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Exploring Situations of the Community-Based Multifunctional Agriculture
in the New England Region

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Paper prepared for presentation at the Agricultural & Applied Economics

Association's 2012 AAEA Annual Meeting, Seattle, Washington, August 12-14, 2012

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Exploring Situations of the Community-Based Multifunctional Agriculture in the New England Region

Abstract

The purpose of this paper is to report preliminary findings of a comprehensive study of multifunctional farming operations in New England. The study shows that small farmers are involved in multifunctional activities that allow them to use existing resources to supplement their farming operations. The study clearly shows that small farmers are involved in broadening, deepening and re-grounding activities including direct sales, value added, agritourism and off farm income endeavors. The study provides much needed insight and specification into these activities and provides important new implications for academics, practitioners and policy makers locally, regionally and nationally.

Introduction

The face of the U.S. agricultural industry has changed dramatically. Researchers are paying more attention to community based small farms given the rising interests in understanding local and regional food systems. Once the agricultural market was dominated by large scale production and operation, the number of small commercial and noncommercial farms has grown significantly. According to a report from the Economic Research Service of the USDA, *“ninety-one percent of U.S. farms are classified as small – gross cash farm income (GCFI) of less than \$250,000. About 60 percent of these small farms are very small, generating GCFI of less than \$10,000.”* (USDA, ERS, 2010) It might be true that economies of scale exist in larger operations. Evidence has shown that some small commercial farms are willing to operate at loss with respect to agricultural production. For noncommercial small farms, many rely on off farm income to supplement farm operations (USDA, ERS, 2010). It is still not clear to researchers and policy makers how small farms have survived over time through the volatility of the market/price variations, turmoil of the economic crises, and pressure from international trade agreement.

This paper provides a preliminary report of the results of a census survey conducted in the New England region. This census survey was the first step of a research project designed to examine the relationship and impacts of multifunctional agriculture at the regional and the national level. The definition of multifunctional agriculture is derived from three aspects – broadening (agri-tourism, value added), deepening (direct sales), and re-grounding (off farm income and jobs) beyond traditional farming operations. The information presented in this paper will make

an important contribution to conceptual and empirical studies in the fields of applied economics, agricultural economics, and entrepreneurship.

There are a few reasons why the multifunctional agriculture is an important topic to study. First, the concept of the multifunctional agriculture has been introduced and limited to trade policy discussions (Moon & Griffith, 2011; DeVries, 2000). The idea of the multifunctional agriculture covers economic, social, and ecological aspects that have been applied in the U.S. by small farmers for many years. Yet, there has been no empirical study in the U.S. to explore and examine the structure of the community based multifunctional agriculture. A second reason for exploring the community based multifunctional agriculture is the need to identify what types of the multifunctional operations actually exist in different communities. It is necessary to capture the true meaning of the multifunctional concept from farmers' perspectives – Does it relate to diversification? Does it mean entrepreneurial activities? While many theorists provide a conceptual framework to describe what multifunctionality is, it will be essential to actually categorize the activities and involvement representing multifunctional agriculture at the community level and it will facilitate future studies with a clear definition. The third reason for understanding the multifunctional agriculture is the need to recognize the impacts of small farms in rural and urban areas. Many commercial and noncommercial small farms contribute to community health and sustainability. There has been considerable discussion among practitioners and farmers with respect to developing a strong underpinning framework to show that sustainable and successful small farms will stimulate local employment, enterprise development, and economic opportunities. However there has been no research evidence that generates a systematic approach to evaluate the relationship between farmers and other community based entities.

Review of the Multifunctional Agriculture

The term of multifunctionality has gained a lot of attention among policy makers in environmental, agricultural, and international trade discussions. Like any emerging concept, multifunctionality could mean different things to different people, often depending on the circumstances and the occasions when this term is brought up by different speakers. We summarize the common descriptions of the multifunctional agriculture from the international perspective and the U.S. perspective, and we derived the research questions for our study based on the literature review.

