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The Education of a Farmer

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The Education of a Farmer

Agricultural Education at the University of Massachusetts - Amherst

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Executive Summary

As the history of human civilization has unfolded, it has become clear that providing food security for fellow humans is one of the great moral issues of current times. One way to make food security sustainable is by having adequately trained farmers to take over from the retiring workforce of farmers in order to provide food and resources to people. National studies have found that fewer youth are educated as farmers by growing up on a farm. This has resulted in there being more responsibility put upon the private and public sectors to educate/train farmers, including colleges and universities.

This report evaluated how the University of Massachusetts – Amherst trains/educates farmers and evaluates how well the university provides future farmers with a well-rounded agricultural education. The main research question that this report seeks to answer is what policy interventions, if any, could strengthen the education and training that students receive. Four alternatives were presented: 1) Status Quo – no changes to the current system that is focused on classroom learning with some hands-on learning 2) Internal improvements by making the curriculum more well-rounded in regards to the three circle agricultural education model 3) Private Partnerships for educational opportunities and 4) Public Partnerships for educational opportunities. In order to assess these four alternatives 15 students and faculty members related to agriculture at UMass – Amherst were interviewed and external organizations were researched in order to recommend the best alternative.

What this report found was that the University of Massachusetts – Amherst’s current agricultural curriculum could use improvement due to the agricultural curriculum having too much of a focus on classroom learning and not utilizing all of its available resources. The Stockbridge School of Agriculture UMass should work on internally improving their program in order to make their agricultural education curriculum more well-rounded to include more class offerings, better utilization of current resources and more experiential learning opportunities. While the most costly of the four alternatives, this alternative has good political feasibility as it is an alternative that the university is currently looking at. Partnerships could also be used within this context. However, this report found that outsourcing education to third party entities would be detrimental to the university as a stand-alone option.

Table of Contents

Introduction.....	3
Methodology.....	6
<i>The Alternatives.....</i>	<i>7</i>
<i>Evaluation Criteria.....</i>	<i>10</i>
<i>Method of Evaluation Analysis.....</i>	<i>11</i>
<i>Missing Data.....</i>	<i>12</i>
Historical Background.....	12
Current Agricultural Education Model.....	14
Data and Findings.....	15
<i>Status Quo.....</i>	<i>15</i>
<i>Internal Improvements.....</i>	<i>17</i>
<i>Private Partnerships.....</i>	<i>20</i>
<i>Public Partnerships.....</i>	<i>22</i>
<i>Trade-offs.....</i>	<i>24</i>
<i>Observations.....</i>	<i>25</i>
Policy Recommendation.....	25
Future Implications.....	27
Conclusion.....	27
Appendices.....	28
Bibliography.....	34

Introduction

This report is a qualitative case study in which the University of Massachusetts – Amherst is examined in how it educates and trains future farmers. As agricultural education plays a large role in training and educating future farmers in this modern day and age, colleges and universities play a large role in making the agricultural labor market sustainable for the future so that one of the foundations of food insecurity is not manifest itself. The question that this report seeks to answer is, “What policy interventions, if any, could strengthen the education and training that students receive?”

What is food insecurity and why is it an issue? By definition, food insecurity is a state in which people do not have enough food to eat. According to the United States Department of Agriculture, food security is measured by the ability for an individual to successfully have access to healthy and nutritious meals.¹ If an individual, or a household, does not know where their next meal is coming from or does not have access to healthy and nutritious food on a consistent basis, they are deemed to be food insecure.² From prior research the researcher has conducted, there are two main ways in which food insecurity can manifest itself within a community – 1) Inequality in food distribution and 2) Agricultural food and resource shortages. While many are led to believe that food insecurity is an issue seen primarily in third world countries, food insecurity happens in the United States of America as well. In 2011, 14.9% of American families polled were deemed to be some form of food insecure.³ In a country where access to food is seen as a right and not a privilege, this is a dire problem.

¹ United States Department of Agriculture: Economic Research Service, *Food Security in the U.S.*

² Ibid

³ USDA-ERS, *Household Food Security in the United States in 2011*

While it is easy to assume that there will always be farmers working the land, there are currently threats to the agricultural well-being of the world and the United States of America. In a speech that he gave in 2006 where he claimed that the United States would need to add 50 million new farmers in order to make agriculture sustainable, author Richard Heinberg states that there are three main concerns that are affecting the world of agriculture. In his speech, Heinberg states that potential food shortages could be caused by 1) Climate change, 2) Resource depletion and 3) the rising average age of the American farmer.⁴ According to the 2007 Agricultural Census, the national average age of the American farmer is rising.⁵

There are many reasons why the average age of the American farmer has been on the rise. This statistic can potentially be explained by the national trend that workers are working longer instead of retiring. However, there are two statistics that are alarming when coupled with the rising average of farmers. The first statistic is that, according to the 2007 Agricultural Census, farmers aged 45 and under decreased between 2002 and 2007.⁶ The second statistic is that, on a national scale, the average size of farms is increasing while the actual number of farms is decreasing.⁷ Interestingly enough the opposite is true in New England where farm size is decreasing and the number of farms is increasing.⁸ However, the national trend suggests that the labor market for agriculture is in flux with a lack of young farmers available or willing to take over the farms that the aging farmers are running as they near potential retirement. While young farmers face many obstacles including limited capital and restrictive land use situations such as retiring farmers selling their land to developers, the lack of young farmers is troubling. It seems

⁴ Richard Heinberg, *Fifty Million Farmers speech*

⁵ 2007 Census of Agriculture

⁶ Ibid

⁷ United States Department of Agriculture, *American Farms pp. 24*

⁸ Steve Goodwin, *UMass College of Natural Sciences Agricultural Learning Center Soeetch*

at a time where the local food movement in which the Pioneer Valley in Western Massachusetts has used as a model to combat food insecurity is in demand, the nation's capability to use this model by increasing the number of local farms, is in decrease.

