

Cultivating Opportunity: A Suitability Analysis for Beginning Farmers in Middlesex County, Massachusetts



Mission

The New Entry Sustainable Farming Project (New Entry) seeks to assist people with limited resources and an interest in small-scale, commercial agriculture, to begin farming in Massachusetts. Initiated in 1998 by Tufts University's Friedman School of Nutrition Science and Policy, New Entry works throughout eastern Massachusetts to cultivate agricultural opportunities and assist new farmers in creating sustainable commercial enterprises. By engaging new farmers in unique training programs, providing incubator farm space and offering market access to the World Peas Cooperative, New Entry works to transition participants into their own farming enterprise.

Farmland Matching Service

New Entry's *Farmland Matching Service* works to improve land access for beginning farmers by offering support with lease arrangements, as well as providing access to information for existing landowners looking to lease land. Dialogues are currently underway with Middlesex County municipal Agricultural Commissions to enhance access to small-scale agricultural opportunities. By strengthening partnerships, both New Entry and local municipalities can work to preserve prime farmland, enhance economic vitality and ensure viable options for the next generation of Massachusetts farmers.

The Farmers

Due to the strong interest in agriculture from eastern Massachusetts's immigrant and refugee residents, New Entry has traditionally worked in the Lowell and Worcester regions. However, with interest in local agriculture growing, New Entry is expanding those it serves; from farm apprentices and interns, to new or existing landowners looking to keep land in production.



The View From the Field

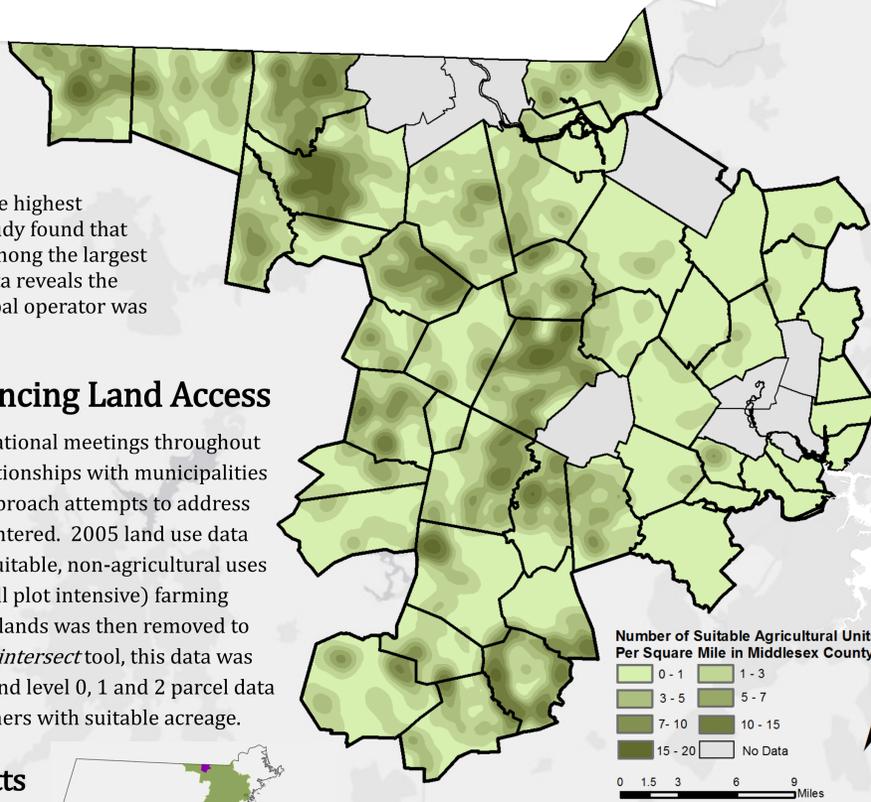
Beginning farmers in Middlesex County face significant challenges. Access to suitable parcels is hindered by fragmentation from residential development as well as some of the highest farmland prices in the nation.¹ One recent study found that among young farmers, access to land ranks among the largest obstacles to overcome.² Middlesex County data reveals the barriers. In 2007, the average age of a principal operator was over 56 years old.³

A Holistic Approach to Enhancing Land Access

By providing spatial data and holding informational meetings throughout the region, New Entry continues to build relationships with municipalities and landowners. This farmland suitability approach attempts to address accessibility issues that are commonly encountered. 2005 land use data was divided between agricultural uses, and suitable, non-agricultural uses to reflect the growing interest in "SPIN" (small plot intensive) farming practices. Any land use overlapping with wetlands was then removed to create "suitable agricultural units." Using the *intersect* tool, this data was combined with open space, prime farmland and level 0, 1 and 2 parcel data to assist New Entry with outreach to landowners with suitable acreage.

