Cultivating the Future: A Design to Improve Technological, Financial, and Organizational Aspects of Farming in New England

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Abstract

Farming has been on a decline in New England since the Industrial Revolution, and the only way it will rebound is to make it into a prominent and prosperous field that will attract the younger generation. To address urgent problems facing farming in New England, we collected background information on the problems faced by farmers from local farmers. We interviewed three farmers and gained insight into the issues of technology, financing, and management that form the core of farmers' problems today. In the area of technology, we proposed redesigns of current farming structures to make them more efficient. The proposed improvements were the use of high tunnels, the inclusion of computers and robots, and a redesign for a more efficient barn. In the financial realm, we proposed to reduce farmers’ costs by reducing the use of supplies, including feed, seeds or supplies, and by increasing the necessary government involvement. Finally, we identified three areas in which the organization and management of the farm could use improvement, such as crop rotation and diversity, irrigation, and launching a CSA. Our ideas will help to rejuvenate farming in the New England region, and also to increase the availability of locally grown, organic produce.

Background

Over the years since the Industrial Revolution, we have seen a decline in farming land. This reduction in the abundance of farms has caused people to rely on conventional food products that require an unnecessary amount of energy and processing to get to their shelves. This is the problem that we seek to fix, and hence, promote the need for more farms, close to virtually every resident, in the New England region.

Methods/Process

Our two step method began with personal interviews with farmers. We interviewed the following farmers:

- John Bennis – Addison Farm, Concord, MA
- Mark Duffy – Great Brook Farm, State Park, Castalia, MA
- John Lee – Allendale Farm, Chestnut HI, MA

After these interviews, we decided to break the research into three different aspects:

- Technological
- Financial
- Organizational

Conclusions/Recommendations

- High tunnels
- Incorporation of Computers/Robotics
- Animal Waste Management
- Financial infrastructure to minimize costs
- Crop rotation/diversity
- Efficient Irrigation
- CSA

Project Goals/Objectives

- Improve upon three aspects: Technological, Financial, and Organizational
- Increase the availability of locally grown organic produce
- Reinvigorate farming as a profession

Financial Improvements

Farming today is unstable financially. The farmers and their families often have trouble making enough money for their needs and wants. In order to get more money for their family about 50% of farmers have a job off the farm. Around 30% of the income farmers make are made from off the farm. This makes farming a part time job, ultimately making it less efficient. We believe that in order for the farming to be in its maximum efficiency they will need to make more profit, in order for their motivation to work. A couple possible solutions to this involve the intervention of the Government: The Government can:

- Give large bonuses to farms for helping the community.
- Lower taxes for the farming community as well.

Technological Improvements

Computers

- Help track customers
- Track finances
- Better accuracy
- Communication

Robotics

Fig1. Milking Robot

High tunnels

- Extend growing seasons
- Protect crops from harsh weather conditions
- Less crop loss
- Easier to grow food organically

Animal Waste Management

Fig. 3

Conclusions

We would like to thank Professor Nikitina, for advising us on our project. Also many thanks to John Bennis, Mark Duffy, and John Lee who allowed us to interview them.

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