were some tax incentives that were provided...that is often a deciding factor."
>
> *Large food and beverage company representative*

5

Recommendations

Actionable ways for NCAMPI and other North Carolina stakeholders to advance agricultural M&P to benefit farmers include:

- **Ensuring "local food" support extends to local sourcing for M&P.** North Carolina boasts a robust local food ecosystem that includes small- and mid-sized aggregation and distribution networks comprised of individual food hubs,[§] collaborative food hub networks, local and regional farmers' markets, direct-to-consumer sales channels, and more. These local food channels primarily focus on aggregating and distributing fresh food; it is unclear, however, the extent to which this existing local food ecosystem is plugged into complementary entry points to the agricultural M&P landscape, such as shared-use kitchens serving local food entrepreneurs. A 2023 evaluation of the NC Food Hub Collaborative (consisting of eight regional food hubs working toward a common goal of "building a stronger local food system for all") found that "only 18% of responding hubs reported access to processing equipment" while hub-specific needs included cold storage, dry storage, transportation, and processing equipment.[176,177]

  Similar questions extend to "local food" connections with larger-scale food processors and manufacturers. Recent food manufacturing recruitment and expansion announcements (e.g., Wow Bao snacks in Rutherford County, Moringa confectionery in Orange County) highlight North Carolina's growing food manufacturing industry. However, it remains unclear the extent to which new and existing food processors and manufacturers are incentivized and supported to source raw agricultural inputs locally (and what their requirements would be to do so).

  Interviewees noted untapped opportunities to leverage the state's existing local food ecosystem to (1) identify and support North Carolina farmers seeking processing opportunities; (2) enable local processors and manufacturers to find and source directly from North Carolina farmers; and (3) provide facilitating services for transport, aggregation, and storage between the farms and processors. Interviewees especially noted this need in Eastern North Carolina, where the local food economy is perceived as less developed than in the Piedmont and Western North Carolina regions.

  Existing resources can support this effort. NC Choices, for example, provides market facilitation support across production, sourcing, processing and marketing functions of the local meat supply chain, offering a model from which to learn and build.[78] The North Carolina Local Food Infrastructure Inventory, developed in 2017 by the Piedmont Triad Regional Council in partnership with North Carolina Cooperative Extension, provides a starting point from which to draw stronger place-based connections between local food production, aggregation, and processing actors.[178]

> **"Regionally, between Kinston and Rocky Mount, it would be helpful [to have additional] facilities. There are a lot of farms that need help but they have to go far for things, including food hubs."**
>
> *Food markets expert*

[§] The U.S. Department of Agriculture defines a "food hub" as a centrally located facility with a business management structure facilitating the aggregation, storage, processing, distribution, and/or marketing of locally/regionally produced food products." (source: USDA. (2010, December.) Getting to scale with regional food hubs. https://www.usda.gov/about-usda/news/blog/getting-scale-regional-food-hubs

- **Derisking differentiated production and promote values-based supply chains.** Expanded agricultural M&P capacity can deliver meaningful farmer benefits under the right business conditions. Many North Carolina farmers currently supply raw inputs into non-differentiated, price-sensitive supply chains where they are treated as "interchangeable suppliers."[9] Transitioning to values-based supply chains—where farmers are treated as partners and rewarded for differentiated production practices—offers a compelling alternative.[9] Enabling such transitions requires coordinated action across North Carolina's agricultural and business communities. In some cases, support is needed to help farmers diversify their production away from bulk commodities that keep them in market-based relationships exposed to global trade dynamics and commodity prices. However, farmers' efforts to transition into more diversified, quality-differentiated production can add significant production risks and costs if not also connected to quality-differentiated market access and mutually beneficial buyer relationships, such as via the values-based supply chains described on page 55. Efforts in the Midwest to derisk farmers' transition to regenerative agriculture practices, for example, demonstrate the type of technical, financial, market access, and other support needed to help farmers move from bulk commodity to differentiated production in values-based supply chains.[179]

> **"We have to get back to bringing farmers to the table, not isolating them in the commodity world. We're not going to fix this through subsidies... [We need to be] educating the brands."**
>
> *North Carolina cotton industry expert*