International Level

The term “multifunctional agriculture” emerged on the international stage in early 1990s, at the Rio Earth Summit, “...*multifunctional aspect of agriculture, particularly with regard to food security and sustainable development.*” (Agenda 21, Chapter 14, appeared in DeVries, 2000). The countries of the Organization for Economic Cooperation and Development (OECD) expanded on the multifunctional agriculture concept in 1998, noting: “*Beyond its primary function of producing food and fiber, agricultural activities can also shape the landscape, provide environmental benefits such as land conservation, the sustainable management of renewable natural resources and the preservation of biodiversity, and contribute to the socio-economic viability of many rural areas. Agriculture is multifunctional when it has one or several functions in addition to its primary role of producing food and fiber.*” (appeared in OECD Declaration of Agriculture Ministers Committee and cited by DeVries, 2000). Many scholars concur with this broad notion of multifunctional agriculture, and the concept has emerged as a key notion in many scientific and policy debates on the future of agriculture and rural development among European countries (Brouwer and van der Heide 2009; Renting, et al. 2009; Hajnalka and Alajos, 2009; Van Huylenbroeck and Durand, 2003).

Supporters called attention to many positive goods and services provided by agriculture besides food and fiber. Many of these non-commercialized goods and services are not traded in the market, therefore there is no market mechanism to assess the values and benefits for them and for farms that provided them. These goods and services could be defined very broadly, and generally include a significant number of small/family farms that rely on the local communities where farmers sell and purchase other value added products. We agree that there has been a strong connection between local farms and farmers, residents, service providers, public and private enterprises, and other entities to develop a healthy and sustainable local economy which will be economically, socially, and environmentally balanced. However the specific aspects of multifunctional agriculture have been limited in the trade discussion particularly amongst the European countries. These aspects include – supporting viable rural communities, to create environmental benefits, to ensure food security for local communities, to maintain the values of the working landscape, to improve food quality and safety in production, and to promote animal welfare for working farmers.

The U.S. Situation

There has not been a clear definition of multifunctional agriculture established in the U.S. In the U.S., multifunctionality has largely been addressed at the macroeconomic level to consider trade issues (e.g., Bohman, et al. 1999). Researchers applied this term, multifunctionality, in a

very flexible manner depending on the type of research questions they generate. For example, a study originated in Minnesota to evaluate changes to current farming practices in two Minnesota watersheds to provide insight into how policy could be structured to provide environmental, social, and economic outcomes on working agricultural lands (Boody, et al 2005). This group of researchers believed that agriculture provided many other types of functions and benefits beyond producing food and fiber. They followed the discussion of multifunctionality at the international trade arena, and hoped to capture the effects of nonmarketed goods and services provided by farms; such as water quality, fish populations, greenhouse gases, carbon sequestration, social capital, and human capital. This study utilized the term “multifunctional farm” as the “diversified farm” in an interchangeable manner, and concluded that (1) there would be positive benefits provided by multifunctional farms with respect to economic, social, and environmental aspects; (2) there would be unavoidable social and economic costs for both farmers and consumers if we would change the social structure in social capital and human capital; and (3) there might be transactional costs for different agricultural production if we would change the structure of agricultural policies with respect to subsidies and payments to farmers.

The Framework and Assumptions of the Research

Van der Ploeg and Roep (Van der Ploeg and Roep, 2003) described a basic framework to categorize multifunctionality in agriculture: *Broadening, Deepening, and Re-grounding*. Broadening involves a farming operation diversifying its enterprise to include the production of new goods and services that encourage the linking of farm production, visitors to rural areas, and amenities of their local communities. Agritourism and specialty food sectors in the New England region are clear examples of broadening activities. Deepening involves refocusing agricultural production to better meet the demands of consumer and sometimes requires advancements in the agricultural supply chain. Direct local sales are examples of deepening activities. Finally, Re-grounding activities involve the total refocusing of farm household resources, such as to activities outside of farming and off-farm work of farm household members. To the extent that these activities take place in the private market, the decision-making is related to the new entrepreneurship model (e.g., Walzer 2007; also Goetz 2008 and Goetz et al. 2010). We introduced and designed a slightly different framework of studying the multifunctional agriculture in the U.S. and in New England. Monitoring previous information collected by the ARMS and Agricultural Census over many years, we have identified four types of operations on farms that fit into the multifunctional purposes beyond traditional farming practices:

- Broadening – farmers might choose to utilize on-farm resources to develop agritourism related services, and/or value added products.

- Deepening – farmers might decide to **sell their products directly** to different types of consumers including institutions (schools, hospitals, government agencies), Community Supported Agriculture (CSA), farmers' markets, farm stands, wholesale venues, large grocery chain stores (Wal-Mart, Kroger, Price Chopper, etc.), and producer/consumer cooperatives.
- Re-grounding – farmers would attend **income from non-farm sources**, such as off-farm jobs, non-farm enterprises, or other individuals' contributions.

