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**FARM AND RANCH DIVERSIFICATION:
A STRATEGY FOR CONFRONTING
THE CHANGING AGRICULTURAL CONTEXT IN TEXAS**

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FARM AND RANCH DIVERSIFICATION: A STRATEGY FOR CONFRONTING THE CHANGING AGRICULTURAL CONTEXT IN TEXAS

By

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ABSTRACT

FARM AND RANCH DIVERSIFICATION: A STRATEGY FOR CONFRONTING THE CHANGING AGRICULTURAL CONTEXT IN TEXAS

By

Carla Eliana Barbieri

A goal-directed behavior model, based on the central actor role of farmers in decision-making processes, was used to assess the success of agriculture diversification in Texas. *Success* was defined as the satisfaction with the extent to which diversification has achieved various goals, both personal and extrinsic, that initially motivated farmers to diversify their farms.

A range of goals, both financial and non-financial, were found to be important in farmers' decisions to diversify. The diversification goals that were found to be more frequent and more important were: the generation of additional income; the continuance of farming and ranching; and the enhancement of quality of life.

A principal component factor analysis of importance ratings of diversification goals resulted in six dimensions. 1) *Reduce Uncertainty and Risk* (F1) comprised goals that are related to the insecurity inherent to farming. 2) *Grow and Service Markets* (F2) comprised those goals that are associated with retaining and expanding markets. 3) *Enhanced Financial Condition* (F3) included goals associated with the financial wellbeing of farm and ranch businesses. 4) *Individual Aspirations and Pursuits* (F4) comprised goals that are personal in nature. 5) *Revenues Enhancement* (F5) included

goals related to the generation of additional income. 6) *Family Connections* (F6) was related to goals that strengthens the liaison of the farm household to the farm.

When investigating the level of accomplishment of diversification goals, it was found that diversification is a successful strategy. From the subjective perspective (i.e., farmers perception), there is a high level of perceived accomplishment among farmers and ranchers of the important goals that influenced them to diversify. The goals comprising the *Family Connection Factor* (8. 38), the *Personal Aspiration and Pursuits Factor* (7. 91) and *Reducing Uncertainty and Risk Factor* (7.38) are the most important in the decision to diversify and the most achieved ones. The *Enhanced Financial Condition* is the factor that has the lowest importance-achievement score (6.73).

Actual measurement of diversification performance showed a positive impact of diversification on farm gross revenues, profits, amount of debt and labor. On average, diversified operations contribute over twenty percent (21.5%) of the total farm revenues. The majority (69.1%) of the diversifiers (69.1%) had an increase of their profits after diversifying their operations, reporting an average increase of 45.1%. There is some positive impact of diversification on farm debt, resulting in an overall debt decrease of 2.4%. On average, diversifiers estimate that diversification has created jobs for more than six employees (6.4) and provides one (0.9) employment opportunity for a family.

This study concludes that diversification accomplishes various economic and non-economic goals that inspired farmers and ranchers to incorporate new enterprises into their farms. The multi-motivational dimension behind diversification suggests that this strategy should not be solely recognized for its economic values but also for non-economic values that it brings to farmers and local communities.

To my husband, José, and my sons, Bartolomé and Cristóbal, for their constant support along this journey

To my parents, Alberto and Lucy, for their guidance throughout my life

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INTRODUCTION

1.1 The Current Agricultural Context

Agriculture around the world has undergone and continues to confront major restructuring. Technological developments[1], changing governments support policies (e.g., subsidies on selected crops), increasing and more diverse competition, and changing markets are encouraging farmers to intensify and specialize their agriculture production. According to Cochrane's theory of the *treadmill of technology*, early adopters of new agricultural technologies enhance their profits because of the reduction of their production costs. Lower production costs encourage more farmers to adopt said technologies, increasing the supply of a given commodity. However, the increased supply frequently causes a decrease in commodity market prices and a resultant reduction in farm and ranch net sales (Buttel *et al.*, 1990).

Usually, late adopters do not benefit from the initial technological rents and are compelled to intensify and/or specialize their production or to enlarge their farm size to maintain or increase their revenues. In turn, agriculture intensification and specialization as well as farm enlargement require more technology, leading to overproduction, greater falls in commodities prices, and therefore the need for even more enhanced technologies. After each cycle the speed of the treadmill increases requiring larger investments for

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[1] Technologies facilitating the agriculture intensification and specialization were mechanization, improvement of crop varieties, and development of agrochemicals (for fertilization and weed/pest control), antibiotics and growth stimulants for agricultural animals (Altieri, 2000).

enhanced technologies, triggering the steady increase of the farm size and the decrease of diversity (Figure 1.1).

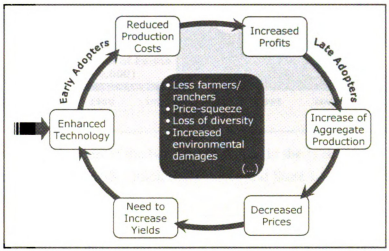

Figure 1.1 The Technological Treadmill

The effects of the technology treadmill on U.S. agriculture are evident in the steady reduction of the number of farms, the increased average farm size, and the decreased ratio prices of farmers [received/paid] over the last decades. According to the United States Department of Agriculture (USDA: National Agricultural Statistics Service, 2004a), the number of farms have decreased from over 2.5 million in 1975 to barely above two million in 2002 (Figure 1.2). Conversely, the average farm size increased from about 428 acres to 441 in the period 1979 – 2003, reaching its higher point during 1991 and 1992 with a mean of 464 acres per farm.

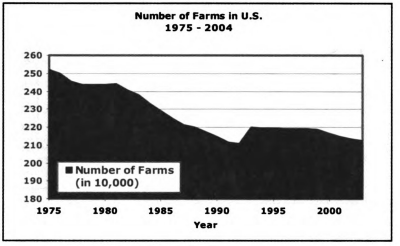

Figure 1.2. Reduction of the Number of Farms in the U.S. (1975 – 2003)
Source: USDA-NASS, Quick Stats - U.S. and State Level Data, 2004

In addition, farmers have experienced a reduction in the prices received index compared to the prices paid index during the last years. The prices received index is the measure of prices that ranchers and growers receive for their products while the prices paid index is the measure of the costs of the inputs necessary to produce/grow commercial commodities, such as fuel and fertilizers (USDA: National Agricultural Statistics Service, undated). The National Agriculture Statistics Service (USDA: National Agricultural Statistics Service, 2004b) reports that the agricultural prices received index have only increased from 73 in 1975 to 120 in 2004 (less than a two-fold increase), while the prices paid index have increased from 47 to 133 (almost a three-fold increase). That is a decrease in the prices received/paid ratio from 1.55 in 1975 to 0.9 in 2004, meaning a significant reduction in the farm and ranch revenues. Figure 1.3 shows the prices paid index compared to the prices received index in the U.S. from 1975 to 2004.

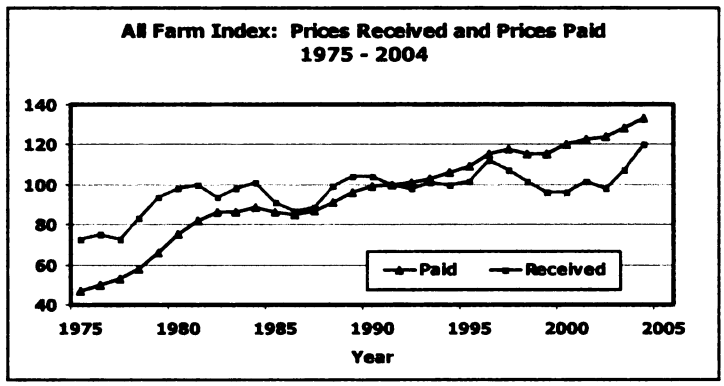

Figure 1.3. Increase of Prices Paid Index and Decrease of Prices Received Index in the U.S. from 1975 to 2004.
Source: USDA: National Agricultural Statistics Service, Agricultural Charts and Maps, 2004

These trends present a challenging context to farmers and ranchers. The constant pressure to promptly adopt enhanced technologies and the steady agriculture cost-price squeeze are setting conditions that not only favor large corporate agricultural firms but are also facilitating their enlargement, hence the expansion of their market control. Specialized and intensive (i.e., industrial) agriculture have brought some immediate benefits to society, such as safe and less expensive food. However, industrial agriculture is visiting a heavy burden in the form of negative externalities to our society. For example, 1) the reduced number of farms and ranches promotes rural exodus –especially young people- to larger cities seeking better jobs, what in turn implies other problems such as the under-utilization of rural investments (e.g., schools), change of [rural] lifestyles, and over-population of closer urban areas; 2) the increased use of machinery in agriculture has decreased the need for farm labor; 3) specializad trends are causing the loss of diversity (e.g., native crop selections) and disruption of the rural landscapes; and 4) the intensive use of chemicals (e.g., fertilizers, pest control products) has increased

environmental damages such as water poisoning, contamination of soil and depletion of underground water resources.

Farms and ranches -especially family owned- are facing the current intensification and specialization trends by adopting various coping strategies to maintain or increase their profits in order to remain farming. The success of these strategies are crucial to the society, especially to local communities, because they can help to alleviate the economic, social and environmental effects that intensive agriculture has brought and continues to bring to our society. Moreover, many contend that keeping farms in business and farmers on farms is important to the American cultural identity because "farming and ranching lifestyle is still believed to be an important and virtuous endeavor, worthy of [our] continued support" (USDA: National Agricultural Statistics Service, undated).

Restructuring Strategies to Face the Current Agricultural Context

Literature indicates that farmers are adopting numerous restructuring strategies[2] to cope with the challenging agricultural context. Although farmers can maintain their traditional farm production model, or [partially or totally] retire from farming (McGehee and Kim, 2004; Wilson *et al.,* 2001; Damianos and Skuras, 1996; Bowler *et al.,* 1996), most strategies focus on making structural farm adjustments and finding new paths of enterprise development (Barlas *et al.,* 2001; Mahoney and Barbieri, 2005). Figure 1.4 summarizes six different strategies that farmers are adopting to face the current agriculture context.

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[2] Evans and Ilbery (1992) define a restructuring strategy as the "way in which farm businesses evaluate past decisions concerning the deployment of capital resources, attempting to ensure that future capital-related decision-making is effective" (p. 85).

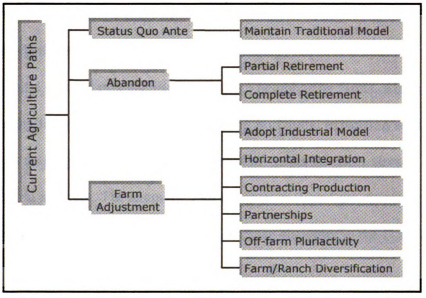

Figure 1.4. Summary of the Enterprise Paths that Farmers can Adopt to Face the Current Agriculture Context
Source: Adapted from Bowler *et al.* (1996)

The first strategy is adoption of the industrial model that aims to reduce per unit production costs. Intensification and/or specialization of the farm production along with the farm size enlargement and entering into the technological treadmill enable the production costs savings. However, sustaining the required pace of industrial agriculture is not an option for every farmer. For example, the need to purchase new technologies requires having a strong capital that in absence may lead to the increase of the farm indebtedness (Ilbery, 1991). Besides, evidence suggests that industrial agriculture creates negative externalities, such as "soil erosion, poisoned ground waters, food-borne illnesses, loss of biodiversity, inequitable social consequences, toxic chemicals in foods and fiber, loss of beauty…" (Tompkins, 2002).

Farmers have also engaged in horizontal expansion of their farm into other geographic areas. Horizontal integration aims to increase the control and ownership of a

certain market within the same stage of the food system, such as production, distribution or processing) (Heffernan, 2000). However, this strategy requires access to great amounts of capital to build new facilities or acquire neighboring farms, which is not feasible for many farmers and ranchers. Moreover, horizontal expansion within certain commodities is no longer feasible because a very few corporate firms already control many agricultural markets. For example, four companies (ConAgra, Superior Packing, High Country and Denver Lamb) control 73% of sheep slaughter in the U.S. (Heffernan, 2000).

Farmers can also enter into production contracts with an integrating firm, by which the integrating firm outsources the agricultural raw product and other agricultural supplies while the growers provide the land, labor, buildings and equipment according to the integrating firm's specifications. The original foundation of a production contracting is a win-win situation for both parties based on the enlargement of the market share of the commodity produced. However, examples show that production contracting can evolve into market monopolies where the integrated firm becomes completely powerless (Heffernan, 2000). For example, the Tyson Corporation poultry-integration production that started in the 70's has showed a very profitable venture for the corporation whilst a steady disadvantage for the integrated farms. From 1980 to 1990, Tyson's profits increased 14 fold while the price that integrated farms received remained the same (Springdale, 1992). The financial situation of the farms got very complicated due to the

50% increase of the production costs along with the payments of the mortgages incurred to build the confinement barns (*Ibidem*)[3].

The development of strategic partnerships and economic linkages is another strategy that some farmers are adopting. Synergies and networks built at different levels, such as economic synergies amongst activities within the same farm and networks amongst farms, can not only increase the farm profitability but also enable rural development (Knickel and Renting, 2000). Production or processing cooperatives[4] and community support agriculture (CSA)[5] are examples of the advantages of partnerships within the same level (i.e., farmer-farmer) and at different levels (i.e., farmer-consumer) respectively. Agriculture cooperatives can result in a two-fold benefit: the members can optimize profits (e.g., because of the aggregate production, cost reduction or better bargaining power) and they keep the profits obtained through the cooperative instead of leaking to an external investor. In community support agriculture, farmers benefit because they increase their profits through the direct sales while members benefit from fresh products and the intrinsic "satisfaction gained from reconnecting to the land and participating directly in food production" (USDA: Agricultural Research Service, 1993).

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[3] Springdale (1992) also states that when growers considered collective bargaining to enhance their prices-received, Tyson threatened to cancel contracts of any growers involved in such bargaining measures.

[4] Cooperatives are businesses that are owned and controlled by the people who use them (i.e., members) in benefit of their members (USDA: Rural Business - Cooperative Services, 1995). According to the U.S. Department of Agriculture, in 1995 there were reported 4,006 farmer cooperatives in operation: 2,074 primarily marketed farm products; 1,458 handled primarily farm production supplies; and 474 provided services related to marketing or purchasing activities (USDA: Rural Business - Cooperative Services, 1997).

[5] CSAs are partnerships between farm and local people (i.e., share-holders). The shareholders pay in advance to cover the anticipated costs of the farm operation and farmer's salary receiving in return products that the farm grows throughout the growing season. Both parties share the risks of farming, including poor harvests due to unfavorable weather or pests (USDA: Agricultural Research Service, 1993). The Thomas Jefferson Agricultural Institute (undated) reports that there are 1200 CSAs in the U.S.

Redeployment of farm labor resources into off farm employment (i.e., other gainful activities) is another structural change strategy that farmers frequently adopt (Benjamin, 1994). Farming is often viewed as a less lucrative employment option compared to off-farm and as a result many farmers are switching to non-farm occupations for their primary source of income, and more children of farm families are opting for careers off the farm (USDA: National Agricultural Statistics Service, undated). Off-farm employment in the U.S. is relevant because of the number of farm and ranch operators that work off the farm and because of the impact of off-farm income to farm households. While one-third of American farm operators worked (mainly full-time) off-farm since the seventies, since 1999 only 10% percent of farm household income comes from the farm operation (USDA: Economic Research Service, 2002). The downside of this farm adjustment strategy is that it reduces the time that operators can put in the farm business (*ibidem*).

Farm/ranch diversification is another option for farmers, especially small farms and ranches, to confront the current agriculture challenges (Barlas *et al.,* 2001; Ilbery, 1991). Although there is not a standard definition for agriculture diversification (Daskalopoulou and Petrou, 2002), a commonly accepted meaning is the reallocation and recombination of farm resources (i.e., land, labor or capital) into new unconventional crops/animals or into non-agricultural enterprises developed on the farm/ranch (Ilbery, 1991). Farm and ranch diversification responds to the growing recognition among farmers and ranchers that their survival depends on them becoming entrepreneurial business managers, and not just more efficient agricultural producers (Mahoney *et al.*, 2004).

Overview of Texas Agriculture Context

Texas is the largest of the contiguous continental states and the second largest overall following Alaska. The last U.S. Census (2000) estimated the population of Texas was over 22,000,000, making it the second most populated state next to California. It is estimated that the population of Texas increased another 6.1% from 2000 to 2003 (U.S. Census Bureau, 2004).

Agriculture represented about five percent (4.83%) of all Texas production of goods in 2004, corresponding to $10.10 billion (Texas Comptroller of Public Accounts, 2004). The net farm income of Texas agriculture was estimated to be $5,939 million in 2003 (USDA: Economic Research Service, 2004a)[6]. In 2001, about fifteen percent (14.7%) or 1,805,650 persons of Texas were employed in farm and farm-related enterprises and organizations. In 2004, the percent of farm and farm-related employment in Texas was very close to the U.S. Average --14.6% (USDA: Economic Research Service, 2004b).

The four principal agricultural commodities in Texas in order of market receipts are cattle, cotton, greenhouses (including nursery) and broilers. Texas leads the nation in cattle and calves production, with almost seventeen percent (16.8%) of the American production representing a value of $6,124 million[7] (U.S. Census Bureau, 2001).

The number of farms and the average farm size in Texas differ from national trends. The number of farms and ranches in Texas has steadily increased over the last years. The National Agricultural Statistics Service (USDA: National Agricultural

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[6] According to previous statistics (1999), Texas has the second farm net income in the U.S. after California (U.S. Census Bureau, 2001). More recent data was not available.

[7] Information corresponding to 1999.

Statistics Service, 2004b), reports an increase from 189,000 "farms" in 1975 to 229,000 in 2003. The average farm size (in acres) on the other hand, has decreased from more than six hundred (610) in 1993 to 570 in 2003. This splintering of farms and ranches is changing the nature of Texas agriculture. Figures 1.5 and 1.6 show trends in Texas compared to those nationwide.

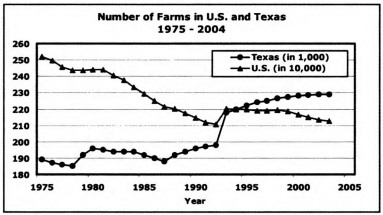

Figure 1.5. Trends of number of farms and ranches in U.S. and Texas (1975 – 2004)
Source: USDA-NASS, U.S. and State Level Data, 2004

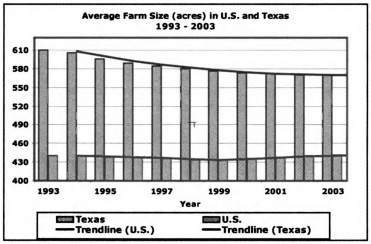

Figure 1.6. Trends of average farm size in U.S. and Texas from 1993 to 2003.
Source: USDA: National Agricultural Statistics Service, U.S. and State Level Data, 2004

The increase in the number of farms and ranches and decrease in farm size is not contributing positively to the agricultural context in Texas[8]. A more detailed examination of the farm acreage distribution trend in Texas[9] reveals that the number of acres in medium-sized farms is dramatically shrinking, about 250,000 acres per year as shown in figure 1.5 (Texas A&M University System and American Farmland Trust, 2003). In brief, although an average of 1,000 new farms/ranches have been established annually in Texas since 1970, the total land used for agriculture has declined by almost 3 million acres (American Farmland Trust, undated). Many of the persons who own these farms and ranches are not as dependent on agricultural income for their financial well-being, and therefore are not required to maintain them in agriculture production.

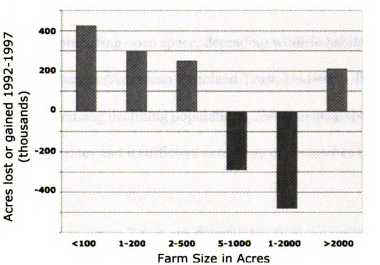

Figure 1.7. Change in the farm/ranch acreage by farm size in Texas since 1970. Source: American Farmland Trust, undated

[8] The uncertain context of the Texan agriculture is also evident when other economic indicators are examined. For example, the agriculture share of Gross Texas Product has steadily decreased from 1.7% in 1991 to 1.2% in 2004, and it is forecasted to decrease below one percent (0.9%) by 2010 and to half percent by 2020 (Texas Comptroller of Public Accounts, 2004).

[9] Most of Texas farm and ranches (78%) are smaller than 500 acres, 16% are medium-sized (500 – 2,000 acres) while only 6% have over 2,000 acres. However, those farm size classes represent 14%, 23%, and 63% of the total Texas farm acreage respectively (Texas A&M University System and American Farmland Trust, 2003).

The reduction in the number of medium-sized farms and ranches in Texas is occurring mostly because those farms are being consolidated into corporate firms or because of land fragmentation. Land fragmentation is the division of farms and ranches into smaller units in order to accommodate new landowners. This often takes place when an owner dies and his/her children jointly inherit the land. The problem with land fragmentation in Texas is that new landowners do not devote their lands to agricultural purposes either because the land is too small for traditional farming or because their interests lean toward "reconnecting with the spirit of the Old West", raising a few cattle, hunting or exploring the countryside for example (American Farmland Trust, undated).

Land fragmentation and splintering of farms and ranches in Texas is producing some significant agricultural and societal impacts. There are concerns that this increasing land fragmentation is consuming open space, degrading wildlife habitat, and depleting and polluting water resources (American Farmland Trust, Undated). Furthermore, rural communities are experiencing declining populations, above-average poverty, above average unemployment rates and insufficient economic opportunities to retain their youth (Wood, 2004).

Farms and ranches across Texas are diversifying their operations as a means of confronting current agriculture challenges (Wood, 2004). Case studies of diversified farms and ranches in Texas developed as part of a project with the Grazing Land Technology Institute revealed that they are growing specialty crops (e.g., herbs) and non-conventional livestock (e.g., bison), offering educational programs (e.g., workshops and seminars), developing new marketing strategies (e.g., on-farm stores and virtual markets), and providing special services, among others (Mahoney and Barbieri, unpublished). For

example, Knolle Farm & Ranch Bed, Barn & Breakfast (Sandia) has a Bed and Breakfast and offers several recreational activities, 7A Ranch (Hondo) processes beef cuts according to the clients specifications, Messina Hof Winery (Bryan) has turned a 19th Century convent into a guest center for wine tasting and other events (e.g., weddings); and Hill Country Lavender (Blanco) uses e-commerce and have an on-farm store to offer its herbs and value-added products (e.g., soaps, candles and health products).

Agriculture diversification through various types of recreational activities (e.g., hayrides, ranch tours, hunting); accommodation services (e.g., bed and breakfasts, cabins and cottages rentals); and a combination of both (e.g., cattle drives, farm and ranch vacations) are also popular in Texas (Mahoney and Barbieri, 2004). For example, Richards Ranch (Jacksboro) provides a wide range of recreational activities in the 15,000-acre working cattle ranch, such as guided tours, horseshoes, volleyball, croquet, stargazing, paddle boating, hiking, picnics, hayrides, fishing, and paid hunting. In addition, the ranch has cabins and a lodge, organizes special events and offers catering.

1.2 Agriculture Diversification – A Proposed Model

Agriculture diversification includes any enterprise or entrepreneurial venture that is incorporated into a working farm or ranch primarily for the purpose of generating additional income and adding to value(s) and return(s) from working farms and ranches (Mahoney *et al.,* 2004). There are a broad range of enterprises and direct marketing strategies that farmers and ranchers are incorporating on their farms and ranches, including growing of specialty herbs, recreational activities, wine-making, virtual markets, conversion of historic barns into yarn shops, among others. The types of

diversification enterprises that farmers and ranchers are launching can be classified in several ways. Figure 1.8 shows one model for depicting and classifying the various types of ranch and farm diversification enterprises. This model was developed based on a review of more than 1,500 diversified farms and ranches throughout the U.S.

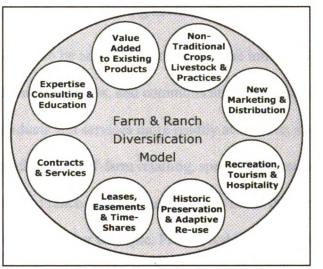

Figure 1.8. A Proposed Model of Farm and Ranch Diversification
Source: Mahoney *et al.* (2003)

The first diversification category involves the introduction of non-traditional crops, livestock and/or farming/ranching stewardship practices into their operations, such things as bison, wild boar, shrimp, hemp, herbs and mushrooms. These crops and livestock are not conventional or customary on that farm or ranch or in the geographic area. Often farmers and ranchers combine non-traditional crops or animals with new farming practices to produce an entire new product line to meet an emerging demand and in a "values-added" way. The non-traditional farming practices also allow the farmers and ranchers to appeal to new markets concerned about food health and the environment.

This sometimes allows the farmer or rancher to simultaneously reduce their production volume, costs and negative externalities (e.g., soil erosion) while generating additional net revenues such as organic agriculture or the use of no-additives. An example would be the Moseley Ranch of Texas Bison Company (Caddo Mills, Texas) that raises grass-fed Bison using a combination of sustainable farming methods such as grass management, bee-pollination, restoration of native prairie grasses and no pesticides.

Diversification can also be accomplished through the introduction of new marketing and merchandising activities, and communication and promotional media that make ranch and farm products and services more readily accessible, such as direct mail promotions, catalogs, on-farm and off-farm retailing, special Internet promotions and virtual markets. Farmers and ranchers are expanding the size of their markets through new combinations of marketing. For example, Fredericksburg Herb Farm (Fredericksburg, Texas) offers an on-line catalog of the herbs and processed products to reach a broad market through e-commerce. In addition, the company has an on-farm store in which to sell its herbal products.