- **Investing in farmer-owned value addition, including via cooperatives.** Multiple interviewees highlighted farmer-owned aggregation and processing as a critical pathway to improve farmer economic benefits through agricultural M&P, especially if conventional supply chain dynamics persist. Interviewees pointed out that while not all farmers have interest in engaging beyond production (e.g., due to time burdens, expense, different skillsets needed), many do and should be supported. Farmer-owned aggregation and processing examples identified through this analysis span value chains and regions, including in apples, aquaculture, berries, rice, and peanuts. Importantly, the study focused on farmer-owned aggregation and processing businesses serving multiple farmers and not at the individual farm scale. Analysis from Pennsylvania State University further emphasizes this option, especially for commodity farmers:

  For commodity farmers, their income per unit of output is essentially the same as that received by others producing the same commodity. Typically, the only way to raise profits is to lower costs. One other option is to assume the role of one or more of the market players who are capturing the other 85 percent of the consumer's dollar. Doing this requires a very different business model as the farmer must take on roles played by other industries and businesses such as processing, packaging, retail, and advertising.[180]

As with differentiated production, such efforts are not without sizable risks given startup costs, marketing and other skills needed, food safely requirements, and more. For this reason, interviewees point to a renewed emphasis on cooperative models as a way to derisk farmer-owned processing. While acknowledging cooperatives have a complicated history in North Carolina, they note that farmer perceptions are changing given the many compounding constraints on production agriculture. Significant financial pressures on North Carolina farmers mean that even cooperatively managed processing efforts will require external funding and support to ensure long-term viability. If startup risks and financial hurdles can be overcome, interviewees identify farmer-owned, cooperatively managed agricultural M&P as one of the most promising pathways to delivering farmer economic returns and increasing farmer leverage in agricultural supply chains.

Existing North Carolina farmer associations and cooperative arrangements tend to emphasize production, aggregation, and distribution support (e.g., in sweetpotatoes, watermelon, peanuts); lessons learned and past examples could inform future farmer-owned, cooperatively managed processing arrangements. Examples cited by interviewees from Virginia and Montana highlight the success of farmer-owned cooperative processing models—approaches that interviewees encouraged North Carolina stakeholders to study and adapt.

> **"[The value of] developing cooperative networks… is not appreciated within North Carolina… compared to Midwest. However, when a single farmer tries to market their crop, they have no leverage. Cooperatives as a process and program is underutilized."**
>
> *NC agricultural innovation expert*

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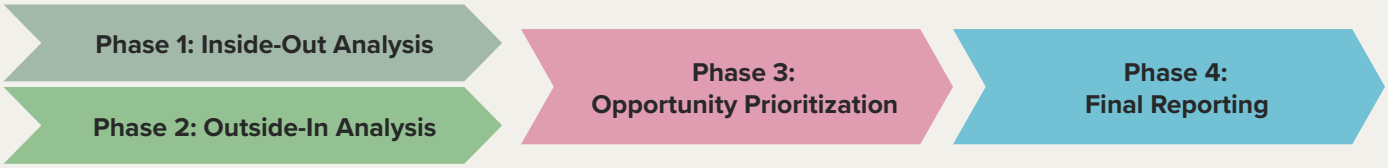
Methodology

This assessment sought to identify and assess opportunities to increase value-added processing of agricultural commodities produced in North Carolina in ways that would return benefits to North Carolina farmers. The RTI research team approached the work without any ex ante exclusions except dairy; no other North Carolina agricultural commodities, M&P steps between production and consumption, or geographical areas were considered out of scope. Agricultural commodities could be considered whether they provided food, feed, fiber, or fuel.

To arrive at the prioritized agricultural M&P opportunities from this initial unconstrained starting point, we used a multi-phased, structured approach that included:



Phase 1: Inside-out research to assess needs and opportunities. RTI interviewed North Carolina-based agricultural and M&P stakeholders and analyzed secondary data to identify gaps and untapped opportunities to better link North Carolina agricultural production with North Carolina-based M&P infrastructure and businesses. Secondary data analysis included National Agricultural Statistics Service agricultural census data; market data from IBIS World, Global Data, BCC Publishing; and business data from Dunn & Bradstreet and the Quarterly Census of Employment and Wages (QCEW).

