



# HARVARD'S AGRICULTURAL

## Climate Action Plan

2020



Harvard's  
Climate  
Initiative

COMMIT > ACT > THRIVE

A PROJECT OF HARVARD'S CLIMATE INITIATIVE



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This plan was prepared for the Town of Harvard by Kim Lundgren Associates, Inc. and Dodson & Flinker with a grant from the Massachusetts Executive Office of Energy and Environmental Affairs Municipal Vulnerability Preparedness (MVP) Program.

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## Acknowledgements

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### **Agricultural Advisory Commission**

- Franklyn Carlson
- Robert Duzan
- Kerri C. Green - *Chair*
- Laura S. McGovern
- Robert Traver
- Christiane Turnheim
- Matthew Varrell

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### **Community Resiliency Working Group**

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- Janet Waldron
- Lucy Wallace
- Christiane Turnheim

**Kim Lundgren Associates, Inc.**

**Dodson & Flinker**

# Letter from Chairs of the Agricultural Advisory Commission and Community Resilience Working Group

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It is our great pleasure to release [Harvard's Agricultural Climate Action Plan](#); the first module of a broader climate action planning process undertaken by the Town. Harvard's farms are an integral part of both the economic and cultural lifeblood of our community. Ranging from private residential initiatives, to large orchards and specialty farms running commercial operations, Harvard's agricultural community offers a wide range of products including food, fibers, and other materials. Our farms provide a visual backdrop that makes Harvard a model rural New England landscape that attracts visitors from many places across the region.

But the specter of climate change and its emerging impacts presents a great challenge to Harvard's farming community. Added to the historical challenges that the agricultural community has always had to deal with such as regulatory and property tax burdens, climate change has the potential to fundamentally disrupt agriculture as we know it in the town. Thus, as important as agriculture is to Harvard and given the threats to its viability, Harvard has been uniquely proactive in taking advantage of Massachusetts' innovative Municipal Vulnerability Preparedness (MVP) Program developed by the Baker-Polito Administration in 2017. Harvard was awarded an MVP Planning Grant in 2018 to develop a Prioritization Plan that included an agricultural component. This was followed up with a successful MVP Action Grant in 2020 for a Climate Action Plan program with an initial focus on agriculture.

[Harvard's Agriculture Climate Action Plan](#), developed in partnership with Kim Lundgren Associates (KLA) as the primary consultant and Dodson & Flinker (D&F) as the subcontractor for agricultural specialization, included key community stakeholder participation from the Agriculture Advisory Commission (AAC) and the broader agricultural community and incorporates the ideas and feedback derived from surveys, meetings, and interviews—conducted both in-person and virtually over the past year. This plan was developed largely as an independent collaboration between the AAC, KLA, and D&F, with assistance and coordination with the Community Resilience Working Group (CRWG)—Harvard's MVP Committee. This Plan is intended as an important part of overall comprehensive climate action planning in Harvard, which will continue beyond this document with both a strong implementation phase for the action items in this plan and also with focus on other important aspects of the community in later phases of an overall climate action plan framework.

Harvard's ability to understand and cherish its past but also embrace the science of today enables us to prepare the town and its key sectors for the current and future impacts of climate change and public health crises like the current COVID-19 pandemic.

Harvard's Agricultural Climate Action Plan builds off of our recent Municipal Vulnerability Preparedness Plan and a Greenhouse Gas Inventory which recognizes the changing weather patterns that climate change is already bringing to the region. KLA and D&F helped the AAG, our Working Group, and key stakeholders to apply this knowledge to Harvard's agricultural community and to craft our Plan. In addition, KLA provided a branding and marketing plan for Harvard's agricultural community as well as a range of tools and actions for the broader climate action effort in town to allow the CRWG to continue to move forward on the larger climate action planning program. Harvard looks forward to continuing its collaboration with MassDevelopment—as well as our stakeholders, farms, businesses, and citizens—on a sustainable future for the town, as we implement this plan and transform our community's future in a way that benefits all of those who live, work, learn, or play at Harvard now and in the future.

Sincerely,

*Kerri Green*

Kerri Green  
Chair of the Agriculture Advisory Commission

*Peter Kelly-Joseph*

Peter Kelly-Joseph  
Chair of the Community Resilience Working Group



# Introduction

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**Harvard is a rural community that closely identifies with its agricultural heritage.**

The town is estimated to have over 100 farms.<sup>1</sup> They range in size from several acres to hundreds of acres. Harvard farms provide a range of products from tree fruits, berries, and vegetables to chickens, bees, horses, and alpacas. Farms also run the gamut from “hobby farms,” to those with part-time operations, to full-time farms with employees. The majority of farms are small with part-time farmers.

Almost all of the farms consume the products they grow or sell directly to customers from the farm.<sup>1</sup> A few large farms—historically, orchards—are a key cultural touchstone for local residents and visitors from out of town.



Harvard as a community recognizes the need to prepare our town for the consequences of climate change. To ensure our bountiful farms and tight-knit community will continue to thrive for generations to come, we are working together to protect and preserve our town and all its important assets. That is why we established *Harvard's Climate Initiative*, the Town's climate action and resilience planning effort, to lay out a roadmap for Harvard's future prosperity and to ensure that we emerge from climate change stronger together.

In 2019, the Town of Harvard completed an agricultural climate vulnerability assessment through the Massachusetts Executive Office of Energy and Environmental Affairs Municipal Vulnerability Preparedness Planning Grant. Through that process, our agricultural community brought awareness to the issue that while climate change impacts are a risk to our farmers, existing financial pressures are the greatest risk to Harvard's socio-economic resilience and will only further exacerbate climate-related impacts. Any plans to address Harvard's resilience in the face of climate change must address these more chronic financial stressors while placing farmers in a financial position to be able to invest further in protecting their farms from future impacts.

At the same time, we know that the economic viability of farms is improved when they are operating efficiently, minimizing potential property damage, and maximizing opportunities for revenue. Further, it is essential that Harvard's farmers do their part to minimize contributions of greenhouse gas emissions that cause climate change, and to protect the important ecosystem services that agriculture provides to the town and to the region.

Harvard's agricultural activities provide essential goods and services in the form of food, fibers, and other materials, as well as providing critical ecosystem services that support our natural environment. These services are central to the health of the region's residents, economy, and environment. Agriculture is also a fundamental part of Harvard's character and sense of community. The impacts of climate change simultaneously place agricultural activities at risk while also elevating the critical nature of local food supplies.

***"Climate change poses unprecedented challenges to U.S. agriculture because of the sensitivity of agricultural productivity and costs to changing climate conditions."***

Source: Climate Change and Agriculture in the United States: Effects and Adaptation.<sup>2</sup>

For all of these reasons, the Town chose to develop an agriculture-specific Climate Action Plan to identify opportunities to proactively build its social, economic, and environmental resilience while also being a model for sustainable agricultural practices.

Harvard's Agricultural Climate Action Plan is centered around a vision for sustaining the agricultural community through four key categories of action.



Economic Viability



Resource Efficiency and GHG Reduction



Nature-Based Resilient and Regenerative Practices



Social Cohesion and Agricultural Character

## OUR VISION

The Town of Harvard will be a thriving, sustainable community that nurtures and enhances its forests, agricultural lands, and all its precious natural and cultural resources through active stewardship and partnering with its citizens to educate and take action on climate change for a more sustainable future.

# Resilience Framework

In order to evaluate potential strategies for inclusion in this plan, as well as to establish a lens through which future strategies and investments could be assessed by the Town of Harvard for their overall climate and sustainability benefits, a climate resilience and nature-based solutions evaluation framework was created, based on Guiding Principles established for *Harvard's Climate Initiative*.

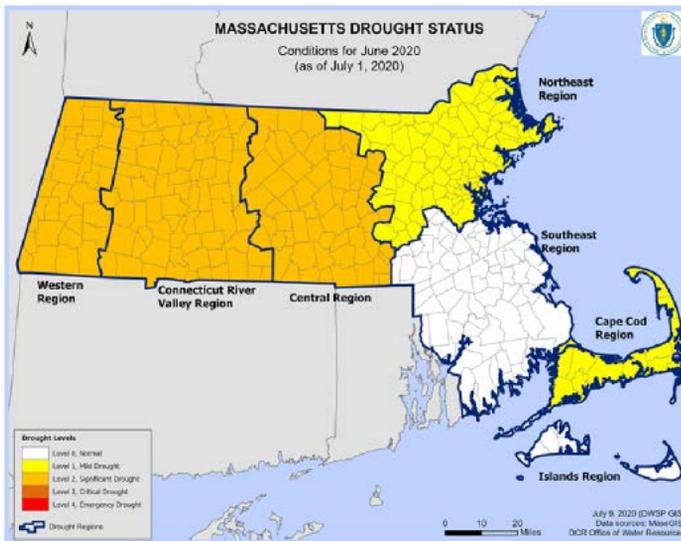
Potential strategies were screened against these criteria, as well as their ability to meet the goals identified within the four categories of agricultural resilience in Harvard.

Principles	Operational Definition	Criteria		
		Positive Contribution (+1)	Neutral Contribution (0)	Negative Contribution (-1)
<b>GHG Reduction</b>	The reduction of Harvard's greenhouse gas emissions in order to mitigate its contribution to climate change.	This strategy will significantly reduce Harvard's GHG emissions (more than 5% reduction).	This strategy will moderately reduce Harvard's GHG emissions (less than 5% reduction).	This strategy will result in negligible or no reductions in Harvard's GHG emissions, or will increase GHG emissions.
<b>Resilience</b>	Harvard's ability to recover from and thrive - socially, economically, physically - in the face of climate change impacts.	<p>The strategy will contribute to enhancing the resilience of Harvard's infrastructure, residents, businesses, or farms to the impacts of climate change.</p> <p>Contributions to resilience can include:</p> <ul style="list-style-type: none"> <li>- preparing infrastructure for floods, storms, extreme heat</li> <li>- preserving or restoring ecosystem services</li> <li>- reducing the vulnerability of community members through reduced exposure to hazards or mitigating chronic stressors</li> </ul>	The strategy will not directly contribute to enhancing the resilience of Harvard's infrastructure, residents, businesses, or farms to the impacts of climate change.	The strategy has the potential to reduce the resilience of (or create new hazards/chronic stressors for) Harvard's infrastructure, residents, businesses, or farms.
<b>Community and Social Capital</b>	The ability to enhance the connectedness of the Harvard community to better engage its members and strengthen its social character.	The strategy will provide opportunities to increase Harvard's social connectedness.	The strategy will have no positive or negative impacts on the connectedness and strength of the Harvard community.	The strategy has the potential to cause tension in the Harvard community and/or isolate members of the community.
<b>Healthy and Productive Natural Resources</b>	The commitment to preserve and nurture natural resources and spaces in harmony with new development.	The strategy will enhance the use of nature-based solutions to reduce water, land, and materials use and recovery to preserve or nurture natural resources or spaces in Harvard.	The strategy will have no positive or negative impact on natural resources or spaces in Harvard.	The strategy has the potential to diminish, contaminate, or otherwise harm natural resources or spaces in Harvard.
<b>Education</b>	The civic engagement of Harvard residents, businesses, and visitors on climate action.	The strategy will increase community education, awareness, and forward thinking action on reducing climate change impacts.	The strategy will have no impact on community education, awareness, and action around reducing climate change impacts.	The strategy may cause resistance or confusion within the Harvard community.
<b>Regional Collaboration and Leadership</b>	Enhancing climate action synergies by leading collaborative action with nearby communities.	The strategy will increase Harvard's collaboration opportunities with neighboring towns and cities to enhance capacity for projects, funding, and/or thought leadership.	The strategy will have no impact on Harvard's collaboration opportunities with neighboring towns and cities.	The strategy may harm Harvard's relationships with neighboring towns and cities or will decrease collaboration opportunities with those communities.

# Climate Change Risks to Harvard's Agricultural Sector

Climate change presents several risks to Harvard's agricultural sector, including changes in precipitation, temperature increases, and extreme storms. The following table highlights changing climate conditions, the hazards they present, and the potential impacts to agriculture. It should be noted that when these warmer and wetter conditions combine, impacts can be further compounded.<sup>3</sup>

Changing Conditions	Hazards	Impacts
<b>Rising Temperatures</b>	Heat waves <i>Exacerbation of drought</i>	<ul style="list-style-type: none"> <li>• New or more pests/pathogens</li> <li>• Unsafe outdoor labor conditions</li> <li>• Changes to crop viability (especially cool-season crops)</li> </ul>
<b>Precipitation</b>	Flooding	<ul style="list-style-type: none"> <li>• Soil erosion</li> <li>• Fertilizer/pesticide/manure runoff</li> <li>• Plant disease</li> <li>• Spring planting impacts</li> </ul>
	Drought	<ul style="list-style-type: none"> <li>• Crop losses</li> <li>• Increased irrigation demands</li> </ul>
<b>Extreme Storms</b>	Wind and flooding	<ul style="list-style-type: none"> <li>• Crop losses</li> <li>• Damage to buildings and equipment</li> </ul>



Drought conditions can be uniquely problematic for the agricultural sector, as even moderate levels of drought can begin to impact crop growth and irrigation demands. As of the writing of this plan, most of Massachusetts was experiencing Level 2 drought conditions from late June through mid-August 2020.

The table below is from the US Drought Monitor and describes potential impacts based on severity of drought conditions.

Category	Impact	Intensity:
D0	Crop growth is stunted; planting is delayed	None
	Fire danger is elevated; spring fire season starts early	D0 (Abnormally Dry)
	Lawns brown early; gardens begin to wilt	D1 (Moderate Drought)
	Surface water levels decline	D2 (Severe Drought)
D1	Irrigation use increases; hay and grain yields are lower than normal	D3 (Extreme Drought)
	Honey production declines	D4 (Exceptional Drought)
	Wildfires and ground fires increase	No Data
	Trees and landscaping are stressed; fish are stressed	
D2	Voluntary water conservation is requested; reservoir and lake levels are below normal capacity	
	Specialty crops are impacted in both yield and fruit size	
	Producers begin feeding cattle; hay prices are high	
	Warnings are issued on outdoor burns; air quality is poor	
	Golf courses conserve water	
	Trees are brittle and susceptible to insects	
D3	Fish kills occur; wildlife move to farms for food	
	Water quality is poor; groundwater is declining; irrigation ponds are dry; outdoor water restrictions are implemented	
	Crop loss is widespread; Christmas tree farms are stressed; dairy farmers are struggling financially	
	Well drillers and bulk water haulers see increased business	
D4	Water recreation and hunting are modified; wildlife disease outbreak is observed	
	Extremely reduced flow to ceased flow of water is observed; river temperatures are warm; wells are running dry; people are digging more and deeper wells	
D4	Massachusetts has had little or no experience in D4 so no impacts have been recorded at that level in the Drought Impact Reporter	

Source: <https://www.mass.gov/news/drought-conditions-continue-in-several-regions-of-massachusetts>

# Harvard's Agricultural Emissions and Carbon Sinks

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In 2018, greenhouse gas (GHG) emissions for the Harvard community totaled 57,453 metric tons of carbon dioxide equivalent (MTCO<sub>2</sub>e), primarily from on-road transportation and building energy use.<sup>4</sup> Agricultural activities are relatively small (< 1%) contributors to the GHG footprint of the community and come from unique sources related to fertilizer use, animal husbandry, and farm machinery use. However, it should be noted that building energy use, solid waste, and transportation emissions specifically from farms were not able to be separated from total community emissions in those respective sectors, and thus emissions associated with agricultural operations should be assumed to be much higher than 1%.

