



2026 NORTHEAST AGENDA

A JOINT VISION FOR THE FUTURE OF THE NORTHEAST

*THE INTERSECTION OF THE PEOPLE, COMMUNITIES, ECONOMIES, AND ECOSYSTEMS
THAT MAKE OUR REGION UNIQUE.*

LAND-GRANT UNIVERSITY RESEARCH
agInnovation
NORTHEAST 

NEED

NORTHEAST EXTENSION
DIRECTORS

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DISCLAIMER

The original version of this document was written and compiled in 2023 by Ali Mitchell Dunigan, Rick Rhodes, Lisa Townson, Bill Miller, Puneet Srivastava, Brent Hales, and Anton Bekkerman into a single coherent document titled the Northeast Agenda. This version was updated by the full memberships of agInnovation Northeast and the Association of Northeast Extension Directors. We gratefully acknowledge the use of written materials by those authors, generally excerpted in their original form, from various multi-author public documents listed in the references.

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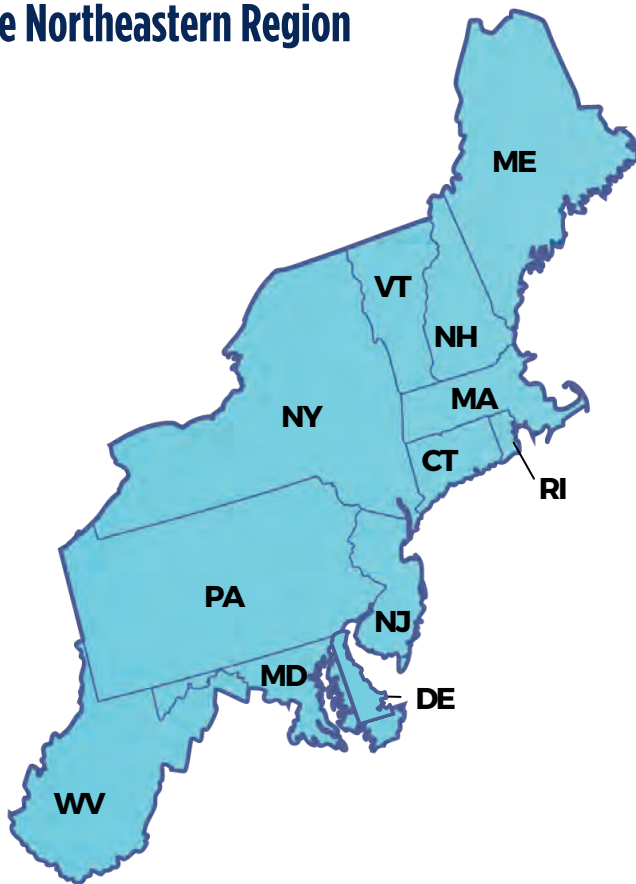
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The Northeastern Region



As a collaborative of Land-grant institutions,

we acknowledge and honor the traditional caretakers of the lands upon which our institutions now stand. We strive to understand and model their responsible stewardship and acknowledge the longer history of these lands and our place in that history.

Land Acknowledgement

Adapted from principles advanced by the United States Department of Agriculture and the land-grant university system regarding Indigenous stewardship, land acknowledgment, and the historic context of land-grant institutions.



PART 1: THE NORTHEASTERN PERSPECTIVE

INTRODUCTION

The *Northeast Agenda* highlights the key challenges and opportunities facing the Northeastern United States and the role Land-grant universities play in responding to them. It describes what makes the region unique and outlines a shared vision, mission, and purpose for Northeast Extension services and state agricultural experiment stations.

The Agenda was developed jointly by the Association of Northeast Extension Directors (NEED) and agInnovation Northeast, bringing together leadership from across the region.

A NOTE TO OUR READERS

We are pleased to share the *Northeast Agenda*, a collaborative effort to identify the challenges and opportunities shaping our region and the role of Land-grant universities in addressing them.

At a time when the Northeast faces increasing complexity, from environmental change to shifting economic and community needs, food insecurity, and health disparities, alignment across our institutions has never been more important. Through this *Agenda*, the Association of Northeast Extension Directors and agInnovation Northeast offer a shared framework to guide our work and strengthen our collective impact.

This document is intended to serve as both a guide and a tool: to inform institutional priorities, support conversations with partners and policymakers, and identify opportunities for deeper regional collaboration.

We invite you to engage with the *Northeast Agenda* in ways that are meaningful to your work by aligning efforts, exploring partnerships, using the Agenda to inform decisions, and contributing ideas that will strengthen and refine this shared direction. Its value will be realized not in its publication, but in how it is used.

We look forward to working together to advance a regenerative, livable, and vibrant Northeastern United States.

Sincerely,

Ali Mitchell Dunigan, Executive Director, NEED

Richard C. Rhodes III, Executive Director, agInnovation Northeast

UNIQUE ATTRIBUTES OF THE NORTHEASTERN UNITED STATES

In the context of NEED and agInnovation Northeast, the Northeastern United States includes Connecticut, Delaware, the District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and West Virginia. According to the 2020 Census, more than 67 million people live in the Northeast. This is approximately 20% of the US population living on 6% of the country's land area, while producing 24% of the nation's GDP. The disproportionately high output per capita is largely the result of the agglomeration benefits of living in densely settled metropolitan areas, which are associated with higher productivity and incomes.

The people who live in the Northeast represent a diverse population and share a rich, long history of independence, self-reliance, and innovation. From our largest cities (New York, Boston, Philadelphia, and Washington, DC) to our smallest communities in northern Maine and the Appalachian region of West Virginia, the Northeast is a microcosm of the diversity present from coast to coast, which has underpinned America's competitiveness on the global stage for generations.

Diverse Peoples, Communities, and Landscapes

Many immigrants, historically and in recent years, have come to the U.S. through the Northeast, and they have often planted roots and raised families here, giving the region rich cultural, culinary, and ethnic diversity. Our towns and cities are among the oldest settler communities in the United States, and our local governments range from commonwealths to the District of Columbia. Across the Northeast, county and municipal governance remains strong, and local decision-making is paramount. Many towns still hold in-person town meetings to encourage local participation, and it is these grassroots efforts, rather than state government agencies, that often lead policies affecting land, water, and energy.

Many of the towns and cities in the Northeast were established in the 1600s, and cobblestone streets can still be found in virtually every state. While the colonial era is an important part of the history and culture of the Northeast, the region is also a leader in innovative thinking, progress, and a collaborative vision for economic growth. With the greatest concentration of colleges and universities in the U.S., there is an above-average proportion of high school and college graduates and a strong connection between communities and Land-grant universities.

Our landscapes span rocky mountain ranges, dense forests, sandy beaches, and everything in between. Fifteen percent of the total US tidal shoreline runs from Maine to Maryland. The shore, large estuaries (including the Chesapeake Bay, the nation's largest estuary), and the Atlantic Ocean support a bustling seafood industry and offer recreational opportunities, access to power generation, and numerous other ecosystem services, from products to health and well-being. Collectively, these assets create opportunities in a new "Blue Economy".¹ The Appalachian Mountain range runs through the Northeast. Fertile farmland can be found in all states, with particularly large areas in New York, Pennsylvania, and West Virginia. High forest density in the region's northern and southwestern parts provides revenue through timber sales and recreation.

1. NOAA Strategy to Enhance Growth of American Blue Economy, <https://oceanservice.noaa.gov/economy/blue-economy-strategy/>

Northeast Agriculture

The Northeast Region has approximately 25 million acres of agricultural land (167,000 farms). From a national perspective, the Northeast accounts for approximately 4.3 percent of total U.S. crop cash receipts and 6.3 percent of total U.S. animal and animal product cash receipts. That translates to more than \$19 billion in contributions to the U.S. agricultural economy. Although the average farm size is only 140 acres² (compared to the US average of 445 acres), the productivity of those farms is high. Northeast farms generate about 2.5 times as much income per acre as farms elsewhere in the United States. Northeast farmers use their resources efficiently!