Phase 2: Outside-in research to assess trends and gaps. RTI interviewed experts from large food and beverage companies and industry observers outside of North Carolina to assess broader M&P, market and consumer trends and observed gaps in North Carolina's M&P infrastructure. We sought to identify potential opportunities, threats, gaps for North Carolina farmers accessing downstream markets, and potential value to be delivered through enhanced agricultural M&P capacity in the state.

Phase 3: Opportunity Prioritization. RTI analyzed Phase 1 & 2 data to prioritize commodity-specific agricultural M&P opportunities based on the below prioritization criteria aligned with NCAMPI's goals

RTI prioritized agricultural M&P opportunities that met the following criteria:

- Provided a necessary, value-added step between production and retail
- Had improved economics over single-farm or out-of-state execution

- Filled a gap in market access for North Carolina producers
- Supported business models that had expected economic returns for North Carolina producers

If an opportunity met all these criteria but represented a commodity that was *not* well established in North Carolina, then it was further screened to ensure it was supported by a strong North Carolina enabling environment and that it could be complemented or paired with M&P infrastructure that supported other commodities.

RTI convened two working groups of North Carolina-based experts to collectively review the 32 prioritized opportunities and weigh their relative potential for: (1) delivering benefits to North Carolina farmers and (2) near-term investment readiness. Ultimately, 11 near-term ag M&P opportunities were selected for profiling in our final report, along with 4 emerging opportunities that aligned with market and consumer trends but require further development of farmer benefit pathways.

Phase 4: Final Reporting. RTI further characterized the prioritized agricultural M&P opportunities through additional research, and codified high-level findings of this analysis. Quality review by NCDA&CS and North Carolina-based experts further informed the final report.

Trends Shaping the Agricultural M&P Landscape

Demand-side factors reflect new challenges and opportunities for North Carolina farmers, processors, and manufacturers. Shifting market and consumer trends are changing how agricultural products are distributed and sold. The broader market trends RTI explored and considered as impacting the local markets include:

- **International tariffs and trade tensions causes market uncertainties and economic pressures** on producers as exemplified by China's fluctuating tariffs on U.S. agricultural products and its temporary halt, and now reduced, purchasing volumes of U.S. soybeans.[181]
- **Shifting dietary patterns and preferences** create new opportunities to meet market demand for global flavors and cuisines, "better blood sugar" options, functional foods with bioactives, and convenient but nutritionally dense foods.
- **Grass-root and diverse coalition of health advocates under the MAHA banner increase pressure on global food manufacturers** to address issues of diet-related chronic diseases such as Type 2 diabetes, hypertension and obesity, reform the GRAS process and remove artificial ingredients and chemicals from the food supply.
- **Demand for place-based, authentic foods and ingredients with verified origins** offer consumers opportunities to use their purchasing power to live out their values and support indigenous or marginalized communities in the food production system.
- **Simultaneous acceleration of advanced bio and digital technologies** are transforming the food production system from traditional, agrarian systems to fermentation bioreactors and smart systems that deploy sensors, AI and ML algorithms, and advanced analytics.
- **Tight labor markets and increases in weekly wages** in sectors related to food production and distribution have increased food production and distribution costs.[182]

Bridging Agricultural Production and Processing: North Carolina's Competitive Advantages

In the highly competitive industries of agriculture and manufacturing, North Carolina has strong competitive advantages to bridge the gap between farmers and processors. With its diverse agricultural production footprint and growing regions, established agricultural M&P industry, strong innovation capacity, and central location on the Eastern Seaboard, North Carolina is in a strong position to advance agricultural M&P opportunities that deliver farmer, processor, and manufacturer benefits.

Key competitive advantages for North Carolina include:

- **Uniquely rural and diverse**. North Carolina is the third most rural state in the country with a vibrant agriculture sector including more than 42,500 farms growing on 8.1M acres. The average farm size in North Carolina is less than 200 acres.
- **Strong in animal agriculture**. The leading sales for agricultural commodities in North Carolina are broilers (36% of national production), hogs (17%) and turkeys (6.4%), making the state a national supplier for high-demand products.
- **Fast-growing and dynamic**. North Carolina value-added product sales grew 42% from 2017 to 2022 with unique products including craft beer and cider, jams and jellies, canned and pickled crops, salsas and sauces, and cheeses and ice creams.[183]
- **A leader among its peers**. North Carolina ranks among the top in the country for many crops (see table).
- **Competitive food and beverage industry:** With more than 1,000 food and beverage companies representing more than 70,000 jobs, North Carolina is home to the fourth largest food and beverage industry in the United States, generating $15 billion of the state's gross domestic product in 2021. Twenty-one of the 50 largest food and beverage companies across North America operate in North Carolina.[5]
- **Nationally top-ranked state for business:** CNBC has ranked North Carolina as the top state for business three out of the past four years.[184]
- **Agricultural focus from state leaders:** The Economic Development Partnership of North Carolina (EDPNC), Department of Commerce, and NCDA&CS have emphasized the importance of North Carolina's pro-business environment, access to markets, and access to capital for the state's agriculture and food industries.[185]