Figure 1 provides a simplified version of the graphical presentation to understand the relationships between potential combinations of four types of multifunctional operations that any farmer may choose to use.

1. Farmers may choose to adopt only one type of multifunctional operation, and it could be agritourism, value added, direct sales, or off farm income.
2. Farmers may choose to adopt only 2 types of multifunctional operations, and it could be any combination of agritourism, value added, direct sales, and off farm income.
3. Farmers may choose to adopt only 3 types of multifunctional operations, and it could be any combination of agritourism, value added, direct sales, and off farm income.
4. Farmers may choose to adopt all 4 types of multifunctional operations, which means they have agritourism, value added, direct sales, and off farm income beyond their traditional farming practices.

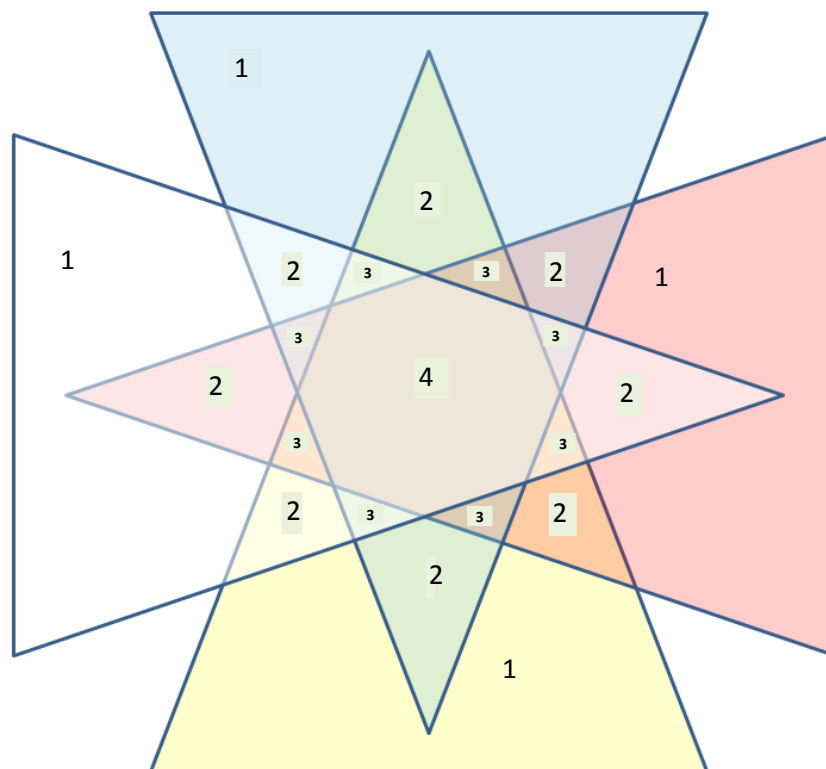


Figure 1. A Diagram to Understand the Combinations of the Four Types of Multifunctional Agriculture – Agritourism, Value Added, Direct Sales, and Off Farm Income

Research Questions

Given such a broad view in multifunctional agriculture at either the international or domestic levels, we developed our own research questions to study the structure of the multifunctional agriculture at the regional level and at the national level. At first, we need to ask two basic questions that no one has discovered before: At the farm level, what do farmers do to be multifunctional and how do farmers connect with the prosperity of the community?

Research Methods

A census survey at the farm level was designed and implemented to gather information about types of multifunctional agriculture among all farmers in New England.

Survey Design

A post card survey instrument was designed in 2011. Four categories of the questions were included in the post card:

Q1: Have you had any agri-tourism operation on your farm since January 2011? Yes or No

If yes (choose all that apply)

Petting Zoo, Farm Tour, Special Events, Bed & Breakfast, Outdoor Recreation, Others

Q2: Have you participated in any direct sales since January 2011? Yes or No.

If yes (choose all that apply)

Pick-Your-Own, Farm Stand, CSA, Coop, Farmers' Market, Restaurant, Others

Q3: Have you introduced any value-added products besides traditional farm products since January 2011? Yes or No

If yes (choose all that apply)

Jam and Jelly, Cheese, Cream, Ice Cream or/and Yogurt, Bread or/and Butter, Wine, Syrup, Pickled Fruit and Vegetable, Wool, Spice, Candy, Others

Q4: Have you earned off farm income other than farming practices since January 2011? Yes or No

If yes (choose all that apply)

From Other Occupations Besides Farms, Income from Other Companies Besides Farms, From Other Individuals

Survey Procedure and Responses

The post card survey was mailed to 28,890 farms between October 2011 and January 2012 through the collaboration with the National Agricultural Statistic Services (NASS) in the New England region. The mailing addresses of all farmers were maintained with the NASS New England office based on the 2007 information. The NASS assisted in printing and mailing the post cards. The post cards were returned from farmers directly to the researcher at the University of Vermont, without any identity attached. Three types of farms were not included in the mailing – (1) new farms started after 2007; (2) farmers that quit farming after 2007; and (3) farms that changed addresses or contact information after 2007.