The question must be asked, "Why is there a lack of young farmers nationally?" While capital, resources and land use restrictions such as development incentives are all reasons, the statistical trend of decreasing farms also can point to the fact that the world of agricultural education and training is changing as well. With New England's trend of having increasing farms and decreasing farm size being the exception as New England is one of the leaders of the local food movement, fewer youth are growing up on farms at the national level with decreasing farms and increasing farm sizes. In the past, many farmers were trained at the hands of their parents and neighbors as they grew up on and around farms. Fewer youth have that opportunity, thus meaning that fewer youth are being trained and educated on actual farms. This means that young farmers are being trained and educated through other entities in the private and public sector. One area where young farmers are currently trained and educated is at colleges and universities, both public and private. In order for the world of agriculture to remain sustainable in terms of farm labor that is adequately trained and educated to run farms, colleges must train and educate young farmers with a well-rounded curriculum that connects them with relevant agricultural resources, classroom learning and hands-on learning.

With the University of Massachusetts – Amherst being used as the case study in this report, it should be noted that the University of Massachusetts – Amherst is a perfect public research university to take the lead in teaching and training tomorrow's farmers. UMass – Amherst

resides in the Pioneer Valley of Western Massachusetts, home to some of the most fertile agricultural soil in the country, a hotbed for agriculture activity and the home of a region that strives for a fair balance of import food products and effective local food production. UMass was also started in 1863 as Massachusetts Agricultural College and was known by that name until the mid 20th century.⁹ However, since becoming a major research institution, UMass has drifted from its agricultural roots. Though it has a respectable agricultural curriculum in the Stockbridge School of Agriculture, agriculture is no longer the main focus of UMass. As UMass has taken on the role of training and educating future farmers, the question must be asked as to what model UMass uses in its curriculum and how could it be improved if at all. Through secondary resource research and interviews with faculty and students at UMass, four alternatives were examined in addition to an evaluation of UMass' current model – 1) Status Quo – no changes to the current system, 2) Internal Improvements through making the curriculum more well-rounded and utilizing existing resources, 3) Private Partnerships for educational opportunities and 4) Public Partnerships for educational opportunities.

Methodology

The project that this report is based upon took place in the form of a qualitative case study. The methods employed in this project sought to accomplish three goals – one being to learn the historical precedence and background of agriculture in the United States, in the Pioneer Valley and at UMass along with the how UMass' agricultural education model matches up against the standard accepted agricultural education model currently in use. The other two goals were to assess the background and operations of each of the four alternatives proposed, and to gain perspective on which alternative is the most beneficial and feasible in terms of implementation for the University of Massachusetts – Amherst Stockbridge School of Agriculture. This

⁹ UMass Special Collections Archive

procedure allowed me to find the data to answer my research questions of how UMass teaches and trains future farmers and what procedures, if any, could be used to improve the training and education that UMass provides to future farmers.

Three methods of data collection were used in this project – a literature review to provide historical background on agriculture and analysis on the agriculture education system, analysis of secondary resources about the values and skills that each alternative added, and interviews with members of the Stockbridge School of Agriculture at the University of Massachusetts – Amherst to determine interest and capacity to support the alternative. In total, 15 individuals were interviewed for this report. The individuals selected for interviews for this report were selected using a convenience sampling method in which they were the individuals that were easiest to access for interviews. Ten of these individuals were students who were seniors and members of the Sustainable Food and Farming concentration within the Stockbridge School of Agriculture at UMass. These students were asked to read and sign consent forms for this report. The student body interviewed had a female majority and had varying experiences in their time studying agriculture. The faculty members interviewed for this report varied in their ranks with two being high ranking faculty members, one being a lower level professor and two more being members of the Agricultural Learning Center at UMass and UMass Extension. The organizations studied for external educational entities in the private and public sector were selected at random based upon the convenience of the researcher's familiarity with the organizations previously.

The Alternatives

Status Quo: UMass' Current Agricultural Education System

The status quo would leave the current agricultural education curriculum as it currently is at UMass with no changes made. UMass currently follows the accepted standard model of a three

pronged approach to agricultural education. This includes classroom learning, experiential (hands-on) learning and student leadership group opportunities. Through interviews with both students and faculty within the Stockbridge School of Agriculture, it has been found that UMass may not have a balanced approach to this model and focuses more on classroom learning. UMass has also re-aligned parts of the Stockbridge School of Agriculture so that there is now a major entitled Sustainable Food and Farming that is offered as a traditional four year major within the Stockbridge School of Agriculture at UMass.

Internal Improvements: More Well-Rounded Curriculum and the Agricultural Learning Center

The methods in which internal improvements would be implemented would be through improved logistics in terms of experimental class credit limits, more practical course offerings relating to farming, the continued development of an Agricultural Learning Center to combine classroom learning with workshops and hands-on experiences, and a more integrated partnership with UMass Agricultural Extension and UMass' Center for Agriculture. In regards to the latter two organizations, they are a part of UMass the same as the Stockbridge School is. However, they are funded through different means (Stockbridge by the university and Extension and the Center for Agriculture by the government) and do not utilize each other as much as they could according to one of the faculty members interviewed.

As it is a generally excepted view that agricultural education should be obtained in a balanced system comprising of three components – classroom learning, experiential learning and student leadership opportunities, it is essential that UMass be able to provide that well-rounded quality of education to the future farmers that it is training. By improving course credit limits, class sizes, designing courses that teach the basics how to farm as compared to why to farm and

centralizing the university's agricultural education functions, UMass could do just that. This would comprise of field work, which has been cited as a necessary complementary method learning from both interviews and literature, and workshops as well. The proposed Agricultural Learning Center would be a student run farm with a center that would house various UMass Agricultural entities and would open access to both students and the public for more classroom learning, research work and workshops to go along with the added hands-on education and training.¹⁰