Commodity	NC Rank in US Ag	NC % of US Ag
All tobacco	#1	60.1% prod
Sweetpotatoes	#1	60.5% prod
All poultry & eggs	#1	11.1% sales
Annual pig crop	#2	13.5% prod
Turkeys	#2	13.3% prod
Trout, food size	#2	7.2% prod
Cucumbers	#3	10.8% prod
Peanuts	#3	8.8% prod
Hogs & pigs	#3	10.5% prod
Broilers	#4	10.3% prod

Full List of Agricultural M&P Opportunities Meeting Initial Prioritization Criteria

From 76 identified agricultural M&P opportunities, RTI arrived at this list of 32 opportunities, from which we further prioritized with stakeholder input to the 11 opportunities profiled in this report.

Commodity		Opportunity
Apples	1	Local apple-to-cider processing facilities including freezer storage, mash facilities, cideries
	2	Recruit juicer or puree operation
Aquaculture	3	Shared freezer and processing facilities for excess catch and aquaculture products
Berries	4	Freezer storage for excess and 2nd tier berries to extend seasonality
Cotton	5	Equipment upgrades for ginner and spinner efficiency and expansion
Forestry Products	6	Support for existing small- and medium-scale processors with upgrading sawmilling equipment and secondary processing. (co-locating a pellet mill with a sawmill)
	7	Secondary processing for chips and smaller diameter logs into products like OSB, cross-laminated timber, biochar, firewood, pulp
	8	Opportunities along biochar value chain, including opportunities to stage and haul slashwood for biochar processing
Grains	9	Expansion of barley seed cleaning, processing, and storage to supply malt houses for beer, perhaps combined with other grains
Herbs	10	Investment in washing, drying, garbling, and co-packaging infrastructure
Other Fruits and Vegetables	11	Convenience value-add (cut, cubed, spiralized, freeze-dried, pureed, frozen), particularly for excess fruits and vegetables
Peanuts	12	Farmer-owned buying points and storage
	13	Canned boiled peanut
Poultry	14	USDA-inspected independent processor (NC currently has none)

Commodity		Opportunity
Red Meat (Beef & Pork)	15	For Beef and pork: value-added processing of jerky, hotdogs, smoked meat
	16	For Beef: Increase processing capacity for differentiated products in WNC that can sell to larger outlets (e.g., Harris Teeter)
All Meat	17	Rendering for poultry and red meat in eastern and/or western NC
Soybeans	18	Scalable, modular extruder plants to provide feed to independent meat producers
	19	High-oleic shelf-stable oil
	20	Fermentation processing
Sweet Potato	21	Sweet potato flour processing
	22	Pet food manufacturing
	23	Sweet potato fries and chips
Tobacco	24	Green leaf storage
	25	Emerging nicotine products/processes such as nicotine salts; heat-not-burn products, nicotine extraction
	26	Medical / vaccine research and other bioprocessing uses
Cross-commodity	27	Natural colorants made with NC produce such as blueberries, strawberries, sorghum, cabbage, sweet potatoes, tomatoes, watermelon, and apples.
	28	Artificial Intelligence, Internet-of-things-enabled data systems and infrastructure to optimize production, waste reduction, food safety, and traceability
	29	Precision fermentation inputs for high intensity sweeteners
	30	Ready-made meals sourcing a variety of products from NC such as sweet potatoes, beef, apples, other fruits and vegetables.
	31	Cold storage to elongate seasonality of produce and reduce farmer waste
	32	Technical support and incentives for local processors to source locally in select industries that have limited local supply chain transparency and connection (e.g., apples, cotton)

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