Much of the short history of community-scale GHG inventories has been in largely developed communities where the vast majority of emissions come from energy use, transportation, and from the disposal and treatment of solid waste and wastewater. While Harvard contains those things, it also contains substantial areas of undeveloped land, as well as significant agricultural activities that create unique sources of GHGs but also act as carbon sinks by pulling carbon from the air. In addition, there are substantial quantities of carbon stored in the land which have the potential for significant release of GHGs depending on future development decisions.

For this GHG inventory, default rates of carbon storage and annual sequestration were obtained from the State of Massachusetts GHG inventory calculations, which were performed using the US EPA State Inventory Tool. Sequestration and standing carbon rates were applied to the area of tree cover to obtain results for the study. Due to data limitations, this analysis provides little information on the potential of different management techniques that could improve rates of sequestration. Future studies with field surveys of existing carbon pools within Harvard's forested land could better inform more specific activities within forests.



Harvard's extensive forested areas and other tree cover create a substantial carbon sink that may be roughly equal to 80% of the community's annual emissions. With 4.3 million MTCO<sub>2e</sub> stored in standing trees and soils, there is the potential to drastically increase Harvard's emissions and reduce ongoing sequestration capacity should there be future development of such land areas.

### **CARBON SINK** • *(noun)*

A natural system that absorbs more carbon than it releases, and thus lowers the concentration of carbon dioxide in the atmosphere.

In total, annual sequestration from above and below ground tree biomass in Harvard is estimated at 42,895 MTCO<sub>2</sub> per year, a substantial figure relative to the sources of GHGs in the community. In addition, the carbon stored is estimated at 4,057,930 MTCO<sub>2</sub>.

Agriculture in Harvard occurs across a range of farm sizes, production methods, and intensities. However, information on the production practices happening in Harvard is incomplete. At the time that the GHG inventory was completed, existing activity data on agricultural activities was incomplete and a combination of factors prevented additional new data from being collected for this project.\*

It is known that several farms in Harvard use organic and regenerative practices on their fields. This includes additions of organic matter for fertilizer, reduced tillage, and other actions that lead to improved soil carbon storage. Supporting more soil carbon sequestration is a relatively unique action that Harvard and its producer community can wield to reduce atmospheric carbon. However, one of the biggest limitations to this is the scale of the land area where it can be applied within Harvard.

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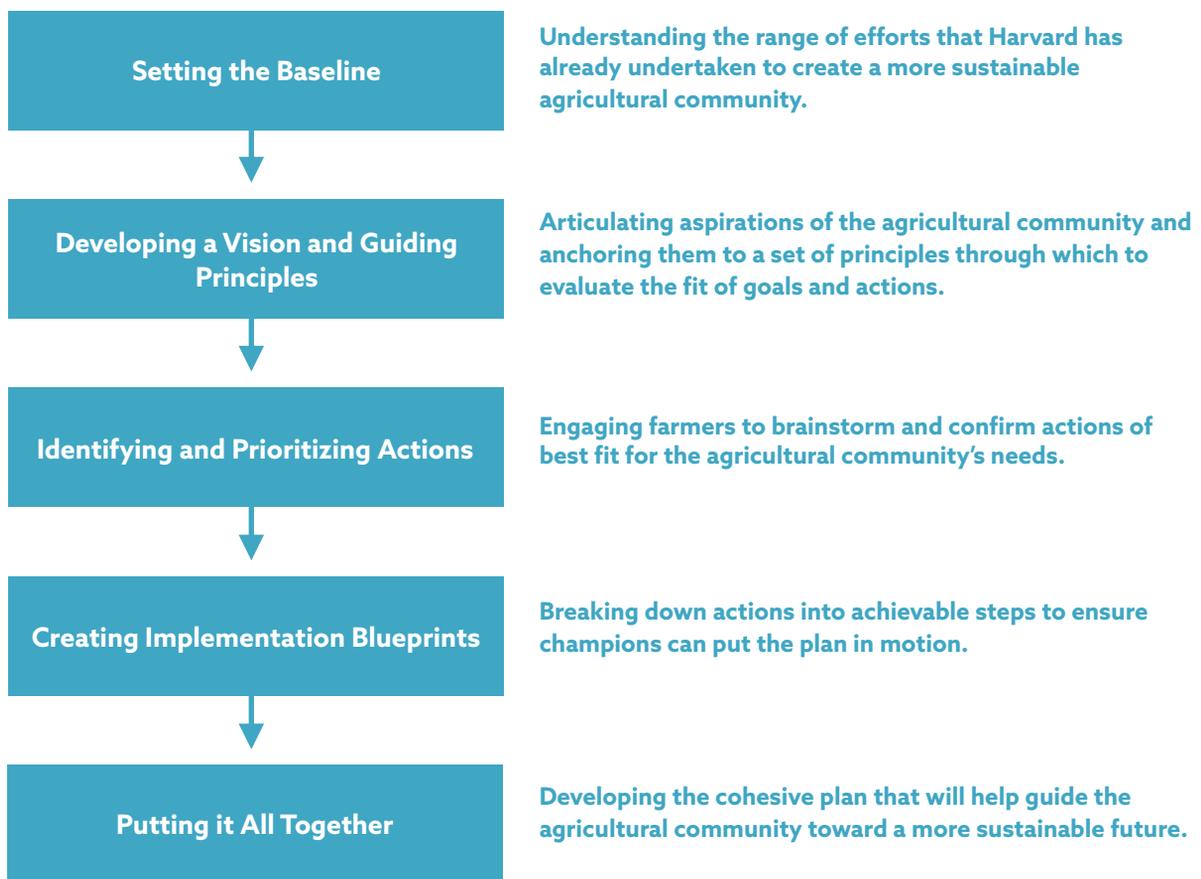
\* Past surveys had limited reach and official records of properties in Chapter 61-A classification missed many smaller producers. Thus, estimating GHGs from agriculture activities was estimated using a top-down approach that would be able to provide estimates of the relative impact of agricultural activities in the community as compared to sources such as building energy use, transportation, and waste.

# Planning Process & Engagement

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## How this Plan was Developed

This Plan is the result of a collaborative effort that engaged a diverse representation of local farmers, the Agricultural Advisory Commission, and Town leadership. A proven planning framework was applied to ensure we captured our community's current needs and priorities while still acknowledging our accomplished agricultural history.



## Engaging the Community

Developing the plan was a collaborative effort with the farming community that helped to identify and prioritize actions that would be most impactful to increasing the resilience of Harvard's agricultural community from the impacts of climate change. Virtual public workshops, meetings of both the Agricultural Advisory Commission and the Community Resiliency Working Group, and community surveys were used to collect feedback for the plan.

## Agriculture Stakeholders Workshop #1

Hosted by the Town of Harvard and the Agricultural Advisory Commission, two virtual public workshops were held as part of this planning process. The first, in July, gathered stakeholders to identify priorities, goals, and challenges and to understand climate impacts as they relate to the agricultural community. During this workshop, stakeholders also participated in a group exercise during which they were asked to share their short-term and long-term visions for agriculture in Harvard.

### PLAN ADVISORS

#### Agricultural Advisory Commission

During the planning process, the Town's Agricultural Advisory Commission met on a regular basis to provide guidance on the components of the plan. The Commission is comprised of five members appointed by the Select Board. The majority of the Commission's membership is required to be substantially engaged in the pursuit of agriculture. Therefore, input from this group was especially important, and focused on the needs of the broader agricultural community, and how best to engage these stakeholders on the development and implementation of the Plan.

#### Community Resiliency Working Group

The Town's Community Resiliency Work Group, formed in late 2019 and tasked with considering ways to address environmental criteria and sustainability at the municipal level, also met regularly to provide advisory support and discuss how the Town could better support the agricultural community in the actualization of this plan.

## Community Survey

An online survey was used to gather feedback from the broader agricultural community in Harvard. This method was a critical tool to provide farmers with the flexibility to participate in the development of the Plan on their own time during the busy summer growing season. This survey asked the agricultural community to prioritize actions identified for each of the key categories discussed in the first public workshop and to provide feedback on what was most important to them. Nine respondents, representing diverse sectors of the agricultural community – from apples/fruit to animal/livestock to flowers and honey, responded. Below are a sample of priority actions identified.

### COMMUNITY CHOICE HIGHLIGHTS:

- Reduce tax burden on farmers for their land, buildings, and equipment
- Establish a forum for the sharing of best practices, results, and challenges with the implementation of regenerative farm practices in Harvard
- Establish Machinery and Tool Exchange to share equipment, especially for small farmers
- Ensure that Town allows for "residential kitchens" (low-risk food production for sale)

The results of this survey helped to prioritize actions for the Plan. Any actions that were not prioritized will continue to remain as future options for the agricultural community.

## Agriculture Stakeholders Workshop #2

In August 2020, at the second and final workshop, stakeholders were presented with the results from the survey on goals and actions and then discussed how to best implement the prioritized actions. This discussion led to the development of detailed implementation blueprints, which include the champion, steps, technical resources, partners, and metrics for success for moving each of the prioritized actions forward.



# Economic Viability

Harvard's farms need a more stable economic footing to be able to take actions to mitigate and adapt to climate change and to secure the town's economic resilience for years to come.



## Goals

- Minimize the cost of owning and operating a farm in Harvard (and minimize financial risks)
- Enhance ongoing revenue of farms
- Expand resource sharing opportunities to support farms in diversifying and/or scaling up operations
- Protect agricultural/agroforestry land from build-out scenarios



Farming contributes to the Harvard and regional economy in numerous ways. Agriculture is one of the main sources of jobs in Harvard. It also supports other businesses when farmers buy supplies or when their products are processed and sold by others. Harvard's farms make high quality products available to town residents, often at prices lower than at retail establishments. Agriculture is also a key visitor draw for the town, with the potential to contribute to growth in the tourism sector.<sup>5</sup> The 2016 Town Master Plan found that agriculture was the strongest economic sector in Harvard. Support for Harvard's agricultural sector may be a promising economic development strategy for the town. However, this economic opportunity presented is limited by the financial challenges that the farmers themselves often face.

Outreach to farmers in Harvard for the Town's climate vulnerability assessment and this planning process revealed that economic viability is a key concern of many of Harvard's farms, particularly the large- and medium-sized farms. Survey results and conversations during community meetings showed that while climate change is a concern for farmers, many farmers are unable to address it until their businesses are on more solid footing.<sup>3</sup> This is particularly true for climate mitigation or adaptation techniques that require significant financial investment or a substantial change in agricultural practices or products. Many farmers simply do not have enough money or capacity to make major changes.



The financial challenges that farmers in Harvard face reflect statewide trends. The prices farmers get for the goods they produce have not increased enough to keep pace with increases in their costs.

## 95.9%



**increase in total production expenses of farms** in Massachusetts between 1987 and 2017.<sup>6</sup>

2012

## \$44,013 → \$48,156

2017

**Average production expenses** per farm in Worcester County increased nearly 10% from 2012 to 2017.<sup>7</sup>



Value (adjusted for inflation) of agricultural products in Massachusetts fell between 2007 and 2017.<sup>8</sup>

**The decline in value** reflects both the decrease in the amount of land available for agricultural production and the value of agricultural products not keeping pace with inflation.<sup>8</sup>

Additional key financial challenges facing Harvard's farmers are described below.

## Taxes

Taxes have been cited by a number of farmers as a significant expense.<sup>1,3</sup> This problem is common among agricultural communities across the country. It is especially difficult in communities like Harvard that have highly rated school systems, are located within an easy commute to robust job markets, and have very limited commercial tax base. In these communities, residential development pressure drives high land prices, which in turn results in high property taxes for large land owners, like farmers.

Some farmers are able to reduce their property taxes by enrolling in current use programs (Chapter 61, 61A), or by placing a conservation restriction or Agricultural Preservation Restriction (APR) on their land. However, many farms in Harvard do not qualify for these programs as they do not meet the minimum requirement for land or annual product sales. Of those that do qualify, some farmers still find that taxes are a substantial expense.\* These farmers pay full residential tax rates, including for 1.5 acres and their residence, which Harvard exempts from Chapter 61A, regardless of whether portions of the acreage and home are also used for agricultural production purposes. Overall average property taxes paid per farm in Worcester County increased 25% between 2012 and 2017.<sup>7</sup> Of the 1,568 farms in Worcester County, 1,145 had less than \$10,000 in sales. For the majority of farms, it is likely that a substantial portion of product sales goes to paying property taxes.<sup>7</sup> Farmers also report that they are burdened by taxes on equipment and on goods in inventory.

There are 51 Farms with some area in the 61-A program. Below are the sizes of the 61-A parcels; actual acres of production within a parcel are likely smaller.

### Counts of Chapter 61-A Farms by Parcel Size

Acre Ranges	Count
Minimum 5 Acres	6
6-9.9	9
10 - 24.9	23
25 - 49.9	7
50 - 99.9	4
100 - 124.9	0
125 - 149.9	1
150 - 200	1

Massachusetts state law establishes limited options for municipalities to adjust their local taxes and far-reaching changes would require passing laws at the state level. The Town could explore the use of specialized tax related programs for economic development to support agriculture, including TIF, DIF or the creation of a Special District. While these tools would not reduce farmer's overall taxes, they could provide farmers with an innovative means to access capital to fund infrastructure improvements.

## Regulations

Farmers in Harvard have noted that federal, state and local regulations also impact their bottom line. Issues range from the challenge of finding provisions related to agriculture in local zoning, to onerous requirements in the state building code, to state and local health code and regulations that preclude the production or sales of products, to complex federal labor laws. Regulatory compliance can cost farmers money directly—for example, permit fees or expenses for lawyers. Regulations can also have an opportunity cost when they prevent a farmer from taking advantage of business opportunities like expanding food processing, retail, or agritourism offerings.

## Access to Farmland

Over the last few decades, Harvard has been significantly built out. While the development has included extensive land conservation, it has nonetheless resulted in fragmentation of former agriculture lands and their conversion to non-agricultural uses like lawn or forested conservation land. This has made it difficult for existing and new farmers in Harvard to access farmland: there are fewer farm-appropriate parcels and they cost more. As one farmer described in a meeting for this project, even if they can find and afford to purchase additional farmland, the future property tax expenses put land out of reach. Another side of this issue is that as the size of farms shrink, the enterprises become more difficult to run successfully.

The Town could also explore creation of a land trust, or similar entity, that would conserve farmland and make it available to farmers at a reasonable cost, often via a long-term lease. A land trust would have the additional benefits of smoothing generational transitions, ensuring farmland is responsibly, and reducing participating farmers' property tax burden. To be effective, a land trust would need to be paired with methods to provide farmers with access to capital.