Integrating recreation, tourism and hospitality enterprises is another common type of farm and ranch diversification. The growth in these enterprises on farms and ranches is in response to the growth in the size and "willingness to pay" of markets who are environmentally sensitive, interested in farm and ranch heritage, attracted to hands-on learning experiences, and seeking soft-adventure experiences (e.g., mountain biking on a ranch). This new line of diversification enterprises is also being encouraged by the reduction of lands available for various forms of recreation (e.g., hunting, fishing) and the proximity of farms and ranches to population centers – urban sprawl is bringing markets

closer. Diversified activities within this category comprise the direct purchase of agriculture products on-site (e.g., on-farm market), the recreational self-harvest of the farm products (e.g., fruits, flowers, Christmas trees), the participation in recreation activities (e.g., tours, fishing and hunting) and events (e.g. festivals), on-farm dining, farm/ranch vacations and accommodations (e.g., B&B and cottages). For example, the five-generation X-Bar Ranch (El Dorado, Texas) has established a rural nature based tourism program that includes nature tours and mountain bike rides and working ranch activities, offers specialty dining, lodging and camping areas.

Historic Preservation and Adaptive Re-Use refers to the restoration and adaptive (revenue generating) re-use of old buildings, structures and farm equipment that farmers have restored such as for old barns converted into theaters, centennial cottages transformed into gift shops and old tractors used for hayrides. These adaptive re-uses include recreations and tourism, merchandising space, and education. For example, Luckenbach Farms and Guest House (Fredericksburg, Texas) features an 1850's cabin where German settlers to the area first stayed. The cabin has been restored and converted into a four-bedroom guesthouse with modern conveniences (e.g., air conditioning, modern plumbing and furnished kitchen) and decorated with furnishings representing the settler's time.

Another type of farm diversification category includes revenues produced from leases, rentals, easements and time-shares of the farm and the farm resources (e.g., land, buildings, animals and equipment). There are more and more opportunities for farmers and ranchers to rent buildings and spaces for special events and recreation. The most common leases are associated with outdoor recreation, such as hunting leases and

easements and the rentals for especial events. For example, San Martiño Winery and Vineyards (Rockwall, Texas) rents the winery at hourly basis to host special events such as private parties and weddings. Continental Ranch (Mason, Texas) is a 47,000 acres working ranch that offers hunting leases of thirteen different exotic species.

Contracting and services offered to others, either farmers or non-farmers, is another type of revenues diversification. This category includes numerous activities such as boarding and training horses, contract growing of rare and endangered species, plants for restoration jobs and native plant community restoration and management planning. For example, two centennial ranches in Texas, King Ranch (Kingsville) and Margo Ranch (Rio Grande) offer lots for cattle feeding and veterinary services respectively. It is pertinent to state that not all the diversification enterprises in this category are necessarily associated with farming and ranching and often are "spin-offs" of other diversified enterprises. As a case in point, Nueces Canyon Ranch (Brenham, Texas) offers catering services.

Farms and ranches are also offering their expertise to others through educational programs and consulting services. There is a growing number of classes, workshops and internships including a broad spectrum of topics such as cooking, ranching, wine making, flowers and herbs growing, permaculture, and organic farming being offered. For example, Pure Luck Texas, an organic and diverse farm located in Dripping Spring (Texas) offers cheese-making workshops. Buena Vida Winery features classes on "flavor dynamics and the interactions between food and wine" focusing on the balance between fats, herbs and acids with the proper wine.

Value(s)-added to existing agricultural products is one of the most common forms of diversification because it generates additional revenues, reduces direct price competition, and extends the shelf life of the harvest. Value(s) added is not limited to additional processing, nor is it limited to increasing the value to the farmer or rancher. Effective value(s) added can increase the values to consumers and to society as well as merchants. This category includes: 1) the processing of the agriculture product, such as yarns, wines, butchering, leathers, gourmet cheeses dried flowers and 2) the packaging of the agriculture product, such as gift boxes and personalized labels for special occasions. For example, Hidden Springs Winery (Pilot Point, Texas) adds value to their grapes processing table and dessert wines. On top of the wine, the farm adds value offering private labels using the photo, message or logo provided by the customers and gift baskets created with their own wines and a broad variety of other local products (e.g., cheese, sausages).

Some Observed Attributes of Agriculture Diversification

Identification and study of some diversified farms and ranches throughout Texas, the U.S. and Canada (Mahoney and Barbieri, 2005) reveal four characteristics and attributes of farms and ranches that have diversified their operations. First, farmers and ranchers are diversifying along three different but related dimensions as modeled in figure 1.9.

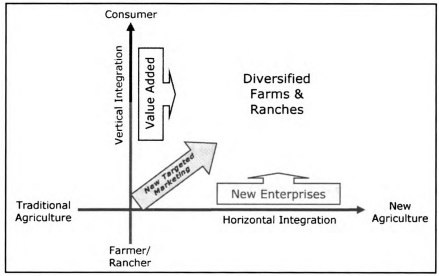

Figure 1.9. A Three-dimensional Approach of Farm and Ranch Diversification
Source: Mahoney *et al.* (2004)

Farmers and ranchers horizontally diversify by integrating new enterprises such as non-traditional crops and animals, recreation activities, on-ranch and on-farm markets and specialty foods into working ranches and farms. They vertically diversify through strategies intended to add values to their products and services through processing, specialized packaging and practicing special agricultural methods (e.g., organic production, sustainable farming) and getting closer to their customers. In addition, farm and ranch enterprises can diversify by combining new-targeted marketing and distribution methods to increase awareness of their products and services and to broaden their markets to more distant locations. Examples of the said marketing and distribution methods include direct marketing to target customers (e.g., newsletters, customers clubs) that increase purchase and build customer loyalty, virtual markets that allow potential customers to compare, select and pay for a range of products, and cooperative marketing that can increase product awareness with lesser efforts and costs.

The three-dimensional diversification is important because the several products/services offered at the farm can be cross-marketed and serve as more holistic value-added propositions. For example offering ranch or farm tours can not only generate revenues, but also help create a continuing "demand" for specialty products of the farm (e.g., jellies). This is consistent with the observation that the most successful operations appear to diversify along all three dimensions. For example, 7A Ranch has integrated many different types of diversified enterprises into its organic ranching. They offer tours of the ranch, host group events and cater their own barbeques that in turn increase the sale of its customized cuts of meats and its own sausage in their on-ranch market. In addition, 7A Ranch combines traditional marketing methods with Internet appearance and direct (overnight) ship their products anywhere in the country.

A second characteristic is that diversified farms and ranches can be classified along a continuum of the scale of diversification and in terms of the number and types of diversification enterprises and measured in terms of the level of investments/ developments. For example, Alpacas of Green Acres (Rockwall, Texas) is a diversified farm that grows Peruvian alpacas for sale. Conversely, Americana Alpacas (Navasota, Texas) not only sells the animals they raise, but sells other types of products (e.g., clothing) that are either produced at the farm or by others through several distribution channels (e.g., virtual market). In addition, Americana Alpacas produce yarn, offer several services (e.g., boarding services, retailing from other producers, and webpage development for other alpaca breeders), provides educational seminars regarding Alpaca matters, and organize and participate in events and rent Alpacas for events. That is, Americana Alpacas has developed a total of seven types of enterprises. Figure 1.10

shows a continuum of the scale of diversification in terms of levels of investments in agtourism-related diversification, including investments in facilities, services and employees needed to provide and support on-farm/ranch recreational activities.

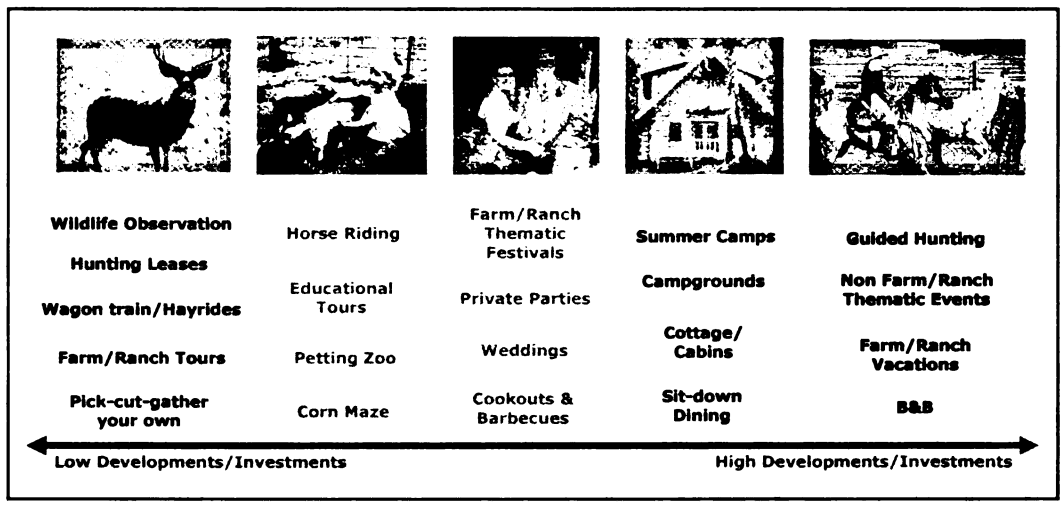

Figure 1.10. Continuum of the Scale of Agtourism Related Diversification in Terms of Levels of Developments/Investments
Source: Mahoney and Barbieri (2003)

A third feature is that farms and ranches are deliberately developing product-lines of diversified enterprises that are related to and support each other (e.g., cross marketing, different values-added) and appeal to different market segments. For example many farms and ranches offer a range of farm and ranch recreation that are symbiotic. Often, these enterprises come from suggestions from customers and because together the different enterprises help create the farm or ranch as a destination attraction worthy of a trip, return trip or longer trip to the countryside. For example, Recreation, Tourism and Hospitality category includes u-pick-up activities (e.g., berries harvest), recreational activities such as snowmobiling races and hayrides, wildlife observation, and various

types of on-farm accommodations such as Bed and Breakfast, rental of cottages and cabins and ranch vacations. Figure 1.11 shows the several types of diversified activities that farms and ranches are offering in the Recreation, Tourism and Hospitality sectors.

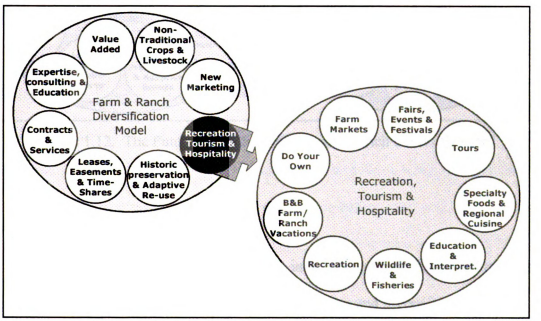

Figure 1.11. Diversified Activities within Recreation, Tourism and Hospitality
Source: Mahoney and Barbieri (2003)

Finally, to be successfully understood and implemented, agriculture diversification must be viewed as a dynamic strategy, that is, subject to change over time. Hence, the diversification model presented is not intended to reflect a static or mature phenomenon. Instead, the model recognizes that new diversification category(ies) can be included or even excluded over time according to the contextual changes. For example, some diversified farmers have reported lately the development of manufacturing on their farms while it is already evident that the agricultural bio-technology (e.g., genetic engineering) developed on the farm will steadily increase over time (see figure 1.12).

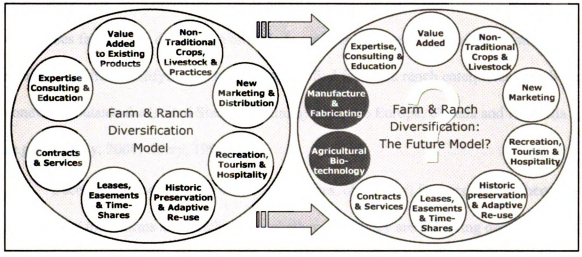

Figure 1.12. The Future Evolution of Farm and Ranch Diversification?

1.3 Problem Statement

A variety of evidence, mostly anecdotal, indicates that more farms and ranches throughout the U.S.[10] are developing different enterprises and diversifying existing enterprises as a means of achieving financial and non-financial objectives. For example, as part of this study Mahoney (2005) identified and analyzed over fifteen hundred diversified farms and ranches throughout the country that market their products and services on the World Wide Web[11]. Clearly, there are many more diversified farms and ranches that could not be identified through this search method.

However, even though more diversification is occurring in North America and around the world, little is scientifically known or documented regarding the extent and

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[10] McNally (2001) report that between 28% and 40% of the farms in England and Wales undertake some form of non-farming activity according to previous studies.

[11] Specifically regarding tourism diversification, Nickerson et al. (2001) identified over seven hundred farmers offering tourism activities in Montana to assess the reasons behind their diversification, while McGehee and Kim (2004) used a sample frame close to one thousand farms to conduct a similar study in Virginia.

characteristics of farm diversification in the U.S. First, the types and combinations of enterprises farmers are developing on their farms is not known. Most of the existing scientific studies identifying the types of diversified farm and ranch enterprises have been conducted outside the United States, pertaining mostly to Europe, Canada and Australia (e.g., McNally, 2001; Ilbery, 1991).

Second, it is inconclusive why (i.e., motives, objectives) farmers and ranchers are diversifying their farms and ranches and whether or not they are achieving desired purposes. The few existing studies regarding the motivations behind farm diversification mostly deal with the influence of characteristics of the farm (e.g., location, size), the farmer (e.g., age and education level) and the environmental context (e.g., policies) have on the diversification decision-making process (e.g., Daskalopoulou and Petrou, 2002; Damianos and Skuras, 1996; and Anosike and Coughenour, 1990). Furthermore, the studies dealing with diversification motives have been conducted outside the American boundaries (e.g., Bowler *et al.,* 1996; and Getz and Carlsen, 2000) or were limited primarily to tourism and hospitality related diversification (McGehee and Kim, 2004; Nickerson *et al.,* 2001). Without knowing the motivations driving diversification, it is impossible to validly assess its success in accomplishing alternative objectives. Most of the case studies intended to demonstrate success are anecdotal and it is difficult to determine their relevance/generalization in other situations.

Third, and most important, it is not yet determined whether and to what extent, various types of diversification are effective at accomplishing both economic and non-economic objectives of farmers and ranchers. Often there is a complex of goals behind a farmer or rancher's decision to diversify including traditional economic objectives and

non-economic goals (e.g., McGehee and Kim, 2004; Nickerson *et al.,* 2001; Getz and Carlsen, 2000; Ilbery). The assessment of the effectiveness (results) of diversification strategies has mostly centered in its financial and economic impacts on the farm or the farm household (Anosike and Coughenour, 1990). Furthermore, the assessment of economic benefits of farm diversification is not consistent; literature reports both profitable and little or unprofitable cases (McNally, 2001). The measures of "financial success" are also very diverse and measurement varies considerable.

Previous studies regarding agriculture diversification reveal that farmers and ranchers are diversifying their operations in pursuit of both economic as well as non-economic purposes. They have also indicated some attributes of the farm (e.g., farm size, farm tenure) or farmer (e.g., farmer life cycle, age) that are associated with diversification, although findings are not conclusive. In addition, studies have demonstrated the economic value of diversification as a tool to face the challenging current context of agriculture either enabling the survival of the farm (e.g., Sharpley, 2002; Ventura and Milone, 2000; Fleischer and Pizam, 1997), or proving to be a very profitable venture (e.g., Nilson, 2002).

The problem is that existing studies have failed to comprehensively assess the extent to which diversification is motivated by and accomplishing the non-economic goals of farmers and ranchers. In part this is because the emphasis has been primarily on agricultural tourism diversification and the studies have generally been more qualitative in nature. Furthermore, Getz and Carlsen (2000) state that the assessment of goals and success of rural tourism and hospitality businesses on farms and ranches cannot be generalized because of the secular characteristics of the tourism and hospitality industry.

Much of the literature that was reviewed in preparation for this study encourages a more comprehensive understanding of agriculture diversification and the values that it brings to farmers. Ilbery (1991) states that a more theoretical and empirical analysis of farmers' attitudes and motives is required to understand the farmers' responses (e.g., diversification) to agricultural change while Ilbery *et al.* (1998) urge to appraise the motives of farm household in the decision making processes. Anosike and Coughenour (1990) stress that agriculture diversification being a dimension of the farm structure, hence a component of the sociology of agriculture, it becomes necessary to learn about its socioeconomic effects[12]. In addition, Kuratko *et al.,* (1997) state that a lack of empirical work on entrepreneurial motivation is evident, while Lynn and Reisch (1990) urge to investigate the purposes or reasons behind [small business] diversification, as well as the level of satisfaction of the owners and managers with their diversification in small businesses. Furthermore, conclusions regarding the success of agriculture diversification are crucial taking into account that the goals achievement motivates entrepreneurs to sustain their business efforts (Kuratko *et al.,* 1997).

The study of farm diversification in Texas is especially important because of the relevance of Texan agriculture in the United States. Furthermore, because no scientific studies regarding agriculture diversification have been conducted in Texas and very few in the United States (e.g., McGehee and Kim, 2004; Nickerson *et al.,* 2001; and Anosike and Coughenour, 1990).

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[12] Although Anosike and Coughenour (1990) refer in their study only to the diversification through the introduction of unconventional crops/livestock, the statement can be extended also to structural diversification.

Therefore, this study advances the knowledge of the processes and motives behind diversification and the spectrum of economic and non-economic values that farmers obtain from diversification assessing the success of this strategy. It also evaluates diversification as a strategy to achieve various farm and ranch objectives. It also provides a verification of diversification models and advances the theoretical basis for future more specific studies.

1.4 Objectives, Research Questions and Hypothesis

Diversification is one strategy for coping with the economic and financial challenges that current agriculture context poses to farmers and ranchers. Evidence suggests that agriculture diversification may bring other than economic values to farmers. This study assesses the satisfaction of the different goals that motivate farmers to develop additional on-farm enterprises to comprehensively evaluate the success of agriculture diversification.

'*Success*' in this study is constructed based on two essential foundations of the decision-making process of farm adjustment strategies: the central actor role of farmers and the mix of personal as well as economic goals for diversification. This study defines success as satisfaction with the extent to which diversification has achieved various objectives, both personal as well as extrinsic, that initially motivated farmers to diversify their farms. To evaluate the success of agriculture diversification, this study addresses two key questions that have not been comprehensively addressed in previous studies. First, what is the set of goals that motivate farmers to diversify? Second, in what extent are those goals achieved according to the perceptions of the farmers and ranchers? This

study aims to develop a framework that describes and clarifies the degree of success of agriculture diversification according to given attributes of the farm and farmer.

The next section presents the study objectives, research questions and hypothesis that are developed and tested to comprehensively understand the success of agriculture diversification.

Study Objectives

Objective 1: *To assess the significance of several types of goals that farmers pursue when diversifying, recognizing potential significant differences in the types of goals pursued based on farm and farmer characteristics and extent of diversification.*

The first objective is accomplished by addressing four related questions: 1) What are the goals that drive and influence farm diversification?; 2) How do diversifiers assess the importance of various goals when making diversification decisions?; 3) Are there common factor patterns among the goals tested? and 4) Does the significance of diversification goals differ within farm classes, farmers profiles, and different levels of farm diversification?

While descriptive statistics determine the most significant goals that influence farmers and ranchers in their diversification decision-making process, a factor analysis is employed to reduce the several goals tested into a small set of underlying goal factors according to underlying patterns of correlations that may exist among them. Chi-square and analysis of variance (ANOVA) tests are used to identify significant differences in the

relevance rating of goal factors among several farm, farmers and diversification intensity classes.

In relation to the first objective, the following research hypotheses are developed and tested.

1. A range of different types of goals, both financial and non-financial, plays a role in the diversification decision-making process.
2. Some goals have greater importance/weight than others in the overall diversification decision-making process.
3. The variation in importance is related to the characteristics of the farms and ranches and the operators.
4. There is a correlation among diversification goals and they can be factor analyzed to identify diversification dimensions.
5. The relevance/importance assessment of diversification goals differs significantly depending on:
    a. Farm classes: size and structure
    b. Farmer profile segments: demographics (e.g., age, gender, education level); on/off farm employment condition, family attachment to the farm
    c. Diversification intensity groups: lightly, moderately and highly diversified farms.

Objective 2: *To evaluate the satisfaction of currently diversified farmers/ranchers with the level of achievement of various diversification goals, identifying significant differences in the "achievement satisfaction" within segments of farms, farmers and levels of diversification*[13].

Three research questions are addressed to achieve the second objective: 1) To what extent are farmer/rancher initial goals for diversification being accomplished? 2) Are certain goals being achieved to a greater or lesser extent than other goals? and 3) Do levels of goal accomplishment differ within farm classes, farmers profiles and diversification intensity?

Descriptive statistics are used to assess "achievement satisfaction" associated with different diversification goals. Chi-square and ANOVA are applied to identify the significant differences in the degree of accomplishment across types of goals and to identify differences in "achievement satisfaction" levels across various types of farms/ranches, farmers' characteristics and diversification levels.

Three research hypotheses, related to the second objective, are an element of this study.

1. Diversification results in positively perceived accomplishment of different types of goals including financial and non-financial.
2. There are significant differences in the levels of achievement satisfaction associated with different types of diversification goals.

[13] Refer to "*Identifying Diversified Farms and Ranches in Texas*" (p. 82) to see what constitutes the sample frame for this study and how it was developed.

3. Achieved satisfaction differs significantly depending on:
    a. Farm classes: size and structure
    b. Farmer segments: demographics (e.g., age, gender, education level); on/off farm employment condition, family attachment to the farm
    c. Diversification intensity groups: lightly, moderately and highly diversified farms.

Objective 3: *To assess the actual level of accomplishment of several measurable diversification goals among Texas diversified farms and ranches*[14].

The research questions associated with this objective are: 1) To what extent are the measurable diversification goals being achieved? and 2) Are the farmers' perceptions of success consistent with their actual achievement?

Descriptive statistics are used to measure quantifiable goals. Chi-square and ANOVA tests are applied to compare different levels of achievement across types of farms and farmers.

The research hypotheses corresponding to the third objective are:

1. Objective indicators show that diversification is a successful strategy
2. Similar quantifiable levels of objectives achievement yield to dissimilar success/failure assessments

[14] Refer to "*Identifying Diversified Farms and Ranches in Texas*" (p. 82) to see what constitutes the sample frame for this study and how it was developed.

1.5 Definition of Terms

Agripreneur: A person who organizes, operates and assumes the risk for diversification of an established or new enterprise (farm, ranch, processing, retail, restaurant) associated with or derived from the growth, processing or value-added function of an agricultural/ranching product, service or experience (Mahoney *et al.,* 2004).

Entrepreneur: This study adopts Kaplan's (2003) definition of entrepreneurship: "the process of creating something different by devoting the necessary time and effort, assuming the accompanying financial, psychic, and social risks, and receiving the resulting monetary rewards and personal satisfaction" (p. 13). According to the stated definition, it is evident that diversified farmers fit into the *entrepreneurial* class (in the same sense, Nickerson *et al.,* 1991).

Farm: According to the U.S. Census of Agriculture, this study defines the farm as "any establishment from which $1,000 or more of agriculture products were produced and sold, or normally would have been sold, during the census year" (USDA: National Agricultural Statistics Service, 2004c). In this sense, farm includes other agricultural firms with name variations, such as ranch or nursery (e.g., cattle ranch, seed nursery) that are commonly used in the U.S.

Farm household: The farm household is the organization/enterprise that includes the strategies and patterns of farm resources use, the interrelation and networks and the reorganization of the way farming is combined with the other activities (Knickel and Renting, 2000). Based on the interdependence between the firm's profit maximization and the household's utility maximization behavior, Benjamin (2004) uses the terms *farm*

and *farm household* synonymously[15]. In the same sense, this study gives identical meaning to both terms - *farm* and *farm household*-, including the physical farm resources but also the set of inter-relations that link the family farm members with the physical farm resources.

Resource: Both, material and immaterial assets controlled by the [agricultural] firm (Alsos *et al.*, 2003).

1.6 Organization of the Dissertation

This dissertation is organized in six chapters. This chapter describes the agriculture context that is encouraging the diversification of farms and ranches. It also defines the research problem and presents the study objectives, research questions and hypotheses.

The next Chapter provides a comprehensive literature review regarding agriculture diversification, mainly studies conducted and developed in Europe and Canada, but also some U.S. studies. Chapter II also addresses the goal-centered behavior model summarizing the relevant goals identified in the farm diversification decision-making process. Furthermore, the second chapter reviews some evidence of success in farm diversification.

Chapter III describes the research methods applied in this study. It presents the survey methods used to collect the data for this study, including the theoretical population, sampling procedures, data collection and the actual survey instrument.

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[15] Bowler *et al.*, (1996) uses the said symbiotic relationship to name *Farm Family* to the form of agrarian organization that includes the farm business and the farm household.

The characteristics of Texas diversified farms/ranches and their operators are described in Chapter IV. This chapter also validates the agriculture diversification model, including detailed descriptions of the type and extent of diversification and verifies the dynamic nature of diversification.

Chapter V presents the results of the analysis conducted for the three study objectives. Hence, this chapter firstly focuses on the types of goals that lay behind diversification and their significance in the farmers/ranchers decision-making process. It also identifies the underlying patterns of correlations among the goals tested. Chapter V also presents the assessment of the perceived achievement of the diversification goals as well as the specific measurements of the objectives accomplished though diversification.

Finally, Chapter VI summarizes the study findings, discusses the limitations encountered throughout the research, and offer some conclusions and suggestions for future research.