The average response rate of the post cards in New England was 14%, with the highest response rate in Vermont (19%) and the lowest response rate in Connecticut (10%) (Table 1).

Table 1. Summary of Survey Mailing and Responses

State	Census Total Farms in 2007	Post Cards Mailed in 2011-12	Post Cards Returned in 2011-12	Response Rate of the Post Cards	% of Census
CT	4,916	4,633	483	10%	28%
ME	8,136	7,387	887	12%	31%
MA	7,691	6,592	810	12%	35%
NH	4,166	3,585	516	14%	37%
RI	1,219	903	98	11%	29%
VT	6,984	5,775	1,107	19%	41%
New England	33,112	28,890	3,916	14%	34%

Compared with the 2007 Agricultural Census information, many more farmers who responded to the post card survey were involved in agritourism operations in 2010 (Table 2). The state of Vermont seemed to have a much higher percentage of the farmers involved in agritourism compared with other states, while the state of Rhode Island showed a slightly lower number of farmers involving in agritourism. Off farm income seemed to be the most important aspect of the multifunctional operations for over 31,000 farmers according to the 2007 Agricultural Census. However the post card surveys only captured between 6 percent and 13 percent of the Census respondents. A major assumption of our comparison is that the same farmer responded to the 2007 Agricultural Census might or might not respond to our post card survey in 2011-12.

Off farm income was definitely the dominating single category among all multifunctional related activities. For those farmers who had 2 types of multifunctional activities, most of them chose to participate in direct sales and off farm jobs. Comparing the types of the multifunctional agricultural operations across the states in different combinations of categories, between 70 percent and 80 percent of the farmers responded to the post cards earned off farm income in 2010. Between 53 percent and 73 percent of the respondents participated in some types of direct sales and earned off farm income in 2010. Direct sales, value added products, and off farm income seemed to be the most popular combination for 48 percent to 70 percent of the responding farmers (Table 3).

Table 2. Summary of Multifunctional Agricultural Operations in New England – Comparison between 2007 Census Information and 2011-2012 Post Card Survey Responses

	Broadening						Deepening			Re-grounding		
State	Census Farms With Agri-Tourism	Post Card Responses to Agri-tourism	% of census	Census Farms With Value Add Sales	Post Card Responses to Value Added Sales	% of Census	Census Farms With Direct Market Sales	Post Card Responses to Direct Market	% of Census	Census Farms With Off Farm Income	Post Card Responses to Off Farm Income	% of Census
CT	97	121	125%	408	148	36%	1099	306	28%	4705	363	8%
ME	112	197	176%	724	275	38%	1705	537	31%	7749	687	9%
MA	154	220	143%	613	263	43%	1659	576	35%	7299	607	8%
NH	88	153	174%	403	220	55%	982	360	37%	4011	399	10%
RI	43	37	86%	89	35	39%	249	71	29%	1168	67	6%
VT	102	255	250%	635	437	69%	1474	609	41%	6430	804	13%
New England	596	986	165%	2,872	1,383	48%	7,168	2,471	34%	31,362	2,938	9%

Table 3. Summary of Multifunctional Agricultural Operations in New England by State