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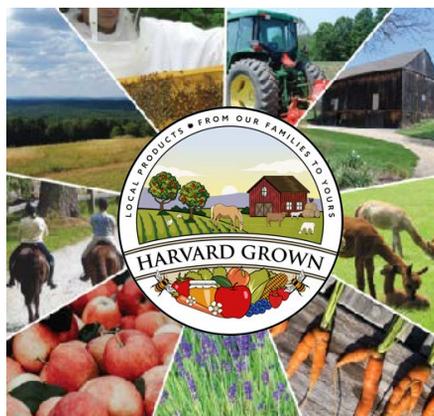
\* Chapter 61A is focused on agriculture. It requires a minimum of 5 acres that have been engaged in agriculture for at least two previous years. The property must generate at least \$500 per year in agricultural sales for the first 5 acres and \$5/acre for every additional productive agricultural acre beyond that. For more information on Chapter 61, see the guide "[Chapter 61 Programs](#)" published by UMass Extension and D.C.R.

## Agricultural Ecosystem

Many communities that have undertaken planning for farm viability have found that investments in other aspects of the food system are as important as improving conditions directly for farmers.<sup>9</sup> Worcester County has significant agricultural assets with both the highest number of farms and acres of farmland among counties in the state<sup>10</sup>, an existing regional “locally grown” marketing program, and a regional food hub. Input from farmers has indicated that there are gaps in the regional food system and in the networks of individuals and organizations that support it. Strengthening the regional food system could help take the pressure off farmers to solve problems individually.

Through the planning process, a number of opportunities for addressing these challenges and enhancing the economic viability of Harvard’s agriculture were identified:

- The “local food” and “farm-to-table” trends that are now extremely popular have created a unique and timely opportunity for agriculture. Harvard’s farmers are taking advantage of local food marketing to differentiate their products. Specifically, as part of this project, the *Harvard Grown* brand and marketing materials were developed to help promote Harvard farms and products as a collective.
- Several high-profile farms have a dedicated client and visitor base. Other farms can build off this reputation and customer base.
- The diversity of Harvard’s farms enhances the climate change and economic resilience of the Town’s agricultural sector.
- Harvard values its agricultural heritage and character. This provides a strong impetus for the Town to take actions to support agriculture.
- While some of the farms in Harvard have limited resources, others have supplemental income and may be able to absorb more risk. These farms could test techniques for adapting agriculture to climate change.



Visit the scenic Nashoba Valley west of Boston and you'll discover dozens of Harvard farms that make "farm to table" a reality. There are wonderful farm experiences waiting for everyone here: from roadside stands to pick-your-own, alpaca visits to farm tours, and CSAs to a selection of home and gift items.

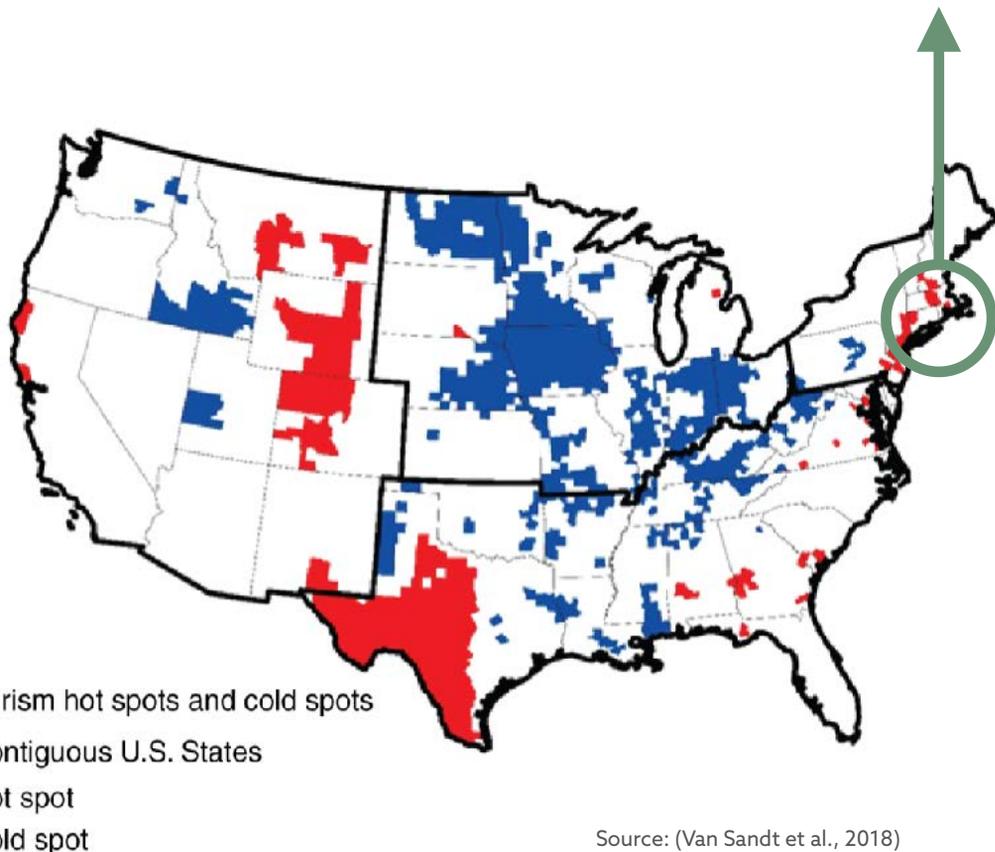
As part of this planning effort, the consultant, KLA, worked with the Agricultural Advisory Committee and local farmers to develop a brand and marketing materials for Harvard’s farms - *Harvard Grown*. Learn more at

[www.harvardgrown.org](http://www.harvardgrown.org)



## AN AGRITOURISM OPPORTUNITY

A key opportunity is to revise the Town's zoning to enable farms to diversify their operations with more agritourism, more diverse retail, and/or greater flexibility for farm structures. The impetus for expanding agritourism can be seen in recent data. Worcester County farms with income from agritourism and recreation earned an average of \$20,583 from those sources—a significant addition to the \$41,579 average market value of products sold per farm.<sup>11</sup> The number of farms offering agritourism in Worcester County doubled between 2012 and 2017 (from 12 to 24) while agritourism earnings nearly tripled (\$89,000 to \$247,000).<sup>11</sup> Worcester is one of a few agritourism “hotspots” in the United States according to a recent peer-reviewed journal article.<sup>12</sup> Harvard has all of the characteristics that are associated with greater revenue from agritourism: proximity to natural amenities or outdoor recreation opportunities, location in a more populated county, and having farms with grapes, fruit trees, nut trees, or specialty livestock.<sup>13</sup> Farm stays look especially promising from an income perspective. A study of agritourism in the Hudson Valley found that, “farmstays, increasingly in demand, generate between \$10K-\$30K annually per farm”.<sup>14</sup>



In addition to the general opportunities listed above, there are specific opportunities to address economic viability issues facing farmers in Harvard. These are found in the table of actions below, as well as in detailed implementation blueprints for a select set of actions that should be considered for implementation in the near-term.

Economic Viability Actions	Timeframe*	Co-Benefits with Other Plan Elements	Implementation Blueprint
Reduce tax burden on farmers for their land, buildings, and equipment	Short/Long		X
Revise Harvard's zoning bylaw to allow greater flexibility for farm-related uses	Medium		X
Establish an organization, or empower an existing one, to work on behalf of Harvard's agricultural community, including applying for and managing grants	Medium/Long	  	X
Map land that is suitable for farming but not currently in production. Use the information to expand participation in farmland connection programs	Short	 	X
Advocate for state building code changes to better fit agricultural uses	Long		
Establish a peer-to-peer farmer technical resource exchange to support business planning, navigating regulations, agricultural practices, and new technologies	Medium	 	
Identify unprotected agricultural land parcels and establish permanent protection for them	Short/Long	 	
Adopt local policy that restricts the use of agriculturally viable land for non-agricultural projects or require mitigation when agricultural land is used	Short	 	
Streamline permitting for agricultural projects, including creating a permitting guidebook to help farmers to navigate Harvard's zoning, board of health regulations, the state food code, and other applicable local and state laws and regulations	Short		
Increase farmers' access to capital through a local investment fund, and/or use state economic development provisions like TIF, DIF, or Special Districts to fund ag infrastructure improvements for climate resilience	Medium	  	
Develop program to expand local labor pool for farms (especially connecting to internships, subsidizing wages, etc.)	Medium	 	
Ensure that Town can exercise Chapter 61/61A right of first refusal for chapter land that is being sold	Medium		
Adopt transfer of development rights (TDR) bylaw to conserve priority agricultural lands and ensure non-ag development occurs in designated receiving zones	Medium	 	
Assist farmers in obtaining crop insurance	Short		

\* Short = less than 1 year  
 \* Medium = 1-3 year  
 \* Long = 4-5 years





1

**ACTION:**

Map land that is suitable for farming but not currently in production. Use information to expand participation in farmland connection programs.

**DESCRIPTION OF ACTION**

Gaining access to farmland is difficult for new farmers and for those looking to expand their operations. Meanwhile, there is land in Harvard that is suitable for agriculture but is not being farmed. This action would map land that is suitable for agriculture and then publicize it to prospective farmers.

**CHAMPION(S)**

Economic Development Department

	IMPLEMENTATION STEPS	PLANNING CONSIDERATIONS	
		Timeframe* (Short, Medium, Long)	Key Partners
1	<p>Work with the Agricultural Advisory Commission to develop criteria for acceptable farmland. Criteria to consider include:</p> <ul style="list-style-type: none"> <li>• Soils</li> <li>• Size of land</li> <li>• Availability of water</li> <li>• Access</li> <li>• Adjacent uses</li> </ul>	Short	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> </ul>
2	<p>Develop a GIS map that identifies suitable areas of land. Ground truth the map with aerial photos and site visits.</p>	Short	<ul style="list-style-type: none"> <li>• Montachusett Regional Planning Commission</li> <li>• College and university students</li> </ul>
3	<p>Contact property owners to determine whether they are interested in providing access to their land to a farmer. This investigation should include land that is currently owned by the Town.</p>	Short	<ul style="list-style-type: none"> <li>• Town of Harvard</li> <li>• Local landowners</li> </ul>
4	<p>Post suitable properties to farm land connection websites and related organizations.</p>	Short/Ongoing	<ul style="list-style-type: none"> <li>• Land for Good</li> <li>• New England Farm Land Finder</li> <li>• Agricultural Advisory Commission</li> </ul>
5	<p>Assist property owners and farmers in negotiating appropriate leases.</p>	Short/Ongoing	<ul style="list-style-type: none"> <li>• Land for Good</li> </ul>

\* Short = less than 1 year; Medium is 1-3 years, Long is 4-5 years

## FUNDING RESOURCES

**Are there grants or other funding resources that can help support this action?**

**GIS support might be provided by:**

- Montachusett Regional Planning Commission
- Students at area colleges or universities

## TECHNICAL RESOURCES

**Are there case studies, reports, or organizations that could be a resource for implementing this action?**

[New England Small Farm Institute's New England Land Link](#)

[New England Farm Finder](#)

[Land for Good](#) provides a Build-a-Lease tool and other resources for connecting farmers and landowners.

[Farmland Access Legal Toolkit](#) includes resources on Leasing and other farmland Access tools.

### Case Study

[All Farmers](#) is an organization in the greater Springfield area. They support refugee and new immigrant farmers in accessing farmland, training, and resources. They have partnered with municipalities and other landowners to gain access to underutilized land. All Farmers supports over 60 families. Most families have a low or very low income and the food they grow comprises a significant portion of their diet.

## MEASURING SUCCESS\*

**How can we measure the progress and success of this action?**

### Outputs\*:

- Map of potential farmland
- List of property owners who are interested in providing access to land

### Outcomes\*:

- Number of properties listed on land link websites
- Number of leases signed
- Number of acres converted to active agriculture
- % increase in agricultural products produced within Harvard

\* An output is a measure of what has been created. An outcome is the level of performance or achievement that occurred based on what was created.

## EQUITY AND ENGAGEMENT

**How can we engage the populations that are likely to be part of or benefit from implementation of this action?**

Engage with landowners by explaining the benefits of providing farmland access and the tools available to make it easy to provide access to farmers.

Farmland seekers can be engaged by networking with existing farmers in Harvard and beyond, contacting agricultural schools and beginning farming networks, and using farmland connection programs.

**How do we ensure that risks and benefits associated with this action are shared equitably across Harvard's diverse agricultural community?**

Develop a system that provides equitable access to potential farmers. Options include a lottery, or a scoring system for matching farmers with landowners that provides extra points for beginning farmers, low income farmers, and/or other marginalized groups.



2

**ACTION:**

Establish an organization, or empower an existing one, to work on behalf of Harvard’s agricultural community, including applying for and managing grants.

**DESCRIPTION OF ACTION**

Some problems and opportunities are too big for an individual farmer to tackle alone. The implementation of the actions identified in this Climate Action Plan will require focused coordination and efforts to secure funding and technical support. This action would establish an organization, or empower an existing organization, to coordinate efforts to improve conditions for farmers in Harvard.

**CHAMPION(S)**

Agricultural Advisory Commission

IMPLEMENTATION STEPS	PLANNING CONSIDERATIONS	
	Timeframe* (Short, Medium, Long)	Key Partners
<p>1 Utilize this Climate Action Plan, as well as other previous plans, to identify the most critical initiatives needed for Harvard’s agricultural community.</p> <ul style="list-style-type: none"> <li>Identify the community resources available and those needed to take collective action, including people, skills, financial resources, partner organizations, and knowledge.</li> </ul>	Short	<ul style="list-style-type: none"> <li>Harvard’s farmers</li> <li>Economic Development</li> </ul>
<p>2 Identify the steps needed to establish a non-profit entity that can support the initiatives (or a targeted subset of initiatives) identified in Step 1.</p> <ul style="list-style-type: none"> <li>Consider a “Friends of” model similar to “Friends of the Harvard Public Library.”</li> </ul>	Short	<ul style="list-style-type: none"> <li>Massachusetts Nonprofit Network</li> <li>Economic Development</li> <li>The Carrot Project</li> </ul>
<p>3 Identify individual(s) or organization(s) that can volunteer, fiscally sponsor, and/or incorporate the non-profit. Identify roles for supportive people and organizations and obtain their commitment to support the lead person or organization. If needed, obtain fiscal sponsorship from an existing non-profit organization. If needed, create memorandums of understanding or other partnership documents.</p>	Medium	<ul style="list-style-type: none"> <li>American Farmland Trust</li> <li>Harvard’s farmers</li> <li>The Carrot Project</li> <li>Land for Good</li> <li>Central Mass Grown</li> </ul>
<p>4 Work to formally establish the nonprofit entity and implement early wins to build momentum for further fundraising and growth.</p>	Medium/Long	<ul style="list-style-type: none"> <li>Massachusetts Nonprofit Network</li> <li>Economic Development</li> <li>The Carrot Project</li> <li>Land for Good</li> <li>Central Mass Grown</li> <li>American Farmland Trust</li> </ul>

\* Short = less than 1 year; Medium is 1-3 years, Long is 4-5 years

## FUNDING RESOURCES

**Are there grants or other funding resources that can help support this action?**

**GIS support might be provided by:**

- Individual donors
- Local Businesses
- [Massachusetts Food Ventures Program](#)
- [MDAR Climate Smart Agriculture Program](#) (available only to commercial agriculture operations)
- [The AgroEcology Fund](#)
- [Clif Bar Family Foundation](#)
- [FarmAid](#)
- [Food and Farm Communication Fund](#)
- [Harry Chapin Foundation](#)
- [Jessie Smith Noyes Foundation](#)
- [Lydia B. Stokes Foundation](#)
- [Northeast Sustainable Agriculture and Education \(SARE\), Farmer Grant Program \(for commercial producers\)](#)
- [Northeast Sustainable Agriculture and Education \(SARE\), Research and Education Grant Program \(eligibility includes nonprofits and municipalities\)](#)
- [Solidago Foundation](#)

## TECHNICAL RESOURCES

**Are there case studies, reports, or organizations that could be a resource for implementing this action?**

**Grant-Writing Tips:**

- <https://fyi.extension.wisc.edu/foodsystemstoolkit/tips-for-writing-agency-foundation-proposals/>
- <https://michaelfields.org/grant-advising-resources/>
- [USDA Community Prosperity resource matrix](#) presents USDA's financial, technical, training and planning assistance opportunities for rural and underserved communities
- [Farm Credit East 2020 Grants and Incentives for Northeast Agriculture](#) provides a description of available grants. Farm Credit East also provides grant writing services.