While the economic impact of dairy continues to lead Northeast agriculture, the region is rich in agricultural enterprises with economic impact, including agrotourism, nursery and horticultural production, and maple syrup production. Challenges to farming in the Northeast include limited amounts of high-cost farmland and high population density. However, opportunities exist for food-system innovators given the proximity to large cities.

Urban-Rural Juxtaposition

In general, the Northeast has a very high population density; however, quintessentially low-population rural areas can be found in most states—from northern communities in Maine, New Hampshire, and Vermont to rural Appalachian and Eastern Shore communities in the Mid-Atlantic. In both the most rural and the most urban areas, there exists incredible wealth as well as deep generational poverty. This creates economic, educational, and policy challenges that affect the Land-grant enterprise as researchers and Extension professionals work to balance the use of limited resources.



THE NORTHEAST IS A LEADER IN
INNOVATIVE THINKING, PROGRESS,
AND COLLABORATIVE VISION FOR
ECONOMIC GROWTH,
ENVIRONMENTAL STABILITY.

Despite often stark differences between nearby communities, the Northeast's signature population clustering means that almost everyone is within a reasonable drive to a large city. The I-95 corridor runs the entire length of the region, allowing easy transport of goods and services and convenient access to major airports. Additionally, the existence of five of the top 25 most productive seaports in the nation³ means that access to global markets can and should be strong.

This creates many opportunities for local and regional systems to emerge and to overcome the many barriers—through access to education and resources—that have kept some communities from realizing their full potential.

The urban-rural juxtaposition also plays a critical role in food production and the natural resources created and used in the Northeast.

Land is a limited and essential resource for food production and natural resource management. Access to available, affordable land is essential for developing local and regional food supply chains, which are critical to increasing community resilience.

That said, access to farmland is the number one barrier to the viability of new and existing food producers across the United States. It is a particularly acute issue in the Northeast, where aspiring farmers are struggling to gain access to land suitable for food production. When they overcome formidable barriers—land prices, developer competition, and financing—and gain access to farmland, the viability of their farm businesses is threatened by local land-use restrictions that hinder business development.

2. 2024 Northeastern Region Farms And Land In Farms Report National Agricultural Statistics Service, https://www.nass.usda.gov/Statistics_by_State/New_York/Publications/Latest_Releases/2025/2024-Northeast-Farms-and-Land-In-Farms.pdf
3. 2023 Port Performance Freight Statistics Program: Annual Report to Congress <https://rosap.ntl.bts.gov/view/dot/65990>

Compact and Collaborative

The close proximity means that most people in the Northeast can easily travel between states for work, school, and recreation. State legislative delegations are often small, requiring decision-makers to join forces on thorny issues, while state agency staff can work closely with land-grant faculty and staff to accomplish their goals. This sense of “we can get more done together” is prevalent. As an example, Northeast states have been working collaboratively for several years to develop a path to increase the amount of local food produced in the region.

Each state has its own food system goals, and there are also regional goals. Leaders from each state share data and report on collective metrics to assess progress across the region.

CRITICAL CHARACTERISTICS AFFECTING THE NORTHEAST

Water

With more than 13,000 miles of coastline and thousands of lakes, streams, and rivers, water quality and flooding remain key concerns in the Northeast. High population density, development pressure, industrial pollution, and agricultural production can all reduce water quality through nonpoint source pollution. While not unique to the Northeast, drinking water quality issues are critical to our region. Access to clean water can be affected by many factors, including aging water infrastructure in our cities and towns. Low-income communities are often disproportionately affected by pollutants in groundwater and municipal water.

Identifying pollutant sources and developing prevention and mitigation strategies are important for all communities in the Northeast to protect water quality and ensure public health.

Although the Northeast doesn't face the same level of concern about water scarcity as the Western U.S., a rapidly changing climate is challenging the historical notion. Since 2015, the Northeast has experienced droughts and floods at levels not seen since the 1960s, signaling a potential trajectory of continued water access challenges in the region.

Climate Variability

The Northeastern region has experienced some of the most dramatic changes in climate as anywhere in the U.S. Examples include:

- A 71% increase in extreme precipitation events in the Northeast in recent years.

In 2016, while record rains fell in the southern part of this region (WV), many other parts of the Northeast experienced the worst drought in 50 years (NY, MA, CT, RI, NH). Unusually warm winters (2010, 2012, 2016, and 2017) are leading to early breaking of plant dormancy and increased freeze losses.⁴

- Winters are warming, affecting crops from fruit to maple syrup production.

Recent winters have been unusually warm, leading to early release from dormancy in perennial plants and to damage from late-winter or spring cold. In 2016, peach crops in the northern half of the Northeast were affected, resulting in near-total losses. Grapes, apples, cherries, and other fruit crops in this region suffered widespread losses due to cold conditions following warm winters in 2010 and 2012. In 2012, for example, record-high March temperatures were followed by record-low temperatures at the end of April, leading to huge losses for growers in NY, VT, and other states.⁵

- Even as flooding and heavy rain events are increasing (for example, Superstorm Sandy and Hurricane Irene), the region faced its worst drought in 50 years in 2016.

4. USDA Northeast Climate Hub, <https://www.climatehubs.usda.gov/hubs/northeast/about>

5. USDA Northeast Climate Hub, <https://www.climatehubs.usda.gov/hubs/northeast/about>

As climate variability continues, the growing season in the Northeast will change, threatening crops and products that require colder winters and cooler summers (e.g., maple syrup, apples, root vegetables). Alternatively, climate variability is also causing crop production belts to move northward. Shifting production belts will have implications for the Northeast agricultural supply chain. Invasive pests and diseases will threaten the health of our woodlands and crops. New growing techniques and alternative cultivars may be required to successfully increase local food production in the Northeast to feed our growing population.

Population Growth and Distribution

Within the United States, the Northeast is the most heavily forested and densely populated region in the U.S., and the urban coastal corridor between Washington, DC, and Boston is among the most developed in the world. Over the past two decades, upland forests, agriculture, and open waters have been identified as the most common land cover types in the region. However, more than two-thirds of all new development in the region during this time has been classified as low-intensity or open-space development, converting land previously categorized as upland forest and agriculture. At the same time, the region has struggled with a declining productive land base (e.g., agriculture and other working lands), decreasing regional self-reliance, and population migrating towards the coastline.⁶

According to the U.S. Census Bureau, the total U.S. population is projected to grow by 79 million by 2060, as the average age rises and the population becomes more racially and ethnically diverse. 2030 is expected to be a turning point year in these population trends.⁷ While the COVID-19 pandemic led to a spike in domestic migration out of city centers, we expect that the populations of the Northeast—in both city centers and small towns—will continue to change significantly in both demographic and socioeconomic terms in the coming years. This may be due to an increasing prevalence of remote and hybrid work schedules, leading families to settle in rural or suburban areas that are easily accessible to cities and transportation; younger, more diverse generations moving to cities believed to be accepting, creative, and full of opportunities; or other factors. Regardless of the reason, an increasing population will continue to strain the region's food system, resources, and related infrastructure.

Science Literacy

While the Northeast has a relatively large share of the population with a bachelor's degree or higher, there is still work to do to ensure that voters and people in decision-making roles have a basic understanding of the science that drives our food systems and addresses environmental challenges. The prevalence of localized decision-making in many Northeast communities makes it even more critical that those who serve on local conservation commissions, planning and zoning boards, and in leadership roles have a basic understanding of scientific concepts. With eroding public trust toward higher education, Land-grant universities must recommit to providing science-based information to the people in our communities. It will be more important than ever for us to forge strong partnerships and foster trust between communities and researchers.

6. "Ecosystem Services in Working Lands Practice and Policy of the US Northeast," April 15, 2022, <https://online.flippingbook.com/view/749315583/>

7. <https://www.brookings.edu/blog/the-avenue/2022/04/14/new-census-data-shows-a-huge-spike-in-movement-out-of-big-metro-areas-during-the-pandemic/>

THE PURPOSE OF THIS EFFORT: A COLLABORATIVE APPROACH TO SOLVING REAL ISSUES

The purpose of the *Northeast Agenda* is to promote opportunities for research and Extension to collaborate in advancing the Land-grant mission to improve lives and the environment in the Northeastern United States. To provide a foundation and context for the *Northeast Agenda*, it is important to understand the organizations that will move this agenda from the pages to action.