Private Partnerships: Local Farm Experiences and Agri-tourism

Partnerships with local farms would take place in the forms of workshops and field trips. While these two types of learning do occur at UMass, they are at the discretion of the professor in charge of the class. Utilizing the growing educational and business tool that farmers use of agri-tourism and agri-tainment could be an intriguing idea to students. According to the Penn State College of Agricultural Sciences, Agri-tourism and agri-tainment is comprised of interactive and experiential experiences on living farms.¹¹ Agri-tourism can range anywhere from a farm stand to a farm tour to an interactive experience where students experience and/or perform a certain agricultural function.¹² A few examples of places that use agri-tourism are the North Hadley Sugar Shack, McCray's Farm, Red Gate Farm and Walt Disney World's attraction Living with the Land. With its rising popularity, many farms in Massachusetts are beginning to adopt or utilize agri-tourism agricultural models according to the Massachusetts Department of Agricultural Resources and the United States Department of Agriculture Rural Development branch.¹³

¹⁰ UMass Center for Agriculture: *Agricultural Learning Center*

¹¹ Penn State Cooperative Extension: *Agricultural Alternatives: Agritainment*

¹² Ibid

¹³ USDA and MDAR, *Massachusetts Agri-Tourism Guide and Map*

Public Partnerships: Public Workshops

Public partnerships would be based on a system where UMass would partner with public sector organizations in order to educate and train future farmers about policies and government resources that the students need to be aware of and will need to adhere to once they enter the workforce as farmers. This learning would take place in the form of workshops where knowledge would be passed from the organization to the student as it would in a lecture. A few organizations that could make up potential partnerships locally would be Community Involved In Sustaining Agriculture (CISA), New England Small Farm Institute (NESFI), United States Department of Agriculture and the Massachusetts Department of Agricultural Resources.

Evaluation Criteria

Throughout the course of the data collection, specific keys were looked at. The data collected was then summarized using the following evaluation criteria keys:

- ***Student Interest and Demand:*** Data collected from student interviews in order to assess whether students were interested in functions that each alternative entailed.
- ***Values and Skills Employed:*** Analysis of resources that assessed what students could learn and acquire from each alternative.
- ***Partnership Opportunities:*** Research and conversations with local organizations to gauge interest in potential partnerships.
- ***Cost:*** Analysis of secondary resources in order to assess estimable cost and faculty interviews to determine whether UMass thought that the cost was plausible to bear.
- ***University Capacity:*** Faculty interviews in order to assess whether faculty believed the Stockbridge School of Agriculture was capable of implementing an alternative if the faculty thought that the alternative was plausible.

Methods of Evaluation Analysis

- **Political Feasibility:** The questions being answered were “How likely is this alternative to happen?” and “Does the Stockbridge School and the university support the idea?” In order to evaluate this criterion, data collected on the evaluation keys of interest and demand, cost, capacity and partnership opportunities were be assessed.
- **Local Availability:** In order for any external educational aid to be utilized by the university, there must be relevant agricultural organizations that are in the local proximity to the University of Massachusetts – Amherst. The organizations must also be willing to partner with the Stockbridge School at the University of Massachusetts – Amherst. The evaluation key that was be used to evaluate this criterion is partnership opportunities.
- **Effectiveness:** In order for an alternative to carry out the overall goal of helping train and educate students in the Stockbridge School of Agriculture, the alternative must be effective in that it provides an educational function to the student. The organizations and methods employed within the alternative must be successful in training and educating people in matters regarding agriculture in some manner. This criterion used the evaluation key and indicator of values and skills learned/employed to assess this criterion.
- **Efficiency:** In order for an alternative to be feasible in the eyes of the university and the Stockbridge School, the alternative must not only be effective and politically feasible – it must also be effective at a reasonable cost. Only when those two keys occur together is an alternative efficient. The evaluation keys that were used to assess this criterion are values and skills addressed and cost.
- **Potential Benefits and Outcomes:** This criterion helped assess how the alterative can aid in helping the Stockbridge School of Agriculture at the University of Massachusetts –

Amherst train and educate future farmers to run small farms. The data that was be used to assess this criterion is the values and skills that an alternative would provide to the student in terms of agricultural education.

Missing Data

Throughout the course of this project, there were some issues in regards to data collection. The project originally was designed to interview Stockbridge School of Agriculture Alumni as well. However, due to lack of response from alumni, alumni input was not included in this report. Also, due to the sample size being limited to seniors in the Stockbridge School, the sample size was smaller than what is represented at the Stockbridge School of Agriculture agricultural programs.

Historical Background

Agriculture in the United States and the Pioneer Valley

Agriculture has always played a large role in the history of the United States. It was Thomas Jefferson, a founding father of the United States of America, who wrote that he foresaw the economy of the United States being based on an agrarian society where people were self-sufficient and could make a living off of farming.¹⁴ For many years, this was true until the Industrial Revolution. As time has passed, America has strayed from its agrarian roots. However, without it, we would not be able to eat and produce. The Pioneer Valley in Western Massachusetts has always been a hotbed for agriculture and it remains so today. It remains so to the extent that Jefferson's vision lives on in the Local Food Movement and the idea that farming is a noble venture.¹⁵ It has been said time and time again that the Pioneer Valley is ahead of the

¹⁴ Thomas Jefferson, *Notes on The State of Virginia*

¹⁵ Community Involved in Sustaining Agriculture, www.growlocal.com

curve in “re-discovering” agriculture through the local food movement.¹⁶ As such, it is fitting that the valley has the potential to be a leader in agricultural education and development. With the University of Massachusetts – Amherst located in the center of the valley, the Pioneer Valley has the potential to be an agricultural hotbed in terms of training and education of labor. The local food movement that has seen so much action in the Pioneer Valley can be defined as knowing where your food comes from.¹⁷ With a greater number of farms providing food and resources, a region can provide a healthy blend of local and import food and resources. This model can help strengthen the local economy and make food more accessible to individuals and families who are deemed food insecure.¹⁸ It also accomplishes the goal of self-sufficiency for a region.