**Case Studies:**

[Island Grown Initiative](#) is "building a regenerative, equitable food system on Martha's Vineyard that engages, informs, and integrates the community." The project began in 2005 with a series of dinner parties to talk about local food systems. It has since grown to include work on a variety of food systems issues impacting Martha's Vineyard.

[Grow Food Northampton's](#) mission is to promote food security by advancing sustainable agriculture in the Northampton, Massachusetts area. Grow Food Northampton was then established as an official 501C(3) to raise money, purchase land and develop a community farm. It has expanded into management of a farmers market, a farm-to-school education program, a mobile market, and other advocacy for local food access for low income residents.

## MEASURING SUCCESS\*

**How can we measure the progress and success of this action?**

**Outputs\*:**

- Meeting notes detailing problems, opportunities, resources and gaps
- Establishment of non-profit
- Statement of organizational roles and commitments

**Outcomes\*:**

- Funding raised and redistributed to Harvard agricultural projects

\* An output is a measure of what has been created. An outcome is the level of performance or achievement that occurred based on what was created.

## EQUITY AND ENGAGEMENT

**How can we engage the populations that are likely to be part of or benefit from implementation of this action?**

This action depends on engagement with a wide range of people with diverse backgrounds and interests: farmers, local food advocates, several government agencies, and agricultural, environmental and food system organizations. Success will depend on building strong interpersonal relationships, making effective use of people's time and delivering results—even if the results are modest to begin with. A focus on actions that can be implemented with available resources will help prevent over-reach and paralysis due to the overwhelming need for improvements.

**How do we ensure that risks and benefits associated with this action are shared equitably across Harvard's diverse agricultural community?**

Participants will need to wrestle with two issues that ultimately relate to equity. The first, is the potential tension between small farmers and large farmers. Democratic decision making could favor the many small farmers who vastly outnumber large farmers in Harvard. On the other hand, larger farmers have access to grant-funding resources that smaller farmers do not. Finding common interests will be critical.

This effort should also consider the value of extending its reach beyond Harvard to serve the needs and leverage resources available in the surrounding region.



3

**ACTION:**

Reduce tax burden on farmers for their land, buildings, and equipment.

**DESCRIPTION OF ACTION**

Taxes are a significant expense that threaten the financial viability of farms in Harvard. . In addition, money that is spent on taxes has an opportunity cost; farmers are not able to use that money to invest in adaptation to climate change.

Current tax relief programs are insufficient for reducing the burden on farmers. Chapter 61, 61A, and 61B reduces taxes on land that is in “current use” for forestry, farming, or open space and recreation. However, many farms are too small to participate. Even those that can, find that buildings and equipment are still taxed at full rates—leading to unaffordable tax bills.

Through this action, the Town of Harvard and individual farmers would evaluate and implement measures to reduce the tax bills of farmers. This action will ultimately help to reduce the conversion of farmland to other land uses, enable adoption of climate-resilient agricultural practices, and safeguard Harvard’s food security and rural agricultural character.

**CHAMPION(S)**

Agricultural Advisory Commission

IMPLEMENTATION STEPS	PLANNING CONSIDERATIONS	
	Timeframe* (Short, Medium, Long)	Key Partners
<p>1 Ensure that farmers understand existing tax relief options including:</p> <ul style="list-style-type: none"> <li>• Chapter 61, 61A, and 61B.</li> <li>• Sales tax exemption on purchases for agricultural use.</li> <li>• Excise tax reductions for farm equipment and exemption from personal property for farm utensils (hand tools) and some animals. (See M.G.L. 59, Sec 8A.)</li> <li>• Enrollment of farmland in Agricultural Preservation. Restrictions (APRs) and conservation restriction which would reduce the tax value of those properties.</li> <li>• Establishment of a non-profit organization which is exempt from taxes to own and lease farmland.</li> </ul>	Short	<ul style="list-style-type: none"> <li>• Assessors Department and Board of Assessors</li> <li>• Economic Development</li> <li>• Local tax, legal, and business assistance professionals</li> </ul>

\* Short = less than 1 year; Medium is 1-3 years, Long is 4-5 years

IMPLEMENTATION STEPS	PLANNING CONSIDERATIONS	
	Timeframe* (Short, Medium, Long)	Key Partners
<p><b>2</b> Evaluate opting into provisions in the state tax code that would enable Harvard to reduce taxes on farms:</p> <ul style="list-style-type: none"> <li>• Consider exempting qualified farmers from all excise taxes for farm machinery, equipment and animals. This measure requires a 2/3rds vote of the local appropriating authority. It does not apply to corporations. (See M.G.L. 59, Section 8A.)</li> <li>• Consider adopting the "small commercial exemption" which would exempt up to 10% of the value of commercial properties that are under \$1 million and reallocate the lost taxes to larger commercial and industrial properties. This exemption has been adopted by Auburn, Avon, Bellingham, Braintree, Dartmouth, New Ashford, Seekonk, Somerset, Westford and Wrentham.</li> </ul>	Medium	<ul style="list-style-type: none"> <li>• Finance Department</li> <li>• Economic Development</li> <li>• Board of Assessors</li> <li>• Finance Committee</li> <li>• Select Board</li> </ul>
<p><b>3</b> Advocate for changes to state laws to reduce taxes on farmers:</p> <ul style="list-style-type: none"> <li>• Advocate for state legislation to exempt agricultural properties from Massachusetts estate taxes.</li> <li>• Advocate for state legislation to expand tax relief for farm equipment and buildings.</li> <li>• Advocate for state legislation to enable term-easements to reduce property taxes for farms. Term-easements are similar to conservation restrictions and Agricultural Protection Restrictions (APRs) in that they restrict development. The difference is that term-easements apply for a fixed period of time (they are short-term instead of in perpetuity). When a term-easement is placed on a property, the property values and therefore taxes should be reduced.</li> </ul>	Medium	<ul style="list-style-type: none"> <li>• Town residents</li> <li>• Select Board</li> <li>• State Representatives and Senators</li> <li>• Massachusetts Department of Agricultural Resources</li> <li>• Mass Audubon</li> <li>• American Farmland Trust</li> <li>• Massachusetts Food Systems Collaborative</li> </ul>
<p><b>4</b> Explore the use of tax increment financing (TIF) to abate tax increases for agricultural properties that are engaged in improvements for agricultural viability, especially improvements related to climate change. (Note: this would be an innovative use of TIF in Massachusetts)</p>	Medium	<ul style="list-style-type: none"> <li>• State Representatives and Senators</li> <li>• Massachusetts Department of Agricultural Resources</li> <li>• Mass Audubon</li> <li>• American Farmland Trust</li> <li>• Massachusetts Food Systems Collaborative</li> </ul>

\* Short = less than 1 year; Medium is 1-3 years, Long is 4-5 years

## FUNDING RESOURCES

### *Are there grants or other funding resources that can help support this action?*

Most of the steps in this action should not require funding. Those that do are best funded with existing Town resources.

## TECHNICAL RESOURCES

### *Are there case studies, reports, or organizations that could be a resource for implementing this action?*

[Farm & Food Law: A Guide for Lawyers in the Legal Food Hub Network](#) provides an introduction to many legal issues facing farmers including a section on Massachusetts taxes that begins on page 110.

- [Lincoln Institute of Land Policy, State Property Tax Information](#)
- [Massachusetts Smart Growth/Smart Energy Toolkit Modules: TIF/DIF](#)
- [The Carrot Project tax resources](#)
- [Center for Agriculture and Food Systems, Farmland Access Legal Toolkit](#)

[Woodstock CT Property and Farm Machinery Tax Abatement Ordinances](#) is an example of a local tax abatement program. This is an example of the kind of abatement that could be offered in Massachusetts if it was allowed by changes in state legislation.

## MEASURING SUCCESS\*

### *How can we measure the progress and success of this action?*

#### **Outputs\*:**

- Increase in participation in tax relief opportunities (e.g. acres in Chapter 61, acres in APR programs, etc).
- Decline in percentage of Harvard farms' revenues that are used to pay taxes

#### **Outcomes\*:**

- Increase in number of acres of land in productive, beneficial agricultural use in Harvard
- Decline in acres of farmland converted to other uses

\* An output is a measure of what has been created. An outcome is the level of performance or achievement that occurred based on what was created.

## EQUITY AND ENGAGEMENT

### *How can we engage the populations that are likely to be part of or benefit from implementation of this action?*

Compile a contact list for all farmers in Harvard. Use the list to conduct outreach.

### *How do we ensure that risks and benefits associated with this action are shared equitably across Harvard's diverse agricultural community?*

The primary equity risk of this action is that it could transfer tax burden to low-income residents and/or other vulnerable commercial enterprises. To counter this risk, use best practices in community engagement to ensure that vulnerable and marginalized groups are engaged in developing and debating the implementation of this action.



4

**ACTION:**

Revise Harvard’s zoning bylaw to allow greater flexibility for farm-related uses.

**DESCRIPTION OF ACTION**

Harvard’s Right-to-Farm Bylaw, the Massachusetts Zoning Act, and the Town’s zoning attempt to limit onerous local regulations that would infringe upon farming. However, as agriculture has evolved, some farmers have found that the Town’s zoning prevents them from undertaking activities that could help their businesses.

Some farms are not able to undertake activities because they do not meet the size threshold to be considered agricultural; others meet the size threshold but still do not have enough property, or capital, to meet the site and performance standards in the Town’s zoning. Other farmers, challenged by increasing costs and competition, want to expand their business in ways that do not meet the definition of agriculture protected under current zoning. A farmer may want to transition from a farm stand to a farm store that mostly sells products from other local farms. Another may want to establish a farm restaurant or a tasting room. Still others may want to take advantage of interest in local food to hold events, host trainings, or offer farm stays—activities that go beyond what is currently allowed for agritourism if the experience itself is the main product, not the sale of farm goods.

Under this action, the Town of Harvard will evaluate which agriculture-related commercial and agritourism activities should be allowed in Harvard and under what conditions.

**CHAMPION(S)**

Agricultural Advisory Commission

IMPLEMENTATION STEPS	PLANNING CONSIDERATIONS	
	Timeframe* (Short, Medium, Long)	Key Partners
1 Gather input from a wide range of farmers in Harvard about which agriculture-related commercial, and agritourism activities they might want to pursue.	Short	• Economic Development Department
2 Review bylaws on this topic from other communities.	Short	• Economic Development Department • Land Use Boards • Montachusett Regional Planning Commission
3 Gather information about innovative agriculture-related and agritourism business models on farms throughout the northeast that Harvard’s farmers may consider in the future.  • Map potential business activities against farm characteristics (required size, infrastructure needs, etc.) to identify the potential geographic spread of the activities in town.  • Assess impacts on neighboring properties and the Town as a whole.  • Assess the individual and town-wide economic, land use, and food systems impacts of allowing or not allowing these activities.	Medium	• External consultant and/or local college or university students

\* Short = less than 1 year; Medium is 1-3 years, Long is 4-5 years

IMPLEMENTATION STEPS	PLANNING CONSIDERATIONS	
	Timeframe* (Short, Medium, Long)	Key Partners
<p>Hold a community conversation about the potential positive and negative impacts of ag-related commercial activities and agritourism.</p> <p>4 Ensure this conversation goes beyond immediate abutter concerns to consideration of the long-term impacts on the town's land use, economy, food system, scenic resources, and identity.</p> <p>Discuss how bylaws from other communities have maximized benefits and mitigated negative impacts.</p>	Medium	<ul style="list-style-type: none"> <li>• Economic Development Department</li> <li>• Land Use Boards</li> <li>• Community organizations</li> <li>• Neighborhood groups</li> </ul>
<p>5 Determine which uses should be allowed where in Harvard and with what performance characteristics. Considerations could include the size or location of farm, hours of operation, site design, offsite impacts related to traffic, noise, etc.</p>	Medium	<ul style="list-style-type: none"> <li>• Economic Development Department</li> <li>• Land Use Boards</li> </ul>
<p>6 Develop draft zoning revisions in consultation with the Agricultural Advisory Commission, the Planning Board, the Zoning Board of Appeals, and the Conservation Commission. Draft zoning revisions can build off the existing research by the Agricultural Advisory Commission, the draft bylaws previously produced by the Department of Community and Economic Development, and model bylaws by others.</p>	Medium	<ul style="list-style-type: none"> <li>• Economic Development Department</li> <li>• Land Use Boards</li> <li>• The Montachusett Regional Planning Commission</li> </ul>
<p>7 Conduct extensive public outreach to inform Harvard citizens about the proposed bylaws and solicit their feedback. Further revise the zoning bylaw, if needed.</p>	Medium	<ul style="list-style-type: none"> <li>• Harvard residents</li> <li>• Community organizations</li> <li>• Neighborhood groups</li> <li>• Existing businesses</li> <li>• Economic Development Department</li> <li>• Land Use Boards</li> </ul>
<p>8 Bring the zoning revisions to Town Meeting for a vote.</p>	Medium	<ul style="list-style-type: none"> <li>• Select Board</li> <li>• All Town Boards and Committees</li> <li>• Harvard residents</li> <li>• Community organizations</li> <li>• Neighborhood groups</li> <li>• Existing businesses</li> </ul>

\* Short = less than 1 year; Medium is 1-3 years, Long is 4-5 years

## FUNDING RESOURCES

### Are there grants or other funding resources that can help support this action?

Depending on the scale and scope of zoning changes, this action can be completed by volunteers, Town staff, or outside consultants.

#### Technical Assistance

- Local Technical Assistance and/or District Local Technical Assistance Grant from The Montachusett Regional Planning Commission
- [Conservation Law Foundation's Legal Food Hub](#) is "a free legal services clearinghouse for farmers, food entrepreneurs, and related organizations."

#### Grant funding

- EEA Planning Assistance Grant

## TECHNICAL RESOURCES

### Are there case studies, reports, or organizations that could be a resource for implementing this action?

#### Overview of Issues

- [Community Guidance to Maintain Working Farms and Forests](#) discusses business uses to support farms and forests. Includes discussion of issues, case studies, model bylaw.
- "[Agritourism Zoning Down on the Farm](#)" an issue of the American Planning Association's *Zoning Practice* magazine (March 2004) and provides an overview of zoning issues. Includes sample definitions and a matrix comparing a sample of bylaws from across the country.

