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# Marketing channels and internet technology used by specialty crop farmers

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# MARKETING CHANNELS AND INTERNET TECHNOLOGY USED BY SPECIALTY CROP FARMERS

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## ABSTRACT

An online survey was used to collect data on specialty crop farms in 2010 in Louisiana. The objectives included evaluation of familiarity with the Louisiana Food MarketMaker website and the All about Blueberries website, about marketing channels used, and the adoption of electronic and Internet based technologies to assist with marketing of differentiated products. Variables included use and effectiveness of marketing channels, level of use and quality of internet service, use of Internet-based functions and applications, barriers to internet use, frequency of use and usefulness of social media and smart phones, effectiveness of and familiarity with MarketMaker and All about Blueberries websites and specific application. Generally, despite small sample size, farmer characteristics from the Louisiana survey were reasonably consistent with results from the Census of Agriculture 2007. Descriptive analysis and Logit model were used for data analysis. Results from this study can provide useful information about these new (to many farmers) technologies for marketing.

Familiarity with MarketMaker was strongly associated with strongly associated with share of total sales from vegetable crops, farmer occupation, Internet speed as a barrier, Internet use in farming and finding markets through MarketMaker in 5 percent significant level. Social media use in farming was statistically significant in explaining familiarity with All about Blueberries website. Internet use and specialty crop acreage also were significant. In addition, large impacts on the odds ratios were found. When speed of internet service was rated as not a barrier, familiarity with MarketMaker is higher. Significant impact of coefficients on odds ratios were found for both websites.

Future questionnaires could segment users based on level of activity such as initial and intermediate involvement, improved ability to use the site for partners and for research, to manage risk, and for feedback for further development of the program. Length of the survey questionnaire was a limitation.

# CHAPTER 1: INTRODUCTION

## 1.1 Background

In recent years, there has been a growth in direct marketing to consumers by small- and medium-size producers as a popular marketing practice in the United States. More farmers are trying to meet the growing demand for local produce as this is an important source of revenue for them (Thilmany et al., 2006). Specialty crops are very important for small- and mid-size producers as these crops have performed an important role in Louisiana agriculture. At the present time, small- and mid-size specialty crop producers in Louisiana produce a wide range of crops including fruits, nuts and vegetables such as strawberries, blueberries, watermelons, sweet potatoes, okra, cabbage and other winter vegetables, tomatoes, sweet and hot peppers, southern peas, pecans, citrus, sweet potatoes, and mushrooms (The Louisiana Specialty Crop Program Final Performance Report-2011).

According to the United States Department of Agriculture (USDA), specialty crops are defined as fruits, vegetables, tree nuts, dried fruits and horticulture, nursery crops and floriculture (The Specialty Crop Competitiveness Act of 2004 and the Food, Conservation, and Energy Act of 2008). The Louisiana Specialty Crop Program Final Performance Report-2011 indicates that specialty crops have increased the growth of the family farm production and sales in Louisiana. Many of those farms have increased production as directly selling their products to local retailers and chain stores.

### 1.1.1 Economic Considerations in Short Term

Direct sales to consumers are a fast growing segment in the United States agriculture (Martinez et al., 2010). According to the 2007 Census of Agriculture from the USDA National Agricultural Statistical Service, U.S. direct-to-consumer (DTC) sales were about $1 billion in 2007, an increase of about 120 percent from $551 million in 1997. Sales of vegetables and melons directly to consumers were $335 million in 2007. This was an increase of about 69 percent from $198 million in 2002, and an increase of about 97 percent from $170 million in 1997. Direct farm sales of fruits and nuts were $344 million in 2007, an increase of about 75 percent from $197 million in 2002. Direct sales of agricultural products produced by farms that engaged in local marketing to consumers were 56 percent of total agricultural direct sales in 2007 (Martinez et al., 2010).

### 1.1.2. Consumer Preference Trend

Fresh produce (fruits and vegetables) is increasingly popular among producers and consumers in the United States. Over the last two decades, consumers have shown increased interest in fresher, healthier, and more nutritious food (Batte et al., 2010). Consumer demand has moved toward more choices such as more varieties, locally grown food products, organic products, production that uses Integrated Pest Management Practices, and other non-commodity products (Li et al., 2007). Consumers are willing to pay for better quality of fresh fruits and vegetables (Shuzzler et al., 2003). The consumer's interest of fresh fruits and vegetables has increased with more concerns about diet and nutrition and benefits of eating fresh fruits and vegetables. In addition, consumers thinking about more nutritious food also have supported this trend. A focus group study has indicated that there were increased amount and variety of fresh fruit and vegetables consumed compared to ten years ago (Zepeda et al., 2004).

Commercially produced, fresh and processed fruits and tree nuts consumption per capita in the United States decreased from 295 pounds in 2000 to 259 pounds in 2008, while aggregate expenditures for fruits consumed at home had an increase of about 34 percent from $30 billion in 2000 to $41 billion in 2009 (Fruits and Nuts Outlook Report, 2010, USDA). Use of all vegetables and melons in the U.S. decreased from 452 pounds Per capita in 2000 to 418 pounds in 2008 (Vegetables and Melons Outlook Report, 2010, USDA). It was forecasted to be 425 pounds in 2010. U.S. aggregate expenditures for vegetables increased from about $27 billion in 2000 to $38 billion in 2008, by 45 percent.

### 1.1.3 Producers Trends in Production

Increased popularity of fresh produce represents considerable potential for enhanced sales by producers. According to the Louisiana Ag Summary, production year 2009 was not a successful year for production in the farm sector due to hurricanes Gustav and Ike. According to the Ag Summary 2007, Louisiana's farm gate sales were about $6 billion and value-added production was about $5 billion for a total contribution of about $11 billion in 2007 (Louisiana Ag Summary 2009). It decreased by 27 percent of total Louisiana farm gate sales value of about $5 billion and value-added production about $3 billion for total contribution of about $8 billion in 2009.

Producers and farmers may be able to enhance sales and income, if they can recognize opportunities to develop their market by capturing the increased demand for their produce. Farmers are engaging in various non-traditional marketing and other activities to enhance sales and income by introducing value-added products or special crops through using direct marketing. These value-added products and various farm-related products (homemade jams, soaps, pies, bread, flower bouquets) provide farmers the opportunity to make extra income by catering to consumers' demand through direct markets. Organic products, pesticide-free products, value-added products and non-commodity products offer potential markets for small- or mid-size farmers to increase their farm income (Govindasamy et al., 1999).

Direct marketing is very important to small- and mid-size producers and growers (Eastwood et al., 2004 and Starr et al., 2003). The literature shows that the likelihood of a farm being involved in direct marketing is greater if the farm is smaller; the farmer grows more types of products, and the farmer places greater importance on using environmentally friendly production practices (Starr et al., 2003). As consumer demand increases for quality products, producers try to supply for the excess demand. This demand is based on characteristics of tastes, preferences and perceptions of consumers (Wolf et al., 2005). According to Wolf (1997), produce that looks and tastes fresh in quality has the potential to earn more money for the farmer.

According to a recent direct marketing survey report by Ohio State University, locally grown food has increased demand because of the health benefit of local products (Fox et al., 2009). In addition, growers' interest in technology, including websites for businesses, social media, and email, have reported the most increased effective strategies seen by respondents. There are many different strong opportunities for local farmers who choose to sell their fresh products through direct markets. Producers can differentiate themselves in terms of product characteristics preferred by the customer. Those customer preferences produce could be included with locally produced, fresh and different quality products such as organic.

**1.1.4 Direct Marketing Channels.**

According to the Census of Agriculture 2007, 136,800 farms, or 6 percent of all farms in the United States, sold $1.2 billion worth of farm products directly to consumers. Direct marketing used

by producers for their farm business has increased by 17 percent from 2002 to 2007 (Detre et al., 2010). Direct marketing channels (DMC) help producers receive a better price by directly selling the products to the consumers. There is much literature on direct marketing strategies but relatively few studies focus on the production side. Brown and Govindasamy examined producer behavior regarding direct marketing channels and how participation in DMCs affects their farm income (Brown et al., 2006; Govindasamy et al., 1999; Monson et al., 2008).

There are many different direct marketing channels in the farm production sector. Farmers-to-consumers direct markets have gained increasing popularity for two reasons: farmers can get a better price directly from the consumers and consumers can get good quality products through direct markets (Govindasamy et al., 1997). Community Supported Agriculture (CSA), Pick-Your-Own (PYO) operations, roadside stands and privately-owned retail outlets, farmers markets, restaurants, farm-to-schools and institutions, agro-tourism and online marketing are the most common farmer-to-consumer direct marketing channels (Kohls et al., 1998; Buhr et al., 2004).

- **Pick-Your-Own Events**

Some farmers grow crops specifically to be harvested by customers. Using PickYour-Own events, farmers can avoid the high cost of labor for picking the crop. Pick-Your-Own events could be used in many direct marketing techniques such as roadside markets, and farmers' markets. Pick – Your-Own events are very popular during the season because customers are allowed to harvest produce at the farms according to their choice (Carpio et al., 2008). By picking their own products in the farmer's field, consumers can get their most preferred products. The advantages of Pick-Your - Own operations are lower cost of harvest, labor, and other expenses for handling, packing and shipping, and least risk of price change.

- **Roadside Stands and Privately-owned Retail Outlets**

Fruits and vegetables stands provide seasonal products or all-year products that are sold at the farm or at a set location (Carpio et al., 2008). Roadside stands or retail outlets usually charge less or near retail prices. The main difference is farmers do not have to travel to a different location to sell their produce to customers. This situation allows farmers to spend more time in production. A disadvantage is if producers do not own roadside stands, they may have to pay for the service.

- **Farmers' Markets**

Farmers' markets are places where local farmers or growers get together on a particular day to sell their products directly to buyers. Farmers' markets are mostly used by small and medium size farmers. Farmers' markets have increased in popularity due to the growing consumer interest in buying fresh products directly from the farm. They allow consumers to have access to locally grown, farm fresh produced products and farmers to develop the relationship with their consumers. Farmers' market environment is attractive to many consumers who love to eat local fresh produce and shop in a street fair atmosphere.

On the other hand, farmers use local farmers markets as retail outlets to command a premium income for their crops. Direct marketing of farm products through farmers' markets has become an important channel to improve farm income. According to the USDA, the number of farmers markets in the United States increased by 249 percent to more than 6,130 in 2010 from 1,755 in 2004 (Farmers Markets and Local Food Marketing, 2010, USDA). If farmers and other small business owners can spend a few hours a week in a market, then it could be a way to make more money (Swisher et al., 2003). The extra time spent, which represents the producers' opportunity cost, may be the most important reason why a producer would want to sell his or her product at a local farmer's market. This opportunity cost should result and be supplemented by the extra income gained from each consumer dollar. Ultimately the producer sells not only to make a profit on his or her produce or good, but to make it worth his or her time in the process.

- **Community Supported Agriculture**

Community Supported Agriculture (CSA) is a direct marketing arrangement which allows consumers to purchase shares of farms productions by paying in advance to farmers, who deliver products during the growing season. CSA directly links local residents and farmers to increase the benefits to both farmers and local residents in the program. In CSA, farmers grow fresh food products for a group of local residents who participate for the program paying beginning of each season. These local residents who directly support local farms receive fresh farm products on a weekly or other periodic basis. CSA provides benefits to both farmers and consumers who provide mutual support and share the risks and benefits of farm production (Wilkinson et al., 2001). The CSA format dramatically

increased in popularity in the United States during last several years and increased by 250 percent to 1,400 in 2010 from 400 in 2001 (Community Supported Agriculture, USDA, 2010).

- **Direct sales to Restaurants**

Many restaurants directly buy local fresh produce and specialty products from local farms. Using locally grown vegetables and fruits in the restaurants is a growing trend in the United States. There is an increased demand for local and specialty process food in the restaurants and restaurants try to find supply for the excess demand (Stephenson et al., 2010).

### 1.1.5 New Trends in Direct Marketing

Direct marketing helps farmers sell products straight to consumers without assistance of middlemen or brokers. Several studies have found that farmers are increasingly utilizing direct marketing to consumers as a way to increase their farm income (Fox and Ernst, 2009; Govindasamy et al., 1999). Small-size and mid-size farmers can earn more profit by using direct marketing with better understanding about customer needs and ability to deliver products in most appropriate direct marketing channel. Farmers use one or more marketing channels to sell all the products they produce add additional direct marketing channels as they needed to grow their business (Stephenson, 2010). Many farmers use farmers markets or roadside stands, and they add other direct marketing channels such as CSA grocery or restaurant sales as the business grows. Direct sales channels for crops or specific crops or segment of a crop could be combining with whole sale channels and other direct marketing channels.

- **Online Marketing**

The Internet is a media that provides a convenient method to advertise a farm business, sell products, and communicate with consumers. The Internet is a large market for crops or specialty crop products. Farmers can advertise the farm products and services on the Internet by developing their own websites. In addition, farmers can advertise their products by participating in web based farm directories. In Louisiana, farmers have different web directories such as (i) Louisiana farm directory-www.stallionsnow.com/Louisiana/farms.htm, (ii) LA Wineries-www.wineries by state /la, (iii) Goat-www.duhgoatman.tripod.com/la., (iv) Pumpkins-www.the pumpkin.com/la, and (v) LA Strawberry-www.louisianastrawberries.net/index.html.

Also, consumers are purchasing more and growers are selling more produce using their own websites and other online applications, allowing access to a larger customer base (Thilmany et al., 2006). This new trend has encouraged other farmers to consider new marketing strategies including electronic technology such as websites, social media and emails for business. One effective strategy for potential gains from better marketing is Internet technologies (Fox and Ernst, 2009). Farm income can be increased by improving marketing practices and expanding market access through online. Use of web-based marketing is one of the new trends in direct marketing for farm products that can be utilized in a variety of marketing strategies. Growers or producers can sell their produces online through e-commerce, simply by using a website to advertise their operations (Briggeman and Whitacre, 2005).

Direct-to-consumer sales include sales made through email or Internet orders; and local sales made in local sales outlets such as farmers markets, farm stands, on-farm sales and community-supported agriculture. As a direct marketing tool, the Internet is becoming an increasingly important management tool in production agriculture (Mishra et al., 2009). Most farmers in United States who use direct marketing have begun to promote their businesses using websites to make a connection with larger amount of customer base (German et al., 2008). Commonly used web applications for selling and buying were ebay.com, Amazon.com, National Food Industry MarketMaker, Google, Facebook, Twitter and blogs. Food Industry MarketMaker is a website that helps small- and mid-sized producers and customers to connect with each other for their buying and selling process online as a direct marketing tool (Cho et al., 2010).

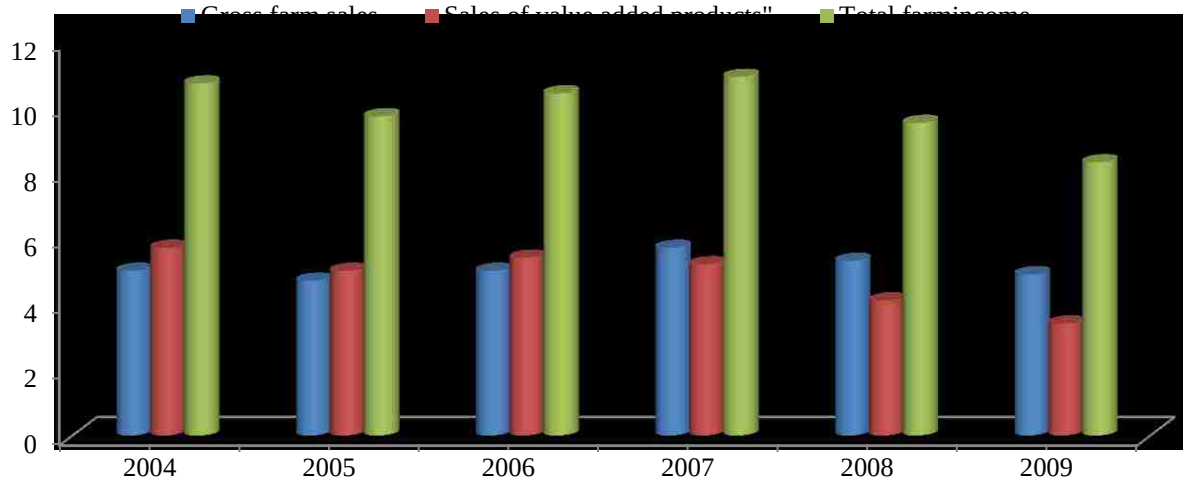
National MarketMaker is a supply chain as a national network of state websites connecting farmers and processors with consumers and food retailers. The site was created in 2004 in Illinois by a team from University of Illinois Cooperative Extension Service. MarketMaker is hosted and maintained by the University Illinois Cooperative Extension Service and an advisory board is made up of representatives from participating states. This chain had developed in18 states by January 2011. Each state has a separate website that allow users to make profiles free of charge to make connections with buyers, sellers, or any other party related to food channels with a mapping system to locate the food-related place.

MarketMaker is a website which improves connections between food producers, buyers and others in the food chain. Ohio State University conducted a survey to find out the impacts of improved market practices on involvement with the new Ohio MarketMaker program (Fox 2009) According to the survey report, more than 50 percent of Ohio MarketMaker registered producer respondents reported that their overall marketing performance improved in the year that they use MarketMaker website. Nearly 50 percent of registered farmers' market reported that their overall marketing performance improved during the past year.

There is a growth in the interest of consumers for local fresh produce in recent years. Farmers are trying to meet the increase in demand for locally-produced products. While they are facing competition in trade, farmers are looking for more additional income. MarketMaker website combines easy to use information including business profile data with demographic data that can be mapped to show the businesses locations. It is a website which improves connections between food producers, buyers and consumers in the food supply chain.

**1.2 Problem Statement**

In recent years, more consumers have shown increased interest in fresh food products with unique characteristics, including organic products, locally produced products and pesticide free products (Linnerman et al., 1999). Consumers have increased demand for more high quality or differentiated food products in fresh fruits and vegetables, which are expected to deliver specific benefits in terms of health, safety and environmental quality. (Van der Heuvel et al., 2007). According to Van der Heuvel, both consumers and farmers have responded to the increased demand for specialty crop products in the markets. As consumers increase demand on specialty crops in the markets, specialty crop farmers (SCF) try to supply for the demand. There is an increased demand for buying local fresh food products in many states including Louisiana. However in Louisiana, most specialty crop farmers operate small- and mid-size farms. They try to promote their products and increase their competiveness in the domestic marketplace. Producers try to find better markets that they can earn more income for supply of their products.




Source: Louisiana Ag Summary

Figure 1: Farm Gate Value in Louisiana in 2004 to 2009 (in billions dollars).

Value-added products contribute a major portion to total farm gate sales value. Almost 50 percent or more of total farm gate sales value, come from value added products in each year except 2009. According to the Ag Summary 2008 and Ag Summary 2009, value-added for specific commodities decreased in 2008 due to the hurricane Katrina and due to lower output caused by bad weather conditions, lower commodity prices or significant changes in acreages in 2009.

Because specialty crop products contribute a major portion to the farm income, a better understanding of specialty crops could be more helpful to increase the farm income in Louisiana. However to find better markets for specialty crops could be a problem for small- and mid-size farmers and specialty crop farmers (SCF). Specialty crops such as fruits, vegetables and nuts products are important to most of customers. These specialty crops provide additional benefits to consumers who care about health benefits. Consumers purchase food products through marketing channels as diverse as direct marketing and traditional supermarkets. SCF usually sell their products through direct marketing channels, and through small traditional retailers. This situation has led a higher number of small crop farmers to consider traditional direct marketing channels such as farmers markets, Pick Your Own events or CSA, which could be more effective to them.

Finding better markets for the harvest is a big challenge, as small- and mid-size farms cannot reach supply volume, standards requirements in super markets and trade competition (Reardon and Gulati, 2008). On the other hand, for small- and mid-size farmers of local foods and specialty crops, it

could be difficult to meet demand for high volumes and consistent quality, time deliveries and out-of-season availability (Shipman et al., 2009; Gregoire et al., 2005; Guptill et al., 2002). Large farms have access for standards food channels such as super markets and they have ability to continue their contracts with wholesale and mass markets (Reardon et al., 2008). But small- and mid-size farmers and SCF have problems accessing standard food channels such as supermarkets that have their own procurement standards for food safety, storage problems, third party certifications, insurance requirements and labor issues (Linnerman et al., 1999). Supermarkets can lower food prices to consumers and create new opportunities and gain access to quality differentiated food products markets and raise income for large farmers.

As a new trend, farmers and producers use Internet media to meet buyers and sellers and promote their products to improve their farm income. Many farmers have set up individual farm websites for buying inputs and selling products to increase their farm income (Briggeman and Whitacre, 2008). Farmers will get the potential benefit of online marketing through connection with consumers via Internet (Mishra et al., 2005). Louisiana has become a partner for Food Industry MarketMaker website and the All About Blueberries website in 2010 to help agriculture businesses to get advantages of computer technology. These websites help to sell or purchase items, by allowing search of the website 24 hours a day.

Usage of information technology, including electronic communication and e-commerce activities in farm sector has developed over the past few years (Batte et al., 2003). Several studies have identified the usage of the computer technology in the farm sector in different states and have proven that they have improvements in farming and production by using the Internet technology (Batte et al., 2003, Hoag et al., 1999, Ascough II et al., 2002, Smith et al., 2004, Fox et al., 2009). Willimack (1989) found that fewer than 3 percent of U.S. farmers used computers to maintain farm records using farm cost and return data in 1987 (Willimark et al., 1989). Lazarus and Smith (1988) found that 15 percent of the New York dairy farmers who were in Farm Business Summary and Analysis Program in 1986 used computers (Lazarus et al., 1988). Putler and Zilberman found that over 25 percent of farmers owned computers in Tulare County, California in 1988 (Putler et al., 1988). A study conducted by Batte (1995), found computer usage rates of farmers was less than 30

percent (Batte et al. 1995). The use of the Internet by individuals has increased by 20 percent annually since 1998 (U.S.D.A.). The U.S. Department of Agriculture estimated that about 54 percent of Internet users in rural areas by 2001. The literature of the study found that the percentage of computer usage in agriculture increased from 13 percent in 1997 to 60 percent in 2005 and nearly $30 billion of business was conducted online in the agricultural, forestry, and fishing sectors in 2005 (Dorfman and Watson, 2005).

The primary problem of the project is how to get better understanding of significant marketing opportunities in farming sector and identify the best ways to find more efficient marketing channels to assist small- and mid-size farmers in Louisiana.

The research will focus on three different problem areas including a better understanding of marketing channel usage by specialty crop producers, Louisiana MarketMaker (MM) program and the All About Blueberries (ABB) Community of Practice. They are as follows:

1. What are the general marketing channels used by specialty crop farmers, and their adoption and usage of Internet marketing and its applications for marketing products?
2. What are the improved market practices and the involvement with the new Louisiana MarketMaker program?
3. How is the "All About Blueberries Community of Practice" usage by specialty crop farmers?

There are many studies on direct marketing strategies as it relates to consumer attributes and relatively fewer studies that focus on the production side (Brown et al., 2006; Govindasamy et al., 1999; Monson et al., 2008). Those studies examined the producer's behavior regarding direct marketing strategies and how their enrollments in direct marketing strategies improved farm income.

But at the present time, there is little understanding about Internet technology usage of small- and mid-size farmers in Louisiana. One main focus of this research is to get a better understanding about usage of Internet technology in the specialty crop farm sector in Louisiana. The study will discuss that how small- and mid-size farmers use Internet technology in their farm activities and what the benefits are for specialty crop product farmers in Louisiana by using Internet technology.

### 1.3 Problem Justification

The primary opportunities of the project are, to get better understanding of significant marketing opportunities in specialty products and identify the best ways to find more efficient marketing channels to assist small- and mid-size farmers in Louisiana. By examining the various choices of direct sales on different marketing channels, this study can provide significant information to U.S. farmers on whether a certain choice of direct marketing channels should be part of their farm business management plan. The analysis is conducted on a state farm-level basis (Louisiana State) with a sample included with online marketing channels used producers in the state, comprising farms of different economic sizes, and in different farm income levels.

Small- and mid-size farmers face competitive pressure in the market place. This situation encourages farmers to find alternative activities to improve the farm income. Challenges include high input cost and increasing competition in the output market (Govinadasamy et al., 1999). On the other hand, small- and mid-size farmers are struggling to increase farm income without any substantial investment (Martinez et al., 2010). Farmers can diversify their farm businesses by product differentiation. This helps to increase farm income and reduce the risk associated with non-diversified business (Govindasamy et al., 1999). Farm profitability can be increased by using activities such as direct marketing, agro-tourism, marketing of organic, value added products, pesticide free products and other differentiated products assisting producers in improving marketing practices and expanding marketing access. This study will identify these types of nontraditional activities for small and mid-size farmers and it will encourage farmers and producers to earn more income over their traditional profit margin**.**

The National MarketMaker website and the All About Blueberries website will have an overall impact in the economic situation of the food industry including fresh fruits, vegetables, fisheries and poultry. This could be an excellent opportunity to improve the efficiency of production and sales to obtain higher income for the farmer. Growers can connect with the Cooperative Extension Service support to get managerial support for the business and, growers and producers can make connections with local markets (Cho et al., 2010). Information exchange among the producers and farmers will help prevent unexpected problems to their crops and maximize productivity. The

MarketMaker website and the All About Blueberries website will help small- and mid-size farmers get connected with each other in agricultural farm sector. Farmers and producers are able to build business relationships by using Internet and social media, such as purchasing inputs for their crop production, selling farm produces and acquiring new agriculture information (Mishra et al., 2005). As a result of the study consumer's knowledge of Louisiana products could lead to an increase in product availability.

According to the Louisiana Farm Bureau, (www.lfbf.org/presidents-column/100410-farmers-social-media.html), an increasing number of farmers and ranchers have changed the way they communicate with non-farming customers, by using Facebook, Twitter, YouTube and other social media platforms as their primary source of information. This situation promotes us to find out how - they use Internet technology to get connect with non-farming consumers. The American Farm Bureau website indicates that farmers who used social media for their product marketing on line, strongly emphasized the importance of the social media usage (www.fb.org/index.php?fuseaction = news room .newsfocus&year = 2011&file = nr0112.html). This study will be beneficial to Louisiana growers by assisting them in learning about new technology revolutions in the farm sector, and encourage farmers to use them to find better markets for their specialty crops to earn more income.

The results obtained in this study will provide useful information to farmers about market operations, new trends in the markets providing opportunity to exchange different ideas. It will contribute information of new management strategies for improving quality of the products by using new techniques. The applications of these implementations will improve the efficiency not only of the producers but of the overall system as well.

**1.4 Specific Objectives**

The general objective of the study is to describe specialty crop farmers' use of alternative market channels, and to investigate the factors that influence their adoption and use of Internet marketing applications. Specific objectives are:

1. To provide a descriptive analysis of specialty crop growers' crop production patterns, use of Internet applications for marketing, familiarity with Louisiana MarketMaker and the All About Blueberries website, and demographic characteristics.

2. To evaluate the influence of production, marketing and demographic characteristics on specialty crop farmers' use of and familiarity with Louisiana MarketMaker.

3. To evaluate the influence of production, marketing and demographic characteristics on specialty crop farmers' use of and familiarity with the All About Blueberries website.

**1.5 Organization of the Study**

The study used data from an online survey of Louisiana specialty crop farmers in Louisiana. This research focused on familiarity with the Louisiana Food Industry MarketMaker website and the All About Blueberries website by specialty crop farmers in Louisiana as both websites are new for Louisiana farmers.

The remaining chapters in this study follow the following order. The second chapter focuses on the literature review, followed by methodology in the third chapter, including the Logit model for familiarity with MarketMaker websites model and the familiarity with All About Blueberries website model, data collection process and the analysis procedures. Chapter four describes the results and discussion. The last chapter concludes with the conclusions, limitations, and suggestions for future research.

# CHAPTER 2: LITERATURE REVIEW

Numerous studies have shown general marketing channels used by specialty crop farmers and their adoption of computer technology and Internet applications usage for farming and marketing their products.

Hoag (1999) conducted a survey to determine the changes of computer adoption in agricultural sector using a sample of Great Plains farmers (Hoag et al., 1999). The sample size was 219 producers from a list of over 772, and it was divided to four groups as small crop, large crop, small livestock and large livestock. Cash grain, tobacco, cotton, other field crops, vegetables, melons and strawberries were included in crops. Beef, hogs, sheep, poultry, and dairy were included in livestock. A second group of producers was chosen for survey to obtain more detail about computer users. A sample of 200 producers was drawn from a list of over 900 names of individuals.

From the survey, the average age of the respondent was 52 years and they had average 38 years of farming experience with higher education such as college degree (32 percent) and high school degree (31 percent). The average farm size was 2,963 acres. Fifty-six percent of the producers had $100,000 of farm income, 38 percent of farmers were between $100,000, and $250,000 of farm income. Results show that 37 percent of farmers had computers. Thirty-two percent of respondents indicated that computer was useful for their business and increased their profits and 31 percent indicated it was useful but did not increase their profit. Only 2 percent of respondents said using a computer was not useful. The results revealed the characteristics of education, age, experience, and other farm characteristics such as farm size, farm scale, and farm types are important factors for computer adoption; however, the age of farmers and experience decreased the probability of adoption. Amount of education also did not have a significant impact on adoption.

Ascough II and Hoag (2002) extended the previous survey of computer usage and satisfaction by Great Plains producers. In the research they were focused on the same survey with the same sample results of “how satisfied are farmers with their computer usage in agricultural business and what the implications for agricultural software developers are?” Results show that producers with more farming experience and higher education used the computer less often. The paper indicated that

limited success in purchases and use of their software in production and agribusiness because of lack of knowledge of farmers in computer technology. Software producers had failed to identify the time it needed and the purposes of needs of computer software in the farm and the agro business. According to the results farmers used computers to keep accounting and financial records (85 percent), their taxes (74 percent), production records (57 percent), financial planning (56 percent) and get help for marketing decisions (25 percent). The study suggests that the most important factors for adoption and use computers in farms were computer skill level, education, and years of farming experience of farmers who adopt and use computers. They concluded that computer software had not been introduced to producers and that they were not properly educated for usage of software in agricultural production or agro marketing.

Similarly, Smith et al. (2004) conducted a survey to investigate the benefits of Internet adoption and usage patterns for a sample of Great Plains farmers. They used 2001 survey data which included information about computer and Internet used by 517 Great Plains farm operators. A multinomial Logit model was employed to explore farm and farmer characteristics of computer and Internet usage.

According to the survey, the average farmer was 55 years old and 32 percent of farm operators worked off the farm. In the sample of farmers 29 percent had college degree and 61 percent of farmers did not have a formal computer-related education. The average farm size was 1,070 acres, Adoption results suggest that exposure to the technology through college, outside employment, friends, and family is ultimately more influential than farmer age and farm size. The information predicted that farmers used the Internet for their business in different ways for different purposes. Results of the survey indicated that farmers used computers and the Internet for business purposes, and different types of tasks such as getting information from Internet including technical (58 percent), pricing of inputs (51 percent), commodities (67 percent), financial information (38 percent), weather information (78 percent), agricultural policy information (39 percent) purchasing goods and services (10 percent), and having a web page. Thirty present of respondents reported this information helped them increase their farm returns. However, 53 percent of farmers who used the Internet for business reported that Internet-use enhanced their competitiveness in the trade. According to the survey,

farmers had good knowledge of the technology and they used applicable software to farm business as new applications and services become available such as Voice over Internet Protocol (Voice over IP), Wi-Fi wireless networks that permit mobile Internet applications on the farm and their own websites for marketing their products.

The Internet technology helps small- and mid-size farmers increase their farm income by marketing their products directly to consumers (Ball and Duval, 2001). The study conducted to determine opportunities and problems farmers face when they are marketing products through Internet. In this study, researchers examined Smallfarms.com (SF) which was created by a small farmer in Hawaii, to identify online market opportunities and marketing problems. SF is a central marketing website that allows making profile for small- and mid- size direct marketers to list their products and meet the buyers and sellers online.

The methodology used was a web-based survey to gather information about the smallfarms.com member farms. The population was all individuals registered with SF at the time, about 91 farmers, and 57 completed the surveys. Non-respondents were followed up by an email and phone interviews. According to the results of the survey, most of farmers who were using SF, sell more than one product on the Internet and about 50 percent of all the products marketed by respondents were organic products. Most products sold online and they were, followed by flowers, fibers, livestock and vegetables. The survey found 78 percent of respondents marketed their products on Internet and many continued other marketing methods such as roadside stand (52 percent) and other direct marketing channels (46 percent). Fifty percent of SF members agreed that their online marketing efforts have been successful for some level and (35 percent) agreed Internet marketing was not appropriate for them since they didn't have online markets (5 percent) or they didn't take credit cards (4 percent).Twenty percent of respondents reported that Internet marketing helped increase their farm income. Results show 75 percent of respondents used the Internet to advertise their products, 48 percent used magazines and 50 percent used posters to advertise their products.

The researchers suggested that small- and mid-size farmers, who listed on SF, needed more training or study program on e-commerce and online marketing. By educating farmers, they will be able to get advantages of free tool and services available on Internet such as free registration on

websites or free business profile service available online. Furthermore they suggested for follow-up studies to measure the success of Internet direct marketing efforts of small-scale farmers.

Batte (2004) conducted another study to find changers of computer usage in agriculture sector. Researcher used mail surveys and analyzed the data of 2,500 farmers in Ohio between March to April in 2003.The sample was 1,001 farmers who completed the survey. According to the report, average farm sales of the sample farms was $179,000, operator's age average was 55 years, 51 percent of farmers had high school degree and 36 percent of farmers had college degree. Research revealed that 44 percent of farmers used computers for their business and adoption rate varied according to farm size. According to the report, gross sales of less than $250,000 had 40.3 percent adoption rate and larger farms had 61 percent of adoption rate. Farmers who were 50 years old or younger, used computers and 67 percent of computer adaption were by educated farmers who had at least high school degrees. When farmers were asked about usage of various computer applications farmers indicated that 89 percent used computers to keep their financial records, 76 percent used computers to get contact with other farmers and customers by email and keep records of crops and livestock, 75 percent used it for word processing and to access the Internet to find information. The research report indicates 34 percent of farmers who worked year-around away from the farm were computer for the farm business.

Mishra and Park (2005) studied the impact of various factors affecting the number of Internet applications employed by farm operators. The study indicates that farmers have the opportunity to build new connections with consumers and other farmers to purchase or sell their farm products online. They get benefits of receive and manage information online anytime, anywhere for their needs. Internet provides information services and communication service to use between businesses or with consumers for lower cost as they have free services. The survey used the secondary data from the 2000 Agricultural Resources Management Survey (ARMS). ARMS is an annual survey done by the Economic Research Service and the National Agricultural Statistics Service. The survey measured the data from ARMS to analyze farm income, farm expenses, farm assets, and farm debts and operating characteristics of farm businesses, the cost of producing agricultural commodities, and the well-being of farm-operator households.

The target population of the survey was operators of farm businesses in 48 states. The sample was 2,138 farms which were defined as farms had sales of $1,000 or more of agricultural products during the year. Farms were organized as proprietorships, partnerships, family business farms, nonfamily corporations, or cooperatives. Different applications of the Internet were used as dependent variables , including paying bills, obtaining loans, online banking, input or commodity price tracking, record-keeping operations, contact with advisory services, contact with other farmers, obtaining information or other services from USDA, and obtaining information or other services from sources other than USDA. The results shows that farms used the Internet technology for different reasons such as price tracking (83 percent), agricultural information services (56 percent), accessing information from USDA (33 percent), and other online record-keeping (31 percent), get connected with advisors (28 percent), contact with other farmers to share information (31 percent).

In addition, Mishra and Park indicated that, education level of the farm operators, farm size, and farm diversification, presence of marketing contacts and location of farms were significantly correlated with number of Internet applications used by farmers. The results indicate that educated and larger farm operators used larger number of Internet applications for their farm activities. Thus, researchers suggest that special efforts of study programs to enhance Internet marketing knowledge improvement for small- and mid-size farmers.

Usage of information technology in farm production has increased in agricultural businesses due to rapid development of computer and telecommunication technology since 1990s (Mishra and Park 2005).They indicated usage of computers help to reduce the cost of information collection, process, and storage for business managers.

Mishra and Thimothy (2005) have indicated a need of enhancing knowledge about computer usage for small and less-educated farmers to obtain benefits of online direct marketing. By using the Internet, farmers get the opportunities to build new connections with consumers or businesses including ability to buy and sell products acquiring new information. This study attempts to identify patterns of Internet use in agriculture. This study used national farm-level data comprised of different farm types and farm locations. This was the first study that used the count data estimation method to investigate the impact of various factors affecting the number of Internet applications in farm

operators. The results reveal that Internet applications used in directly correlated with education level of the farm operator, farm size, farm diversification, marketing contacts and location of the farm. A large number of Internet applications are associated with larger farm operators.

Briggeman (2008) studied about factors affecting input purchases online and reasons for non-adoption of computers in agricultural sector. The sample of the research was 6,682 that represented 1,982,609 farms. The report shows that farming industry has several computer technology applications for farming and agricultural marketing, including checking weather forecasts, buying inputs and selling products online, or even setting up and running individual farm websites. The study used the data from the 2005 Agricultural Resource Management Survey, which contained information regarding the financial condition of farms, operational characteristics, and the overall well-being of farm households. Many respondents (70 percent) used the Internet for their farm business, but only 6.6 percent used it to purchase farm inputs. Eighty-three percent of farmers used Internet to search commodity prices and 30 percent of farmers stated they did not use Internet for their farm business. The study stated that Internet usage for farming was higher among the farmers who had higher education and higher house hold income. Farmers who were older and less educated had less usage of computer technology for their businesses.

Researchers at Ohio State University conducted a direct marketing research project named "Exploring and improving marketing practices and regional market access for Ohio's food producing farmers" in 2009. The work plan was completed in three steps. In the first step they profiled producers to identify the size and scope of their operations. The second step was the" Ohio Case Study Research" to identify their marketing challenges and opportunities. The third step was the web based survey to find the impact of improved market access through "Ohio MarketMaker Survey".

In the first step of the project, they studied Ohio direct marketing practices and changes, marketing challenges and market access for food producing farmers and others in Ohio food industry (Fox et al., 2009). There were 397 farmers who participated in the survey by a written mail questionnaire. Each business had some similarities in their marketing practices such as using new technologies to improve marketing performances. Farm income and sustainability can be improved by assisting farmers to improve marketing practices and expanding access to find better markets.

Electronic markets such as online markets and new technology have the potential to reduce transaction expenditures and reduce the price of the produce to consumers.

During the case study research, Ohio direct marketing team collected valuable information about business/ market situations, product and services, people who were involved in product marketing, place, promotion, and positioning in Ohio MarketMaker. There were six case studies in six business areas including producer and retail farm market, processor and retail farm market, processor and retailer, farmers market, processor and retailer (including restaurant), distributor were used for the research. Research team collected information by interviews of owner or manager of the business to explore the marketing practices, marketing challenges and market access in Ohio's food chain. The case study survey shows that locally grown foods, new technology, quality improvements and the attracting new customers were common strategy themes from respondents (Fox et al., 2009). The value of quality products has been identified by all the cases as the most effective marketing strategy. Respondents indicated that locally grown foods and specialty crop products have increased demand and educating consumers on benefits of local food could be the most effective step for the direct marketing. In addition, new technology usage such as websites for business, social media and emails are the most effective strategies seen by respondents. Furthermore, the study shows that most effective direct marketing tactics used in 2009 were road signs and billboards 54 percent, websites for business 51 percent, listings in web directories 45 percent, newspaper advertising 42 percent, email 36 percent, samples 35 percent, and special events 31 percent.