	CT		MA		ME		NH		RI		VT	
Type of Multifunctional Operation	Farms	%	Farms	%	Farms	%	Farms	%	Farms	%	Farms	%
ONLY ONE TYPE (total)	125		186		227		112		17		283	
agritourism	6	4.8	2	1.08	4	1.76	3	2.68	2	11.76	9	3.18
direct sales	28	22.4	53	28.49	30	13.22	21	18.75	7	41.18	32	11.31
value added	1	0.8	0	0	3	1.32	1	0.89	0	0	14	4.95
off farm income	90	72	131	70.43	190	83.7	87	77.68	8	47.06	228	80.57
TWO TYPES (total)	154		273		267		152		32		269	
agritourism, direct sales	9	5.84	24	9.00	11	4.12	11	7.24	3	9.38	15	5.58
agritourism, value added	1	0.65	1	0	2	0.75	1	0.66	0	0	1	0.37
agritourism, off farm income	21	13.64	17	6.00	18	6.74	10	6.58	5	15.63	33	12.27
direct sales, value added	10	6.49	24	9.00	27	10.11	19	12.5	4	12.5	40	14.87
direct sales, off farm income	109	70.78	196	72.00	195	73.03	99	65.13	19	59.38	142	52.79
value added, off farm income	4	2.6	11	4.00	14	5.24	12	7.89	1	3.13	38	14.13
THREE TYPES (total)	104		194		178		143		23		272	
agritourism, direct sales, value added	13	12.5	28	14.43	17	9.55	18	12.59	4	17.39	31	11.4
agritourism, direct sales, off farm income	22	21.15	54	27.84	46	25.84	31	21.68	8	34.78	44	16.18
agritourism, value added, off farm income	2	1.92	4	2.06	2	1.12	4	2.8	0	0	7	2.57
direct sales, value added, off farm income	67	64.42	108	55.67	113	63.48	90	62.94	11	47.83	190	69.85
ALL FOUR TYPES	46		90		96		80		15		115	

Table 4. Summary of Multifunctional Agricultural Operations in New England by Categories

Agritourism	# of Farms	Direct Sale	# of Farms	Value Added	# of Farms	Off Farm Income	# of Farms
Zoo	88	Pick Your Own	390	Jam & Jelly	279	Full Time Job	1535
Events	401	CSA	204	Bread & Butter	89	Part Time Job	917
Outdoor Activity	182	Farmers' Market	632	Ice Cream	54	Another Business	753
Tour	563	Grocery Stores	396	Pickled	206	Others	515
B&B	58	Institutions	234	Wine	25		
Others	236	Farm Stand	1243	Cheese	80		
		Coop	233	Cream	29		
		Restaurant	496	Wool	188		
		Others	984	Syrup	480		
				Candy	113		
				Spice	43		
				Others	619		

Anecdotal discussions in recent years have revealed strong evidence that farmers provide many goods and services in addition to traditional food and fiber. Our survey showed that many respondents created new opportunities to utilize on-farm resources, to diversity farming profile, and to generate direct impacts on consumers and communities (Table 4). Among all the respondents who provided agritourism services, 563 farmers offered tours to visitors and 401 farmers hosted events on farms (e.g. wedding, reunion, concert, and festival). Several farmers responded to the “Others” category offered educational workshops by teaching local residents, students, and visitors different aspects of farming. For those farmers who responded to direct sales, 1,243 had set up farm stands, 632 sold in farmers’ markets, and 496 sold to restaurants. The most popular categories of value added products included syrup, jam and jelly, and pickled fruit and vegetable. Over one thousand and five hundred respondents had full time jobs to compensate farming operations. Nine hundred and seventeen farmers had part time jobs, and over seven hundred farmers had other types of businesses besides farming. Notice that the off farm income questions only asked farmers about their own experiences. Later we asked the family members if they had any off farm income to support the family income.

Discussion and Implication

The purpose of this paper is to report preliminary findings of a comprehensive study of multifunctional farming operations in New England. The postcard survey shows that there seems to be an increasing number of farms, 2007 Census compared to survey respondents, involved in agritourism with the exception of Rhode Island. There are fewer farms involved in value added sales, direct sales and off farm income even though these three categories represent larger total numbers.

Farmers engaged in only one multifunctional operation were more engaged in direct sales. This make sense since it represents the simplest choice. Those engaged in two multifunctional operations were focused in direct sales and off farm income. Those involved in three multifunctional activities were more often than not involved in direct sales, off farm income and value added activities.

The results also shows in more detail the nature of multifunctional operations. For example, direct sales to local outlets predominate in that area. Value added activities allow farmers to convert the basic commodities, particularly excess production, into income and allow diversification and agritourism activities provide activities that involve farmers with their local communities and tourists in a way that provides more insight to the audiences about farms and farmers.

These findings have important implications for academics who want to pursue further research in this increasingly important area, for extension personnel directly involved with farmers seeking ways to use farm resources and preserve their way of life and policy makers who are interested in assisting small rural farms and rural communities in their development activities.

In addition policy makers interested in local food systems can see the extent to which local foods play a role in preserving rural farms and in rural community development.

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