#### Example Bylaws

- [Accessory Businesses at Active Farms Bylaw, Littleton MA](#)
- [Farm Accessory Uses, Gloucester RI \(Chapter 350-58.2 and various other changes\)](#)
- [Agricultural exemption from site plan approval, Hadley MA \(Zoning Bylaw, §8.3\)](#)
- [Farm Stand Special Rule, Grafton MA \(Zoning Bylaw Section 3.2.2.5\)](#)
- [Accessory On Farm Businesses, Vermont Act 143](#)

#### Legal Background

- "[Agri-tourism and Agriculture](#)," [MDAR Agricultural Law Memo](#) provides a set of tests for determining whether an activity should be considered agri-tourism under current state law.
- "[Agricultural Activity-Incidental Uses](#)," [MDAR Agricultural Law Memo](#) gives examples of allowed incidental uses associated with agriculture under current state law.

## MEASURING SUCCESS\*

### How can we measure the progress and success of this action?

#### Outputs\*:

- Example agricultural zoning bylaws
- Revised zoning bylaw for Harvard

#### Outcomes\*:

- Decline in acres of farmland converted to other uses
- Increase in the number of people employed in agriculture-related activities in Harvard
- Increased revenue for farm operators
- Increase in diversity of goods and services sold on Harvard's farms

\* An output is a measure of what has been created. An outcome is the level of performance or achievement that occurred based on what was created.

## EQUITY AND ENGAGEMENT

### How can we engage the populations that are likely to be part of or benefit from implementation of this action?

Farmers in Harvard are the primary population that will benefit from this action. Because of the seasonality of farming, engagement of farmers should take place during the winter. Asynchronous opportunities for input—like surveys and phone calls may be more effective than community meetings. However, because of the diversity of farms in Harvard, opportunities for farmers to hear from each other and engage in discussions is also essential.

### How do we ensure that risks and benefits associated with this action are shared equitably across Harvard's diverse agricultural community?

To ensure that bylaw changes are developed equitably, the town can:

- Clearly articulate the policy objectives of bylaw changes. Evaluate how farms of different types and sizes are impacted by those policy objectives.
- Ensure meaningful participation by farmers of all types, sizes, and business models in community discussions and drafting and reviewing bylaw changes.

There may be an impulse to limit zoning changes to larger properties. The argument for this approach is that it will reduce the number of impacted abutters and larger properties can have greater buffering from neighbors. The downside is that it will exclude smaller farmers who are often less able to comply with existing zoning and who already suffer from lacking economies of scale. The town should carefully weigh the pros and cons of taking this approach.



# Resource Efficiency & GHG Reduction

Efficient use of resources, such as energy, water, and materials at Harvard's farms will not only reduce operational costs, but also reduce impacts to the environment, including emissions of greenhouse gases (GHGs).

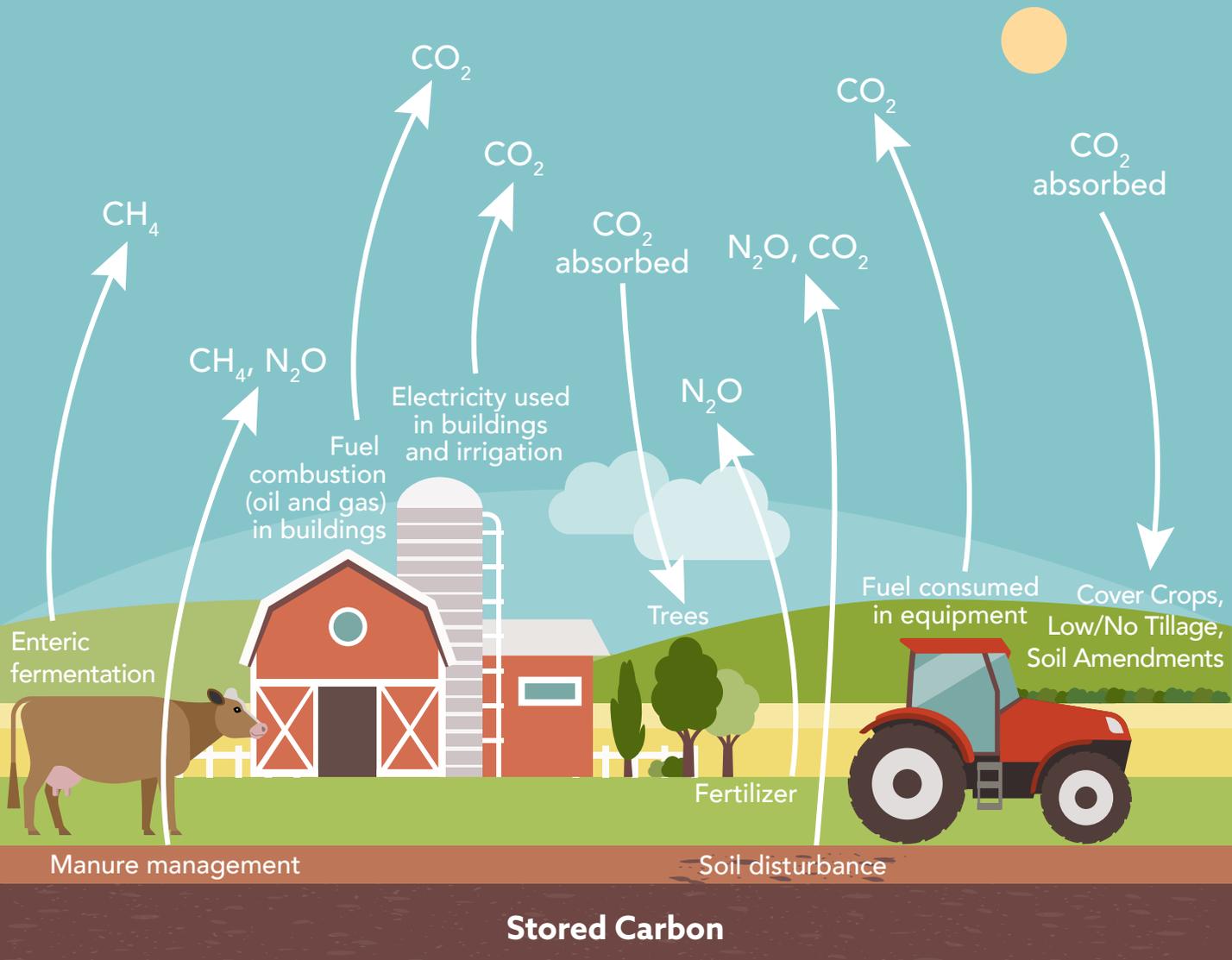


## Goals

- Reduce energy consumption and/or GHG emissions in farm operations
- Increase utilization of renewable sources of energy
- Minimize water consumption in farm operations
- Manage waste through circular economy principles

While agriculture is a significant and visible part of Harvard's identity, active areas of production only make up about 8% of total land area.<sup>15</sup> Globally, emissions related to agricultural production activities, not counting land use change account for about 12% of all GHGs and only about 6% in the United States.<sup>16</sup> In Harvard, GHGs from direct agricultural activities are estimated at less than 1% of overall community-wide GHG emissions. In some ways, this reflects the lighter footprint approach that many Harvard producers already take on their farms. Small, diversified vegetable farms do not have the same level of mechanization and other inputs needed to support intensive monoculture operations. Livestock numbers in town are at a scale where land can absorb and recycle waste and nutrients locally. This and other practices to reduce fertilizer use limit GHGs from that source compared to what they could be if only synthetic fertilizers were applied.

# Energy Consumption and GHGs on Harvard Farms



As seen in the diagram above, greenhouse gases (GHGs) from agricultural activities directly are not the only sources of emissions from farms. Within Harvard's GHG inventory, energy use in buildings to support farm operations is one area that is currently aggregated with all other building energy use in the community, as well as the energy used to pump well water for irrigation and livestock. Like all businesses, some amount of their activity takes place beyond their fences, such as in transporting crops to the market or customers coming to the farm. Efficiency opportunities to reduce energy and water demand exist across farm operations.



An agrivoltaic installation in Amherst, MA.  
Photo source: Civil Eats and Hyperion Systems, LLC

### Energy

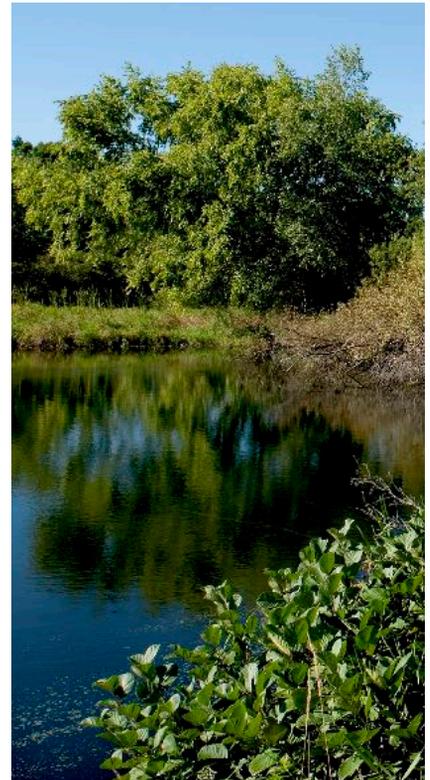
The open area that rural farms provide create unique opportunities for renewable energy deployment. So called “[agrivoltaics](#)” are large solar arrays integrated with farm production. Sometimes this can be done with row crops that can thrive with some amount of shading. Solar integrated with livestock can even improve productivity and animal health and comfort through the shading provided by the panels, a “win-win” benefit for reducing GHG emissions while also providing resilience benefits in extreme heat events. Integrating solar installations into farms can create diversified income streams and reduce land conversion pressure to develop large solar farms. [Extra incentives](#) are available from the State to develop solar resources while maintaining productive agricultural land.

As more renewable energy is produced on site, the possibility for 100% renewable energy-powered farms become within reach. Today, there are many electric small equipment options for chain saws and trimmers and just now the first generations of full-size electric tractors are coming to market and likely to expand soon. These options may have a price premium or uncertainty around performance compared to the models that farmers are accustomed to, and options to lower the barriers or provide opportunities to try a new technology can help to speed the transition.



## Water

Surveys of Harvard farms has indicated that at least in normal years, irrigation demand and water consumption is fairly moderate, with many only irrigating as needed.<sup>1</sup> On the other hand, as drought conditions are becoming more frequent, farms may find their irrigation demands increasing, just as there is also less water available for it. Investments to ensure that irrigation is applied effectively where it is needed and also pulled from the ground efficiently will help Harvard maintain good stewardship even in times of high irrigation demand. Drought driven irrigation demands can also put strain on electrical systems, just as air conditioners do during extreme heat events. Using high efficiency water pumps can help reduce peak demand on hot summer days as well as save energy throughout the year. Rainwater capture, especially in locations that typically generate stormwater runoff, can also reduce demand on groundwater as well as the energy used to extract it. Timers, sensors, and automation for irrigation equipment can also reduce water consumption and over-watering.



## Waste

Farms in Harvard generate various forms of waste, including animal, food, and vegetative waste, as well as containers and packaging used for planting, transporting, and selling their products. Composting is practiced throughout Harvard farms on an individual basis. Some efficiencies could be gained with a central operation that could also collect from the wider town. A larger central operation may be able to produce a higher quality end-product as well.

Animal and food waste contain a significant amount of energy that could be captured and turned into renewable biogas. Small scale digesters are becoming more widely available and could be well positioned to accompany expanding livestock operations.

One aspect of seasonal plant production that can be hard to escape is the black plastic trays and pots that are used to raise plants from seed to sale or to planting. Even well-intentioned recycling of these items can fail as automatic sorting machines at recycling processing centers reject them. Resourceful producers may get several uses out of them before disposal but it ultimately ends up as waste. Two different strategies could help to alleviate the issue of packaging waste from farm operations. One would be to invest in durable, reusable containers for CSA shares or wholesale distribution. These containers could carry the *Harvard Grown* brand and their visibility could help to share the message that Harvard farms are conscious about their impact on the environment. Another could be in using alternative single use trays and pots made from biodegradable materials.

Resource Efficiency & GHG Reduction Actions	Timeframe*	Co-Benefits with Other Plan Elements	Implementation Blueprint
Establish Machinery and Tool Exchange to share equipment, especially for small farmers	Short	 	X
Coordinate among farmers for the collaborative purchasing of farm supplies and equipment	Short	 	X
Establish a Community Kitchen to support creation of value-add food products	Medium	 	X
Formalize/centralize composting operations across farms to produce higher grade finished compost to be redistributed among farms	Medium		
Evaluate opportunities for "agrivoltaics" or community solar arrays on pasture land	Medium		
Install high efficiency pumps on wells and irrigation equipment	Short		
Identify opportunities for large scale composting of community-wide food and green waste to reincorporate into agricultural soils	Short		
Encourage the use of clean rainwater for landscaping, irrigation, and interior non-potable uses	Long		
Install timers and other automation for irrigation equipment	Short		
Coordinate among farms with animal production to assess the viability of anaerobic digestion with current or planned manure volumes	Long		
Coordinate Farm Energy Audits of each producer in the community	Medium		
Weatherize greenhouses and coordinate annual end-of-season checkup on maintenance of seals, fans, heating equipment prior to start of spring production	Medium		
Investigate opportunities for solar thermal systems to preheat food processing or brewing water	Medium		

\* Short = less than 1 year  
 \* Medium = 1-3 year  
 \* Long = 4-5 years





1

**ACTION:**

Coordinate among farmers for the collaborative purchasing of farm supplies and equipment.

**DESCRIPTION OF ACTION**

Pilot a collaborative purchasing initiative to take advantage of volume discounts which can enable wider use of organic fertilizer, biodegradable plant containers, and other farm supplies. Over time, look for opportunities to formalize the initiative into a purchasing cooperative or grange model. This could also create a mechanism for collective purchasing of electric equipment.

**CHAMPION(S)**

Town Agricultural Coordinator

	IMPLEMENTATION STEPS	PLANNING CONSIDERATIONS	
		Timeframe* (Short, Medium, Long)	Key Partners
1	Recruit participants and assess needs. Consider the following: <ul style="list-style-type: none"> <li>• What common supplies are used across farms?</li> <li>• What preferred products are currently out of reach?</li> <li>• Are there beneficial practices farmers would use if supplies/equipment were more affordable?</li> </ul>	Short	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Harvard's Farmers</li> </ul>
2	Determine logistics needed to implement: <ul style="list-style-type: none"> <li>• Are there feasible staging areas or host farms able to receive, store, and distribute materials?</li> <li>• Are there any regulatory restrictions that need to be considered?</li> <li>• What digital/financial platforms can be used for payments?</li> </ul>	Short	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Participating farms</li> <li>• Other public / conservation land holders</li> </ul>
3	Establish rules for participation/membership.	Medium	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Participating farms</li> <li>• Legal counsel</li> </ul>
4	Identify suppliers that work in necessary volume and could give discounts.	Short	<ul style="list-style-type: none"> <li>• Padula Brothers/United Ag &amp; Turf</li> <li>• Other current vendors</li> </ul>
5	Develop purchasing schedules - identify key deadlines for seasonal orders.	Medium - Long	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Participating farms</li> </ul>
6	Work to formalize initiative into an established organization like a 'grange' or purchasing co-operative.	Long	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> </ul>

\* Short = less than 1 year; Medium is 1-3 years, Long is 4-5 years

## FUNDING RESOURCES

### *Are there grants or other funding resources that can help support this action?*

Pilot project can be performed informally with no outside investment needed.

Scaling up to a purchasing co-op and formal organization would likely require investment and establishment of a member dues structure.