CHAPTER II

LITERATURE REVIEW

Chapter two is organized in three sections. The first section examines previous studies concerning agriculture diversification, mainly focusing on the types of enterprises developed by farmers and the characteristics that are associated with the diversification process. Since the success of agriculture diversification is defined in this study as the achievement of the goals pursued by farmers, the second section presents the goal-setting model and the construction of the '*Success*' definition. Section three reviews several goals that have been identified as relevant in the farm diversification decision-making process. The final section summarizes previous studies dealing with the success of farm diversification, either assessing the achievement of goals pursued or measuring accomplishment in terms of specific business objectives.

2.1 Farm and Ranch Diversification

Farm and ranch diversification, also often labeled Alternative Farm Enterprise (Bowler *et al.*, 1996), has received academic attention in recent years[16]. Notwithstanding, large gaps are still apparent in the literature. The most obvious gap is the lack of commonly agreed definitions (Daskalopoulou and Petrou, 2002; Ilbery, 1991) and measures of achievement/success.

[16] Although it's recent academic attention, Carter (2001) and Ilbery (1991) report that farm diversification is not a recent phenomenon.

The first discrepancy regarding the scope of diversification deals with its confusion related to pluriactivity. Pluriactivity is the generation of additional income [for the farm household] from more than one activity, including both on-farm enterprises (i.e., farm diversification) and farmers' off-farm employment (Alsos *et al.*, 2003; Ilbery *et al.*, 1998). Although most recent studies recognize the difference between pluriactivity and farm diversification (e.g., Damianos and Skuras, 1996; Evans and Ilbery, 1992; Ilbery, 1991), others often treat both concepts as synonymous (e.g., Benjamin, 1994).

According to Ilbery (1991), the discrepancy regarding off-farm employment arises whether the farmers' labor is defined as a resource of the farm business or a resource of the farm household. When the farmers' labor is conceptualized as a component of the farm business, diversification includes off-farm employment. Conversely, defined as a farm household resource, off-farm employment is excluded from diversification.

Taking into consideration the recognized interdependency between farms and farm households (see p. 33), the demarcation line between farm and farmhouse resources becomes blurry. This study distinguishes pluriactivity from farm diversification based on the location where the farmer's labor is input (i.e., on-farm vs. off-farm) instead of on the nature of the labor (i.e., farm or farm household resource). Hence, this study adopts an [on] farm-centered approach, excluding off-farm employment from the definition of diversification (in the same sense, Evans and Ilbery, 1992).

A second element of ambiguity occurs when diversification is defined as the adoption of *alternative* or *non-conventional* enterprises, revenues, products or services because of the uncertainty of the terms that comprise these definitions. For example,

Daskalopoulou and Petrou (2002) gives a time-dimensional approach to said terms defining *alternative* as anything used opposed to present-day conventional [agriculture] production practices and process. On the other hand, Damianos and Skuras (1996) take a geographical-centered approach, limiting alternative farming to enterprises that are not traditional in a given region. Problems of consistency and comparability arise because diversification is a relative concept depending on the practice or system that it is compared to (Daskalopoulou and Petrou, 2002).

However, the ontological debate of the alternative and conventional agriculture paradigms presented by Beus and Dunlap (1990) shows a more complex view than the regional and spatial approaches usually found in the farm diversification literature. The authors contrast alternative vs. conventional agriculture based on six core elements that are helpful to better understand the definitional attributes of alternative farming. *First*, alternative agriculture promotes the *decentralization* of power and control, encouraging more farmers with dispersed control of land, resources and capital. Alternative farms have a more local/regional production, processing and marketing. *Second*, alternative agriculture seeks *independence* from external sources of energy, inputs and credit, relying more on personal and community knowledge and skills and also on local expertise and capabilities. *Third*, alternative agriculture contributes to strengthening communities and often results in cooperation amongst different actors involved, preservation of farm and rural culture with a primary emphasis on permanence, quality and beauty. Alternative agriculture farm work provides financial and life-style rewards. A *fourth* attribute of alternative agriculture (i.e., *harmony with nature*) is that nature is understood as essential to agriculture while humans are part of and subject to nature, caring about resource

conservation and production of naturally nutritious food. *Fifth*, based on the several values of *diversity* (e.g., building of soil fertility, decrease of vulnerability before agricultural prices and other market disruptions), agriculture diversity searches for a broad genetic base, polyculture, crop rotation, integrated systems of crops and livestock, locally adapted production systems and holistic systems integrating science and technology. *Restraint*, the *sixth* element in Beus and Dunlap's conceptualization of alternative agriculture entails the inclusion of all external costs of production and recognizes the importance of short-term as well as long-term goals for the conservation of resources.

Given the multi-dimensionality of Beus and Dunlap's conceptualization, it is difficult to clearly determine boundaries of alternative (i.e., diversification) farming. A wide variety of activities, services or products is consistent with their view of diversification. Taking this into consideration, this study considers farm diversification to include any activity or product adopted *on* the farm that can bring additional revenues to the farm household (Barlas *et al.,* 2001). In this sense, agriculture diversification includes any activity, service or product developed on the farm resulting from the combination of any of a variety of farm resources, including -but not limited to- land, labor (hence, farm household labor), capital, entrepreneurial ability, and business and marketing systems. While the product or service is produced completely or primarily on the farm they may be marked and distributed off-farm.

Taking into account the USDA's definition of a farm used in this study (see p. 32), the definition of agriculture diversification relates to activities, products or services produced on working farms or ranches. That is, where the farm purpose is to produce

agricultural products and not only to produce a scenic landscape, habitats for recreational settings for personal engagement. Nor does this study's definition of diversification include farms or ranches that are developed primarily as tourist attractions that are not dependent, or may not even produce, agricultural products.

Categories within Farm Diversification

Development of different typologies is a crucial element of rural sociology (Whatmore *et al.*, 1987). Agriculture diversification is no exception and this is evident by a number of different attempts to classify agriculture diversification. Commonly, a starting point for many typologies is dividing farms into non-traditional agriculture and non-agricultural enterprises (Bowler *et al.*, 1996). In turn, each group is subdivided into various sub-types.

Non-traditional agriculture is consistently divided in the European literature into two categories: *Conversion* and *Extensification* (Barlas *et al.*, 2001; Damianos and Skuras, 1996). *Conversion* refers to the adoption of any crop/livestock or any variety that is new or unusual for farmers in a given region[17], such as growing specialty products (e.g., mushrooms, culinary herbs). However, *Conversion* should also include the adoption of unusual agricultural practices as a means to achieve one of the goals of alternative agriculture as argued by Beus and Dunlap (1990), such as the use of alternative sources of energy for agriculture production. *Extensification* refers to the reduction of the production level, such as organic agriculture, free-range pastures and

[17] Some early studies regarding agriculture diversification excluded unconventional crops and livestock from diversification (e.g., Griffits, 1987, cited by Ilbery, 1991)

afforestation practices. Although extensification may appear contrary at first to diversification and its purpose to increase farm revenues, Knickel and Renting (2000) report that the higher price paid for organic products added to the reduced costs of inputs lead to an increase in net farm revenues of around fifteen percent. So, some farms can actually reduce agricultural production, and reduce the negative externalities associated with some production practices, and actually increase total and net revenues. While extensification is not a required aspect of diversification, many diversified farms focus on the net revenues and other benefits when determining production practices rather than focusing on maximizing output.

Non-agricultural enterprises have also been sub-divided in several categories based on their wide variety of non-agricultural uses of the farm's resources that are offered to the public. However, studies show dissimilarities in the types of enterprises (i.e., categories) most frequently found in farms and ranches. For example, Bowler *et al.* (1996) concluded that tourism and contracting were the most predominant enterprises (31% and 20% respectively) offered by farmers in England. Conversely, Mahoney and Barbieri (2003) developed seven categories of non-agricultural enterprises, identifying many examples for each category throughout the United States and Canada. Non-agricultural enterprises of this model include: new marketing and distribution; recreation, tourism and hospitality; historic preservation and adaptive re-use; leases, easements and time-shares; contracts and services; expertise, consulting and education; and value(s) added to existing products.

The variety of categories proposed through the literature suggests that said categories should not be interpreted as exhaustive but demonstrative of the wide range of

enterprises that farms and ranches can develop (in the same sense, Ilbery, 1991). The following paragraphs describe the different types (i.e., categories) of non-agriculture enterprises that the literature compiles.

Most studies identified tourism and lodging as an important type of non-agricultural enterprise offered in farms. For example, McGehee and Kim (2004) identified 987 farms in Virginia that were offering at least one type of tourism or lodging services. Understood as the provision of tourism and accommodation services within a working farm environment, farm/ranch tourism or agritourism includes a wide variety of activities and services, such as farm stays, Bed and Breakfasts (B&B), cattle drives, u-pick-up, farm tours, special events, hunting and fishing, and wine tasting.

Value-added is another category widely found in literature, although there are differences in definitions and perceived extent. Most studies include value-added processing as well as the direct marketing of agriculture products in this category (e.g., McNally, 2001; Ilbery, 1991), while Mahoney and Barbieri (2003) separate them[18]. This study supports separating value-added processing and marketing as different diversification enterprises, taking into consideration that Ilbery (1991) reported that direct marketing was the most frequent diversification related activity in the 120 farms that were studied in the United Kingdom. Processing includes a wide variety of activities, in a continuum with simple processes at one end (e.g., dehydration of flowers and herbs) and very sophisticated processes at the other end (e.g., wineries). In turn, direct marketing includes several strategies such as farm gate sales, on-farm shops and recently

[18] In addition, Ilbery (1991) reports that an early study of agriculture diversification excludes those diversified activities that are directly related to the crop/livestock production such as value-added processes.

on-line orders and virtual markets. Most definitions also focus on value added/gained by the farmer or rancher associated with additional processing of agricultural products. However, in reality it should be defined as value(s) added, recognizing the potential and large benefits of adding social, environmental and community values.

Agricultural contracting and services[19] is another category found in the literature (Mahoney and Barbieri, 2003; McNally, 2001; Bowler *et al.*, 1996). Contracting and services is the use of –other than labor– farm resources in favor of other farmers or non-agricultural agents (e.g., public). This category appears very frequently in England and Wales according to two studies: Bowler *et al.* (1996) found that 20% of the 2,700 farms surveyed reported a type of contracting, and McNally (2001) found contracting as the most common type of diversification (40%) and the only category that increased over time.

Several authors include *passive diversification* (i.e., leasing/rentals of land and/or buildings) as another category of diversified enterprises (e.g., Mahoney, 2002; Ilbery, 1991). McNally (2001) found that thirty percent of the farms studied in England reported renting out farm buildings. Examples include the lease of the farm for hunting purposes or for special events, and the lease of a given infrastructure (e.g., cider mill for processing). This study suggests that passive diversification should also include the lease or rental of the farm equipment.

Mahoney and Barbieri (2003) include two additional categories in their farm diversification model. First, *Historic Preservation and Adaptive Re-use*, defined as the adaptation of historic infrastructure and resources for an actual use, giving an additional

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[19] Also called *Hirework* (McNally, 2001)

value to the resource. Examples include the restoration of old barns and conversion into dance or events theaters, deployment of antique tractors for hayrides, and adaptation of historic cottages for accommodation. Second, *Expertise, Consulting and Education*, which includes the wide spectrum of educational activities that the farmers can provide to others based on their agricultural or professional expertise. Examples include workshops for wool processes (e.g., shearing and fleecing), herbal teas classes and sustainable farming practices seminars. A very large number of farms and ranches are offering internships.

Although the intention is to develop a classification of farm diversification, the categories proposed in various models must be viewed as interdependent and not mutually exclusive (Ilbery, 1991). That is, certain activities fit in more than one category. For example, wine tasting fits within farm tourism and also within direct marketing. In addition, some studies reveal that farmers prefer to stick with only one category of diversification, although develop several activities within that category (Ilbery, 1991). For example, farms offering farm tourism through several activities, such as hayrides, petting zoo, farm tours and special events. The different diversification enterprises should also be viewed as mutually supporting product lines that increase the draw and attraction of diversified farms.

Figure 2.1 summarizes the categories and sub-categories of farm diversification found in the literature.

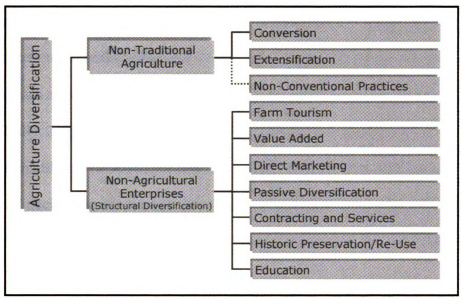

Figure 2.1. Categories and Sub-categories within Farm Diversification
Source: Adapted from Bowler *et al.* (1996) and Mahoney and Barbieri (2003)

Attributes Associated with Farm Diversification

Three types of attributes have been associated with farm diversification and efforts to classify diversification: farm characteristics (e.g., commodity produced and farm size), farmer/farm household's profile (e.g., demographics, family cycle), and environmental attributes (e.g., closeness to major roads, change of policies). It is important to state that although some general characteristics are often related and correlated to farm diversification, a complex and very specific farm attributes trigger the development of farm alternatives enterprises (Ilbery *et al.*, 1998).

Farm Characteristics Associated with Diversification:

Farm diversification and types of diversified enterprises are often found to be related to both physical and tenure attributes of the farm. Several studies have focused on

the relationships of farm size and diversification. Most studies conclude that larger farms are more likely to diversify because of their access to financing and non-financial resources, such as capital for investments, natural resources and infrastructure for re-use (e.g., McNally, 2001; Ilbery, 1991; Anosike and Coughenour, 1990). However, Damianos and Skuras (1996) found that total arable land available negatively influences the farmers' decision to adopt an alternative farm enterprise, concluding that the probability of adopting an alternative enterprise on farm falls by 28.6% as the mean size of arable land increases by 20 hectares.

One problem associated with the efforts to relate diversification to farm size is that there are alternative measures of size. While some studies define farm size according to the total farmland (e.g., Ilbery *et al.*, 1998; Ilbery, 1991), others define it based on the farm net income (e.g., McNally, 2001) or even with the combination of arable land and farm gross profits (Damianos and Skuras, 1996)[20].

The relationships between farm size and types of diversified enterprises developed have also been studied. The studies result in contrary findings. For example, in a study conducted in England, Ilbery (1991) found that there are no significant differences between size and types of diversified enterprises, although the number of diversified activities tends to increase with farm size. Conversely, other studies in England and Wales concluded that contracts, services, processing and rentals of farm buildings more likely occur on large farms, indicating that higher level of farm resources (e.g., buildings and machinery) provides greater advantages for diversification (Bowler *et*

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[20] Whatmore *et al.*, 1987a suggest that typologies must consider political and economic factors because, for instance, particular economic characteristics (e.g., profits) or technological conditions can make two farms with the same acreage belong to different classes.

al., 1996 and McNally, 2001). In Greece, Damianos and Skuras (1996) reported that large-sized farms are more likely to move farmers toward conversion (i.e., adoption of unconventional crops/livestock), while less likely to move toward structural diversification. Regarding farm recreation and tourism, some studies show that smaller farms have greater incidence of farm accommodation (Bowler *et al.*, 1996), while others conclude that farm size is strongly correlated with types of recreation opportunities developed (McNally, 2001).

Research has showed an association between diversification and the mode of agriculture production. It is obvious that diversification is more likely observed on less specialized (less intensive) farms, because either farmers have more time and capital to allocate to diversified activities, or there is a greater market opportunity (McNally, 2001; Ilbery, 1991). In addition, Ventura and Milone (2000) report that diversification more likely occurs on farms with seasonal production because labor/time is available in the off-season to develop and manage diversified enterprises. Also, there is greater need to generate non-agriculture related revenues during the off-season.

Some relationships between commodities produced and types of diversification have also been observed. Bowler *et al.* (1996) found a greater development of fat cattle production in diversified farms compared to conventional farms. Furthermore, McNally (2001) concluded that cereal farms are more likely to rent buildings and to engage in hirework and less likely to engage in recreation, while horticultural firms are more likely to engage in retailing and less likely in other activities. These conclusions may suggest that diversifiers allocate their existing resources to the most adequate use (i.e., diversified enterprise) according to the needs or requirements of the enterprise to be developed.

Regarding farm structure, Anosike and Coughenour (1990) found that the land tenure is negatively correlated to diversification. Also, McNally (2001) found a positive relationship between whether the farm is classified as a non-family business (i.e., other partnership, limited company) and the probability of engaging in all types of diversification, except the development of crafts enterprises (no relationship) and hirework (negative relationship)[21]. These findings are sustained by the fact that non-family businesses may be larger, more specialized and less in need to diversity to increase their revenues.

Diversification has also been shown to be correlated with the farm managerial structure. Using the amount of hired labor as an indicator of the managerial and organizational abilities of the farmer and holding size, Damianos and Skuras (1996) concluded that farms that depend extensively on hired labor are more likely to diversify. Interestingly, Bowler *et al.* (1996) found that diversified farms have greater debts than conventional farms, although there were no differences in the total size of profits[22].

Farmer and Farm Household Profile Associated with Diversification:

Characteristics of the entrepreneur are a focal point in the farm diversification literature. Previous studies indicate that diversified farmers are not generally young new entrants into farming, but more likely to be people with considerable farming experience and traditional family farming backgrounds (Ilbery, 1991). Furthermore, diversifiers

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[21] Conversely, Anosike and Coughenour (1990) concluded that the form of the farm organizations is not correlated with conversion.

[22] The author found out though that diversified farms have higher profit levels per hectare of farmland than conventional farms.

describe their farms as being their only current occupation, suggesting that the expansion of the farm business into non-farm activities does not diminish the perception of the farm as the main income-generating activity (Carter, 2001). However, preliminary research as part of this study indicates that these findings may not be true for many diversified farmers and ranchers in the U.S. and Canada.

Studies report that overall, the farmer's age and education do not appear to be correlated to the development of alternative farm enterprises (McNally, 2001; Anosike and Coughenour, 1990; Damianos and Skuras, 1996)[23]. However, diversifiers seem to have a high level of disposition towards skills acquirement and expertise outsourcing. For example, Carter (2001) found that diversifiers were more likely to have undertaken agriculture and management training and to employ agricultural management consultants than non-diversified farmers. Similarly, Ilbery (1991) found that over 50% of those having farm accommodation diversification sought market research. These finding suggest that they are more entrepreneurial in nature.

Family structure seems to have an effect on diversification. Regarding farm household structure, it has been found in some studies that the number of family members (excluding spouses) working on the farm has a positive relationship to diversification, except passive diversification (i.e., rental and leasing) suggesting that diversification is a strategy that either utilizes or provides employment for family

[23] However, McNally (2001) reports that older farmers are less likely (3%) to offer services to others and Anosike and Coughenour (1990) found out that education is positively correlated with the adoption of non-conventional crops/livestock. In turn, Ilbery *et al.* (1998) found age differences between tourism and accommodation activities.

members[24] (McNally, 2001; Damianos and Skuras, 1996). Conversely, Bowler *et al.* (1996) did not find any significant differences in the extent to which family labor is employed between alternative and conventional farms.

Regarding farm family cycle, Damianos and Skuras (1996) found a higher number of children living on diversified farms, suggesting that diversification may be more likely in the early stages of the family life cycle. The authors concluded that the probability of adopting any diversified enterprise was about 10% higher for each additional child living on the farm. Furthermore, Ilbery *et al.* (1998) conclude that alternative enterprises do not tend to be adopted by couples with children younger than six years of age.

Gender and the role of the farmer's wife as it relates to diversification have received considerable attention in the literature. This attention is consistent with the crucial role that female spouses and significant others play in the establishment and operation of diversified enterprises (Ilbery *et al.*, 1992). For example, McNally, (2001) showed that the probability of observing tourism activities on the holding increases by twelve percent (12%) when the spouse is present, finding also positive associations with retailing and recreation. Conversely, the author found a negative relationship with hirework and rentals and the spouse presence. However, Damianos and Skuras (1996) reject the said association in a study conducted in Greece.

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[24] According to the author, the result regarding passive diversification is consistent with the hypothesis that rentals and leases do not create job opportunities.

External Farm Environmental Characteristics Associated with Diversification:

The external farm environment, the institutional complex associated with farm policy, (e.g. education and training), market and capital structures, state regulation, farmers' organizations, farming interests, science and technology is important and obviously impacts motivations and support for diversification (Barlas *et al.*, 2001). Location of the farm is the most studied environmental attributes that may affect farm diversification.

Research has shown a strong association between diversification and closeness to main roads and urban fringes. For example, Damianos and Skuras (1996) state that according to previous studies, the probability of diversified farms occurrence decreases by 18% as the distance from a main road increases by 10 km. This correlation is not surprising taking into consideration the importance of "short chains" in the development of new food systems and the market supply/demand for products, labor and networks in urban areas (Knickel and Renting, 2000). However, there is no research showing that *"success"* depends on distance to roads.

Studies also reveal that the location of the farm is associated with the type of alternative enterprise. For example, Ilbery (1991) concluded that value-added processes were more frequent in England inner areas, while farm-based recreation was generally found further out in the outer fringe. In the same sense, McNally (2001) found that farm tourism is more likely to occur in less developed/favored areas, contrary to the other types of diversification, being the retail-diversified activity with the strongest negative coefficient of correlation. Again, these results are expected because the external context (e.g., rural landscaping) plays a major role in some alternative enterprises (e.g., farm

tourism) while closeness to the urban boundaries is an advantage for other activities (e.g., direct marketing). Obviously, there is interplay of distance from and access to markets and diversification.

Finally, there is also evidence of spatial concentration of certain activities in certain areas. For example, Ventura and Milone (2000) report clusters of farm butcher shops in Umbria (Italy) that encouraged the spread of butcheries networks and the development of other *Chianina*[25] products. Likewise, Ilbery (1991) found a preponderance of horsiculture activities in the urban fringe of West Midlands (U.K.). Said clusters, especially in cases of product innovation, are extremely advantageous for the farmers because they facilitate the information exchange, processing and marketing through networks development as well as customer recognition (Knickel and Renting, 2000).

Table 2.1 summarizes the associations found between farm diversification and several attributes of the farm, farmer and the environment.

[25] *Chianina* is a local beef breed, traditionally used for traction, although lately the breed has proven to be a superior source of meat.

Table 2.1 Summary of the several correlations found among farm, farmer/farm household and environmental attributes and farm diversification and types of diversification.

Attributes	Farm Diversification	Types of Diversification
Farm Attributes		
Size	+ - [1]	+ -
Agriculture Production		
Specialization	-	N/A
Seasonality	+	N/A
Farm Structure		
Land tenure	-	N/A
Non-Family Farm	+	+
Management Structure		
Hired Labor	+	N/A
Amount of Debts	+	N/A
Farmer/Farm household Attributes		
Agriculture/Management training	+	+
Family workers working on-farm	+ 0 [2]	+
Number of children living on-farm	+	
Role of farmer's wife	None	+ -
Environmental Attributes		
Closeness to main roads/urban fringes	+	+ -

[1] Positive and negative correlations were found
[2] Positive correlations and no correlation were found

2.2 The Roles of Goals in Farm Diversification Decisions: A Theoretical Approach

Goals (i.e., objectives) are internal representations of desired outcomes, events or processes (Austin and Vancouver, 1996). According to the Theory of Goal-Setting, the individual's conscious goals govern his/her behavior (Hornsby and Kuratko, 2002). In the same sense, the literature generally concludes that goals have a significant role in the entrepreneurial behavior, both in the decision-making process (Gasson, 1973) and in venture performance (Kuratko *et al.*, 1997).

The Role of Goals in the Diversification Decision-Making Process

According to a sociological approach, socio-cultural processes affect individual's goals (Austin and Vancouver, 1996). Specifically regarding farm decision-making processes, such socio cultural processes can have internal as well as external roots (i.e., stimuli). External stimuli are, for example, the changes regarding macro economy (e.g., new market trends, declining demand/prices), political environment (e.g., new rural policies) and in the societal structure (e.g., increase role of women in society) (Bowler *et al.*, 1996; Ilbery *et al.*, 1998; Damianos and Skuras, 1996). Conversely, internal stimuli that influence goal construction include the economic and social changes that may occur inside the farm affecting the allocation of resources for production processes, such as variations in the farm profitability rates, labor relations and even in the family life course (*Ibid.*).

Two elements of the goal structure are relevant to this study: its *hierarchical* property and its *importance/commitment* dimension. The *hierarchical* property implies that each individual has several goals that are hierarchically and sequentially organized, with few higher-order goals at the peak and several lower-order goals (subgoals) at the bottom (Austin and Vancouver, 1996). Therefore, it can be hypothesized that farmers can have several goals for their diversification behavior and decisions and these goals do not all have the same level of importance.

The *importance/commitment* dimension means, that the level of importance for the same goal or goal set can and often will differ across individuals. Second, that the goal importance determines the goal commitment (Austin and Vancouver, 1996). Commitment refers to the individual's attachment to a goal, implying how long and how

diligently an individual is willing to strive for a specific goal and the unwillingness to abandon (or lower) said goal over time (Slocum *et al.*, 2002). This includes how much and for how long they were willing to invest.

Once a set of goals is established, the farmer will purposely decide on behaviors (e.g., enterprises, investments) to achieve them. Consistent with the actor theory, it is the farmer/farm household who will ultimately decide the necessary farm adjustments to respond to their perceptions of their agriculture contextual (e.g., Rob and Burton, 2004; Barlas *et al.*, 2001; Ventura and Milone, 2000; MacFarlane, 1996; Bryan, 1989; Whatmore *et al.*, 1987b). Recall that as previously discussed, farmers can adopt several strategies[26]. Therefore, farmers will choose the path that seems most consistent and appropriate to achieve their goals based on their assessment of the farm reality (e.g., resources, external context).