The *Northeast Agenda* was produced by the directors from two organizations, the Association of Northeast Extension Directors (NEED) and agInnovation Northeast.

Association of Northeast Extension Directors (NEED) is a non-profit professional association where Cooperative Extension Directors and Administrators from the Northeast region come together to set priorities, link resources, collaborate on new projects, and support an effective Extension System.

NEED supports Cooperative Extension in the Northeast region by convening regional symposiums and conferences, connecting experts, providing professional development, and fostering partnerships. Cooperative Extension meets the region's unique needs by being embedded in and listening to communities.

Cooperative Extension services in the Northeast meet agricultural needs by providing business and risk management support, technical training, adaptation tools, and other services to farmers, producers, and land managers. At the same time, Extension works in population centers and across the urban-rural interface to develop urban forestry projects, support community food systems, deliver youth developed through 4-H, address the opioid epidemic, and respond to other emerging priority issues.

agInnovation Northeast is a formal coalition of Directors of 14 state agricultural experiment stations (SAES) and one of five such organizations nationally. The Northeastern state agricultural experiment stations are primarily located on the campuses of the region's 13 Land-grant universities, except Connecticut, which houses a stand-alone station in New Haven and another at the University of Connecticut, Storrs. All of these stations contribute to a nationwide research system dedicated to addressing global, national, and regional challenges in agriculture, food systems, natural resources, and human nutrition by offering the best available science. Members of agInnovation Northeast are participants in a partnership with the National Institute of Food and Agriculture, USDA.

Federal funding (Hatch Multistate Research Fund) and state matching funds are strategically allocated to research missions at member institutions. Managing collaboration is an essential role of agInnovation Northeast, located at the University of Rhode Island. agInnovation Northeast serves as the premier connecting organization for the region's agricultural experiment stations.

The **Morrill Land-grant Act of 1862** created a mechanism for every state to establish a college for teaching agriculture and the mechanical arts: Land-grant colleges and universities. Land, much of it in the West, made available by the forcible movement of native peoples, was "granted" to each state to sell with the stipulation that the money from the sale be used for those Land-grant colleges and their tripartite mission of teaching, research, and Extension.

The **Hatch Act of 1887** then established the state agricultural experiment stations (SAES) to conduct original research that has contributed to the growth of the agricultural industry in the United States ever since. By 1890, legislators understood that the system set up to serve all was serving only some. As such, the second **Morrill Land-grant Act of 1890** established a regular funding stream for Land-grant universities and stipulated that to receive that funding, states must either ensure that the state's Land-grant university admitted and served black Americans or establish a new second Land-grant university for that purpose.

Formal funding for Cooperative Extension services came through the Smith-Lever Act in 1914 and the National Agricultural Research, Extension, and Education Act (NAREPTA) in 1977. These laws acknowledge the need for sustained funding for Extension as the nationwide system that links communities with the Land-grants institutions, brings information to the agricultural experiment stations to spur new research, and informs citizens about the information produced by that research.

The Tribal College Program began in 1994 with the passage of the Equity in Educational Land-Grant Status Act, which established tribally controlled colleges and universities as Land-grant institutions. Collectively, the legacy of the Land-grant mission is access: access to higher education, research-based knowledge, and application of that knowledge to improve the health and well-being of all Americans.

Today, the Land-grant legacy is alive and thriving in the Northeast through the efforts of the member institutions of NEED and agInnovation Northeast. The beauty and the strength of the region are encapsulated in the diversity of Land-grant institutions in the Northeast, from small to large, north to south, and east to west. Our institutional knowledge and expertise base are well-suited to implementing the *Northeast Agenda*, which aims to inspire research, education, and Extension collaborations that create vibrant communities, resilient food systems, and working lands in the Northeast.

NEED and agInnovation Northeast hope that readers come away from this agenda with a better understanding of why the Northeast matters and what we hope to accomplish together—from scientists and Extension professionals in the Northeast to Land-grant partners nationwide to non-scientists who care about the public good and decision-makers of all stripes.

PART II: THE NORTHEAST AGENDA

OUR PROMISE TO THE PEOPLE OF THE NORTHEAST

Individual Land-grant Universities are state-focused by design. They were created to serve the needs of farmers, families, communities, and landscapes within each state, and they continue to address local needs through a trusted network of Extension professionals, experiment station scientists, and on-campus educators. At its best, the Land-grant University acts as a hub in a cycle that connects embedded Extension professionals (who learn what people need from the communities themselves) to researchers who conduct science and train tomorrow's workforce to meet those needs, and back again. Science-backed solutions are continually co-created. What works, works. What doesn't provide lessons for continual progress?

The *Northeast Agenda* honors the legacy of local solutions for local issues and builds upon it. Many issues are not unique to a single state, as climate, problematic pests, and systemic issues do not care about political boundaries. With this agenda, we identify key common issues and needs we must and can address together.



THE *NORTHEAST AGENDA* HONORS
THE LEGACY OF LOCAL SOLUTIONS
FOR LOCAL ISSUES AND BUILDS
UPON IT.

Common areas of opportunity and need are organized here under high-level thematic key priorities, which we have identified as:

- | | |
|-------------------|---|
| Priority 1 | Develop resilient and sustainable food systems. |
| Priority 2 | Lead innovation and collaboration to enhance long-term resilience across the Northeast. |
| Priority 3 | Promote environmental, human, animal, and community health and well-being. |

These priorities can only be addressed through a set of clear collective actions. NEED and agInnovation Northeast commit ourselves to the following as our promise to the Northeast.

Action: Enhance collaboration across research, education, and Extension enterprises

Research, education, and Extension represent the ingredients to an adaptive process that consistently helps improve the lives and landscapes of a state and region. Community-based or connected Extension professionals are embedded within organizations, neighborhoods, and cultural spaces, enabling them to assess present and pressing needs, both formally and informally. They pass this information to researchers and on-campus education colleagues to develop curricula and innovations necessary to support formal education in traditional on-campus classrooms to train the next workforce generation and inform programming at the core of Extension's work. Without those connections, important findings sit on the shelves of a university library, inaccessible and overlooked. Collaboration takes effort.

We are committed to identifying and addressing the structural impediments that limit collaboration, trust, and information sharing. We know that success depends on promoting collaborative solution-making whenever possible and embracing ways of working together that are creative, innovative, and evidence-based.

Action: Advance innovation and technology-focused research and Extension programs

Cooperative Extension and the agricultural research stations have well-established, proven ways of working. Extension thrives on face-to-face teaching, learning, and convening. The agricultural research stations have invested years of time, energy, and resources in long-term test farms. While these activities and processes work and will remain our core, we need to embrace the possibilities. Technological advancements have a direct impact on health, food systems, community development, and family dynamics. Generational changes in culture, expectations, and population diversity also drive research, education, and Extension needs.

To meet changes head-on, Extension and research must be willing to innovate. NEED and agInnovation Northeast are committed to supporting bottom-up visions and rethinking our top-down leadership so that a culture of effective innovation can flourish across the Northeast.

Action: Communicate our impact both externally and internally

The Land-grant University system often calls itself the nation's "best kept secret". NEED and agInnovation Northeast are committed to combating that narrative across the region through our public-facing communication strategies. With resources decreasing across universities, the higher the return on investment on our efforts that we can see and communicate, the better. Coordinated external communication on multistate and regional impacts can strengthen all Northeast institutions' ability to make larger "asks" for funding and support at the state level. It will also help them successfully demonstrate that there will be a large Land-grant return on investment (ROI), even if or when the impact of an individual state's program is not as significant in isolation.

NEED and agInnovation Northeast are committed to providing external communications to showcase the importance of our work in the region, which is greater than the sum of its parts.

At the same time, consistent and effective internal regional communications are needed to build stronger coalitions, minimize duplicative efforts, and maximize program impacts. The Northeast region is highly diverse, and each state faces unique challenges as a result. Greater coordination will be key to ensuring that our region's needs are recognized and responded to at the multistate, regional, and national levels.