The third part of the research study addressed the performances of Ohio MarketMaker. Food Industry MarketMaker is an agricultural website that helps small and mid-size producers to get connected with buyers. There were 144 registered Ohio MarketMaker producers, farmers markets, wineries who completed the questionnaire. According to the report, more than 50 percent of Ohio MarketMaker registered producer respondents reported that their overall marketing performance improved after using the MarketMaker (Fox et al., 2009). Nearly 48 percent of registered farmers' markets reported that, after using the MarketMaker program their overall marketing performance and profitability was improved by selling new products to new buyers through online.

Cho (2009) conducted a survey to study farm-level impact of New York Food Industry MarketMaker usage by farmers registered with the website (Cho et al., 2009). New York joined MarketMaker in 2007, and they did the survey in 2009. A structured questionnaire was used for the survey and the sample was 374 producers out of 700 producers selected from meat, dairy, vegetables, fruits and nuts, grains, herbs and specialty producers who were registered with the website.

According to the results of the survey, 38 percent of respondents described that they learned about MarketMaker at a grower meeting, 31 percent by an extension meeting, 13 percent through a web link, 9 percent by Internet search, 7 percent by New York Farm Viability Institute (NYFVI), and 2 percent through another farmer. When respondents were asked how they use MarketMaker website to search for sales contacts, 9 percent of respondents said they frequently searched for sales contacts, 29 percent said sometimes, and 18 percent said never.

About 4 percent of respondents were frequently looked for other farm products, 15 percent checked sometimes, and 32 percent never look for other farm products. Fourteen percent of respondents were frequently checked the MarketMaker website to find food industry contacts, while 21 percent of respondents checked sometimes, and 16 percent never checked for food industry contacts. Eleven percent of respondents frequently checked their business profile, when 24 percent of respondents check their profiles sometimes, 32 percent checked rarely, and 5 percent never checked. MarketMaker helped 23 percent of respondents to make new marketing contacts and 39 percent did not get any contacts. Among them 81 percent said they have got only 2-4 contacts, 17 percent said only one, and 2 percent said 5-10 contacts. Forty six respondents (12 percent) answered they have used the MarketMaker directory to contact others.

Eighty-six percent of respondents indicated that the dollar value of sales by MarketMaker helped with business under $5,000. Only 12 percent said they had about more than $5,000 sales by MarketMaker. Fifty-five percent of respondents (55 percent) said that 10-to-25 percent of their farm-level income increased from direct and niche marketing activities, 26-to-50 percent increased by 20 percent of respondents. Producers were asked the different market channels they currently use or plan to use in the near future. Thirty percent of respondents use on-farm retail, 20 percent use local food

store, 18 percent use farmers markets, 15 percent use wholesale, 10 percent use restaurants, and 7 percent use Community Supported Agriculture as different marketing channels.

German (2008) revealed that online direct marketing through personal websites or social media is one of newest trend to earn a larger customer base. This situation has created a need to identify consumers' most demanding farm products from online sources by farmers markets or agri-businesses. Under this research, they conducted an online survey to identify consumers' preferences in direct marketing and what type of products are they most preferred to buy online. Furthermore this online survey shows how farmers market can increase their large customer base and increase their profit by using Internet for their business. The online survey conducted a study using the www.agri-culturehealth.com website which offer information about fresh-market growers, farm markets, consumers, and the Agro tourism industry including types of markets of U-Pick, tailgate market, farm stand, roadside market, farmers market, direct Internet sales, mail order, Community Supported Agriculture, and entertainment farming. The target market area for this project consists of Delaware, New Jersey, Maryland, Pennsylvania, and Virginia.

# CHAPTER 3: SURVEY DATA AND METHODS

## 3.1 Conceptual Model

### 3.1.1. Change in Consumer Preferences

In early 1900s, most of the foods consumed in the United States were locally grown fresh products since about 40 percent Americans lived on a farm (Martinez et al., 2010). Today, perishables such as meat, eggs, fruits and vegetables along with related value added products are shipped across the nation (Martinez et al., 2010). Improved refrigerated transportation system and development of technology helped to develop the fresh food system and determine the pattern of regional and global specialization.

After World War II, food consumption and composition of products consumed increased as household income increased. The food consumption options have increased in the United States due to the increased domestic production, product convenience, technological improvements, consumer's preferences, and greater availability and diversity of products (Pollack et al., 2001). At the present, consumers have more variety to choose from as the food marketing system has developed domestically and globally, providing quality fresh, processed and specialty food products from different regions of the world.

As household incomes grew after WWII, consumers' lives became busier. Changes included movement toward non-farm jobs and living in suburbs, changing size and composition of households, and expectations of children to participate in many organized activities outside school. Food decisions about consumption at home and outside of the home were related to convenience. Food supermarkets provided convenience by having the needed and desired food products at one place. That is still a very important driver given the fact that most consumers get a very large share of their food needs from supermarkets and new non-traditional outlets like superstores as well as fast-food stores. Most quick service restaurants offer a variety of products including fresh produce items on menus. Restaurants have become popular and convenient with quick service to fine dining. Examples are Wendy's successful Garden Sensations line of salads, McDonalds's South West salads, Burger King's Garden

salads and many more. This new trend of the food system reflects increasing consumer preferences for verity, quality and convenience fresh food in the market.

Consumers make important decisions regarding food choices based on level of concern about health, the environment and their local or regional economy. In terms of health, consumers increasingly seek out fresh quality produce that is grown by producers they trust. The trust relationship in local foods can develop by direct selling relationship between producer and consumer. Additionally, consumers care about the reduction of food miles which is the distance traveled by food products to reach the market. There are also concerns over levels of pesticides used in production. Simply, demand for fresh produce has grown and consumers try to find some other products with special characteristics. Consumers are willing to pay more for fresh produce that is differentiated by production practice such as organic or locally grown. Consumer's preferences have changed towards fresh fruits and vegetables, and other special characteristic products such as locally grown fresh products, organic products and pesticide free products.

Consumer's concerns about food choices include health issues, nutrition and general well-being behavior (Hinson et al., 2008). Health and safety issues are very important reasons for popularity of fresh produce as an indication of the positive and negative impacts of food supply (Carman et al., 2006). There is much literature on consumers' preferences for fresh fruits and vegetables products that are sold through direct market channels. Wolf (1997) found that consumers prefer to buy produce at farmers markets rather than supermarkets because they prefer products of higher perceived quality. Gallons (1997) study found that some consumers prefer direct market outlets because they offer different varieties of locally grown products with special characteristic that some consumers seek (Gallons et al., 1997). On one hand, buying products locally helps local farmers and encourages them to produce more. Buying food from closer to home also is stimulated by desire for quality, originality, and a concern for the environment.

### 3.1.2. Small- and Mid-Size Farmers Might Respond to Excess Demand

Increasing demand for fresh products and special characteristic products are important incentives for farmers. This increased demand has created an opportunity to develop the productive capacity for new demand for fresh products by using more land resources. Other inputs and

technology may be necessary for farmers and producers to increase production and income from the increased demand. Producers also may add value to products.

The next step is marketing those products to the consumers. The main channels of marketing of fresh produces are direct marketing channels, super market channels and sales to processors. Buying and selling products directly is not exactly a new principle in the food industry. In terms of the food marketing, most fresh food products sell more locally in farmer's markets, retail outlets, or directly via Internet. Super market channel is not very popular among the small and mid-size farmers since they have a problem accessing standard food channels that have their own procurement standards for food safety and quality of the products, storage problems, third party certifications, insurance requirements and labor issues (Linnerman et al., 1999). Supermarkets offer advantages such as lower food prices, create new opportunities and provide access to quality differentiated food products markets. Since small and mid-size farmers have such problems achieving supper market channels and sales to processors, they have to have alternative food marketing system to find better markets for their products. As a solution, they use direct marketing channels to sell their products. At the present small and mid-size farmers use Internet to market their products and use social-media to connect with more customers.

### 3.1.3. Internet and Multimedia Usage by Small and Mid-Size Farmers

According to Briggeman and Whitacre (2008), farmers and producers use the Internet to meet buyers and sellers and promote their products to improve their farm income. Many farmers have their own websites to promote their products and connect with the consumer by using Internet marketing (Mishra et al., 2005). Most farmers are taking advantage of the new trends in Internet marketing by using different food industry marketing websites and other relevant websites for agriculture marketing. They use emails and websites and social media to develop the knowledge of Internet marketing for their marketing purposes.

A decade ago, social media was not very popular among farmers to obtain industry news and communicate with each other's and the public. The time and technology have made a big difference. At the present, farmers join the social-media to connect with other farmers and reach the public. People use social media through Internet and mobile-based tools to share information among human

beings by integrating technology, telecommunications and social interaction, and the construction of words, pictures, videos and audio through the Internet. Social media help farmers to connect and learn from others about ideas and practices that can improve farm operations, and educate people outside of the farm industry.

### 3.1.4. Barriers in Internet Marketing for Small and Mid-Size Farmers

The Internet may reduce constraints on a farmer's ability to receive and manage information. Some rural areas still do not have Internet connection and some small and mid-size farmers do not have the ability to build infrastructure to get the connection as it is very expensive. On the other hand, some studies have found that experienced and older farmers still do not prefer to use computer for their farm activities (Briggman et al., 2008). Other barriers are lack of knowledge in computers, Internet, websites or social media sites. Thus age, experience, access, education might be problems with computer technology usage.

Anne Mims-Adrian, Alabama Cooperative Extension System associate director of information technology, and professional speaker Michele Payn-Knoper gathered responses on the benefits of using social media in farming, posting the question on Twitter, another social media site allowing users to post short comments and questions in 2010 (Smith et al., 2010). According to Mims-Adrian's research, use of social media among farmers reflects that younger farmers are more likely to use sites, such as YouTube and Facebook, as compared to farmers ages older as 50-plus. Lack of time, lack of education in using the technology and desire of privacy are some of the barriers preventing farmers from engaging in social media.

Different literature indicates that farmers use the Internet for financial record keeping, to get information for farm activities, for email, and for livestock and crop records (Mishra et al., 2005, Brian et al., 2008, Fox et al., 2009).

## 3.2 Data Collection

### 3.2.1 Population and Sample

The target population of the study was specialty crop farmers in Louisiana. The sample was selected from farmers and producers who registered with Louisiana Department of Agriculture & Forestry, Louisiana Vegetable Growers Association, Louisiana Ag Center, and specialty crop farmers

who registered with Louisiana MarketMaker website and All about Blueberry website. In addition, some email contact information was received from selected parish agents in Louisiana.

### 3.2.2 Online Survey

For data collection, an online survey approach was chosen. Sethuraman and Dahan describe online and offline advantages and disadvantages of data collection methods (Sethuraman et al., 2005;Dahan et al., 2000). Using online surveys is cheaper than phone surveys or mail surveys. It is easier and faster to send the questionnaires and collect data online than any other survey methods. Online surveys provide access to surveys for an individual anywhere in the world (Sethuraman et al., 2005). Accessing the respondent's data and tracking ability are other advantages of online surveys. Disadvantages of online surveys include both sampling problems and accessing problems (Sethuraman et al., 2005). Online access problem is also disadvantage as not everyone uses the Internet. Some rural areas do not have "good" Internet service as well.

Various web sites offer software packages for online surveys. These software packages offer different templates for online surveys including many varieties of question types. These computer programs help the researcher in creating and launching the questionnaire with some other features such as tracking respond's email addresses and sending reminders for respondents who did not complete the survey (Dahan et al., 2000). These features enable the administrator to send reminders to only those who have not finished the survey. Software can track respondents who have not taken the survey, and who have started but not completed the survey as well (Dahan and Srivivasan 2000).

### 3.2.3 Email address collection

Several institutions and agencies that were possible sources of email addresses of specialty crop farmers were identified for the survey. The Logit and actions taken are discussed below.

**1. Louisiana Department of Agriculture and Forestry (LDAF)**

An email message was sent to the Director of the Commodity Promotion and Research Division at the Louisiana Department of Agriculture and Forestry with respect to availability of email addresses of specialty crop farmers. LDAF was contacted in first place, assuming it might keep all the necessary information including state's specialty crop Block Grant program and other promotion and

research development programs for specialty crop farmers. As a result, email addresses were received for 161 growers.

**2. Louisiana Vegetable Growers Association (LVGA)**

A request was made to the secretary of the Louisiana Vegetable Growers Association, asking to share email addresses of specialty crop growers if possible. LVGA has many specialty crop farmers as members. After approval of the president of the association, email addresses list was provided including 80 email addresses of specialty crop farmers.

**3. Louisiana MarketMaker website (MM)**

Email addresses were collected from agents who work with the Louisiana MarketMaker website. There were 36 email addresses of vegetable growers, 64 email addresses of fruits and nuts producers and 16 email addresses of farmers' markets venders for a total of 109 email addresses contributed to the main email address list. An agent working on MarketMaker website sent a list of 54 email addresses collected by Pecan Research Station in Louisiana. The total of 163 email addresses was collected from MarketMaker website-related sources.

**4. Louisiana Cooperative Extension Service (LCES)**

Louisiana Cooperative Extension Service (LCES), a part of the LSU Agricultural Center, was contacted for both groups of agents with horticulture responsibilities and extension parish chairs.

**(a) Extension Agents with Horticulture Responsibilities**

Extension Agents with Horticulture responsibilities were identified and contacted by email. They were asked to provide email address lists of specialty crop growers in their geographic area. Follow up telephone calls were made and reminder emails were sent to encourage their cooperation. These agents were contacted because they work directly with horticulture crops growers in their parishes. As expected, some Ag Center horticulture agents chose not to share email addresses.

**(b) Extension Parish Chairs**

Emails were sent to parish chairs in Louisiana including a brief introduction of the survey with respect to availability of email addresses of specialty crop farmers. Follow up telephone calls were made and reminder emails were sent to encourage their cooperation. Parish chairs make direct contacts with their growers and producers in the parish for agricultural development programs. Parish

chairs were contacted hoping to add more farmers email addresses which have been missing from other sources (LDAF and LVGA). As a result 92 email addresses of specialty crop producer's in Louisiana were collected for the survey. As expected, some of Louisiana Ag Center Agents with Horticulture responsibilities and Extension Parish Chairs were hesitant to provide email addresses because they did not want to provide farmer's email addresses to another third party.

**4. Managers of Public Farmers' Markets in Louisiana (FMM)**

A procedure similar to the one used with LCES was applied to contact farmers' market managers because they have direct contact with the farmers and producers who sell at the farmers' market. Farmers' markets email addresses list was from the MarketMaker website. Farmers' market managers asked to provide email addresses of farmers who sell products in the farmers market. No email addresses were received because they were not comfortable with sending their farmers market's venders email addresses, assuming third parties might use them for other marketing purposes.

Because farmers' market managers chose not to share farmer email addresses, they were asked to send a message to farmers that contained information about the survey and a link to the survey. In addition, managers were asked to report the number of producers who had received the message and link. These farmers' market managers reported that they distributed the survey link to a total of 88 farmers.

### 3.2.4 Addressing Concerns about Sharing Farmers' Private Email Addresses

LCES personnel and farmers' market managers were concerned that releasing email addresses could compromise their relationships with farmers. Many of these individuals did not provide email address lists. This resulted in an absence of survey coverage for those specific areas. Those who did not share email lists were offered the alternative of forwarding the survey to their specialty crop growers. An email with explanatory letter and embedded link to the survey was sent, including a request to respond with the number of producers that received the survey link. Some chose this alternative. LCES agents indicated that about 43 emails were forward by total of 51 Extension Agents from both Louisiana Ag Center Agents with Horticulture responsibilities and Extension Parish Chairs.

### 3.2.5. Summary of Email Addresses Collection

The main specialty crop farmer's email addresses list was 496 email addresses which were directly collected from Louisiana Department of Agriculture & Forestry, Louisiana Vegetable Growers Association, Louisiana Ag Center agents with Horticulture responsibilities, Extension Parish Chairs and Louisiana MarkerMaker website. After email addresses were screened for duplications and obvious errors, result was a list of 416 email addresses of specialty crop farmers. The survey link was sent directly to the main group of 416 specialty crop farmers email list.

Table 1: Number of Email Addresses Collection and Sources for Specialty Crop Farmer Survey Louisiana 2011

| Source | Number of email addresses |
|---|---|
| Louisiana Department of Agriculture & Forestry(LDAF) | 161 |
| Louisiana Vegetable Growers Association (LVGA) | 80 |
| Louisiana MarketMaker website | 163 |
| Louisiana Ag Center Agents with Horticulture responsibilities and Extension Parish Chairs (Extension Agents) | 92 |
| Louisiana Farmers' Market managers (FMM) | 0 |
| Total before screen for duplications and errors | 496 |
| Duplications and errors | 80 |
| Total Emails were sent out for the survey | 416 |

Louisiana Agricultural Center Horticulture Extension County Agents and Louisiana Cooperative Extension parish chairs and farmers market managers forwarded the email with the survey link to total 131email addresses.

Table 2: Number of Contacts, and Number of Links Forwarded to Email Addresses for Louisiana Specialty Crop Farmer Survey

| Source of email contacts | Number of sources | Number of messages forwarded |
|---|---|---|
| Extension Parish Chairs/ Horticulture - Extension County Agents | 51 | 43 |
| Farmers Market managers | 42 | 88 |
| Total | 93 | 131 |

The survey was sent to total 416 + 131 = 547 email addresses. The "Zoomerang software" (MarketTools Company 2011) was used for the survey. After the survey was launched by the

Zoomerang software, few emails were returned due to hard bounced and soft bounced. There were 63 hard-bounced email addresses which bounced back because the email addresses were not valid. There were 11soft-bounced emails addresses which were temporarily undeliverable and bounced back. When hard-bounced and soft-bounced occurred, those email addresses were deleted from the list. In addition to that, email addresses were deleted from the list as requests from three growers. One specialty crop farmer requested to be removed from the list because he did not live in Louisiana. Two farmers were no longer in business in 2010. The total of removed email addresses from the main list was 87 email addresses.

Table 3: Number of Email Addresses Removed from Louisiana Specialty Crop Farmer Survey 2011

| Source of email contacts | Number of removed email addresses |
|---|---|
| Total Emails were sent out for the survey | 416 |
| Hard Bounced Email addresses | 63 |
| Soft Bounced Email address | 11 |
| Deleted Email address from the list | 03 |
| Opted Out Email address | 10 |
| Total Email addresses used for the survey | 329 |

The survey was sent to a total of 329 specialty crop farmers email addresses. In addition, the survey link was forwarded to total of 131 email addresses. Louisiana Ag Center Horticulture Extension County Agents and Louisiana Cooperative Extension parish chairs and farmers' market managers helped to forward this link to specialty crop farmers' email addresses list they had. Hence, the total target population remained as 329 + 131= 460 and the total number of responses was 144. There were 133 provided complete responses. The response rate for the Specialty Crop Farmer Survey 2010 was 144/460 *100 = 31.3%.

### 3.2.5 Pretest and Follow-up Procedure

The questionnaire was emailed to four growers as a pre-test. The growers were asked to provide feedback in terms of the content, organization, degree of difficulty, and appropriateness of the survey instrument. The general consensus was that the questionnaire appeared to be lengthy, and some of the questions were confusing. Additional efforts were made to reduce the length of the survey instrument and to improve the organization of the instrument.

The Dillman protocol was used for follow up procedure to increase the survey response rate. Initially, the survey was sent to 547 producers. First set of email reminders was sent to producers who had not responded within one week and second set of reminder emails were sent in two weeks. Other than that, direct link to the survey was sent to few producers who were not able to access the instrument through the link from Zoomerang. In addition, a copy of the survey document was mailed to one farmer who did not have access the survey links. Producers who had problems with their survey links were contacted individually and assisted. The length of the survey period was 6 weeks starting from September 02, 2011.

**3.3 The Survey Document**

The survey was an online survey using the "Zoomerang software" (Market Tools Company 2011). An online survey allows collecting rapid and efficient of information from a certain group of population while avoiding coding and other input errors associated with other survey methods (Dillman, 2000). The survey was made up of the complete questionnaire along with a message from Dr. Roger Hinson, on behalf of the LSU Ag Center (consisting of a brief introduction and instructions for the survey) and a supporting letter from the Louisiana Vegetable Growers Association.

A very important step of the survey was the development of the survey instrument. The questionnaire was focused on farmers' adoption and usage of direct marketing channels with particular interest in Internet marketing, social media usage relevant to the farm business, the MarketMaker website and All About Blueberries Community of Practice website. The questionnaire was divided in 4 sections as described below:

1. Information about specialty crops produced and marketing channels usage.

2. Participants' perceptions regarding usage of Internet and social media in their business.

3. Respondent's perceptions regarding usage and importance of "MarketMaker" website for their farm businesses, and the "All About Blueberries" website with respect to usage and importance for their farm businesses.

4. Demographic and business characteristics.

The questionnaire was focused on using 5-point Likert scaling system (Wuensch et al; 2005). The Likert scale was used when respondents were asked to evaluate according to any kind of

subjective or objective criteria; generally levels of agreements or disagreements were measured. Burns (2008) found that, often - point Likert scale is used than 4-, 6-, 7- or 9-point scales (Burns et al; 2008). A study found that a 5- or 7- point scale may produce slightly higher mean scores compared to the highest possible score, relative to those produced from a 10-point scale (Dawes et al., 2008).

**1. Information about Specialty Crops Produced and Marketing Channels Usage.**

Specialty crop products produced in farm year 2010 and the marketing channels used by specialty crop farmers were screened and collected in the first section. The crop section was focused on 18 main crops according to the Louisiana Ag summary 2010 (Louisiana Ag Summary, 2010). Producers were asked to provide information about other crops they produced. In addition, 37 'other' crops including citrus, mayhaw, figs, muscadine, and honey were reported. Respondents were asked to write the percentage of product sales they made through direct marketing in 2010, with combined total of all of their products sold being 100%. Fruits and vegetables were in the top categories of products sold. First section of survey focused on collect information about product categories that producers were selling in each main criterion's and to be identified the specialty crop farmers' use of alternative market channels.

To identify marketing priorities and opportunities, the questionnaire included the following three questions.

1. Producers were asked their specialty about their crops as locally grown, organically produced but not certified, certified organic, pesticide free, etc. Objective was to identify producer's concern about new trend of increased demand for fresh product along with theses above categories.

2. In the same section producers were asked about certification they have used for marketing their specialty crops.

3. Producers were asked to provide information about their usage of eight marketing channels including on-farm market, roadside stand, and/or pick-your-own, peddlers, public farmers' market, Community Supported Agriculture.

Respondents were asked to write the percentage of product sales they made through these direct marketing channels in 2010, with combined total of all of their products sold being sales that went through each market for 100%.

The first section of the questionnaire was focused on selling quality products, targeting new trends on the market, and identifying how farmers use their experiences with various certifications they have, find out what customers need and meet that need, or want have fresh good tasting product attributes such as organic, local, pesticide free, etc. Survey document was focused on collecting information about their usage of Internet marketing to sell product and using Internet technologies such as websites, email lists, popular web directory links, blogs and social media for their marketing purposes

The crops and marketing channels section in the questionnaire was designed and developed after earlier surveys conducted by Ohio direct marketing research report from Ohio State University, (Fox et al., 2009).

**2. Participants' Perceptions Regarding Usage of Internet and Social Media on their Business.**

Internet technology may help small- and mid-size farmers to increase their farm income by marketing their products directly to consumers (Ball and Duval, 2001).The questionnaire was developed to determine producers' usage of Internet and social media for their farm operations. Internet technology usage data were collected about available Internet services in the area including usage of Internet technology in farm operations in terms of how often they use. Producers were asked to rate Internet applications usefulness for their farm operations as well. In addition to that, producers were asked about Internet barriers they have when they are connecting to the Internet.

In the same section, producers were asked to provide information about Internet technology usage in their farm business operation functions, including social media usage and smart phone usage. Information about Internet usage was collected for their farm business including buying farm inputs, communication purposes (email, social media), collecting information, online banking, paying bills, record keeping, and selling farm products. If they selected other they were asked to specify the information. The survey collected data about available Internet service in the area including Dial up, Dial up with accelerator, Cable, DSL (Digital Subscriber Line) and Satellite. These categories were

identified initially from Best Internet Service Provider Comparisons and Reviews 2011 from www.toptenreviews.com (http://isp-review.toptenreviews.com/) and developed according to research reports from Louisiana Ag Center Research Station.

In the barriers to Internet section, producers were asked to provide information about barriers to Internet usage in farming. Social media usage in their farm operations including Facebook, Twitter, blogs, YouTube, Flicker and other social media in terms of frequency of usage of social media and usefulness of social media in farming were collected in the same section. Producers were asked to provide information about usage of smart phone for their farm business operations including buying farm inputs, communication purposes (email, social media), collecting information, online banking, paying bills, record keeping, selling farm products, and if they selected other they were asked to specify the information.

**3. Respondents' Perceptions about Usage and Importance of "MarketMaker" Website and the "All About Blueberries" Website in the Farm Business.**

A very important aspect of the survey was to identify whether specialty crop farmers use MarketMaker website and All About Blueberries website along with collecting information about their usage of these two important websites for Louisiana farmers. Data was collected about MarketMaker website and All about Blueberry website usage by specialty crop farmers. According to German 2008, online direct marketing through own web sites or social media is one of newest trend to earn a larger customer base (German et al., 2008). This situation has created a need to identify how farmers are using Internet technology for marketing and what social media sites are out there for direct marketing their products.

Louisiana Food Industry MarketMaker" is an Internet site that connects sellers and actual/potential buyers of raw and processed agricultural products. Researches followed the same categories to collect data usage of Louisiana MarketMaker as the MarketMaker research in Ohio State (Fox et al., 2009). Producers were asked to provide information following questions to be identified how familiar with MarketMaker. In addition to that data were collected about usage of MarketMaker website for specialty crop producers and asked to rate the effectiveness of Louisiana MarketMaker in

producer's farm operations for different functions for marketing farm products such as finding farm products, finding customers, differentiating farm products and improving farm income.

The All About Blueberries website is an extension webpage which was developed to assist for blueberry producers in Louisiana. The survey was focused on this All About Blueberries website usage as it is also new for Louisiana farmers and clarifies producer's knowledge and usage of the website.

Ohio MarketMaker research report and New York MarketMaker research report were used as guidance to develop the MarketMaker section in the questionnaire (Fox et al; 2009; Cho et al., 2010). Similar questions were used to collect the data for All About Blueberries website usage by specialty crop farmers.

**4. Demographic Characteristics Section**

In the last section of the questionnaire, specialty crop farmers were asked about general characteristics of the farm, such as the acreage devoted to production, sales, the age of the business and the farmer's characteristics such as age and education.

**3.3.1 The Survey Process**

Once the questionnaire was completed, it was emailed to four growers as a pre-test. The growers were asked to fill out the questionnaire and were given instructions to provide some feedback in terms of the contents, organization, degree of difficulty, and appropriateness of the survey instrument. The general consensus was that the questionnaire appeared to be lengthy, and some of the questions were confusing for the respondent. Additional efforts were made to reduce the length of the survey instrument and to improve the organization in such a way that it appeared less complicated to the respondent.

Another two sets of survey documents were emailed to 49 county agents and farmers market managers of 42 farmers markets in LA. The Dillman protocol was used for follow up procedure to increase the survey response rate. Initially, the survey was mailed to 416 producers. For producers who had not responded, a reminder email was sent within one week. Two weeks after the email was sent, a second complete set of survey material was sent by emails to all producers who had not responded to the questionnaire. A direct link was sent to few producers who were not able to access

the link forwarded by the Zoomerang. In addition, a copy of the survey document was mailed to one farmer who had not access to those survey links. A follow up procedure was continued for producers who did not respond within three weeks.

Many questionnaires were not received by producers due to hard bounced and soft bounced problems of email addresses. They were returned indicating that the targeted individual or farm had invalid email address. Since no additional information was available, these were deleted from the list, leaving the target population at 313 firms/individuals. The total number of responses was 144 but of those, only 133 provided complete responses. Only those individuals with complete responses were used when conducting the statistical analyses. It would have been possible to implement remedies for missing data, but the choice was made to use only observations with complete responses.

**3.4 Econometric Modeling Procedures**

The Logit Model was used for analysis of familiarity with the 'MarketMaker website' and familiarity with the 'All About Blueberries website'. According to Magnac (2008), the Logit Model makes use of one or more predictor variables that may be either continuous or categorical. The Logit Model has been used when the dependent variable is binary (Allison et al., 1991; Govindasamy et al., 1999), and is useful in a variety of other situations because it constrains the predicted value probabilities to the range of 0 to 1.

The maximum likelihood method was used for the estimation procedure. The maximum likelihood estimation method could be used since the data source was individual rather than grouped data (Gujarati et al., 1992). Consistency and asymptotically efficient parameter estimates were the advantages of maximum likelihood estimation (Pindyck and Rubinfeld, 1991). In addition, the odds ratio is available to further interpret the results (Allison et al., 1991).

The models correspond to the objective of this study, which was examining respondents' familiarity with the 'Food Industry MarketMaker website' and 'All About Blueberries website' among specialty crop farmers in Louisiana. The Logit Model was used to explain the impact of respondents' demographic and other farm characteristic information on familiarity with 'MarketMaker website' and 'All About Blueberries website' More specifically, the Model was used to predict the likelihood of respondents' familiarity with MarketMaker (FMMD) by given business

and demographic characteristics of respondents. The Model for 'All About Blueberries website familiarity was used to predict the likelihood of respondents' familiarity with All About Blueberries website (FAAB). Because they were two different dependent variables (familiarity with MarketMaker website and familiarity with All About Blueberries website) separate Models were estimated.

### 3.4.1 The Logit Model for the MarketMaker Website

The Logit Model assumes that the probability of familiarity with MarketMaker website, $P_i$, is dependent on a number of independent variables ($X_{ij}$) associated with respondents i and variable j, and a number of unknown parameters β (Stock & Watson, 2007).

Formally, the model is stated as:

$P_i = F(Z_i) = F(\alpha+Bx_i) = 1/[1 + \exp(-Z_i)]$

Where:

$F(Z_i)$ = Cumulative density function of probabilities of familiarity with MarketMaker website, expressed as function of $Z_i$

$P_i$ = the probability that an individual respondents' familiarity with the MarketMaker website

$\alpha$ = Intercept

$\beta X_i$ is a linear combination of independent variables.

$Z_i = \log [P_i/ (1-P_i)] = \beta X_i = \beta_0 +\beta_1 X_1 +\beta_2 X_2 +. ..+\beta_n X_n + \varepsilon$

Where:

i = 1, 2,.. , n are number of respondents

$Z_i$ = the log odds of familiarity choice for the $_i$ th respondents

$X_n$ = the nth explanatory variable for the $_i$th respondent's choice of familiar or not familiar with Market Maker website

$\beta$ = the parameters to be estimated; and $\varepsilon$ = the error term

The dependent variable $Z_i$, in the above equation is find the logarithm of the probability of familiarity with MarketMaker that a particular be familiar or not familiar with the website, was made. However, when the independent variables are qualitative in nature as is the case with some of the explanatory variables in this model, $\delta P_i/\delta X_{ij}$ does not exist in that $X_{ij}$ is discrete, which means that it

does not vary continuously. In this case, probability changes must be obtained by evaluating Pi at the alternative values of $X_{ij}$. Probability changes are then determined by

$(\delta P_i/\delta X_{ij}) = Pi\ (Y_i : X_{ij} = 1) - P(Y_i : X_{ij} = 0)$.

The likelihood of observing level of familiarity was hypothesized to be a function of a set of independent variables. Since the sample was small, several estimations of the model were conducted with alternative sets of variables. The final model included share of sales of vegetable crops (VegCrpSS), farmer's occupation (FarmOcc), farm Income (FarmInc), Internet speed as a barrier (BSpeedD), Internet usage (UseIntnet) and effectiveness of finding markets through MarketMaker (FindMktD). The model was tested under the specification:

Familiarity with MarketMaker choice = $\beta_0 + \beta_1$ VegCrpSS + $\beta_2$ FarmOcc + $\beta_3$FarmInc + $\beta_4$BSpeedD + $\beta_5$UseIntnet + $\beta_6$ FindMktD + e

Where:

- Familiarity with MarketMaker = 1 if the respondent said 'familiar' otherwise '0'which means 'not familiar'.

  Familiarity with MarketMaker was a dummy variable with the values '0' for 'not familiar' and '1' for 'familiar'. In the questionnaire, respondents reported their 'familiarity' with MarketMaker in 5 point Likert scale as 1 = I don't know about MarketMaker, 2 = not familiar with MarketMaker, 3 = registered but not active, 4 = use it for communication and 5 = doing business through MarketMaker. 'Not familiar was 1 or 2; 'familiar was 3, 4 and 5 in the scale.
- VegCrpSS = Share of sales of all Specialty Crop-vegetable (continuous variable).
- FarmOcc = occupation was obtained from question 29 in the questionnaire. 'Not a farm occupation' consisted of those who described themselves as retirement or residential/lifestyle = 0; farming as occupation was composed of all others (small and larger respondents who said farming was their occupation = 1. See Appendix 7.
- FarmInc = Farm Income less than $25,000 = 0 and over $25,000 =1
- BSpeedD = Speed of Internet as a barrier to use of Internet. Barriers were reported as a 5 point Likert scale where 1 = not a barrier, 2 = a minor barrier, 3 = neutral, 4 = an important barrier and 5 = a major barrier. 'Not a barrier' was identified as 1 or 2 and 'a barrier' was identified as 3, 4 or 5 in the scale.
- UseIntnet = Do you use the Internet for farm operation. Use Internet for farm business (dummy variable). If the respondents use Internet for their farm operations, 1= yes, otherwise 0 = no

- FindMktD = Effectiveness of finding markets through MarketMaker. Effectiveness was reported as a 5 point Likert scale where 1 = ineffective, 2 = somewhat ineffective, 3 = neutral, 4 = somewhat effective and 5 = very effective. 'Not effective' was identified as 1, 2 and 3 in the scale and 'very effective' was identified as 4 or 5 in the scale.

For estimation purposes, one classification was eliminated from each group of variables to prevent perfect co-linearity. The data set was cleaned and modified using Statistical Analysis Software (SAS Institute, Inc.) and the models were analyzed using Statistical Software (Stata Institute, Inc.). Variables description can be found in the Appendix 11.

### 3.4.2 The Logit Model for the All About Blueberries Website

The Logit Model assumes that the probability of familiarity with All About Blueberries website, $P_i$ is dependent on a number of independent variables ($X_{ij}$) associated with respondents $_i$ and variable $_j$, and a number of unknown parameters $\beta$.

The likelihood of observing level of familiarity was hypothesized to be a function of a set of independent variables. Since the sample was small, several estimations of the model were conducted with alternative sets of variables. The final model included share of sales of vegetable crop (VegCrpSS), farmer's occupation (FarmOcc), social media (SocialMedD), smart phone usage (SmPhoneD), Internet speed a barrier (BSpeedD), and acres of specialty crop production (SCAcres).

The model was tested under the specification:

Familiarity with All About Blueberries choice = $\beta_0 + \beta_1$ VegCrpSS + $\beta_2$ FarmOcc + $\beta_3$SocialMedD + $\beta_4$ SmPhoneD + $\beta_5$ BSpeedD + $\beta_6$ SCAcres + $\beta_7$ UseIntnet + e

Where:

- Familiarity with All About Blueberries website =1 if the respondent said 'familiar' otherwise '0'which means 'not familiar'.

Familiarity with MarketMaker identified as a dummy variable with the values '0' for ' not familiar' and '1' for 'familiar' as it's values. In the questionnaire respondents reported 'familiarity' with All About Blueberries website in 5 point Likert scale as I = don't know what it is, 2 = I am not very familiar, 3 = I don't visit the site often, 4 = I use it for ongoing communications and asking questions, 5 = It's part of my regular activities. 'Not familiar was 1 or 2; 'familiar was 3, 4, 5 in the scale.

- VegCrpSS = Share of sales of all Specialty Crop-vegetable (continuous variable).
- FarmOcc = occupation was obtained from question 29 in the questionnaire. Not a farm occupation consisted of those described themselves as retirement or residential/lifestyle = 0; farming as occupation was composed of all others (small and larger respondents who said farming was their occupation = 1. See Appendix 7).
- SocialMedD = Social media for farm business (dummy variable). If the respondents use social media for farm operations = 1 (yes), otherwise 0 = no.
- SmPhoneD = Smart phone for farm business (dummy variable). If the respondents use smart phone for their farm operations = 1 = (yes) otherwise = 0 = no.
- BSpeedD = Speed of Internet as a barrier to use of Internet. Barriers were reported as a 5 point Likert scale where 1 = not a barrier, 2 = a minor barrier, 3 = neutral, 4 = an important barrier and 5 = very effective. 'Not a barrier' was identified as 1 or 2 and 'a barrier' was identified as 3, 4 or 5 in the scale.
- UseIntnet = Do you use the Internet for farm operation. Use Internet for farm business (dummy variable). If the respondents use Internet for their farm operations, 1= yes, otherwise 0 = no
- SCAcres = Acres of specialty crop production

For estimation purposes, one classification was eliminated from each group of variables to prevent perfect co-linearity. The data set was cleaned and modified using Statistical Analysis Software (SAS Institute, Inc.) and the models were analyzed using Statistical Software (Stata Institute, Inc.). Variables description can be found in the Appendix 11.

# CHAPTER 4: RESULTS AND DISCUSSION

## 4.1 Descriptive Analysis

Specialty Crop Survey was an online survey. Email addresses of crop growers held by Louisiana's Department of Agriculture & Forestry, Louisiana Vegetable Growers Association, LSUAgCenter, and specialty crop farmers who registered with Louisiana MarketMaker website and All About Blueberries website were available. In addition to those email addresses, email contact information for specialty crop growers was received from selected parish agents in Louisiana. A total of 133 complete responses were available for analysis from 144 total responses. Only those individuals with complete responses (133) were used when conducting the statistical analysis. The results of the Specialty Crop Survey are discussed in five sections of this chapter. Those sections are:

- Summary statistics for demographic and business characteristics
- Summary statistics concerning crop production and market channel usage
- Summary statistics for use of Internet, social media and smart phone on their farm business
- 'MarketMaker' and 'All About Blueberries' websites use in their farm businesses
- Model results discussion (the model results for the Logit model analysis)

### 4.1.1 Summary Statistics for Respondents Demographic and Business Characteristics

In this section, results from the Louisiana Specialty Crop Farmer Survey are compared to statistics from official statistics from the Census of Agriculture 2007 and periodic updates from USDA agencies. A state-level report with useful information for comparison was Louisiana Ag Summary 2010, which provides informal estimates of the value of animal, forestry, fisheries, plant and wildlife products in Louisiana in 2010.

#### 4.1.1.1 Summary Statistics for Respondents Demographic Characteristics

The Specialty Crop Survey appears to be reasonably consistent with the Census of Agriculture 2007. According to the results of the survey, the typical Louisiana farmer was white, male, and between the ages of 55 and 64, as shown in Figure 1, 2, 3 and Appendix 1.