The Role of Goals in the Diversification Performance

A second role that goals play in the entrepreneurial behavior is related to the venture performance and hence to *Success* and *Failure* constructs. Goal-directed behavior results in an outcome (i.e., emotion) that in turn may affect subsequent attitudes and motivations (Slocum *et al.*, 2002). An actual or perceived positive outcome (i.e., Success) has a crucial role in the sustainability of a certain course of entrepreneurial behavior (Kuratko *et al.*, 1997). Positive outcome --contrasting entrepreneurial goals to actual or perceived achievement (i.e., meeting or exceeding personal relevant goals)--

[26] The multiple choices that farmers can choose from is consistent with the property of *equifinality*, meaning that goals can be achieved through multiple means (Austin and Vancouver, 1996).

reinforces the entrepreneur behavior either within the on-going enterprise or through the development of a new venture(s). Conversely, a negative outcome can lead to the disengagement of a venture. Hence, to be successful, individuals must translate goal-directed behaviors into achieved goals (Slocum *et al.*, 2002). Achievement will also influence word-of-mouth concerning the benefits associated with an entrepreneurial venture.

The assessment of "*Success*" incorporates three dimensions of goals. First, farmers are motivated by a set of goals that are hierarchically organized. Second, these goals can be related to different outcomes (e.g., financial and non- financial). Third, each goal has different relative importance for the diversifier.

Failing to adequately understand and apply this three dimensional perspective can lead to incorrect assessments concerning the "success" and "failure" of diversification enterprises[27]. Evidence suggests, for example, that financial "failure" (i.e., little or no economic returns) of diversification may not imply entrepreneurial failure or vice versa. According to Kuratko *et al.* (1997) some entrepreneurs continue to pursue their business venture in spite of adverse events or lack of financial success. Moreover, Lynn and Reinsch (1990) found out that although positive financial performance and owner satisfaction were significantly and positively related, most entrepreneurs indicated that they would repeat an unprofitable diversification or forego a profitable one because they achieved other goals.

This literature suggests that the assessment of entrepreneurial success requires a comprehensive evaluation of the accomplishment of the various types of goals with

[27] For example, McNally (2001) suggests that the little economic rewards of diversification appear as a failure of the strategy.

different importance that entrepreneurs pursue through their venture. Taking into account the central actor role of farmers, the significance of goals in the decision-making process and entrepreneurial sustainability, and the complex structure of the goal setting, this study defines success as the satisfaction of the initial goals that agripreneurs pursued taking into account the complexity (i.e., typologies and level of importance) of the farm diversification goal set.

Figure 2.2 shows the model that this study will use to assess the success of farm diversification in Texas.

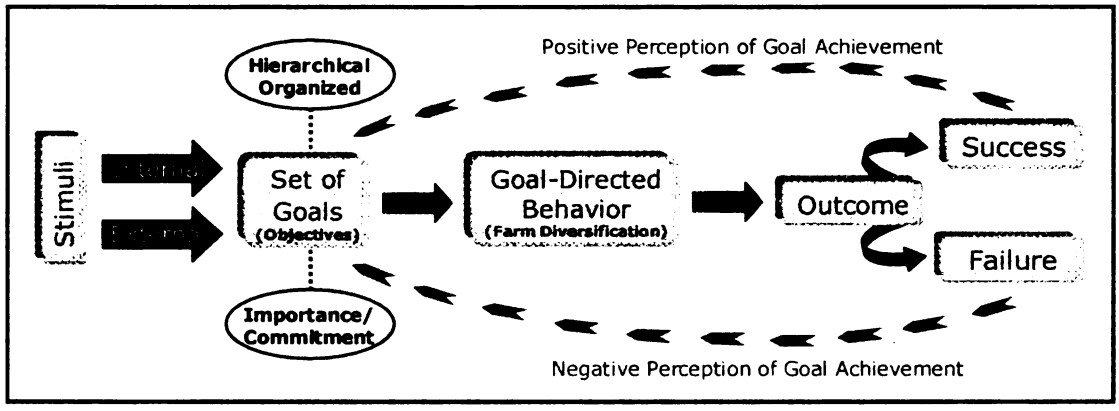

Figure 2.2. Goal-Directed Behavior Model

2.3 Goals Behind Entrepreneurship and Diversification

Literature identifies several types of goals that entrepreneurs and specifically farm diversifiers seek to achieve through diversification ventures. Diversification goals can be arranged on a continuum with very personal (i.e., intrinsic) goals at one end and purely financial goals at the other end. This section reviews the several types of goals identified in literature for entrepreneurs in general and then for farm diversification.

Lynn and Reinsch (1990), in a study conducted with 280 Texan entrepreneurs, found that the most common reasons behind diversification was the firm's financial growth, followed by creating an opportunity to the spouse. Other frequent goals identified were related to the market environment, such as meeting a need in the market, building on an existing market position, meeting the requests for/from several customers and providing a variety of products and services.

In turn, Kuratko *et al.* (1997) identified sixteen goals that, when achieved, motivated Midwestern entrepreneurs to sustain their business venture. The authors classified those goals according to four factors founded in the types of rewards that the entrepreneur is aiming at through business development. *Extrinsic Rewards* includes several -and most frequently reported- goals closely related to economic or financial benefits. Examples include (personal and firm) financial enhancement, building equity and the increase of income opportunities. Conversely, the *Intrinsic Rewards* embraces several psychological values that the diversifier pursues. This category includes, for instance, task accomplishment, subjective compensation (e.g., public recognition), personal growth, meet a challenge, and leisure related aspirations (e.g., enjoyment and excitement). The third factor, *independence/autonomy*, is related to the values related to being "ones's own boss". This class includes maintaining personal (and business) control and freedom through self-employment. At last, *family security*, refers to the several goals that focus on the protection and/or enhancement of the loved ones. This category includes building a business to pass on to next generations, the creation of employment for family members, and keeping alive a several-generations firm.

Specific studies related to goals pursued with farm diversification confirmed those goals identified in the entrepreneurial literature, including that agripreneurs are not only economically/financially driven. Instead, agripreneurs are motivated to achieve a wide variety of economic as well as non-economic goals (e.g., McGehee and Kim 2004). Although there is similarity between the goals pursued by non-agriculture entrepreneurs and the ones pursued by the *agripreneurs*, it is reasonable to expect that certain goals relate exclusively to farm diversification.

First, agripreneurs appear to be highly motivated by their farm identity and their relationships with the farm. In one of the pioneering studies regarding goals and values of farmers, Gasson (1973) found that relevant goals that farms strive toward are centered on the value of being a farmer (e.g., belong to the farming community and the prestige of being a farmer and continuing family traditions). Rob and Burton (2004) contend that an important factor in diversification decision-making is "the meaning of life. Farmers want to farm. It gives them their identity and their sense of achievement (...) Farmers see themselves as food producers" (p. 9). In the same sense, Getz and Carlsen (2000) found that the economic motivation (i.e., farm revenues improvement) behind agri-tourism development in Australia was not an end *per se*, but a means to support rural lifestyles.

Second, some diversified farmers may be influenced by goals that are supported by the business structure. Getz and Carlsen (2000) summarize previous evidence concluding that family business goals are different from the firm-value maximization goals usually pursued by publicly traded and professionally managed firms because they are more oriented to the satisfaction of personal, family or lifestyle goals. Further, it is not uncommon that family businesses accept lower returns or longer paybacks on their

investment to sustain a lifestyle. In addition, Lynn and Reinsch (1990) conclude that intrinsic reasons are often more associated to owner-managed companies.

Studies regarding the goals that are most relevant and important in the diversification decision-making process are not conclusive. While some studies show that goals linked to external environmental factors (e.g., economic and market changes) are more important than those that are related to internal factors (Bowler *et al.,* 1996; Ilbery, 1991; Nickerson *et al.*, 1991), others conclude that lifestyle and family-related reasons were predominant goals behind farm diversification (Getz and Carlsen, 2000).

The strong relevance of economic reasons behind farm diversification is consistent with the economic rationality of farmers[28]. For example, farmers diversify to deal with decreased prices they receive, increased operating costs and reduction of agricultural profits. Other farmers, especially those located close to urban fringes, also diversify to help compensate and allow them to pay for the property tax increases resulting from residential developments (Nickerson *et al.,* 1991).

However, there is also rationality for the importance assigned to non-economic goals for farm diversification. According to Gasson (1973), farmers may choose to maximize *satisfaction* within a given preferences system rather than maximizing income. The '*satisficing*' concept suggests that farmers and ranchers do not necessarily indulge in economically optimal decision-making, but instead may optimize social, intrinsic and/or expressive goals (Rob and Burton, 2004). In addition, Nickerson *et al.*, (1991) conclude that the high importance assigned to non-economic reasons is evidence of the desire to keep the family farm operation sustained by the farmers' perception of agriculture as a

[28] According to Gasson (1973), [farmers] rationality is defined as a goal-directed behavior.

way of life rather than a career or job. In similar sense, McGehee and Kim (2004) conclude that social motivations prove that agritourism is sustained to attain the rural lifestyle. Furthermore, the farmers' goal of providing employment to family members reflects the farmers' desire to pass the farms on to heirs (Evans and Ilbery, 1989)[29].

Relevant Goals behind Farm Diversifiers

Various goals have been identified relevant in the agripreneur's decision-making process. Agripreneurship goals can be grouped into four general categories.

First, economic/financial goals appear to be very important in diversification decision-making especially related to agritourism (e.g., McGehee and Kim, 2004; Busby and Rendle, 2000). Bowler *et al.* (1996) found that the three most important reasons for diversifying farms were: a) To maintain or increase the income generated by the farm business (66%); b) reactions toward a market opportunity (22%); and c) to exploit an under-utilized farm resource (22%).

Similar results were found for farms and ranches offering agritourism activities[30]. In a study of 987 farms offering agritourism in Virginia, McGehee and Kim (2004) found that 'additional income' had the highest mean in importance score with lowest standard deviation followed by 'fully utilizing farm resources'. The same conclusion regarding

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[29] Evidence suggests that the disposition of the business among family members is not a broadly extended farm path. According to Getz and Carlsen (2000) there are only a few cases of succession in Australia because children see the business as too difficult and less rewarding and because children are alienated by the parents' management style.

[30] Nickerson *et al.*, (1991) report that 'to cope with the agriculture income fluctuation' was not a primary motivation reported by farmers because the agriculture production was not the primary income source of most participants.

the importance of the additional income goal was drawn in a study undertaken among 707 farms and ranches in Montana (Nickerson *et al.*, 1991).

Interestingly, the levels of farm indebtedness appear as a strong motivation to diversify the farm operation. Comparing different business paths among diversified farmers, Bowler *et al*, (1996) found that the amount of farm debt has a significant role in the adoption of non-conventional products (lower debt levels) and developing other 'industrial' enterprises (higher levels). One of the important economic goals for diversifiers may therefore be to specifically decrease the farm debts.

Opportunity to "close-by market" appears as another economic purpose triggering farm diversification. Ilbery (1991) concluded that 82% of the diversified farmers interviewed reported that the proximity to a major urban market did influence their decision to develop an alternative enterprise (second most important reason).

The literature that was reviewed, verified the importance of intrinsic goals in diversification decisions. According to Getz and Carlsen (2000) more than two thirds of participants reported that 'To meet interesting people' was found to be an important goal in starting tourism and hospitality enterprises (mean of 3.96 on a five-point scale) among Western Australian farmers. Certainly, this goal would be expected to be important related to hospitality/tourism related diversification enterprises. Interestingly though, said study found that most participants (61.9%) reported that 'To gain prestige by operating a business' was not an important goal in the diversification decision-making process (mean of 2.16). 'To educate the consumer' appeared as an important goal in the farm tourism diversification process in studies conducted in Montana (mean of 2.90 on a five-point scale) and in Virginia (Nickerson *et al.,* 1991 and McGehee and Kim, 2004 respectively).

There are also some goals associated with the characteristics of agripreneurs[31]. Getz and Carlsen (2000) report that 'To provide me with a challenge', 'To be my own boss' and 'To become financially independent' were significant start-up goals (means of 3.93, 3.94 and 3.97 respectively on a five-point scale). Interestingly, said study found significant differences in this type of goal regarding the farmer's age and the business structure: a) farmers younger than 44 years were more likely to agree with the independence factor than those over 65 years; b) sole proprietors were much more likely to agree than married couples that being one's own boss was an important start-up goal.

Getz and Carlsen (2000) also found that the lifestyle was by far the most important goal factor (i.e., higher factor loadings) among Australian farmers offering tourism and hospitality services. Furthermore, the start-up goals with higher means in said study were 'To live in the right environment' and 'To enjoy a good lifestyle' with means of 4.51 and 4.37 respectively on a five-point scale. Interestingly, this study found out that younger farmers were more likely to agree with the lifestyle factor than those over thirty-five years. Bowler *et al.*, (1996) state that employment generation for a family member was the fourth main goal behind the development of alternative enterprises among English farmers. Providing employment for family members is convenient when taking into consideration the benefits of hiring family labor, such as low labor wages, loyalty and commitment (Evans and Ilbery, 1989).

Table 2.2 summarizes the several start-up goals that have been tested for their significance in the farm diversification decision-making processes.

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[31] Contrary to its misuse as synonymous of business owner or manager, the entrepreneur comprises a type of behavior characterized as being proactive, taking initiative, identifying new opportunities and being able to assume risks, characteristics that are found in those farmers that are able to make fundamental changes to their existing farm such as the development of novel enterprises (Bryant, 1989).

Table 2.2 Summary of the several start-up goals tested behind entrepreneurship and farm diversification.

Types of Start-Up Goals
Economic/Financial
To make lots of money
To maintain or increase the farm business income
To cope with fluctuations in agriculture income (e.g., seasonality)
To reduce [agricultural] risk
To exploit an under-utilized farm resource
To safeguard farm investments (e.g., in infrastructure and breed selections)
To react to a need/opportunity in the market
To qualify for a state grant
To benefit from a tax incentive
To offset the loss of a government agricultural program
To satisfy a few important customers
To provide an [early] retirement income
Personal Aspirations
To support my/our leisure interests
Companionship with guests/users
To meet interesting people
Interest/hobby that grew into a business
To educate the consumer
Entrepreneurial Image
To be my own boss
To permit me to become financially independent
To provide me with a challenge
To gain prestige
Family Security
To create employment for a family member
To keep my family together
To keep this property in the family
To live in the right environment
To enjoy a good lifestyle
Others
Need to create employment for a non-family member
Imitate others' success

Existing Classifications of Farm Diversification Goals

Some scholars have attempted on more than one occasion to classify the most relevant goals that drive farm diversification decisions. McGehee and Kim (2004) used Weber's theory of formal and substantive rationality to distinguish three types of motivations behind agri-tourism entrepreneurship in Virginia: formal (primarily

economic), formal-substantive (formal weighted) and substantive (primarily socio-cultural) reasons.

According to their main motivations to start new business activities, Alsos *et al.* (2003) identified three types of farm-based entrepreneurs. The *Pluriactive*, which is mainly motivated to enable the farm continuance focusing on three goals: to sustain farming, to expand the farm to incorporate more family jobs and increase income. The *Resources-Based* farmer, oriented to better utilize their own -especially unique- resources. And the *Porfolio* farmer whose main goal is the exploitation or development of a new business idea.

Nickerson *et al.*, 1991 used three sets of reasons (social, economic and externally influenced) to classify entrepreneurs in three groups: The *Economists*, who are mostly oriented toward economic reasons; the *Influentials* who mostly care about external forces; and the *Multidimensionals* who have several types of reasons for diversifying although are highly oriented to social goals.

In turn, Evans and Ilbery (1989) found two types of diversified farms based on the economic/financial goals pursued with diversification: the *Survivors* who adopt diversification to remain on the land and generate family income, and the *Accumulators* who aim to increase returns on surplus capital.

Attributes Associated with Farm Diversification Goals

Some studies have focused their attention on identifying farmer and farmer attributes related to differences in the types of goals that are pursued[32]. For example, Getz and Carlsen (2000) found that tour operators were less oriented toward making money than hotel owners. McGehee and Kim (2004) showed that there are different motivations among farm families based on characteristics of the farm household such as acres owned (less than 100 acres vs. more than 300 acres), dependence on farming operations (full-time farmers vs. farm hobbyists), and household income (those earning less than $50,000 vs. those earning more than $100,000). Nickerson *et al.* (1991) concluded that farmers and farmers/ranchers were more concerned about potential loss of agricultural programs than ranchers and that smaller operations (<100 acres) and farms leasing less than 1000 acres were less concerned about agricultural income fluctuations while larger operations (>3000 acres) were less concerned about market and tax incentives.

A number of studies failed to show statistical differences in the reasons why farmers develop alternative enterprises on the farm, including the age of the firm, the total business income (Lynn and Reinsch, 1990), the gender and the type of industry (Kuratko *et al.*, 1997). Current vs. potential entrepreneurs and number of years in agriculture and offering recreation activities were also not statistically related to diversification goals (Nickerson *et al.*, 1991).

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[32] Conversely, Nickerson *et al.* (1991) found that those farms located in Eastern Montana were more motivated by agricultural income fluctuations and loss of government support while those in Western Montana were more motivated by meeting a need in the market and tax incentives. However, such differences were consistent with the fact that the Eastern Montana is more agricultural than Western Montana.

Nickerson *et al.* (1991) found that some farm and farmer's characteristics differ among their three classes of entrepreneurs developed. For example, potential entrepreneurs were more *Multidimensionals* (i.e., broad motivations driven) and *Influentials* (i.e., external forces concerned) than current entrepreneurs and respondents owning no land were higher *Influentials* while those with large land (>3000) were more *Economists* (oriented to economic reasons).

2.4 Previous Studies Assessing the Success of Farm Diversification

The most suggested and tested benefit of farm diversification is the generation of additional income for the farm household. However, assessments of income indicators (e.g., revenues) from diversified enterprises are not conclusive regarding the economic value of diversification. On the one hand, farm diversification appears a highly profitable enterprise. For example, Nilson (2002) reports that in Austria it is not unusual that tourism has a share of 50% of the gross income of the farm, proving many farmers depend on tourism to maintain their agriculture. On the other hand, several studies report low revenues from diversification. For example, Sharpley (2002) and Fleischer and Pizam (1997) report low revenues in most farm tourism businesses in Cyprus, Israel and in England respectively; Ilbery (1991) stated that 60% of farmers interviewed reported earning 10% or less of their income from diversification and Hjalager (1996) concluded that financial returns of farm diversification most often do not meet the expectations of the farmers or the politicians.

More consistently, literature concludes that diversification revenues allow farm cash flow. For example, Ventura and Milone (2000) prove that the vertical integration of

the farm in the food system through on-farm stores improve the financial equilibrium of the farm because of the continuous and stable sales throughout the year. Similarly, McNally (2001) explains that the negative relationship found between expected income and probability of observing a diversified activity (i.e., farmers expecting relatively low profits are more likely to diversify) indicates that revenues from diversified enterprises provide a buffer in years of low agriculture returns.

Overall, although evidence shows that diversification is not always as highly a profitable business as expected, it spreads agricultural risk and supplements farm income enabling farms to remain in business and to engage in a variety of traditional agricultural activities[33] (Busby and Rendle, 2000; Ilbery *et al.*, 1998; Fleischer and Pizam, 1997; Damianos and Skuras, 1996).

Several factors have been used to ascertain the dissimilar impacts of diversification on farm/ranch revenues[34]. Discriminated analysis based on the types of diversified activities yield some differences in the degree of financial success of farm diversification. For example, Bowler *et al.* (1996) concluded that farm families that adopted industrial and value-added enterprises were more profitable than those farmers adopting non-conventional crops and livestock. Likewise, it was found that diversified operations represent a major component of total farm revenues on those farms offering farm retailing (McNally, 2001), production and accommodation services (Ilbery, 1991).

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[33] Contrarily, McNally (2001) suggests that the insignificance of revenues from diversified enterprises, even though the most important motivation is the increase of revenue, demonstrates the failure of the diversification strategy. This study rejects such conclusions because the achievement of other entrepreneur goals also needs to be evaluated.

[34] Although not specifically referring to farm diversification, Lynn and Reinsch (1990) found that owner satisfaction and financial performance were correlated with novelty of business lines and with the operation's length of existence. Furthermore, the authors found that diversifications undertaken to reduce risk and to meet a need in the market were associated to short-term satisfaction, while pursuing the satisfaction of important customers was related to long-term satisfaction.

Some farm internal attributes have been associated with different levels of success. For example, Bowler *et al.* (1996) conclude that farmers with higher education tend to obtain greater profits from the diversified activities/services offered. In turn, Hjalager (1996) concluded that those farms with higher [agricultural] margins are those who earn greater revenues from diversification. In addition, some farm external factors such as market/large town closeness (McNally, 2001; Bowler *et al.*, 1996), accessibility through main roads and local "high landscape value" (McFarlane, 1997) also appear to be associated with the success of farm diversification.

Other economic values of diversification analyzed are reviewed in the literature. Murdoch and Miele (1999) concluded that business diversification enables the capture of additional markets while Fleischer and Pizam (1997) point out the value of maximizing the use of the farm resources, enabling additional revenues without compromising them. Interestingly, Lynn and Reinsch (1990) concluded that the financial success of small businesses sharing resources depends on the type of resource shared: sharing of products is more associated with greater, especially short-term, financial success than sharing technology.

Evans and Ilbery (1992) point out the values associated with the interaction between the farm and the external environment: capital mobilization, developing knowledge of competitors, and marketing arrangements. Likewise, Ventura and Milone (2000) concluded that the network created with on-farm direct sales gives flexibility to the firm to quickly adapt to the market changes.

Studies assessing the family security values agree regarding the benefit of job creation for household members. Hjalager (1996) suggests that farm diversification in

Denmark allows for re-located farm household labor, providing jobs to the farmers' wife and to the older children. In turn, Ventura and Milone (2000) concluded that the development of on-farm butcheries allow an optimal allocation of family labor because most products (e.g., hams, salami) are processed during winter when there is little work on the files. Furthermore, Ilbery *et al.* (1998) showed that 29% and 50% of the full and part-time positions respectively related to farm diversification involved family members.

As stated earlier, few studies have assessed the satisfaction of non-economic goals. Getz and Carlsen (2000) concluded that the most recurrent satisfying factors in rural tourism entrepreneurs were working as a family, the pride in the business, and the business independence of the farm.

Disparities between the importance assigned to economic values in respect to those potential non-economic values that diversification can bring to farmers, suggest the need to conduct a comprehensive assessment of the success of farm diversification.

CHAPTER III

RESEARCH METHODS

Chapter III is organized in four sections. The first section presents the survey methods used to collect the data for this study describing the special features, conveniences, and the contents of the Web-based data-driven survey instrument. Section two describes the methods used to identify the diversified farms and ranches throughout Texas. The third section refers to the survey administration including the types and timing of communications sent to participants and the methods used to monitor the data collection. Section four presents the response rate and data preparation including the methods used to exclude the cases that did not have the requisites for this study.

3.1 Web-based Data-Driven Texas Agriculture Diversification Survey

The Texas Agriculture Diversification Survey was designed as a Web-hosted data-driven instrument. This survey medium was employed to: (1) increase the response rate, (2) permit the survey to be duplicated in subsequent years and, (3) reduce the time and costs of survey administration and data entry. These details are explained in the following paragraphs.

The Convenience of an On-line Survey

Web-based –or virtual– surveys have numerous advantages compared to mail surveys including: a) reduced costs (e.g., no printing, mailing, data entry), b) the time to distribute, administer and prepare the data for analysis is shorter, c) the capacity to

efficiently target reminders and verify entries, d) reduces the cost and potential errors associated with data entry and, e) the data collection data-base can easily be converted to a Statistical Package for the Social Sciences (SPSS) analysis data-base.

Virtual surveys can be conducted through both email and web-based instruments[35]. Literature shows that email surveys generate better response rates than web-based surveys because they provide greater research control over the sample (without being involved in the survey), avoiding multiple entries by the same person. However, web-based instruments allow better displays, are more interactive and are easier to complete than email surveys (Ilieva *et al.*, 2002). Web-based surveys also offer the capacity for data-driven surveys tailored to individual respondents.

Ilieva *et al.* (2002) recommended combining the benefits of email and web-based techniques to optimize the online data collection. That is, to establish contact with the potential participants through a personalized email and posting the questionnaire on the web. This study combined the benefits of email contacts and correspondence with the sample and a Web-based survey considering both suggestions. Farmers and ranchers were initially, and then regularly, contacted throughout the survey process (i.e., survey announcement and later reminders) by email. The Agriculture Diversification Survey was designed as a web-based instrument to allow a better display and a greater interaction with the survey respondents.

Answers from participants were directly stored in a Microsoft ACCESS database when participants click the "*Submit*" button. Both, the on-line instrument and the

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[35] Another [more recent] modality is the pop-up survey, in which a survey is displayed in a new browser window when a person visits a certain website (Comley, 2000)

database were hosted in one of the servers of the Department of Community, Agriculture, Recreation, and Resource Studies at Michigan State University.

The Advantages of a Data-driven Survey

HyperText Markup Language (HTML) and Active Server Pages (ASP) were employed to design a data-driven survey. Data-driven surveys allow the application of numerous dynamic features that are very useful for the participants and the survey administrator. The dynamic features of this type of system are developed by retrieving already stored information from the database. When a respondent completes and submits questions comprising a section of the survey their response data is stored in the data-base. When submitted the information, it is stored and can be retrieved and used to format (e.g., what questions are asked various respondents) later sections in the database. Respondents can also exit and re-enter the survey to recall and change responses already provided.