Agriculture and the University of Massachusetts

It is fitting that the University of Massachusetts – Amherst should be working towards becoming a national leader in training and educating young farmers so that they can properly operate small farms. The fertile grounds and agricultural culture of the Pioneer Valley in Western Massachusetts is one of the main reasons why UMass exists in Amherst. When Massachusetts was awarded the rights and funding to a college from the proceeds of the Morrill Land Grant Act in 1863, a Hadley farmer named Levi Stockbridge was one of many who petitioned that the college be placed in the Pioneer Valley.¹⁹ Stockbridge, and the other founding fathers of the college including William Clark, soon oversaw an agricultural college named Massachusetts Agricultural College in Amherst.²⁰ Despite not becoming President of MAC until later in his career, Stockbridge was one of the noted visionaries of the college. Levi believed that, “farming

¹⁶ Ibid

¹⁷ Ibid

¹⁸ Ibid

¹⁹ University of Massachusetts – Amherst Special Collections – Levi Stockbridge

²⁰ Ibid

is a science” and that “agriculture is the only necessary calling.”²¹ With this passion, Massachusetts Agricultural College flourished with this hard-working and noble Hadley farmer and the other administration at “Mass Aggie”. Though the agricultural department is now housed in a building bearing his name, the agricultural focus of UMass fell to the wayside as UMass became UMass, the Division I research institution. In the past few years, UMass has attempted to find its root in agriculture by focusing their farming majors into a new four year program (it was previously a two year Associate’s Degree program) called Sustainable Food and Farming .²² Under the direction of Stockbridge, MAC followed a model that roughly followed a model that would later be called the three circle model that focuses on a well-rounded agricultural curriculum that pulls from many integrated sciences. In the end, farmers should know how, how, what, where and why to farm.

Current Status of Agricultural Education

In 1917, legislation formally passed in the United States Congress in an act that was titled the Smith-Hughes Act.²³ The act promoted agricultural education for those who were interested in taking up a vocation in farming. The model that was used was called the three circle model where the three components of the model made up a well-rounded agricultural curriculum for schools all over. This accepted current standard for agricultural education is still used today in the United States. The three balanced parts that make up the accepted model of agricultural education are classroom learning, experiential (hands-on) learning and experience and student leadership opportunities.²⁴ While colleges and universities are not obligated to follow this model, many roughly follow the abstract design of the model. MAC roughly used the model informally

²¹ Anna Stockbridge Tuttle, *Reminiscences of Levi Stockbridge By His Daughter*

²² UMass Amherst Stockbridge School of Agriculture 2012-2013 Handbook

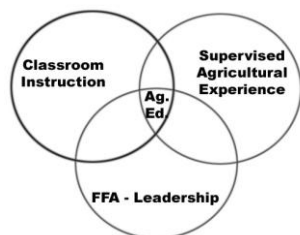
²³ Future Farmers of America, *Agricultural Education*

(<https://www.ffa.org/about/whoweare/Pages/AgriculturalEducation.aspx>)

²⁴ Future Farmers of America: *Agricultural Education Model*

at its founding and UMass currently uses a rough form of this model. However, through research for this report, it has been found that UMass currently has an unbalanced approach to the model

where classroom learning is the more focused upon method of training and education.



The Three Circle Agricultural Education Model (<http://www.nvaged.com/agedwhatweare.htm>)

Data and Findings

The data obtained via secondary resource research and qualitative interviews was qualitatively evaluated by the content of the data and summed up/ranked in the evaluation matrix in the Appendix I. While detailed notes were taken throughout the interviews, with the exception of stand-out quotes, the answers were summarized and analyzed into three sets of rankings that are provided in the four tables presented with the alternatives. Evaluated categories for the alternatives was ranked as either low, medium or high depending on the content and consistency (frequency) of certain themes and keywords that set the tone for the answers.

Status Quo

Keeping the current agricultural education system in place at the University of Massachusetts – Amherst was among the most feasible of the four alternatives, yet it was also the least productive in addressing the new mission statement of the Stockbridge School of Agriculture. In its current form, UMass focuses heavily on classroom learning in the three circle model and not enough on hands-on learning. In the mission statement, the Stockbridge School states that the goal of the school is to honor the original mission of the school by teaching agriculture as a science and an art of action and that the school gives students a full and comprehensive agricultural experience.²⁵ The end result of this process is that students are qualified to run and work on small

²⁵ Stockbridge School of Agriculture Mission Statement

farms. While the current agricultural education system that UMass offers does educate students about agriculture, it does not completely fulfill the original mission of the program in that it does not offer enough hands-on and practical knowledge for all of the students within the program.

Table 1: Status Quo Evaluation Matrix

<u>Alternative</u>	<u>Political Feasibility</u>	<u>Local Availability</u>	<u>Effectiveness</u>	<u>Efficiency</u>	<u>Value Addressed</u>
<i>Status Quo</i>	High	Yes	Low/Medium	High	Current - None/Low
	<u>Potential Outcome</u>	<u>Ranking</u>			
	Current	2			

As demonstrated in Tables 1 through, the data shows that while the status quo is politically feasible due to the fact that it is the current system, it is not the most highly demanded alternative. When asked in interviews about their opinions on the current agricultural education system at UMass, both current students and faculty noted that while the current program is not bad, it could offer more in terms of practicality and hands-on experience. Among the student body, a consistent response was that there was a heavy focus on the classroom instruction and the scientific theories behind farming. Of the current students interviewed, roughly 80% stated this opinion. While this approach is good and is consistent with many of Levi Stockbridge's thoughts, it does not tell the full story about farming. As was done in many of Stockbridge's courses, there needs to be a practical and a hands-on component to the exercises. The students noted that while the practical knowledge and hands-on experiences are not absent from the current program within the Stockbridge School, they are not emphasized enough. One student noted that it "seems like how much hands-on exposure you get is determined by which classes you select as electives." Therefore, while the status quo is politically feasible, it is not the alternative with the most student demand.

The fact that student demand is not high and that interviewed faculty members have stated that the program can be improved, it can be noted that the overall effectiveness of the status quo and current agricultural education system at UMass is not high. The status quo is not ineffective in that the current courses are not effective as much as they are ineffective due to program not going far enough into what the science and art of farming really incorporates. As such, it can also be said that the status quo is inefficient as it does not maximize the utility of its resources. According to one faculty member, the Stockbridge School of Agriculture has the resources in terms of knowledge to do more; the school just hasn't until as of late when the school has been researching ways to improve its program.