Action: Secure sustainable funding for scientific research, education, and Extension priorities

In the Northeastern United States, Land-grant universities graduate more than 36,000 students annually in food, agricultural, and natural resources disciplines. The agriculture supply chain in the Northeast (farm to fork, including agriculture, manufacturing, wholesaling, on-premise retailing, and off-premise retailing) has an economic output of \$707 billion and accounts for approximately 16% of the U.S. agriculture supply chain output.⁸ The entire regional farm-to-fork continuum supports 4.4 million jobs with an annual payroll of \$209 billion.⁹

Despite the industry's significance, researchers and educators in the Northeast rely on under-resourced grant programs and campus facilities. These conditions threaten the region's food, fuel, and fiber security and hinder innovation in food and agriculture. Sustainable funding is crucial for the research, education, and Extension programs that form the foundation of this industry.

While funding should not be solely profit-driven, flexible and sustainable funding allows for responsive research and extension activities that meet key needs. The research, education, and Extension enterprises in the Northeast must demonstrate a collective need for funding that addresses the region's unique needs. One way to achieve this is to cultivate strategic partnerships across institutions, with non-traditional federal partners, and with the region's private innovation and technology sectors. By attracting new investment and diversifying funding sources for Land-grant programs, the Northeast's research, education, and Extension enterprises can leverage their high-impact work to benefit the region's agriculture and related industries.

8. 2026 Feeding the Economy Report, <https://feedingtheeconomy.com/wp-content/uploads/2026/03/Feeding-the-Economy-Report-2026.pdf>

9. Association of Public and Land-grant Universities. Northeast Region – Land-Grant Impacts <https://landgrantimpacts.org/northeast-region>.

KEY PRIORITY 1: DEVELOP RESILIENT AND SUSTAINABLE FOOD SYSTEMS

Land-grant universities in the Northeast are helping to establish long-term, environmentally sustainable systems for the production and distribution of safe, healthy food. We are uniquely positioned to conduct scientific research on all aspects of the food system: from soil and water to agricultural production systems and technologies. Our Extension professionals are experts in translating that research into integrated educational programs, resources, tools, and technologies that meet the needs of citizens, communities, businesses, and governments.

Access to fresh local food is a persistent issue. Increasingly, we are approaching agriculture and food systems in the Northeast through this lens, and we are developing initiatives and strategies that seek to expand food production capacity to ensure a healthy, fresh, and secure food system for all citizens.

Local and Regional Food Systems

Local and regional food systems refer to the geographic areas where food is produced, marketed, and consumed, as well as the intermediary steps in the supply chain that move food from farm to table. While numerous factors affect the viability of food systems, the vulnerability of our collective food systems became readily apparent during the COVID-19 pandemic.

The pandemic significantly affected the production and distribution of food across the globe. In the U.S., many portions of the food supply chain were disrupted. Consumers, forgoing public venues and eating at home, stocked up on groceries and supplies. Sales declined at restaurants. Distribution channels were upended, with food stranded upstream, creating food-security risks for vulnerable populations. Likewise, agricultural workers left the workplace due to illness.

Farmers, distributors, producers, consumers, packaged-goods companies, and retailers all faced distinct challenges. In the wake of the pandemic, many states declared agricultural entities, including research and Extension, as essential systems. Collectively, this clearly demonstrated the need to build resilience in our food systems.

Robust local and regional food systems increase resilience in times of uncertainty by improving access to food and reducing transportation-related nutritional losses. As such, Northeastern Land-grant institutions work with producers, processors, regulators, and distributors to address challenges to the sustainability of the local/regional food system to:

- Improve access to high-quality, nutritious food.
- Identify and address food deserts.
- Increase producers' and growers' access to the marketplace.
- Design and implement innovative and sustainable food production systems.
- Develop accessible and safe food processing systems.
- Connect businesses across the supply chain to enable efficient food distribution.
- Ensure biosecurity.

Innovative Agriculture

The geographic and demographic characteristics of the Northeast require applying innovative agricultural practices to support local food systems while safeguarding the environment and our natural resources. Embracing innovative practices is especially important amid rapidly evolving food preferences and our growing understanding of how food choices drive health.

Northeast Land-grant universities are poised to meet this opportunity by developing innovative agricultural approaches (e.g., climate-smart agriculture, conservation agriculture, integrated agriculture, regenerative agriculture, and precision agriculture) and the education necessary for adoption and a workforce that can provide long-term support for these approaches, but doing so will require a reimagination of Northeast food systems where collaborations enable new technologies, consumer demand drives production, and sustainability shapes agricultural investment decisions.

There are six key areas of opportunity for the development and application of innovative agriculture: urban agriculture, organic agriculture, specialty crops, agricultural technologies, controlled-environment agriculture, and aquaculture, as well as conventional production agriculture.

Urban Agriculture

The Northeast is home to four of the ten most populous urban areas in the United States, yet it is the smallest geographic region. This reality creates complex challenges (e.g., competition for available land, zoning disputes) and incredible opportunities to advance a regional urban agricultural initiative (e.g., large consumer bases, close proximity to land-grant institutions for collaboration). Safeguarding access to local, healthy food is a regional priority, and the Northeast can lead by developing and implementing urban agriculture strategies to feed our dense, growing population.

Urban agriculture nourishes communities with local, healthy food, provides jobs, strengthens communities, teaches generations the joy and fulfillment of farming, benefits the environment, and creates green spaces in cities. In short, urban agricultural systems reduce “food miles”, i.e., the distance food travels from farm gate to plate.

Coordination of programming across Land-grant institutions in urban controlled-environment agriculture, agribusiness, nutrition education, agricultural economics, and marketing is critical for developing the urban agriculture sector and the workforce it needs to grow and thrive. Innovative approaches to urban agriculture require producers, processors, and distributors to collaborate on system development.

Research and Extension will play extremely important roles in the development and utilization of urban agriculture. Major topics include:

- Food access
- Precision nutrition
- Nutrition education
- Emerging food systems
- Food business development
- Organizational development of food cooperatives
- Urban controlled-environmental agriculture
- Food demand aggregation and distribution
- Land rehabilitation and zoning

Urban Agriculture continued.

Our overall goals in urban agriculture are to:

- Improve consistent access to affordable, nutritious, locally produced food in urban and peri-urban communities.
- Position the Northeast as a national leader in science-based, scalable urban agricultural systems.
- Reduce structural barriers and increase long-term viability of urban agriculture through research-informed technical, policy, and land-use strategies.
- Ensure the Northeast urban agriculture sector has the technical, business, and leadership capacity to grow and thrive.

Organic Agriculture

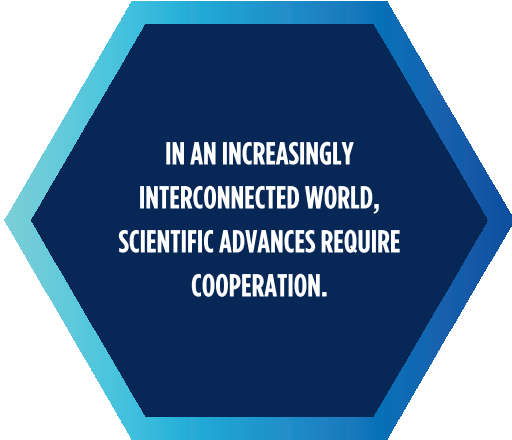
The organic agriculture industry is the fastest-growing segment of U.S. agriculture, and it is thriving in the Northeast. Since 2001, sales in all organic food categories in the region have increased annually. In this context, it is not surprising that the Northeast is home to three of the top five U.S. states with the most organic farms: Pennsylvania, New York, and Vermont. The fact that farms in the Northeast have an average acreage below the national average creates an opportunity to establish small-scale organic operations. Further, the urban-rural interface connects the growing organic agriculture sector with the nation's largest megalopolis, stretching from Boston to Washington, D.C. Collectively, the region is poised to be a leader and a test case for the success of small-scale organic agriculture.