- **Respondent's Gender**

Nearly 75 percent of survey respondents were male in the Specialty Crop Farmer Survey. In contrast, the 2007 Census of Agriculture indicated that 86 percent of Louisiana specialty crop farmers were male. Figure 4.1 shows respondent gender information according to the Specialty Crop Survey.

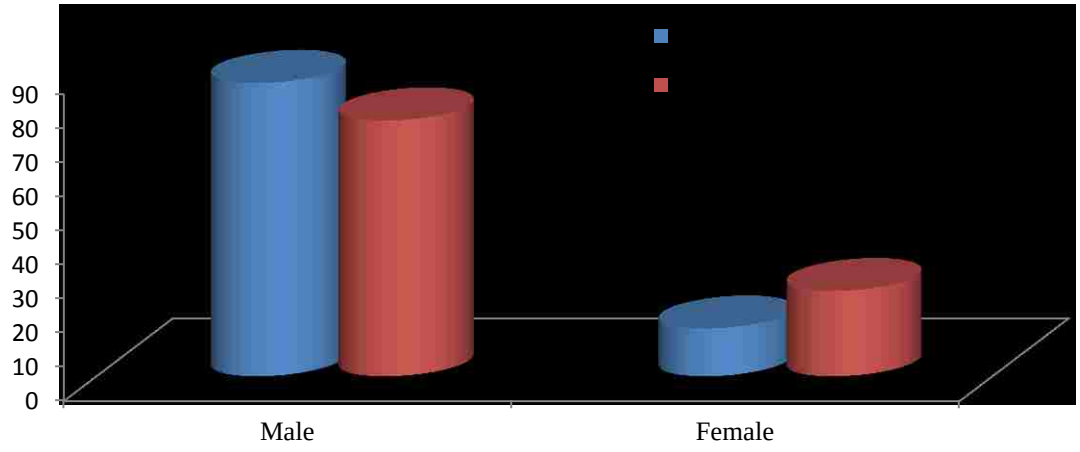



Figure 4.1: Respondents Gender Reported in Louisiana Specialty Crop Farmer Survey 2011

- **Respondent's Ethnicity**

Ninety two percent of the survey respondents were white/Caucasian which was consistent with the U.S. Census of Agriculture data (92 percent). According to the Specialty Survey, African American farmers were 2 percent; compared to 6 percent in the Census of Agriculture 2007 (USDA-NASS, 2007) Figure 4.2 provides information about ethnicity of the respondents in Specialty Crop Survey.

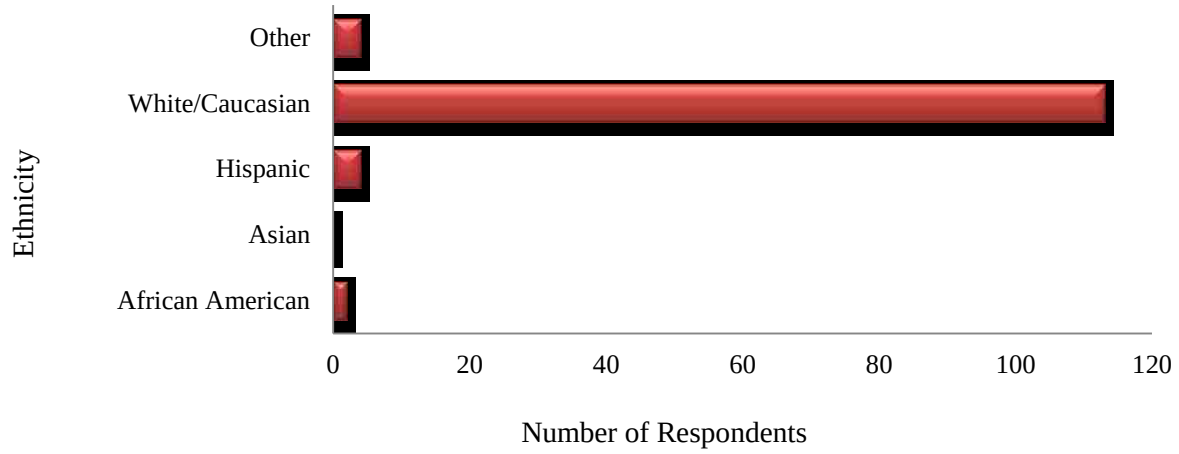



Figure 4.2: Respondent's Ethnicity Reported in Louisiana Specialty Crop Farmer Survey 2011

**Respondent's Age**

Figure 3 shows the number of respondents in four different age groups. The highest number of respondents (33) was in the 55-64 age group, and it was about 25 percent. Respondents' age was consistent with the average from U.S. Census of Agriculture data for Louisiana specialty crop farmers (55.8 years of age) (USDA-NASS, 2007). According to Specialty Crop Survey, 23 percent of farmers were 65 years or older which was somewhat less than 28 percent of 65 years or older farmers reported in the Census (USDA, NASS, 2010).

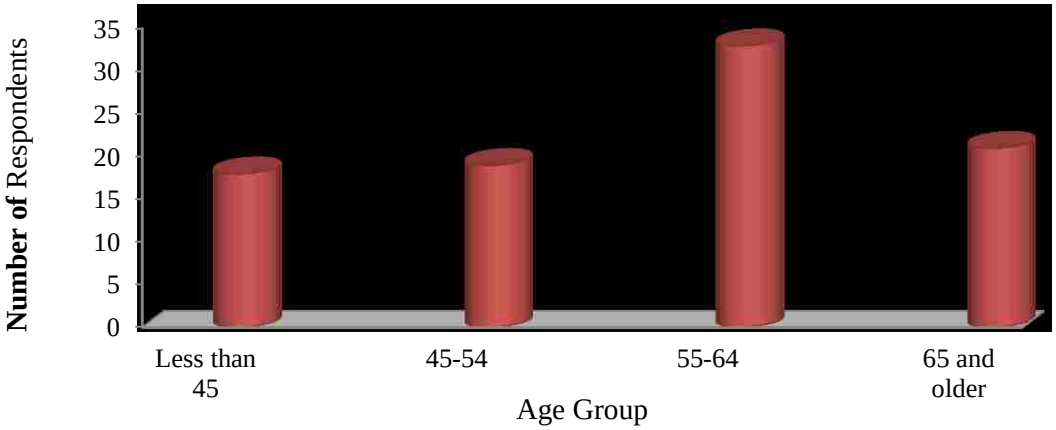



Figure 4.3: Respondent's Age Reported in Louisiana Specialty Crop Farmer Survey 2011

- **Respondent's Education**

The highest respondent education level group was four year degree (38 percent) followed by the 'some college' group (20 percent). Results indicated that 86 percent of survey respondents had more than 'high school' education, and about 34 percent had education levels less than '4 year college (B.S./B.A.) degree'. The rate of college educated farmers from other studies was lower. Hoag (1999) reported 32 percent, Smith (2004) reported 29 percent, and Batte (2004) reported 36 percent (Hoag et al., 1999; Smith et al., 2004; Batte et al., 2004). The survey data indicate that specialty crop farmers in Louisiana are relatively well-educated. The Louisiana Specialty Crop Farmer Survey probably differed from the selected comparisons since it was an Internet survey. Farmers with computers and email address would be expected to be better educated. Figure 4.4 shows respondent's education information.

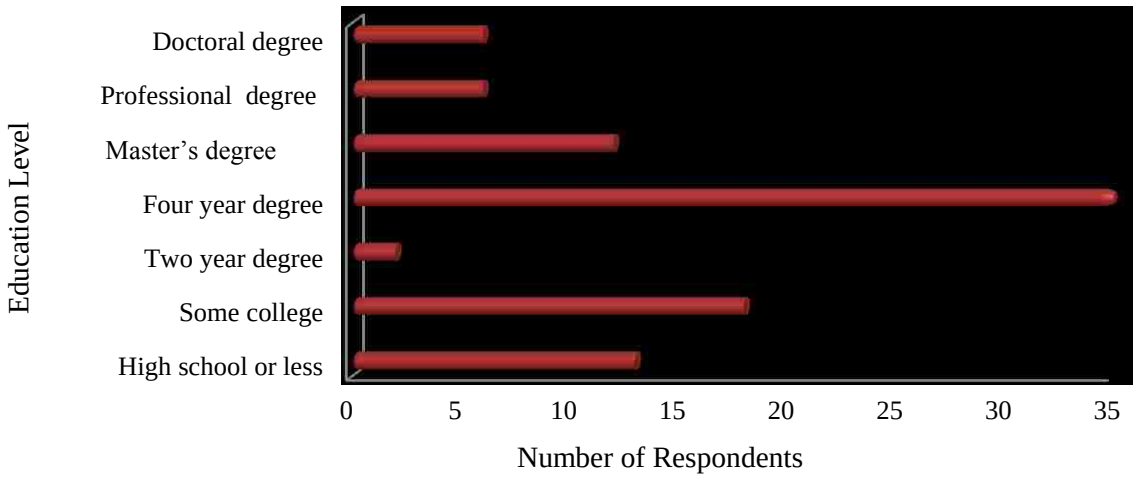



Figure 4.4: Respondent's Education as Reported in Louisiana Specialty Crop Farmer Survey 2011

- **Respondent's Household Status**

Figure 5 displays the household status of respondents who participated in the Louisiana Specialty Crop Survey. Results indicated that the highest number of respondents was married (91 percent) compared with single respondents, which accounted for only 9 percent of respondents in the survey. For 56 percent of respondent who had children, the children had left home, while 37 percent of respondents had children in high school age or lower grades.

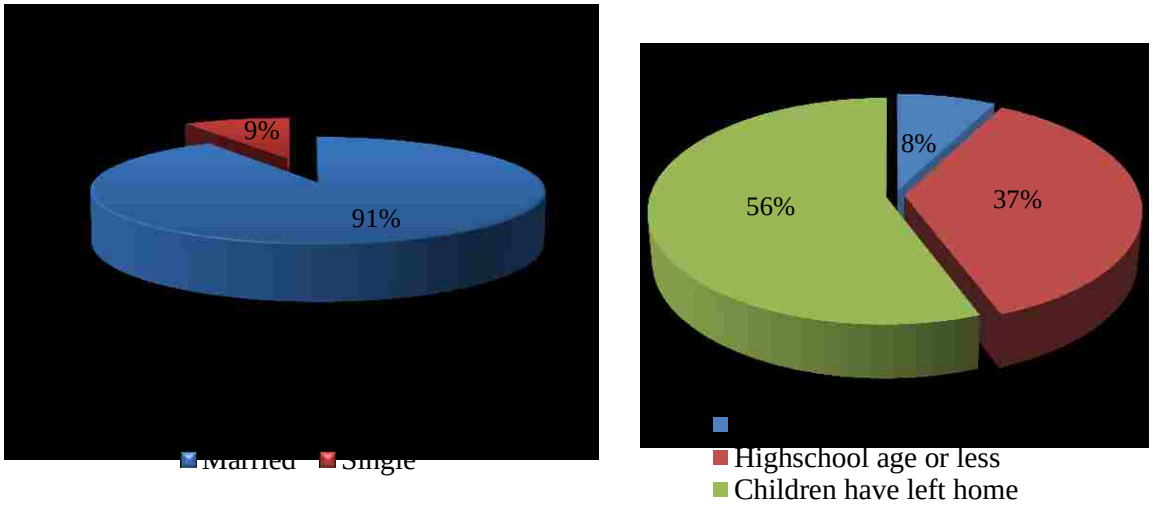



Figure 4.5: Respondent's Household Status Reported in Louisiana Specialty Crop Farmer Survey 2011

- **Respondent's Non-farm Work**

Figure 6 provides information about full and part time work by the survey. Thirty three of these farmers (36 percent) replied that they worked off the farm full-time. Fifteen (16 percent) considered

themselves to be part time off-farm workers, four (4 percent) farmers replied that they worked off-farm seasonally, and forty farmers (44 percent) replied they considered themselves to be in the category of full-time farmers.

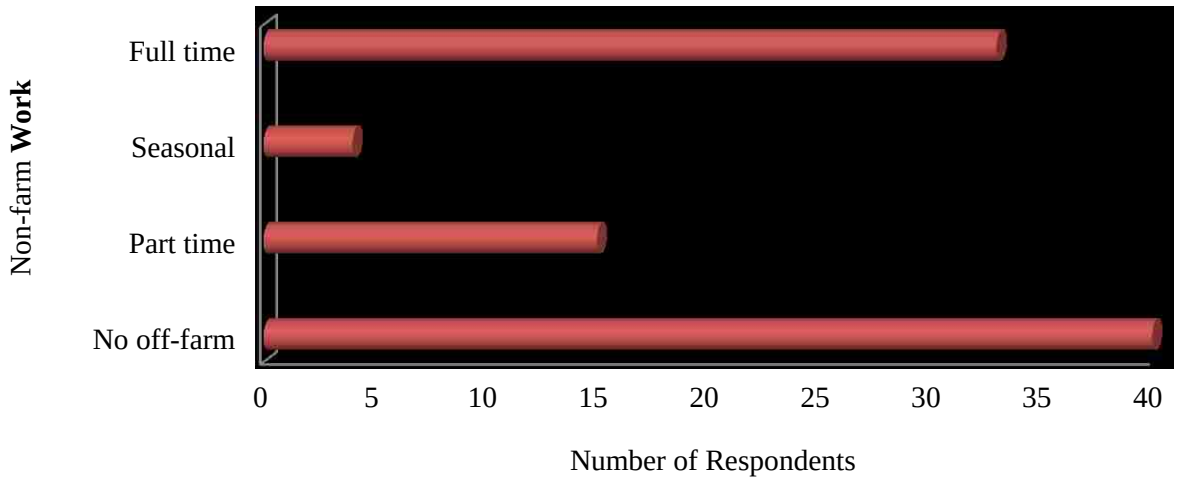



Figure 4.6: Respondent's Non-farm Work Reported in Louisiana Specialty Crop Farmer Survey 2011

**4.1.1.2 Summary Statistics for Business Characteristics**

- **Farm Size**

A total of 133 producers contributed information to the business demographic characteristics section. On average, these participating producers farmed approximately 168 acres of land, while average farm acreage in Louisiana was about 269, (USDA 2007). Of the land being used for the production and sale of products, producers on average owned 46 percent of that land while approximately 27 percent of production land was rented. On average, a total of 74 acres of owned land and rented land were used for specialty crop production. The survey indicated that 48 respondents (49 percent) reported they used less than 10 acres for their specialty crop production.

Eighty-eight percent of respondents used less than 100 acres which was higher than 54.4 percent reported in the U.S. Census of Agriculture (USDA-NASS, 2007). Ninety three percent (93 percent) of respondents reported their farm acres in production as less than 500 acres, which was higher than 85.4 percent reported in the U.S. Census of Agriculture (USDA-NASS, 2007). Figure 4.7 shows relevant information about farm size from the Louisiana Specialty Crop Survey.

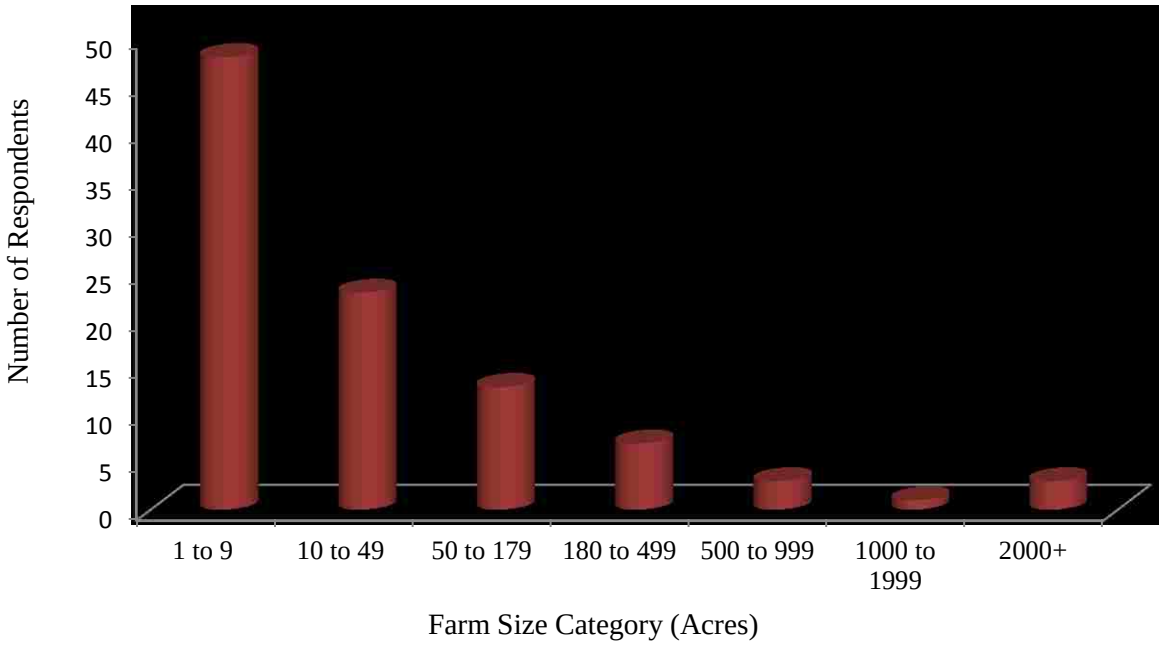



Figure 4.7: Total Farm Size (by acres) Reported in Louisiana Specialty Crop Farmer Survey 2011

- **Farm income**

Figure 4.8 shows farm income distribution from the Louisiana Specialty Crop Farmer Survey 2011. The majority of respondents (61 percent) indicated a gross farm income range from $10,000 to $24,999. In addition, nearly 94 percent of survey respondents reported that farm income was less than $250,000.

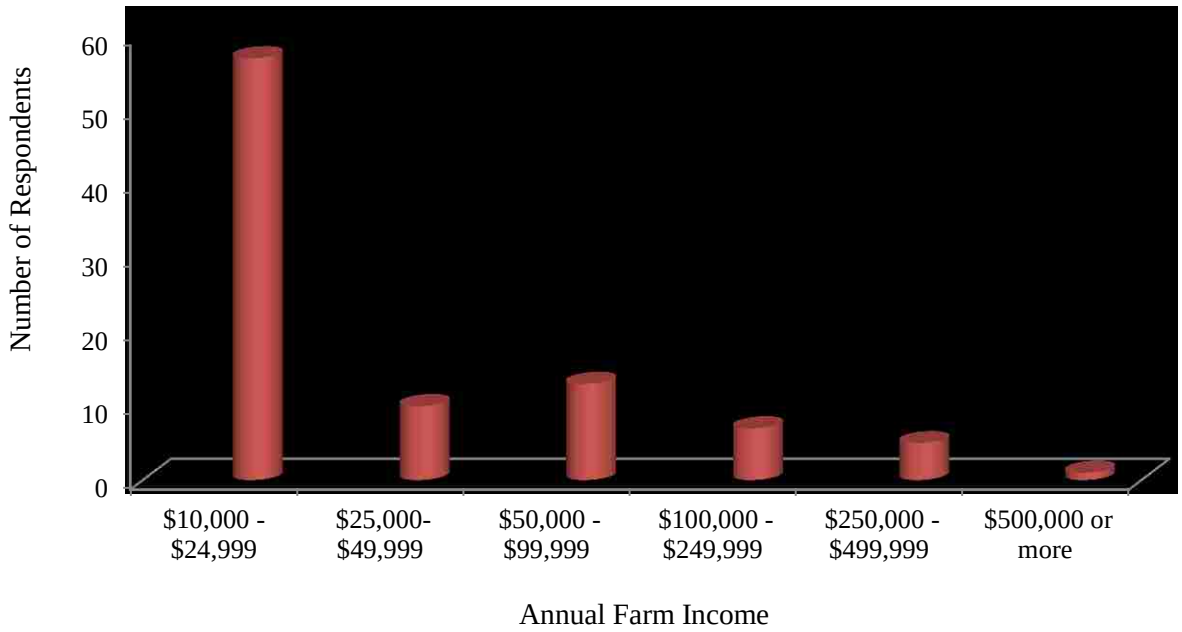



Figure 4.8: Annual Farm Income Reported in Louisiana Specialty Crop Farmer Survey 2011

- **Farm Sales by Different Farm Category**[1]

Farming in Louisiana is very diverse, ranging from very small retirement and residential farms having less than $250,000 of farm income to large family farms that have farm income more than $250,000. According to the results of Specialty Crop Survey, small family farms including small retirement farm, small residential farm, and small farms - farming vocation with annual sales less than $250,000 were 87 percent of respondents. This number was essentially the same as the share of small family farms with annual sales less than $250,000 (88 percent) U.S. farms in the United States in 2007 (USDA-NASS, 2010). USDA defines retirement farms as small scale farms whose operators are retired. Residential/lifestyle farms are small scale farms whose operators have a major occupation other than farming (USDA-NASS, 2007). Farming occupation farms are small farms whose operators have no other occupation. Figure 4.9 shows information about the number of respondents reported in Louisiana Specialty Crop Survey, for farm income by different farm category.

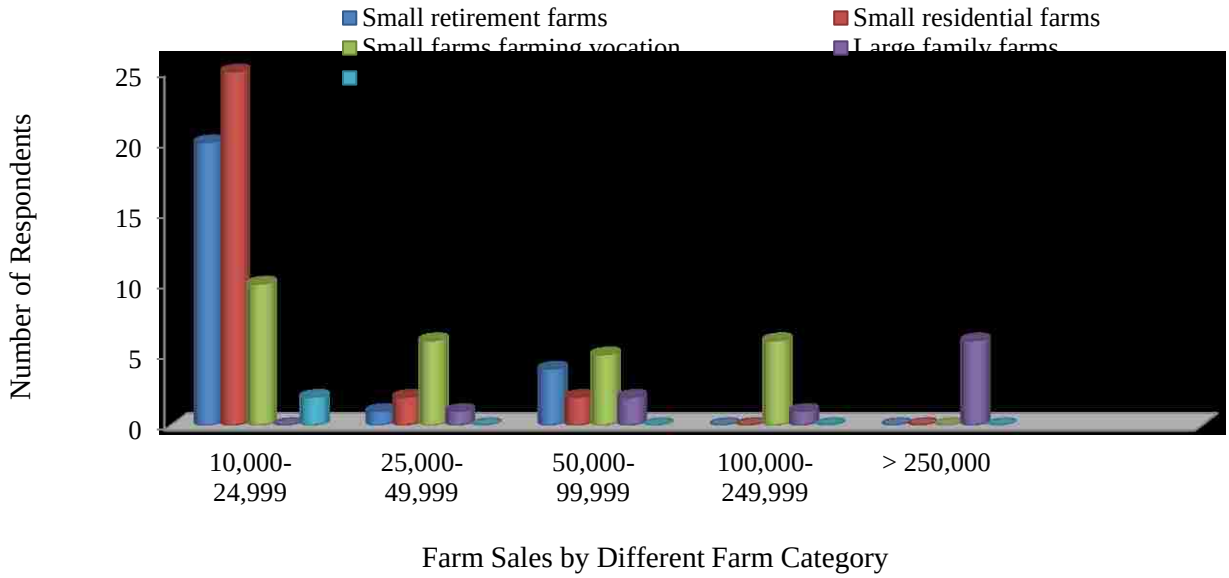



Figure 4.9: Number of Respondents Reported in Louisiana Specialty Crop Farmer Survey 2011, for Farm Income by Farm Category

According to the survey, 98 percent of farms are family operated farms, composed of small retirement farms, small residential farms, small farm - farming vocations and large family farms. It

[1]There were reporting discrepancies in large family farm category. According to the survey questionnaire respondents were informed as 'large farms are in farm sales of $250,000' category. But four respondents reported their farm income in the 'less than $250,000' category and indicated the farm type as 'large farm'.

was consistent with the U.S. Census of Agriculture data (98 percent), (USDA-NASS, 2009). Most farms were in the small farm category (89 percent), while large farms were about 11 percent of the total. Sixty-one percent of respondents had less than $25,000 of farm sales and only 6 percent of respondents were in the $250,000 and greater sales category. Most farms (31percent) were residential/lifestyle farm with an annual farm income less than $250,000.

### 4.1.2 Summary Statistics Concerning Product Information and Market Channels Usage

#### 4.1.2.1 Crops Produced

Based on the 133 responses received, specialty crop farmers were a diverse group, both in crops produced and marketing strategies. Over 45 different crops were reported by respondents. Those crops were classified as vegetable, fruit or nut based on the highest share of sales for each respondent's farm sales. Respondents were asked to write the percentage of crop product sales made through direct marketing channels in 2010, with the combined total of all of products sold being 100 percent. Pecan, blueberries, peaches, sweet potatoes and field tomatoes were the top five products sold in 2010. Table 4 provides crop information about the comparison of crop value ranks between Louisiana Ag summary[1] 2010 and The Specialty Crop Survey.

### 4.2 Comparison of Crop Sales Value Rank between Louisiana Ag Summary and Louisiana Specialty Crop Farmer Survey 2011

The Specialty Crop Survey provides valuable information about Louisiana specialty crops produced in 2010. To validate survey results, a detailed comparison of crop sales value rank between Louisiana Ag Summary and Specialty Crop Survey is shown in Table 4 and Figure 4.10. For further consideration, Table 4 provides crop information about the comparison of crop value ranks between Louisiana Ag Summary 2010 and Louisiana Specialty Crop Farmer Survey, 2011.

Louisiana Ag Summary 2010 reported estimates of the value of animal, forestry, fisheries, plant and wildlife products in Louisiana in 2010.

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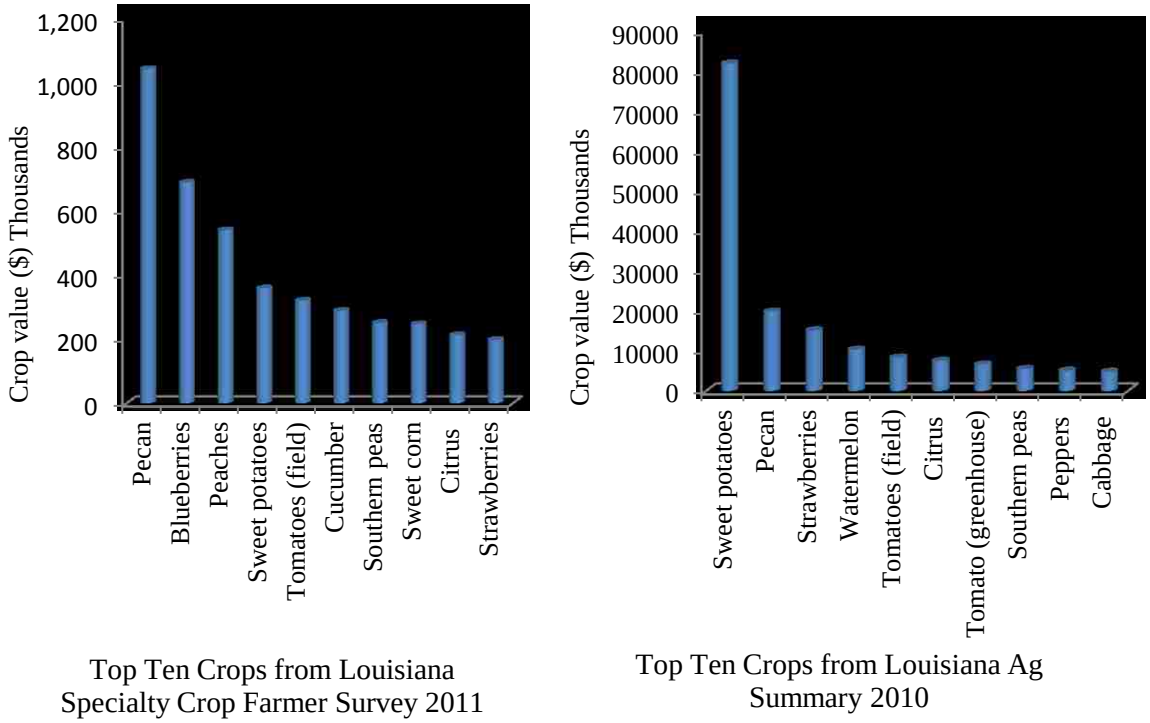
[1]Louisiana Ag Summary 2010 reported estimates of the value of animal, forestry, fisheries, plant and wildlife products in Louisiana in 2010.

Agents and specialists of the Louisiana Cooperative Extension Service, and other agencies in both private and public sectors, contribute their service to this report and maintain valuable information in Louisiana Ag Summary about agricultural production in Louisiana. The estimated crop sales values in Specialty Crop Survey were calculated by multiplying the midpoint of the reported farm income range for each farm by each crop's share of sales. This estimate of sales for individual crops was summed over crop categories reported by the farmer.




Top Ten Crops from Louisiana Specialty Crop Farmer Survey 2011

Top Ten Crops from Louisiana Ag Summary 2010

Figure 4.10: Top crop sales value from Louisiana Specialty Crop Farmer Survey and Louisiana Ag Summary 2010

From the survey, the two highest farm sales values were pecans, followed by blueberries. The mailing list used in the survey contained higher numbers of pecan and blueberry growers because larger and more accurate lists were available for those two crops, so the greater number of email addresses available in the Specialty Crop Farmer Survey probably influenced crop responses. Peaches, sweet potatoes, tomatoes (field), cucumber, southern peas, sweet corn, citrus and strawberries followed in descending order of farm sales values.

Comparing the average crop sales value from Ag Summary 2010 (Table 4), sweet potatoes had the highest average crop sales and it was in the second place in the survey. Strawberries, tomatoes (greenhouse), watermelon and peaches followed as leaders in average crop sales according to the Ag Summary 2010. According to the survey, pecan, sweet potatoes, peaches, blueberries and citrus had top average crop sales. These results show some similarity between crop sales from Ag Summary and crop sales from the survey.

#### 4.2.1.5 Terms Important to Customers

One of specific objective of Louisiana Specialty Crop Farmer Survey was to develop a better understanding of potential market opportunities for specialty crop farmers in Louisiana. According to the literature, "organically produced", "locally produced", "Pesticide free produced" and other differentiating produce helped farmers communicate with customers about market (Govindasamy et al., 2009). In terms of differentiating their farm products, farmers were asked what terms they use to differentiate their farm's products from competing products. Specialty crop farmers reported their differentiating products terms as "locally grown", "organically produced but not certified", "certified organic", "pesticide free", "reduced pesticide use strategy" and "value added". Respondents were asked to report these special terms to determine what words were important in the promotion and labeling of direct marketed products. Respondents chose terms such as "locally grown", "pesticide free", "reduced pesticide use" and "organically produced" from a list of terms commonly used in direct marketing of specialty crops in Louisiana. Figure 4.11 and Appendix 2 show a complete description of terms important to customers.

Eighty percent of respondents said that the most important term to customers was "locally grown" products. The term "locally grown" had the highest response rate in most important term to customers by vegetable growers (47 percent), fruit growers (20 percent) and nut growers (12 percent). The terms "locally grown", "pesticides free" and "organically produced" were the most popular among vegetable and fruit crop growers. For nut growers, "locally grown" and "pesticide free" were the most important descriptive terms to customers.

Table 4. Number of Farmers, Crop Sales, Average Sales and Rank Comparison between Louisiana Ag summary 2010 and Louisiana Specialty Crop Farmer Survey, 2011

| Crop[1] | Ag Summary 2010[2] | | | | Louisiana Specialty Crop Farmer Survey | | | |
|---|---|---|---|---|---|---|---|---|
| | Number of farmers | Crop sales | Average sales | Rank[3] | Number of farmers | Estimated crop sales[4] | Average sales | Rank[5] |
| **Fruits** | | | | | | | | |
| Strawberries | 83 | 15,192,274 | 183,039 | 2 | 6 | 198,126 | 33,021 | 6 |
| Watermelon | 296 | 10,350,859 | 34,969 | 4 | 12 | 125,256 | 10,438 | 11 |
| Citrus | 545 | 7,518,645 | 13,796 | 9 | 6 | 213,000 | 35,500 | 5 |
| Blueberries | 1419 | 1,301,712 | 917 | 18 | 18 | 689,256 | 38,292 | 4 |
| Peaches | 37 | 1,210,229 | 32,709 | 5 | 13 | 540,800 | 41,600 | 3 |
| **Vegetables** | | | | | | | | |
| Sweet potatoes | 75 | 82,035,294 | 1,093,804 | 1 | 7 | 359,002 | 51,286 | 2 |
| Tomatoes (field) | 320 | 8,383,212 | 26,198 | 6 | 35 | 320,355 | 9,153 | 13 |
| Tomato (greenhouse) | 66 | 6,657,792 | 100,876 | 3 | 8 | 60,128 | 7,516 | 16 |
| Southern peas | 406 | 5,524,067 | 13,606 | 10 | 14 | 251,370 | 17,955 | 8 |
| Peppers | * | 5,064,737 | * | * | 30 | 84,924 | 2,830 | 29 |
| Cabbage | * | 4,807,380 | * | * | 10 | 45,400 | 4,540 | 24 |
| Okra | 300 | 4,204,058 | 14,014 | 8 | 18 | 64,008 | 3,556 | 27 |

Table 4 (continued)

| Crop[1] | Ag Summary 2010[2] | | | | Louisiana Specialty Crop Farmer Survey | | | |
|---|---|---|---|---|---|---|---|---|
| | Number of farmers | Crop sales | Average sales | Rank[3] | Number of farmers | Estimated crop sales[4] | Average sales | Rank[5] |
| Squash | 212 | 2,167,812 | 10,226 | 11 | 30 | 147,390 | 4,913 | 22 |
| Sweet corn | 287 | 2,119,802 | 7,386 | 13 | 16 | 247,424 | 15,464 | 9 |
| Mustard | 324 | 1,683,702 | 5,197 | 15 | 14 | 64,120 | 4,580 | 23 |
| Eggplant | 74 | 1,276,861 | 17,255 | 7 | 28 | 122,780 | 4,385 | 25 |
| Cucumber | 139 | 1,002,217 | 7,210 | 14 | 29 | 289,101 | 9,969 | 12 |
| Irish potatoes | 123 | 977,219 | 7,945 | 12 | 3 | 2,376 | 792 | 41 |
| Beans | 30 | 122,264 | 4,075 | 16 | 1 | 525 | 525 | 44 |
| **Nuts** | | | | | | | | |
| Pecan | 9491 | 19,877,004 | 2,094 | 17 | 16 | 1,044,576 | 65,286 | 1 |

*Not available; [1]The top 20 crops from Ag summary 2010 were included in descending order by value of sales. [2]Louisiana Ag Summary 2010 reported estimates of the value of animal, forestry, fisheries, plant and wildlife products in Louisiana in 2010. [3] Rank by average sales according to the Ag Summary 2010. [4]For each farm, individual crop sales were calculated by multiplying the midpoint of the reported farm income range by each crop's share of sales. This estimate of sales for individual crops was summed over crop categories reported by the farmer. [5]Rank by average sales according to Louisiana Specialty Crop Farmer Survey 2011.

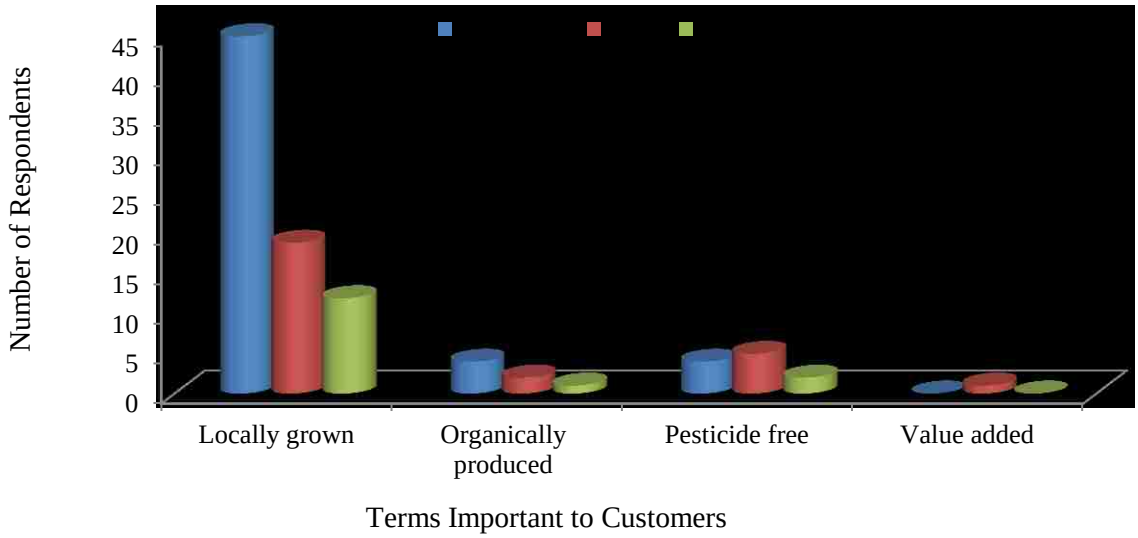



Figure 4.11: Terms Important to Customers in Louisiana Specialty Crop Farmer Survey 2011

**4.2.1.6 Terms Important to Producers**

In terms of improving farm income by using direct marketing methods, it was important to know what special terms specialty crop farmers use to differentiate their farm products from competing products by other crop producers. Respondents were asked to indicate which special terms were believed by producers to be most important to consumers. Respondents reported that "locally grown," "pesticide free," "reduced pesticide use strategy," and "organically produced," were commonly used terms by producers in direct marketing of specialty crops in Louisiana. Figure 4.12 and Appendix 2 show important information about terms that important to producers as reported in the 2011 Louisiana Specialty Crop Farmer Survey.

According to the results, the most important term to producers was identified as "locally grown" (63 percent). The term "locally grown" was most popular among vegetable growers (37 percent). The terms "locally grown", "pesticides free" and "organically produced" were the most popular terms among vegetable and fruit crop growers. For nut growers "locally grown" and "pesticide free" were more popular than other terms.

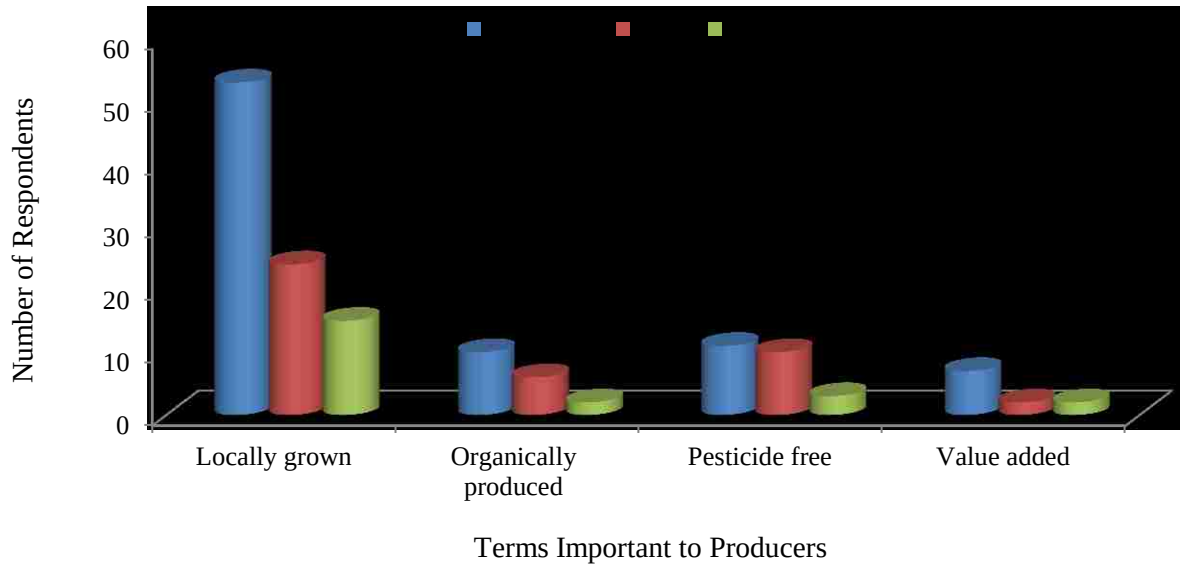



Figure 4.12: Terms Important to Producers, Reported in Louisiana Specialty Crop Farmer Survey 2011

#### 4.2.1.7 Farmers' Certifications

A certification describes a confirmation of certain characteristics of a certain product. Product certifications describe information related to food production which occurred in ways to sustain and protect natural resources and safeness for the end customer. Producers were asked to report the certifications they held. Information about farmers' certifications is shown in the Figure 4.13 and Appendix 2.