## TECHNICAL RESOURCES

### *Are there case studies, reports, or organizations that could be a resource for implementing this action?*

Agricultural Co-ops: <https://www.cccd.coop/co-op-info/co-op-types/agricultural-co-ops>

As electric tractors and other farm equipment come to market, consider group purchasing models to scale up their use. [\*Electric Vehicle and Photovoltaic Power Purchase Handbook\*](#)

## MEASURING SUCCESS\*

### *How can we measure the progress and success of this action?*

#### **Outputs\*:**

- Reduced purchasing costs
- Reduced solid waste
- Reduced delivery traffic throughout Harvard
- Greater use of environmentally friendly farm inputs

#### **Outcomes\*:**

- Improved resource efficiency of Harvard agriculture
- Strengthened networks among farmers
- Ability to report collective impact of Harvard's agricultural purchasing practices.

\* An output is a measure of what has been created. An outcome is the level of performance or achievement that occurred based on what was created.

## EQUITY AND ENGAGEMENT

### *How can we engage the populations that are likely to be part of or benefit from implementation of this action?*

Proactively recruit and identify participants who may benefit, especially small hobby farmers who may not be well connected.

Utilize the "Best Practices Forum" to discuss pros and cons of different products tried by individual farms.

### *How do we ensure that risks and benefits associated with this action are shared equitably across Harvard's diverse agricultural community?*

Consider multiple "buying groups" that may be able to serve different types of farms better.



## 2

## ACTION:

Establish a Community Kitchen to support creation of value-add food products.

## DESCRIPTION OF ACTION

A community kitchen would enable the creation of more value-add farm products in a facility that can meet all regulatory requirements and provide enhanced capacity and efficiency with commercial grade equipment.

## CHAMPION(S)

Town Agricultural  
Coordinator

	IMPLEMENTATION STEPS	PLANNING CONSIDERATIONS	
		Timeframe* (Short, Medium, Long)	Key Partners
1	<p>Assess the needs of Harvard's farmers for a shared community kitchen in consideration of the following:</p> <ul style="list-style-type: none"> <li>• What value-add products are or could be made with a better facility?</li> <li>• What are the available markets for value-add products beyond individual farms?</li> </ul>	Short	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Harvard's Farmers</li> <li>• Neighboring community farmers</li> <li>• Potential retail outlets</li> </ul>
2	<p>Determine the minimum requirements for equipment capacity, town water supply, hot water, and other amenities.</p>	Short	<ul style="list-style-type: none"> <li>• Building Department</li> <li>• Agricultural Advisory Commission</li> </ul>
3	<p>Inventory possible facilities:</p> <ul style="list-style-type: none"> <li>• Explore existing facilities in schools and churches.</li> <li>• Understand existing schedule and alignment with harvests.</li> <li>• Explore former restaurants or other commercial space that could be converted.</li> <li>• Determine locations' ability to meet regulatory requirements of a commercial kitchen.</li> </ul>	Short	<ul style="list-style-type: none"> <li>• Harvard schools</li> <li>• Houses of Worship in town</li> <li>• Water Supply District</li> <li>• Inspectional Services Department</li> <li>• Town Board of Public Health</li> </ul>
4	<p>Determine costs to rent, upgrade, and or otherwise invest in a kitchen operation.</p> <ul style="list-style-type: none"> <li>• Weigh costs and potential returns to farmers.</li> </ul>	Medium	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Participating farms</li> </ul>
5	<p>Create legal documents for participation covering liability, terms of responsible use, membership.</p>	Medium	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Participating farms</li> <li>• Legal counsel</li> </ul>
6	<p>Utilize <i>Harvard Grown</i> network to promote availability of commercial kitchen.</p>	Long	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Harvard's Farmers</li> <li>• Neighboring community farmers</li> </ul>

\* Short = less than 1 year; Medium is 1-3 years, Long is 4-5 years

## FUNDING RESOURCES

***Are there grants or other funding resources that can help support this action?***

[MA Agricultural Produce Safety Improvement Program \(APSIP\)](#)

MA Agricultural Energy Grant Program (ENER)

## TECHNICAL RESOURCES

***Are there case studies, reports, or organizations that could be a resource for implementing this action?***

[CLF Legal Guide for Community Kitchens in MA](#)

[MAPC Municipal Food Systems Planning Toolkit](#)

[SARE Shared Kitchen Toolkit](#)

## MEASURING SUCCESS\*

***How can we measure the progress and success of this action?***

### **Outputs\*:**

- Number of participating producers
- Market value of goods produced
- Investment generated into community institutions

### **Outcomes\*:**

- Improved farm income diversification
- Wider recognition of *Harvard Grown* products in the region
- Strengthened networks among farmers

\* An output is a measure of what has been created. An outcome is the level of performance or achievement that occurred based on what was created.

## EQUITY AND ENGAGEMENT

***How can we engage the populations that are likely to be part of or benefit from implementation of this action?***

Use proactive outreach to small hobby farms to ensure awareness of the opportunity.

Explore whether schools or Houses of Worship benefit from more local food in the meals they serve.

***How do we ensure that risks and benefits associated with this action are shared equitably across Harvard's diverse agricultural community?***

Seek sponsorships to reduce fees that create barriers to entry. Consider making a portion of the food produced in the community kitchen available to local food pantries.



**3**

**ACTION:**

Establish Machinery and Tool Exchange to share equipment, especially for small farmers.

**DESCRIPTION OF ACTION**

A machinery and tool exchange can create more collaborative consumption opportunities throughout the community through development of peer-to-peer sharing networks, a lending library, or similar initiative. It also reduces waste and ongoing maintenance costs for farmers.

**CHAMPION(S)**

Town Agricultural Coordinator

IMPLEMENTATION STEPS	PLANNING CONSIDERATIONS	
	Timeframe* (Short, Medium, Long)	Key Partners
<p><b>1</b> Inventory the equipment needs of farmers and the current available supply.</p> <ul style="list-style-type: none"> <li>• Survey farmers to find what kinds of tools and equipment would be most useful to have available.</li> <li>• Survey farmers to find what items they are willing to share.</li> <li>• Determine what concerns need to be addressed for lenders to participate.</li> </ul>	Short	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Community Resiliency Working Group</li> <li>• Area land trusts</li> <li>• All area farmers</li> </ul>
<p><b>2</b> Research sharing models to learn about pros and cons and which model could work best for Harvard’s farmers. Options might include:</p> <ul style="list-style-type: none"> <li>• Peer-to-peer (share what is owned by individual farms).</li> <li>• Centrally-owned (items purchased for use of the group).</li> <li>• Integrated with existing equipment rental businesses.</li> <li>• Hosting by library or other institution.</li> </ul>	Short	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Harvard Public Library</li> <li>• Area equipment dealers</li> </ul>
<p><b>3</b> Create legal documents for participation covering:</p> <ul style="list-style-type: none"> <li>• Liability</li> <li>• Terms of responsible use</li> <li>• Membership dues/requirements</li> <li>• Rental periods, etc.</li> </ul>	Medium	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Legal counsel</li> </ul>
<p><b>4</b> Establish a digital platform to:</p> <ul style="list-style-type: none"> <li>• List available items.</li> <li>• Handle reservations.</li> <li>• Track usage and participation.</li> </ul>	Medium	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> </ul>

\* Short = less than 1 year; Medium is 1-3 years, Long is 4-5 years

## FUNDING RESOURCES

***Are there grants or other funding resources that can help support this action?***

- Sponsorships from agriculture-related supply companies
- Library Grants

## TECHNICAL RESOURCES

***Are there case studies, reports, or organizations that could be a resource for implementing this action?***

[ShareStarter](#)

[MyTurn Digital Platform Example](#)

[Fitchburg Library of Things](#)

## MEASURING SUCCESS\*

***How can we measure the progress and success of this action?***

### **Outputs\*:**

- Number and type of available equipment
- Number of rentals
- Member/Farmer cost avoidance

### **Outcomes\*:**

- Overall lower production costs
- Increase in diversity of production systems using specialty equipment

\* An output is a measure of what has been created. An outcome is the level of performance or achievement that occurred based on what was created.

## EQUITY AND ENGAGEMENT

***How can we engage the populations that are likely to be part of or benefit from implementation of this action?***

Use proactive outreach to small hobby farms to ensure awareness of the service. Regularly collect feedback on evolving needs for different types of tools or other materials that could be shared.

***How do we ensure that risks and benefits associated with this action are shared equitably across Harvard's diverse agricultural community?***

Seek sponsorships by area suppliers to reduce fees that create barriers to entry.



# Nature-Based Resilient and Regenerative Practices

Preserving the inherent value that a farm's ecosystem services provides will enhance resilience of farms in Harvard and the community as a whole. As described by Regeneration International:

"The key to regenerative agriculture is that it not only "does no harm" to the land but actually improves it, using technologies that regenerate and revitalize the soil and the environment. Regenerative agriculture leads to healthy soil, capable of producing high quality, nutrient dense food while simultaneously improving, rather than degrading land, and ultimately leading to productive farms and healthy communities and economies."<sup>17</sup>



## Goals

- Protect and enhance pollinator habitats
- Enhance soil health and maximize carbon sequestration
- Maintain biodiversity
- Encourage resilient and regenerative practices among farmers



## Nature-Based Resilient and Regenerative Practices

Many farmers in Harvard and throughout the region are already adopting sustainable methods in their farming operations in order to better adapt to changing climate conditions. Efforts to adapt to changing temperatures and precipitation trends will be fundamental to the long-term health, productivity, and biodiversity of Harvard's lands. "Conventional" agricultural production involves frequent plowing and tilling practices and also utilizes nitrogen fertilizers and pesticides. These practices reduce the stability of soil, making it vulnerable to erosion during heavy precipitation events and risking runoff of fertilizers and pesticides that can harm surrounding water bodies. Some pesticide applications can harm pollinators like bees and butterflies. These practices can also reduce the levels of organic matter in soils which minimizes nutrients and reduces soil stability.



### **"Feed the Soil, Heal the Earth" - Sustainable Practices at Old Frog Pond Farm**

One of the few certified organic orchards in Massachusetts, Old Frog Pond Farm, uses no chemical pesticides, fertilizers, or herbicides, and uses natural practices to support soil health - activating their "plants' immune systems". Their raspberries are grown in wide rows with mountain mint planted to feed pollinators and repel pests. Medicinal herbs and wildflowers are grown between the apple trees. The vegetable fields, berry patch, and orchard have been certified organic since 2006. The farm is also fostering a sense of community through art, poetry, sacred fires, and other community events.



## Nature-Based Resilient and Regenerative Practices

Resilient soil management practices such as organic material soil amendments, cover crops and crop rotation, conservation tillage, and use of windbreaks can be adopted by Harvard’s farmers to reduce risks to their farms from increased periods of drought as well as heavy precipitation events. Planting native, pollinator-friendly vegetation can also support biodiversity and, in some cases, reduce the need for pesticides, fertilizers, and additional irrigation.

Orchards and other perennial crops, like berries, are a significant part of Harvard’s agricultural production and do not require tillage, which disrupts soil and releases stored carbon. This is a benefit for carbon sequestration in Harvard. Conservation tillage and organic soil amendment practices can also build the capacity of soils to absorb and store carbon, further mitigating agricultural contributions to climate change and, in fact, *removing* carbon dioxide. The table below provides an estimated average of the benefit that farms in Harvard could be producing with regard to carbon uptake and sequestration, benefits that can be further maximized if sustainable soil management practices are employed.

Category	Acreage	Rate of Carbon Uptake (MTCO <sub>2</sub> e/acre/Year) <sup>18</sup>	MTCO <sub>2</sub> e Sequestered per Year
Corn	81.4	0.82	66
Tobacco	0.2	0.82	0
Oats	1.8	0.82	1
Alfalfa	1.8	0.82	1
Other Hay/Non-Alfalfa	918.9	0.82	750
Potatoes	0.2	0.82	0
Misc Veggies & Fruits	0.7	0.82	1
Herbs	0.2	0.82	0
Sod/Grass Seed	0.9	0.98	1
Fallow/Idle Cropland	8.5	0.27	2
Apples	180.1	1.48	267
Grass/Pasture	43.1	1.26	54
Blueberries	2	0.82	2

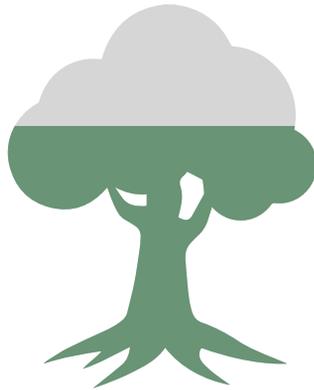


## Nature-Based Resilient and Regenerative Practices

Nearly all of the agricultural properties in Harvard are surrounded by some area of forest buffer. Many farms maintain areas of forest on their properties. There is even slightly more tree cover on properties designated as 61-A than there are in forestry-related Chapter 61 properties. Forests provide reserves of biodiversity and pollinator habitat, areas for groundwater recharge, wind breaks, and opportunities for diverse forest products that can supplement farm income.

# 65%

**of Harvard is tree covered.** About half of that area is in some form of preservation status.

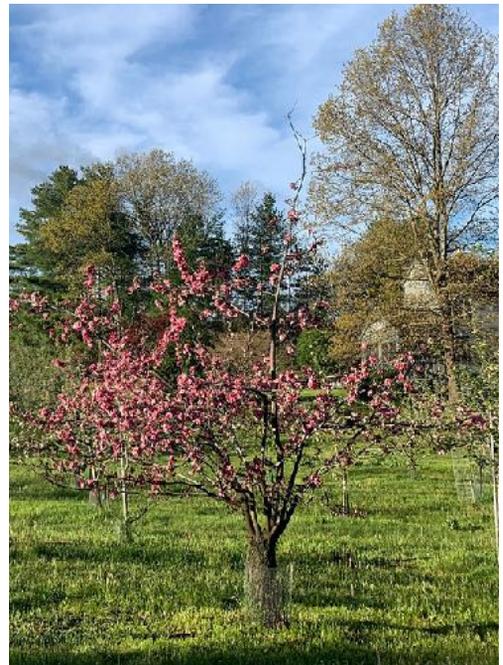


# 4.3 million

**metric tons of CO<sub>2</sub>e stored in the trees in Harvard.** This is an asset that can continue to grow, but also risks being released if land conservation measures are not in place.

The 2019 report, *The Impact of Climate Change on Agriculture: Harvard Massachusetts* includes a number of additional best practices that can be considered by farmers in Harvard in the short- and long-term for adapting to precipitation changes (including heavy precipitation and periods of drought), extreme storm events, and changing temperatures.<sup>3</sup> Examples include, but are not limited to:

- Use of high tunnels for vegetable crops and fruit trees
- Drainage improvements
- Water storage and drip irrigation solutions
- Use of hail nets for fruit trees
- Adjusting planting times
- Adopting integrated pest management (IPM) practices



The table below outlines additional strategies identified and reviewed with local farmers to support resilient and regenerative practices among Harvard's farms.