The Agriculture Diversification Survey's data-driven system incorporated the following features. First, it provided the capacity to tailor questions to the characteristics of the responding farms/ranches. The system employs answers to questions previously submitted to format (e.g., questions asked) subsequent sections. For example, responses in Section V (Diversification Goals and Objectives) are the basis to customize the questions of Section VI (Assessment of the Accomplishment of Diversification Goals). Section V asks the respondent to select from a list of possible diversification goals that were important reasons behind their decision to diversify their farm. In the next section they are only asked the degree to which they achieved the goals that they identified in

Section V. This capacity to customize the survey makes it more convenient for respondents because they only encounter questions that are relevant to their farm and ranch significantly reducing the length of the survey. There is also a positive psychological effect in that respondent's are not distracted by questions that are obviously not pertinent to them.

A second convenience of the Agriculture Diversification Survey, especially given its length and also that some questions requested information that respondents had to research, is that respondents can complete the survey during multiple sessions. They can begin the survey, enter and submit some answers, and then re-enter at a later time using the e-mail and zip code they provided at the time of registration. This feature increases the percentage of completed surveys because respondents are not constrained by having to answer it all in one sitting. It also encourages greater accuracy of responses.

The data-driven survey also allows respondents to retrieve, review and change previously submitted responses. This is a particularly useful feature for this survey because it allows them to skip those questions that they needed to research (i.e., check their production and sales records) and to re-enter and provide that information. This feature allows respondents to review all the questions and develop a list of information they need to obtain to provide accurate responses.

Possibly the most powerful and useful feature of the data-base driven feature is that farmers and ranchers who responded to this (2005) survey will be able to recall their answers in 2006 and adjust their responses to reflect changes in their operations such as the development of a new enterprise or changes in their gross production. This provides

a unique way to allow farmers and ranchers to continue to enter information to represent their current operations and report performance over time.

A fourth convenience of the survey is that the survey administrators are able to continuously monitor the response and completion rate without manipulating the database. An administrator webpage is available which displays the emails of the respondent participants and the number of survey sections completed[36]. This allows the survey administrators to (1) monitor the response rate and establish the best timing for reminders and, (2) identify incomplete surveys and then send those respondents emails to remind and encourage them to re-enter and complete unanswered sections.

Instrument Design

Two important features/capabilities of Web-based data-driven surveys were employed in the design of Agriculture Diversification instrument. First, the format (i.e., appearance) of the webpage was developed to create identification with participants and to facilitate responses. To create identification with the participants, the survey combined earthy colors (green, brown and beige) and displayed a header with six pictures representing different types of agriculture diversification. The questions were formatted within a white background simulating a sheet of paper contrasting over a dark brown background designed to make it easier for respondents to navigate the survey. For example, to facilitate responses, multiple options questions were formatted in tables using alternating colors for the rows to visually encourage responses.

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[36] For protecting the confidentiality of respondents, only the email address and the status condition (i.e., Section Completed) and not actual responses were shown in this webpage.

Second, the questions were grouped into eight different topic/subject sections, each having its own "Submit" button. Sectioning had three primary advantages. This system reduces the potential for "lost data" if an Internet session is some how interrupted (e.g., power outage, server problem) because the response data from each section is automatically stored in the database each time a respondent submits a section. Also, if for whatever reason a respondent decides to stop completing the survey, the responses already submitted are not lost. Finally, because re-entering respondents are provided with a section index (See Appendix), they are able to go directly to any section that they want to review, modify or complete without needing to review the entire survey.

The structure and flow of the Texas Agriculture Diversification Survey is shown in Figure 3.1. The basis structure consists of (1) a home page (Appendix A), (2) registration page (Appendix B), (3) login and section index pages (Appendices C and D) and, (4) eight surveys sections (Appendix E).

Potential respondents accessed the survey, through a homepage (http://www.prr.msu.edu/newagsurvey/). A direct link to this page was inserted into the invitation e-mails and letters. The survey homepage includes a description of the purposes of the study, identification of the sponsors, instructions on registering and completing the survey, links to confidentiality information required by University Committee on Research Involving Human Subjects (UCHRIS) at Michigan State University, and various e-mail, mail and telephone contact information.

There are two primary links off the homepage, one to a Registration Page and another to the Survey Login Page. First time visitors are instructed to register first.

Respondents who had previously registered and/or completed sections of the survey were referred to the login page.

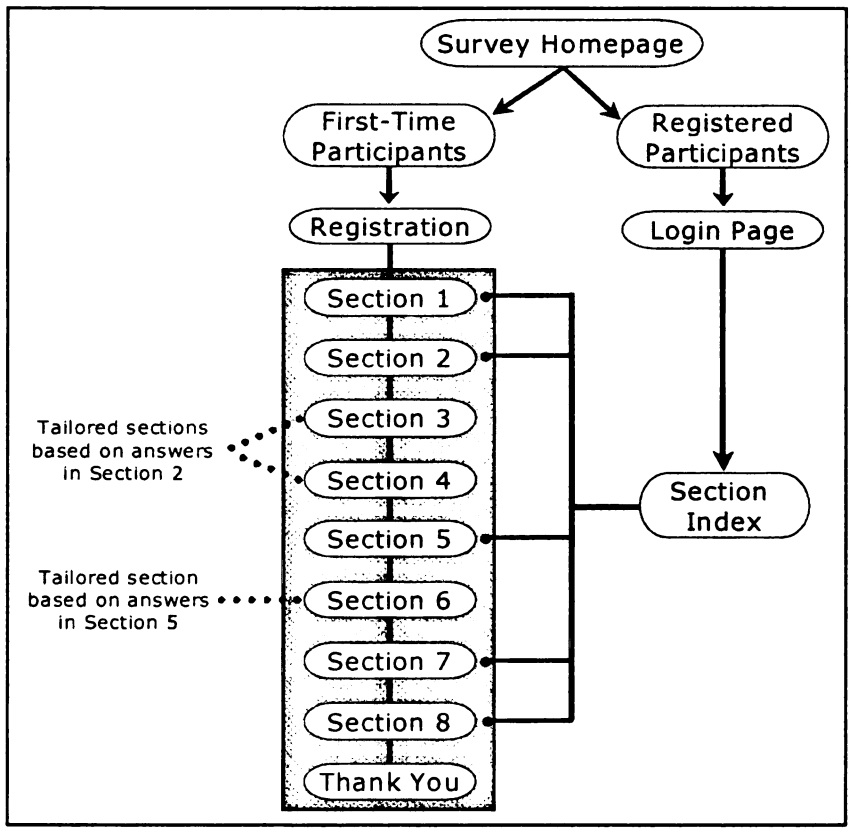

Figure 3.1. Flow Chart of the Agriculture Diversification Survey

The registration page collects basic contact information such as the email address, zip code and full name of the owner/operator. Respondents are first required to provide a valid e-mail address and the zip code where the farm/ranch is located. Their email address and zip code were designed as the key to re-access the survey. After completing and submitting the registration page information participants are automatically transferred to the first section of the survey. An error message is displayed if they fail to

provide the zip code and or email address because they would not be able to re-enter the survey and it would be impossible to contact them (e.g., reminders, provide respondents the report).

Once registered, participants were able to re-enter and access their responses to the survey through the login page. Once they log in, a "Sections Index" page appears that displays a table indicating those sections of the survey that they have completed and ones that remain to be completed. They could access any of the section from the Index page to complete, review or modify their responses. Because the survey is database driven, Sections III and IV are only accessible if respondents first complete Section II and Section V is only accessible if Section VI is answered first.

The first section of the survey, consisting of thirteen questions, gathers general information about the characteristics of the farm or ranch enterprise, including farm size, location, organization attributes and the way the respondents got into farming and ranching. A combination of questions gathers data concerning the family attachment of the family to the farm/ranch such as the number of generations that the farm has been in the family and whether the next generation will likely to continue to farm and ranch. It also gathers information regarding farming and ranching practices and stewardship methods used at the farm as well as the preservation, restoration and adaptive re-use of heritage/cultural objects. Section I contains one question intended to verify whether a respondent's farm or ranch is actually a working farm or ranch (i.e., raises or produces agriculture products for commercial sale).

Section II inquires about the products, services and enterprises that generate farm/ranch revenues. The types of products/revenues include: Crops, Livestock, Other

Agriculture Products and Services; Processing of Foods and Beverages; Recreation, Tourism and Special Events; Lodging and Accommodations; Restaurants and Food Services; Health and Cosmetics; Arts and Crafts; Educational Activities; Leasing, Easements and Time Shares; and Other Products and Services.

Section III deals more in depth with the specific products and services offered by the agricultural enterprise. For each general product/service category (e.g., Recreation, Tourism and Special Events) respondents are asked about specific products and services (e.g., tours, wildlife observation, rides, fishing, etc.). Section III questions are tailored/developed based on responses they provide in Section II. Section III also gathers information about the sequence in which they developed different revenue generating enterprises. Table 3.1 shows the product/service categories comprised in Section II and the number of products and services for each production category (Section III).

Table 3.1 Number of response categories by types of agricultural product/services categories.

Product/Service Categories	Number of Response Categories	
	Fixed	Open Ended
Crops	21	2
Livestock	14	2
Other Agriculture Products and Services	16	2
Processing of Foods and Beverages	22	2
Recreation, Tourism and Special Events	21	2
Lodging and Accommodations	6	2
Restaurants and Food Services	7	2
Health and Cosmetics	4	2
Arts and Crafts	11	2
Educational Activities	7	2
Leasing	4	2
Easements	5	2
Time Shares	-	1
Other Products and Services	-	3

Section IV of the survey focuses on farm/ranch sales and different revenues. This includes the total gross value of all sales. Information is also collected on percent of revenues coming from different product categories and enterprises. Again the product and enterprise categories are only the ones they indicated in Section II. The last Section III question asks participants to assess the profitability, breaking even or loss of their diversified operations.

Sections V and VI of the survey deal specifically with initial goals or objectives for diversifying (e.g., products and enterprises) the farm or ranch. Section V asks about twenty fixed possible goals/objectives for diversification. In Section VI they are asked the relative importance and degree of accomplishment of the goals and objectives they identify in Section V. Section VI also asks about measures of diversification achievements and contribution such as whether there was a change in the levels of profits and debts of the firm as a consequence of the diversification process. Finally, two questions deal with the farmers or ranchers assessment of the success/failure of the diversification including whether they would still, based on their experience, make the decision to diversify again.

Section VII compiles information regarding the finances, marketing and management practices of the responding farm or ranch. Specifically there are questions relating to sources of start-up, marketing methods, and membership in business related associations. There are also questions relating to the enterprise business decision-maker, whether the firm has business and marketing plans, and sources of information that were useful in the diversification process. This section also asks about their future development of diversified enterprises.

The last section (VIII) consists of ten questions about characteristics of the farm/ranch owner/operator and their households including socio-economic characteristics and sources of income, including on and off the farm/ranch employment.

Revision and Pre-Test

Based on the literature review, study objectives and hypothesis, and questions offered by the Texas Department of Agriculture and Natural Resource Conservation Service, a "paper draft" survey was developed and distributed for review to persons from the Texas Department of Agriculture (TDA), the Natural Resources Conservation Service (NRCS) and faculty at Michigan State University (MSU). Based on the reviews that were received the survey content was modified.

The Web-based survey was tested numerous times to verify the correctness of the variable coding and to make sure that all possible answers for each variable were properly sent to the database. Thereafter, people from TDA, NRCS and MSU tested the survey many different times to detect problems in the operation of the survey design, taking special care to assess the proper operation of the data-driven features. Any problems were corrected and then the survey was field tested on a random sample of 108 farmers and ranchers in the U.S. included in the database previously developed. This test focused on the ability for farmers and ranchers to provide the data that was requested, whether they were able to successfully navigate the Web-based Survey and the extent to which they completed all the questions.

3.2 Identifying Diversified Farms and Ranches in Texas

Identifying diversified farms and ranches in Texas was for sure the most challenging phase in this project. The number and identity of diversified farms was not known (see p. 18). Neither the U.S. Department of Agriculture (USDA) nor the Texas Department of Agriculture (TDA) had a previous list that identified diversified farms and ranches in the state. Although agricultural related organizations (e.g., Texas Emu Association and National Christmas Tree Association) have members lists, their members are not necessarily diversified, and in fact many are rather specialized in terms of production. In addition, those listings mostly do not discriminate between the agricultural producer (i.e., farm/ranch) and other types of members (e.g., manufacturers, financial institutions, advertising agencies).

Hence a database of Texan diversified agricultural firms had to be developed from scratch. Two different sources were used as starting points to develop the list. First, a systematic search on the Internet produced the larger number of diversified farms and ranches. The search on the Internet focused on identifying the e-mails and other contact information of farms and ranches that were raising various agriculture products for commercial sale and that have developed at least one diversified enterprise according to the categories comprised in the Agriculture Diversification Model (see pp. 15-19)[37]. This search process included: (1) use of key words (e.g., vacation-ranch, organic-farm) with general and specialized Web search engines (e.g., Yahoo, Google, Agrisurf), and (2) searches of the Web sites of various farm and ranch organizations. This search process

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[37] This search was a component of a project sponsored by the Grazing Land Technology Institute of the Natural Resources Conservation Service (NRCS). The main purpose of the project was the identification of a wide spectrum of diversified farms and ranches for extension purposes throughout the United States (Mahoney and Barbieri, unpublished).

resulted in the identification of four hundred ninety-seven (497) farms and ranches with diversified operations in Texas. The Texas Center for Rural Entrepreneurship provided the contact information for another one hundred forty-one (141) diversified firms. However, many of these email addresses were found to be either incorrect or not valid and were undeliverable. It is possible, although undeterminable, that the businesses with these emails were no longer in business.

The identification process resulted in a database that comprised six hundred thirty-eight (638) diversified farms and ranches. The email addresses of five hundred sixty-eight (568) operations were obtained and the mailing addresses of another seventy (70). In addition, the farm/ranch name, website URL address, mailing address, phone and fax numbers and name of a contact person (e.g., owner, manager) were also collected when available. This database was later sent to the TDA and the Natural Resources Conservation Service (NRCS) for review. They were unable to add significantly to this list. This developed database became the first major product of this project.

This list of diversified farms and ranches served as a purposive or judgmental sampling, defined as a sample that researchers draw because it best serves the purposes of the study (Monette *et al.*, 1994). Since the population of diversified farms/ranches in Texas is not known or available, probability sampling (i.e., random selection) could not be accomplished[38].

The diversified farmers and ranchers that were identified and sent an email asking them to participate in the survey were encouraged to forward the email to other

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[38] Similarly, Getz and Carslen (2000) reported using a non-random sample to study family rural businesses in tourism and hospitality in Western Australia due to the lack of an adequate database.

diversified farms and ranches to recruit them to participate. This resulted in the recruitment of an additional forty-nine (49) farms and ranches.

3.3 Survey Administration

The Texas Agriculture Diversification Survey was launched in spring 2005. According to McGehee and Kim (2004), spring is a good season to conduct surveys to farmers because most farmers can be reached at home. An e-mail was sent to five hundred sixty-eight (568) farms and ranches to invite them to participate in the survey. In addition, an invitation letter was sent to five hundred eight-nine (589) participants through U.S. mail[39]. Both the e-mail and the letter sent through the U.S. mail explained the purpose of the study, described the confidentiality procedures, contained the contact information of the project coordinators, and provided a link and the URL address to the web instrument. In addition, the e-mail contained a link to an electronic letter from Susan Combs, Texas Commissioner of Agriculture, supporting this study. The mailed letter included a copy of her support letter. The survey did not offer any economic incentive to participants. However, participants were offered a free copy of the study report.

Because the identification of diversified farms and ranches continued even after the first invitation letters and email were sent, the survey was conducted –invitations and reminders –in three waves. The timing of the invitations and reminders for the three waves is shown in Table 3.2.

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[39] The number of the e-mailed invitations (568) does not coincide with the mailed invitations (589) or the total number of identified farms/ranches (638) because it was not possible to find the complete contact information (either e-mail or postal address) of some identified farms/ranches.

Table 3.2 Dates of communications sent to participants by types of communication and waves.

Types of Communication	Dates Sent		
	Wave 1	Wave 2	Wave 3
Electronic Communications	(n=424)	(n=88)	(n=56)
Invitation E-mail	May 24th, 2005	May 31st, 2005	June 06th, 2005
First Reminder	May 31st, 2005	June 06th, 2005	June 13th, 2005
Second Reminder	June 07th, 2005	June 13th, 2005	June 20th, 2005
Third Reminder	June 23rd, 2005	June 23rd, 2005	June 23rd, 2005
Fourth Reminder – Last Call	July 12th, 2005	July 12th, 2005	July 12th, 2005
Fifth Reminder – Please 3 More!	July 20th, 2005	July 20th, 2005	July 20th, 2005
Regular Mail Communications	(n=483)	(n=65)	(n=41)
Invitation Letter	May 26th, 2005	June 08th, 2005	June 08th, 2005
Reminder	June 20th, 2005	June 20th, 2005	June 20th, 2005

Five email reminders and one mail reminder were sent to non-respondents (Table 3.2). The reminders contained a repeat brief explanation of the study, the contact information of the project coordinators and the link to the survey homepage. The intervals between reminders were determined based on when the percentage of responses tailed off significantly[40]. Figure 3.2 depicts how reminder e-mails for Wave 1 (in red) were scheduled after significant decrease in the rate of responses (in blue).

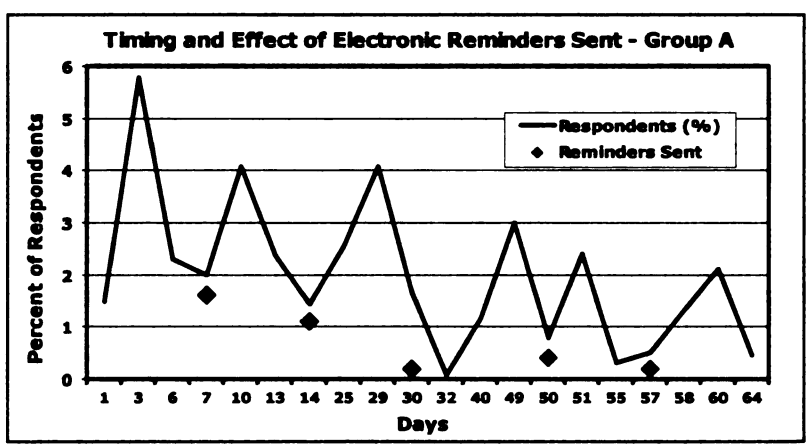

Figure 3.2. Timing and Effect of Electronic Reminders for Wave A

[40] The pace of the responses was constantly monitored through an administrator webpage as previous explained (see p. 73).

Different means of communicating with respondents were employed including e-mail, regular mailing, phone and fax. Inquires and requests from participants were usually responded to within 24 hours. These inquires included such things as how to re-access the survey and requesting verification genuineness of the project/institution and the confidentiality procedures. Two participants requested to complete the survey through a telephone interview and two others mailed and faxed hard copies of the survey they completed on line because they were unable to submit their responses due to problems related to settings in their computers.

The completeness of surveys that were submitted was carefully monitored on a continuing basis. *Thank You* emails were continuously sent to participants who submitted completed surveys. Respondents who first submitted partially completed surveys were sent emails reminding them of survey sections that were still not complete along with the instructions to re-access and complete the survey. A maximum of three personalized reminder e-mails were sent to each respondent who submitted partially completed surveys. As a last resource, those who failed to complete their surveys even after receiving three reminder emails were contacted by telephone.

To protect the confidentiality of the respondents as well as to protect the information gathered, back-ups of the database were created daily. These backed-up databases were stored on a different server. Access to all survey databases was restricted to the survey administrators.

The survey was closed on July 27th, 2005 at midnight Eastern Standard Time. According to the literature, on-line surveys are usually conducted in less than a month, although some can be extended up to two months (Ilieva *et al.*, 2002). Since spring is a

very busy season for farmers, and further since some respondents were completing the survey after they received a fourth reminder, the survey remained open for sixty-four days.

3.4 Response Rate and Data Preparation

Of the five hundred sixty-eight (568) e-mails for diversified farms and ranches that were initially identified, ninety were determined to be undeliverable. Most were associated with non-existent or suspended accounts. Only three e-mails (0.5%) did not reach the recipients because they were spam blocked. There were four hundred seventy (470) valid deliverable e-mails (Table 3.3). One hundred two (102) of the five hundred eighty-nine (589) mailed invitation letters were returned as undeliverable because of address errors, the recipient had moved, or the business had closed.

Table 3.3 Number of useable e-mails.

	Total E-mails	Undelivered E-mails	Valid E-mails
Wave 1	424	59	361
Wave 2	88	22	63
Wave 3	56	9	46
Total	568	90	470

The final response rate for the Agriculture Diversification Survey was 231 (38.9%)[41]. This is a much higher response rate than is normally expected in virtual

[41] The response rate does not include the 49 responses obtained from the snowball sampling technique.

surveys[42] and a much higher response rate than expected given the length of the survey. It is also higher than many mail and telephone surveys.

The initial invitation e-mails produced a response rate close to fifteen percent. The first email reminder increased the response rate to almost 20%. The second and fourth reminders only increased the response rate 4%. However, the third reminder generated a significant increase in the response rate of about 10%. The final reminder sent to participants resulted in 6% more responses.

The snowball sampling technique resulted in completed surveys form forty-nine farmers and ranchers not on the initial list. However, only farmers and ranchers comprising the initial sampling frame that was developed are included in the calculation of the response rate.

Table 3.4 Response rate by type of electronic communication.

Types of Electronic Communication	Number of Respondents	Response Rate[1] (E-Mail)	Response Rate[2] (Regular Mail)
From Original Listing			
Invitation E-mail	65	13.8%	13.3%
Reminder 1	91	19.4%	18.7%
Reminder 2	103	21.9%	21.1%
Reminder 3	147	31.3%	30.2%
Reminder 4: "Last Call"	155	33.0%	31.8%
Reminder 5: "Please, 3 more!"	183	38.9%	37.6%
From Snowball Effect			
Number of Respondents	49		
Total Number of Respondents			
Total Number of Respondents	232		

[1] Response rate = completed surveys / valid e-mails (470)
[2] Response rate = completed surveys / valid mailed letters (487)

[42] According to Comley (2000), response rates in virtual surveys mostly range between 15%-29% with a mean of 24%.

The survey data that was collected and stored in the nine separate ACCESS database tables was exported so that it could be analyzed using SPSS software. The e-mail address provided by the respondents as part of the registration was the primary key to link the nine data tables. After the nine tables of data were combined into one SPSS file, the e-mail address was replaced with an ID number. The contact information (e-mail address, respondent name and farm/ranch name) was removed to protect the confidentiality of the participants.

The data was first examined to determine the extent to which the respondents satisfied three conditions. First, they had to be a farm or ranch according to the USDA definition (see p. 31). This condition was evaluated using information from three questions: whether the farm/ranch raises agriculture products for commercial sale, the existence of types of agriculture products (i.e., crops, livestock, or other agriculture products/services) and the total gross value of sales in 2004 (over $1,000). The second condition was that the participating farm/ranch must have developed at least one diversified enterprise including agriculture diversification (i.e., non-conventional crops, livestock or practices). The Production Profile of the farms and ranches along with the listing of farm/ranch products and services were used to evaluate this condition. Finally, the farm/ranch must have been located in Texas. This information was gathered as part of the registration.

The screening resulted in two hundred sixteen (216) that met all three conditions. Table 3.5 shows that fifteen cases failed to meet all three requirements. Eight participants did not meet the USDA's traditional definition of being a farm/ranch: Four cases did not produce/raise any crops, livestock or other agricultural products, including a

City Park, a wildlife refuge and lands completely devoted to conservation easements; and another four cases had no agriculture gross income. Five participants were excluded because were located outside Texas. Two respondents were excluded because they were not diversified farms and ranches.

Table 3.5 Number of useable and excluded cases by reasons for exclusion.

	Number of Cases
Number of Respondents	
Total Number of Respondents	231
Cases Excluded	
No agriculture production	4
2004 income less than $1000	4
Non Texas farms/ranches	5
Non diversified farms/ranches	2
Number of Useable Cases	
Total Number of Useable Cases	216

The method used to develop the sample frame has some limitations since it may not be representing the overall characteristics of diversified farms and ranches. First, the sample used may be over-representing diversified farms and ranchers involved in recreation/tourism and direct marketing because they are more prone to have a web presence. Second, it may be under-representing diversified farms and ranchers that are small and have a high percentage of loyal local clientele because they are less likely to be engaged in web-based marketing. It is also possible that may not be representing diversified farms and ranches that only or primarily market on the web their predominant product (e.g. cattle) and not other enterprises they may have been engaged in. Therefore, it is questionable whether the sample used is representative of the population of diversified farms and ranches in Texas.

CHAPTER IV

AN OVERVIEW OF

AGRICULTURE DIVERSIFICATION IN TEXAS

This chapter presents the characteristics of Texas diversified farms/ranches and their operators. These characteristics will be the basis for the segmentation analyses and profiles that will be presented in Chapter V. This chapter also further validates the agriculture diversification model, including detailed descriptions of the types and extent of diversification categories and enterprise-lines that farmers and ranchers are implementing. This chapter also verifies the dynamic nature of diversification.

4.1 Profile of the Texas Diversified Farmers and Ranchers

Demographic characteristics, the level of attachment of the family to the farm, the farmer's family life-cycle, the role of the farmer's spouse and the farmer's experience are the topics used to describe the farmers and ranchers that have diversified their operations in Texas.