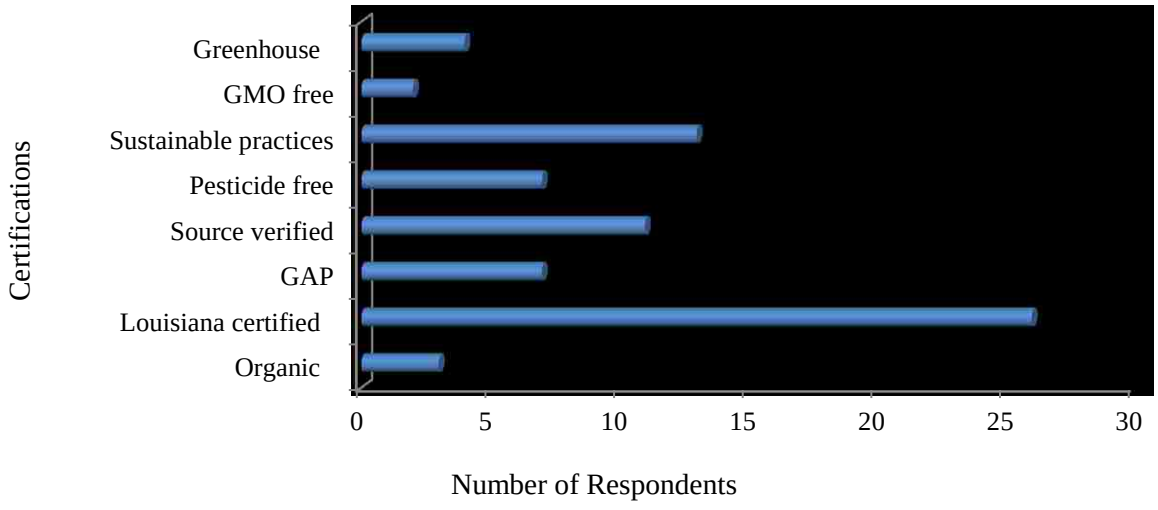



Figure 4.13: Farmers Certifications Reported in Louisiana Specialty Crop Farmer Survey 2011

Most producers who had certifications had the "Louisiana Certified Product" (State Certified) Certification, "Sustainable Practices" (Producer Verified) Certification, "Good Agricultural Practices" (GAP, Commercially Certified) Certification and "Source Verified" (Producer Verified) Certifications. "Louisiana Certified Product" (State Certified) was the highly used certification by the specialty crop growers in 2011. "Sustainable Practices" (Producer Certified) was the second most popular certification reported by respondents. Louisiana Certified product certification, Louisiana Certified Cajun product certification and Louisiana Certified Creole product certification were issued by Louisiana Department of Agriculture and Forestry. They were added in the Louisiana certified category in the survey results.

**4.2.2. Usage of direct marketing channels by specialty crop growers in Louisiana**

The Louisiana Specialty Crop Farmer Survey 2011 contained specific questions aimed at collecting information about specialty crop farmers' use of direct marketing strategies for marketing their products. Specifically, the survey asked which of the following direct marketing outlets or approaches had been used: on-farm market, roadside stand, pick-your-own; peddlers; public farmers' market; Community Supported Agriculture; restaurants, chefs, schools; Internet customers; local, grocery stores; wholesalers or distributers (regional / national); processors.

According to Appendix 2, the most frequently used direct marketing strategy in Louisiana Specialty Crop Farmer Survey was "on-farm market" followed by "roadside stand" and "pick-your-own" which was used by 67 respondents (33 percent). It was followed by direct sales to "public farmers market" which was used by 48 respondents (24 percent) and "local, small grocery stores" which were used by 24 respondents (12 percent). Respondents reported effectiveness in 5 point Likert scale where 1= ineffective, 2 = somewhat ineffective, 3 = neutral, 4 = somewhat effective and 5 = very effective. According to table 5, "on-farm market", "roadside stand", "pick-your-own" had the highest average effectiveness (4.6) which was between somewhat effective and very effective. Rank for effectiveness of 'Internet sales' (2.77) was between somewhat effective and neutral. According to table 5, the highest share of sales was reported from public farmers market by 61 percent, followed by wholesalers and distributers by 60 percent and on farm markets 54 percent.

Share of sales through each of these channels, and their effectiveness, is shown in Table 5 and Appendix 3.

Table 5. Number of Farmers who used Marketing Channels, Average Share of Sales and Average Effectiveness of Marketing Channels, from Louisiana Specialty Crop Farmer Survey, 2011

| Marketing channels | Number of farms | Average share of sales | Average effectiveness[1] |
|---|---|---|---|
| On-farm market[2] | 67 | 54.14 | 4.06 |
| Peddlers | 15 | 23.67 | 2.81 |
| Public farmers market | 48 | 61.23 | 3.91 |
| CSA[3] | 3 | 46.67 | 2.91 |
| Restaurants, chefs, schools | 14 | 25.71 | 3.12 |
| Through Internet | 7 | 22.14 | 2.77 |
| Local, small grocery stores | 24 | 33.54 | 3.23 |
| Wholesalers or distributers | 22 | 60.41 | 3.32 |
| Processors | 4 | 43.33 | 2.94 |

[1] Respondents reported effectiveness in 5 point Likert scale (1 = ineffective, 2 = somewhat ineffective, 3 = neutral, 4 = somewhat effective and 5 = very effective). [2] On-farm market, roadside stand, pick-your-own. [3] Community Supported Agriculture.

#### 4.2.2.1 Effectiveness Rating on Marketing Channels Reported on Louisiana Specialty Crop Farmer Survey 2011

The results indicate that respondents identified most effective marketing channels as "on-farm markets", "roadside stands", "pick your own", second most effective channels as "public farmers markets" and thirdly "local small grocery stores." "Peddlers" were reported as "neutral" and "Community Supported Agriculture" and "processors and restaurant, chefs and schools" were identified as less effective marketing channels. A detailed description of effectiveness of marketing channels is shown in Figure 4.14 and Appendix 3.

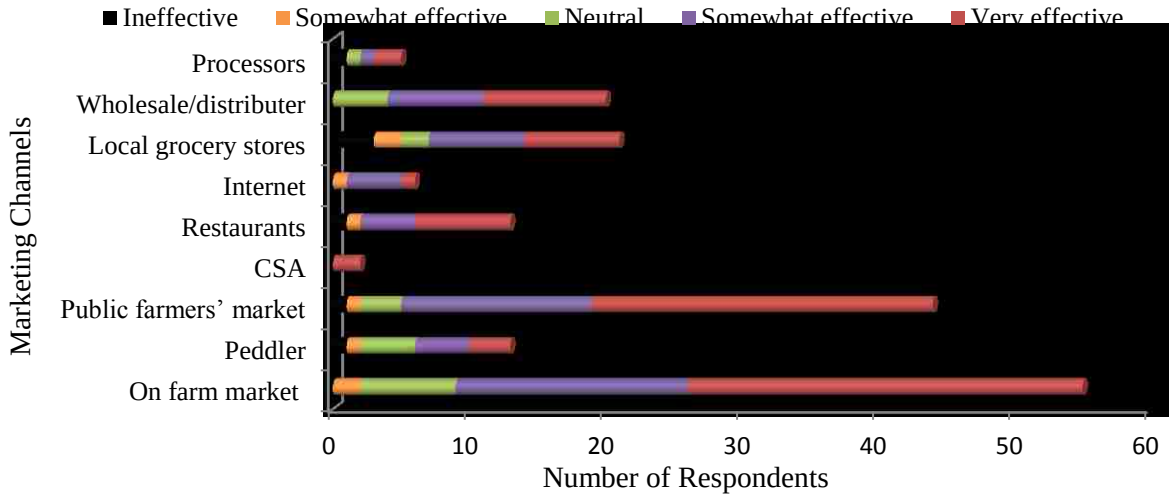



Figure 4.14: Effectiveness Ratings of Marketing Channels Recorded in Louisiana Specialty Crop Farmer Survey 2011

#### 4.2.2.2 Consolidated Marketing Channels

Farmers reported their marketing activity for nine different marketing channels as described in section 4.2.2. These were grouped into "direct-to-consumer sales", "local intermediated sales" and "sales to wholesalers and processors". "On-farm market", "Peddlers", "public farmers market", "Community Supported Agriculture" and "Internet sales" were grouped as "direct to consumer sales." Local grocery stores and restaurants, chefs, and schools were grouped as "local intermediated sales" and "wholesalers or distributers" and "processors" were grouped as "wholesalers and processors". These marketing channels are called consolidated marketing channels throughout the survey to identify different aspects of farmer's production and marketing behavior.

Farmers were asked to record share of sales for each crop with their combined total of all of their products sold being equal to 100 percent and each farmer was classified as a vegetable or a fruit crop farmer or a nut crop farmer, based on the highest share of sales reported. The highest number of respondents for direct marketing was vegetable growers (40 percent), followed by fruit crop growers (21 percent).

Table 6. Number and Percentage of Kinds of Specialty Crop Farmers by Consolidated Marketing Channels, from Louisiana Specialty Crop Farmer Survey 2011

| Variable | Consolidated Marketing Channels[1] | | | |
|---|---|---|---|---|
| | Direct to Consumer | Local Intermediated | Wholesale/ Processor | Total |
| | | Number (Percentage) | | |
| Vegetable crop growers | 39 | 10 | 6 | 55 |
| | (39.80) | (10.20) | (6.12) | (56.12) |
| Fruit crop growers | 21 | 1 | 6 | 28 |
| | (21.43) | (1.02 | (6.12 | (28.57) |
| Nut crop growers | 8 | 1 | 6 | 15 |
| | (8.16) | (1.02) | (6.12) | (15.31) |
| Total | 68 | 12 | 18 | 98 |
| | (69.39) | (12.24) | (18.37) | (100.00) |

[1.] Farmers reported their marketing data, in nine different marketing channels. These were grouped into direct-to-consumer sales, local intermediated sales and sales to wholesalers and processors.

Figure 4.15 shows information about consolidated marketing channels usage by farmers.

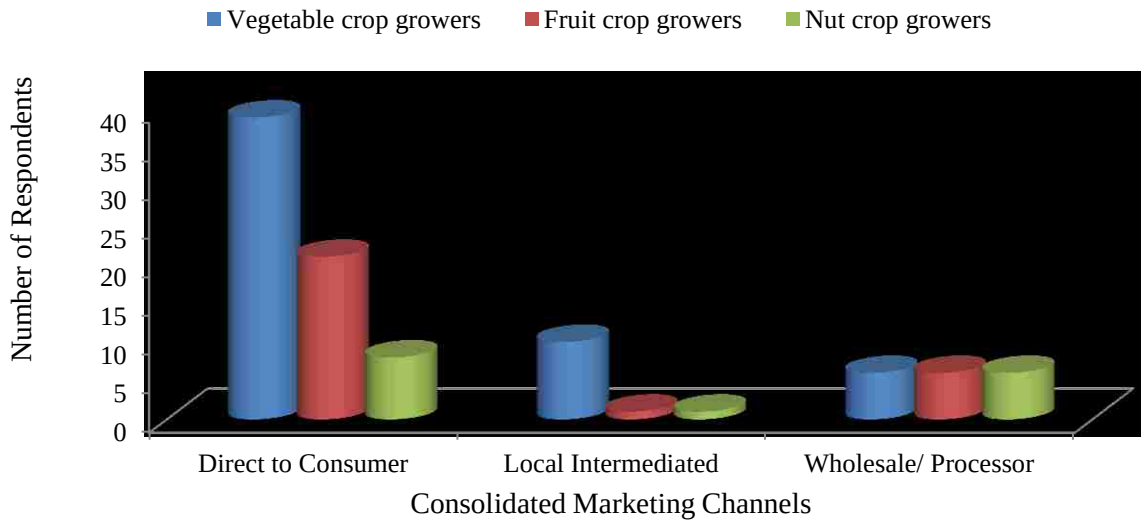



Figure 4.15: Kind of Specialty Crop Farmers by Consolidated Marketing Channels Recorded in Louisiana Specialty Crop Farmer Survey 2011

According to the results of Specialty Crop Survey direct to consumer channels were more frequently used by vegetable crop growers and fruit crop growers (Table 6). Wholesalers or distributers were used by crop growers equally by 6 percent. Local intermediated marketing channels were not very

popular among crop growers. According to Table 6, direct to consumer channels (40 percent). Local intermediated channels (10 percent) were more popular for vegetable crop growers. For fruit crop growers, direct to consumer channels (22 percent) and wholesalers and processors (6 percent) were more popular marketing channels. Nut crop growers used more direct to consumer (8 percent) and wholesale and processors (6 percent).

#### 4.2.2.3 Estimation of Mean Values for Crops and Consolidated Marketing Channels

Summary statistics for main crops and share of sales by consolidated marketing channels from Louisiana Specialty Crop Farmer Survey 2011 is shown in Table 7.

Table 7. Summary Statistics for Main Crops and Share of Sales by Consolidated Marketing Channels from Louisiana Specialty Crop Farmer Survey 2011

| Variable | Direct to consumer | Local intermediated | Wholesale/ processor |
|---|---|---|---|
| | Mean[1] (Std. Dev.) | Mean (Std. Dev.) | Mean (Std. Dev.) |
| **Average number of crops** | | | |
| Vegetable | 5.58 (3.51) | 5.56 (2.42) | 2.86 (2.70) |
| Fruit | 0.99 (0.73) | 1.96 (0.79) | 0.97 (0.71) |
| Nut | 0.98 (0.00) | 1.25 (0.00) | 1.03 (0.00) |
| **Share of sales by channel** | | | |
| On-farm market | 66.04 (34.72) | 17.00 (4.47) | 13.50 (11.57) |
| Peddlers | 15.50 (10.66) | 48.75 (40.08) | 5.00 (0.00) |
| Public farmers' market | 68.33 (31.36) | 25.00 (7.07) | 7.50 (3.54) |
| CSA[2] | 46.67 (35.12) | 0.00 (0.00) | 0.00 (0.00) |
| Restaurants, chefs, schools | 16.13 (13.90) | 45.00 (43.44) | 6.00 (0.00) |
| Internet customers | 19.16 (11.14) | 0.00 (0.00) | 40.00 (0.00) |
| Local grocery stores | 21.37 (14.16) | 57.78 (33.92) | 12.50 (5.00) |
| Wholesalers or distributers | 25.00 (11.18) | 25.00 (0.00) | 76.93 (29.53) |
| Processors | 25.00 (0.00) | 0.00 (0.00) | 43.33 (49.33) |

[1] Mean value for crops show the average number of crops (crop section) and mean value for each marketing channel shows the average share of sales percentage (marketing channels section), [2]Community Supported Agriculture.

### 4.3. Internet Usage on Farm Operation

#### 4.3.1. Internet Usage and Quality

Computer and Internet use by specialty crop farmers was available from the Specialty Crop Survey. According to the results, 99 percent of farmers had access to the Internet. It was much higher as expected as the survey was conducted online. According to the USDA, Internet access for crop farms has increased to 64 percent in 2011, from 60 percent since 2009 (USDA-NASS, 2010). Internet usage on the farm was 63 percent and Internet usage reported in the 2007 Census was 57 percent (Appendix 4). According to the survey, 43 percent of respondents who reported as 'use Internet' were reported from direct to consumer sales channels. The Census of Agriculture 2007 indicates that Internet usage on farm had increased over the past few years from 50 percent in 2002 to 57 percent in 2007(USDA-NASS, 2007).

The survey collected information about quality of Internet services which is an important measure of farmers' ability to use the Internet effectively. Respondents reported "use" and "do not use" directly on the survey. In addition to that, respondents used a 5 point Likert scale where 1= poor, 2 = fair, 3 = good, 4 = very good and 5 = excellent. These responses were grouped as "low quality service" and "high quality service". "Low quality service" was identified as 1 or 2 on the scale and "high quality" was identified as 3, 4 or 5 (Appendix 4). These Internet uses and the quality of services were identified by consolidated marketing channels to identify different aspects of farmers' production and marketing behavior in different channels.

#### 4.3.2 Quality of Internet Services

Available Internet services in the area were identified as dial-up, dial-up with accelerator, cable, DSL and satellite. According to Appendix 4, the most frequently used Internet service was DSL **(**Digital Subscriber Line) by 45 percent followed by satellite (41percent) and cable (32 percent). Dial-up (56 percent) and dial up with accelerator (32 percent) had the higher rates of low service ratings. An average about 30 percent of respondents reported "don't know/ not available" for each available Internet service in the area. Figure 4.16 shows quality of Internet services available in Louisiana. According to Census of

Agriculture 2007 (USDA-NASS, 2007), DSL, the most common Internet service method used by farmers (38 percent) increased from 36 percent from 2009. Dialup access had dropped from 23 percent in 2009 to 12 percent in 2010 related to the quality of the service. Satellite was used by about 15 percent and cable was used by about 11 percent of US farms which did not change from 2009.

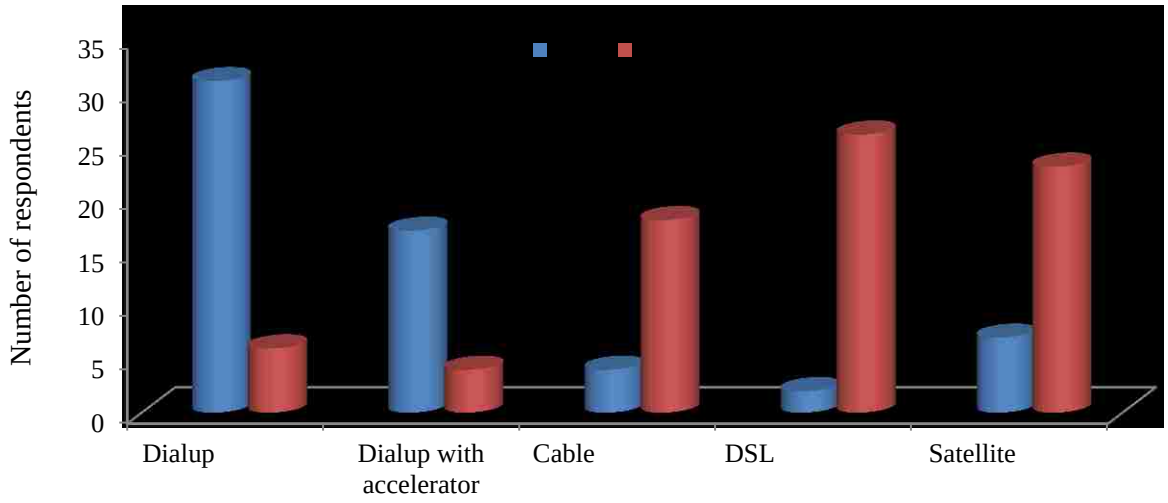



Figure 4.16: The Quality of Internet Service by Number of Respondents Recorded in Louisiana Specialty Crop Farmer Survey 2011

### 4.3.3 Internet Applications in Farm Business

In the questionnaire, respondents were asked to indicate how often they use specific Internet applications (Appendix 5). Buying inputs, communications, collecting information, online banking, paying bills, record keeping and selling farm products online compared as online use functions in a 5 point Likert scale delineated as 1 = do not use, 2 = use monthly, 3 = use weekly, 4 = use daily and 5 = use more than once daily. "Do not use often" was 1or 2; "use often" was 3, 4 or 5.

According to Appendix 5, 78 percent of farmers who use the Internet have used it very often to collect information (at least weekly). 77 percent of farmers who use the Internet often have accessed it for communication purposes, almost every day (average 3.51 in the scale).

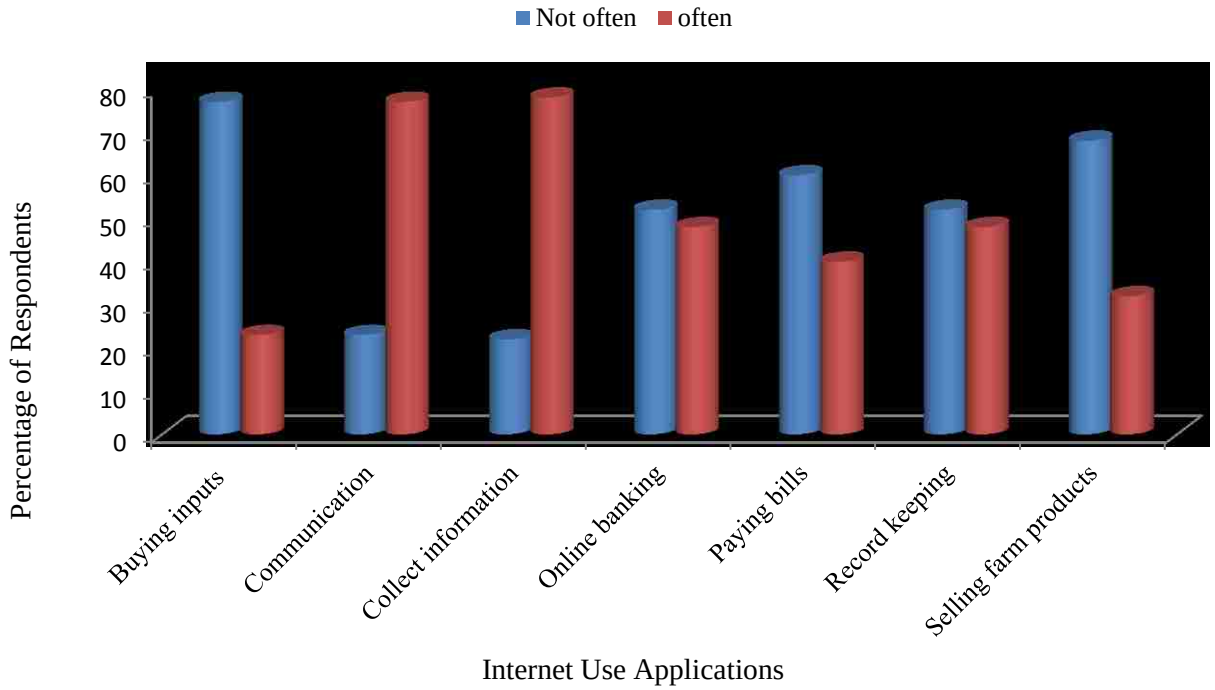



Figure 4.17: Internet Use in the Farm Operation recorded in Louisiana Specialty Crop Farmer Survey 2011

According to Figure 4.17, respondents seldom used the Internet for buying inputs (77 percent) or selling farm products (68 percent). Communication (77 percent) and collect information (78 percent) were the Internet applications that respondents used often. According to Appendix 5, online banking (average 2.42 in the scale), record keeping (average 2.49 in the scale), paying bills (average 2.12 in the scale), and selling farm products (average 2.1 in the scale) were used at least monthly.

**4.3.4 Internet Barriers**

Respondents reported Internet barriers to their use of the Internet. Barriers were reported as a 5 point Likert scale where 1 = not a barrier, 2 = a minor barrier, 3 = neutral, 4 = an important barrier and 5 = very effective. “Not a barrier” was identified as 1 or 2 and “a barrier” was identified as 3, 4 or 5 in the scale. Figure 4.18 and Appendix 6 provide detailed information about Internet barriers.

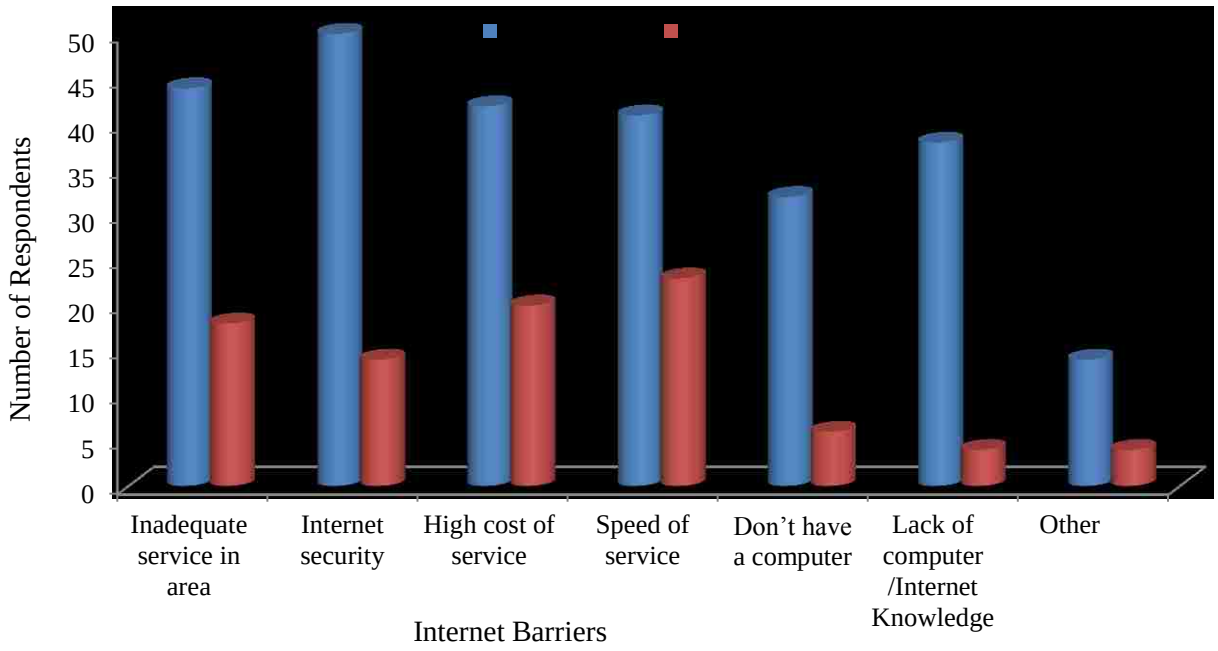



Figure 4.18: Barriers to Internet Recorded in Louisiana Specialty Crop Farmer Survey 2011

According to the results of the survey (see Appendix 6), speed of service (36 percent) was the number one barrier for Internet use in Louisiana. High cost of the service was the second barrier (22 percent) followed by inadequate service in area (29 percent). According to Appendix 03, inadequate service in area was not a barrier for 44 respondents (71 percent). Internet security was not a barrier for most of respondents (78 percent). High cost of service was not a barrier for 42 respondents (67 percent) but was a barrier for 14 respondents (22 percent). Other barriers were reported by 4 respondents but as to their nature the respondents did not elaborate.

### 4.3.2 Social Media and Smart Phone Usage on Farm Business by Specialty Crop Farmers

#### 4.3.2.1 Social Media Usage on Farm Business in Louisiana Specialty crop farmer Survey

The American Farm Bureau's 2010 Young Farmers and Ranchers Survey shows that nearly 98 percent of farmers and ranchers between the ages of 18 to 35 now have access to and use the Internet. About 10 percent of those farmers use social media. According to the Louisiana Specialty Crop Survey, 33 percent of respondents recorded that they used social media on their farm business (Appendix 8). Respondents ranked the 'usefulness' of social media on a 5 point Likert scale where 1 = not useful at all

and 2 = sometimes useful 3 = average, 4 = often useful, 5 = very useful. “Not useful” was identified as 1 or 2 and “useful” was identified as 3, 4 or 5 in the scale.

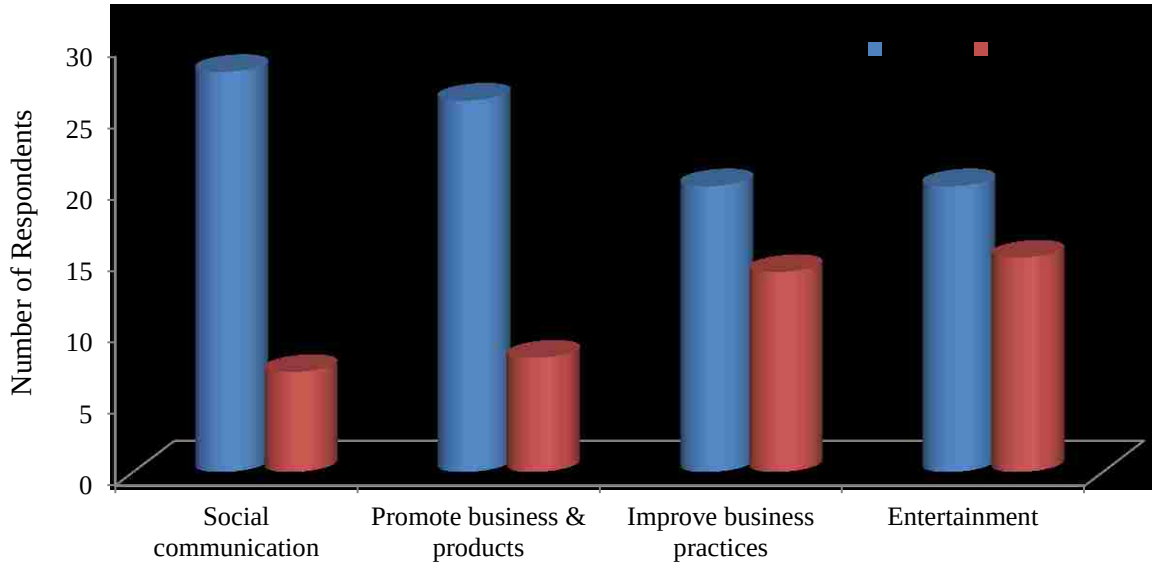



Figure 4.19: Social Media applications recorded in Louisiana Specialty Crop Farmer Survey 2011

According to the results of the survey (Figure 19), social communication (80 percent) and promote business and products (76 percent) were identified as most useful applications of social media while improved business practices (59 percent) and entertainment (57 percent) were identified as less useful applications.

**4.3.2.2 Smart Phone Usage on Farm in Louisiana Specialty Crop Farmer Survey**

According to Appendix 8, thirty-two respondents reported they use smart phone for the farm business. Respondents reported their smart phone social media use as Facebook, Twitter, blogs, YouTube and Flicker. To report “how often they use smart phone functions,” respondents used a 5 point Likert scale where 1 = do not use, 2 = use monthly, 3 = use weekly, 4 = use daily and 5 = use more than once daily. “Do not use often” was identified as 1or 2 and “Use Often” was identified as 3, 4 or 5.

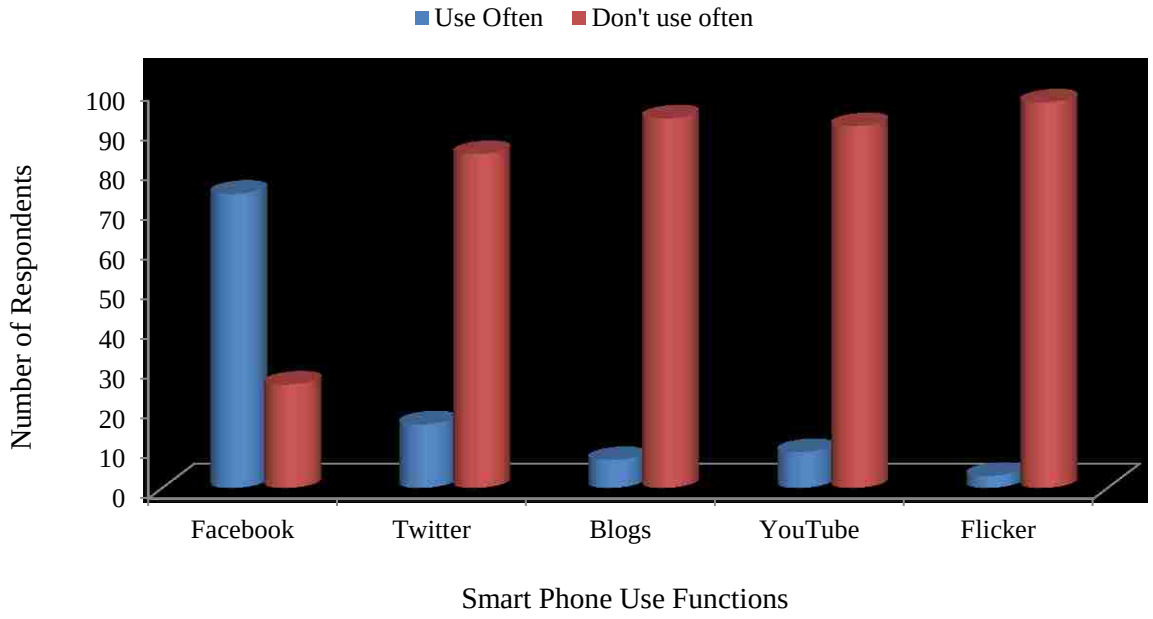



Figure 4.20: Smart Phone Usage Recorded in Louisiana Specialty Crop Farmer Survey 2011

According to Figure 20, 74 percent frequently used Facebook on their smart phone and 26 percent did not use Facebook very often on their smart phone. Twitter used by 16 percent while 7 percent said they used blogs on their smart phone. Nine percent of respondents reported, they used YouTube and 3 percent said they used Flicker on a smart phone.

**4.4 Louisiana Food Industry MarketMaker Website**

One of the main objectives of the research was to study specialty crop farmers' familiarity and usage of Food Industry MarketMaker website. Food industry Market Maker is an agricultural and food industry related website. MarketMaker website helps buyers or sellers to maintain free profiles in web based resource with easy to use information about agriculture or food, including demographic and mapping system to show the location. More than 17,500 profiles of food related enterprises and agricultural producers were using the MarketMaker website in 2011. Louisiana State joined this nationwide website in 2010. This part of the chapter summarizes the results of MarketMaker familiarity and usage by Louisiana Special Crop Farmers Survey 2011.

### 4.4.1 Level of Involvement with Louisiana MarketMaker Website

The findings of the familiarity with MarketMaker on participants' by consolidated marketing channels are shown in Table 8.

Table 8. Number and Percentage of Farmers who Reported Familiarity with MarketMaker Functions, by Consolidated Marketing Channels, from Louisiana Specialty Crop Farmer Survey, 2011

| Variable Categories[1] | Consolidated Marketing Channels | | | |
|---|---|---|---|---|
| | Direct to Consumer | Local Intermediated | Wholesale/ Processor | Total |
| | Number (Percentage) | | | |
| Don't know what MarketMaker is | 17 (26.56) | 0 (0.00) | 2 (3.13) | 19 (26.69) |
| Not very familiar | 11 (17.19) | 3 (4.69) | 1 (1.56) | 15 (23.44) |
| Registered but not active | 14 (21.88) | 2 (3.13) | 7 (10.94) | 23 (35.94) |
| Use it for ongoing communications | 1 (1.56) | 1 (1.56) | 0 (0.00) | 2 (3.13) |
| Doing business through MarketMaker | 3 (4.69) | 1 (1.56) | 1 (1.56) | 5 (7.81) |
| Total | 46 (71.88) | 7 (10.94) | 11 (17.19) | 64 (100.00) |

[1]Categories were taken from an Ohio MarketMaker report prepared by Julie M. Fox, The Ohio State University, October 2009.

According to the results of the survey, 64 respondents replied to the MarketMaker section (Table 5). Twenty seven percent of respondents, who reported their information on MarketMaker section, did not know about MarketMaker website. Twenty three percent of respondents knew about the website but they were not very familiar.

Ohio MarketMaker research was conducted after about 1 year after Ohio MarketMaker website was launched. Fox (2009) indicated that 8 percent of respondents of the survey reported as they were not familiar with Ohio MarketMaker website at the time of the survey (Fox et al; 2009). There were 144 registered respondents including producers, farmers' markets and wineries reported their MarketMaker

use data to the Ohio MarketMaker research. Respondents in Louisiana appeared to be less familiar compared to Ohio respondents. Thirty six percent had registered but did not have active profiles on the MarketMaker website. This value was lower compared to respondents in the Ohio survey (78 percent). Eleven percent of respondents had active profiles on MarketMaker and had done business through the website (8 percent). This measure was higher percent compared to the Ohio survey (3 percent). Louisiana specialty crop farmers had used MarketMaker for ongoing communications by 3 percent. Figure 4.21 shows summary of familiarity with MarketMaker functions from the Specialty Crop Survey.

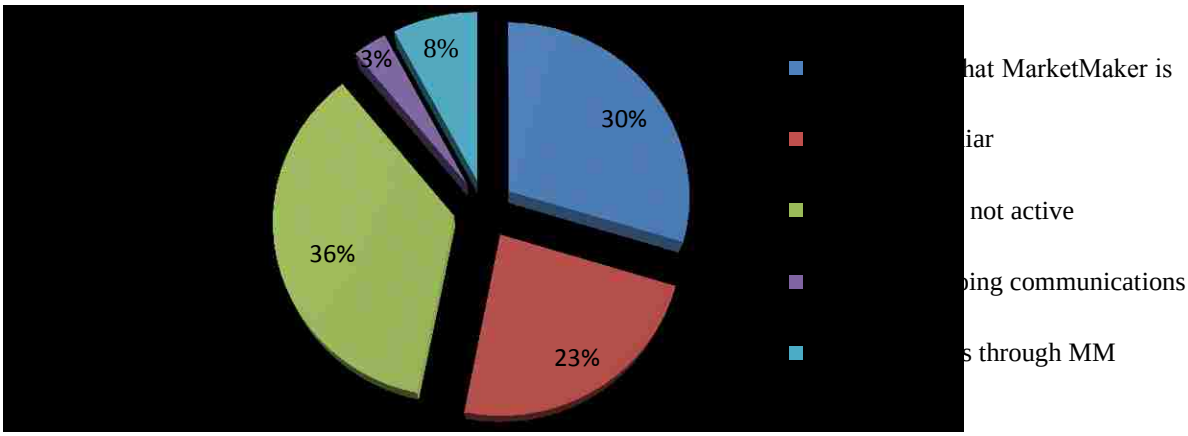



Figure 4.21: Familiarity with MarketMaker from Louisiana Specialty Crop Farmer Survey, 2011

**4.4.1.2. Level of Familiarity with Louisiana MarketMaker**

Since respondents reported their familiarity with MarketMaker website in the Likert scale it was able to further study the level of familiarity with MarketMaker. They were reported as 'how familiar specialty crop farmers with MarketMaker website functions in 5 point Likert scale as described above. A detailed description about familiarity with the MarketMaker website is shown in table 09.

Seventy-two percent of respondents to the Specialty Crop Farmer Survey used 'direct to consumer' consolidated marketing channel. MarketMaker website was "familiar" to 29 percent of direct to consumer marketing channel specialty crop farmers.