Town of Pepperell, Massachusetts

Aggregated suitable parcel units from Middlesex County can be clipped to individual towns, such as Pepperell, shown below. The agricultural units can then be analyzed according to their proximity to various features and their overlap with areas of local significance. The local analysis may assist both New Entry and the Town of Pepperell in exploring the town's potential for increased agriculture.



Middlesex County's Suitable Agriculture Units

Suitable Agricultural Units	Acres	Number of Units
Units in Agricultural Use	6875.33	863
Units in Non-Agricultural Use	3016.29	819
Total	9891.62	1682

Findings

This suitability analysis suggests Middlesex County offers substantial agricultural potential. Although data on existing agricultural lands is important, the analysis shows there are over 3000 acres in non-agricultural uses. Information on the location and suitability of these arable parcels will allow for better outreach to landowners, and new options for beginning farmers. Similarly, there are many localized opportunities available in certain municipalities. A closer look at Pepperell reveals the agricultural options for overlapping town lands, as well as some of the ways farmland access can be addressed through proximity analysis. Further research may include the addition of geocoded points of agricultural activities or the development of a GIS model that can increase the pace of analysis. Despite improvements, this current research may be another tool to grow local agricultural options.

Challenges and Limitations

Both municipalities and researchers looking to replicate this process for their region or locality should make note of a few challenges and limitations.

Parcel Data

Massachusetts assessor's parcel data is now available in several levels of detail, and in some cases not available at all. In level II data and higher, condominiums and roads can skew the results. A careful search through the data tables may help reduce the error.

Land Use Data

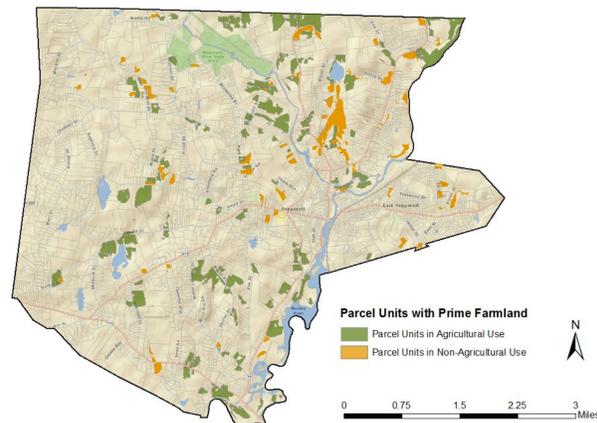
Further fragmentation of suitable parcel units is likely to have occurred since the 2005 land use data set was created. Updating this analysis when new data becomes available or analyzing the suitable parcels in relation to recent satellite imagery or land cover data will enhance the accuracy of this study.

Water Features

Assessing the distance from water features can be a cumbersome process as the data contains many measurable features, such as marshes, that can skew findings. Additionally, hydrography files are available in both arc and polygon format, therefore requiring data to be exported into a spreadsheet for further conflation.

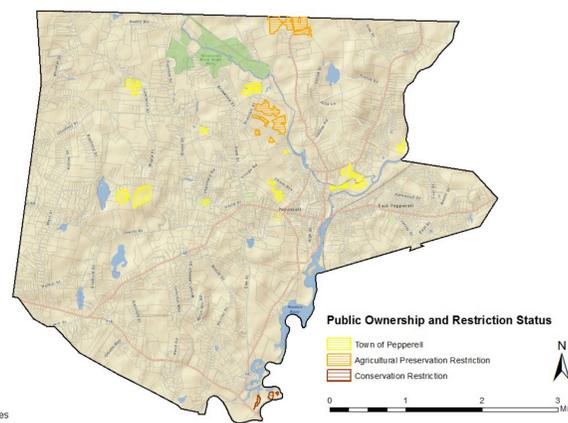
Suitable Agricultural Units

Analysis of Pepperell's agricultural potential isolates parcels >2 acres containing prime farmland and arable land meeting criteria deemed suitable for farming. Suitable units in agricultural use include cropland, pasture, nursery and orchard uses. Units in non-agricultural use include low and very low residential, brushland/successional, open land and transitional uses. Identifying suitable residential parcels can allow landowners to re-evaluate the potential for agriculture.