Nature-Based Resilient and Regenerative Practices Actions	Timeframe*	Co-Benefits with Other Plan Elements	Implementation Blueprint
Establish a forum for the sharing of best practices, results, and challenges with the implementation of regenerative farm practices in Harvard	Short		X
Encourage farmers to adopt soil management practices that will enhance resilience to climate change impacts	Medium	 	X
Ensure farms' stormwater infrastructure can accommodate increased volumes of precipitation	Medium-Long		X
Require native, pollinator-friendly vegetation and trees and/or naturalized areas	Medium		
Establish schedule and communication protocols between farmers and beekeepers to protect pollinator habitats from farm operational risks	Medium	 	
Establish a community experiment plot for the trial of new crops and varieties that may perform well under changing climate conditions	Short		
Ensure that barns have adequate cooling capacity (mistlers, fans, use of cooler lighting such as LED)	Long	 	
Investigate opportunities for integrating livestock and grower producers beneficially (eg using goats for vegetation management and mobile chicken coops for pest control)	Long		
Select species of crops and landscaping vegetation that is drought-resistant and/or resistant to high water flows	Ongoing	 	
Identify opportunities for development of agroforestry and/or silviopasture systems. Prioritize areas that would protect or expand areas of contiguous tree cover	Long		
Encourage farmers to utilize integrated pest management practices	Medium		
Plant trees or other vegetation that can provide shading for animals during high heat events	Medium-Long		

\* Short = less than 1 year  
 \* Medium = 1-3 year  
 \* Long = 4-5 years





1

**ACTION:**

Establish a forum for the sharing of best practices, results, and challenges with the implementation of regenerative farm practices in Harvard.

**DESCRIPTION OF ACTION**

Harvard’s farmers can convene periodically in a forum that covers specific topics and allows for the exchange of best practices with regard to implementing resilient and regenerative practices. This forum can be opened up to farmers throughout the region as well.

**CHAMPION(S)**

Town Agricultural Coordinator

IMPLEMENTATION STEPS	PLANNING CONSIDERATIONS	
	Timeframe* (Short, Medium, Long)	Key Partners
1 Establish a name and description for the forum and the frequency with which to meet (monthly, quarterly, annual).	Short	• Agricultural Advisory Commission
2 Develop a list of potential topics to be covered during each session. This could be done through a solicitation for ideas from the agricultural community.	Short	• Agricultural Advisory Commission
3 Coordinate logistics – a regular location or rotating location and consider online vs in-person options (particularly as COVID-19 circumstances evolve).	Short	• Agricultural Advisory Commission • Local farmers • Neighboring communities
4 Invite and advertise the forum to both local and regional farmers through newsletters, social media, and other means as appropriate.	Medium	• Agricultural Advisory Commission • Community Resiliency Working Group • Local farmers • Neighboring communities
5 Consider establishing (or utilizing an existing) website and newsletter to post educational content, videos, and other resources.	Medium	• Agricultural Advisory Commission • Community Resiliency Working Group

\* Short = less than 1 year; Medium is 1-3 years, Long is 4-5 years

## FUNDING RESOURCES

***Are there grants or other funding resources that can help support this action?***

Northeast Sustainable Agriculture Research and Education (SARE) Grants - [Research and Education Grant Program](#)

## TECHNICAL RESOURCES

***Are there case studies, reports, or organizations that could be a resource for implementing this action?***

GrowFood Northampton [Gardener News and Resources](#)

[Western Mass Permaculture Guild](#)

[Regeneration International](#)

## MEASURING SUCCESS\*

***How can we measure the progress and success of this action?***

### **Outputs\*:**

- Regular forum meetings
- List of topics
- Materials/content documented and shared

### **Outcomes\*:**

- Number of participants
- Number of forums held
- Percent of farmers adopting resilient/regenerative practices

\* An output is a measure of what has been created. An outcome is the level of performance or achievement that occurred based on what was created.

## EQUITY AND ENGAGEMENT

***How can we engage the populations that are likely to be part of or benefit from implementation of this action?***

Multiple tactics should be utilized to engage potential participants - word of mouth, posted advertisements, social media, newsletters. The newly established [Harvard Grown](#) website could be utilized for advertising and sharing info on sustainable practices being implemented by Harvard's farms.

***How do we ensure that risks and benefits associated with this action are shared equitably across Harvard's diverse agricultural community?***

This forum can serve as a unique opportunity to bring together farmers of different scales to learn more about each other's operations and opportunities to collaborate for a resilient and productive local food system for Harvard and the region. New or aspiring farmers from throughout the region should be invited to participate.



2

**ACTION:**

Encourage farmers to adopt soil management practices that will enhance resilience to climate change impacts.

**DESCRIPTION OF ACTION**

One of the most important strategies to maintain/improve the health and productivity of crops and reduce risks from climate change impacts is to adopt sustainable and resilient soil management practices, including organic material soil amendments, cover crops and crop rotation, conservation tillage, and use of windbreaks, among others.

**CHAMPION(S)**

Agricultural Best Practices Forum (*to be established*)

IMPLEMENTATION STEPS	PLANNING CONSIDERATIONS	
	Timeframe* (Short, Medium, Long)	Key Partners
<p>1 Research and compile best practices for soil management with consideration for:</p> <ul style="list-style-type: none"> <li>• Crop type</li> <li>• Resilience to erosion from wind/rain</li> <li>• Nutrients, soil health and productivity</li> </ul>	Short	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Climate Resiliency Working Group</li> </ul>
<p>2 Identify examples of best practices being applied at farms locally and regionally that could be case studies or leveraged for training workshops.</p>	Short	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Town Agricultural Coordinator</li> <li>• Community Resiliency Working Group</li> </ul>
<p>3 Develop a package of educational materials on soil management practices that are best suited to the diverse farm types in Harvard.</p>	Medium	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Town Agricultural Coordinator</li> <li>• Community Resiliency Working Group</li> </ul>
<p>4 Pilot/test out various practices and track/document results to be shared among local farmers.</p>	Medium/Ongoing	<ul style="list-style-type: none"> <li>• Local farmers</li> </ul>
<p>5 Continue to promote practices through the Forum, website, newsletters, videos, and other means.</p>	Medium/Ongoing	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Community Resiliency Working Group</li> </ul>

\* Short = less than 1 year; Medium is 1-3 years, Long is 4-5 years

## FUNDING RESOURCES

### **Are there grants or other funding resources that can help support this action?**

Northeast Sustainable Agriculture Research and Education (SARE) Grants - [Research and Education Grant Program](#)

U.S. Department of Agriculture:

- [Agricultural Management Assistance](#)
- [Conservation Innovation Grants \(CIGs\)](#)
- [Regional Conservation Partnership Program \(RCPP\)](#)
- [Environmental Quality Incentives Program](#)

## TECHNICAL RESOURCES

### **Are there case studies, reports, or organizations that could be a resource for implementing this action?**

Sustainable Agriculture Research and Education (SARE) - [What is Soil Health?](#) (See interactive infographic of management practices)

U.S. Department of Agriculture: *Adaptation Resources for Agriculture - Responding to Climate Variability and Change in the Midwest and Northeast* (2016)

## MEASURING SUCCESS\*

### **How can we measure the progress and success of this action?**

#### **Outputs\*:**

- Compilation of best practices and case studies
- Number of farms adopting new practices

#### **Outcomes\*:**

- Adoption of sustainable/resilient soil management practices
- Improved soil health/productivity among farms in Harvard
- Reduced losses from floods/storm events

\* An output is a measure of what has been created. An outcome is the level of performance or achievement that occurred based on what was created.

## EQUITY AND ENGAGEMENT

### **How can we engage the populations that are likely to be part of or benefit from implementation of this action?**

The Agricultural Best Practices Forum (*separate blueprint*) should be established to filter this information to local farmers and should seek inputs from surrounding communities.

### **How do we ensure that risks and benefits associated with this action are shared equitably across Harvard's diverse agricultural community?**

Smaller farms may have fewer resources to make investments in new practices. Ensure that guidance is provided for low-cost improvements and best practices.



**3**

**ACTION:**

Ensure farms’ stormwater infrastructure can accommodate increased volumes of precipitation.

**DESCRIPTION OF ACTION**

With climate projections indicating that Harvard can expect larger quantities of precipitation in shorter time periods, ensuring that stormwater infrastructure can accommodate increased volumes is essential to protecting crops and other property from flooding and erosion, as well as preventing pollution from runoff. Green infrastructure solutions should be prioritized wherever feasible for better infiltration, pollution reduction, and the co-benefits of shading and provision of habitat.

**CHAMPION(S)**

Agricultural Advisory Commission

IMPLEMENTATION STEPS	PLANNING CONSIDERATIONS	
	Timeframe* (Short, Medium, Long)	Key Partners
1 Identify and continue to track trends and projections for precipitation volumes, infiltration rates, and runoff frequency.	Short/Ongoing	<ul style="list-style-type: none"> <li>Department of Public Works</li> </ul>
2 Develop a guidance document for Harvard farmers (which can be used by others in nearby communities) that outlines design/capacity needs to accommodate projected volumes and includes best practices for green infrastructure.	Medium	<ul style="list-style-type: none"> <li>Economic Development</li> <li>Land useboards</li> <li>Department of Public Works</li> <li>MA Department of Environmental Protection</li> <li>External consultant and/or educational institution</li> </ul>
3 Convene a training with Harvard farmers to educate on the guidance document and resources available for upgrading their infrastructure.	Medium	<ul style="list-style-type: none"> <li>Economic Development</li> <li>Agricultural Best Practices Forum (to be established)</li> </ul>
4 Work with farmers to secure funding and/or technical support to implement upgrades on their farms.	Long	<ul style="list-style-type: none"> <li>Economic Development</li> <li>Agricultural Best Practices Forum (to be established)</li> <li>MA Department of Environmental Protection</li> </ul>

\* Short = less than 1 year; Medium is 1-3 years, Long is 4-5 years

## FUNDING RESOURCES

***Are there grants or other funding resources that can help support this action?***

[MA Stormwater Project Grants](#)

Northeast Sustainable Agriculture Research and Education (SARE) Grants

U.S. Department of Agriculture – [Agricultural Management Assistance](#)

## TECHNICAL RESOURCES

***Are there case studies, reports, or organizations that could be a resource for implementing this action?***

- MA Climate Change Clearinghouse
- EPA National Stormwater Calculator
- [EPA Green Infrastructure Modeling Toolkit](#)
- Central MA Regional Stormwater Coalition

## MEASURING SUCCESS\*

***How can we measure the progress and success of this action?***

### **Outputs\*:**

- Stormwater best management practices for Harvard farms
- Farm stormwater infrastructure upgrades

### **Outcomes\*:**

- Insurance/repair cost savings
- Improved stormwater collection/infiltration rates

\* An output is a measure of what has been created. An outcome is the level of performance or achievement that occurred based on what was created.

## EQUITY AND ENGAGEMENT

***How can we engage the populations that are likely to be part of or benefit from implementation of this action?***

Widespread communication to farms of varying size and operations, including outreach to neighboring communities.

***How do we ensure that risks and benefits associated with this action are shared equitably across Harvard's diverse agricultural community?***

Smaller farms may have fewer resources to make investments in infrastructure upgrades. Ensure that guidance is provided for low-cost improvements and best practices.

It is also critical to ensure that new development projects in Harvard do not inadvertently create more runoff/new water flows to properties that are effectively managing stormwater or are in the process of investing in improvements.



# Social Cohesion and Agricultural Character

Communities that have a strong sense of character and social cohesion tend to be more resilient to economic and natural disruptions. Harvard can strengthen its sense of community around its agricultural character, making it more resilient to climate change and other impacts.

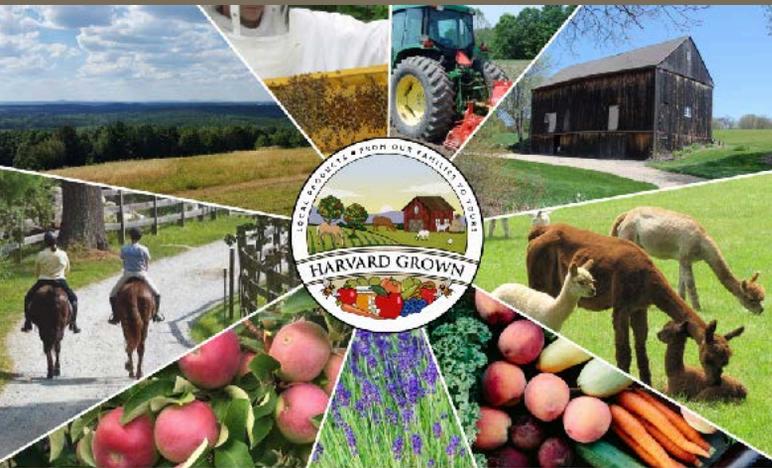


## Goals

- Nurture a more cohesive agricultural community within Harvard
- Support local food and goods production at all scales
- Expand the availability and purchasing of agricultural products produced in Harvard
- Expand understanding among Harvard and surrounding community members of the public value of farms



## Social Cohesion and Agricultural Character



Winding along picturesque roads dotted with historic barns and farmhouses, you'll witness generations of family farming and also get a glimpse into the future where sustainable practices provide a bounty, protect the planet, and help Harvard thrive. Here we like to say we're rooted in the past but growing the future.

In the process of developing this plan, we heard repeatedly that Harvard's agricultural character is central to its overall character. The *Harvard Grown* brand established through this process reflects this.

However, there is also a strong draw to the more rural character of Harvard because it is just that – rural. Some residents prefer that it is less populated and more isolated. The drawback to rural communities can be that its members interact less frequently and don't know each other as well. Harvard has a tremendous opportunity to leverage its agricultural character to build stronger social ties while still preserving its rural landscape. A more socially cohesive Harvard can be rooted in:

- Connections and sharing of resources among farmers through many of the efforts already described in this plan;
- Building year-round activities and events around agriculture that provide opportunities to engage with other community members and celebrate local food and agriculture;
- Raising awareness among non-farming community members of the benefits of local food and agriculture;
- Using local farms, farm stands, markets, and other events to educate the next generation of farmers about sustainable agricultural practices;
- Embracing agriculture and associated activities at *all* scales – commercial scale farming, hobby farming, residential kitchens, shops that sell local products, services that support farmers, restaurants that serve local food.

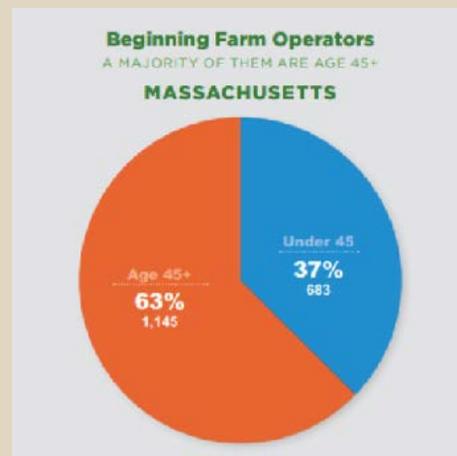
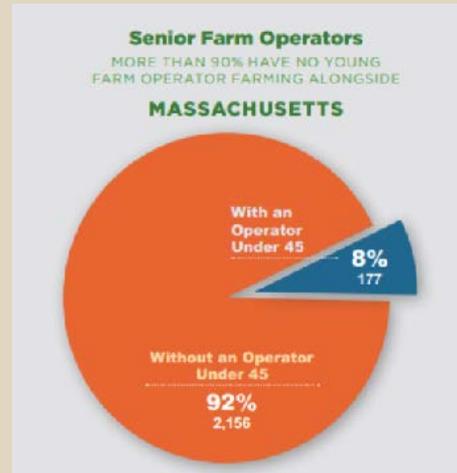
In order to achieve this sense of social cohesion and strengthen Harvard's sense of resilience through its sustainable and resilient agricultural character, the community will need to embrace education, communication, and innovation – celebrating Harvard's agriculture assets today and preserving them for future generations.