Table 9. Number and Percentage of Farmers who Reported Familiarity with the MarketMaker Website by Consolidated Marketing Channels, from Louisiana Specialty Crop Farmer Survey

| Variable | Consolidated Marketing Channels | | | |
|---|---|---|---|---|
| | Direct to Consumer | Local Intermediated | Wholesale/ Processor | Total |
| | Number (Percentage) | | | |
| **Familiarity with MarketMaker** | | | | |
| Not familiar[1] | 28 | 3 | 3 | 34 |
| | (43.75) | (4.69) | (4.69) | (53.13) |
| Familiar | 18 | 4 | 8 | 30 |
| | (28.13) | (6.25) | (12.50) | (46.88) |
| Total | 46 | 7 | 11 | 64 |
| | (71.88) | (10.94) | (17.19) | (100.00) |

[1]Respondents reported 'familiarity' with MarketMaker in 5 point Likert scale as1 = I don't know about MarketMaker, 2 = not familiar with MarketMaker, 3 = registered but not active, 4 = use it for communication and 5 = doing business through MarketMaker. 'Not familiar was 1 or 2; 'familiar' was 3, 4 and 5 in the scale.

Forty four percent respondents who used direct to consumer marketing channels said that MarketMaker was not familiar to them. In total, 47 percent respondents reported, MarketMaker was familiar and 53 percent said MarketMaker was not familiar to them.

According to the Appendix 9, 47 percent of respondents who completed the MarkertMaker section in the survey had reported they were familiar with Louisiana MarketMaker website. It was clear that those respondents who were familiar with Louisiana MarketMaker had registered on the website with an active business profile and have been used ongoing communication to do business through MarketMaker website successfully. This was lower than 66 percent of Ohio MarketMaker team reported being familiar with MarketMaker (familiar was 54 percent and very familiar was 12 percent).

Fifty three percent of respondents have reported as they were not familiar with Louisiana MarketMaker website and it was higher than 35 percent of Ohio MarketMaker team reported being not familiar with MarketMaker (not vary familiar was 12 percent and somewhat familiar was 23 percent) .

According to the specialty Crop Survey, 44 percent of respondents who reported their usage about MarketMaker, had used direct to consumer marketing strategies to market their products. But they have reported low levels of familiarity with the MarketMaker website.

#### 4.4.1.3 Effectiveness of MarketMaker Functions on Farm Operation

In order to measure effectiveness of MarketMaker functions, researchers used 5-point Likert scale. A detailed description of the impact on effectiveness of MarketMaker website on website functions identified by participants' is shown in Appendix 9. Each variable was identified as "use" or "do not use" as respondents reported.

- **Effectiveness of marketing products through MarketMaker**

As data shown in the Appendix 9, total of 42 percent of respondents who use MarketMaker website for marketing their farm products perceived the website as ineffective (27 percent) or somewhat ineffective (16 percent). A total of twelve percent of respondents who use MarketMaker said it was somewhat effective (8 percent) or very effective (4 percent) for marketing their products through MarketMaker.

- **Finding Products through MarketMaker**

MarketMaker is a place where anyone can find an agricultural or food related products online with a mapping system which easily can locate the seller. According to the results of the survey, only 15percent of respondents who use MarketMaker have reported as it was somewhat effective (10 percent) or very effective (5 percent). Finding products was not effective according to 38 percent of respondents.

- **Differentiating products**

This function offers buyers a tool to search and locate exact products they want while producers get advantage of marketing their products to customers via MarketMaker. Advantage of differentiating farm product is an efficient manner of communicating the quality of the product to potential buyers. MarketMaker website is a good source to differentiate farmers' products since MarketMaker has many online customers who are looking for specific or differentiated products.

A total of 56 percent who use and do not use MarketMaker, reported that MarketMaker was either infective (48 percent) or somewhat ineffective (8 percent). Total respondents of 16 percent who use and do not use Market Maker indicated MarketMaker was effective and helped them to differentiate their product and make some new connections. Thirty one percent of total respondents reported that possibility of differentiating product through MarketMaker was between ineffective and effective in the Likert scale.

- **Using buy sell notices**

MarketMaker is an online agricultural marketing resource that connects agricultural and food related producers with markets. Buy/sell forums help producers or sellers or buyers on MarketMaker to market their products through MarketMaker. According to the results of the survey, 60 percent of respondents reported buy/sell notices were ineffective (50 percent) or somewhat ineffective (10 percent). Only 15 percent of respondents reported buy sell notices were somewhat effective (5 percent) or very effective (10percent).

- **Improve farm income**

The highest ratings for ineffective and somewhat ineffective were reported for "improve farm income" category by a total of 65 percent of respondents of the survey. Respondents who use MarketMaker reported it was ineffective (31 percent) or somewhat ineffective (23 percent) for their farm income compared to 12 percent of respondents who reported it was somewhat effective (8 percent) or very effective (4 percent).

- **Improve business**

A total of sixty seven percent of respondents reported that effective in improving business MarketMaker was ineffective (41percent) or somewhat ineffective (26 percent) while 14 percent of respondents reported it was somewhat effective (7 percent) or very effective (7 percent).

- **Overall effectiveness of MarketMaker**

A total of 48 percent of respondents reported MarketMaker was ineffective (29 percent) or somewhat ineffective (19 percent) while 29 percent of respondents reported as somewhat effective (13

percent) or very effective (16 percent). Respondents who used MarketMaker reported that 40 percent ineffective (20 percent) or somewhat effective (20 percent) and 23 percent of respondents were reported as somewhat effective (13 percent) or very effective (10 percent). A detailed description of the impact on effectiveness of the MarketMaker website is shown in Figure 22.

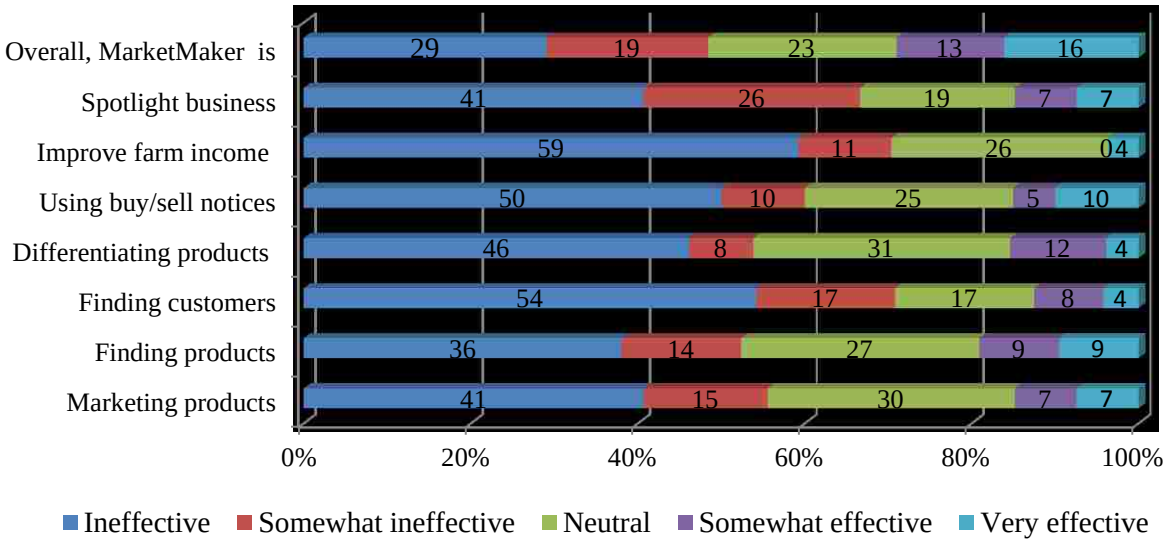



Figure 4.22: Effectiveness of MarketMaker Reported in Louisiana Specialty Crop Farmer Survey 2011

**4.4.1.4. Effectiveness of Marketing Products through MarketMaker, by Demographic and Other Selected Characteristics**

MarketMaker is a website where producers have access to sell their products using up to date information with interactive mapping system. Louisiana Specialty Crop Farmer Survey collected valuable information about farmers who used MarketMaker in year 2010. This survey research was conducted about 1 year after Louisiana MarketMaker was launched. Table 10 shows effectiveness of marketing products through MarketMaker by demographic and other selected characteristics according to ratings of effectiveness by respondents who used MarketMaker.

Table 10: Number and Percentage of Respondents Who Rated Effectiveness of Marketing Products through MarketMaker, by Demographic and Other Selected Characteristics

| Variable | Ineffective[1] | Effective[2] | Total |
|---|---|---|---|
| | Number (Percentage) | | |
| **Age** | | | |
| Less than 55 years | 4 (50.00) | 4 (50.00) | 8 (100.00) |
| Over 55 years | 7 (63.64) | 4 (36.36) | 11 (100.00) |
| Total | 11 (57.89) | 8 (42.11) | 19 (100.00) |
| **Education** | | | |
| Less than college degree | 2 (40.00) | 3 (60.00) | 5 (100.00) |
| College degree or higher | 9 (64.29) | 5 (35.71) | 14 (100.00) |
| Total | 11 (57.89) | 8 (42.11) | 19 (100.00) |
| **Farm Occupation** | | | |
| Small Residential/Retirement | 5 (55.56) | 4 (44.44) | 9 (100.00) |
| Farmer vocation/Large/Non family | 6 (60.00) | 4 (40.00) | 10 (100.00) |
| Total | 11 (57.89) | 8 (42.11) | 19 (100.00) |
| **Farm Income** | | | |
| Less than $25,000 | 6 (66.67) | 3 (33.33) | 9 (100.00) |
| More than $25,000 | 4 (57.14) | 3 (42.86) | 7 (100.00) |
| Total | 10 (62.50) | 6 (37.50) | 16 (100.00) |
| **Consolidated Marketing Channels** | | | |
| Direct To Consumers | 6 (66.67) | 3 (33.33) | 9 (100.00) |
| Local Intermediated | 0 (0.00) | 2 (100.00) | 2 (100.00) |
| Wholesale/Processors | 1 (50.00) | 1 (50.00) | 2 (100.00) |
| Total | 7 (53.85) | 6 (46.15) | 13 (100.00) |

[1] Respondents reported effectiveness as a 5 point Likert scale (1 = ineffective, 2 = somewhat ineffective, 3 = neutral, 4 = somewhat effective and 5 = very effective). 'Ineffective' was identified as 1 and 2 in the scale.[2] 'Effective' was identified as 4 and 5 in the scale.

Table 10 (continued)

| Variable | Ineffective | Effective | Total |
|---|---|---|---|
| | Number (Percentage) | | |
| **Type of Farmer** | | | |
| Vegetable Grower | 2 (40.00) | 3 (60.00) | 5 (100.00) |
| Fruits Grower | 4 (57.14) | 3 (42.86) | 7 (100.00) |
| Nuts Grower | 2 (100.00) | 0 (0.00) | 2 (100.00) |
| Total | 8 (57.14) | 6 (42.86) | 14 (100.00) |
| **Social Media Users** | 5 (55.56) | 4 (44.44) | 9 (100.00) |
| **Internet Users** | 9 (56.25) | 7 (43.75) | 16 (100.00) |
| **Smart Phone Users** | 4 (44.44) | 5 (55.56) | 9 (100.00) |

- **Effectiveness of Marketing Products through MarketMaker by Age**:

  A relatively higher percentage of younger respondents rated this MarketMaker function higher in effectiveness than did the higher age group (50 percent), and the younger and older group had the same number of respondents rating the function as effective. Older group ratings for ineffective were higher than ratings for effective.

- **Effectiveness of Marketing Products through MarketMaker by Education**:

  A higher percentage of respondents with less than a college degree rated this MarketMaker function relatively higher in effectiveness than did the college degree or higher group (60 percent), and the number and percentage of respondents both were higher for the effective ratings than for the ineffective ratings.

- **Effectiveness of Marketing Products through MarketMaker by Farm Occupation**

  A relatively higher percentage of respondents from residential/retirement farms rated this MarketMaker function higher in effectiveness than did the farm vocation group (44 percent), and

the residential/retirement group had almost as many in the effective group as the ineffective group.

- **Effectiveness of Marketing Products through MarketMaker by Farm Income**

  A relatively higher percentage of respondents from the higher farm income group rated this MarketMaker function higher in effectiveness than did the lower farm income group (44 percent), and had almost as many in the effective group as in the ineffective group.

- **Effectiveness of Marketing Products through MarketMaker by Consolidated Marketing Channels**

  More respondents who used local intermediated channel or wholesale channel rated this MarketMaker function higher in effectiveness than did the direct marketing channel, and both had more respondents rating effective than ineffective.

- **Effectiveness of Marketing Products through MarketMaker by Type of Farmer**

  A relatively higher percentage of vegetable growers rated this MarketMaker function higher in effectiveness than did the fruit or nut growers (60 percent), and the vegetable growers group had more respondents rating it as effective than ineffective.

- **Effectiveness of Marketing Products through MarketMaker Social Media Users and through MarketMaker Internet Users**

  Forty four percent of respondents said MarketMaker was effective for this MarketMaker function while 56 percent rated as not effective.

- **Effectiveness of Marketing Products through MarketMaker Smart Phone Users**

  Fifty six percent of respondents who used smart phone rated this MarketMaker function as effective.

The discussion above illustrates that a comparison of numbers of respondents who rated as effective versus ineffective provides a different perception of MarketMaker's effectiveness. As a summary, younger farmers who had less than a college degree, small residential/retirement farmers, and

farmers whose sales were mostly from vegetable crops, reported MarketMaker as effective. The number of farmers that used the Internet, social media and smart phones rated MarketMaker effective almost as frequently as ineffective.

#### 4.4.1.4. Effectiveness of Finding Customers through MarketMaker, by Demographic and Other Selected Characteristics

Table 11 shows effectiveness of finding customers through MarketMaker by demographic and other selected characteristics according to ratings of effectiveness by respondents who used MarketMaker.

Table 11: Number and Percentage of Respondents Who Reported Effectiveness of Finding Customers Through MarketMaker by Demographic and Other Special Characteristics

| Variable | Ineffective | Effective | Total |
|---|---|---|---|
| | Number (Percentage) | | |
| **Age** | | | |
| Less than 55 years | 5 (71.43) | 2 (28.57) | 7 (100.00) |
| Over 55 years | 7 (58.34) | 5 (41.66) | 12 (100.00) |
| Total | 12 (63.16) | 7 (36.84) | 19 (100.00) |
| **Education** | | | |
| Less than college degree | 3 (42.86) | 4 (57.14) | 7 (100.00) |
| College degree or higher | 9 (75.00) | 3 (25.00) | 12 (100.00) |
| Total | 12 (63.16) | 7 (36.84) | 19 (100.00) |
| **Farm Occupation** | | | |
| Small Residential/Retirement | 6 (60.00) | 4 (40.00) | 10 (100.00) |
| Farmer vocation/Large/Non family | 6 (66.67) | 3 (33.33) | 9 (100.00) |
| Total | 12 (63.16) | 7 (36.84) | 19 (100.00) |
| **Farm Income** | | | |
| Less than $25,000 | 6 (85.71) | 1 (14.29) | 7 (100.00) |
| More than $25,000 | 5 (55.56) | 4 (44.44) | 9 (100.00) |
| Total | 11 (68.75) | 5 (31.25) | 16 (100.00) |

Table 11 (continued)

| | | | |
|---|---|---|---|
| **Consolidated Marketing Channels** | | | |
| Direct To Consumers | 6 | 4 | 10 |
| | (60.00) | (40.00) | (100.00) |
| Local Intermediated | 0 | 0 | 0 |
| | (0.00) | (0.00) | (0.00) |
| Wholesale/Processors | 2 | 1 | 3 |
| | (66.66) | (33.33) | (100.00) |
| Total | 8 | 5 | 13 |
| | (61.54) | (38.46) | (100.00) |
| **Type of Farmer** | | | |
| Vegetable Grower | 2 | 3 | 5 |
| | (40.00) | (60.00) | (100.00) |
| Fruits Grower | 4 | 3 | 7 |
| | (57.14) | (42.86) | (100.00) |
| Nuts Grower | 2 | 0 | 2 |
| | (100.00) | (0.00) | (100.00) |
| Total | 8 | 6 | 14 |
| | (57.14) | (42.86) | (100.00) |
| **Internet Users** | 11 | 6 | 17 |
| | (64.71) | (35.29) | (100.00) |
| **Social Media Users** | 6 | 3 | 9 |
| | (66.67) | (33.33) | (50.00) |
| **Smart Phone Users** | 4 | 3 | 7 |
| | (57.14) | (42.86) | (100.00) |
| **Growers who familiar with MarketMaker** | 9 | 6 | 15 |
| | (60.00) | (40.00) | (100.00) |

- **Effectiveness of Finding Customers through MarketMaker by Age:**

  A relatively higher percentage of younger respondents rated this MarketMaker function higher in effectiveness than did the higher age group (50 percent). The younger and older groups both had more ratings of the function as more ineffective than effective.

- **Effectiveness of Finding Customers through MarketMaker by Education:**

  A higher percentage of respondents with less than a college degree rated this MarketMaker function relatively higher in effectiveness than did the college degree or higher group (57 percent). The number and percentage were higher for the ineffective ratings than for the effective ratings by the college degree or higher group.

- **Effectiveness of Finding Customers through MarketMaker by Farm Occupation**

  A relatively higher percentage of respondents from residential/retirement farms rated this MarketMaker function higher in effectiveness than did the farm vocation group (40 percent). The residential/retirement farms and farm vocation group both had more ratings of the function as more ineffective than effective.

- **Effectiveness of Finding Customers through MarketMaker by Farm Income**

  A relatively higher percentage of respondents with farm income above $25,000 rated this MarketMaker function higher in effectiveness than did less than $25,000 farm income category group (44 percent). Both farm income groups had more ratings of the function as ineffective than as effective.

- **Effectiveness of Finding Customers through MarketMaker by Consolidated Marketing Channels**

  More respondents who used direct marketing channels rated this MarketMaker function higher in effectiveness than did the local intermediate or wholesale/processor marketing channels, but fewer respondents rated more effective than ineffective.

- **Effectiveness of Finding Customers through MarketMaker by Type of Farmer**

  A relatively higher percentage of vegetable growers rated this MarketMaker function higher in effectiveness than did the fruit or nut growers (60 percent), and the vegetable growers group had more respondents rating as effective than ineffective. Fruit grower ratings of effectiveness were relatively high.

- **Effectiveness of Finding Customers through MarketMaker by Social Media Users**

  Thirty three percent of respondents said MarketMaker was effective in finding markets, while 67 percent said it was not effective.

- **Effectiveness of Finding Customers through MarketMaker by Internet Users**

  Thirty five percent of respondents who used Internet said marketing products through MarketMaker was effective and 65 percent said it was not effective.

- **Effectiveness of Finding Customers through MarketMaker by Smart Phone Users**

  Forty three percent of respondents who used smart phone said marketing product through MarketMaker was effective.

As a summary, higher age category farmers who had education less than college degree and residential/retirement farmers who grew vegetable crops tended to report that finding customers through MarketMaker was effective. Farms in the higher income group and who used direct marketing channels also had relatively higher effectiveness ratings as well.

### 4.5. All About Blueberries Website

#### 4.5.1 Familiarity with All About Blueberries Website

All About Blueberries is a new website developed by Louisiana State University AgCenter (LSU Ag Center) to promote the production of blueberries and help blueberry famers to improve nutritional value of blueberries (http://www.eXtension.org/blueberries). The website is part of the national extension website (extension.org). The Extension.org website is included educational information on agricultural production information and consumer-oriented nutrition information posted by Extension specialists at land-grant universities across the country. Louisiana launched "All About Blueberries" website in 2010. Louisiana Specialty Crop Farmer Survey was conducted about one year after "All About Blueberries website" was launched. A detailed description of the "familiarity with All About Blueberries" consolidated marketing channels is shown in Table 12. It should be noted that blueberry production is Louisiana is a relatively small share of specialty crops; so many respondents probably had little incentive to learn about or use this site.

Table 12. Number and Percentage of Farmers who Reported Familiarity Functions of All About Blueberries Website, from Louisiana Specialty Crop Farmer Survey, 2011

| Variable | Consolidated Marketing Channels | | | |
|---|---|---|---|---|
| | Direct to Consumer | Local Intermediated | Wholesale/ Processor | Total |
| | Number (Percentage) | | | |
| Don't know what it is | 26 (47.27) | 5 (9.09) | 8 (14.55) | 39 (70.91) |
| Not very familiar | 8 (14.55) | 0 (0.00) | 3 (5.45) | 11 (20.00) |
| Don't visit the site often | 3 (5.45) | 1 (1.82) | 0 (0.00) | 4 (7.27) |
| Use it for ongoing communication | 1 (1.82) | 0 (0.00) | 0 (0.00) | 1 (1.82) |
| Total | 38 (69.09) | 6 (10.91) | 11 (20.00) | 55 (100.00) |

According to the results of the survey 55 respondents helped the research by giving data to the "All About Blueberries website" section. Even though about one year past after launched the All About Blueberries website, about 71 percent of respondents were did not know about "All About Blueberries website." Twenty percent of respondents were not very familiar with the website. The results of the survey show that 7 percent of respondents knew about the website but did not visit the site often. In addition to that only about 2 percent of respondents used the website for ongoing communications. A detailed description of the "familiarity with All About Blueberries" is shown in Figure 4.23.

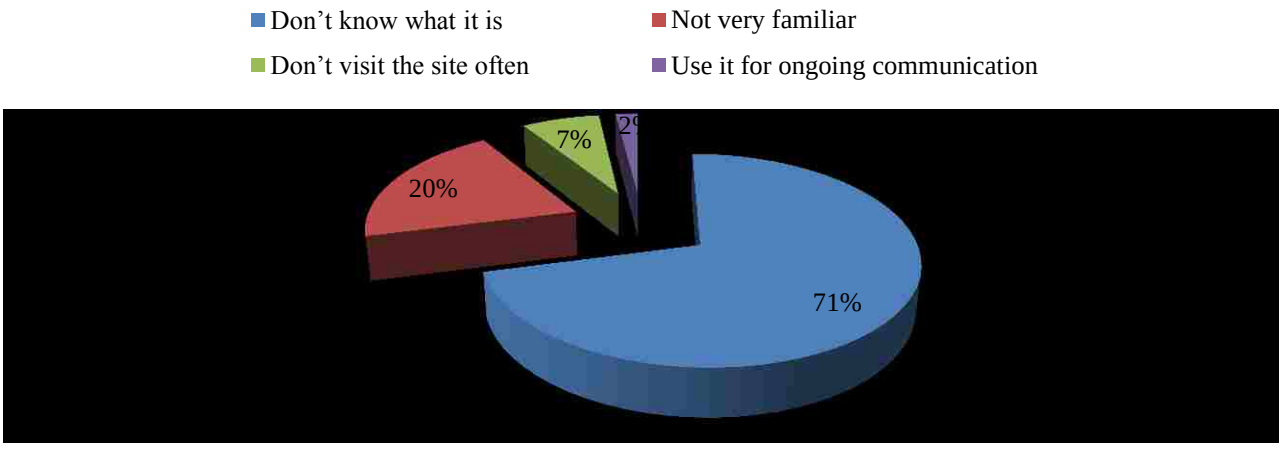



Figure 4.23: Familiarity with All About Blueberries website reported in Louisiana Specialty Crop Farmer Survey 2011

#### 4.5.1.2. Level of familiarity with All About Blueberries website

For further study the level of familiarity with All About Blueberries website identified as reported in the survey. They were reported as "how familiar" specialty crop farmers with All About Blueberries website functions in 5 point Likert scale. Each variable treated as "dummy variable" and "not familiar" was identified as 1 or 2 in the scale and "familiar" was identified as 3, 4 and 5 in the scale.

About 91 percent of survey respondents who provided information in the All About Blueberries section reported as they were not familiar with the website. Only 9 percent of the respondents said they were familiar with the website. A detailed description about effectiveness of All About Blueberries website is shown in the Figure 4.24.

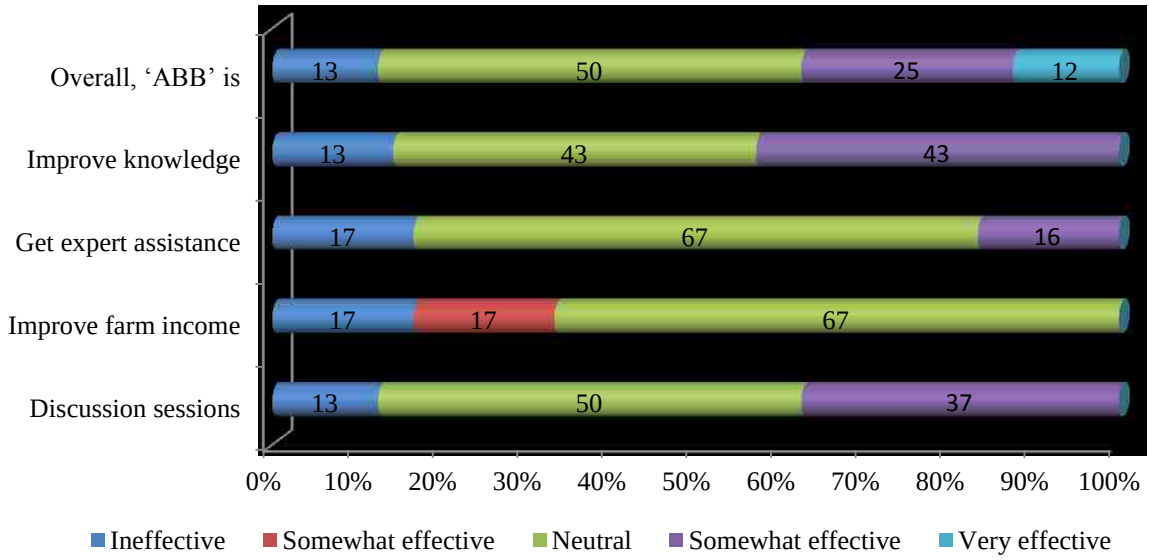



Figure 4.24: Effectiveness of All About Blueberries website reported in Louisiana Specialty Crop Farmer Survey 2011

In addition to familiarity with All About Blueberries website, respondents reported effectiveness of different website functions. A detailed description of effectiveness of the website is shown in Appendix 10. About 38 percent of the respondents who provided information on this section reported the discussion section in the website was somewhat effective, while 25 percent of respondents reported between somewhat ineffective and somewhat effective (neutral). Many of respondents did not report they had any kind of farm income improvement by using the website.

Table 13. Number and Percentage of Farmers who Reported Familiarity with All About Blueberries Website, by Consolidated Marketing Channels, from Louisiana Specialty Crop Farmer Survey, 2011

| Variable | Consolidated Marketing Channels | | | |
|---|---|---|---|---|
| | Direct to Consumer | Local Intermediated | Wholesale/ Processor | Total |
| | Number (Percentage) | | | |
| **Familiarity with All About Blueberries website** | | | | |
| Not familiar[1] | 34 | 5 | 11 | 50 |
| | (61.82) | (9.09) | (20.00) | (90.91) |
| Familiar | 4 | 1 | 0 | 5 |
| | (7.27) | (1.82) | (0.00) | (9.09) |
| Total | 38 | 6 | 11 | 55 |
| | (69.09) | (10.91) | (20.00) | (100.00) |

[1]Respondents reported 'familiarity' with All About Blueberries website in 5 point Likert scale as I = don't know what it is, 2 = I am not very familiar, 3 = I don't visit the site often, 4 = I use it for ongoing communications and asking questions, 5 = It's part of my regular activities. 'Not familiar was 1 or 2; 'familiar was 3, 4, 5 in the scale.

Thirty three of the respondents who provided information on this section reported the farm income improvement by the website was between somewhat ineffective and somewhat ineffective and 33 percent of respondents reported farm income improvement was neutral.

Getting expert assistance was identified as ineffective by 17 percent of respondents and results show that they had not used the website. Seventeen percent of respondents said it was somewhat effective.

Forty three percent of respondents said it improved their knowledge while the same percentage (43 percent) reported as 'neutral'. Thirteen percent of respondents who used the website reported as it were very effective to them while 25 percent reported as somewhat effective.

**4.6 Models Results and Discussion**

Models were estimated to analyze whether respondents were familiar with Louisiana MarketMaker (FMMD) or not, and whether respondents were familiar with the All About Blueberries website (FAAB). Each equation had a set of different independent variables, including vegetable crops' share of sales (VegCrpSS), farmer's occupation (FarmOcc), farm income (FarmInc), social media use

(SocialMedD), smart phone use (SmPhoneD), whether Internet service speed was a barrier (BSpeedD), Internet usage on farm (UseIntnet), effectiveness of finding markets through MarketMaker (FindMktD) and acres of specialty crop production (SCAres).

Explanatory variables are chosen for evaluation in econometric models on the basis of theory and/or on results from literature relevant to the subject. On that basis, variables included that might affect familiarity with MarketMaker should be related to characteristics of the farm operation such as size in acres, crops, and marketing approaches, and on farmers' demographic characteristics such as age, education, and respondent occupation. These classes of variables were included in initial models. Other variables such as farm markets and public farmers markets were rated by respondents in terms of their use and effectiveness. These logically could be related to familiarity with MarketMaker, and were included. Technology applications, such as Internet use, social media use and smart phone use also were included in the models. However, because of the limiting nature of the sample size, a full set of variables that was expected to affect MarketMaker or All About Blueberries was not included in a single model. This study evaluated two new websites and outreach programs administered in the Louisiana State University Agricultural Center, and used an Internet-based technology approach to data collection. As such, the results were viewed as exploration of a new area of research rather than evaluation of established methods and programs. Since this research was based on methodology where there was little history, and the sample size was small, it was logical to view these results as exploratory. Model runs of six or seven variables were conducted. From the results, significant variables were identified and retained, and others were dropped and/or added to the model as appropriate. This approach, while not ideal, was adopted because of the exploratory nature of the work. Variables that were evaluated but were not found to be significant were FarmInc (Farm Income), EduD (Education), Age, FarmKind (Kind of farm), EffOFM (Effectiveness of 'on farm sales'), EffOPFM (Effectiveness of 'on 'farmers market sales') , BCostD (Cost as an Internet barrier) and SmPhoneD (Smart Phone use). From the regression equation, goodness of fit statistics was reported. Results are presented in the form of estimated model coefficients, marginal effects, odds ratios, and predictive success in Tables 14 through 23.

### 4.6.1 Results for the Model of Familiarity with MarketMaker Website

The model for the MarketMaker familiarity was estimated under the specification:

$$FMMD = \beta_0 + \beta_1 VegCrpSS + \beta_2 FarmOcc + \beta_3 FarmInc + \beta_4 BSpeedD + \beta_5 UseIntnet + \beta_6 FindMktD + e$$

The model description and development were provided in chapter 3.3. Summary statistics for all the variables are in Appendix 12. Overall, the Log pseudolikelihood = -52.763272 was recorded in the logistic regression. The Wald chi-square of 24.07 with a p-value of 0.0005 tells that the model as a whole was statistically significant.

#### 4.6.1.1. Logistic Regression Results – Familiarity with MarketMaker

In a logistic regression model, familiarity with MarketMaker was specified as the dependent variable whose values were influenced by independent variables related to crops and marketing channels, farm occupation, farm income, Internet barriers, use internet and finding markets through MarketMaker. Table 14 presents the summary statistics of dependent and independent variables including mean values, standard deviation values, and minimum and maximum value. The results of the MarkeMaker model are presented in Tables 14 to 18.

Table14. Summary Statistics for Variables in the Familiarity with MarketMaker Model

| Variable | N | Mean | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| FMMD | 133 | 0.25564 | 0.43787 | 0 | 1 |
| VegCrpSS | 133 | 48.64662 | 43.2211 | 0 | 100 |
| FarmOcc | 133 | 0.30075 | 0.460319 | 0 | 1 |
| FarmInc | 133 | 0.32331 | 0.46951 | 0 | 1 |
| BSpeedD | 133 | 0.29323 | 0.45697 | 0 | 1 |
| UseIntnet | 133 | 0.66165 | 0.47494 | 0 | 1 |
| EffPFMD | 133 | 0.09023 | 0.28759 | 0 | 1 |

According to Table 14, the mean value of FMMD (familiarity with MarketMaker) was 25 percent or 30 respondents of the 120 observations. The results of the Specialty Crop Farmer Survey show that share of sales of vegetable crops was about 49 percent. Sixty six present of respondents used the Internet for their farm operation. Twenty nine percent of respondents reported Internet speed as a barrier for their

Internet use. Social media use in farming was 34 percent. Farm occupation variable had a mean value of 30 percent. The mean value of farm income of specialty crop farms was 32 percent.

From Table 15, share of sales of vegetables (VegCrpSS), farm occupation (FarmOcc), farm income (FarmInc), Internet Speed as barrier (BSpeedD), use of Internet (UseIntnet) and finding markets through MarketMaker were statistically significant in explaining familiarity with MarketMaker at the 5 percent significance level.

Table 15: Analysis of Maximum Likelihood Estimates in Logistic Regression Results for Familiarity with MarketMaker Model

| FMMD | Coefficient | Robust Standard Deviation | z Value | P>\|z\| | [95% Conf. Interval] | |
|---|---|---|---|---|---|---|
| VegCrpSS | **-0.01254** | 0.00577 | -2.18 | **0.030*** | -.02385 | -.00124 |
| FarmOcc | **1.52782** | 0.51095 | 2.99 | **0.003*** | 0.52637 | 2.52927 |
| FarmInc | -0.05974 | 0.52112 | -0.11 | 0.909 | -1.08111 | 0.96163 |
| BSpeedD | **-1.13728** | 0.58798 | -1.93 | **0.053*** | -2.28970 | 0.01514 |
| UseIntnet | **1.21018** | 0.60214 | 2.01 | **0.044*** | 0.03000 | 2.39036 |
| FindMktD | **4.07362** | 1.20816 | 3.37 | **0.001*** | 1.70567 | 6.44158 |

* indicates coefficient significance at the 0.05 level.

The negative coefficient of VegCrpSS indicated that vegetable crops' share of sales had a negative relationship with familiarity with MarketMaker website. When share of sales of vegetable crops increased, respondents were significantly less likely to be familiar with MarketMaker website. Farmers with a higher share of sales of vegetable crops could have needed an established sales relationship with buyers, since it was important to have stable and established selling relationships for the farm business. On the other hand, if farmers had lower share of sales of vegetable crops, in terms of production those farmers might have had a lower quantity of production with lower need to have established buyer relationships. If that was the case, then farmers might have had less incentive to use sources such as the MarketMaker website to locate buyers.

The positive coefficient of farm occupation (FarmOcc) indicated that farm occupation and familiarity with MarketMaker had a positive relationship. This dummy variable indicated that as the

respondent's occupation changed from small residential/retirement type to farming as an occupation, familiarity with MarketMaker also increased. This suggests that MarketMaker was more important to the farmer occupation respondents, from risk management and other points of view, to have marketing and selling pre-planned. In addition, compared to small residential/ retirement farms, the farmer occupation group may have used more technology in farming and marketing. If that is the case, perhaps this farming occupation group used computers, Internet and/or social media more than the non-farm occupation respondents. It was shown in descriptive tables above that larger family and non-family farms and small farmer occupation respondents were more likely to be familiar with MarketMaker.

BSpeedD (Internet speed as a barrier) was found to be significant at the 5 percent level of significance. The negative coefficient of BSpeedD indicated that Internet speed as a barrier and familiarity with MarketMaker had a negative and significant relationship. This dummy variable indicated that as the variable Internet speed as barrier increased from "not a barrier" to "a major barrier," the likelihood of familiarity with MarketMaker decreased. Farmers with less access to the Internet would have been less likely to have access to the MarketMaker website.

The positive coefficient of use of Internet (UseIntnet) indicated that Internet use and familiarity with MarketMaker were positively related. This dummy variable indicated that as Internet use changed from "don't use" to "use," familiarity with MarketMaker also increased.

Effectiveness of finding markets through MarketMaker (FindMktD) was significant at the 5 percent level of significance. This relationship was expected, since a user who perceived that the website was effective in the effort to find markets probably had used the site. The positive coefficient of FindMktDindicated that effectiveness of finding markets through MarketMaker and familiarity with MarketMaker had a positive relationship. This dummy variable indicated that as the rating of effectiveness of finding markets through MarketMaker increased from not effective to very effective, familiarity with MarketMaker also increased.

In summary, these Maximum Likelihood Estimates suggested that familiarity with MarketMaker was significantly associated, at the P = 0.05 level of significance, with share of sales from vegetable crops, farm occupation, Internet speed, Internet use and finding markets through MarketMaker .

**Odds Ratio Estimates for the Familiarity with MarketMaker Website**

The Odds ratio indicates the probability of "success" and probability of "failure" where "success plus failure" equals one. Odds ratio estimates for the Familiarity with MarketMaker website are shown in Table 16.

Table 16. Odds Ratio Estimates for the Familiarity with MarketMaker

| FMMD | Odds Ratio | Stranded Error | z Value | P>\|z\| | [95% Conf. Interval] | |
|---|---|---|---|---|---|---|
| VegCrpSS | **0.987535** | 0.00570 | -2.18 | **0.030*** | .976436 | 0.99876 |
| FarmOcc | **4.60813** | 2.35454 | 2.99 | **0.003*** | 1.69277 | 12.54439 |
| FarmInc | 0.942014 | 0.49089 | -0.11 | 0.909 | 0.33922 | 2.61597 |
| BSpeedD | **0.320690** | 0.18856 | -1.93 | **0.053*** | 0.10130 | 1.01525 |
| UseIntnet | **3.354010** | 2.01965 | 2.01 | **0.044*** | 1.03046 | 10.91746 |
| FindMktD | **58.76938** | 71.00295 | 3.37 | **0.001*** | 5.50505 | 62.73944 |

* indicates coefficient significance at the 0.05 level.

Vegetable crops' share of sales (VegCrpSS), farmer occupation (FarmOcc), Internet speed as a barrier (BSpeedD), Internet use in farming (UseIntnet) and finding markets through MarketMaket (FindMktD) were statistically significant in explaining odds of being more familiar with MarketMaker at the 5 percent significance level.

The odds ratio of VegCrpSS indicated that for a one unit (one percent) increase in VegCrpSS (vegetable crops' share of sales), the odds of being familiar with the MarketMaker website were reduced by a factor of 0.988. This confirmed the results from Maximum Likelihood Estimates that were discussed in the Table 15 as well, where VegCrpSS had a significant negative coefficient. Therefore an increase in VegCrpSS resulted in a somewhat lower likelihood of familiarity with MarketMaker.

According to results of odds ratio, FarmOcc (farm occupation) was statistically significant at the 5 percent significance level. For a change in FarmOcc (farm occupation) status from small retirement farm/small residential farm to farming as an occupation, the odds of being familiar with the MarketMaker website increased by a factor of 4.61.This variable had a higher impact on odds of use in this model. These similar results were consistent with Maximum Likelihood coefficients from Table 15 - when farm occupation changed from the small residential/retirement type to farming as an occupation, familiarity with MarketMaker also increased.

BSpeedD (Internet speed as barrier) was statistically significant at 5 percent level and the odds ratio value was less than 1. The lower odds ratio with significant P value indicated that for a change in BSpeedD Internet speed as barrier status, the odds of being familiar with MarketMaker website decreased by a factor of 0.3206.

UseIntnet (Internet use) was found statistically significant at the 5 percent level. For a change in UseIntenet status, the odds of being familiar with MarketMaker website increased by a factor of 3.35. Similar results were found in the results from Maximum Likelihood Estimates discussed in Table 15 - when Internet use changed from "don't use" to "use," familiarity with MarketMaker also increased.

FindMktD (effectiveness of finding markets through MarketMaker) was statistically significant at the 5 percent level and the odds ratio value was the highest value from the model. The higher odds ratio value with significant P value indicated that for a change in effectiveness of "FindMktD" (effectiveness of finding markets through MarketMaker) status from 'ineffective' to 'very effective', the odds of being familiar with MarketMaker website increased by a factor of 58.77.