Northeast land-grant universities are examining numerous ways to understand, support, and improve organic agriculture, including:

- Identifying sustainable organic strategies that improve soil health and nutrient management while effectively controlling diseases, pests, and weeds.
- Developing seeds and breeds is critical to the industry's growth.
- Addressing the challenges of organic animal production. The availability of certified organic feedstuffs, certified grazing land, and identity-preserved supply chains from slaughter to consumer are significant barriers to entry into the organic sector.
- Developing innovative management strategies for certified organic growers and informing transition choices.

Specialty Crops

The Northeast is home to a tremendous array of edible crop production operations that collectively fall under the banner of specialty crops.¹⁰ Indeed, the Economic Research Service (USDA) notes that specialty crops account for 30-40% of the total value of U.S. crops, and the Northeast is considered a significant contributor to the market. The region has a wide variety of climate zones, soil types, and large, accessible markets, as well as a long history of terminal markets that connect specialty crop products to regional, national, and international buyers.



IN AN INCREASINGLY
INTERCONNECTED WORLD,
SCIENTIFIC ADVANCES REQUIRE
COOPERATION.

10. Specialty crops are defined in law as "fruits and vegetables, tree nuts, dried fruits and horticulture and nursery crops, including floriculture." (Section 10010 of the Agricultural Act of 2014, Public Law 113-79)

Specialty Crops Cont.

Northeast farmers are also early adopters of new crops and production techniques. The fact that Northeast farms tend to be smaller allows the industry, as a whole, to be responsive to change. These attributes help counterbalance the high land values, diminishing access to prime farmland, urban-rural conflicts, invasive pests, and an extremely variable climate. This provides opportunities for collaborations between Land-grant universities and producers to add value to a growing agricultural sector. In an increasingly interconnected world, scientific advances require cooperation.

Northeast land-grant universities are studying, determining the impacts of, and supporting Extension and education work specific to:

- Identifying and addressing threats from pests and diseases, including threats to specialty crop pollinators.
- Improving production efficiency, handling and processing, productivity, and profitability over the long term by application of science-based technologies, knowledge, and strategies.
- Developing methods to prevent, detect, monitor, control, and respond to potential food safety hazards in the production, handling, and processing of specialty crops.
- Developing innovative management strategies for certified organic growers and informing transition choices.
- Enhancing the competitiveness of specialty crop farmers through consumer awareness programs.

Agricultural Technologies

The Northeast region has the necessary assets to advance agricultural technology through public-private partnerships. The region has a high concentration of universities, is proximal to technology clusters, most notably the Route 128 corridor in Boston, and has access to investors and venture capitalists who call our big cities home. As noted earlier in this report, the future of our food is being shaped by demographic changes, shifts in consumer demand, the confluence of food and healthcare, sustainability and environmentally focused consumers and investors, and advancements in biology, chemistry, engineering, computer science, and physics. Agriculture is undergoing profound changes.

The farm of tomorrow will have to be climate-smart with reduced inputs. Modern dairy and livestock farms that utilize advanced engineering building systems will ensure the welfare of our livestock and meet regional, national, and global demand for beef, pork, and poultry. Agricultural technologies will enable Northeast farm businesses to be more profitable, efficient, safer, and more environmentally friendly while providing consumers with the products they want. Finally, our food system must reduce its footprint—from land area used, to greenhouse gases emitted, to food wasted and lost. The future of agriculture will be shaped by the technological innovations we build today.

Northeast Land-grant universities are embracing the potential of agricultural technologies and are studying, determining the impacts of, and supporting Extension and education work specific to:

- Development of agricultural devices, sensors, and systems.
- Translational research that assesses how to employ/deploy technologies economically and with minimal disruption to existing practices.
- Assistance and instruction for farmers on using new technologies.
- Advancing Northeast agricultural public/private partnerships.

Controlled-environment agriculture

The Northeast's variable seasonal climate has led many producers to turn to Controlled Environment Agriculture (CEA), the production of bedding plants, pot plants, cut flowers, plugs, and vegetables in greenhouses and indoor spaces, including high tunnels. CEA systems are designed to overcome the vagaries of outdoor weather by automating precise control of variables such as light, temperature, irrigation, and soil, and are expected to see their market size increase fivefold over the next decade.

CEA operations also provide a viable method for producing high-quality, non-native crops locally in the Northeast, outside the traditional growing area. Locally CEA-grown produce can result in lower total carbon emissions than imported food. Compared to outdoor agriculture, CEA can yield more with the same amount of space and far less water.

The Northeast's position at the urban-rural interface creates increased demand for locally grown food. In urban areas, CEA has been used in different settings, from containers to basements to warehouses. CEA has highlighted the need for a modern agricultural workforce with expertise in chemistry, horticulture, engineering, plant physiology, plant pathology, computer science, and entomology. The proximity of Northeast Land-grant universities makes it possible to align programming to prepare the future CEA workforce.

Northeast Land-grant universities are taking an interdisciplinary approach to studying resource optimization in controlled-environment agriculture by investigating:

- Crop-specific guidelines for light quantity and quality in both supplemental and sole-source lighting applications.
- Conversion efficiency of electric light sources used for controlled environment crop production.
- Environmental control strategies that incorporate artificial intelligence techniques.
- Wavelength-selective greenhouse coverings and agrivoltaics applications for environmental controls and reduced resource use.
- Co-optimization of environmental variables and resource-use efficiency in indoor crop production.

Aquaculture

The Northeast is home to a vibrant commercial aquaculture industry that commonly farms oysters, clams, mussels, Atlantic salmon, and kelp. It is an industry that unifies our coastal states. In the greater Atlantic region, aquaculture is the third most valuable fisheries sector in terms of economic revenue, behind scallops and American lobster. Terrestrial and freshwater aquaculture provide additional opportunities for regional producers in landlocked areas or in areas prone to user conflict (e.g., high-value coastal sites).

Importantly, the region's high population represents a tremendous market for fish, shellfish, and aquatic plants. Moreover, the Northeast is blessed with a world-class research and technology sector with hubs at regional Land-grant universities and a center of excellence in aquaculture, the Northeast Regional Aquaculture Center (NRAC). Collectively, Northeast aquaculture creates employment and business opportunities and provides safe, nutritious, and sustainable shellfish and finfish.

Aquaculture Cont.

Northeast land-grant universities are responding to the opportunities and challenges posed by aquaculture in numerous ways, including:

- Developing and/or improvising aquaculture marketing and sales strategies that facilitate growth of the aquaculture industry, including expansion into urban agriculture.
- Researching and demonstrating opportunities and methods that can lead to greater commercial profitability, viability, and/or sustainability of aquatic plants and animals.
- Identifying new aquaculture species (plant, shellfish, and finfish) with commercial potential.
- Creating innovative strategies to address social barriers to development and to sustain the expansion of the aquaculture industry in the Northeast region.

Conventional Production Agriculture

Conventional agriculture is alive and well in the Northeast. The thirteen states and the District of Columbia that comprise the Northeast account for only 3% of U.S. agricultural acres. Despite the small footprint, the Northeast produces 14% of the U.S. corn silage harvest and 14% of U.S. milk production. Northeast conventional agriculture accounts for 8% of the national hay crop, 9% of the broiler production, 5% of the turkeys, and 2% of the beef cow herd. In addition, 3% of corn grain and 2% of soybeans are grown in the Northeast, which has a small agricultural footprint. Notably, the Northeast accounts for 62% of the U.S. mushroom crop and produces 90% of the country's maple syrup.

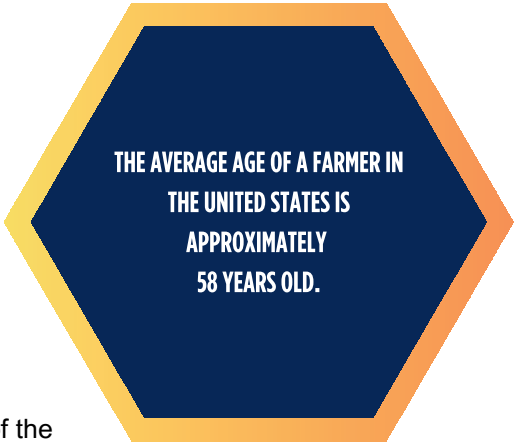
With an average operation size of 140 acres, producers in the Northeast are closely connected to their land and are engaged in adopting new technologies such as passive feed and water intake monitoring, robotic milking, agrivoltaics, and Big Data-driven management approaches. They scout crops and animals with drones and participate in citizen science to assess pest infestation. Near urban centers throughout the Northeast, conventional agriculture is present in crop fields, dairies, beef herds, and in pockets of significant fruit and vegetable production.