Internal Improvements

Of the four alternatives presented in this report, the concept of internal improvements was the most popular option. Both faculty and students alike supported this option and believed that it could be a viable and feasible alternative. There are two main reasons why the idea of internal improvements is the most popular option, as is shown in Tables 1 through 7 in the appendices. The two reasons why internal improvements was shown to be the most popular alternative out of the four presented was that 1) There are currently efforts underway to improve the farming program within the Stockbridge School of Agriculture at the University of Massachusetts – Amherst 2) Internally improving the curriculum for farming within the Stockbridge School of Agriculture has the most to offer in terms of values and skills added.

Table 2: Internal Improvements Evaluation Matrix

<u>Alternative</u>	<u>Political Feasibility</u>	<u>Local Availability</u>	<u>Effectiveness</u>	<u>Efficiency</u>	<u>Value Addressed</u>
<i>Internal Improvements</i>	Medium/High	Yes	High	Medium/High	All skill sets/High
	<u>Potential Outcome</u>	<u>Ranking</u>			
	Well-Rounded Educ.	1			

While the alternative of internal improvements is the most costly and expensive of the four options, it is also the most in demand alternative. There are several different ways in which internal improvements could be implemented. In addition to the already completed step of re-organizing and recognizing new majors within the Stockbridge School of Agriculture, the Stockbridge School could also:

- Petition for more practical classes. A course titled “Farming 101” that would teach the basics of farming was mentioned as an option by an interviewed student.
- Increase the amount of experiential learning credits from 15 credits. Hands-on learning is a large part of a hands-on profession like farming. Both students and faculty voiced that the 15 credit cap for hands-on labs and student farming experiences was detrimental to the program along with the fact that only a limited number of students could enter the experiential learning courses each semester.
- The development of the new proposed Agricultural Learning Center. The Agricultural Learning Center would be another student run farm that would allow the university to have an on campus farm and would give the university capacity to properly implement the three circle agricultural model where classroom learning is balanced with hands-on learning and leadership opportunities. There would be added courses, partnerships with local farms and public workshops in addition to a student run farm that would be just north of the UMass – Amherst campus. While roughly 25% of the students interviewed were curious as to why the university would not just simply approve improvements to the

already existing student farms, nearly all of the students were generally supportive of the idea

- Internal public partnership within the university that would reconnect and integrate the Stockbridge School of Agriculture with UMass Extension and the UMass Center for Agriculture. At the present time, not all of these entities are connected. This idea would draw from three of the four alternatives that are proposed in this report. Due to a logistical mistake by the university, UMass Extension and the UMass Center of Agriculture have different funding sources than the Stockbridge School of Agriculture. Since Extension and the Center of Agriculture are not funded to provide undergraduate education, they are not partnered with the Stockbridge School of Agriculture as much as they could be. A potential internal improvement would be to strengthen this internal public partnership.

In the evaluation of this alternative, internal improvements was rated to have a medium to high chance of political feasibility as can be seen in Table 2 due to the fact of cost and student uncertainty. This is also displayed in the Appendix with Appendix. This is due to the fact that parts of this option have already started to occur and been thought of. While the question of whether the cost is worth the benefit is a question that has caused some faculty members to give pause, the Stockbridge School has the capacity and resources to make some of the suggested internal improvements a reality according to a faculty member. Likewise, the Agricultural Learning Center is a center that is currently in development. While the Agricultural Learning Center is an expensive venture, developers of the center have already begun to accrue funds to make the Agricultural Learning Center a reality. Most importantly, there is general support and demand from the student base despite the fact that some students had initial reservations about

the university and the Stockbridge School putting all of its eggs in one basket, so to speak. It should be noted that the specific feasibilities of each facet of internal improvements was not examined in detail.

As far as effectiveness, efficiency and value/skills added goes, the alternative of internal improvements ranks as high and medium to high on the entire criterion. Since the concept of internal improvements addresses many of the areas of need that the Stockbridge School farming program currently has, such as more hands-on experience and a more well-rounded curriculum to fit the effectiveness that the three circle model draws upon. Therefore, internal improvements would prove to be an effective solution. Internal improvements would also be largely efficient as the Stockbridge School would be maximizing its resources in order to maximize its effectiveness. The only hindrance is that some parts of the concept of internal improvements could be expensive for the school.

Private Partnerships

The alternative of private partnerships was an idea that was generally well received among students and faculty. However, the overall feasibility of this option as a standalone alternative was questioned due to some concerns that were raised in the interview process of both the faculty and the students. As can be seen in Table 3, this alternative was the lowest ranking alternative when presented as a stand-alone alternative.

Table 3: Private Partnerships Evaluation Matrix

<u>Alternative</u>	<u>Political Feasibility</u>	<u>Local Availability</u>	<u>Effectiveness</u>	<u>Efficiency</u>	<u>Value Addressed</u>
<i>Private Partnerships</i>	Medium	Yes	Medium	High	Knowledge, Exper./Medium
	<u>Potential Outcome</u>	<u>Ranking</u>			
	Some better educ.	4			

Overall, students and faculty would be receptive to more formally developed private partnerships but were weary of the idea for several reasons, including the idea that the university is simply outsourcing its education. There was also the concern of “putting all of our eggs into one basket” according to one faculty member in terms of relying too much on certain private farms.

However, it should be noted that some professors do currently make connections with local area farms in the Pioneer Valley for field trips. However, there is no formal partnership where both parties have a formal agreement that they mutually benefit from. Due to the mixed reactions that this alternative received, political feasibility was ranked as medium. From a student perspective, while students felt that they could gain some knowledge from the area farms and gain access to potential job and internship locations in the Pioneer Valley, they were not sure of how welcoming the farms would be of them. The native community in the Pioneer Valley has what can be defined as a love/hate relationship with UMass students where respect is not always mutually shared. It is this latter fear that made the interviewed students weary of the feasibility of this alternative.