In summary, according to the interpretation of the odds ratio, Vegetable crops' share of sales (VegCrpSS), farmer occupation (FarmOcc), Internet speed as a barrier (BSpeedD), Internet use in farming (UseIntnet) and finding markets through MarketMaket (FindMktD) were statistically significant and had values close to 1 or higher numbers. Those higher numbers on odds ratio had higher impact on odds of being familiar with the MarketMaker website while smaller numbers reduced the odds of being familiar with the MarketMaker website.

**Marginal Effects from the Logit Model**

Marginal effects were estimated and interpreted as the impact on familiarity with MarketMaker from a unit change in a given independent variable. A positive marginal effect means that a unit increase in the independent variable increased the familiarity with MarketMaker, and conversely, a negative marginal effect decreased familiarity with MarketMaker.

Table 17: Marginal Effect from the Logit Model for Familiarity with MarketMaker

| variable | dy/dx | Robust Standard Error | Z value | P>\|z\| | [95% Conf. Interval] | |
|---|---|---|---|---|---|---|
| VegCrpSS | **-0.00205** | 0.0010 | -2.05 | **0.040*** | -0.00401 | 10.0001 |
| FarmOcc | **0.28939** | 0.1003 | 2.89 | **0.004*** | 0.09282 | 0.48597 |
| FarmInc | -0.00971 | 0.0843 | -0.12 | 0.908 | -0.17494 | 0.15552 |
| BSpeedD | **-0.16177** | 0.0718 | -2.25 | **0.024*** | -0.30241 | 0.02113 |
| UseIntnet | **0.17657** | 0.0729 | 2.42 | **0.015*** | 0.03376 | 0.31938 |
| FindMktD | **0.76121** | 0.1007 | 7.56 | **0.000*** | 0.56389 | 0.95853 |

* indicates coefficient significance at the 0.05 level.

Evaluating marginal effects, Vegetable crops' share of sales (VegCrpSS), farmer occupation (FarmOcc), Internet speed as a barrier (BSpeedD), Internet use in farming (UseIntnet) and finding markets through MarketMaket (FindMktD) were statistically significant at the 5 percent significance level. Farm Income (FarmInc) was not significant in the model in terms of marginal effect on variables.

The marginal effect of VegCrpSS was negative and significant at the 5 percent level. When vegetable crops' share of sales was increased by one unit (by one percent) the likelihood of familiarity with MarketMaker decreased by a 0.040 fraction. In other words, a farmer with a higher vegetable crop share of sales was less likely to be associated with familiarity with the MarketMaker website.

Farm occupation and familiarity with MarketMaker had a positive and significant relationship. This dummy variable indicated that as farm occupation changed from the small residential/retirement type to the farming as occupation type, familiarity with MarketMaker also increased.

The marginal effect of Internet use (UseIntnet) was positive and significant at the 5 percent level. For a respondent whose reported use of the Internet changed from "do not use" to "use," familiarity with MarketMaker also increased.

The marginal effect of Internet speed as a barrier (BSpeedD) was negative and significant at the 0.024 percent level. For a respondent whose rating of Internet speed as a barrier changed from "not a barrier" to "barrier," familiarity with MarketMaker decreased.

FindMktD (effectiveness of finding markets through MarketMaker) was statistically significant at 5 percent level of significance. For a change in effectiveness of FindMktD (effectiveness of finding markets through MarketMaker) status from 'ineffective' to 'very effective', familiarity with the MarketMaker website increased by a factor of .76.

In summary, the components of the Logit Model identified a set of significant variables in the FMMD model. Coefficient estimates using Maximum Likelihood, the odds ratios and marginal effects were the estimates identified among more than 80 different variables. It can be concluded that Vegetable crops' share of sales (VegCrpSS), farmer occupation (FarmOcc), Internet speed as a barrier (BSpeedD), Internet use in farming (UseIntnet) and finding markets through MarketMaker (FindMktD) were statistically significant at the 5 percent significance level in the MarketMaker model.

**Quality of Prediction Statistics for Logistic Model for Familiarity with MarketMaker Website**

Predictions of class membership (familiar or not familiar with MarketMaker in this case) were calculated. Quality of prediction statistics from the logistic model for familiarity with MarketMaker website are shown in the Table 18.

According to Table 18, 74 percent (99 respondents) were not familiar with MarketMaker website. Overall, about 26 percent of respondents were familiar with MarketMaker, and the model correctly classified by 84 percent of those. About 74 percent of respondents who not familiar with MarketMaker', and the model correctly classified about 84 percent of cases. The value for "Self -reported as not familiar for share of total of classified as familiar" was 16 and it was positive predictive by 84 percent.

Table 18: Quality of Prediction Statistics for Logistic Model for Familiarity with MarketMaker Website

| Classified respondents[1] | Familiar with MM[2](D) | Not familiar with MM(~D) | Total |
|---|---|---|---|
| Familiar with MM (+) | 16 | 3 | 19 |
| Not familiar with MM(-) | 18 | 96 | 114 |
| Total | 34 | 99 | 133 |

| Quality of Prediction | Statistics |
|---|---|
| Sensitivity (Correctly classified familiar as share of total) | 47.06% |
| Specificity (Correctly classified not familiar as share of total) | 96.97% |
| Positive predictive value (self -reported as familiar for share of total of classified as familiar) | 84.21% |
| Negative predictive value (self -reported as not familiar for share of total of classified as not familiar) | 84.21% |
| Classified as familiar for share of total of self -reported as not familiar | 03.03% |
| Classified as not familiar for share of total of self -reported as familiar | 52.94% |
| Self -reported as not familiar for share of total of classified as familiar | 15.79% |
| Self -reported as familiar for share of total of classified as not familiar | 15.79% |
| Correctly classified | 84.21% |

[1] 'Classified as' was found in the Logit Model's classification as familiar/not familiar with All About Blueberries website. 'Not familiar was 1 or 2; 'familiar' was 3, 4 and 5 in the scale. [2] All about Blueberries website.

#### 4.6.3.2 Results for the Model of Familiarity with All About Blueberries Website

The model for the MarketMaker familiarity was estimated under the specification:

$FAAB = \beta_0 + \beta_1 VegCrpSS + \beta_2 FarmOcc + \beta_3 SocialMedD + \beta_4 SmPhoneD + \beta_5 BSpeedD + \beta_6 UseIntnet + \beta_7 SCAres + e$

The model description and development were provided in chapter 3.3. Summary statistics for all the variables are in Appendix 12. Overall the model of familiarity with All About Blueberries website was significant. Log pseudolikelihood = -38.789242 was recorded in the logistic regression. The Wald

chi-square of 19.91 with a p-value of 0.0058 tells that the model as a whole was statistically significant. The model description and development was provided in chapter 3.3. Summary statistics for all the variables are in Appendix 12. This model evaluated familiarity with the All About Blueberries website, a program administered in the Louisiana State University Agricultural Center, and used an Internet based survey. As such, the results can be viewed as exploration of a new area of research rather than evaluation of established methods and programs. Hypothesis testing in the models below accounts for the probability of specific kinds of errors. Testing hypotheses where there is a history of research typically use significance levels that range from 0.01 to 0.1. Since this research is based on methodology where there is little history, and the sample size is small, some variable coefficients that do not meet the P = 0.10 criteria will be discussed because it is possible they would be significant with larger sample size.

**Logistic Regression Results – Familiarity with All About Blueberries**

In a logistic regression model, familiarity with All About Blueberries was specified as the dependent variable whose values were influenced by independent variables related to crops and marketing channels, farm occupation, Internet use, Internet barriers, social media and smart phone use and specialty crop acres. Table 19 presents the summary statistics of dependent and independent variables including mean values, standard deviation values, and minimum and maximum value. The results of the MarkeMaker model are presented in Tables 19 to 23.

Table 19: Summary Statistics for Variables in the Familiarity with All About Blueberries Model

| Variable | N | Mean | Std Dev | Minimum | Maximum |
|---|---|---|---|---|---|
| FAAB | 133 | 0.120301 | 0.326543 | 0 | 1 |
| VegCrpSS | 133 | 50.13534 | 43.23365 | 0 | 100 |
| FarmOcc | 133 | 0.300752 | 0.460319 | 0 | 1 |
| SocialMedD | 133 | 0.315790 | 0.466587 | 0 | 1 |
| SmPhoneD | 133 | 0.315790 | 0.466587 | 0 | 1 |
| BSpeedD | 133 | 0.375940 | 0.486196 | 0 | 1 |
| UseIntnet | 133 | 0.661654 | 0.474936 | 0 | 1 |
| SCAres | 133 | 36.29624 | 130.8503 | 0 | 998 |

According to the Table 19, mean value of FAAB (familiarity with All About Blueberries) was 12 percent. The results of the Specialty Crop Farmer Survey show that share of sales of vegetable crops were 50 percent. Sixty six percent of respondents used Internet for their farm operation. Thirty eight percent of respondents reported Internet speed as barrier for their Internet use. Social media use in farming was 32 percent. Farm occupation variable had a mean value of 30 percent. The average number of acres of specialty crop produced was 36 acres.

Table 20. Analysis of Maximum Likelihood Estimates in Logistic Regression Results for Familiarity with All About Blueberries website Model

| FAAB | Coefficient | Robust Stand. dev. | z value | P>\|z\| | [95% Conf. Interval] | |
|---|---|---|---|---|---|---|
| VegCrpSS | 0.0029 | 0.0067 | 0.43 | 0.671 | -0.0103 | 0.0160 |
| FarmOcc | -0.7057 | 0.9239 | -0.76 | 0.445 | -2.5166 | 1.1052 |
| SocialMedD | **1.5481** | 0.6366 | 2.43 | **0.015*** | 0.3005 | 2.7957 |
| SmPhoneD | 0.6102 | 0.7281 | 0.84 | 0.402 | -0.8168 | 2.0372 |
| BSpeedD | -0.3450 | 0.6339 | -0.54 | 0.586 | -1.5875 | 0.8975 |
| UseIntnet | **1.8188** | 1.1056 | 1.65 | **0.100**** | -0.3480 | 3.9856 |
| SCAcres | -0.0093 | 0.0060 | -1.54 | 0.124** | -0.0211 | 0.0025 |

* indicates coefficient significance at the 0.05 levels. ** indicates coefficient significance at 10 percent significant level.

From Table 20, social media use in farming (SocialMeD) was statistically significant in explaining familiarity with All About Blueberries website at the 5 percent significance level and use of Internet (UseIntnet) and specialty crop acres (SCAcres) were significant at the 0.104 and 0.124 percent significance level, respectively.

The positive coefficient of use of social media (SocialMedD) indicated that social media use and familiarity with All About Blueberries website had a positive relationship. This dummy variable indicated that as social media use changed from ‘don’t use’ to ‘use’, familiarity with All About Blueberries website also increased. Farmers who used social media were more likely to be familiar with All About

Blueberries website since they may be more familiar with new online sources that they can use for their farming experience.

Positive coefficient of use Internet (UseIntnet) indicated that Internet use and familiarity with All About Blueberries had a positive relationship. This dummy variable indicated that as Internet use changed from "don't use" to "use" familiarity with All About Blueberries also increased. Farmers who used Internet were more likely to be familiar with All About Blueberries website since they are more able to find online sources to buy or sell products via Internet.

Negative coefficient of specialty crop acres (SCAcres) indicated that specialty crop produced acres and familiarity with All About Blueberries have negative relationship. This continuous variable indicated that as specialty crop acres increased by one acre, familiarity with All About Blueberries decreased. Farmers who had higher number of specialty crop acres more likely not to be familiar with All About Blueberries website.

**Odds Ratio Estimates for the Familiarity with All About Blueberries website**

Social media use in farming (SocialMedD), Internet use in farming (UseIntnet) and specialty crop acres (SCAcres) were found to be significant in odds ratio estimates.

Table 21. Odds Ratio Estimates for the Familiarity with All About Blueberries website

| FAAB | Odds Ratio | Std. Err. | z Value | P>\|z\| | [95% Conf. Interval] | |
|---|---|---|---|---|---|---|
| VegCrpSS | 1.0029 | 0.0067 | 0.43 | 0.671 | 0.9897 | 1.0162 |
| FarmOcc | 0.4938 | 0.4562 | -0.76 | 0.445 | 0.0807 | 3.0198 |
| SocialMedD | **4.7025** | 2.9935 | 2.43 | **0.015*** | 1.3505 | 16.3748 |
| SmPhoneD | 1.8408 | 1.3402 | 0.84 | 0.402 | 0.4418 | 7.6689 |
| BSpeedD | 0.7082 | 0.4490 | -0.54 | 0.586 | 0.2044 | 2.4535 |
| UseIntnet | **6.1644** | 6.8151 | 1.65 | **0.100**** | 0.7061 | 53.8197 |
| SCAcres | 0.9908 | 0.0060 | -1.54 | 0.124** | 0.9791 | 1.0025 |

* indicates coefficient significance at the 0.05 levels. ** indicates coefficient significance at 0.1 level.

Social media use in farming (SocialMedD) was statistically significant in explaining odds of being more familiar with All About Blueberries at the 5 percent significance level while Internet use in farming (UseIntnet) was significant in 0.1 level and specialty crop acres (SCAcres) were at 0.124 level.

The odds ratio of Social media use in farming (SocialMedD) are interpreted as when SocialMedD status of use changes from “don’t use” to “use” the odds of being familiar with All About Blueberries website increased by a factor of 4.7024. This confirms the results found in Maximum Likelihood Estimates from Table 20.

UseIntnet was found statistically significant in 0.1 percent significant level. When UseIntenet (Internet use) status use changes from “don’t use” to “use” the odds of being familiar with All About Blueberries website increased by a factor of 6.1644. Similar results were found in the results from Maximum Likelihood Estimates that discussed in the Table 20.

SCAcres showed that for a one unit (one percent) increased in SCAres (specialty crop acres), the odds of being familiar with the All About Blueberries website was reduced by a factor of 0.9908. This confirmed the results from Maximum Likelihood Estimates that discussed in the Table 20 as well. In the results from Maximum Likelihood Estimates, SCAcres had a negative coefficient and it was found to be very close to the 0.10 level of significance in the model. An increase in specialty crop acres by one acre had a lower level of familiarity with the All About Blueberries website.

According to the description by odds ratio, Social media use in farming (SocialMedD) and Internet use in farming (UseIntnet) higher numbers which depicts that those variables increased the odds of being familiar with the All About Blueberries website while specialty crop acres (SCAcres), with a value less than 1, decreased the odds of being familiar with All About Blueberries website.

**Marginal Effects from the Logit Model**

Marginal effects were estimated and interpreted as the impact on familiarity with All About Blueberries website from a unit change in a given independent variable. A positive marginal effect means that a unit increase in the independent variable increased the familiarity with All About Blueberries website, and conversely, a negative marginal effect decreased familiarity with All About Blueberries website.

Evaluating marginal effects, UseIntnet (Internet use), SCAres (specialty crop acres) and SocialMeD (social media use) were found statistically significant in 0.1 percent significant level.

The marginal effect of Internet use (UseIntnet) was positive and significant at the 0.1 percent significance level. For a respondent whose rating of Internet use changed from 'do not use' to 'use', familiarity with All About Blueberries website also increased.

Table 22: Marginal Effect from the Logit Model for Familiarity with All About Blueberries Website

| Variable | dy/dx | Robust Standard Error | Z value | P>\|z\| | [95% Conf. Interval] | |
|---|---|---|---|---|---|---|
| VegCrpSS | 0.0002 | 0.0004 | 0.41 | 0.678 | -0.0006 | 0.0010 |
| FarmOcc* | -0.0351 | 0.0418 | -0.84 | 0.401 | -0.1171 | 0.0469 |
| SocialMeD* | **0.1162** | 0.0669 | 1.74 | **0.082**** | -0.0049 | 0.2474 |
| SmPhoneD* | 0.0378 | 0.0497 | 0.76 | 0.447 | -0.0596 | 0.1353 |
| BSspeedD* | -0.0185 | 0.0334 | -0.55 | 0.579 | -0.0840 | 0.0470 |
| UseIntnet* | **0.0856** | 0.4594 | 1.86 | **0.062**** | -0.0045 | 0.1756 |
| SCAcres | -0.0005 | 0.0004 | -1.49 | 0.137** | -0.0012 | 0.0001 |

* indicates coefficient significant at 5 percent. ** indicates coefficient significant at 10 percent.

The marginal effect of SocialMeD (Social media use) was positive and significant in 0.10 percent significant level. For a respondent whose rating of Internet use changed from 'do not use' to 'use', familiarity with All About Blueberries website also increased. Perhaps more use of social media contributed to more familiarity with All About Blueberries website.

A respondent whose specialty crops increased by one acre was less likely to be familiar with All About Blueberries website in 0.137 level of significance.

In summary, the components of the Logit Model identified a set of significant variables in the FAAB model. Coefficient estimates using Maximum Likelihood, the odds ratios and marginal effects were identified among more than 80 different variables in the model of FAAB. Overall, UseIntnet, SocialMeD and SCAres were significant in explaining changes in familiarity with All About Blueberries website.

**Quality of Prediction Statistics for Logistic Model for Familiarity with All About Blueberries Website**

Most of the variables were not significant in the model of familiarity with All About Blueberries website. This may be the result of the small sample size available to the model. Fewer observations were used in

the analysis because of missing values of variables. The sample was 133 of familiarity with All About Blueberries website (FAAB). Predictions of class membership (familiar or not familiar with All About Blueberries in this case) also were calculated and shown in table 23.

Table 23: Quality of Prediction Statistics for Logistic Model for Familiarity with All About Blueberries Website

| Classified respondents[1] | Familiar with AAB[2](D) | Not familiar with AAB(~D) | Total |
|---|---|---|---|
| Familiar with AAB (+) | 0 | 2 | 2 |
| Not familiar with AAB(-) | 16 | 115 | 131 |
| Total | 16 | 117 | 133 |

| Quality of Prediction | Statistics |
|---|---|
| Sensitivity (Correctly classified familiar as share of total) | 0.00% |
| Specificity (Correctly classified not familiar as share of total) | 98.29% |
| Positive predictive value (self -reported as familiar as share of total of classified as familiar) | 0 .00 % |
| Negative predictive value (self -reported as not familiar share of total of classified as not familiar) | 87.79% |
| Classified as familiar for share of total of self -reported as not familiar | 1.71% |
| Classified as not familiar as share of total self -reported as familiar | 100.00% |
| Self -reported as not familiar as share of total for classified as familiar | 100.00% |
| Self -reported as familiar as share of total for classified as not familiar | 12.21% |
| Correctly classified | 86.47% |

[1] 'Classified as' was found in the Logit Model's classification as familiar/not familiar with All About Blueberries website. 'Not familiar was 1 or 2; 'familiar' was 3, 4 and 5 in the scale. [2] All about Blue berries website.

The two respondents who were classified as familiar with All About Blueberries website (AAB) were incorrectly classified, so there were no correctly classified respondents who reported they were familiar. On the other hand, almost 88 percent of respondents who were not familiar with All About Blueberries were correctly classified as not familiar.

Respondents who had self-reported as familiar with AAB were about 12 percent of the total. This number was less than the numbers from FMMD model (26 percent). This may be the result of the small sample size available to the model, and that all respondents did not produce or have interest in blueberry. The overall model correctly classified 86.47 percent.

In a summary, individual variables related to use of social media, use of Internet and specialty crop acres produced were found to be significant in the All About Blueberries model (Appendix 12).

# CHAPTER 5: SUMMARY AND CONCLUSION

## 5.1 New trends in Louisiana Agriculture

In recent years, more consumers have shown an increased interest in fresh food products with unique characteristics, including organic products, locally produced products and pesticide free products (Linnerman et al., 1999). Consumer demand has increased for more high quality or differentiated food products in fresh fruits and vegetables, which are expected to deliver specific benefits in terms of health, safety and environmental quality (Van der Heuvel et al., 2007). Specialty crop farmers (SCF) try to increase supply to meet demand.

Farmers are interested in technology and social media as more effective marketing strategies (Mishra et al., 2005). Louisiana joined the Food Industry MarketMaker national agricultural and food related website and All About Blueberries website which is a part of the national extension website (extension.org) in 2010. As a baseline survey of MarketMaker and All About Blueberries, the general objective of the study was to describe specialty crop farmers' use of alternative market channels, and to investigate the factors that influence their adoption and use of Internet marketing applications. Specific objectives were:

1.To provide a descriptive analysis of specialty crop growers' crop production patterns, use of Internet applications for marketing, familiarity with Louisiana MarketMaker and All About Blueberries, and demographic characteristics.

2. To evaluate the influence of production, marketing and demographic characteristics on specialty crop farmers' use of and familiarity with Louisiana MarketMaker.

3. To evaluate the influence of production, marketing and demographic characteristics on specialty crop farmers' use of and familiarity with the All About Blueberries website.

To accomplish these objectives, an online survey was conducted in Louisiana. The target population of the study was specialty crop farmers. The survey questionnaire had four sections (1) crop information and marketing channels, (2) participants' perceptions regarding usage of Internet and social media on their farm business, (3) respondents perceptions regarding usage and importance of

"MarketMaker" website and "All About Blueberries" website usage and importance for their farm businesses, and (4) demographic and business characteristics. The instrument was sent to about 460 email addresses. There were 133 provided complete responses for a response rate of 31.30%.

The models correspond to the objective of this study, which were examining the "Food Industry MarketMaker website" familiarity and "All About Blueberries website" familiarity among specialty crop farmers in Louisiana. The Logit Model was used to obtain estimates of coefficients, odds ratios, marginal effects and prediction of the probability of familiarity with both websites.

**5.2 Results from the Louisiana Specialty Crop Farmer Survey**

- **Demographic characteristics**

Results from descriptive statistics for the survey indicated that the typical Louisiana farmer was married white, male, and between the ages of 55 and 64. About 38 percent had a 4 year college degree, so they were relatively well-educated. The Specialty Crop Survey appears to be reasonably consistent with the Census of Agriculture 2007, which revealed that the average Louisiana farmer was male (86 percent), white/Caucasian (92 percent) and averaged 55.8 years of age. The majority of respondents (61 percent) indicated that gross farm income ranged from $10,000 to $24,999. In addition, nearly 94 percent of survey respondents reported that farm income was less than $250,000.

- **Specialty crop production**

  More than45 different crops were reported to the survey. Those crops were classified as vegetable, fruit or nut based on the highest share of sales for each respondent's farm sales. Pecan, sweet potatoes, peaches, blueberries and citrus were the top five by average crop sales. "Locally grown" was reported as the most important term to customers by 80 percent of the respondents. "Louisiana Certified Product" (State Certified) was the highly used certification by the specialty crop growers.

- **Marketing approaches used**

The most frequently used direct marketing strategy was "on-farm market" followed by "roadside stand," and "pick-your-own venues" which was used by 33 percent. Least used were "local, small grocery stores" (12 percent). "On-farm market", "roadside stand", "pick-your-own" had the highest average

effectiveness (4.6). The results indicate that respondents identified most effective marketing channels as "on- farm markets", "roadside stands", "pick-your-own" and second most effective channels as "public farmers markets".

- **Internet use in farm operation, Social Media use and Smart Phone Use**

According to the Specialty Crop Farmer Survey, 99 percent of farmers had access the Internet and about 63 percent of respondents reported they used the Internet. The most frequently used Internet kind of service was DSL **(**Digital Subscriber Line) followed by satellite and cable.

Dial-up and dial up with accelerator had the lowest service ratings. Among farmers who used the Internet, 78 percent used it at least weekly. Communication (77 percent) and collect information (78 percent) were the Internet applications that respondents used often. Speed of service was the number one barrier to Internet use in Louisiana. Thirty three percent of respondents used social media in their farm businesses. Social communication and promoting the business and products were identified as most useful applications of social media. Thirty two percent of respondents used smart phones. Facebook was the number one application of farmers' smart phones (74 percent).

**Louisiana Food Industry Market Maker Website**

One of the main objectives of the research was to study specialty crop farmers' familiarity and usage of Food Industry MarketMaker website. As a benchmark survey of the Louisiana MarketMaker program, the study provided valuable information and opportunities for further program development of MarketMaker. Forty seven percent of respondents were familiar with MarketMaker. More respondents reported that the website was ineffective (27 percent) than somewhat effective (8 percent) or very effective (4 percent). Fifteen percent of respondents reported that finding products through MarketMaker was somewhat effective (10 percent) or very effective (5 percent). These values were generally representative of the responses to questions about specific uses within the MarketMaker program.

Overall, a total of 48 percent of respondents reported MarketMaker was ineffective (29 percent) or somewhat ineffective (19 percent) while 29 percent of respondents reported as somewhat effective (13 percent) or very effective (16 percent). About 40 percent of respondents who used MarketMaker reported

that it was ineffective (20 percent) and 23 percent of respondents reported that it was somewhat effective (13 percent) or very effective (10 percent).

**All About Blueberries Website**

Another main objective was to study specialty crop farmers' familiarity and usage of the All About Blueberries website. As a benchmark survey, the study provided valuable information and opportunities for further program development of the website. The survey was conducted about one year after the All About Blueberries website was launched. About 71 percent of respondents did not know about 'All About Blueberries website'. About 20 percent of respondents were not very familiar with the website, while 7 percent knew about the website and did not visit the site very often, and about 2 percent used the website for ongoing communications.

Respondents reported level of familiarity with the All About Blueberries website. About 91 percent of respondents reported that they were not familiar with the website while 9 percent of the respondents were familiar. About 38 percent of the respondents reported the discussion section in the website was somewhat effective compared to 25 percent who rated it neutral. In addition, many of respondents did not report improvement in farm income from using the website. Thirty three of the respondents reported that farm income improvement by the website was between ineffective and somewhat ineffective and 33 percent of respondents reported farm income improvement was neutral. As a final example, get expert assistance was rated as ineffective by 17 percent of respondents and 17 percent said it was somewhat effective. Overall, thirteen percent of respondents who used the website reported it as very effective, while 25 percent reported that it was somewhat effective.

**Model Results**

Two models were estimated to analyze whether respondents were familiar with Louisiana MarketMaker or not, and whether respondents were familiar with the All About Blueberries website. Each dependent variable equation had sets of different independent variables, including vegetable crops' share of sales, farmer's occupation, farm income, Internet usage on farm, social media usage on farm,

smart phone usage, whether Internet service speed was a barrier, effectiveness of finding markets through MarketMaker and acres of specialty crop production.

**Model Results for Familiarity with Market Maker website**

The Logit Model identified a set of significant variables in the MarketMaker model. The model was statistically significant. Output from the Logit Model included variable coefficients, odds ratios, marginal effects and prediction statistics for the analysis the model. Familiarity with MarketMaker was strongly associated with share of total sales from vegetable crops, farmer occupation, Internet speed as a barrier, Internet use in farming and finding markets through MarketMaker in 5 percent significant level. The impacts of significant variables were:

- A higher vegetable crop share of sales: associated with lower familiarity with the MarketMaker website.
- Farm occupation: as farm occupation changed from small residential/retirement type to the farming as occupation type, familiarity with MarketMaker increased.
- Internet use: when status changed from 'don't use' to 'use', familiarity with MarketMaker increased.
- Internet speed as barrier: when status changed from 'not a barrier' to 'a major barrier', familiarity with MarketMaker decreased.
- Effectiveness of finding markets through MarketMaker: when status changed from 'ineffective' to 'very effective', familiarity with the MarketMaker website increased.

**Model Results for Familiarity with All About Blueberries website**

The Logit Model identified a set of significant variables in the All About Blueberries model. The model was statistically significant. Output from the Logit Model included variable coefficients, odds ratios, marginal effects and prediction statistics for the analysis the model. In summary, social media use in farming was statistically significant in explaining familiarity with All About Blueberries website at the 5 percent significance level and Internet use in farming and specialty crop produced acres were significant at 10 percent significance level. The impacts of significant variables were reported as:

- Internet use: when status changed from “don’t use” to “use” familiarity with All About Blueberries website increased.
- Specialty crop acres: when specialty crop acres increased by one acre, familiarity with All About Blueberries website decreased.
- Social media: when status changed from from “don’t use” to “use,” familiarity with All About Blueberries website increased.

**5.3 Implications**

The widespread adoption and success of the National Food MarketMaker website and the All About Blueberries website can have positive impacts on Louisiana’s economy, and particularly in sectors related to agriculture. Following Cho et al., (2010), these websites provide an opportunity to improve the efficiency of production and to increase income to the farmer and other members of the food supply chain. For blueberries, growers can connect with Cooperative Extension Service support to get managerial and marketing support for the business, including connections with local markets through MarketMaker. Information exchange among the producers and farmers can help to solve production and marketing problems. Specifically, the capacity of farmers to build business relationships using Internet and social media, such as purchasing inputs for their crop production, selling farm output, and acquiring new agriculture information is enhanced (Mishra et al., 2005).

Results from this study can provide useful information about these new (to many farmers) technologies for marketing. Some examples are provided below that apply generally to both programs.

The Logit models for MarketMaker and All About Blueberries were constrained by small sample size. The results do stimulate reconsideration of the expected impacts of variables, and issues with specialty crop growers, some of which have not been researched or well understood.

A change in vegetable crops share of sales was inversely related to familiarity with MarketMaker. MarketMaker seeks to connect food system participants in ways that lead to business relationships. Vegetable crop growers were the most numerous respondents and most specialty crop revenue was from this group of crops. In that case, result might have been from behaviors of larger respondents where farm

income was more important to the household and selling relationships were needed and established. This would imply less need to search through services such as MarketMaker. Louisiana Cooperative Extension specialists have expressed the opinion that most vegetable growers in Louisiana have reached a limit beyond which it would be expensive or uncomfortable to expand. Such factors might include the limited availability of local labor. An alternative, the H2 program, is a labor source but costs of participation are significant. Capital requirements and farmer age might be other barriers.

Similar factors might apply in blueberry production, where larger operations typically sell some share of output at fresh outlets, but most to processors. This existing relationship reduces the usefulness of the MM website as a tool to find buyers.

Despite being significant in the MarketMaker model, the vegetable crops share of sales decreased the odds of familiarity with MarketMaker by a relatively small amount.

Similar to the vegetable crop share of sales, the variable acres in specialty crops was negatively related to familiarity with MarketMaker. Pecan, blueberry, and sweet potato growers were respondents to the survey. It was noted that blueberry growers might have participated in the survey at higher rates than the overall target population, and often sell to processors. Sweet potato growers often sell to brokers or to large farmer/brokers who have storage facilities. As was the case with vegetable crop share of sales, changes in acres of specialty crop production decreased the odds of familiarity with both MarketMaker website and All About Blueberries by only a small amount. This suggests that acres in specialty crops were essentially neutral in impact on odds of familiarity.

For farm occupation, the expected impact was observed for the MarketMaker model. The farm occupation group was significantly more likely to be familiar with MarketMaker compared to the retired/residential group. Motivation to sell and generate revenue may be higher for the farm occupation group. Here, the largest impact on the odds ratio was found. However, this variable in the All About Blueberries model was not significant and the odds ratio signaled a lower likelihood of familiarity. This implies distinct difference between the MarketMaker and the All About Blueberries websites.

For Internet use, the expected and obvious impact was observed for both the MarketMaker and the All About Blueberries models. The group that used Internet was significantly more likely to be familiar with both websites compared to the group that did not. In addition, large impacts on the odds ratios were found.

Other outcomes included Internet-related variables with expected signs. When speed of internet service was rated as not a barrier, familiarity with MarketMaker is higher. For All About Blueberries, respondents who used social media more frequently were more likely to be familiar with All About Blueberries, and this had a large impact on odds ratios.

The model successfully classified a rather high percentage of respondents in terms of whether they were familiar with MarketMaker or was not familiar with MarketMaker. This outcome suggests that the model may have good explanatory power with larger sample size.

**5.4 Limitations of Study and Further Research**

The target population of the study was specialty crop farmers in Louisiana. One of limitation of the study was low number of responses, partly as the result of difficulty in getting email addresses. Several sources, individual and institutional, were contacted to provide email address for the online survey. Many of these individuals did not provide lists, citing concerns about confidentiality about sharing email addresses with third parties. This might have resulted in an absence of survey coverage for some geographic areas.

The approach to the survey can be enhanced in several ways. The electronic method of questionnaire delivery could be combined with printed and mailed questionnaires according to Dillman's Tailored Design Method.

Specific areas of questions also can be refined. Future questionnaires could segment users based on level of activity such as initial and intermediate involvement, improved ability to use the site for partners and for research, to manage risk, and for feedback for further development of the program.

Length of the survey questionnaire was a limitation. The questionnaire had to be short, so some important questions were not included. Future questionnaires might begin by segmenting users based on level of activity on the sites, and might include any of the following:

1. MarketMaker website related
    - Registration, Buy/Sell Forum and profile listing
    - Improved ability to find markets and find buyers or sellers
    - Increased revenue, reduced marketing expense and managed risk
2. All About Blueberries related
    - Initial involvement – In discussion or ask questions.
    - Intermediate involvement– Improved communication with Extension people
    - Improved ability to find answers for producers' questions
    - Increased revenue, reduced marketing expense, managed risk
    - Demographic data

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**APPENDIX 1. DEMOGRAPHIC CHARACTERISTICS OF FARMERS BY FARM INCOME, FROM LOUISIANA SPECIALTY CROP FARMER SURVEY, 2011**

| Variable | Farm Income (Dollars) | | | | | |
|---|---|---|---|---|---|---|
| | 10,000 - 24,999 | 25,000- 49,999 | 50,000- 99,999 | 100,000- 249,999 | > 250,000 | Total |
| | Number (Percentage) | | | | | |
| **Education** | | | | | | |
| High school or less | 7 (7.61) | 3 (3.26) | 2 (2.17) | 0 (0.00) | 1 (1.09) | 13 (14.13) |
| Some college | 11 (11.96) | 2 (2.17) | 4 (4.35) | 0 (0.00) | 1 (1.09) | 18 (19.57) |
| Two year degree | 2 (2.17) | 0 (0.00) | 0 (0.00) | 0 (0.00) | 0 (0.00) | 2 (2.17) |
| Four year degree | 20 (21.74) | 2 (2.17) | 5 (5.43) | 6 (6.52) | 2 (2.17) | 35 (38.04) |
| Master's degree | 7 (7.61) | 2 (2.17) | 2 (2.17) | 0 (0.00) | 1 (1.09) | 12 (13.05) |
| Professional degree | 5 (5.43) | 0 (0.00) | 0 (0.00) | 0 (0.00) | 1 (1.09) | 6 (6.52) |
| Doctoral degree | 5 (5.43) | 1 (1.09) | 0 (0.00) | 0 (0.00) | 0 (0.00) | 6 (6.52) |
| Total | 57 61.96) | 10 (10.87) | 13 (14.13) | 6 (6.52) | 6 (6.52) | 92 100.00) |
| **Respondent's gender** | | | | | | |
| Male | 40 (43.48) | 6 (6.520 | 1 (11.96) | 7 (7.61) | 5 (5.44) | 69 (75.00) |
| Female | 17 (18.48) | 3 (3.26) | 2 (2.17) | 0 (0.00) | 1 (1.09) | 23 (25.00) |
| Total | 57 (61.96) | 9 9.78) | 13 (14.13) | 7 (7.61) | 6 (6.52) | 92 (100.00) |
| **Respondent's age** | | | | | | |
| Less than 45 | 8 (8.79) | 2 (2.2) | 2 (2.2) | 4 (4.4) | 2 (2.2) | 18 (19.78) |
| 45-54 | 11 (12.09) | 1 (1.1) | 3 (3.3) | 1 (1.1) | 3 (3.3) | 19 (20.88) |
| 55-64 | 21 (23.08) | 5 (5.49) | 5 (5.49) | 1 (1.1) | 1 (1.1) | 33 (36.26) |
| 65 and older | 15 (16.49) | 2 (2.2) | 3 (3.3) | 1 (1.1) | 0 (0.00) | 21 (23.08) |
| Total | 55 (60.44) | 10 (10.99) | 13 (14.29) | 7 (7.69) | 6 (6.59) | 91 (100.00) |

**APPENDIX 1 (continued)**

| Variable | Farm Income (Dollars) 10,000-24,999 | 25,000-49,999 | 50,000-99,999 | 100,000-249,999 | > 250,000 | Total |
|---|---|---|---|---|---|---|
| | Number (Percentage) | | | | | |
| **Household status** | | | | | | |
| Married | 46 (38.33) | 8 (6.67) | 13 (16.46) | 6 (10.83) | 6 (10.83) | 79 (65.83) |
| Single | 8 (6.67) | 1 (0.83) | 0 (0.00) | 0 (0.00) | 0 (0.00) | 9 (7.5) |
| No children | 2 (1.67) | 2 (1.67) | 0 (0.00) | 0 (0.00) | 0 (0.00) | 4 (3.33) |
| Children in high school or lower grades | 8 (6.67) | 1 (0.83) | 1 (0.83) | 3 (2.5) | 1 (0.83) | 14 (11.67) |
| Children not at home | 8 (8.67) | 1 (0.83) | 1 (0.83) | 3 (2.5) | 1 (0.83) | 14 (11.67) |
| Total | 72 (60.00) | 13 (10.83) | 15 (12.50) | 12 (10.00) | 8 (6.67) | 120 (100.00) |
| **Non-farm work** | | | | | | |
| No off-farm | 19 (20.65) | 6 (6.52) | 8 (8.70 | 4 (4.35) | 3 (3.26) | 40 (43.48) |
| Part time | 11 (11.96) | 2 (2.17) | 1 (1.09) | 0 (0.00) | 1 (1.09) | 15 (16.3) |
| Seasonal | 2 (2.17) | 1 (1.09) | 0 (0.00) | 1 (1.09) | 0 (0.00) | 4 (4.35) |
| Full time | 25 (27.17) | 1 (1.09) | 4 (4.35) | 2 (2.17) | 1 (1.09) | 33 (35.87) |
| Total | 57 (61.96) | 10 (10.87) | 13 (14.13) | 7 (7.61) | 5 (5.44) | 92 (100.00) |
| **Farm classification**[1] | | | | | | |
| Small retirement farm | 20 (21.50) | 1 (1.08) | 4 (4.3) | 0 (0.00) | 0 (0.00) | 25 (26.88) |
| Small residential farm | 25 (26.88) | 2 (2.15) | 2 (2.15) | 0 (0.00) | 0 (0.00) | 29 (31.18) |
| Small farm, farming vocation | 10 (10.75) | 6 (6.45) | 5 (5.38) | 6 (6.45) | 0 (0.00) | 27 (29.03) |
| Large family farm | 0 (0.00) | 1 (1.08) | 2 (2.15) | 1 (1.08) | 6 (6.45) | 10 (10.76) |
| Non–family farm | 2 (2.15) | 0 (0.00) | 0 (0.00) | 0 (0.00) | 0 (0.00) | 2 (2.15) |
| Total | 57 (61.29) | 10 (10.75) | 13 (13.98) | 7 (7.53) | 6 (6.46) | 93 (100.00) |

[1]Farm classifications from USDA publications. (http://www.ers.usda.gov/Publications/EIB66/EIB66.pdf)

**APPENDIX 2. FARMERS WHO REPORTED PRODUCT DIFFERENTIATION TERMS AND CERTIFICATIONS BY KIND OF CROP FARM, FROM LOUISIANA SPECIALTY CROP FARMER SURVEY, 2011**

| Variable | Kind of Crop Farm[1] | | | |
|---|---|---|---|---|
| | Vegetable | Fruit | Nut | Total |
| | Number (Percentage) | | | |
| **Terms important to customers** | | | | |
| Locally grown | 45 (47.37) | 19 (20.00) | 12 (12.63) | 76 (80.00) |
| Organically produced | 4 (4.22) | 2 (2.11) | 1 (1.05) | 7 (7.38) |
| Pesticide free | 4 (4.21) | 5 (5.26) | 2 (2.11) | 11 (11.58) |
| Value added | 0 (0.00) | 1 (1.05) | 0 (0.00) | 1 (1.05) |
| Total | 53 (55.79) | 27 (28.42) | 15 (15.79) | 95 (100.00) |
| **Terms important to producers** | | | | |
| Locally grown | 53 (36.55) | 24 (16.55) | 15 (10.34) | 92 (63.45) |
| Organically produced | 10 (6.90) | 6 (4.14) | 2 (1.38) | 18 (12.41) |
| Pesticide free | 11 (7.59) | 10 (6.90) | 3 (2.07) | 24 (16.55) |
| Value added | 7 (4.83) | 2 (1.38) | 2 (1.38) | 11 (7.59) |
| Total | 81 (55.86) | 42 (28.97) | 22 (15.17) | 145 (100.00) |
| **Farmer certifications** | | | | |
| Organic | 2 (2.74) | 0 (0.00) | 1 (1.37) | 3 (4.11) |
| Louisiana certified | 13 (17.8) | 5 (6.85) | 8 (10.96) | 26 (35.62) |
| Good agricultural practices | 4 (5.48) | 3 (4.11) | 0 (0.00) | 7 (9.59) |
| Producer verified | 6 (8.22) | 2 (2.74) | 3 (4.11) | 11 (15.07) |
| Pesticide free | 3 (4.11) | 1 (1.37) | 3 (4.11) | 7 (9.59) |
| Sustainable practices | 8 (10.96) | 2 (2.74) | 3 (4.11) | 13 (17.80) |
| Genetically modified organism free | 2 (2.74) | 0 (0.00) | 0 (0.00) | 2 (2.74) |
| Greenhouse produced | 3 (4.11) | 0 (0.00) | 1 (1.37) | 4 (5.48) |
| Total | 41 (56.16) | 13 (17.81) | 19 (26.03) | 73 (100.00) |

[1] Respondents reported 45 individual crops which were classified as vegetable, fruit or nut.