Northeast land-grant universities support this important sector, which continues to represent the vast majority of food production, and are responding to the opportunities and challenges faced by conventional agriculture in the Northeast by:

- Assessing how this sector acquires and adopts new knowledge and new technologies.
- Continuing to develop innovative tools and management approaches to reduce production risks and increase market opportunities.
- Responding with research-based technologies and practices that enable food producers to quickly respond to rapidly emerging disease, pest, and climate threats.
- Developing and transferring innovations in plant and animal genetics to better protect from and respond to environmental, weather, and market uncertainties.
- Encouraging innovation to ensure that Northeast producers are able to compete with producers in other U.S. regions, who might have advantages due to lower costs and access to more land.

Cultivating the Next Generation of Our Food System Workforce

Land-grant institutions across the Northeast have the opportunity to engage with a large network of current and prospective students, recent graduates, and alumni networks that span the urban-rural interface, while working closely with the region's multifaceted agricultural industry within and beyond the farm gate. With strong access to industry partners, Agricultural research stations and Cooperative Extension in the Northeast can form deep connections with representatives across the agricultural supply chain in production, processing, distribution, marketing, and food system infrastructure. These connections allow the region to meaningfully understand the agricultural industry's evolving workforce development needs. Programs at our Land-grant institutions support value-adding elements of the food system, such as providing technical training to maintain increasingly high-tech equipment, managing non-profit organizations that support food access, or engineering systems for controlled-environment agriculture.



THE AVERAGE AGE OF A FARMER IN
THE UNITED STATES IS
APPROXIMATELY
58 YEARS OLD.

Our programs also provide young people with opportunities to engage in all aspects of agriculture, including on-farm production. However, several meaningful barriers exist for individuals interested in starting a career in production agriculture: access to land and inputs, input prices, experiential opportunities, and access to start-up and operating capital. Given that the average age of beginning farmers in the United States is approximately 46, and the average age of a US farmer is approximately 58, young adults in this country will be trained at our institutions for career opportunities in production agriculture as the aging workforce turns over.

NEED and agInnovation Northeast can work together to cultivate the next generation of our food system workforce by:

- Providing our modern food system workers (farm-to-fork) with technical skills in sustainable agricultural production, technology (AI/data analysis), food safety, and supply chain management. Northeast Land-grant universities share this essential training through Extension programs, experiential learning, and partnerships focused on systems thinking, climate resilience, and agricultural technology, addressing the entire food supply chain.
- Preparing emerging adults for professional success in all elements of the region's technologically advanced food industry through programs in our colleges of agriculture and the environment. The Northeast promotes hands-on, contemporary, place-based learning opportunities across our unique urban-rural interface to secure the right workforce for the long-term future of an evolving food system.
- Encouraging young professionals to consider agricultural careers and giving them the tools they need to succeed through training, internship opportunities, and professional connections.
- Collaborating with industry stakeholders to identify workforce development opportunities that meet evolving industry needs, such as:
 - *Stackable credentials*
 - *Apprenticeships and internships*
 - *Training and technical assistance*
 - *Workforce training for English-limited audiences*
 - *Legal resources related to land access, heirs' property, and business management*
 - *Agricultural engineering and technology development to replace human labor*

Cultivating the Next Generation of Our Food System Workforce Cont.

- Evaluating the regionally specific factors currently inhibiting youth from working in land careers with a particular eye to issues of land tenure, healthcare, and higher education.¹¹
- Evaluating the role of cash-transfer and basic income programs to supplement conventional, market-based systems.¹²

KEY PRIORITY 2: LEAD INNOVATION AND COLLABORATION TO ENHANCE LONG-TERM RESILIENCE ACROSS THE NORTHEAST

Climate variability is increasing faster than at any point in the history of modern civilization. The Northeast United States feels the effects of this in everything from increased weather uncertainty to high-intensity storms, rising temperatures, sea-level rise, and saltwater intrusion.

We know that all aspects of the food system—from the production, processing, distribution, and consumption of food and natural products to the built environments that support them—both drive and are affected by climate variability, with positive and negative outcomes. For example, unlike many other regions, the Northeast is expected to see some benefits from longer growing seasons; this has already been observed in forest growth and carbon sequestration.

Climate-related stresses influence changes in inter- and intra-state demographics, the extent of urban sprawl, what can be successfully grown when and where, and the spread of pests. These food-system stressors are compounded by labor shortages, land costs, and numerous other business-related hurdles. These conditions call for developing and implementing new climate-smart technologies and/or repurposing existing technologies for climate-adaptive and climate-resilient farming.

They also present a significant opportunity for food-system players, from producers to consumers, to play a crucial role in climate mitigation through carbon storage and reduction of greenhouse gas (GHG) emissions. Such efforts will allow the broader agricultural community in the Northeast to mitigate the effects of climate pressures, sustain production, and remain economically viable.

NEED and agInnovation Northeast envision a Northeast that is seen as a leading example of how communities and food systems can become and remain resilient.

Climate Seasons and Extreme Weather

The Northeast experiences four distinct seasons, which are essential drivers for rural and urban economies. With milder winters and earlier spring conditions, climate variability is leading to less distinct seasons. In addition, the Northeast is experiencing an uptick in extreme climate events, including more days of extreme heat, longer growing seasons, warmer nights, and more frequent drought and very heavy precipitation events, which are expected to continue at an increasing rate over the next 80 years.

According to the Fourth National Climate Assessment,¹³ the Northeast is projected to be more than 3.6°F warmer on average by 2035 than during the preindustrial era. Furthermore, an increase in average temperatures by as much as 8.5°F is expected by the end of the century, with the greatest warming in the winter. This has led to reported crop losses of 38.1% due to drought and 33.8% due to excess moisture.

11. *Ecosystem Services in Working Lands Practice and Policy of the US Northeast*, April 15, 2022, <https://online.flippingbook.com/view/749315583/>

12. *USDA Northeast Climate Hub*, <https://www.climatehubs.usda.gov/hubs/northeast/about>

13. *National Climate Assessment*, 2018, <https://nca2018.globalchange.gov/rising-average-temperatures-has-already-led-to-reported-crop-losses-of-38.1%-from-drought-and-33.8%-from/>

Climate Seasons and Extreme Weather cont.

In response to observed changes in seasons and extreme events, the Northeast Land-grant universities are carefully analyzing observed and projected climate data to determine changes, their effects, and how to increase the adoption of practices that adapt to or mitigate those effects. Tracked information includes:

- **Seasons.** Examples include the start and end of seasons, shifts in the date of the last spring freeze, and the date of the first fall freeze (i.e., the length of the frost-free period). This has implications for changes in the length of the growing season, the northward shift in agricultural production belts and crop productivity, and the creation of favorable conditions for pests and invasive species.
- **Temperatures.** Examples include changes in maximum and minimum daily temperatures, nighttime temperatures, the duration of high and low temperatures, temperatures that significantly affect the yield and quality of a particular commodity, and changes in the number of extremely hot and cold days. These all affect heat-related illnesses among farmworkers, crop yields, disease-carrying insects and pests, and heating and cooling demands that drive energy use in agricultural production.
- **Precipitation.** Examples include changes in average annual and seasonal precipitation, which affects crop production and field operations; changes in rainfall intensity, duration, and frequency, which impacts flood risks; farm operations, drainage, erosion, soil health, and transport of sediment and other contaminants; changes in extreme rainfall events, which has implications for erosion, nutrient runoff, and crop productivity; and length of dry periods between rainfalls relevant to agriculture, which affects crop production, soil health, water deficits requiring irrigation, and water quality.