Socio-economic Profile

The study reveals that the diversification *agripreneurs* that responded to the survey are younger on average than Texas farmers in general (Table 4.1). Only 17% of the participants are 65 years old or older compared to 31% of all Texas farmers and

ranchers. The majority of the Texas *agripreneurs* (64.5%) that participated in this study are middle-age adults (45-64 years).

Table 4.1 Socio-economic characteristics of Texas diversified farmers and ranchers compared to all Texas farmers and ranchers demographics.

Attributes	Percent of Survey Respondents	Percent of All TX Farms/Ranches[a]
Farmer/Rancher's Age [b]		
Less than 25 years	0.5	0.9
25-34 years	3.0	4.5
35-44 years	15.0	14.7
45-54 years	26.0	24.7
55-64 years	38.5	24.3
65-69 years	7.0	10.3
70 years or more	10.0	20.7
Operator's Gender [b]		
Male	70.1	88.1
Female	29.9	11.9
Farmer/Rancher's Race/Ethnicity [b]		
White	92.0	89.1
Black/African American	0.5	2.5
Hispanic/Latino	3.5	7.0
Mixed	2.0	0.4
Other	2.0	1.0
Farmer/Rancher's Level of Education [b]		
Elementary	0.5	n/a
Attended high school	0.5	
Completed high school	10.3	
Attended college	22.6	
Completed college	33.2	
Attended graduate school	6.7	
Completed graduate school	26.2	
Annual Farm Household Income [b]		
Less than $25,000	7.6	n/a
$25,000 - $34,999	10.3	
$35,000 - $49,999	14.1	
$50,000 - $74,999	18.9	
$75,000 - $99,999	15.1	
$100,000 - $149,999	16.8	
$150,000 - $199,999	5.4	
More than $200,000	11.9	

[a] According to U.S. Census of Agriculture 2002
[b] These were the pre-established survey response categories.

Analyses of the survey data confirm previous studies concerning the active role of women in agriculture diversification (Bock, 2004; McNally, 2001; Ilbery et al., 1992). Over a fourth (29.9%) of the diversified farms and ranches that responded to the survey has female principal operators. The percentage of female principal operators of diversified farms is more than twice than all farms in Texas (11.9%). However, this may not represent the gender distribution of all diversified farms in Texas.

Not surprisingly most diversified farmers are white (92.0%)[43]. Interestingly, percentages of diversified farmers/ranchers that are Black/African American (0.5%) and Hispanic/Latino (3.5%) are smaller than the overall Texas percentages (2.5% and 7.0% respectively). However, this is very likely due to the fact that these farmers and ranchers are less likely to have access to the Web and were therefore less likely to be included in the survey. *Agripreneurs* have advanced education. Two-thirds of the respondents have at least one college degree and the majority (88.7%) has at least some college education. Over one-third of diversified farm households had a yearly income over $100,000[44].

Diversified Farm and Ranch Attachment to Farming

Diversified farmers' families exhibit a strong attachment to farming and desire to pass on the farm/ranch and agricultural traditions (Table 4.2). Twenty-nine percent of respondents reported having inherited[45] the farm or the farmland and 38.5% reported being at least the second- operating this farm/ranch. A very high percentage (70.7%) had intentions of passing the farm to the next generation. Interestingly, more second

[43] The 2002 Census of Agriculture also shows that the majority of farmers and ranchers of Texas are white.
[44] The annual farm household income included income coming from the farm, wages, salaries, social security and retirement benefits.
[45] Inherit includes those that although not formally inherited, are already working their parents' farm/ranch.

generation-farmers (92.0%) have intentions of passing on the farm than first generation farmers (59.5%). This suggests that either attachment to the farm grows over time, or that more first generation farmers view the farm as a business rather than a heritage.

Table 4.2 *"Level of Attachment"* of Texas diversified farmers and ranchers families to their farms and ranches.

Family Attachment to the Farm	Percent of Respondents	
Ways the farmer got the farm		
Purchased land and started the farm/ranch	50.0	
Purchased an existing farm	18.2	
Inherited the land and started the farm/ranch	4.7	
Inherited an existing farm	24.3	
Other	2.8	
Number of Generations on the Family		
One generation	61.5	
Two generations	9.5	
Three generations	10.0	
Four or more generations	19.0	
Succession Expectations		
Expecting to pass the farm to next generation	70.7	
First generation farmers		59.5
Second or more generation farmers		92.0
Not expecting to pass the farm to next generation	29.3	
Total Number of Family Members Working on the Farm [a]		
None	18.8	
1 family worker	16.1	
2 family workers	34.3	
3 – 5 family workers	24.0	
6 or more family workers	6.8	
Mean	(2.34)	
Operator's Principal Occupation		
Farming/ranching	61.2	
Non farming/ranching	38.8	
Off-Farm Work Days Yearly (n=200) [b]		
None	56.5	
At least one day	43.5 [c]	
1-49 days		7.0
50-99 days		9.3
100-199		29.1
200 days or more		54.6

[a] Categories constructed based on the natural distribution of the continuous data.
[b] Categories developed according to U.S. Census of Agriculture 2002
[c] According to U.S. Census of Agriculture 2002, 56.1% of Texas farmers worked at least one day off the farm. Of those, 10.3% worked 1-49 days off-farm; 5.8% between 50-99 days; 12.7% between 100-199 days and 71.2% worked at least 200 days off-farm.

The survey results also indicate that diversified farm family members seem to be more actively involved in farming and ranching activities. Almost two-thirds (65.1%) of diversified farms and ranches have at least two family members working on the farm (mean = 2.3). In addition, 61.2% of the operators reported that farming was their main occupation and 56.6% reported working exclusively on the farm. This is a considerably greater involvement than for all Texas farms (53.6% and 43.9% respectively). Only 23.6% of those that worked off the farm worked 200 or more days off the farm, which is much lower than the 40% reported in the 2002 Census of Agriculture.

Diversified Farm Family Characteristics

Not unexpectedly, most (87%) diversified farmers and ranchers are married (Table 4.3). Diversified farmers are more likely to reside on the farm (75.5%) than Texas farmers in general (67.3%). Families living on the farms average three persons (mean=2.83). Interestingly, less than a third of respondents (31%) who live on-farm have their children living with them. Only 22.5% live on-farm with young children. The relatively large percentage of empty nester diversified farm households is consistent with the fact that almost half of the diversified farmers (42.7%) are retired from a previous job and almost two thirds (64.5%) are between 45 and 64 years old as previously presented (see table 4.1).

Table 4.3 Characteristics of diversified Texas farm/ranch families.

Farmer's Family Attributes	Percent of Respondents
Marital Status (n=200)	
Married farmers	87.0
Single farmers	13.0
Farmer Residence (n=200)	
Farmers living on the farm	75.5
Farmers not living on the farm	24.5
On-Farm Household Composition (n=129)	
Farmers living on-farm with spouse or significant other	87.6
Farmers living on-farm with children	31.0
Farmers living on-farm with children under 20 years old	22.5
Farmers living on-farm with children 20 years old or over	29.5
On-Farm Household Size (n=129)	
1 person	0.8
2 persons	62.7
3 – 4 persons	23.3
5 persons or more	13.2
Mean (in number of persons)	(2.83)
Range (min. – max.)	(1 – 7)
Operators Retired from Previous Job (n=199)	
Retired farmers	42.7
Non-retired farmers	57.3

Role of Spouses in Diversified Farm Operations

Most diversified farmers (91.4%) have working spouses or significant others (Table 4.4). The majority (84.3%) of the spouses work on the farm/ranch, either exclusively (51.2%) or simultaneously working off-farm (33.1%). Almost half of the spouses (47.6%) working on-farm perform activities related to agriculture matters and the management and marketing of their diversified enterprises. Almost a quarter of them are exclusively dedicated to farming or ranching (26.7%) or to diversified operations (25.7%). Of those spouses working off-farm (i.e., pluriactive), almost two thirds (68.0%) worked 200 or more days off the farm.

Table 4.4 Activities that diversified farmer/rancher's spouses perform and the amount off farm/ranch work days.

Farmer's Spouse Attributes	Percent of Respondents
Employment Status of Significant Other (n=174)	
Non-working spouses	8.6
Working spouses	91.4
Employment Location of Farmers' Spouses [a] (n=121)	
Work exclusively on-farm	51.2
Work exclusively off-farm	15.7
Work on and off farm	33.1
Types of Activities of Farmers' Spouses Performed On-Farm [b] (n=105)	
Exclusively farming/ranching	26.7
Exclusively diversified enterprise(s)	25.7
Farming/ranching and diversified enterprise(s)	47.6
Number of Days Worked Off-Farm of Farmers' Spouses [c d] (n=75)	
1-49 days	9.3
50-99 days	6.7
100-149 days	12.0
150-199 days	4.0
200 or more	68.0

[a] Only include the 91.4% of working spouses
[b] Only include only the 84.3% of spouses that work on-farm
[c] Only include only the 48.8% of spouses that work off-farm
[d] Categories developed according to U.S. Census of Agriculture 2002 usage.

Extent of Farming Experience

Diversified farmers and ranchers are experienced; having an average of 14.5 years of experience in farming and 9.5 years involved with farm diversification enterprises (Table 4.5). More than half of the participants had more than ten years in farming (52.5%) and more than five years in as diversified *agripreneurs* (57.9%). Over a quarter (27.4%) of the *agripreneurs* have agriculture background and almost a third (31.0%) has business training. Interestingly, the majority of the respondents (51.5%) have educational background in disciplines not related to agriculture or business.

Table 4.5 Extent of farming/ranching and diversification experiences of diversified farmers and ranchers and their educational background.

Farmers' Experience Indicators	Percent of Respondents
Years in Farming (n=200)	
Less than 3 years	7.0
3 – 5 years	12.5
6 – 10 years	28.0
11 – 20 years	27.0
21 – 30 years	18.0
More than 30 years	7.5
Mean (in years)	(14.5)
Years as a Diversified Farmer (n=180)	
Less than 3 years	17.8
3 – 5 years	23.9
6 – 10 years	24.4
11 – 20 years	24.4
21 – 30 years	7.2
More than 30 years	2.3
Mean (in years)	(9.5)
Education Background (n=171)	
Agriculture	17.5
Business	21.1
Agriculture and business	9.9
Other	51.5

4.2 Characteristics of the Diversified Farms and Ranches.

The following tables profile diversified farms and ranches on farm size, farm location, farm organizational structure and marketing and managerial sophistication.

Farm Size

Various studies have used different size variables to characterize farms and ranches (Sumner and Wolf, 2002). This study collected data on three different size

indicators including: 1) numbers of acres owned and operated[46]; 2) acreage farmed including owned and rented farmland; and 3) gross farm sales, including the revenues from all diversified enterprises[47].

Table 4.6 presents seven size categories of farms[48]. Almost a third (32.5%) of farms responding to the survey are small farms (less than 50 acres), 39.6% are medium size farms (50 – 999 acres) and 27.9% are large farms (1000 +acres). Interestingly, diversified farms tend to be larger than average Texas farms and ranches. While the majority of farms in Texas (57.5%) are medium sized and a small percentage (9.8%) are small, a greater proportion of diversified farms are medium (39.6%) and large farms (27.9%). Almost half of the respondents (44.7%) farm less than 50 acres.

Diversified farms and ranches have higher gross sales on average than Texas farms overall, suggesting a positive revenue impact associated with diversification. For example, while more than half (58.7%) of farms in the U.S. sold less than $5,000 of farm products annually (USDA: NASS, 2004a), only 12.6% diversifiers had farm income of this amount. Conversely, more than half (50.5%) of the diversified farms reported agriculture related total gross sales of US$50,000+, compared to just 10.2% of all Texas farms and ranches. Almost twice the percentage of diversified farms and ranches (29.6%) has revenues between $10,000 and $49,999 compared to overall Texas farms (18.3%).

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[46] According to the USDA definition, the acreage operated included the la acres owned minus the acres rented or assigned to a tenant (USDA, 2001b).

[47] The Texas Agriculture Diversification Survey also gathered information about the number of acres farmed under a grazing permit on a per-head as an additional farm descriptor. There were too few cases (2%) to report any distribution.

[48] Although structured as a continuous variable in the survey instrument, the land size and acres farmed distributions were grouped into seven size groups to enable a comparison with the general Texas farmland size distribution reported by the USDA.

Table 4.6 The size, and gross sales revenues of diversified farms and ranches and all Texas farms and ranches.

Farm Size Indicators	TX Diversified Farms (Percent)	TX Farms/Ranches (Percent) [a]
Farm/Ranch Acres [b] (n=210)		
0	0.9	n/a
1 - 9	7.0	6.0
10 - 49	24.6	26.7
50 - 179	24.2	30.8
180 - 499	9.8	18.6
500 - 999	5.6	8.1
1000 - 1999	10.2	5.3
2000+	17.7	4.6
Mean (in acres)	(2,975)	(570) [c]
Land Farmed (in acres) (n=215)		
Less than 1	4.2	n/a
1 - 9	15.8	
10 - 49	24.7	
50 - 179	17.2	
180 - 499	6.5	
500 - 999	5.6	
1000 - 1999	9.3	
2000+	16.7	
Mean (in acres)	(2,963)	
Farm Gross Sales in Dollars (n=192)		
Less than 2,500	6.3	44.6
2,500 - 4,999	6.3	14.1
5,000 - 9,999	7.3	12.8
10,000 - 24,999	16.1	12.5
25,000 - 49,999	13.5	5.8
50,000 - 99,999	14.1	3.8
100,000 - 499,999	25.5	4.9
500,000 or more	10.9	1.5

[a] According to U.S. Census of Agriculture 2002.
[b] Categories constructed from the continuous data gathered to match the Agriculture Census categories.
[c] Statistics for 2003 (USDA-NASS, U.S. and State Level Data, 2004).

On average, Texas diversified farm and ranches employed ten (10.4) employees in 2004, although more than half of the farms and ranches (51%) had less than 6 employees. More than a third (34.8%) of employees were full-time year round, 13.3% were part-time year round, 24.8% full-time seasonal and 27.1% were part-time seasonal

employees. Table 4.7 shows the labor distribution of employees of the diversified farms among the four employment categories.

Table 4.7 Number and types of employees on Texas diversified farms and ranches.

Number of Employees (n=192)	Year-Round		Seasonal		Total (100%)
	Full Time (34.8%)	Part Time (13.3%)	Full Time (24.8)	Part Time (27.1%)	
Less than 3	71.7%	84.3%	87.5%	70.3%	24.0%
3 – 5 employees	16.2%	9.4%	5.2%	10.9%	27.0%
6 – 10 employees	5.2%	4.2%	3.7%	13.0%	24.5%
11 – 20 employees	1.6%	1.6%	2.1%	3.7%	14.6%
More than 20 employees	5.3%	0.5%	1.5%	2.1%	9.9%
Mean	(3.64)	(1.39)	(2.59)	(2.82)	(10.43)

Farm Location

The distances of diversified farms/ranches from a paved highway, an urban cluster[49] and the nearest urbanized area[50] provide indicators of accessibility (Table 4.8). Almost two thirds (65.2%) of the diversified farms/ranches are located less than one mile away from a paved highway revealing the importance of accessibility to automobiles. A high percentage is also located close to urbanized areas benefiting simultaneously from a large base of customers and rural landscapes. While very few diversified farms/ranches are located in urban clusters (6.3%) or urbanized areas (2.4%), a high percent (83%) are located less than 30 miles from an urban cluster and less than 60 miles (60.2%) away from urbanized areas.

[49] An urban cluster is a densely settled area that has a census population of 2,500 to 49,999 (U.S. Census Bureau, 2000)

[50] An urbanized area is a densely settled area that has a census population of at least 50,000 (U.S. Census Bureau, 2000)

Table 4.8 Distances diversified farms and ranches are located from a paved highway, urban clusters and urbanized areas.

Distance Indicators	Percent of Respondents
Distance from a Paved Highway (in miles) (n=210)	
Over a paved highway	31.9
Less than 1 mile	33.3
1 – 2 miles	16.7
3 – 4 miles	8.1
5 – 9 miles	7.6
10 miles or more	2.4
Distance from an Urban Cluster [a] (in miles) (n=206)	
Located in an Urban Cluster	6.3
Less than 5 miles	18.0
6 - 10 miles	26.2
11 - 30 miles	38.8
31 - 60 miles	7.8
61 - 90 miles	2.4
91 miles or more	0.5
Distance from an Urbanized Area [b] (in miles) (n=209)	
Located in an Urbanized Area	2.5
Less than 5 miles	4.3
6 - 10 miles	5.7
11 - 30 miles	23.4
31 - 60 miles	36.8
61 - 90 miles	16.3
91 - 120 miles	3.8
121 - 180 miles	3.8
181 miles or more	3.4

[a] Densely settled area that has a census population of 2,500 to 49,999
[b] Densely settled area that has a census population of at least 50,000

Agriculture Production and Practices

About the same proportion of diversified farms and ranches raise crops (58%) and livestock (63%). Only a quarter (24.9%) produce other agricultural products. Table 4.9 shows the types of commodities and products grown/raised by production line (i.e., crops, livestock, and other agricultural production). As might be expected, cattle are the commodity most commonly raised by Texas diversified farms and ranches (42.3%) since cattle are the number one agriculture product (65.8%) in this State.

Table 4.9 Commonly raised/grown agriculture products by Texas diversified farms and ranches.

Agriculture Production Line (n=213)	TX Diversified Farms/Ranches	
	Within Production Line (%)	Overall (%)
Crops (n=125)	**58.7**	
Hay or haylage	28.8 [a]	16.9 [a]
Christmas trees	24.0	14.1
Vegetables or melon field grown	23.2	13.6
Livestock (n=135)	**62.9**	
Cattle	66.7	42.3
Horse, ponies or other equines	34.8	22.1
Deer or elk	25.2	16.0
Other Agricultural Products (n=48)	**24.9**	
Eggs	33.3	7.5
Honey and apiary products	14.6	3.3
Wool and fibers	12.5	2.8

[a] This is the percentage of farms and ranches that produce this commodity among those that have this production line. For example, 28.8% of the farms and ranches that grow crops are producing hay or haylage.

[b] This is the percentage of all the respondents that raise/grow this commodity. For example, 16.9% of all survey respondents produce hay or haylage.

An expected but still interesting finding is that environment-friendly farming and stewardship practices, including biological control, protection or propagation of native plants, and improvement of wildlife and fisheries habitats, are commonly practiced by diversified farms and ranches. About three quarters (78.3%) of diversified farms are engaged in at least one environment-friendly agriculture practice and almost all (90.2%) are involved in some type of resource stewardship practice (Table 4.10). On average, diversified farms and ranches are engaged in more than one (1.5) environment-friendly agriculture practices and more than three (3.1) stewardship practices. These results imply the importance that diversified farm and ranch customers place on environmentally friendly farming. Stewardship and environmentally friendly farming practices also contribute to creating environments and landscapes that support AgriTourism, events and on-farm retailing experiences.

Table 4.10 Environment-friendly and stewardship farming/ranching practices on diversified farms and ranches.

Types of Practices	Percent of Respondents
Environment-Friendly Farming Practices (n=207)	
Do not practice any	21.7
Practice at least one	78.3
Types of Practices	
Organic/natural growing/raising	46.3[a]
Integrated Pest Management	37.0
Farm/ranch waste management	31.5
Crop rotation	30.9
No additives	29.0
Biological control	22.8
Certified organic	6.2
Other	9.3
Number of Environment-Friendly Farming Practices	
Range (min. – max.)	(0 – 7)
Mean	1.5
Median	1.0
Stewardship Practices	
Do not practice any	9.8
Practice at least one	90.2
Types of Practices	
Water conservation	83.4[b]
Soil conservation	79.3
Wildlife habitat improvement	62.7
Native plants propagation/protection	60.1
Fisheries habitat improvement	17.6
Other	7.2
Number of Stewardship Practices	
Range (min. – max.)	(0 – 6)
Mean	3.1
Median	3.0

[a] This is the percentage of farms and ranches that utilize this specific practice among those that practice at least one environment-friendly practice. For example, 46.3% of the 78.3% farms and ranches that employ environment-friendly practices are doing organic or natural agriculture.

[b] This is the percentage of farms and ranches that utilize this specific practice among those that practice at least one stewardship practice. For example, 83.4% of the 90.2% farms and ranches that employ environment-friendly practices are doing water conservation.

Farm Organizational Structure

More than half (62.4%) of diversified farms and ranches are individual or family proprietorships[51] (Table 4.10). Diversified farms are more likely to be organized as partnerships (14.1%) or corporations (21.2%) compared to the general Texas farms according to the USDA 2002 Census of Agriculture (5.6% and 1.9% respectively). These results are possibly associated with the need for strategic alliances to broaden the farmer's skills required for the development and management of the diversified enterprises. They may also be a risk management strategy.

In two-thirds of the diversified farms and ranches the decision-makers in both agricultural (68.2%) and business (67.9%) matters are the owners/managers. In more than a quarter, the decision maker is either the farmer and their spouse or the farm household for agricultural (25.1%) and business issues (29%). Three quarters of all diversified farmers and ranchers farm the land that they own (72.6%).

Marketing and Managerial Structure

Whether the farm has a written business plan and a marketing plan, whether the farmer/rancher belonged to any business associations, and the types of distribution channels (i.e., markets) and marketing methods that the farm/ranch utilizes to distribute or promote its products and services were indicators of their marketing and managerial structure and sophistication.

[51] This percentage is much lower than the 90.2% of total individual or family proprietorships farms in Texas according to the 2002 census of agriculture.

Table 4.11 Organization structure, decision-maker and tenure structure of diversified farms and ranches in Texas.

Farm/Ranch Organization Structure	Percent of Respondents
Farm/Ranch Organization Structure (n= 213) [1]	
Individual or family (sole proprietorship)	62.4
Partnership	14.1
Corporation (including LLC)	21.2
Other	2.3
Decision-Maker	
In Agriculture Matters (n=195)	
Owner/manager	68.2
Manager other than owner	6.7
Farmer and spouse	13.3
Farmer household	11.8
Other	0.0
In Business Matters (n=190)	
Owner/manager	67.9
Manager other than owner	2.6
Farmer and spouse	15.3
Farmer household	13.7
Other	0.5
Tenure Structure of the Land Farmed (n=215)	
Only farmed own land	72.6
Mostly farmed own land [2]	9.3
Evenly farmed own and rented land [3]	5.1
Mostly farmed others land [4]	5.6
Only farmed rented land	7.4

[1] According to U.S. Census of Agriculture 2002, 91.9% of Texas farms and ranches are individual or family organized, 5.6% are partnerships, 1,9% are incorporated and 0.7% have other types of organization including cooperatives, estate or trust and institutional.

[2] At least 60% of the land farmed was owned

[3] The ratio between farmed rented owned at rented was within 40/60

[4] At least 60% of the land farmed was rented

More than half of farms and ranches (52.2%) have either a written business or marketing plan (Table 4.12). Of these, a very high percentage (50.5%) has both. Over two thirds (77.8%) are members of at least one business association. They use a wide range of marketing methods to distribute and promote their diversified products to customers. On average respondents use more than four (4.4) marketing methods. This was expected because diversified farms and ranches have more diverse customers and

they must engage in various types of farm/ranch-to-customer direct marketing; wholesale marketing is not enough. Since specialized markets require distinct marketing strategies and approaches it was expected that they would be more sophisticated in terms of the types of marketing they practice. Not surprisingly, given the initial sampling frame (see page 81), the majority of participants (89.6%) use Webpage to market their products and services. More than half of participants reported using printed materials, such as brochures (56.0%) and ads in media, such as newspapers and radio (55.5%).

Table 4.12 Availability of business/marketing plans, association membership and marketing methods employed by Texas diversified farms and ranches.

Marketing and Managerial Attributes	Percent of Respondents	
Availability of a Business and Marketing Plan (n=201)		
Do not have business or marketing plans	47.8	
Have either a business or marketing plan	52.2	
Only have a business plan		9.5 [a]
Only have a marketing plan		40.0
Have both business and marketing plans		50.5
Association Membership (n=198)		
Members of at least one association	77.8	
Not a member of any association	22.2	
Marketing Methods (n=191)		
Web page	80.6	
Printed materials	56.0	
Ads in media	55.5	
Listings in specialized directories	45.0	
Trade shows and special events	41.9	
Through an association	37.2	
Direct mail to current and potential customers	36.1	
Customer newsletters	19.9	
Direct shipping of products	18.8	
Sales promotions	16.2	
Special labeling	9.4	
Customer loyalty clubs	3.7	
Product subscriptions	2.1	
Other	12.6	
Number of methods used		
Range (min. – max.)	(1 – 11)	
Mean	(4.4)	

[a] This is the percentage of farms and ranches that have either a business or a marketing plan.

Diversified farmers and ranchers in Texas also employ a range of different product distribution channels. About a third (36.9%) wholesale their products and this accounts for an average of 61.0% of their total sales (Table 4.13). The primary distribution channels used by diversified farmers and ranchers are the direct sales to customers (61.5%), sales through internet and/or virtual market (41.0%), and the sales on "on farm/ranch" markets (38.5%), with an average sales of 55.5%, 37.3%, and 55.0% respectively.

Table 4.13 Types of product distribution channels employed by Texas diversified farmers and ranchers.