**APPENDIX 3. DIFFERENT MARKETING CHANNELS BY EFFECTIVENESS, FROM LOUISIANA SPECIALTY CROP FARMER SURVEY, 2011**

| Variable[1] | Effectiveness | | | | | |
|---|---|---|---|---|---|---|
| | Ineffective | Somewhat Ineffective | Neutral | Somewhat Effective | Very Effective | Total |
| | Number (Percentage) | | | | | |
| **On farm market** | | | | | | |
| Don't use | 4 | 1 | 1 | 4 | 0 | 10 |
| | (6.15) | ( 1.54) | (1.54) | (6.15) | (0.00) | (15.38) |
| Use | 0 | 2 | 7 | 17 | 29 | 55 |
| | (0.00) | (3.08) | (10.77) | (26.15) | (44.62) | (84.62) |
| Total | 4 | 3 | 8 | 21 | 29 | 65 |
| | (6.15) | (4.62) | (12.31) | (32.31) | (44.62) | (100.00) |
| **Peddler** | | | | | | |
| Don't use | 8 | 5 | 11 | 5 | 1 | 30 |
| | (18.60) | (11 .63) | (25.58) | (11.63) | (2.33) | (69.77) |
| Use | 1 | 1 | 4 | 4 | 3 | 13 |
| | (2.33) | (2.33) | (9.30) | (9.30) | (6.98) | (30.23) |
| Total | 9 | 6 | 15 | 9 | 4 | 43 |
| | (20.93) | (13.95) | (34.88) | (20.93) | (9.30) | (100.00) |
| **Public farmers' market** | | | | | | |
| Don't use | 5 | 1 | 9 | 1 | 3 | 19 |
| | (7.94) | (1.59) | (14.29) | (1.59) | (4.76) | (30.16) |
| Use | 1 | 1 | 3 | 14 | 25 | 44 |
| | (1.59) | (1.59) | (4.76) | (22.22) | (39.68) | (69.84) |
| Total | 6 | 2 | 12 | 15 | 28 | 63 |
| | (9.52) | (3.17) | (19.05) | (23.81) | (44.44) | (100.00) |
| **CSA[2]** | | | | | | |
| Don't use | 8 | 3 | 9 | 5 | 3 | 28 |
| | (25.81) | (9.68) | (29.03) | (16.03) | (9.68) | (90.32) |
| Use | 0 | 0 | 0 | 0 | 2 | 3 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (6.45) | (9.68) |
| Total | 8 | 3 | 9 | 9 | 5 | 31 |
| | (25.81) | (9.68) | (29.03) | (29.03) | (16.13) | (100.00) |
| **Restaurants** | | | | | | |
| Don't use | 8 | 3 | 9 | 4 | 2 | 26 |
| | (20.51) | (7.69) | (23.08) | (10.26) | (5.13) | (66.67) |
| Use | 1 | 1 | 0 | 4 | 7 | 13 |
| | (2.56) | (2.56) | (0.00) | (10.26) | (17.95) | (33.33) |
| Total | 9 | 4 | 9 | 8 | 9 | 39 |
| | (23.08) | (10.26) | (23.08) | (20.51) | (23.08) | (100.00) |

**APPENDIX 3 (continued)**

| Variable | Effectiveness | | | | | |
|---|---|---|---|---|---|---|
| | Ineffective | Somewhat Effective | Neutral | Somewhat Effective | Very Effective | Total |
| | Number (Percentage) | | | | | |
| **Internet** | | | | | | |
| Don't use | 13 (31.71) | 6 (14.63) | 6 (14.63) | 5 (12.20) | 5 (12.20) | 35 (85.37) |
| Use | 0 (0.00) | 1 (2.44) | 0 (0.00) | 4 (9.76) | 1 (2.44) | 6 (14.63) |
| Total | 13 (31.71) | 7 (17.07) | 6 (14.63) | 9 (21.95) | 6 (14.63) | 41 (100.00) |
| **Local grocery stores** | | | | | | |
| Don't use | 6 (13.04) | 4 (8.7) | 5 (10.87) | 7 (15.22) | 3 (6.52) | 25 (54.35) |
| Use | 3 (6.52) | 2 (4.35) | 2 (4.35) | 7 (15.22) | 7 (15.22) | 21 (45.65) |
| Total | 9 (19.57) | 6 (13.04) | 7 (15.22) | 14 (30.43) | 10 (21.43) | 46 (100.00) |
| **Wholesale/distributer** | | | | | | |
| Don't use | 8 (20.00) | 1 (2.50) | 6 (15.00) | 3 (7.50) | 2 (5.00) | 20 (50.00) |
| Use | 0 (0.00) | 0 (0.00) | 4 (10.00) | 7 (17.50) | 9 (22.50) | 20 (50.00) |
| Total | 8 (20.00) | 1 (2.50) | 10 (25.00) | 10 (25.00) | 11 (27.50) | 40 (100.00) |
| **Processors** | | | | | | |
| Don't use | 0 (0.00) | 11 (31.43) | 8 (22.86) | 5 (14.29) | 6 (17.14) | 30 (85.71) |
| Use | 1 (2.86) | 0 (0.00) | 1 (2.86) | 1 (2.86) | 2 (5.71) | 5 (14.29) |
| Total | 1 (2.86) | 11 (31.43) | 9 (25.71) | 6 (17.14) | 8 (22.86) | 35 (100.00) |

1. Variables (marketing channels) were identified as dummy variables. [1] Respondents reported effectiveness as a 5 point Likert scale (1=ineffective, 2=somewhat ineffective, 3=neutral, 4=somewhat effective and 5=very effective). 'Do not use' was 1 or 2; 'use' was 3, 4 or 5. [2]Community Supported Agriculture

**APPENDIX 4.NUMBER AND PERCENTAGE OF FARMERS WHO REPORTED INTERNET USE AND QUALITY OF INTERNET SERVICE, BY CONSOLIDATED MARKETING CHANNEL, FROM LOUISIANA SPECIALTY CROP FARMER SURVEY 2011**

| Variable | Consolidated Marketing Channels | | | |
|---|---|---|---|---|
| | Direct to Consumer | Local Intermediated | Wholesale/ Processor | Total |
| | Number (Percentage) | | | |
| **Internet use on farm** | | | | |
| Use | 41 (41.84) | 10 (10.20) | 11 (11.22) | 62 (63.27) |
| Do not use | 28 (28.57) | 1 (1.02) | 7 (7.14) | 36 (36.73) |
| Total | 69 (70.41) | 11 (11.22) | 18 (18.37) | 98 (100.00) |
| **Quality of internet service**[1] | | | | |
| **Dial-up** | | | | |
| Low[2] | 22 (40.00) | 4 (7.27) | 5 (9.09) | 31 (56.36) |
| High | 4 (7.27) | 2 (3.64) | 0 (0.00) | 6 (10.91) |
| Don't know/not available | 10 (18.18) | 4 (7.27) | 4 (7.27) | 18 (32.73) |
| Total | 36 (65.45) | 10 (18.18) | 9 (16.36) | 55 (100.00) |
| **Dial up with accelerator** | | | | |
| Low | 10 (18.87) | 3 (5.66) | 4 (7.55) | 17 (32.08) |
| High | 4 (7.55) | 0 (0.00) | 0 (0.00) | 4 (7.55) |
| Don't know/not available | 20 (37.74) | 6 (11.32) | 6 (11.32) | 32 (60.38) |
| Total | 34 (64.15) | 9 (16.98) | 10 (18.87) | 53 (100.00) |
| **Cable** | | | | |
| Low | 2 (3.57) | 1 (1.79) | 1 (1.79) | 4 (7.14) |
| High | 13 (23.21) | 3 (5.36) | 2 (3.57) | 18 (32.14) |
| Don't know/not available | 22 (39.29) | 5 (8.93) | 7 (12.50) | 34 (60.71) |
| Total | 37 (66.07) | 9 (16.07) | 10 (17.86) | 56 (100.00) |
| **DSL** | | | | |
| Low | 2 (3.45) | 0 (0.00) | 0 (0.00) | 2 (3.45) |
| High | 18 (31.03) | 4 (6.90) | 4 (6.90) | 26 (44.83) |
| Don't know/not available | 19 (32.76) | 6 (10.34) | 5 (8.62) | 30 (51.72) |
| Total | 39 (67.24) | 10 (17.24) | 9 (15.52) | 58 (100.00) |

**APPENDIX 4 (continued)**

| Variable | Consolidated Marketing Channels | | | |
|---|---|---|---|---|
| | Direct to consumer | Local Intermediated | Wholesale/ Processor | Total |
| | Number (Percentage) | | | |
| **Satellite** | | | | |
| Low | 5 (8.93) | 1 (1.79) | 1 (1.79) | 7 (12.50) |
| High | 18 (32.14) | 2 (3.57) | 3 (5.36) | 23 (41.07) |
| Don't know/not available | 13 (23.21) | 8 (14.29) | 5 (8.93) | 26 (46.43) |
| Total | 36 (64.29) | 11 (19.64) | 9 (16.07) | 56 (100.00) |

[1]Kind of internet services were adopted from a survey questionnaire developed by Lory Dickes and Dave Lamie, (Clemson University), and modified as needed for Louisiana.

[2]Respondents used a 5 point Likert scale (1=poor, 2=fair, 3=good, 4=very good and 5=excellent). 'Low quality service' was 1 or 2; 'high quality' was 3, 4 or 5.

**APPENDIX 5. NUMBER AND PERCENTAGE OF FARMERS WHO RATED KINDS OF INTERNET USE IN THE FARM OPERATION BY CONSOLIDATED MARKETING CHANNELS, FROM LOUISIANA SPECIALTY CROP FARMER SURVEY**

| Variable | Consolidated Marketing Channels | | | |
|---|---|---|---|---|
| | Direct to Consumer | Local Intermediated | Wholesale/ Processor | Total |
| | Number (Percentage) | | | |
| Buying inputs | | | | |
| Do not use often[1] | 35 | 10 | 6 | 51 |
| | (53.03) | (15.15) | (9.09) | (77.27) |
| Use often | 8 | 2 | 5 | 15 |
| | (12.12) | (3.03) | (7.58) | (22.73) |
| Total | 43 | 12 | 11 | 66 |
| | (65.15) | (18.18) | (16.67) | (100.00) |
| Communication | | | | |
| Do not use often | 9 | 3 | 3 | 15 |
| | (13.64) | (4.55) | (4.55) | (22.73) |
| Use often | 34 | 9 | 8 | 51 |
| | (51.52) | (13.64) | (12.12) | (77.27) |
| Total | 43 | 12 | 11 | 66 |
| | (65.15) | (18.18) | (16.67) | (100.00) |
| Collect information | | | | |
| Do not use often | 10 | 4 | 1 | 15 |
| | (14.93) | (5.97) | (1.49) | (22.39) |
| Use often | 34 | 8 | 10 | 52 |
| | (50.75) | (11.94) | (14.93) | (77.61) |
| Total | 44 | 12 | 11 | 67 |
| | (65.67) | (17.91) | (16.42) | (100.00) |
| Online banking | | | | |
| Do not use often | 24 | 7 | 3 | 34 |
| | (36.36) | (10.61) | (4.55) | (51.52) |
| Use often | 19 | 5 | 8 | 32 |
| | (28.79) | (7.58) | (12.12) | (48.48) |
| Total | 43 | 12 | 11 | 66 |
| | (65.15) | (18.18) | (16.67) | (100.00) |
| Paying bills | | | | |
| Do not use often | 26 | 9 | 4 | 39 |
| | (40.00) | (13.85) | (6.15) | (60.00) |
| Use often | 16 | 3 | 7 | 26 |
| | (24.62) | (4.62) | (10.77) | (40.00) |
| Total | 42 | 12 | 11 | 65 |
| | (64.62) | (18.46) | (16.92) | (100.00) |
| Record keeping | | | | |
| Do not use often | 22 | 7 | 4 | 33 |
| | (34.38) | (10.94) | (6.25) | (51.56) |
| Use often | 20 | 4 | 7 | 31 |
| | (31.25) | (6.25) | (10.94) | (48.44) |
| Total | 42 | 11 | 11 | 64 |
| | (65.63) | (17.19) | (17.19) | (100.00) |

**APPENDIX 5 (continued)**

| Variable | Consolidated Marketing Channels | | | |
|---|---|---|---|---|
| | Direct to Consumer | Local Intermediated | Wholesale/ Processor | Total |
| | Number (Percentage) | | | |
| Selling farm products | | | | |
| Do not use often | 31 (46.97) | 8 (12.12) | 6 (9.09) | 45 (68.18) |
| Use often | 13 (19.70) | 4 (6.06) | 4 (6.06) | 21 (31.82) |
| Total | 44 (66.67) | 12 (18.18) | 10 (15.15) | 66 (100.00) |

[1.] Respondents used a 5 point Likert scale (1=do not use, 2=use monthly, 3=use weekly, 4=use daily and 5=use more than once daily). 'Do not use often' was 1or 2; 'use often' was 3, 4 or 5.

**APPENDIX 6. NUMBER AND PERCENTAGE OF FARMERS WHO RATED SELECTED INTERNET BARRIERS, BY CONSOLIDATED MARKETING CHANNELS, FROM LOUISIANA SPECIALTY CROP FARMER SURVEY 2011**

| Variable | Consolidated Marketing Channels | | | |
|---|---|---|---|---|
| | Direct to Consumer | Local Intermediated | Wholesale/ Processor | Total |
| | Number (Percentage) | | | |
| Inadequate service in area | | | | |
| Not a barrier[1] | 29 (46.77) | 8 (12.90) | 7 (11.29) | 44 (70.97) |
| A barrier | 14 (22.58) | 3 (4.84) | 1 (1.61) | 18 (29.03) |
| Total | 43 (69.35) | 11 (17.74) | 8 (12.90) | 62 (100.00) |
| Internet security | | | | |
| Not a barrier | 36 (56.25) | 7 (10.94) | 7 (10.94) | 50 (78.13) |
| A barrier | 7 (10.94) | 4 (6.25) | 3 (4.69) | 14 (21.88) |
| Total | 43 (67.19) | 11 (17.19) | 10 (15.63) | 64 (100.00) |
| High cost of service | | | | |
| Not a barrier | 27 (43.55) | 7 (11.29) | 8 (12.90) | 42 (67.74) |
| A barrier | 15 (24.19) | 4 (6.45) | 1 (1.61) | 20 (32.26) |
| Total | 42 (67.74) | 11 (17.74) | 9 (14.52) | 62 (100.00) |
| Speed of service | | | | |
| Not a barrier | 26 (40.63) | 8 (12.50) | 7 (10.94) | 41 (64.06) |
| A barrier | 18 (28.13) | 3 (4.69) | 2 (3.13) | 23 (35.94) |
| Total | 44 (68.75) | 11 (17.19) | 9 (14.06) | 64 (100.00) |

**APPENDIX 6 (continued)**

| Variable | Consolidated Marketing Channels | | | |
|---|---|---|---|---|
| | Direct to Consumer | Local Intermediated | Wholesale/ Processor | Total |
| | Number (Percentage) | | | |
| Don't have a computer | | | | |
| Not a barrier | 24 | 5 | 3 | 32 |
| | (63.16) | (13.16) | (7.89) | (84.21) |
| A barrier | 2 | 3 | 1 | 6 |
| | (5.26) | (7.89) | (2.63) | (15.79) |
| Total | 26 | 8 | 4 | 38 |
| | (68.42) | (21.05) | (10.53) | (100.00) |
| Lack of computer /Knowledge | | | | |
| Not a barrier | 29 | 4 | 5 | 38 |
| | (69.05) | (9.52) | (11.90) | (90.48) |
| A barrier | 4 | 0 | 0 | 4 |
| | (9.52) | (0.00) | (0.00) | (9.52) |
| Total | 33 | 4 | 5 | 42 |
| | (78.57) | (9.52) | (11.90) | (100.00) |
| Other | | | | |
| Not a barrier | 8 | 6 | 0 | 14 |
| | (44.44) | (33.33) | (0.00) | (77.78) |
| A barrier | 3 | 0 | 1 | 4 |
| | (16.67) | (0.00) | (5.56) | (22.22) |
| Total | 11 | 6 | 1 | 18 |
| | (61.11) | (33.33) | (5.56) | (100.00) |

[1.] Respondents reported barriers as a 5 point Likert scale (1=not a barrier, 2=a minor barrier, 3 =neutral, 4=an important barrier and 5=very effective). 'Not a barrier' was 1 or 2; 'a barrier' was 3, 4 or 5.

**APPENDIX 7. NUMBER AND PERCENTAGE OF FARMERS BY KIND AND FREQUENCY OF USE OF SOCIAL MEDIA ON FARM OPERATIONS, BY CONSOLIDATED MARKETING CHANNELS, FROM LOUISIANA SPECIALTY CROP FARMER SURVEY 2011**

| Variable | Consolidated Marketing Channels | | | |
|---|---|---|---|---|
| | Direct to Consumer | Local Intermediated | Wholesale/ Processor | Total |
| | Number (Percentage) | | | |
| **Social media usage** | | | | |
| Use | 28 (27.72) | 3 (2.97) | 2 (1.98) | 33 (32.67) |
| Do not use | 43 (42.57) | 9 (8.91) | 16 (15.84) | 68 (67.33) |
| Total | 71 (70.30) | 12 (11.88) | 18 (17.82) | 101 (100.00) |
| **Social media usage functions** | | | | |
| **Social communication** | | | | |
| Useful[1] | 23 (65.71) | 3 (8.57) | 2 (5.71) | 28 (80.00) |
| Not useful | 6 (17.14) | 1 (2.86) | 0 (0.00) | 7 (20.00) |
| Total | 29 (82.86) | 4 (11.43) | 2 (5.71) | 35 (100.00) |
| **Promote business & products** | | | | |
| Useful | 22 (64.71) | 3 (8.82) | 1 (2.94) | 26 (76.47) |
| Not useful | 7 (20.59) | 0 (0.00) | 1 (2.94) | 8 (23.53) |
| Total | 29 (85.29) | 3 (8.82) | 2 (5.88) | 34 (100.00) |
| **Improve business practices** | | | | |
| Useful | 15 (44.12) | 3 (8.82) | 2 (5.88) | 20 (58.82) |
| Not useful | 14 (41.18) | 0 (0.00) | 0 (0.00) | 14 (41.18) |
| Total | 29 (85.29) | 3 (8.82) | 2 (5.88) | 34 (100.00) |
| **Entertainment** | | | | |
| Useful | 15 (42.86) | 3 (8.57) | 2 (5.71) | 20 (57.14) |
| Not useful | 14 (40.00) | 1 (2.86) | 0 (0.00) | 15 (42.86) |
| Total | 29 (82.86) | 4 (11.43) | 2 (5.71) | 35 (100.00) |

1. Respondents reported 'usefulness' in 5 point Likert scale as 1=not useful at all and 2=sometimes useful 3=average, 4=often useful, 5=very useful. 'Not useful' was 1 or 2; 'useful' was 3, 4 or 5.

**APPENDIX 8. NUMBER AND PERCENTAGE OF FARMERS BY USE OF SMART PHONES ON THE FARM OPERATIONS AND THEIR FREQUENCY OF USAGE, BY CONSOLIDATED MARKETING CHANNELS, FROM LOUISIANA SPECIALTY CROP FARMER SURVEY 2011**

| Variable | Consolidated Marketing Channels | | | |
|---|---|---|---|---|
| | Direct to Consumer | Local Intermediated | Wholesale/ Processor | Total |
| | Number (Percentage) | | | |
| **Smart Phone usage** | | | | |
| Use | 20 (19.80) | 3 (2.97) | 9 (8.91) | 32 (31.68) |
| Do not use | 51 (50.50) | 9 (8.91) | 9 (8.91) | 69 (68.32) |
| Total | 71 (70.30) | 12 (11.98) | 18 (17.82) | 101 (100.00) |
| **Smart phone functions** | | | | |
| **Facebook** | | | | |
| Use often[1.] | 22 (62.86) | 3 (8.57) | 1 (2.86) | 26 (74.29) |
| Do not use often | 7 (20.00) | 1 (2.86) | 1 (2.86) | 9 (25.71) |
| Total | 29 (82.86) | 4 (11.43) | 2 (5.71) | 35 (100.00) |
| **Twitter** | | | | |
| Use often | 4 (12.90) | 1 (3.23) | 0 (0.00) | 5 (16.13) |
| Do not use often | 22 (70.97) | 2 (6.45) | 2 (6.45) | 26 (83.87) |
| Total | 26 (83.87) | 3 (9.68) | 2 (6.45) | 31 (100.00) |
| **Blogs** | | | | |
| Use often | 2 (6.67) | 0 (0.00) | 0 (0.00) | 2 (6.67) |
| Do not use often | 23 (76.67) | 3 (10.00) | 2 (6.67) | 28 (93.33) |
| Total | 25 (83.33) | 3 (10.00) | 2 (6.67) | 30 (100.00) |
| **YouTube** | | | | |
| Use often | 2 (6.25) | 1 (3.13) | 0 (0.00) | 3 (9.38) |
| Do not use often | 25 (78.13) | 2 (6.25) | 2 (6.25) | 29 (90.63) |
| Total | 27 (84.38) | 3 (9.38) | 2 (6.25) | 32 (100.00) |

**APPENDIX 8 (continued)**

| Variable | Consolidated Marketing Channels | | | |
|---|---|---|---|---|
| | Direct to Consumer | Local Intermediated | Wholesale/ Processor | Total |
| | Number (Percentage) | | | |
| **Flicker** | | | | |
| Use often | 1 (3.33) | 0 (0.00) | 0 (0.00) | 1 (3.33) |
| Do not use often | 24 (80.00) | 3 (10.00) | 2 (6.67) | 29 (96.67) |
| Total | 25 (83.33) | 3 (10.00) | 2 (6.67) | 30 (100.00) |

[1.] Respondents used a 5 point Likert scale (1=do not use, 2=use monthly, 3=use weekly, 4=use daily and 5=use more than once daily). 'Do not use often' was 1or 2; 'use often' was 3, 4 or 5.

**APPENDIX 9. NUMBER AND PERCENTAGE OF FARMERS WHO REPORTED USE OF MARKETMAKER WEBSITE FUNCTIONS, BY EFFECTIVENESS, FROM LOUISIANA SPECIALTY CROP FARMER SURVEY 2011**

| Variable[1] | Effectiveness[2] | | | | | |
|---|---|---|---|---|---|---|
| | Ineffective | Somewhat Ineffective | Neutral | Somewhat Effective | Very Effective | Total |
| **Marketing products** | | | | | | |
| Don't use | 4 | 0 | 1 | 0 | 1 | 6 |
| | (15.38) | (0.00) | (3.85) | (0.00) | (3.85) | (23.08) |
| Use | 7 | 4 | 6 | 2 | 1 | 20 |
| | (26.92) | (15.38) | (23.08) | (7.69) | (3.85) | (76.92) |
| Total | 11 | 4 | 7 | 2 | 2 | 26 |
| | (42.31) | (15.38) | (26.92) | (7.69) | (7.69) | (100.00) |
| **Finding products** | | | | | | |
| Don't use | 3 | 0 | 1 | 0 | 1 | 5 |
| | (14.29) | (0.00) | (4.76) | (0.00) | (4.76) | (23.81) |
| Use | 5 | 3 | 5 | 2 | 1 | 16 |
| | (23.81) | (14.29) | (23.81) | (9.52) | (4.76) | (76.19) |
| Total | 8 | 3 | 6 | 2 | 2 | 21 |
| | (38.10) | (14.29) | (28.57) | (9.52) | (9.52) | (100.00) |
| **Finding customers** | | | | | | |
| Don't use | 3 | 0 | 1 | 0 | 1 | 5 |
| | (12.50) | (0.00) | (4.17) | (0.00) | (4.17) | (20.83) |
| Use | 10 | 4 | 3 | 2 | 0 | 19 |
| | (41.67) | (16.67) | (12.50) | (8.33) | (0.00) | (79.17) |
| Total | 13 | 4 | 4 | 2 | 1 | 24 |
| | (54.17) | (16.67) | (16.67) | (8.33) | (4.17) | (100.00) |
| **Differentiating products** | | | | | | |
| Don't use | 3 | 0 | 1 | 0 | 1 | 5 |
| | (12.00) | (0.00) | (4.00) | (0.00) | (4.00) | (20.00) |
| Use | 9 | 2 | 6 | 3 | 0 | 20 |
| | (36.00) | (8.00) | (24.00) | (12.00) | (0.00) | (80.00) |
| Total | 12 | 2 | 7 | 3 | 1 | 25 |
| | (48.00) | (8.00) | (28.00) | (12.00) | (4.00) | (100.00) |
| **Using buy/sell notices** | | | | | | |
| Don't use | 3 | 0 | 1 | 0 | 1 | 5 |
| | (15.00) | (0.00) | (5.00) | (0.00) | (5.00) | (25.00) |
| Use | 7 | 2 | 4 | 1 | 1 | 15 |
| | (35.00) | (10.00) | (20.00) | (5.00) | (5.00) | (75.00) |
| Total | 10 | 2 | 5 | 1 | 2 | 20 |
| | (50.00) | (10.00) | (25.00) | (5.00) | (10.00) | (100.00) |
| **Improve farm income** | | | | | | |
| Don't use | 3 | 0 | 1 | 0 | 1 | 5 |
| | (11.54) | (0.00) | (3.85) | (0.00) | (3.85) | (19.23) |
| Use | 8 | 6 | 4 | 2 | 1 | 21 |
| | (30.77) | (23.08) | (15.38) | (7.69) | (3.85) | (80.77) |
| Total | 11 | 6 | 5 | 2 | 2 | 26 |
| | (42.31) | (23.08) | (19.23) | (7.69) | (7.69) | (100.00) |

**APPENDIX 9 (continued)**

| Variable | Effectiveness | | | | | |
|---|---|---|---|---|---|---|
| | Ineffective | Somewhat Effective | Neutral | Somewhat Effective | Very Effective | Total |
| **Overall, MM[3] is** | | | | | | |
| Don't use | 3 | 0 | 1 | 0 | 2 | 6 |
| | (10.00) | (0.00) | (3.33) | (0.00) | (6.67) | (20.00) |
| Use | 6 | 6 | 6 | 3 | 3 | 24 |
| | (20.00) | (20.00) | (20.00) | (10.00) | (10.00) | (80.00) |
| Total | 9 | 6 | 7 | 3 | 5 | 30 |
| | (30.00) | (20.00) | (23.33) | (10.00) | (16.67) | (100.00) |

[1]Variables were identified from Ohio Marketmaker survey report prepared by Julie M. Fox, The Ohio State University, October 2009.[2] Effectiveness functions of MarketMaker website were identified as a 'dummy variable'. Respondents reported effectiveness in a 5 point Likert scale (1=ineffective, 2=somewhat ineffective, 3=neutral, 4=somewhat effective and 5=very effective). 'Do not use' was 1 or 2; 'use' was 3, 4 or 5. [3] MarketMaker website.

**APPENDIX 10. NUMBER AND PERCENTAGE OF FARMERS WHO REPORTED KIND OF USAGE BY RATING OF EFFECTIVENESS OF ALL ABOUT BLUEBERRIES WEBSITE FUNCTIONS, FROM LOUISIANA SPECIALTY CROP FARMER SURVEY 2011**

| Variable[1] | Effectiveness | | | | | |
|---|---|---|---|---|---|---|
| | Ineffective | Somewhat Ineffective | Neutral | Somewhat Effective | Very Effective | Total |
| | Number (Percentage) | | | | | |
| Discussion sessions | | | | | | |
| Don't use | 1 (12.50) | 0 (0.00) | 2 (25.00) | 0 (0.000 | 0 (0.00) | 3 (37.50) |
| Use | 0 (0.00) | 0 (0.00) | 2 (25.00) | 3 (37.50) | 0 (0.00) | 5 (62.50) |
| Total | 1 (12.50) | 0 (0.00) | 4 (50.00) | 3 (37.50) | 0 (0.00) | 8 (100.00) |
| Improve farm income | | | | | | |
| Don't use | 1 (16.67) | 0 (0.00) | 2 (33.33) | 0 (0.00) | 0 (0.00) | 3 (50.00) |
| Use | 0 (0.00) | 1 (16.67) | 2 (33.33) | 0 (0.00) | 0 (0.00) | 3 (50.00) |
| Total | 1 (16.67) | 1 (16.67) | 4 (66.67) | 0 (0.00) | 0 (0.00) | 6 (100.00) |
| Get expert assistance | | | | | | |
| Don't use | 1 (16.67) | 0 (0.00) | 2 (33.33) | 0 (0.00) | 0 (0.00) | 3 (50.00) |
| Use | 0 (0.00) | 0 (0.00) | 2 (33.33) | 1 (16.67) | 0 (0.00) | 3 (50.00) |
| Total | 1 (16.67) | 0 (0.00) | 4 (66.67) | 1 (16.67) | 0 (0.00) | 6 (100.00) |
| Improve knowledge | | | | | | |
| Don't use | 1 (14.29) | 0 (0.00) | 2 (28.57) | 0 (0.00) | 0 (0.00) | 3 (42.86) |
| Use | 0 (0.00) | 0 (0.00) | 1 (14.29) | 3 (42.86) | 0 (0.00) | 4 (57.14) |
| Total | 1 (14.29) | 0 (0.00) | 3 (42.86) | 3 (42.86) | 0 (0.00) | 7 (100.00) |
| Overall, 'ABB' is | | | | | | |
| Don't use | 1 (12.50) | 0 (0.00) | 2 (25.00) | 01 (0.00) | 0 (0.00) | 3 (37.50) |
| Use | 0 (0.00) | 0 (0.00) | 2 (25.00) | 2 (25.00) | 1 (12.50) | 5 (62.50) |
| Total | 1 (12.50) | 0 (0.00) | 4 (50.00) | 2 (25.00) | 1 (12.50) | 8 (100.00) |

[1]Familiarity functions of All About Blueberries website were identified as 'dummy variables'. Respondents reported effectiveness as a 5 point Likert scale (1=ineffective, 2=somewhat ineffective, 3=neutral, 4=somewhat effective and 5=very effective). 'Do not use' was 1 or 2; 'use' was 3, 4 or 5.

**APPENDIX 11: VARIABLE DESCRIPTION IN THE MODEL USED IN FAMILIARITY WITH MARKETMAKER AND FAMILIARITY WITH ALL ABOUT BLUEBERRIES WEBSITES**

| Variable | Type | Description |
|---|---|---|
| VegCrpNu | Continuous | Number of Specialty Crop grown-vegetables |
| FruCroNo | Continuous | Number of Specialty Crop grown--fruit |
| NutCrpNo | Continuous | Number of Specialty Crop grown-nut |
| VegCrpSS | Continuous | Share of sales of all Specialty Crop-vegetable |
| FruCrpSS | Continuous | Share of sales of all Specialty Crop-fruit |
| NutCrpSS | Continuous | Share of sales of all Specialty Crop-nut |
| OthCrpSS | Continuous | Share of sales of all Specialty Crop-other |
| VegCrpLSS | Continuous | Specialty Crop kind of farm by vegetable, defined as category of crops with largest share of sales |
| FruCrpLSS | Continuous | Specialty Crop kind of farm by fruit, defined as category of crops with largest share of sales |
| NutCrpLSS | Continuous | Specialty Crop kind of farm by nut, defined as category of crops with largest share of sales |
| EffOfOFSC | Categorical | Effectiveness of 'on farm sales' and 'farmers market sales' , 5 point Likert scale |
| EffOfOFSD | Dummy | Effectiveness of 'on farm sales' and 'farmers market sales' , 5 point Likert scale |
| EffOfFMS | Categorical | Effectiveness of 'on farm sales' and 'farmers market sales' , 5 point Likert scale |
| ffOfFMD | Dummy | |
| CustPreftag | Categorical | How does producer describe product , what is customer looking for, dummy 1 to 3 = 0, 4,5 = 1 |
| ProdPrefTag | Categorical | How does producer describe what type of product is important for the producer, dummy 1 to 3 = 0, 4,5 = 1 |
| SSOnFarm | Continuous | Share of sales to each kind of market |
| SSOnFarm | Continuous | Share of sales to each kind of market |
| SSPeddler | Continuous | Share of sales on peddlers |
| SSPubFM | Continuous | Share of sales on public farmers market |
| SSCSA | Continuous | Share of sales on Community Supported Agriculture |
| SSRest | Continuous | Share of sales on restaurant, school |
| SSIntnet | Continuous | Share of sales on internet market |
| SSLocStore | Continuous | Share of sales on local grocery stores |
| SSWhSale | Continuous | Share of sales on whole sellers |
| SSProc | Continuous | Share of sales on processors |
| DTC | Continuous | share of sales to direct to consumer sales channels |
| LIS | Continuous | share of sales to local intermediated sales channels |
| WS | Continuous | Share of sales on wholesale/processor |
| KindDTC | Dummy | Dummy variable for direct to consumer sales channels |
| KindLIS | Dummy | Dummy variable for local intermediated sales channels |
| KINDWS | Dummy | Dummy variable for wholesale/processor |
| DTCLISWS | Categorical | What market have used from consolidated 3 marketing channels |
| EffOnFMC, EffPFMC | Categorical | Effectiveness of on-farm markets and public farmers markets |

**APPENDIX 11 (continued)**

| Variable | Type | Description |
|---|---|---|
| EffOnFMD<br>EffPFMD | Categorical | Effectiveness of on-farm markets and public farmers markets, 1 to 3 = 0; 4,5 = 1 |
| UseIntnet | Categorical | Do you use the internet for farm operation, 1=yes, 2=no |
| BuyInputIC<br>…OtherIC | Categorical | Frequency of use of each of these internet applications, 5 point Likert, continuous |
| BuyInputID<br>…OtherID | Dummy | Frequency of use of each of these internet applications, 5 point Likert, 1to 3 = 0; 4,5 = 1 |
| BLowServC<br>…BOtherC | Categorical | Barriers to use of internet, 5 point Likert, continuous |
| BLowServD<br>…BOtherD | Dummy | Barriers to use of internet, 5 point Likert, 1 to 3 = 0; 4,5 = 1 |
| SocialMedD | Dummy | Social media for farm business-dummy 1=yes, 0=no |
| SmPhoneD | Dummy | Smart phone for farm business- dummy 1=yes, 0=no |
| FMMC | Continuous | MarketMaker Familiarity , 1 and 2 = no familiarity to 5 = frequent application |
| FMMD | Dummy | MarketMaker Familiarity 0 = none, 1 = some to regular use, |
| FarmKind | Categorical | Choose from 5 kinds of farms |
| FarmDepN | Dummy | Choices 1 and 2 from Farm Kind were retirement and lifestyle farms not vocation, dummy 1, 2 =0 |
| Farmocc | Dummy | Choices 3, 4, 5 from Farm Kind were farm vocation and higher farm income, dummy 3, 4 , 5 =1 and 1 , 2=0 |
| FarmInc | Categorical | 6 categories |
| FarmIncD | Dummy | Farm Income, farm Income categories , farm Income $25,000 or less = 0 , farm Income over $25,000=1 |
| NFWAmt | Categorical | Nonfarm work activities |
| SCAcres | Continuous | Acres of specialty crop production |
| HHComp | Categorical | Married/single |
| ChatH | continuous | Children at home |
| ChGone | continuous | Children has gone |
| Age | Categorical | 6 ranges |
| Educ | Categorical | 8 categories |
| EducD | Dummy | 0 = lower 3 categories, 1 = 5 higher categories |
| VegCrpNu | Continuous | Number of Specialty Crop grown-vegetables |
| FruCroNo | Continuous | Number of Specialty Crop grown--fruit |
| NutCrpNo | Continuous | Number of Specialty Crop grown--nut |