Water Quantity and Quality

Water-related issues in the Northeast are multifaceted. Unlike other regions, such as the West, water is generally abundant in the Northeast. However, demand for freshwater (both surface and groundwater) is high and increasing due to urban expansion, irrigation during short-term (flash) droughts, and other factors. This demand for water has outpaced groundwater replenishment, especially in the Mid-Atlantic coastal plains, resulting in saltwater inundation of coastal aquifers.

At the same time, rainfall and storm intensity are increasing, leading to flooding in long-standing, densely populated areas along rivers, canals, and other water bodies. Flooding from intense storms can spread contamination into soil and surface waters, affecting ecosystems, animals, and people. These high-intensity storms also increase soil erosion and agricultural runoff of nutrients, pesticides, and pathogens, causing excessive nutrient loading in water bodies and posing threats to food safety and to animal and human health. In addition, warming during the winter-spring transition and earlier snowmelt-related streamflow timing are expected to change the streamflow regime (higher winter flows and lower spring flows). This has implications for water supply, water quality, and reproduction of many aquatic species.

Northeast Land-grant universities are responding to observed and projected water-related issues in numerous ways, including:

- Investing in water reuse research and transformational education.
- Evaluating how changes in precipitation intensity, seasonal temperatures, and flow regime are affecting freshwater ecosystems and aquatic communities (e.g., stream invertebrates, freshwater mussels, amphibians, and coldwater fishes).
- Determining how increased nutrient and contaminant runoff is changing the water quality and productivity of coastal waters (e.g., Chesapeake Bay) and developing tools to address them.
- Investing in irrigation and water use efficiency research and Extension.

Water Quantity and Quality Cont.

- Developing and implementing innovative approaches (e.g., cover crops, no-till) to decrease soil and nutrient loss due to floods or drought.
- Developing approaches to reduce inundation of agricultural fields while reducing contamination of surface water bodies.
- Investing heavily in programs and policies to increase afforestation of riparian areas and afforestation and reforestation in general.
- Conducting Extension and outreach to build coalitions and increase community capacity to address water quality issues.

Coastal Resilience

The health of coastal communities and coastal landscapes is inexorably linked. According to the National Oceanic and Atmospheric Administration, “Forty percent of the nation’s population lives in U.S. coastal counties. Annually, coastal counties produce more than \$9.5 trillion in goods and services, employ 58.3 million people, and pay \$3.8 trillion in wages.”

Increases in atmospheric carbon dioxide, warmer ocean temperatures, sea-level rise, coastal flooding, ocean acidification, and saltwater intrusion have a profound impact on the resilience of coastal communities. We are experiencing a loss of productive coastal agricultural land and important habitats and changes in ocean-supported commerce, tourism, and recreation, along with broader socioeconomic and ecological outcomes.

According to the Fourth National Climate Assessment, “The Northeast has experienced some of the highest rates of sea level rise and ocean warming in the United States,” with the projection that these exceptional increases will continue through the end of the century.

Northeast Land-grant universities are studying, determining the impacts of, and supporting Extension and education work specific to:

- The impacts of storms and sea level rise on the diverse Northeastern coastal landscape, including uplands and forested areas, wetlands and estuarine systems, mainland and barrier beaches, bluffs, and developed areas.
- Impacts of shifts in temperature, ocean acidification, sea level, storm surges, flooding, and erosion on marshes, fisheries, and coastal ecosystems.
- How climate variability will alter valuable ecosystem services, such as wave attenuators, fish and shorebird habitat provided by coastal areas, and recreation.
- How ocean acidification will affect shell-forming organisms (e.g., lobsters, scallops, blue crabs, and oysters) and how rising water temperatures will increase the prevalence of shell diseases and pathogens.
- How proactive conservation and management measures can improve the population resilience of fished species.

Invasive Pest Migration and Expansion

Rapid development, high-density populations, and numerous ports of entry in the Northeast pose opportunities for the introduction of invasive species. Invasive species are non-native organisms that can harm agriculture, the environment, the economy, and human health.

Currently, the Northeast agricultural and forest ecosystems are challenged by invasive terrestrial plants and weeds (e.g., nutsedge, bindweed, lambsquarters, mile-a-minute, knapweed, knotweed), aquatic plants (e.g., milfoil, waterweed, fanwort), aquatic animals (e.g., mitten crab, veined whelk), and invasive insects (e.g., spotted lantern fly, emerald ash borer, asian long-horned beetle).

As the risks posed by pest invasions grow, stress from climate variability is reducing the resilience of native plants and animals and increasing their vulnerability. The Northeast has been a crucible for tick-borne zoonotic diseases, including Lyme disease, anaplasmosis, and babesiosis. Collectively, the Northeast could serve as an early warning system for invasive pests for the nation.

Northeast Land-grant universities are studying, determining the impacts of, and supporting Extension and education work specific to:

- Identifying and mapping invasive pests.
- Developing early detection and rapid response systems.
- Implementing invasive species mitigation using conventional and next generation strategies.
- Introducing and utilizing climate-smart, native species.

KEY PRIORITY 3: PROMOTE ENVIRONMENTAL, HUMAN, ANIMAL, AND COMMUNITY HEALTH AND WELL-BEING

Community Health/One Health¹⁴

The health of individuals in the Northeast has large implications for the region's long-term economic sustainability and the population's overall well-being. Issues such as incomplete knowledge of nutritional needs, inactive lifestyles, poor access to healthy foods, social inequities that exacerbate access to food and knowledge, and evolving diseases such as long COVID can significantly increase morbidity and mortality, and strain public health systems. Moreover, because the Northeast is home to the oldest and fastest-aging population—with nearly one in five individuals 65 or older—concerns about maintaining high levels of community health are particularly acute.

Understanding trends in nutrition and health behaviors across all populations and communities in the Northeast, and delivering important information about the factors that contribute to healthier lives, are key to ensuring the long-term well-being of the region's citizens.

In response to these issues, the Northeast Land-grant universities aspire to:

- Develop and improve health research and Extension methodologies to incorporate multidisciplinary and community development perspectives. By expanding our health-related research and program development to include policy, systems, and environmental pressures alongside personal choices, Northeast Land-grants will be better able to understand and respond to individual and community health issues.
- Produce researched precision-nutrition strategies and deliver educational programs and materials that are tailored and highly effective across contexts.
- Study and test innovative behavioral interventions to help individuals adopt healthier behaviors.
- Increase emphasis on understanding and empowering healthy behaviors in children and younger adults to increase the likelihood of lifelong healthy choices.

Nutrition and Physical Activity

Trends in poor nutritional intake among Americans closely track rising rates of chronic diseases and growing health uncertainties. These outcomes not only affect an individual's quality of life but also strain families, communities, and the healthcare system. Overcoming these challenges in the Northeast is particularly difficult because one-size-fits-all solutions are not viable.

In response to these issues, the Northeast Land-grant universities aspire to:

- Apply state-of-the-art tools and methods to better understand how different individuals absorb and process foods and the nutrients they contain.
- Work across disciplines to better understand how the productive-to-consumption food process—from the choices made by a farmer to the way a person's body absorbs a food's nutrients—can be enhanced to increase production, economic, and nutritional outcomes.
- Assess individuals' behavioral choices when making decisions about food and nutrition, and develop direct (through educational materials) and indirect (through incentives) interventions to increase the likelihood of better food choices.
- Leverage the impact of Cooperative Extension as the nation's largest provider of nutrition education for individuals and families by critically examining and filling the gaps in current related regional Extension and research activities.

14. One Health is a collaborative effort of the human health, veterinary health, and environmental health communities, recognizing that the health of animals, people, and the environment is connected. The One Health approach seeks optimal health outcomes for both animals and people.

Sustainable Agriculture

The term “sustainable agriculture” is defined in the U.S. Code and rests on the principle of meeting the needs of the present without compromising future generations' ability to meet their own needs. The USDA's Sustainable Agriculture Research and Education (SARE) program describes sustainability as “Farmer-driven innovations in agriculture that improve profitability, stewardship, and quality of life.” This section describes sustainable agriculture through those domains.