Types of Distribution Channels	Percent of Respondents (n=195)	Percent of Revenues (Mean) [a]
Wholesale sales of products	36.9	61.0%
Direct sales to customers	61.5	55.5%
Internet and/or virtual market	41.0	37.3%
"On farm/ranch" market	38.5	55.0%
"Off farm/ranch" retail stores from others	10.8	34.6%
Farmers' market	9.7	21.1%
Direct sales to resorts and restaurants	3.6	n/a [b]
Own "Off farm/ranch" retail stores	2.6	n/a
"Off farm/ranch" non-store locations	1.5	n/a
Other direct distribution channels	11.8	43.1%

[a] This is the average revenues generated from this distribution method for those farms and ranches that use this method to distribute/sell their products.
[b] None or too few cases to report

4.3 Validation of the Conceptual Model of Agriculture Diversification

The data collected on the Texas Farm and Ranch Diversification Survey validates the diversification model and its various components that was presented and discussed in Chapter 1. First, Texas farmers and ranchers are diversifying their revenues by incorporating eight different diversification enterprises and activities: (1) value(s)-added

processing and packaging; (2) non-traditional crops, livestock and practices; (3) new marketing and distribution methods; (4) recreation, tourism and hospitality; (5) historic preservation and adaptive re-use; (6) leases, easements and timeshares; (7) contracts and services; and (8) expertise, consulting and education. Second, *agripreneurs* are strategically developing and leveraging compatible and supportive enterprise-lines within these eight diversification categories. Finally, diversification appears to be a dynamic process and appears to stimulate and support additional diversification. The next paragraphs present the results regarding the agriculture diversification model previously proposed.

The Agriculture Diversification Model

The results of the survey reveal that over a third (34.4%) of farmers and ranchers are engaged in some type of value(s)-added processing, producing products such as food and beverages, arts and crafts and cosmetics and health products (Table 4.14). Over two-thirds (68.9%) of diversified farmers and ranchers generate revenues through *Non-Traditional Crops, Livestock and Practices.* As expected, the majority (88.2%) of the diversified farmers and ranchers practice at least one type of *new marketing* – marketing communications, distribution - often a form of direct or relationship marketing. Although this includes creative or niche wholesaling, most are engaged in various types of direct marketing. Again, these findings are not surprising because of the initial sample frame used[52]. However, high quality and specialized products, including recreation and tourism

[52] Availability of website was excluded when calculating the distribution of the enterprise categories to prevent a bias due to the selection of the study sample. The inclusion of this product increases the "New Marketing and Distribution" category to 88.3%.

experiences, cannot effectively be wholesale marketed or distributed and require more creative and non-traditional marketing. About two thirds (64.6%) of participants reported having diversified through AgriTourism, recreation and/or hospitality services.

Table 4.14 Categories of On-farm/ranch diversification, diversification index categories, and extent of diversification segments.

Diversification Categories, Index and Extent	Respondents (n=212)
Diversification Categories	
Value-Added to Existing Products	34.4%
Non-Traditional Crops, Livestock and Practices	68.9%
New Marketing and Distribution	88.2%
Recreation, Tourism and Hospitality	64.6%
Historic Preservation and Adaptive Re-use	42.9%
Leases, Easements and Timeshares	13.2%
Contracts and Services	6.1%
Education, Expertise and Consulting	31.1%
Diversification Index (1-8) [a]	
Range	(1-8)
Mean Index Score	3.5
Median Index Score	3.0
Extent of Diversification Segments	
Lightly Diversified (1 - 2 enterprises)	28.6%
Moderately Diversified (3 - 4 enterprises)	44.1%
Highly Diversified (5 - 8 enterprises)	27.2%

[a] This index represents the sum/composite of the eight types of diversification categories that the Agriculture Diversification Model comprises.

The findings reveal that almost half (42.9%) of the diversified farmers and ranchers have preserved, restored and/or adaptively re-used historic buildings, equipment, artifacts and other heritage on their farm/ranch. A smaller but still large proportion (13.2%) is generating revenues through various types of leases (e.g., recreation, buildings) as well as positive and negative easements. Almost a third (31.1%) offer at least one consulting or education service. Contracting and services such as boarding

horses, renting pack animals and customized harvesting or processing generate revenues for about 6% of the diversified farms and ranches.

Almost three quarters (71.3%) of farmers and ranchers that completed the survey are involved in three or more categories of diversification. The average is 3.5 categories. They were classified - *lightly*, *moderately* and *highly diversified* - based on the number (1-8) of diversification categories they are involved with. Over a quarter (28.6%) are engaged in just one or two categories of diversification and they are referred to as *lightly diversified* farms and ranches, about half (44.1%) are *moderately diversified* meaning that they are involved in either three or four categories of diversification enterprises, and another quarter (27.2%) are *highly diversified* in that they are engaged in five or more enterprise categories.

Based on the literature which has been reviewed, it was hypothesized that there is a relationship between various characteristics of the farms/ranches and their operators and the extent to which they are diversified. It is important to recognize that just because a relationship exists it does not infer cause or effect. In other words, farmers and ranchers with greater resources may become more diversified because they already had more resources available, or farmers who are diversified may be more able, or been required (e.g., buildings, staff) to secure additional resources. Also some farmers have difficulty identifying and measuring inherent characteristics and tendencies that would make them successful traditional or diversified farmers. There also may be combinations of situational characteristics that produce greater likelihood of diversified or traditional farming success.

When it comes to farm/ranch characteristics there is a significant relationship between the extent of diversification and gross farm sales and also the number of total number of employees. On average, farms and ranches that are more diversified have significantly higher gross farm sales (χ^2=18.0, p=.006) whereas lightly diversified farms employ significantly less employees (χ^2=31.5, p<.001) as shown in Table 4.15. There is no statistically significant relationship between the extent of diversification - *lightly, moderately, highly* - and size of farms or the number of acres farmed or ranched. Highly diversified farms are more likely to have a business plan than moderately diversified farms (χ^2=6.6, p=.010). Interestingly, the extent of diversification is not related to whether they have a marketing plan. This may in part be due to ambiguity in terms of what constitutes a marketing plan and the great variability in what is considered to be a marketing plan.

The more highly diversified a farm or ranch the more likely it is to be engaged in various types of resource stewardship including soil and water conservation, protection or propagation of native plants, and improvement of wildlife and fisheries habitats. A summative stewardship index comprised of 13 types of stewardship (1= implemented, 0= not implemented) and environmentally friendly agriculture practices was first calculated and then compared across the different diversification segments. Highly diversified farms are engaged in an average of six (5.8) environmentally friendly practices, while moderately diversified average five (4.8) practices and lightly diversified average three (3.4) practices (F=16.3, p<.001). Tukey Post-hoc tests show significant differences across the three groups indicating a positive relationship between extent of diversification and propensity to engage in stewardship. Of course there is the potential

that farmers and ranchers who diversify have an unrelated propensity to undertake stewardship practices. However, the nature of many diversification enterprises along with the characteristics of the market strongly suggests a contributory association.

Table 4.15 A comparison of operating characteristics and stewardship practices of light, moderately and highly diversified farmers and ranchers.

	Lightly Diversified (28.6%)	Moderately Diversified (44.1%)	Highly Diversified (27.2%)	*Sig.*
Total Gross Value of Sales [a] (n=201)				
Less than $50,000	61.4%	60.9%	33.3%	χ^2=18.0, p=.006*
$50,000 - $99,999	12.3%	12.6%	15.8%	
$100,000 - $499,999	12.3%	20.7%	38.6%	
$500,000 or more	14.0%	5.8%	12.3%	
Total Number of Employees [b] (n=188)				
No employees	10.9%	0.0%	0.0%	χ^2=31.5, p<.001**
1 - 2 employees	32.6%	19.8%	14.3%	
3 - 5 employees	21.7%	36.0%	17.9%	
6 – 10 employees	19.6%	19.8%	33.9%	
11 – 20 employees	8.7%	14.0%	21.4%	
21 or more employees	6.5%	10.5%	12.5%	
Firm Management Sophistication (n=198)				
Availability of written business plan	28.3%	25.0%	45.6%	χ^2=7.2, p=.027***
Environment-Friendly and Stewardship Practices Index (n=213) [c]				
Index (mean)	3.4	4.8	5.8	F=16.3, p<.001
Sales Channels (n=66) [d]				
Percent of wholesale product sales (mean)	81.6%	58.4%	37.9%	F=11.1, p<.001
Percent of direct market sales (mean)	18.4%	41.6%	62.1%	
Marketing Methods Index (n=189) [d]				
Index (mean)	2.9	4.3	5.7	F=16.3, p<.001

[a] This includes all 2004 gross farm/ranch sales derived from all existing enterprises.

[b] This includes full time and part-time year-round and seasonal employees employed in 2004.

[c] This index represents the sum/composite of thirteen stewardship and environmentally friendly agriculture practices that farms and ranches are performing.

[d] This indicates the percent of revenues derived from wholesale and direct sales.

* Pairwise comparisons show that the highly diversified segment is different from the lightly diversified (χ^2=12.8 p=.005) and from the moderately diversified segments (χ^2=11.2 p=.011).

** Two-way chi-squares show that the lightly diversified segment is different from the highly diversified (χ^2=15.5 p=.009) and from the moderately diversified segments (χ^2=14.6 p=.012).

*** Chi-squares tests performed between groups show that significant differences occur between the highly and moderately diversified segments (χ^2=6.6 p<.010).

The percentage of wholesale and direct farm sales and the number of marketing methods employed is significantly associated with the extent of diversification ($p<.001$). As would be expected, the more diversified the farm, the smaller the percentage of wholesale product sales, and the number of marketing methods employed is greater. These results were expected because, as previously mentioned, one of the purposes of agriculture diversification is the broadening of farms/ranches' markets requiring different marketing methods. Diversified farmers and ranchers are more likely to develop products for and market to a broader range of specialized or niche markets (e.g., AgriTourists, organic consumers) and this requires more creative marketing methods and media (Murdoch and Miele, 1999). Diversified farmers are also likely to be engaged in more types of marketing because AgriTourism and other services require a different approach than agricultural products.

The association between *agripreneur* characteristics and the extent to which they have diversified their sources of revenues was also tested. There was no association between operator age, gender, education level or primary occupation (i.e., farming or non-farming) of the principal operator and the extent of farm/ranch diversification. Nor was any significant association between farm household attributes -- household income, spouse's main occupation (i.e., on-farm work or off-farm work), and whether the operator is a new entrant to farming and ranching or has a longer farming involvement (2+ generations) -- and the extent of farm/ranch diversification.

Enterprise-lines

Exploratory research conducted prior to and in preparation of this survey indicated that some farmers and ranchers are developing compatible *enterprise-lines* within the eight categories of diversification (see pp. 22-23). Enterprise-lines are related farm and ranch enterprises that complement and leverage one another (e.g., cross marketing, adding different values), take greater advantage of expertise and facilities that are available, together create critical mass, and overall broaden market appeal. For example, offering several related recreational activities and hospitality services can help a farm to become a destination attraction worthy of a trip, return trip or extended trips to the countryside. Also adding various recreational events can be an effective marketing medium to attract market segments that will purchase other farm products. A broader combination of different farm and ranch products and services can also help increase market awareness and positioning.

Diversified farmers and ranchers were asked about whether or not they offered specific *enterprises* including 45 types of value-added processes, 19 non-traditional crops, livestock and practices; 16 types of marketing; 33 enterprises related to recreation, tourism and hospitality; 4 types of historic preservation and adaptive re-use; 10 types of leases, easements and timeshares; and 5 enterprises related to education, expertise and consulting. Table 4.16 presents the number of different diversification categories and the number of *enterprises* that farmers and ranchers are offering. This provides two related indicators of the breadth of farm and ranch diversification.

Table 4.16 Different measures of the extent of farm and ranch diversification.

	Indexes			
	Range[a] (Min.–Max.)	Observed Range[b] (Min.–Max.)	Mean Score[c]	Median Score[d]
Diversification Categories				
1. Value-Added to Existing Products	(1-45)	(1-18)	3.5	2.0
2. Non-Traditional Crops, Livestock & Practices	(1-19)	(1-7)	2.1	2.0
3. New Marketing and Distribution	(1-16)	(1-11)	4.1	4.0
4. Recreation, Tourism and Hospitality	(1-33)	(1-18)	4.7	4.0
5. Historic Preservation and Adaptive Re-use	(1-4)	(1-3)	1.6	1.0
6. Leases, Easements and Timeshares	(1-10)	(1-3)	1.3	1.0
7. Contracts and Services	--	--	--	--
8. Education, Expertise and Consulting	(1-5)	(1-4)	1.9	2.0
Diversification Breadth				
Diversification Categories	(1-8)	(1-8)	3.5	3.0
Enterprise-Lines	(1-32)	(1-46)	10.5	9.0

[a] This is the maximum number of enterprises identified within a diversification category.
[b] This was the observed range of enterprises offered by participants. The most diversified participants engaged in Value-added diversification have developed 18 different enterprises.
[c] This is the mean of the number of enterprises in each diversification category. For example, farmers and ranchers that are engaged in value-added diversification are engaged in an average of 3.5 enterprises.
[d] Half the farmers that are engaged in value- added diversification are engaged in 2 or more value-added enterprises.

More than half of the diversified farms and ranches are engaged in nine or more different *enterprises*. The average is 10 (10.5) enterprises. The findings reveal that a majority of the farmers and ranchers that initially decide to diversify continue to add related enterprises in response to market demand and because the expertise (e.g., marketing, processing) that they develop is applicable across related products comprising different *enterprise-lines*. Often adding an additional enterprise is needed to provide customers/visitors with a more complete package. The results also reveal that a significant amount of farm diversification involves farmers and ranchers expanding *enterprise-lines* within the eight different diversification categories. For example, farms that have diversified though AgriTourism are offering thirty-three different types of

recreation and entertainment experiences including u-pick activities (e.g., berries harvest), recreational activities (e.g., hayrides), various types of recreational lodging (e.g., Bed and Breakfast) and on-farm dining.

A very common form of diversification involves diversification through new marketing and distribution channels. Not surprisingly, given the initial sampling frame, the majority of participants (72.6%) are using the Internet for marketing purposes. The majority (56.6%) of Texas diversifiers also direct sell to their customers. A large proportion of the diversified farmers who responded to the survey is engaged in organic or natural farming (35.4%) and also offers recreational tours on their farms and ranches. Interestingly, over a quarter of the Texas *agripreneurs* (27.8%) are preserving historic and cultural buildings on their farms, such as barns, mills and farmhouses. Table 4.17 displays the number of *enterprise-lines* in each diversification category and the three most frequent *enterprise-lines* per category, providing the percentage of occurrence within category and within overall respondents.

Table 4.17 Diversified categories and diversified enterprise-lines on Texas diversified farms and ranches.

Diversification Categories (n=212)	Percent of Respondents	Within Category Percent [b]	Overall Percent [c]
Value-Added Processes (n=74)	**34.4**		
Jams, jellies and preserves		19.2	6.6
Ceramics and pottery		36.4	5.7
Dried flowers		36.4	5.7
Photography		36.4	5.7
Christmas ornaments (e.g., wreaths)		36.4	5.7
Non-Traditional Crops, Livestock & Practices (n=146)	**68.9**		
Organic/natural growing/raising		51.4	35.4
No-additives farming		32.2	22.2
Biological control		25.3	17.5
Deer or elk		23.3	16.0
New Marketing and Distribution (n=187)	**88.2**		
Availability of website		81.9 [d]	72.6
Direct sales to customers		63.8	56.6
Sales through Internet (i.e., Virtual Markets)		42.6	37.7
Participation in trade shows and special events		42.6	37.7
Recreation, Tourism and Hospitality (n=137)	**64.6**		
Tours		56.0	35.4
Pick/cut your own (e.g., berries, Christmas trees)		32.1	20.3
Paid hunting and customized hunting tours		32.1	20.3
Wildlife observation		29.9	18.9
Historic Preservation and Adaptive Re-use (n=91)	**42.9**		
Preservation of buildings		69.4	27.8
Preservation of equipment		54.1	21.7
Preservation of artifacts		28.2	11.3
Other		7.1	2.8
Leases, Easements and Timeshares (n=28)	**13.2**		
Leasing of land		69.2	8.5
Conservation Easements		15.4	1.9
Leasing of equipment		11.5	1.4
Leasing of animals		11.5	1.4
Hunting leases		11.5	1.4
Contracts and Services (n=13) [e]	**6.1**		
Expertise, Consulting and Education (n=64)	**13.1**		
Educational tours		84.4	25.5
Classes, workshops and seminars		57.8	17.5
Apprenticeships programs		17.2	5.2
Horse riding lessons		14.1	4.2

[a] This is the percent of overall respondents who are engaged in each diversification category.

[b] Indicates the percentage of farms/ranches engaged in this category of diversification that offer this enterprise. For example, 19.2% of the farms and ranches engaged in Value-Added to Existing Products Diversification are processing jams, jellies and preserves.

[c] Indicates the percentage of all farms/ranches that responded to the survey that are engaged in this enterprise. E.g., 6.6% of all respondents are processing jams, jellies and preserves.

[d] Availability of website was excluded when calculating the distribution of the enterprises categories to prevent a bias due to the selection of the study sample. The inclusion of this product increases the "New Marketing and Distribution" category to 88.3%.

[e] No specific enterprise-lines within this diversification category were identified.

Dynamic Diversification

The results from this survey also confirm the belief that diversification is a dynamic process and that diversification stimulates and supports additional diversification. In other words, diversification encourages even greater diversification for reasons including that a majority of diversified farmers and ranchers are realizing important benefits from diversification (Mahoney *et al.*, 2006). Also, many appear to be incorporating new enterprises as a means of adjusting to and capitalizing on changing market expectations and competitive situations. To test these assumptions, diversified farmers and ranchers were asked questions about the pace and timing of their diversification and whether or not they plan to continue to add new enterprises.

Table 4.18 Pace and timing of development of diversified enterprises.

Diversification Development	Respondents (Percent)	
Pace of Development (n=193)		
All enterprises developed at once	30.1	
Enterprises developed in phases	69.9	
Started farm with livestock and crops		98.1 [a]
Did not start farm with livestock and crops		1.9
Timing of Diversification Development (n=179)		
Started as a diversified farm	24.5	
1 – 2 years	25.0	
3 – 5 years	18.4	
6 – 10 years	14.5	
11 – 20 years	12.3	
More than 20 years	5.3	
Mean (in years)	(5.4)	

[a] This is the percent from the 69.9% that diversified in phases.

Over two thirds (69.9%) of the respondents phased in various diversification enterprises over time (Table 4.18). As would be expected, the majority of them (98.1%) started their business growing crops or raising livestock. On average, Texas *agripreneurs*

began to diversify after five (5.4) years of starting farming. Only a quarter of the diversified farmers (24.5%) began their operations as a diversified farm or ranch, and another quarter (25.0%) began their diversification less than two years after starting their farms and ranches. A small percentage of *agripreneurs* (17.6%) diversified after ten years of being in farming.

Table 4.19 Percentage of farmers and ranchers planning additional diversification and the categories of diversification they are expecting to incorporate.

	Percentage of Respondents	Time Frame (Mean) [a]
Farmers Planning to Diversify (n=190)		
Planning to diversify more	48.9	
Not planning to diversify more	51.1	
Types of Additional Diversified Enterprises [b] (n=78)		
Recreation, tourism and special events	55.1	1.8
Educational activities	34.6	1.8
Lodging and accommodations	30.8	2.4
Processing of foods and beverages	16.7	1.6
Restaurants and food services	15.4	1.8
Arts and crafts	12.8	1.6
Other products and services	12.8	1.4
Health and cosmetics	n/a [c]	--
Easements	n/a	--
Leasing	n/a	--
Time-shares	n/a	--

[a] 1 = within one year; 2 = 2-3 years; 3 = 3-4 years; 4 = 5 years or more.
[b] Includes only those farmers and ranchers that plan to further diversify (48.9%).
[c] Too few cases to report.

Almost half (48.9%) of the diversified farms and ranches planned to further diversify by adding new enterprises (Table 4.19). The most frequent types of enterprises that farmers expect to add in the future are recreation, tourism and special events (55.1%), educational activities (34.6%) and lodging and accommodations (30.8%). A large number are planning to diversify relatively soon. With the exception of those

planning to add or expand lodging and accommodations to their farms and ranches, most who are planning to further diversify expect to do so in three years or less. A relatively high percentage (12.8%) anticipate diversifying additionally in three years or less by adding enterprises not currently included in the *diversification* model. Clearly farmers are considering a broader range of enterprises as a means of generating additional income to sustain family farms.

Operator characteristics were examined to determine which, if any, are associated with plans to diversify additionally. No significant associations were found between intentions to further diversify and the age, gender and level of education of the principal operator, the number of generations the operator's family has been engaged in farming, or whether or not their primary occupation is farming or an off-farm job.

Some farm characteristics are associated with future plans for further diversification (Table 4.20). As would be expected, farms with larger annual gross income –more than $500,000 – are statistically less likely to continue to add enterprises (χ^2=10.2, p=.04) while medium sized farms in terms of annual gross income –$100,000 - $249,000 – are more likely to expand their diversification. As anticipated the current extent of farm diversification is positively associated with plans to diversify additionally. The more diversified a farm or ranch is the more likely they are to continue to add enterprises. On average, farms and ranchers planning to add more enterprises currently have four (3.8) enterprises compared to three (3.3.) enterprises for those not planning to diversify more (F=5.6, p=.02). There is no statistically significant relationship between expansion plans and the farm size and the acreage farmed/ranched.

Table 4.20 A comparison of farm/ranch characteristics of those planning and not planning further diversification.

Farm/Ranch's Characteristics	Planning Further Diversification	Not Planning Further Diversification	*Sig.*
Farm Gross Sales (n=185)			
Less than $50,000	47.4%	52.6%	χ^2=10.2, p=.04
$50,000 - $99,999	53.8%	46.2%	
$100,000 - $249,999	65.4%	34.6%	
$250,000 - $499,999	56.3%	43.8%	
$500,000 or more	20.0%	80.0%	
Business Sophistication (n=190)			
Availability of a written business plan	34.4%	65.6%	χ^2=7.6, p=.01
Extent of Diversification (n=187)			
Number of diversification categories (mean)	3.8	3.3	F=5.6, p=.02

Whether farmers and ranchers are more likely to diversify along *enterprise-lines* they are already involved with and therefore, have relevant experience and complementary facilities and technologies was also examined. Table 4.21 presents the results of a test of this hypothesis related to AgriTourism and farm and ranch recreation. Farmers and ranchers were classified into two segments: farmers not engaged in AgriTourism (64.3%) and those who were engaged in AgriTourism (35.7%). Statistical comparisons between these segments were conducted to determine whether farmers and ranchers who planned to further diversify are more likely to add related enterprises including recreational activities, restaurants and food services and lodging services.

As it was expected, farms and ranches currently involved in AgriTourism are statistically more likely to continue to add recreation related enterprises. Over a quarter of farms engaged in AgriTourism plan to diversify further by adding recreation, tourism and special events enterprises compared to about fifteen percent (14.5%) of those not involved in tourism (χ^2=4.3, p=.037). Similarly, statistically more Agritourism farms

(16.9%) are planning to add lodging and accommodation enterprises than farms not engaged in Agritourism (5.8%; χ^2=4.8, p=.028).

Table 4.21 A comparison of future expansion planned by farmers not engaged in AgriTourism and those engaged in AgriTourism.

	Engaged In Agritourism (64.3%)	Not Engaged In Agritourism (35.7%)	*Sig.*
Enterprises Related to AgriTourism			
Recreation, Tourism & Special Events	27.7%	14.5%	χ^2=4.3, p=.037
Lodging and Accommodations	16.9%	5.8%	χ^2=4.8, p=.028
Restaurant and Food Services	8.4%	2.9%	*Not sig.*
Enterprises Not Related to AgriTourism			
Processing of Foods and Beverages	8.4%	4.3%	*Not sig*
Educational Activities	17.8%	8.7%	*Not sig*
Arts and Crafts	5.9%	4.3%	*Not sig*

However, it was found that there is no significant difference between both segments regarding their plans for further diversifying in restaurants or other types of food service. In part this is because on-farm restaurants are rarely the first element of farm diversification. They are commonly added only after on-farm visitation reaches a certain level and there is a critical mass of "things to do" (e.g., recreational and educational experiences) that increases the length of stay. Besides, other factors such as income and availability of financing, not just their current offerings or even past experience, influences the types of diversification possible on farms and ranches. As was expected, there are no significant differences in the plans for further diversification in enterprises not related to AgriTourism. Further diversification plans in processing of foods and beverages, educational activities and arts and crafts were not statistically different between those currently engaged in Agritourism and those not engaged in Agritourism.

CHAPTER V

GOALS AND SUCCESS BEHIND AGRICULTURE DIVERSIFICATION

This chapter presents the findings that address the objectives, research questions and hypotheses that guided the design of this study. A primary focus is on the types of goals for diversification and their relative significance in the decision making process of farmers/ranchers. This chapter also examines the degree of correlation among various diversification goals with the level of achievement of different economic and non-economic diversification goals.

Chapter V is presented in five sections. The first section provides an overview of different goals that encourage farmers to diversify their farms and ranches. Section two identifies the patterns of correlations between diversification goals as well as the degree of association between farm and farmer profiles and extent of diversification and the importance assigned to various goals. Section three addresses the extent to which various goals are being achieved from the farmers' perspective. The fourth section provides farmer's perspectives of the relative success of diversification in terms of farm revenues, net income, overall debt and job creation and support. Finally, this chapter integrates both the subjective and objective assessment of the impacts of diversification.

5.1 Reasons Why Farmers and Ranchers Diversify Their Enterprises

Farmers and ranchers were asked about the importance of twenty possible diversification goals. These goals represent a wide spectrum of both economic and non-economic goals that the literature recognizes as stimulating diversification. Two open-ended categories were included to identify possible goals not already identified in the literature.