**APPENDIX 12: SUMMARY STATISTICS FOR ALL THE VARIABLES IN THE MODEL USED IN FAMILIARITY WITH MARKETMAKER AND FAMILIARITY WITH ALL ABOUT BLUEBERRIES WEBSITES**

| Variable | N | Mean | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| FMMD | 48 | 0.3958333 | 0.494204 | 0 | 1 |
| VegCrpNu | 121 | 2.5454545 | 3.5986108 | 0 | 18 |
| FruCroNo | 121 | 0.6528926 | 0.9193362 | 0 | 4 |
| NutCrpNo | 121 | 0.1487603 | 0.3573317 | 0 | 1 |
| VegCrpSS | 121 | 35.0247934 | 43.303861 | 0 | 100 |
| FruCrpSS | 121 | 27.5867769 | 40.0941952 | 0 | 100 |
| NutCrpSS | 121 | 11.2727273 | 29.7755493 | 0 | 100 |
| OthCrpSS | 121 | 1.322314 | 9.3712458 | 0 | 100 |
| VegCrpLSS | 121 | 0.4297521 | 0.497099 | 0 | 1 |
| FruCrpLSS | 121 | 0.1983471 | 0.400413 | 0 | 1 |
| NutCrpLSS | 121 | 0.1404959 | 0.3489457 | 0 | 1 |
| FrNcpLSS | 120 | 0.3333333 | 0.4733811 | 0 | 1 |
| EffOfFSC | 65 | 4.0461538 | 1.1378539 | 1 | 5 |
| EffOfFSD | 65 | 0.7692308 | 0.4246039 | 0 | 1 |
| EffFMSC | 59 | 3.9322034 | 1.2298641 | 1 | 5 |
| EffFMSD | 59 | 0.6949153 | 0.4643957 | 0 | 1 |
| CustPrefTag | 93 | 1.7956989 | 1.729282 | 1 | 7 |
| ProdPrefTag | 85 | 1 | 0 | 1 | 1 |
| SSOnFarm | 63 | 51.952381 | 38.2459901 | 0 | 100 |
| SSPeddler | 18 | 25.2777778 | 30.9398003 | 0 | 100 |
| SSPubFM | 44 | 57.5681818 | 35.0112259 | 0 | 100 |
| SSCSA | 4 | 32.5 | 39.4757309 | 0 | 80 |
| SSRest | 13 | 25.3846154 | 31.4471474 | 2 | 100 |
| SSIntnet | 8 | 19.375 | 14.2521928 | 0 | 40 |
| SSLocStore | 20 | 32.75 | 27.742946 | 5 | 100 |
| SSWhSale | 20 | 61.45 | 35.3471133 | 0 | 100 |
| SSProc | 4 | 36.25 | 43.8510737 | 0 | 100 |
| SSOther | 4 | 50 | 37.4165739 | 10 | 100 |
| DTC | 91 | 67.043956 | 38.1910147 | 0 | 100 |
| LIS | 91 | 14.7252747 | 26.5961843 | 0 | 100 |
| WS | 91 | 16.2087912 | 32.2798584 | 0 | 100 |
| KindDTC | 90 | 0.7111111 | 0.4557854 | 0 | 1 |
| KindLIS | 90 | 0.1222222 | 0.3293773 | 0 | 1 |
| KINDWS | 90 | 0.1666667 | 0.3747658 | 0 | 1 |
| DiverseMkt | 90 | 2.0777778 | 1.153673 | 1 | 5 |
| EffOnFMC | 66 | 4.0606061 | 1.1351555 | 1 | 5 |
| EffPFMC | 58 | 3.9137931 | 1.2323773 | 1 | 5 |
| EffOnFMD | 66 | 0.7727273 | 0.4222815 | 0 | 1 |
| EffPFMD | 60 | 0.7166667 | 0.4903014 | 0 | 1 |
| UseIntnet | 117 | 1.3247863 | 0.4703091 | 1 | 2 |
| BuyInputIC | 79 | 2.0126582 | 0.9404537 | 1 | 5 |
| CommIC | 80 | 3.4875 | 1.3120064 | 1 | 5 |
| GetInfoIC | 82 | 3.2317073 | 1.1363661 | 1 | 5 |
| BankingIC | 80 | 2.375 | 1.3536168 | 1 | 5 |

**APPENDIX 12 (continued)**

| Variable | N | Mean | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| PayBillIC | 79 | 2.1012658 | 1.2046378 | 1 | 5 |
| RecordsIC | 78 | 2.4871795 | 1.3459279 | 1 | 5 |
| SellIC | 80 | 2.1 | 1.0625977 | 1 | 5 |
| OthIC | 53 | 1.7169811 | 1.3640629 | 0 | 5 |
| BuyInputID | 121 | 0.1404959 | 0.3489457 | 0 | 1 |
| CommID | 121 | 0.5123967 | 0.5019247 | 0 | 1 |
| GetInfoID | 121 | 0.5206612 | 0.5016502 | 0 | 1 |
| BankingID | 121 | 0.2975207 | 0.4590684 | 0 | 1 |
| PayBillID | 121 | 0.2479339 | 0.4336087 | 0 | 1 |
| RecordsID | 121 | 0.322314 | 0.4693058 | 0 | 1 |
| SellID | 120 | 0.225 | 0.4193332 | 0 | 1 |
| BLowServC | 68 | 2.1764706 | 1.6476231 | 1 | 5 |
| BSecureC | 74 | 2.3108108 | 1.393976 | 1 | 5 |
| BCostC | 73 | 2.6164384 | 1.4494265 | 1 | 5 |
| BSpeedC | 76 | 2.6184211 | 1.6730579 | 1 | 5 |
| BNoCompC | 40 | 1.225 | 0.9996794 | 1 | 6 |
| BCantUseC | 49 | 1.6530612 | 1.1465713 | 1 | 5 |
| BOtherC | 10 | 0.8 | 0.421637 | 0 | 1 |
| BLowServD | 73 | 0.3287671 | 0.4730162 | 0 | 1 |
| BSecureD | 76 | 0.2631579 | 0.4432733 | 0 | 1 |
| BCostD | 75 | 0.3333333 | 0.474579 | 0 | 1 |
| BSpeedD | 77 | 0.4025974 | 0.4936369 | 0 | 1 |
| BNoCompD | 46 | 0.173913 | 0.383223 | 0 | 1 |
| BCantUseD | 48 | 0.1458333 | 0.356674 | 0 | 1 |
| BOtherD | 25 | 0.44 | 0.7118052 | 0 | 1 |
| SocialMed | 116 | 1.6206897 | 0.5381962 | 1 | 2 |
| SocialMedD | 121 | 0.4297521 | 0.5748398 | 0 | 1 |
| SmPhone | 116 | 1.637931 | 0.5340013 | 1 | 2 |
| SmPhoneD | 115 | 0.3913043 | 0.7801895 | 0 | 1 |
| INDEX | 34 | 13.4117647 | 10.6489938 | 1 | 40 |
| FarmKind | 105 | 2.0380952 | 1.0644953 | 0 | 5 |
| RetResFMD | 121 | 0.5785124 | 0.4958506 | 0 | 1 |
| OccLRGFM | 121 | 0.2727273 | 0.4472136 | 0 | 1 |
| FarmOcc | 121 | 0.3636364 | 0.6582806 | 0 | 4 |
| FarmInc | 91 | 2.043956 | 1.4135227 | 1 | 6 |
| NFWAmt | 106 | 16.9481132 | 102.9662434 | 0 | 1000 |
| SCAcres | 99 | 72.0334343 | 347.2867764 | 0.15 | 3300 |
| HHComp | 94 | 0.9042553 | 0.2958185 | 0 | 1 |
| ChatH | 21 | 1 | 0 | 1 | 1 |
| ChGone | 37 | 2.1351351 | 1.8282074 | 1 | 7 |
| Age | 109 | 4.5321101 | 1.3303356 | 1 | 7 |
| Educ | 109 | 3.9449541 | 2.0630563 | 0 | 8 |
| EDUD | 121 | 0.4876033 | 0.5019247 | 0 | 1 |

## APPENDIX 13: THE QUESTIONNAIRE OF SPECIALTY CROP FARMER SURVEY 2011

Created: August 18 2011, 8:59 AM

Last Modified: September 09 2011, 11:44 AM
Design Theme: Basic White
Language: English
Button Options: Labels
Disable Browser “Back” Button: False

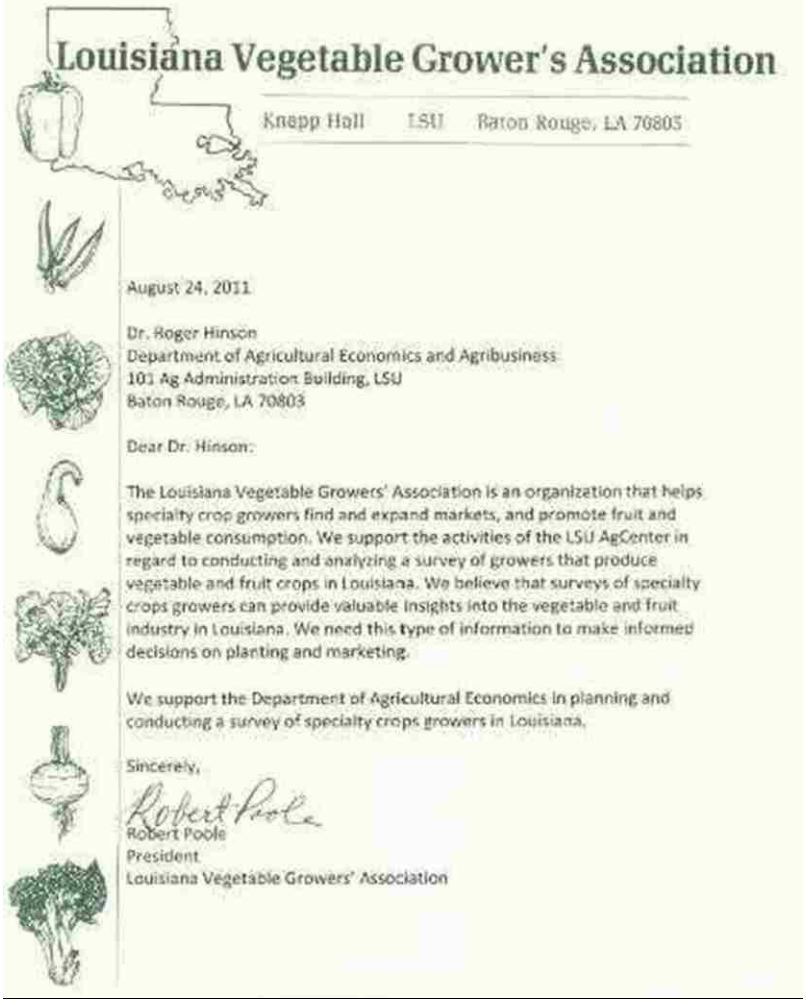
**Louisiana Specialty Crop Growers Survey**


Page 1 - Heading

To: Louisiana Specialty Crop Growers - vegetables, fruits, nuts, citrus and sweet potatoes
It is a busy time of year, but we ask you to take 10 to 15 minutes to complete this survey of Louisiana specialty crop growers. There is great interest in how farmers use the Internet to market products, and in selling locally produced foods. This is the topic of our study. You have been selected to participate in the study because you were identified as a grower of vegetable, fruit, nut, citrus or sweet potatoes. Your unique perspective and opinions are valuable to this study. We at the LSU Ag Center will use information from this survey to strengthen support in these areas, and we believe the farm and nonfarm communities can benefit.
Participation in the study is completely voluntary. Your responses will remain strictly confidential. By completing the survey, you are agreeing to participate in the study. If you have any concerns or questions about your rights as a participant, please contact Robert C. Mathews, Institutional Review Board Chairman, LSU at (225) 578-8692 or irb@lsu.edu.Thank you for your assistance. Feel free to contact me if you have any questions or concerns at 225-578-2753 or rhinson@agcenter.lsu.edu.
Sincerely,
Roger Hinson, Professor Louisiana State University Agricultural Center Department of Agricultural Economics and Agribusiness

Page 1 - Image

Letter of Support From The Louisiana Vegetable Grower's Association



Louisiana Vegetable Grower's Association

Knapp Hall LSU Baton Rouge, LA 70803

August 24, 2011

Dr. Roger Hinson
Department of Agricultural Economics and Agribusiness
101 Ag Administration Building, LSU
Baton Rouge, LA 70803

Dear Dr. Hinson:

The Louisiana Vegetable Growers' Association is an organization that helps specialty crop growers find and expand markets, and promote fruit and vegetable consumption. We support the activities of the LSU AgCenter in regard to conducting and analyzing a survey of growers that produce vegetable and fruit crops in Louisiana. We believe that surveys of specialty crops growers can provide valuable insights into the vegetable and fruit industry in Louisiana. We need this type of information to make informed decisions on planting and marketing.

We support the Department of Agricultural Economics in planning and conducting a survey of specialty crops growers in Louisiana.

Sincerely,

Robert Poole

Robert Poole
President
Louisiana Vegetable Growers' Association

Page 1 - Question 1 - Yes or No [Mandatory]

Do you wish to continue with this survey?
Your answers to questions on this survey are strictly confidential. Individual information will not be disclosed, and reports will be constructed to avoid inappropriate disclosures.

- ○ Yes
- ○ No [Skip to End]

Page 2 - Image

Louisiana Specialty Crop Growers Survey 2011

Page 2 - Heading

Crop Information

(This survey should take about 15 minutes)

Page 2 - Question 2 - Choice - One Answer (Drop Down)

Indicate the parish in which you farm from the list below (click in the box to see the list).

- ○ Acadia Parish
- ○ Allen Parish
- ○ Ascension Parish
- ○ Assumption Parish
- ○ Avoyelles Parish
- ○ Beauregard Parish
- ○ Bienville Parish
- ○ Bossier Parish
- ○ Caddo Parish
- ○ Calcasieu Parish
- ○ Caldwell Parish
- ○ Cameron Parish
- ○ Catahoula Parish
- ○ Claiborne Parish
- ○ Concordia Parish
- ○ DeSoto Parish
- ○ East Baton Rouge Parish
- ○ East Carroll Parish
- ○ East Feliciana Parish
- ○ Evangeline Parish
- ○ Franklin Parish
- ○ Grant Parish
- ○ Iberia Parish
- ○ Iberville Parish
- ○ Jackson Parish
- ○ Jefferson Parish
- ○ Jefferson Davis Parish
- ○ Lafayette Parish
- ○ Lafourche Parish
- ○ LaSalle Parish
- ○ Lincoln Parish
- ○ Livingston Parish
- ○ Madison Parish
- ○ Morehouse Parish
- ○ Natchitoches Parish
- ○ Orleans Parish
- ○ Ouachita Parish
- ○ Plaquemines Parish
- ○ Pointe Coupee Parish
- ○ Rapides Parish
- ○ Red River Parish
- ○ Richland Parish
- ○ Sabine Parish

- ○ Saint Bernard Parish
- ○ St. Charles Parish
- ○ St. Helena Parish
- ○ St. James Parish
- ○ St. John the Baptist Parish
- ○ St. Landry Parish
- ○ St. Martin Parish
- ○ St. Mary Parish
- ○ St. Tammany Parish
- ○ Tangipahoa Parish
- ○ Tensas Parish
- ○ Terrebonne Parish
- ○ Union Parish
- ○ Vermilion Parish
- ○ Vernon Parish
- ○ Washington Parish
- ○ Webster Parish
- ○ West Baton Rouge Parish
- ○ West Carroll Parish
- ○ West Feliciana Parish
- ○ Winn Parish

Page 2 - Question 3 - Choice - One Answer (Bullets) [Mandatory]

Did you sell specialty crop products (vegetables, fruits, nuts, sweet potatos or citrus) either directly to consumers or to wholesale buyers in 2010?

- ○ Yes
- ○ No [Skip to 6]

Page 3 - Question 4 - Open Ended - One or More Lines with Prompt

In 2010, what share of sales did each of these crops account for? (For example: if 20 percent of your sales came from Bell peppers, then please put "20" in the text box immediately to the right of “Bell Peppers”). When you add the individual crop percents, they should sum to 100.

- Bell Peppers _____
- Blueberries _____
- Cabbage _____
- Cucumber _____
- Eggplant _____
- Mustard _____
- Okra _____
- Peaches _____
- Pecans _____
- Southern peas _____
- Strawberries _____
- Squash _____
- Sweet corn _____
- Sweet potato _____
- Tabasco peppers _____
- Tomato (field)
- Tomato (greenhouse)
- Watermelon

✍ Other, please specify crop and share of sales, i.e. Zucchini: 15 .....

Page 4 - Question 5 - Choice - Multiple Answers (Bullets)

What terms do you use to differentiate your farm's products from competing products? (Select all that apply. If you select "Other" please specify in the text box)

- ❑ Locally grown
- ❑ Organically produced but not certified
- ❑ Certified organic
- ❑ Pesticide free
- ❑ Reduced pesticide use strategy
- ❑ Value added
- ❑ Other, please specify

---

Page 4 - Question 6 - Choice - One Answer (Bullets)

Which of these terms from the previous question would you rank as most important to your customers? (Please select one. If you select "Other" please specify in the text box)

- ○ Locally grown
- ○ Organically produced but not certified
- ○ Certified organic
- ○ Pesticide free
- ○ Reduced pesticide use strategy
- ○ Value added
- ○ Other, please specify

---

Page 4 - Question 7 - Choice - Multiple Answers (Bullets)

What state verified, commercially verified or other certifications do you have? (Select all that apply. If you select "Other" please specify in the text box)

- ❑ Organic (state certified)
- ❑ Louisiana Certified product (state certified)
- ❑ Louisiana Certified Cajun product (state certified)
- ❑ Louisiana Certified Creole product (state certified)
- ❑ Good Agricultural Practices (GAP, commercially certified)
- ❑ Pesticide free (producer verified)
- ❑ Source verified (producer verified)
- ❑ Sustainable practices (producer verified)
- ❑ Genetically Modified Organism (GMO) free (producer verified)
- ❑ Greenhouse (producer verified)
- ❑ Other, please specify

---

Page 5 - Heading

(about 10 more minutes remaining to complete the survey)

Page 5 - Question 8 - Open Ended - One or More Lines with Prompt

How did you sell specialty crop products in 2010. Please indicate the percentage of your farm's sales that went through each market. (For example, if you sold twenty percent of your crops at a public farmers' market, then please put "20" in the text box immediately to the right of the words “Public farmers' market”). If you select" Other", please enter the item and the percentage in the box. The total should sum to 100.

- On-farm market, roadside stand, and/or pick-your-own
- Peddlers
- Public farmers’ market
- Community Supported Agriculture members
- Restaurants, Chefs, Schools
- Through Internet
- Local, small grocery stores
- Wholesalers or distributers (regional / national)
- Processors
- Other, please specify venue and share of farm sales, i.e. National Grocery Stores: 20

Page 5 - Question 9 - Rating Scale - Matrix

Please rate the effectiveness of the following marketing channels, using the scale below.

| | Ineffective | Somewhat ineffective | Neutral | Somewhat effective | Very effective |
|---|---|---|---|---|---|
| On-farm market, roadside stand, pick-your-own | 1 | 2 | 3 | 4 | 5 |
| Peddlers | 1 | 2 | 3 | 4 | 5 |
| Public farmers’ market | 1 | 2 | 3 | 4 | 5 |
| Community Supported Agriculture associations | 1 | 2 | 3 | 4 | 5 |
| Restaurants, Chefs, Schools | 1 | 2 | 3 | 4 | 5 |
| Internet customers | 1 | 2 | 3 | 4 | 5 |
| Local, small grocery stores | 1 | 2 | 3 | 4 | 5 |
| Wholesalers or distributers (regional / national) | 1 | 2 | 3 | 4 | 5 |
| Processors | 1 | 2 | 3 | 4 | 5 |

Page 6 - Heading

Internet and social media usage
(about 9 more minutes)

Page 6 - Heading

The internet plays an increasing role in connecting farmers with current and potential customers.

Page 6 - Question 10 - Choice - One Answer (Bullets)

Do you have Internet access of any kind – at home, through other family members, the library, or some other way?

- ○ Yes
- ○ No

Page 6 - Question 11 - Choice - One Answer (Bullets) [Mandatory]

Do you use the internet for your farm operation?

- ○ Yes
- ○ No [Skip to 8]

Page 7 - Question 12 - Rating Scale - Matrix

Please rate the quality of service for the type of Internet service available in your area using the scale below. If a type of service is not available in your area, mark the “not available” box.

| | Poor | Fair | Good | Very good | Excellent | Not available/ don't know |
|---|---|---|---|---|---|---|
| Dial-Up | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 | ❍ Not available/ don't know |
| Dial-Up with Accelerator | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 | ❍ Not available/ don't know |
| Cable | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 | ❍ Not available/ don't know |
| DSL (Digital Subscriber Line) | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 | ❍ Not available/ don't know |
| Satellite | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 | ❍ Not available/ don't know |

Page 7 - Question 13 - Rating Scale - Matrix

Please chose the number on the scale below that best decribes how often you use each of the following online functions in your farm operation.

| | I do not use | Use monthly | Use weekly | Use daily | Use more than once daily |
|---|---|---|---|---|---|
| Buying farm inputs | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Communication (email, social media) | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Collecting information | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Online banking | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Paying bills | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Record keeping | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Selling farm products | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Other | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |

Page 7 - Question 14 - Open Ended - Comments Box

If you select "Other" for question 13, please specify the other factor in the text box below.

Page 7 - Question 15 - Rating Scale - Matrix

Please rate the following barriers to internet use, using the scale below.

| | Not a barrier | A minor barrier | Neutral | An important barrier | A major barrier | Don't kn |
|---|---|---|---|---|---|---|
| Inadequate Internet service in the area | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 | ❍ Don't k |
| Internet security | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 | ❍ Don't k |
| High cost of service | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 | ❍ Don't k |
| Speed of service | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 | ❍ Don't k |
| Don’t have a computer | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 | ❍ Don't k |
| Lack of computer / internet knowledge | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 | ❍ Don't k |
| Other | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 | ❍ Don't k |

Page 7 - Question 16 - Open Ended - Comments Box

If you select "Other" for question 15, please specify the other factor in the text box below.

Social media (web-based and mobile technology based communications such as Facebook, Twitter, Blogs, etc.) are increasingly popular with many people for a variety of uses.

Page 8 - Question 17 - Choice - One Answer (Bullets) [Mandatory]

Do you use social media for your farm business?

- ❍ Yes
- ❍ No [Skip to 10]

Page 9 - Heading

(about 6 more minutes remaining to complete the survey)

Page 9 - Question 18 - Rating Scale - Matrix

Please rate the frequency of your social media usage, using the scale below.

| | Do not use | Use monthly | Use weekly | Use daily | Use more than once daily |
|---|---|---|---|---|---|
| Facebook | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Twitter | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Blogs | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| YouTube | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Flicker | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Other | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |

Page 9 - Question 19 - Open Ended - Comments Box

If you selected "Other" for question 18, please specify the other factor in the text box below.

Page 9 - Question 20 - Rating Scale - Matrix

Please rate the usefulness of social media to you with respect to the following kinds of activities, using the scale below.

| | Not useful at all | Sometimes useful | Average | Often useful | Very useful |
|---|---|---|---|---|---|
| To communicate socially | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| To promote my business and products | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| To improve business practices | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Entertainment | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Other | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |

Page 9 - Question 21 - Open Ended - Comments Box

If you select "Other" for question 20, please specify the other factor in the text box below.

Smartphones are devices that combine mobile phones with common features of computers or personal assistant devices. You also can use them to read and send email, search the internet, store information, and install applications for specific purposes.

Page 10 - Question 22 - Choice - One Answer (Bullets) [Mandatory]

Do you use a smart phone for your farm business?

- ❍ Yes
- ❍ No [Skip to 12]

Page 11 - Heading

(about 4 more minutes remaining to complete the survey)

Page 11 - Question 23 - Rating Scale - Matrix

Please indicate how often you use a smart phone in your farm operation, using the scale below.

| | Do not use | Use monthly | Use weekly | Use daily | Use many time each day |
|---|---|---|---|---|---|
| Communication purposes | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Connecting with social media | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Collecting Information | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Online banking | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Paying bills | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Keep records (photos, daily, weekly schedules, etc.) | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Other | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |

Page 11 - Question 24 - Open Ended - Comments Box

If you select "Other" for question 23, please specify the other factor in the text box below.

Page 12 - Heading

"Louisiana Food Industry MarketMaker" is an internet site that connects sellers and actual/potential buyers of raw and processed agricultural products.

(If you are not familiar with "Food industry MarketMaker website", please do not attempt to answer below questions and go to next page).

Page 12 - Question 25 - Choice - One Answer (Bullets)

Please indicate how familiar you are with LA MarketMaker. (select one)

- ❍ I don't know what LA MarketMaker is.
- ❍ I am not very familiar, don't know if I'm registered or not
- ❍ I am registered but not active – I don't visit the site often

- ❍ I use it for ongoing communications – in addition to my profile, I post information on the buy/sell forum
- ❍ I'm doing business through MarketMaker – made sales, found customers, was found by businesses searching for product

Page 12 - Question 26 - Rating Scale - Matrix

Please rate the effectiveness of Louisiana MarketMaker in your farm operation for these functions, using the scale below.

| | Not effective | Somewhat effective | Average | Above average effectiveness | Highly effect |
|---|---|---|---|---|---|
| Marketing farm products | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Finding sources of products | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Finding customers | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Differentiating my products | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Using the buy/sell notices | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Improve farm income | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Spotlight my business | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Overall, I think Louisiana MarketMaker is | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |

Page 13 - Heading

"All About Blueberries" is an internet website that provides a broad range of information about blueberry production and sales, including related issues such as nutritional value, consumer preferences, and finding experts to answer questions.

(If you are not familiar with "All About Blueberries website", please do not attempt to answer below questions and go to next page).

Page 13 - Question 27 - Choice - One Answer (Bullets)

Please indicate how familiar you are with the "All about Blueberries" website. (select one)

- ❍ I don't know what it is
- ❍ I am not very familiar
- ❍ I don't visit the site often
- ❍ I use it for ongoing communications and asking questions
- ❍ It's part of my regular activities.I use it for _____(Please specify in the text box below).

Page 13 - Question 28 - Rating Scale - Matrix

Please rate the usage of the "All about Blueberries" website in your farm operation in terms of effectiveness, using the scale below.

| | Ineffective | Somewhat ineffective | Neutral | Somewhat effective | Very effec |
|---|---|---|---|---|---|
| Education and discussion sessions | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Improve farm income | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Get expert assistance | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Improve my product knowledge | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |
| Overall, I think the 'All about Blueberries' website is | ❍ 1 | ❍ 2 | ❍ 3 | ❍ 4 | ❍ 5 |

Page 14 - Heading

Farm and Demographic Information
(about 2 minutes remaining)

Page 14 - Heading

Your answers to the following questions are strictly confidential. Individual information will not be disclosed, and reports will be constructed to avoid inappropriate disclosures.

Page 14 - Question 29 - Choice - One Answer (Bullets)

Please indicate which classification below best describes your farm. (select one)

- ○ Small retirement farm (operator is retired, farms on a small scale, sales are <$250,000)
- ○ Small residential/lifestyle farm (operator has a major occupation other than farming, sales < $250,000)
- ○ Small farmer (operator's major occupation is farming, sales < $250,000)
- ○ Large family farm (sales of $250,000 or more, operator's major occupation is farming)
- ○ Nonfamily farm (operator and persons related to the operator do not own a majority of the business)

Page 14 - Question 30 - Choice - One Answer (Bullets)

Please indicate which choice below best describes your annual farm income (do not include off-farm income). ( select one)

- ○ $10,000 -$24,999
- ○ $25,000- $49,999
- ○ $50,000 -$99,999
- ○ $100,000 - $249,999
- ○ $250,000 - $499,999
- ○ $500,000 or more

Page 14 - Question 31 - Choice - One Answer (Bullets)

Please indicate which choice below best describes your non-farm work activities in 2010. (select one)

- ○ I did no off farm work
- ○ I worked part time most or all year
- ○ I worked a seasonal job (full or part time)
- ○ I worked full time off the farm

Page 14 - Question 32 - Open Ended - One or More Lines with Prompt

Please provide this general information about your farm operation. Write your answer in the text box to the right of item.

- ✎ In 2010, what was the acreage of all crop production and pasture land on rented and owned land?
- ✎ How many acres of owned land were used in specialty crop production? _____
- ✎ How many acres of rented land were used in specialty crop production? _____
- ✎ How many years of experience do you have in specialty crop production? _____

Page 15 - Question 33 - Choice - One Answer (Bullets)

Please indicate your gender. (select one)

- ○ Male
- ○ Female

Page 15 - Question 34 - Choice - Multiple Answers (Bullets)

Please indicate which choice below best describes your household. (select those that apply)

- ❑ Married
- ❑ Single
- ❑ No children
- ❑ Children in high school or lower grades
- ❑ Children have left home

Page 15 - Question 35 - Choice - One Answer (Bullets)

Please indicate your age group. (select one)

- ❍ Under 25 years
- ❍ 25 to 34 years
- ❍ 35 to 44 years
- ❍ 45 to 54 years
- ❍ 55 to 64 years
- ❍ 65 to 74 years
- ❍ 75 years and over

Page 15 - Question 36 - Choice - Multiple Answers (Bullets)

Please indicate your ethnicity. (select one)

- ❑ African American
- ❑ Asian
- ❑ Hispanic
- ❑ White/Caucasian
- ❑ Other

Page 15 - Question 37 - Choice - One Answer (Bullets)

Please indicate the highest level of education you have completed. (select one)

- ❍ Less Than High School
- ❍ High School/GED
- ❍ Some College
- ❍ 2-Year College Degree (Associate)
- ❍ 4-Year College Degree (BA, BS)
- ❍ Master's Degree
- ❍ Professional Degree (MD, JD)
- ❍ Doctoral Degree

Thank You Page

Thanks for taking the time to complete this survey.
<http://www.lsuagcenter.com/en/our_offices/departments/Ag_Economics_Agribusiness/>


<http://www.lsuagcenter.com/en/our_offices/departments/Ag_Economics_Agribusiness/>

Screen Out Page

Redirect: <http://www.lsuagcenter.com/en/our_offices/departments/Ag_Economics_Agribusiness/>

Over Quota Page

Redirect: <http://www.lsuagcenter.com/en/our_offices/departments/Ag_Economics_Agribusiness/>

Survey Closed Page

This survey is now closed. <http://www.lsuagcenter.com/en/our_offices/departments/Ag_Economics_Agribusiness/>

## APPENDIX 14: THE EMAIL SENT TO FARMERS MARKET MANAGERS

To: Louisiana Farmers' Market Managers

The LSU Ag Center is conducting a survey of specialty crop farmer survey. Our definition of specialty crops includes vegetables, fruits, nuts, citrus and sweet potatoes. Since ours is an online survey, we are trying in several ways to connect with farmers who have internet addresses. The survey focuses on internet, smart phone and social media usage in their farm business. Again, this is an internet only survey.

We would really appreciate your assistance in forwarding this survey link to email addresses of specialty crop growers, regardless to vendors at your market. If you have email address of growers of these products who are not market vendors, please forward to them as well.

Link to specialty crop farmer's survey

http://www.zoomerang.com/Survey/WEB22D22TZNRL2/

As noted on the survey, this information is strictly confidential. Please contact me if you have any concerns. I look forward to working with you, and thanks in advance for your valuable assistance. Feel free to contact me if you have any questions or concerns at 225-578-2753 or rhinson@agcenter.lsu.edu.

Roger Hinson

Professor

Agricultural Economics and Agribusiness

LSU Agricultural Center

## APPENDIX 15: THE EMAIL SENT TO FARMERS MARKET WEBSITES

The LSU Ag Center is doing a "specialty crop farmers survey", and trying to connect with all growers of vegetables, fruits, nuts, and citrus whether they are selling their products directly to consumers, local grocers, or to wholesale markets. We will focus on internet and social media usage, including smart phone usage, done as part of their farm business. I have provided some information about the survey on the attached document.

We are planning to launch the survey next week. It will be an internet only survey. We are trying to contact all available sources of email addresses for the survey. We would really appreciate it if you would assist us by providing email address lists of specialty crop growers who are selling at your farmers market. We will use those only for the survey, and then we will erase the files from our records. We will manage the survey from the LSU Ag Center, sending reminders and other information as appropriate.

Roger Hinson,

Professor

Agricultural Economics and Agribusiness

LSU Agricultural Center

## APPENDIX 16: THE EMAIL SENT TO PARISH CHAIRS

**Subject: Specialty crop grower survey**

**To: LCES Parish Chairs**

**From: Roger Hinson, Professor**

**Department of Agricultural Economics and Agribusiness**

**Re: Specialty Crops online survey - growers of vegetables, sweet potatoes, fruits, nuts and citrus; not ornamentals**

I'm working on projects that focus on specialty crop production and marketing - they are Louisiana MarketMaker (LaMM) and the All About Blueberries (AAB) Community of Practice.

**What:** we are conducting an online survey of specialty crop growers to learn more about crop productions, kinds of marketing and tools Louisiana growers, their familiarity with LaMM and AAB, and whether and how growers use the Internet, smartphones, etc., to support the different facets of the farm operation.

**Why contact you?** I would like to send a link to the survey to your specialty crop email lists. I have been working with horticulture agents across the state and have received some email addresses, but I'm not aware that your parish has been contacted. If your parish is not 'covered', please ask the appropriate person in your office to respond to this request.

**What you are asked to do:**

Send email addresses of your specialty crop farmers to me and I will handle the survey.

However, I know that there is some hesitance to share these addresses**. If that is the case with you, then I ask that you forward the link below to your specialty crop farmers. If you would be willing to send a message that encourages farmers to respond, that would be very much appreciated. A message in the survey explains what we are doing and why.**

The link to the survey is

http://www.zoomerang.com/Survey/WEB22D2K5GYPYK/

If you choose to forward the request to your growers, please let me know how many email addresses the survey was sent to. I also will be asking you to forward a reminder.

We will use survey results to highlight the value of these programs and learn where they should be strengthened. These are opportunities to expand farm operations, to switch to some level of specialty crop production, and perhaps to enter farming. The programs are driven by consumers' support of fresh local foods, and farmers' markets, wholesalers and retailers note that supplies are difficult to locate.

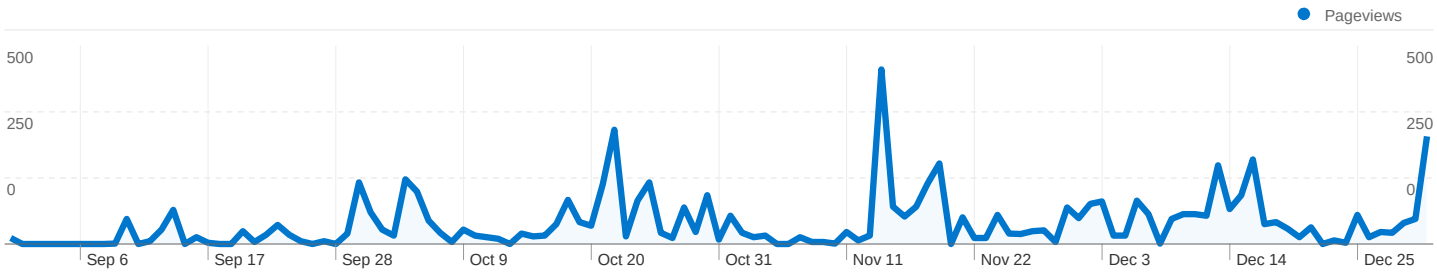
As noted on the survey and as always, this information is strictly confidential. Please contact me if you have any concerns. I look forward to working with you, and thanks in advance for your valuable assistance at 225-578-2753 or rhinson@agcenter.lsu.edu.

Roger Hinson

Department of Agricultural Economics and Agribusiness

LSU Agricultural Center

**APPENDIX 17: GOOGLE ANALYLITICS REPORTS FOR ENTRANCE SOURCES OF ALL ABOUT BLUEBERRIES WEBSITE FROM AUGUST 31, 2010 TO DECEMBER 31, 2010**

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| 6,381<br>% of Site Total: 0.34% | 4,082<br>% of Site Total: 0.28% | 00:01:00<br>Site Avg: 00:01:40 (-39.90%) | 28.33%<br>Site Avg: 76.88% (-63.15%) | 14.47%<br>Site Avg: 51.79% (-72.06%) | $0.00<br>Site Avg: $0.00 (-28.85%) |

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|---|---|---|---|---|---|---|
| (direct) | 3,574 | 2,171 | 00:01:04 | 30.00% | 13.29% | $0.00 |
| lsuagcenter.com | 652 | 421 | 00:00:41 | 20.93% | 12.39% | $0.00 |
| deltafarmpress.com | 646 | 473 | 00:01:01 | 23.08% | 15.48% | $0.00 |
| google | 311 | 173 | 00:01:32 | 23.53% | 12.96% | $0.00 |
| twilatv.org | 282 | 190 | 00:01:13 | 16.67% | 12.24% | $0.00 |
| southeastfarmpress.com | 257 | 163 | 00:00:59 | 13.04% | 17.16% | $0.00 |
| 2theadvocate.com | 203 | 132 | 00:00:20 | 55.56% | 16.98% | $0.01 |
| facebook.com | 146 | 123 | 00:00:49 | 20.00% | 26.32% | $0.00 |
| aces.edu | 65 | 46 | 00:00:35 | 50.00% | 23.53% | $0.00 |
| eden4.lsuagcenter.com | 59 | 38 | 00:01:00 | 33.33% | 9.68% | $0.00 |
| extension.missouri.edu | 40 | 26 | 00:01:12 | 0.00% | 14.29% | $0.00 |
| text.lsuagcenter.com | 19 | 15 | 00:00:37 | 66.67% | 30.00% | $0.00 |
| wayne.ces.ncsu.edu | 17 | 9 | 00:00:34 | 0.00% | 11.11% | $0.00 |
| yahoo | 17 | 15 | 00:00:26 | 0.00% | 22.22% | $0.00 |
| bhfletcher.wordpress.com | 13 | 13 | 00:00:52 | 33.33% | 42.86% | $0.00 |
| ehow.com | 11 | 11 | 00:00:34 | 0.00% | 16.67% | $0.00 |
| us.mg204.mail.yahoo.com | 11 | 7 | 00:01:03 | 0.00% | 16.67% | $0.00 |
| cms.lsuagcenter.net | 7 | 5 | 00:00:18 | 0.00% | 25.00% | $0.00 |
| blogs.extension.org | 5 | 5 | 00:00:13 | 0.00% | 33.33% | $0.00 |
| hertford.ces.ncsu.edu | 5 | 5 | 00:00:44 | 0.00% | 33.33% | $0.00 |

| | | | | | | |
|---|---|---|---|---|---|---|
| us.mc1800.mail.yahoo.com | 5 | 5 | 00:00:52 | 0.00% | 33.33% | $0.00 |
| us.mg4.mail.yahoo.com | 5 | 5 | 00:00:17 | 0.00% | 33.33% | $0.00 |
| cop.extension.org | 3 | 3 | 00:00:00 | 100.00% | 100.00% | $0.00 |
| thegrower.com | 3 | 3 | 00:01:36 | 0.00% | 50.00% | $0.00 |
| agcenter.lsu.edu | 1 | 1 | 00:00:00 | 100.00% | 100.00% | $0.00 |
| br.mg1.mail.yahoo.com | 1 | 1 | 00:00:00 | 100.00% | 100.00% | $0.00 |
| co112w.col112.mail.live.com | 1 | 1 | 00:00:00 | 100.00% | 100.00% | $0.00 |
| google.com | 1 | 1 | 00:00:00 | 100.00% | 100.00% | $0.00 |
| pasquotank.ces.ncsu.edu | 1 | 1 | 00:00:00 | 100.00% | 100.00% | $0.00 |
| us.mg1.mail.yahoo.com | 1 | 1 | 00:00:00 | 100.00% | 100.00% | $0.00 |
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## VITA

Sandamali Kankanamge was born in Elpitiya, Sri Lanka. After successfully completing the General Certificate of Education Advanced Level examination (GCE A/L), she was selected to follow Bachelor of Commerce and Management Special Degree at the University of Kelaniya, Sri Lanka. She graduated from University of Kelaniya, in January 2002, where she received the title of Bachelor in Commerce and Management Special Degree with second class honors. While she was studying her Bachelor Degree she followed a course in Chartered Accountancy in Institute of Chartered Accountants of Sri Lanka. She has worked as an accountant and an auditor in private sector for three years in Sri Lanka. In the fall of 2009 she enrolled at Louisiana State University (LSU) to pursue a master's degree in Agriculture in Economics and Agribusiness Management, under supervision of Dr. R. Hinson and she is scheduled to graduate in the spring of 2012.