In many ways, the value and skills that students would learn at private and local farms is a specific area of knowledge and access to potential job and internship locations. For example, if a student was interested in maple sugar production, a partnership with the North Hadley Sugar Shack would make it possible for a student to experience the maple sugaring process through field trips and give them access to talk to the Boisvert family about a potential job or internship opportunity. As is shown in Table 3 with the values and skills being addressed being knowledge and experience, the values and skills gained would depend on the student’s interest and would generally be specific knowledge. By these means, private farm partnerships could be effective,

especially in an agritourism scenario where the student would be experiencing something. However, this is not a given variable. Therefore the effectiveness would be medium as effectiveness is defined by how much value is added to the quality of education and whether the alternative adequately fulfills a student's ability to know how to do a certain task. The efficiency, however, can be ranked as high. In an interview with a local farm, the farmer stated that they would charge an upfront fee at most. More than likely they would forge a partnership for free in exchange for heightened awareness and the fact that Private partnerships would also rank high on the local availability and benefit criterion as the university would be engaging the community and helping the community in terms of raising awareness with their partnerships. However, the reluctance on the part of faculty and students make this option an uncertainty. It should be noted that the feasibility of this option is heightened when this alternative is considered through the lens of an internal improvement, such as a program through the new proposed Agricultural Learning Center at UMass. In interviews with current students, the majority of the students interviewed stated that they viewed potential partnerships as a form of an internal improvement. In this light, the students viewed partnerships as feasible. As its own alternative, they were weary of its feasibility.

Public Partnerships

The alternative of public partnerships was ranked similar to that of private partnership. Surprisingly, students are slightly unaware of the value and skills that can be gained from attending public workshops and having access to the resources that services such as land use policy agents, farm loan officers and advocacy groups provide. The public sector, excluding public universities, provides many of the resources that dictate how farming and the world of agriculture is conducted. The public sector also provides subsidized resources that can help beginning farmers with start-up expenses. Even though many of the students in the farming

programs in the Stockbridge School of Agriculture intend to become farmers, they do not seem to realize the importance of public policies and resources that can and will help and govern them. In this instance, the Stockbridge School has a clear instinctive need to incorporate parts of public workshops into the curriculum. The question is, is it more feasible for this to be done as a part of an internal improvement effort or should this be a university partnership separate from an internal improvement. Many of the students and faculty interviewed saw no distinction on the issue but were inclined to view public partnerships as a form of internal improvements.

Table 4: Public Partnerships Evaluation Matrix

<u>Alternative</u>	<u>Political Feasibility</u>	<u>Local Availability</u>	<u>Effectiveness</u>	<u>Efficiency</u>	<u>Value Addressed</u>
<i>Public Partnerships</i>	Medium	Yes	Medium	Medium	Knowledge, Aware./Medium
	<u>Potential Outcome</u>	<u>Ranking</u>			
	Some better educ.	3			

The political feasibility of this option can be viewed as medium as both students and faculty members saw no harm in partnering with a public organization to better educate and train the student body in the public policy and resource part of agricultural education. The public organization that was interviewed for this report was hesitant to say that they would be willing to enter a stand-alone partnership for fear of being exploited and having their mission statement compromised. With such inconclusive results, it can be said that the political feasibility of this alternative was medium as is shown in Table 4.

The effectiveness and efficiency of public partnerships was ranked as being medium. The efficiency was ranked as medium due to the fact that research indicates that a public organization would only have an annual up-front fee in order for a partnership to occur between a university and a public sector organization such as a non-profit. As can be seen in Table 4, and similar to private partnerships, while there is a local availability of resources, only certain skills sets and

values are addressed. Therefore, the potential benefits and outcomes are limited to the exposure of the knowledge that public sector organizations are savvy in. The effectiveness of the alternative, in terms of how well it provides an agricultural educational aspect to the student, was ranked as medium due to the fact that the values and skills added are very specific to what the organization's mission goal is. Therefore, the student does learn everything from the partnered organization but rather awareness and knowledge of a particular issue or skill/value.

Trade-offs

It is clear from the data collected in this report, that some form of improvement needs to occur within the farming program in the Stockbridge School of Agriculture. The student and faculty demand dictates that decision. It should also be noted that the Stockbridge School is already starting to move away from the status quo and being a series of internal improvements.

Therefore, it is not a matter of if, but rather a question of when and how.

What this means is that the trade-offs that must be confronted when policy intervention decisions are being made on how to best enhance the curriculum offered by the Stockbridge School of Agriculture in order to best train farmers to operate farms, is that the potential trade-off becomes a matter of what issues in the implementation stage are traded off.

In this case, the largest trade-off becomes an issue of whether the university and the Stockbridge School wishes to be self sufficient or invest some facets of its educational curriculum in the local community. As a public research institution, the argument can be made that the University of Massachusetts – Amherst already invests in the local community byway of positive externalities in that the university is a leading player in Western Massachusetts' economic development. On the other hand, it can be argued that UMass could do more to work with and collaborate with

local businesses and organizations. The two alternatives that address potential partnerships would address this issue. However, the question is whether investing fully into an external entity would be a wise move for UMass and the Stockbridge School of Agriculture. The other side of the spectrum presents UMass and the Stockbridge School as a self-sufficient entity that could become an economic development powerhouse and could incorporate local investments into a larger plan that the university monitors. There are no clear answers to this potential trade-off that has to be confronted but it would seem that the university would wish to be self-sufficient given its standing as a Division I research institution.

Observations

Throughout the course of research for this report, it was observed that the alternatives of public and private partnerships could also be viewed through the lens of internal improvements in terms of exposing students to more agricultural resources and experiences that outside organizations could provide. Without the addition internally improving the program, the two alternatives concerning partnerships lost some of their effectiveness and feasibility.

Policy Recommendation

This report sought to answer research questions pertaining to how well the university currently trains and educates young farmers using the three circle model, what alternatives could help or add to the quality of agricultural education at UMass and what policy intervention, if any, should UMass apply in order to ensure that UMass is adequately training and education farmers to operate farms to make the farmer work force sustainable to combat food insecurity. Through analysis of resources and interviews, these questions were answered in that UMass currently focuses too much on one part of the three circle model, there are many resources available that UMass could draw upon to strengthen its curriculum and that internal improvements by making

the curriculum more well-rounded and utilizing internal partnerships are what is needed to ensure UMass is adequately training and educating future farmers.