One challenge facing the Massachusetts and New England agricultural landscape is the aging demographic of farm operators and lack of succession/transfer planning.



## A study conducted by American Farmland Trust and Land for Good (using 2012 Census of Agriculture data) discovered the following key findings:

- “Over 90% of Massachusetts’ 2,333 senior farmers do not have a young (under 45) farm operator working with them. While this does not mean that these farmers don’t have a succession plan, it suggests that the future of many of these farms is uncertain.
- This subset of seniors farming without young farm operators own a collective \$1.5 billion in farmland and buildings and manage 154,000 acres of land in farms. How and to whom these assets transfer will impact agriculture for generations to come.
- Twenty-four percent of principal farm operators in Massachusetts have farmed for 10 years or less. These beginning operators produced 13% of the total market value of agricultural products in 2012.
- A majority of beginners (63%) are 45 and older. These older beginners are often coming to farming as a second or “retirement” career; many are bringing assets to agriculture and will need to plan their own succession soon.
- There are 16% fewer young farm operators (under 45) now than in 2002. There is a particular dearth of young farm operators in some sectors, including fruits, nursery/greenhouse, hay and maple. For senior farmers in these sectors, this shortage of young farmers may prove especially problematic.”<sup>19</sup>



This tells us that an important risk to the resilience of Harvard’s agricultural character and economy is that farmland may not remain in use for farming as seniors retire without a transfer plan. Addressing this requires supporting senior farmers in this process as well as reducing barriers to entry for new farmers, and also supporting education and awareness around agriculture from an early age.

The table below outlines strategies identified and reviewed with local farmers to support efforts to support the strength and longevity of Harvard’s agriculture. Detailed implementation blueprints for three key actions follow.

Social Cohesion and Agricultural Character Actions	Timeframe*	Co-Benefits with Other Plan Elements	Implementation Blueprint
Expand understanding of requirements and opportunities associated with "residential kitchens"	Short		X
Develop a shared marketing program for farms and farm products	Short		
Create a community food/farm project that supports new farmers, hobby farmers, gardeners, provides trainings and resources, educational programs, business incubation support, etc.	Medium		X
Expand agricultural education program at local schools to cultivate future growers, consumers, and informed citizens	Medium		
Provide affordable rental units for agriculture workforce within Harvard	Long		
Expand farm-to-restaurant/institution/market sales	Short	 	
Expand farm participation in Healthy Incentives Program (HIP) and other programs that expand healthy food access to people with low incomes	Medium		
Work with landholders to support farm succession and transfer planning	Ongoing		
Provide educational information about local food, nutrition, and Farm Friendly Neighbor info at Farmers' Markets and other local events	Short/ Ongoing		
Use accessible communications applications to communicate and coordinate activities with impacts to neighbors, (eg pesticide spray applications)	Short		
Expand generational farm transition planning	Medium		X

\* Short = less than 1 year  
 \* Medium = 1-3 year  
 \* Long = 4-5 years





1

**ACTION:**

Create a community food/farm project that supports new farmers, hobby farmers, gardeners, provides trainings and resources, educational programs, business incubation support, etc.

**DESCRIPTION OF ACTION**

As agricultural practices continue to evolve, technological advancements are made, and local food production becomes increasingly attractive at all scales – both culturally and economically, the Harvard community and its neighbors will benefit from a community food or farm project that engages an entire network of individuals and groups with the common interest of supporting community agriculture. This could emerge out of the establishment of a 501c3 (as detailed in a separate blueprint - [see page 22](#)) and/or leverage the new *Harvard Grown* brand. It could also serve to support the best practices exchange forum (also described in separate blueprint - [see page 46](#)).

**CHAMPION(S)**

Town Agricultural Coordinator

IMPLEMENTATION STEPS	PLANNING CONSIDERATIONS	
	Timeframe* (Short, Medium, Long)	Key Partners
1 Create a vision statement and/or project charter for what this community project aims to support programmatically.	Short	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Community Resiliency Working Group</li> <li>• Community Preservation Committee</li> </ul>
2 Research existing programs such as Central Mass Grown and Worcester Regional Food Hub to determine the types of support/programming available and determine what gaps exist. Consideration should be given to: <ul style="list-style-type: none"> <li>• Trainings and knowledge exchange</li> <li>• Marketing/promotion</li> <li>• Business incubation/expansion support</li> <li>• Financial training</li> <li>• Educational programs</li> </ul>	Short	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Community Resiliency Working Group</li> </ul>
3 Promote and engage Harvard community in resources already provided through the above entities.	Short/Ongoing	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Community Resiliency Working Group</li> </ul>
4 Coordinate with Central Mass Grown and Worcester Regional Food Hub to build out additional programming identified as a gap/need for Harvard community, either through one of these entities or by establishing a more localized program.	Long	<ul style="list-style-type: none"> <li>• Central Mass Grown</li> <li>• Worcester Regional Food Hub</li> <li>• Agricultural Advisory Commission</li> <li>• Community Resilience Working Group</li> </ul>

\* Short = less than 1 year; Medium is 1-3 years, Long is 4-5 years

## FUNDING RESOURCES

***Are there grants or other funding resources that can help support this action?***

Northeast Sustainable Agriculture Research and Education (SARE) Grants - [Research and Education Grant Program](#)

## TECHNICAL RESOURCES

***Are there case studies, reports, or organizations that could be a resource for implementing this action?***

Central Mass Grown

Worcester Regional Food Hub

The Carrot Project

[Wendell Local Food Security Project](#)

## MEASURING SUCCESS\*

***How can we measure the progress and success of this action?***

### **Outputs\*:**

- Programming established
- Membership in local food programs/projects

### **Outcomes\*:**

- Participation rate of community members
- Increased local food system revenues

\* An output is a measure of what has been created.  
An outcome is the level of performance or achievement that occurred based on what was created.

## EQUITY AND ENGAGEMENT

***How can we engage the populations that are likely to be part of or benefit from implementation of this action?***

It may be helpful to survey community members to inform the vision and gap/needs analysis described in the first couple steps of this action.

***How do we ensure that risks and benefits associated with this action are shared equitably across Harvard's diverse agricultural community?***

In steps 1 and 2 of this effort, it will be important to consider the needs of all scales of farming/local food production and associated sales/support.



2

**ACTION:**

Expand generational farm transition planning in Harvard.

**DESCRIPTION OF ACTION**

Planning for the transition of farm assets and operations is critical to ensuring that farmland remains protected from development and for maintain Harvard’s agricultural character for the long term.

**CHAMPION(S)**

Economic Development Department

	IMPLEMENTATION STEPS	PLANNING CONSIDERATIONS	
		Timeframe* (Short, Medium, Long)	Key Partners
1	Survey and map Harvard’s agricultural lands and identify active farms or agricultural lands that are in need of succession or transfer planning. Determine: <ul style="list-style-type: none"> <li>• Ownership</li> <li>• Current land status</li> <li>• Succession/transfer plan</li> </ul>	Short	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Local farmers</li> </ul>
2	Connect land owners with the New England Farm Link Collaborative, which includes New England Farmland Finder, Land for Good, and farm link programs in CT, ME, and VT.	Short	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Local farmers</li> <li>• NE Farm Link Collaborative</li> <li>• Central Mass Grown</li> </ul>
3	Encourage farmers/land owners to utilize the farm link programs to support transition planning. Services/ programs might include: <ul style="list-style-type: none"> <li>• Property postings</li> <li>• Seeker postings</li> <li>• Farmer recruitment</li> <li>• Transfer facilitation</li> <li>• Conservation easement support</li> <li>• Lease and sale facilitation</li> <li>• Property assessments</li> <li>• Educational materials/events</li> </ul>	Short/Ongoing	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Local farmers</li> <li>• NE Farm Link Collaborative</li> <li>• Land trusts</li> <li>• Central Mass Grown</li> </ul>
4	Continue to identify and provide opportunities for current and new farmers to receive trainings and technical assistance – connect them to the community food/farm project and best practices forum, both of which are further described/detailed in separate implementation blueprints in this plan. This is especially important for new farm owners or farm operators working with soon-to-retire farm owners.	Long	<ul style="list-style-type: none"> <li>• Agricultural Advisory Commission</li> <li>• Local farmers</li> <li>• NE Farm Link Collaborative</li> <li>• Forever Farmland Initiative</li> </ul>

\* Short = less than 1 year; Medium is 1-3 years, Long is 4-5 years

## FUNDING RESOURCES

***Are there grants or other funding resources that can help support this action?***

MA Dept of Agricultural Resources  
- [Matching Enterprise Grants for Agriculture \(MEGA\)](#)

## TECHNICAL RESOURCES

***Are there case studies, reports, or organizations that could be a resource for implementing this action?***

Land for Good:

- [Farm Link Programs](#)
- [New England Farm Link Program Guide](#)

## MEASURING SUCCESS\*

***How can we measure the progress and success of this action?***

### **Outputs\*:**

- Succession/transfer plans for all Harvard agricultural properties

### **Outcomes\*:**

- Shifting demographics of farmland ownership/operation – increasing % of those under age 45.

\* An output is a measure of what has been created.  
An outcome is the level of performance or achievement that occurred based on what was created.

## EQUITY AND ENGAGEMENT

***How can we engage the populations that are likely to be part of or benefit from implementation of this action?***

It will be important for transition planning efforts to look both within and beyond Harvard's boundaries. New/aspiring farmers may be coming from outside of the community.

***How do we ensure that risks and benefits associated with this action are shared equitably across Harvard's diverse agricultural community?***

Both large and small farms will need to consider succession/transfer planning and smaller farms may have fewer resources to do so. It will be important to connect them with financial and technical support.

There is also an opportunity to engage a more diverse population of farm workers and potential farm owners. Seeking opportunities to support farm workers transitioning to operational management and/or ownership and identifying agricultural job/skills training opportunities for low-income, minority, or immigrant populations will support a more diverse and resilient agricultural economy and landscape in Harvard.



3

**ACTION:**

Expand understanding of requirements and opportunities associated with "residential kitchens."

**DESCRIPTION OF ACTION**

As an increasing number of people wish to prepare food products in their own home kitchens for sale, many questions arise around what is permitted. These operations are regulated by the Massachusetts Department of Public Health Food Protection Program and licensed by local boards of health. This action encourages Harvard's agricultural community to coordinate with the Board of Health to more clearly define the regulations and processes for Harvard residents to carry out residential kitchen activities.

**CHAMPION(S)**

Agricultural Advisory Commission

IMPLEMENTATION STEPS	PLANNING CONSIDERATIONS	
	Timeframe* (Short, Medium, Long)	Key Partners
1 Compile all resources available on state and local regulations of residential kitchens - both Retail Residential Kitchens and Wholesale Residential Kitchens.	Short	<ul style="list-style-type: none"> <li>• Town Board of Health</li> <li>• MA Department of Public Health</li> <li>• Economic Development</li> </ul>
2 Distribute digital and print materials that further explain the processes and regulations. These materials can be provided in the near term for those already engaging in or interested in starting a Residential Kitchen.	Short	<ul style="list-style-type: none"> <li>• Town Board of Health</li> </ul>
3 Coordinate with the Town's Board of Health to convene a forum to further explain what Retail and Wholesale Residential Kitchens are, what opportunities are available to start them, permit requirements, and regulations for health and safety and resale.  • The forum can also serve as an opportunity for residents to ask clarifying questions of the Board of Health and raise potential solutions to key challenges, including technological solutions that can overcome some of the food safety issues that are the source of certain restrictions (e.g. refrigeration needs, etc).	Medium	<ul style="list-style-type: none"> <li>• Town Board of Health</li> <li>• MA Department of Public Health</li> <li>• Economic Development</li> </ul>
4 Make forum materials, recording, outcomes, etc available through the Town website and other digital/ social platforms.	Medium	<ul style="list-style-type: none"> <li>• Town Board of Health</li> <li>• Economic Development</li> </ul>

\* Short = less than 1 year; Medium is 1-3 years, Long is 4-5 years

## FUNDING RESOURCES

***Are there grants or other funding resources that can help support this action?***

UMass Center for Agriculture, Food and the Environment – [Starting a Small Food Business](#)

## TECHNICAL RESOURCES

***Are there case studies, reports, or organizations that could be a resource for implementing this action?***

Concord MA – [Starting a Home Food Business](#)  
[New England Food Entrepreneurs](#)

MA Dept of Public Health – [Residential Kitchen Questions & Answers](#)

## MEASURING SUCCESS\*

***How can we measure the progress and success of this action?***

### **Outputs\*:**

- Detailed guidance on Residential Kitchens
- Forum for exchange of information

### **Outcomes\*:**

- Number of Retail and Wholesale Residential Kitchens
- Revenue generated by local Residential Kitchens

\* An output is a measure of what has been created.  
An outcome is the level of performance or achievement that occurred based on what was created.

## EQUITY AND ENGAGEMENT

***How can we engage the populations that are likely to be part of or benefit from implementation of this action?***

There is already a great deal of information and guidance available on this topic. The challenge is making it accessible and digestible for Harvard's community members. The steps outlined above should facilitate this process.

***How do we ensure that risks and benefits associated with this action are shared equitably across Harvard's diverse agricultural community?***

It will be necessary to ensure that materials and communications are made accessible to *all* members of the Harvard community, including those who may have disabilities or may not speak English as their primary language.



# How to Support Harvard's Resilient Agricultural Community

You are fundamental to shaping the future of Harvard's farming community. Whether you are a farmer, visitor, or town resident, Harvard's prosperity depends on everyone's support of community farms. By working together, we can better prepare for the impacts of a changing climate so that we can continue to nurture what's Harvard Grown. Read on for ways you can support your local community.

## RESIDENTS & VISITORS

**Shop local!** Grab the [Harvard Grown](#) brochure map and pick up your weekly fruits and vegetables at a nearby stand instead of driving into town.

**Get to know your local farmers.** They are a wealth of knowledge on crop varieties, tools, techniques, and more!

**Join a Community Supported Agriculture (CSA) program,** like the one offered by Westward Orchards, and let seasonally appropriate produce be hand chosen for you. Many CSAs even include recipe recommendations for the goods and produce you receive as well!

**Night on the town?** Choose to dine at restaurants or try a cider at places like the Carlson Tap Room that source their ingredients from nearby farms.

**Talk with friends and family on the benefits of shopping local.** It's a great way to explore your community and support your neighbors at the same time.

## FARMERS

**Bring visitors to your farm** by offering educational programs, farm tours, and demonstrations.

**Promote** your business on social media using the *Harvard Grown* communications kit!

**Offer a token of appreciation,** like a produce sampler bag or 10% off a purchase, to visitors who post photos and tag your farm on social media.

**Market what's unique to the goods and produce you sell.** Local? Ethically harvested? Grown with love? Attributing traits to your product can help it stand out more to customers.

**Out of tomatoes for the day?** Refer your customers to other Harvard farms nearby! Print [free brochure maps](#) and hand them out at the register or point customers to the [Harvard Grown](#) website.

**Talk with your neighbors** and fellow farmers on how they can support *Harvard Grown*.



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