As noted throughout this agenda, the Northeast is characterized by a highly diversified agricultural and food system that produces, processes, and delivers food, fiber, and myriad environmental services to our citizens. For the health of people and ecosystems across the Northeast, our diversified agricultural enterprise and food system must be sustainable and, in doing so, ensure profitability, stewardship, and quality of life.

Agricultural enterprises provide approximately 207,000 jobs in the Northeast, based on data from the Feeding the Economy Report (2026). For agricultural businesses to be competitive and profitable in local, regional, and national markets, our producers must be innovators.



OUR DIVERSIFIED AGRICULTURAL
ENTERPRISE AND FOOD SYSTEM
MUST BE SUSTAINABLE AND
ENSURE PROFITABILITY,
STEWARDSHIP, AND QUALITY OF
LIFE.

To ensure the profitability and sustainability of our agricultural enterprises, the Northeast Land-grant universities aspire to:

- Conduct research and Extension activities to identify effective strategies that enhance agricultural sustainability and sustain livelihoods.
- Create, promote, and assist in the adoption of innovative agricultural practices (e.g., precision agriculture, alternative energy systems, new marketing channels, and value-added processing).
- Identify and evaluate opportunities for agricultural enterprise diversification (e.g., agritourism, crop/livestock integration, niche products, and ecosystem service adoption).

Stewardship is a cornerstone principle of agricultural sustainability. Ecosystem Services in Working Lands Practice and Policy addressed the challenge of balancing private land conversion with land conservation in the U.S. Northeast. The study suggests that the role of Cooperative Extension and Agricultural Experiment Stations will become even more essential in helping landowners adopt practices on working lands that not only help them navigate rising uncertainty but also mitigate the impacts of climate variability. Effective stewardship of working lands and the management of those lands as a system are essential to preserving our natural resources. Importantly, stewardship also extends to producers' roles in the care and use of livestock.

To promote sustainability through working land stewardship, the Northeast Land-grant universities aspire to:

- Create and promote practices and technologies that ensure soil health on working lands (e.g., use of cover crops, conservation tillage systems, crop rotation, organic matter additions, and management-intensive grazing).
- Work closely with working lands managers and producers to develop comprehensive economic and ecological sustainability plans.

- Develop best practices in livestock health and husbandry, and assist with implementing preventive health measures, reducing the use of antibiotics/hormones, selecting effective breeds, and promoting animal welfare.
- Monitor, respond, mitigate, and educate about emerging animal diseases to protect the region's food security and minimize the risk of zoonotic diseases.
- Make significant strides in highly innovative genetic and genomic analyses to advance plant and animal agriculture.
- Conduct research that leads to new knowledge about effectively and efficiently using land and waters (e.g., agrivoltaics, silvopasture and agroforestry, carbon sequestration, and recreational services).
- Create and promote practices and technologies that ensure the health of waters on and near working lands (e.g., nutrient management, manure management, and irrigation and drainage systems).

Quality of life (QOL), a pillar of sustainability, transcends many of the priority areas identified in the *Northeast Agenda*. Personal finance, work/life balance, health, and well-being are all indicators of QOL and have important implications in Northeast agriculture. Despite the Northeast's limited availability of trained agricultural workers, cultivating the next generation of our agricultural workforce, as noted earlier, is an important component of the *Northeast Agenda* and a feeder for community vitality.

To ensure Northeastern quality of life from individuals to communities, the Northeast Land-grant universities aspire to:

- Support mental and physical health, workplace safety, fair compensation, social networking, and interpersonal skills of Northeasterners.
- Identify indicators of resilience at various scales and for various stakeholders across the Northeast.
- Develop resilience strategies at the household and farm.

Biodiversity

The Northeast's remarkable biodiversity has enabled the region to be an abundant source of food, fiber, and natural beauty, and, as a consequence, opportunities for economic growth. However, as food and timber management practices become more specialized and climate variability increases, human and animal communities are becoming increasingly stratified. As a consequence, the biodiversity that has been one of the Northeast region's biggest assets is under threat. Reduced biodiversity threatens the environmental, economic, and health assets that enable Northeast communities to thrive today and remain highly resilient to tomorrow's challenges.

In response to these issues, the Northeast Land-grant universities aspire to:

- Support and encourage biodiversity on working lands.
- Build and leverage multidisciplinary teams to develop and implement new knowledge to strategically balance biodiversity, economic, and stewardship priorities.
- Better understand, quantify, and develop solutions to overcome threats to biodiversity present today and future-proof our working lands for the challenges of tomorrow.



STEWARDSHIP IS A
CORNERSTONE PRINCIPLE OF
AGRICULTURAL SUSTAINABILITY.

Food Safety

The CDC estimates that one out of six Americans (i.e., 47.8 million people) get sick from foodborne illnesses every year. About 128,000 of them are hospitalized; 3,037 die. Ensuring a safe food supply is critical to maintaining a healthy population and trust in Northeast food producers, processors, and distributors.

Cooperative Extension and agricultural research must work together to identify food safety risk factors, create educational opportunities and strategies across the food chain to prevent and mitigate adverse health outcomes, and provide timely, accurate education to consumers. This support will enable producers and processors to adopt the legally required and optional best management practices that are critical to minimizing the negative health and economic ramifications of food-borne illness outbreaks.

In response to these issues, the Northeast Land-grant universities aspire to:

- Develop innovative methods to quickly and accurately detect and eliminate causes of food-borne illnesses.
- Assess the economic consequences of food-borne illness outbreaks and develop information on how players across the food system can remain resilient when they occur.
- Create and deliver research-based educational programming for food producers and processors to identify and address food safety issues in their workplaces and to comply with evolving federal and state food safety policies.
- Educate food consumers about best practices to reduce their risk of foodborne illness.
- Bring state-of-the-art research into undergraduate classrooms to train the next generation of workforce participants who will produce and process food products.



Recreation and Tourism

The importance of the recreation economy has been recognized by the USDA, as many small towns and rural communities that are otherwise dependent on agriculture look to recreation and tourism for economic diversification and economic growth.

The Northeast is endowed with robust tourism opportunities: rural authenticity, unique culture and heritage, distinctive and “alive” assets of traditional music, art and craft, local food and drink, and outdoor beauty and recreation. While rural tourism has been examined at the state and local levels as a means of economic development, the Northeast Region has the interest, expertise, and capacity to examine and strengthen a broader outdoor recreation/rural tourism economy to ensure community resilience across state lines.

In response to these issues, the Northeast Land-grant universities aspire to:

- Assess, inventory, and classify the impacts of disasters and external shocks, such as pandemics, hurricanes, and droughts, on ecosystem-based tourism at the regional level.
- Identify, implement, and evaluate strategies for Northeast tourism-related businesses (e.g., suppliers, buyers, and destinations) and destinations to be resilient to external shocks.

PART III: CONCLUSION

The *Northeast Agenda* is a living, evolving document that identifies numerous challenges affecting our region and our work.

The three key priorities identified in the *Northeast Agenda* capture both the actions we are taking and the goals we hope will galvanize our regional institutions, colleagues, and communities to create a prospectus for collaboration and investment. Through this *Agenda*, the Association of Northeast Extension Directors and agInnovation Northeast offer a shared framework to guide our work and strengthen our collective impact.

The *Northeast Agenda* seeks your participation, collaboration, and investment. We invite you to engage with the *Northeast Agenda* in ways that are meaningful to your work by aligning efforts, exploring partnerships, using the *Agenda* to inform decisions, and contributing ideas that will strengthen and refine this shared direction.

To learn more about the *Northeast Agenda* and how to become a part of this enterprise, please contact Ali Dunigan (nee Mitchell), Executive Director, Association of Northeast Extension Directors (Adunigan@northeastextension.org) or Rick Rhodes, Executive Director, agInnovation Northeast (rcrhodes@uri.edu).

The *Northeast Agenda* is a **call to action** to stimulate deeper regional collaboration and strengthen impact. Its value will be realized not in its publication, but in how it is used.



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A CALL TO ACTION.