In the final analysis, the policy intervention alternative that this report recommends is the continued efforts to internally improve the farming program within the Stockbridge School of Agriculture within the University of Massachusetts – Amherst. The alternative of internal improvements, both through improved curriculum and the ongoing development of the Agricultural Learning Center in North Amherst, provides the most value and effectiveness in accomplishing the goals that the Stockbridge School wishes to accomplish. As this alternative is starting to become the Status Quo, it is a wise investment. While the feasibility of the individual components of internally improving the existing program was not explored, it is the recommendation of the researcher that university continue to integrate the current curriculum with a more well-balanced approach to the three circle model in order to better educate and train future farmers. It is also suggested that the university utilize current internal partnerships and make sure that UMass Extension, UMass Center for Agriculture and the Stockbridge School of Agriculture use and work with each other. Overall, internally improving the farming program allows the university and school to both go back to the original mission statement that the founders of UMass foresaw 150 years ago and to adequately train and educate future farmers to be able to run and operate small, local farms.

This recommendation is not to discount the two alternatives of private and public partnerships. These two alternatives may have a place within the concept of internal improvements. However, as standalone options, they are not as effective as the idea of internal improvements.

Future Implications

If the University of Massachusetts – Amherst’s Stockbridge School of Agriculture continues to adopt the policy stance of internally improving its agricultural curriculum, there could be positive changes in the agricultural landscape. As UMass is located in a region known for agriculture, the university has the potential to engage in innovative research opportunities such as the ongoing research of vertical and greenhouse farming. The local food model and sustainable farming model that has thrived in the Pioneer Valley for so long could see heightened awareness and become more of an acceptable food security and farming model for the nation and world. The Pioneer Valley could see positive externalities due to the University of Massachusetts – Amherst being recognized as what it was founded as – an agricultural college. Most importantly, tomorrow’s farmers will be adequately trained and qualified to operate small farms that empower their communities and provide them with a living.

Conclusion

This report reached the conclusion that the Stockbridge School of Agriculture would be best served to consider the alternative that detailed several different methods of internal improvement due to the fact that this alternative best accomplishes the goal of educating and training tomorrow’s farmers who will be replacing the aging and retiring farmers. As the latter issue is one of the three main threats to food security supply in the future, it is crucial that this task be done in the most effective way possible. With its increased responsibility in training and educating future farmers, public universities must make their curriculum as well-rounded and practical as possible with a program design that incorporates both science and hands-on experience. Of the four proposed policy alternatives, internal improvements best accomplishes that goal and it continues a recent current effort by UMass to better its agricultural programs.

Appendices

Appendix I: Evaluation Matrix

<u>Alternative</u>	<u>Political Feasibility</u>	<u>Availability</u>	<u>Effectiveness</u>	<u>Efficiency</u>
<i>Status Quo</i>	High-Current System	Yes	Low/Medium	High
<i>Internal Improvements</i>	Med./High - Expensive but in progress/needed	Yes	High	High
<i>Private Partnerships</i>	Medium - provides some educ.	Yes	Medium	High
<i>Public Partnerships</i>	Medium - provides some educ.	Yes	Medium	Medium

<u>Alternative</u>	<u>Value Addressed</u>	<u>Outcome</u>	<u>Ranking</u>
<i>Status Quo</i>	Current - None/Low, Classroom Experience focus	Current	2
<i>Internal Improvements</i>	All skill sets/High - 3 Circle Model potential	Well-Rounded Educ.	1
<i>Private Partnerships</i>	Knowledge, Experience/Medium - Certain ag. exp.	Some better educ.	4
<i>Public Partnerships</i>	Knowledge, Aware./Medium -certain ag. knowledge	Some better educ.	3

Appendix II: Internal Improvements Matrix

<u>Idea</u>	<u>What</u>	<u>Purpose</u>
15+ Credits	Added experiential learning, research	More hands-on opp.
Workshops	Network, training, awareness events	Raised awareness of resources
Field Trips	Visit an ag. experience	Int. Educ. To educate
Research	More transparent, hands-on research	More relevant work
Experiential	More field work	More hands-on opp.
Practical Classes	More nuts and bolts courses	Learn how to farm
Ag. Learning Center	Center to learn about farming, do ag. and host events	Combines many of above

<u>Idea</u>	<u>Cost</u>	<u>Benefits and Outcomes</u>
15+ Credits	University determined	More experience
Workshops	Commission fee in some cases	Awareness and some knowledge
Field Trips	Up front fee	Knowledge, Awareness
Research	Free/Small fee	Knowledge
Experiential	Price needed	Work Experience, knowledge
Practical Classes	Price needed/will cost money	Knowledge and awareness
Ag. Learning Center	Money needed (Expensive) but in progress	Little bit of everything

Appendix III: Private Partnerships Matrix

<u>Organization</u>	<u>What</u>	<u>Purpose</u>
<i>North Hadley Sugar Shack</i>	Agritourism/tainment, Opportunities, Educ. Exp.	Educate and raise awareness
<i>Red Gate Farm</i>	Experiential Learning	Learn how to farm
<i>McCray's Farm</i>	Agritourism	Int. Educ. To raise awareness
<u>Organization</u>	<u>Cost</u>	<u>Benefits and Outcomes</u>
<i>North Hadley Sugar Shack</i>	Up front fee (Varies)	Knowledge, interest and awareness
<i>Red Gate Farm</i>	N/A	Experience and knowledge
<i>McCray's Farm</i>	Up front fee (Varies)	Knowledge and market option