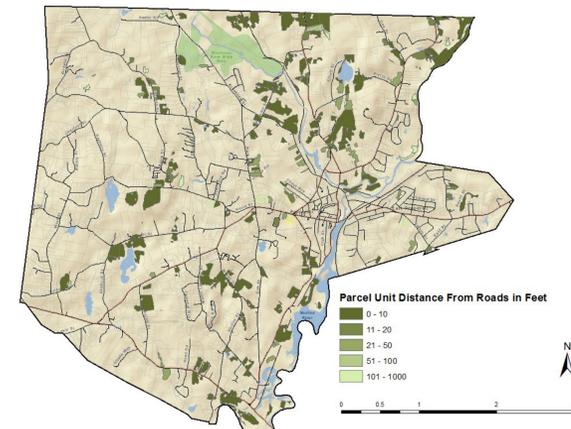
Assessing Public Ownership and Restrictions

Having a clear understanding of the location of conservation and agricultural preservation restrictions (APR) can help steer land seekers to the most appropriate sites. Similarly, municipal lands may be available for lease or managed for other purposes. In this map, APR, conservation restrictions and land owned by the Town of Pepperell were selected to show overlap with the agricultural units defined in this study.



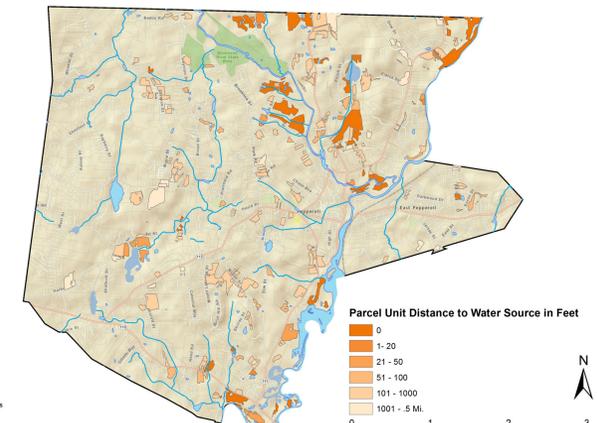
Distance from Roads

Vehicular access can be a significant factor when determining the appropriate site for an agricultural enterprise. Road frontage can also be an important component to a successful business as some towns in Middlesex County allow farm stands for growers to sell their produce. In this map, the agricultural units were converted to points before using the *near* function to gauge their proximity to roads of various sizes.



Distance to Water Sources

Accessibility to a reliable water source can determine necessary irrigation methods at a site. Hydrographic data, including reservoirs, lakes, ponds, rivers, streams and ditches were joined to the parcel unit data for an accurate depiction of surface water proximity. The data may assist municipalities, landowners and beginning farmers in assessing site compatibility with different agricultural practices.



Date: December 14, 2011
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 In Conjunction With: New Entry Sustainable Farming Project - <http://hesfp.nutrition.tufts.edu/>
 Projected Coordinate System: NAD 1983 StatePlane Massachusetts Mainland FIPS 2001
 Sources: MassGIS
 Massachusetts Department of Agricultural Resources. 2007. *Massachusetts Ag Facts & Statistics*. <http://www.mass.gov/ag/facts/index.htm>.
 National Young Farmers Coalition. 2011. *Building a Future with Farmers: Challenges Faced by Young American Farmers and a National Strategy to Help Them Succeed*.
www.youngfarmers.org/reports/Building_A_Future_With_Farmers.pdf.
 United States Department of Agriculture. 2007. *Middlesex County Profile*. http://www.agcensus.usda.gov/Publications/2007/Online_Highlights/County_Profiles/