Appendix IV: Public Partnership Matrix

<u>Organization</u>	<u>What</u>	<u>Purpose</u>
<i>CISA</i>	Workshops and Awareness	Network and resource aware.
<i>NESFI</i>	Workshops and Opportunities, help for farmers	Network and resource aware.
<i>USDA</i>	Workshop app., help for farmers	Network and resource aware.
<i>MDAR</i>	Workshop app., help for farmers	Network and resource aware.
<i>FFA/FB</i>	Opportunities and Awareness	Network and resource aware.
<i>Other</i>	Workshops and Networking	Network and resource aware.
<u>Organization</u>	<u>Benefits and Outcomes</u>	
<i>CISA</i>	Knowledge and awareness (Resources-network/business)	
<i>NESFI</i>	Knowledge and awareness (Resources-network/business)	
<i>USDA</i>	Knowledge and awareness (Resources-network/business)	
<i>MDAR</i>	Knowledge and awareness (Resources-network/business)	
<i>FFA/FB</i>	Knowledge and awareness (Resources-network/business)	
<i>Other</i>	Knowledge and awareness (Resources-network/business)	

Appendix V: Secondary Data Chart

<u>Idea</u>	<u>Effectiveness</u>		
<i>Agritourism/tainment</i>	Good for some aspects.		
<i>Workshops/Resource Fairs</i>	Good for some. Already do informally		
<i>Field Trips</i>	Good for awareness. More younger crowd.		
<i>Job/Internship Opportunities</i>	Good.		
<i>Interactive Education</i>	Good for some aspects. Public?		
<i>Internal Improvements</i>	Good. Similar to Ag. Learning Center?		
<i>Ag. Learning Center</i>	Good		
<u>Idea</u>	<u>Outcome</u>		
<i>Agritourism/tainment</i>	Some gained knowledge/awareness (depends)		
<i>Workshops/Resource Fairs</i>	Business/Policy knowledge and awareness		
<i>Field Trips</i>	Some gained knowledge /experience		
<i>Job/Internship Opportunities</i>	Experience		
<i>Interactive Education</i>	Experience and knowledge		
<i>Internal Improvements</i>	Knowledge and experience		
<i>Ag. Learning Center</i>	Knowledge and experience, awareness		
<u>Idea</u>	<u>Local</u>	<u>Value</u>	
<i>Agritourism/tainment</i>	Yes	Interactive Ed., Awareness	
<i>Workshops/Resource Fairs</i>	Yes	Awareness and knowledge	
<i>Field Trips</i>	Yes	Awareness and knowledge	
<i>Job/Internship Opportunities</i>	Maybe	Work Experience	
<i>Interactive Education</i>	Maybe	Unorthodox Learning	

Appendix VI: 10 Student Interview Notes (Brief Summary of thoughts)

<u>What Expected</u>	<u>Current System</u>
Hands-on experience	Not bad but need more hands on
Mix of hands-on experience and theory	Not bad but need more hands on
Learn about ag. in any way	Not bad but need more hands on
Practical experience	More hands on needed
Work on farm and be hands-on	Science not bad but need collab.
Wanted to learn about food prod. And farming	Good but need more greenhouse work
Wanted to learn about food security	Not bad but could be stronger
A mix of scientific thought and hands-on experience	Like current system
Learn about social implications of food	More visibility would be good
Learn about social implications of food	Not bad but could use improvements
<u>Improvements</u>	
Internal	
Improve current resources	
Improve logistics	
More outside partnerships	
Like Ag. LC but is it needed?	
Internal Improvements	
Stronger internship requirements	
Better set-up	
More awareness in department	
More classes	

Appendix VI: 5 Faculty Interview Notes (Brief Summary of thoughts)

<u>Background</u>	<u>Main thought</u>
Professor	Need more balanced approach - Internal Improv. Good
Professor	Current system could change - more integrated approach
Upper Level Faculty	Internal Improvements good - Part. Good only to a point
UMass Extension	More internal partnerships would be good and effective
Ag. Learning Center	Ag. Learning Center will address some of the 3 Model Needs

Appendix VIII: Interview Questions

Faculty

1. Do you feel that the current curriculum at the Stockbridge School of Agriculture prepares students to work on and run small, local farms? Why or why not?
2. What is your opinion of the current curriculum? What do you like about the current curriculum? Would you change anything? Why or why not?
3. Would you like to see the university internally improve its procedures in the Stockbridge School of Agriculture?

4. Do you feel that the university should partner more with public organization in the area to bring you (the student) public workshops? Would you find this interesting or helpful? Why or why not?
5. Do you feel that the university should partner more with private farms in order to help train and educate students at the Stockbridge School of Agriculture? Would agritourism/agritainment experiences be helpful? What about local connection that you could study or potentially do an internship on? Why or why not?
6. Would the university have the funds and capacity to support public partnerships and workshops? Would the university want to do this and/or be receptive to this idea? Why or why not?
7. Would the university have the funds and capacity to support private farm partnerships? Would the university want to do this and/or be receptive to this idea? Why or why not?
8. Would the university have the funds and capacity to support internal program improvements? Would the university want to do this and/or be receptive to this idea? Why or why not?
9. If you could describe what you want the Stockbridge School of Agriculture to be like in 10 years in one word, what would that word be?

Students

1. Has the quality of education here at the Stockbridge School of Agriculture met what you expected to learn when you enrolled in this program?
2. Do you feel like the Stockbridge School of Agriculture has provided enough hands-on learning?
3. In your experiences at the Stockbridge School of Agriculture, what do you feel the curriculum has best trained you to do?
4. Has the 15 credit limit on hand-on learning hindered what you felt you could learn and practice?
5. Would you like to see the university internally improve its procedures in the Stockbridge School of Agriculture?

6. What do you feel the university could do, if anything, to enhance the education and training that you receive in agriculture? Or do you think the system is fine as it is?
7. What is your opinion on the Stockbridge School of Agriculture? What is your opinion on the new proposed Agricultural Learning Center?
8. Do you feel that the university should partner with public organization in the area to bring you (the student) public workshops? Would you find this interesting or helpful? Why or why not?
9. Do you feel that the university should partner more with private farms in order to help train and educate students at the Stockbridge School of Agriculture? Would agritourism/agritainment experiences be helpful? What about local connection that you could study or potentially do an internship on? Why or why not?
10. Does the Stockbridge School of Agriculture teach you how to farm in terms of the basic procedural steps?
11. Where do you see the Stockbridge School of Agriculture being in 10 years as far as quality of education?
12. Do you feel that the quality of the professors is good or bad? Why? What would you suggest?

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