Table 5.1 Percentage of respondents who considered different goals to be important reasons for diversifying their farms and ranches.

Diversification Goals	Percentage of Respondents (n=208)
Generate additional income	83.7
Continue farming/ranching	53.4
Enhance personal/family quality of life	52.4
To generate additional revenues from existing resources	50.5
Respond to a market need/opportunity	49.5
Keep the farm/ranch in the family	47.1
Increase/diversify the market	44.2
Capitalize on an interest/hobby	38.0
Interact with customers	38.0
Educate customers	33.7
Offset fluctuations in farm/ranch revenues	33.2
Generate revenues during off/non-growing seasons	32.7
Provide current customers with new products/services	32.7
Provide a new challenge	32.7
Enhance ability to meet financial/loan obligations	29.8
Make farm less dependent on outside factors	26.9
Reduce overall farm/ranch debt	26.4
Reduce impacts of catastrophic events	25.5
Provide employment opportunities for family members	22.1
Qualify for state/federal assistance program	12.5

The results reveal a broad range of goals, both financial and non-financial, that are important in farmers' decisions to diversify. Table 5.1 presents the percentage of respondents who consider various goals to be important reasons why they diversified their farms or ranches. Two economic goals, the generation of additional income

(83.7%) and the generation of additional revenues from existing resources (50.5%) are important reasons for the development of farm/ranch enterprises. However, a majority diversified in part to allow them to continue farming (53.4%) and as a way of enhancing their (family's) quality of life (52.4 %). No important new diversification motivations were identified[53].

Farmers and ranchers were asked separately about the importance of various reasons for preserving farm and ranch related cultural objects and heritage (Table 5.2). Important reasons included: the importance of the cultural resource to them and their family (84.1%); their intrinsic value (46.6%); and the potential to generate resources (40.9%). What is most surprising is that such a high percentage of farmers and ranchers are aware of the revenue generating potential associated with cultural heritage.

Table 5.2 Percentage of respondents who considered different goals as important in the preservation of cultural objects and heritage.

Goals Related to Historic Preservation	Percentage of Respondents (n=88) [a]
Importance to me and my family	84.1
Their intrinsic value	46.6
Potential to generate revenues	40.9
Cost savings	23.9
Other goals	10.2

[a] Includes only those farmers and ranchers who have diversified through historic preservation and adaptive re-use (42.9%)

Farmers and ranchers were then asked to rank the importance of various goals for diversification on a five- point *Likert* scale ranging from "*not important*" (1) to

[53] Only 3.4% of the respondents reported goals related to the enhancement of their community as important in their diversification process. These goals included environmental and conservation concerns, the generation of local economic impact and the farming heritage awareness.

"*extremely important*" (5)[54]. The distribution and average importance ratings are reported in Table 5.3.

Table 5.3 Level of importance of different farm and ranch diversification goals.

Diversification Goals [a] (n=202)	Level of Importance [b]					
	1	2	3	4	5	Mean
Generate additional income	17.0%	4.0%	10.0%	20.0%	49.0%	3.80
Continue farming/ranching	47.2%	0.5%	1.5%	13.1%	37.7%	2.94
Enhance personal/family quality of life	46.8%	--	4.5%	11.4%	37.3%	2.93
Keep the farm/ranch in the family	52.2%	--	3.0%	7.0%	37.8%	2.78
To generate additional revenues from existing resources	49.5%	2.0%	10.5%	15.0%	23.0%	2.60
Respond to a market need/opportunity	50.5%	2.0%	9.0%	24.0%	14.5%	2.50
Increase/diversify the market	55.5%	0.5%	4.0%	22.5%	17.5%	2.46
Interact with customers	61.7%	0.5%	7.5%	10.5%	19.9%	2.26
Capitalize on an interest/hobby	62.0%	2.5%	8.0%	14.5%	13.0%	2.14
Educate customers	65.4%	2.0%	5.0%	10.4%	17.3%	2.12
Generate revenues during off/non-growing seasons	67.0%	--	4.5%	11.5%	17.0%	2.11
Enhance ability to meet financial/loan obligations	70.5%	0.5%	0.5%	7.0%	21.5%	2.09
Offset fluctuations in farm/ranch revenues	66.7%	0.5%	7.5%	11.0%	14.4%	2.06
Provide a new challenge	67.2%	1.5%	6.0%	10.5%	14.9%	2.05
Provide current customers with new products	67.5%	1.5%	7.0%	10.0%	14.0%	2.02
Reduce overall farm/ranch debt	74.0%	0.5%	1.0%	5.0%	19.5%	1.96
Make farm less dependent on outside factors	73.1%	1.0%	3.0%	9.0%	13.9%	1.90
Reduce impacts of catastrophic events	75.6%	0.5%	4.0%	7.5%	12.4%	1.81
Provide employment opportunities for family	79.0%	1.0%	3.0%	7.0%	10.0%	1.68
Qualify for state/federal assistance program	87.1%	2.0%	1.5%	4.5%	5.0%	1.38

[a] Two open-ended categories of diversification goals were excluded because the small number of cases reporting them and the wide range of responses prevented further analysis.

[b] Anchors: (1) not important; (2) somewhat important; (3) moderately important; (4) fairly important; and (5) very important.

Generation of additional income is the most prevalent and on average the most important reason leading to decisions to add diversified enterprises to Texas farms and ranches (mean importance=3.8). Almost half (49.0%) of farmers and ranchers consider this a very important reason why they diversified. Three other reasons all related to

[54] The complete scale had the following points: (1) not important; (2) somewhat important; (3) moderately important; (4) fairly important; and (5) extremely important.

perpetuation of farming were also high in importance: the continuance of farming and ranching (mean=2.94), the enhancement of quality of life (mean=2.93) and keeping the farm/ranch in the family (mean=2.78). However, it should be noted that about half (47.2%) felt that continuing in farming was not an important reason why they diversified, possibly because they were already committed and able to stay in farming. Enhanced economic utilization of the farm resources to generate additional income is also an important reason leading to decisions to diversify (mean=2.6). This includes for example, the generation of economic activities to keep full time farm labor busy all year-round.

5.2 Underlying Patterns of Association among Diversification Goals

Obviously, more than one goal contributes to a decision to diversify farms and ranches. In some instances farmers and ranchers are almost evenly divided on whether a goal is important or not important. This is why it was important to identify the underlying pattern of relationships among the goals.

Principal component factor analysis with *varimax* rotation was performed on the importance ratings that farmers and ranchers assigned to various diversification goals for the purpose of identifying the underlying patterns of relationships among these goals. A *listwise* method was used to handle missing values. Only cases/respondents with no missing values were included in the analysis[55]. The varimax-rotated factor matrix resulted in six factors with eigenvalues that were all over one accounting for 60.9% of the

[55] The same factor procedure was performed considering only valid data (i.e., pairwise) and replacing missing values by the average value for the sample. These procedures resulted in the same factors in terms of number and composition, showing small differences in the factor loadings.

variance. An examination of the scree plot confirmed the suitability of the six-factor result (Figure 5.1). A loading higher than 0.50 was the threshold for including a goal as part of a factor. Reliability analysis (Cronbach's alpha) shows coefficients higher than 0.50 (minimum value expected) indicating internal consistency of the variables comprising each factor. The overall reliability measure was 0.85. "To educate customers" did not load on any factor (<0.5) and obtained similar loadings (between 0.45 and 0.26) in four factors reflecting the heterogeneity of this goal. Thus, this goal was dropped from further analysis.

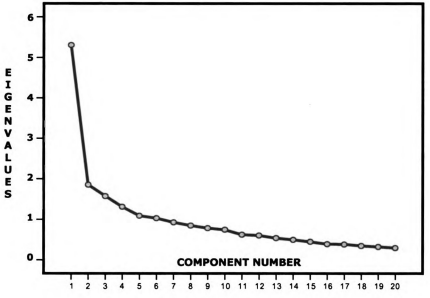

Figure 5.1. Scree Plot

The six factors were assigned labels based on the common characteristics of the goals that loaded on each factor. The factors were labeled as follows: (F1) Reduce Uncertainty and Risk, (F2) Grow and Service Markets, (F3) Enhanced Financial

Condition, (F4) Individual Aspirations and Pursuits, (F5) Revenues Enhancement, and (F6) Family Connections. Table 5.4 displays the six factors obtained, the goals that loaded in each factor and their corresponding loadings, the Cronbach's alpha reliability coefficients, *eigenvalues*, and percentage of variance explained by each factor.

Table 5.4 Rotated factor matrix of the goals for farm and ranch diversification.

Factors and Goals (n=195)	Factor Loadings	Explained Variance (%)	Eigenvalue
Reduce Uncertainty and Risk (F1) (α=.74) [a]		14.34	5.38
Offset fluctuations in farm/ranch revenues	.765		
Reduce impacts of catastrophic events	.754		
Make farm less dependent on outside factors	.626		
Continue farming/ranching	.568		
Grow and Service Markets (F2) (α=.71)		11.32	1.86
Provide current customers with new products/services	.732		
Generate revenues during off/non-growing seasons	.597		
Respond to a market need/opportunity	.576		
Increase/diversify the market	.572		
Enhanced Financial Condition (F3) (α=.66)		10.09	1.58
Enhance ability to meet financial/loan obligations	.811		
Reduce overall farm/ranch debt	.740		
Qualify for state/federal assistance program	.540		
Personal Aspirations and Pursuits (F4) (α=.60)		9.83	1.32
Capitalize on an interest/hobby	.740		
Provide a new challenge	.691		
Enhance quality of life	.538		
Interact with customers	.501		
Revenue Enhancement (F5) (α=.56)		7.88	1.09
Generate additional income	.813		
To generate additional revenues from existing resources	.625		
Family Connection (F6) (α=.53)		7.50	1.03
Keep the farm/ranch in the family	.714		
Provide employment opportunities for family members	.630		
Total Variance Explained		**60.96**	

a. Cronbach's alpha reliability coefficients for domains. Overall reliability (α=.85)

Factor 1, *Reduce Uncertainty and Risk,* comprised four goals and explained 13.4% of variance in the data, with an eigenvalue of 5.4. The alpha reliability coefficient for this factor was the highest obtained (α=.74). The four different goals that loaded on

F1 relate to the uncertainty and risk associated with farming including the fluctuations of the agriculture revenues originated by the variations in the commodities prices; the existence of catastrophic events (e.g., droughts, floods) that frequently threaten farmers and ranchers, independence from outside factors (e.g., be a price setter instead of a price taker), and the perpetuation of farmers and ranchers in agriculture business. The four goals that loaded on this factor and contributed to its naming are: (1) Offset fluctuations in farm/ranch revenues; (2) Reduce impacts of catastrophic events; (3) Make the farm less dependent on outside factors; and (4) To continue farming/ranching.

The second factor, *Grow and Service Markets,* explained 11.3% of variance in the data, with an eigenvalue of 1.9 and an alpha reliability coefficient of 0.71. The four goals that comprise this factor (F2) are associated in some way with the retaining and expanding markets. They include: providing current customers with new products/services; generating revenues during off/non-growing seasons; respond to market needs/opportunities and diversifying markets.

The *Enhanced Financial Condition* factor (F3) includes goals associated with the financial wellbeing and performance of farm and ranch businesses. This factor explained 10.1% of variance, had an *eigenvalue* of 1.6 and an alpha reliability coefficient of 0.66. These goals included: enhancing the ability to meet financial obligations, the reduction of the farm debt, and the ability to qualify for an assistance program. Conversely, the four goals that make up the *Individual Aspirations and Pursuits* factor (F4) are personal in nature including to capitalize on an interest/hobby; diversification as a new challenge; enhanced quality of life; and to interact on a personal level with customers. F4 have 9.8% of explained variance and 1.3 for eigenvalue (Cronbach's α=.6).

The *Revenues Enhancement* factor (F5) comprised two goals and explained 7.8% of variance with an *eigenvalue* of 1.1 (Cronbach's α=.6). This factor is related to two principal goals: the generation of additional income derived for example from the additional value added to the agriculture product and the maximum utilization of the farm resources including land, capital and labor. Diversifying to keep the farm in the family and to generate employment for family members loaded on the last factor named *Family Connections* (F6). F6 had an *eigenvalue* of 1.03, 7.5% of explained variance and a reliability coefficient just above the standard minimum acceptable (α=.53).

Significant Differences in the Importance Assessment of Goals by Factors

According to the goal-directed behavior model discussed in Chapter II, internal and external stimuli can affect the hierarchical organization and the importance of individuals' goals. Recognizing this, tests of association were preformed between the diversification goals prominently identified with the six factors and various farm and farmer/rancher characteristics and extent of diversification. Farm and ranch characteristics included farm size –measured in terms of acres farmed and annual gross income--, and farm structure measured by the extent of tenure and farm organizational structure. Farmer/rancher characteristics included their socioeconomics (i.e., gender, age and level of education), on/off farm employment status and their family attachment to the farm (i.e., number of generations on the farm, number of family employees and whether farming is the main occupation of the operator).

Table 5.5 Differences in the importance assessment of goals loaded in the *Reduce Uncertainty and Risk* factor (F1) by farm characteristics, farmer profile and extent of diversification.

Variables (n=200)	Importance Assessment of Goals – Reduce Uncertainty and Risk Factor (F1)[a]			
	Offset fluctuations in farm revenues	**Reduce impacts of catastrophic events**	**Make farm less dependent on outside factors**	**Continue farming**
Acres Farmed				
Less than 50 acres	1.8	1.6	1.8	2.5
50 - 149	1.9	1.7	1.7	2.6
150 - 999	1.8	1.5	1.6	2.8
1000 acres or more	2.6	2.3	2.4	3.7
Level of Significance	F=3.97, p=.009	F=2.66, p=.050	F=2.81, p=.041	F=5.12, p=.002
Annual Farm Gross Sales				
Less than $50,000	1.7	1.5	1.6	2.7
$50,000 - $99,999	2.1	1.7	1.8	2.7
$100,000 - $499,999	2.6	2.3	2.2	3.2
$500,000 or more	2.6	2.7	2.8	3.6
Level of Significance	F=4.26, p=.006	F=6.80, p<.001	F=3.83, p=.011	Not Sig.
Tenure Structure [b]				
Only farm owned land	1.9	1.7	1.7	2.9
Farm mostly owned land	2.7	2.1	2.5	3.1
Equally farm owned and rented land	3.1	2.7	3.0	3.4
Farm mostly rented land	1.8	2.2	2.1	3.6
Only farm rented land	1.6	1.9	1.9	2.2
Level of Significance	F=2.66, p=.034	Not Sig.	F=2.97, p=.021	Not Sig.
Operators' Age				
Less than 45 years	2.3	2.4	2.0	2.7
45-64 years	2.0	1.7	1.9	2.9
65 years or older	2.0	1.6	1.8	2.8
Level of Significance	Not Sig.	F=4.19, p=.016	Not Sig.	Not Sig.
Number of Generations in the Farm				
First generation in the farm	1.7	1.6	1.5	2.6
At least second generation	2.6	2.2	2.5	3.4
Level of Significance	F=15.69, p<.001	F=7.37, p=.007	F=20.27, p<.001	F=8.66, p=.004
Farmers Principal Occupation				
Farming or Ranching	2.3	1.9	2.0	3.1
Not farming or ranching	1.7	1.6	1.7	1.6
Level of Significance	F=7.81, p=.006	Not Sig.	Not Sig.	F=4.19, p=.042
Extent of Diversification				
Lightly diversified	1.6	1.5	1.5	2.7
Moderately diversified	2.0	1.7	1.9	3.0
Highly diversified	2.6	2.2	2.3	3.1
Level of Significance	F=4.90, p=.008	F=3.40, p=.035	F=3.42, p=.035	Not Sig.

[a] Anchors: (1) not important; (2) somewhat important; (3) moderately important; (4) fairly important; and (5) very important.

[b] *'Farm mostly owned land'* refers to those that own at least 60% of the land farmed; *'Equally farm owned and rented land'* refers to those whose ratio between acreage owned and rented is within 40/60; and *'Farm mostly rented land'* refers to those that farmed at least 60% of rented acreage.

The level of importance assigned to the goals that compose the *reduce uncertainty and risk* factor (F1), are statistically related to the characteristics of farms and farmers. Larger farms, in terms of acreage and gross sales, assign greater importance to goals related to reduce uncertainty and risk (F1) (Table 5.5) [56]. Tenure structure of farms have an association with the relative importance "offsetting fluctuations in farm revenues" and "making farm less dependent on outside factors" in the decision to diversify. Those who equally farm land they own and rented land consider both goals more important than farmers who exclusively farm either land that they own or land that they rent. The importance of the F1 diversification goals was not statistically related to farm organization.

As might be anticipated younger farmers (those less than 45 years old) view reducing the effects from catastrophic events (F=4.19, p=.016) to be a more important reason to diversify than older farmers. Obviously, younger farmers are less well established and therefore not as capable of absorbing large financial losses. Interestingly, *first generation farmers and ranchers* place significantly less importance on the F1 goals than those whose families have been engaged in farming for multiple generations. This may be because new farmers appear to be more entrepreneurial and have less experience with the cyclical ups-and-downs of faming and the constant struggle to remain viable. They are also more likely to view the farm or ranch as a business rather than a legacy. It is understandable why multiple generation farmers and ranchers would be more likely to diversify to enhance certainty and control. As was expected, farmers and ranchers whose primary occupation is farming view offsetting fluctuations in farm revenues and

[56] The ANOVA performed between the annual gross sales in the importance level of the goal "To continue farming and ranching" was not significant.

as a means of continuing farming as more important reasons to diversify. Gender, level of education and on/off-farm employment are not statistically associated with the importance farmers assign the various diversification goals that makeup F1.

Very interestingly, more highly diversified farmers and ranchers consider reducing uncertainty and influence of outside forces as more important reasons to diversify than the operators of less diversified farms and ranches. However, no differences were found regarding the importance of diversifying as a means to continuing farming across different levels of diversification. Some of the goals that comprise the *Grow and Service Markets Factor* (F2) are only related to a few farm, farmer/rancher and extent of diversification characteristics. The size of farms and ranches is associated with the importance that "responding to market needs/opportunities" play in diversification decisions (Table 5.6). Operators of smaller farms, less than 50 acres, are more likely to consider this goal to be an important reason for diversifying. This result is not surprising since many smaller farms are surviving and prospering by identifying and responding to special or niche markets. Gross sales and farm structure indicators (i.e., tenure and organization) are not significantly related to the importance farmers and ranchers place on F2 related goals as a reason for diversifying their farms or ranches.

Table 5.6 Differences in the importance assessment of goals loaded in the *Grow and Service Markets* factor (F2) by farm characteristics, farmer profile and extent of diversification.

Variables (n=200)	Importance Assessment of Goals – Grow and Service Markets (F2) [a]			
	Provide current customers with new products	**Generate revenues during off seasons**	**Respond to a market need/ opportunity**	**Increase/ diversify the market**
Acres Farmed				
Less than 50 acres	2.2	2.1	3.1	2.5
50 - 149	2.3	1.9	2.4	2.7
150 - 999	1.5	1.9	2.4	2.4
1000 acres or more	1.9	2.4	2.0	2.3
Level of Significance	Not Sig.	Not Sig.	***F*=5.28, *p*=.002**	Not Sig.
Annual Farm Gross Sales				
Less than $50,000	1.9	1.8	2.5	2.3
$50,000 - $99,999	2.1	2.3	2.9	2.7
$100,000 - $499,999	2.2	2.2	2.6	2.8
$500,000 or more	2.4	2.8	2.4	2.6
Level of Significance	Not Sig.	Not Sig.	Not Sig.	Not Sig.
Tenure Structure [b]				
Only farm owned land	2.0	2.2	2.6	2.5
Farm mostly owned land	2.5	2.2	2.6	2.6
Equally farm owned and rented land	2.2	1.8	2.2	2.4
Farm mostly rented land	2.1	1.9	2.4	2.1
Only farm rented land	1.7	1.3	2.1	1.8
Level of Significance	Not Sig.	Not Sig.	Not Sig.	Not Sig.
Operators' Gender				
Male	2.1	2.3	2.5	2.6
Female	1.9	1.5	2.6	2.2
Level of Significance	Not Sig.	***F*=10.40, *p*=.001**	Not Sig.	Not Sig.
Number of Generations in the Farm				
First generation in the farm	2.1	2.1	2.7	2.5
At least second generation	1.9	2.2	2.2	2.4
Level of Significance	Not Sig.	Not Sig.	***F*=5.10, *p*=.025**	Not Sig.
Farmers Principal Occupation				
Farming or Ranching	2.1	2.2	2.5	2.5
Not farming or ranching	1.9	1.9	2.5	2.4
Level of Significance	Not Sig.	Not Sig.	Not Sig.	Not Sig.
Extent of Diversification				
Lightly diversified	1.2	1.6	1.9	1.9
Moderately diversified	2.0	2.3	2.6	2.6
Highly diversified	2.9	2.2	2.9	2.8
Level of Significance	***F*=19.13, *p*<.001**	***F*=3.16, *p*=.044**	***F*=6.30, *p*=.002**	***F*=4.98, *p*=.008**

[a] Anchors: (1) not important; (2) somewhat important; (3) moderately important; (4) fairly important; and (5) very important.

[b] *'Farm mostly owned land'* refers to those that own at least 60% of the land farmed; *'Equally farm owned and rented land'* refers to those whose ratio between acreage owned and rented is within 40/60; and *'Farm mostly rented land'* refers to those that farmed at least 60% of rented acreage.

Several farmer and rancher characteristics are related to the importance that various F2 goals have in decisions whether or not to diversify. First generation farmers consider "responding to a market needs/opportunities" to be an important reason to diversify (mean=2.7). Again, this is possibly due to the fact that these farmers may be required to be more entrepreneurial and market focused because they are new to farming and likely entered as a non-traditional farmer. For some reason, male operators assign much greater importance to the generation of off-seasons revenues (mean=2.3) as a reason for diversifying than women operators (mean=1.5).

The extent of diversification is positively associated with the *Grow and Service Market* Factor. The more diversified a farm or ranch, the greater importance their operators place on growing and servicing markets. This might be in part because heavily diversified farmers are engaged in enterprises that require them to be more marketing oriented and sensitive, and they are likely to respond to market opportunities by adding new and related enterprises. They switch from a wholesale to a direct marketing orientation. It is often the case that the customers of diversified farms and ranches recommend additional products and services that they desire or need and this stimulates additional diversification.

Table 5.7 Differences in the importance assessment of goals loaded in the *Enhanced Financial Condition* factor (F3) by farm characteristics, farmer profile and extent of diversification.

Variables (n=200)	Importance Assessment of Goals – Enhanced Financial Condition (F3) [a]		
	Enhance ability to meet financial/ loan obligations	Reduce overall farm/ranch debt	Qualify for state/ federal assistance program
Acres Farmed			
Less than 50 acres	2.2	2.1	1.4
50 - 149	1.5	1.5	1.4
150 - 999	2.1	1.7	1.3
1000 acres or more	2.4	2.3	1.4
Level of Significance	Not Sig.	Not Sig.	Not Sig.
Annual Farm Gross Sales			
Less than $50,000	1.9	1.8	1.5
$50,000 - $99,999	1.8	1.4	1.1
$100,000 - $499,999	2.2	2.2	1.2
$500,000 or more	3.1	2.9	1.2
Level of Significance	***F*=3.23, *p*=.024**	***F*=4.04, *p*=.008**	Not Sig.
Organization Structure			
Individual proprietorship [b]	1.9	1.8	1.4
Non-individual proprietorship	2.5	2.2	1.4
Level of Significance	***F*=5.59, *p*=.019**	Not Sig.	Not Sig.
Operators' Age			
Less than 45 years	1.9	2.3	1.2
45-64 years	2.2	1.9	1.4
65 years or older	1.8	1.6	1.6
Level of Significance	Not Sig.	Not Sig.	Not Sig.
Operator's Level of Education			
At least some school	3.2	2.6	1.6
At least some college	2.1	2.0	1.4
At least some graduate studies	1.8	1.7	1.3
Level of Significance	***F*=5.75, *p*=.004**	Not Sig.	Not Sig.
Number of Generations on the Farm			
First generation on the farm	2.0	1.9	1.3
At least second generation	2.2	2.0	1.5
Level of Significance	Not Sig.	Not Sig.	Not Sig.
Farmers Principal Occupation			
Farming or Ranching	2.2	2.1	1.5
Not farming or ranching	2.0	1.7	1.2
Level of Significance	Not Sig.	Not Sig.	Not Sig.
Extent of Diversification			
Lightly diversified	1.8	1.4	1.3
Moderately diversified	2.1	2.1	1.4
Highly diversified	2.4	2.3	1.4
Level of Significance	Not Sig.	***F*=3.60, *p*=.011**	Not Sig.

[a] Anchors: (1) not important; (2) somewhat important; (3) moderately important; (4) fairly important; and (5) very important

[b] Includes family and individual farms.

Whether or not the goals that compose the *Enhanced Financial Condition* factor (F3) are important in deciding to diversify is statistically associated with the amount of annual farm sales, how the farm business is organized, the education level of the operator, and the current diversification extent of the farm[57]. Diversifying as a way to better meet financial obligations and to reduce overall farm debt was more important to operators of farms and ranches with larger gross sales ($500,000 +) (Table 5.7). Farms and ranches organized as corporations similarly considered the "enhancement to meet financial obligations" goal as important reasons to diversify. Interestingly the farmers and ranchers who are most diversified placed more importance on debt reduction as a reason to diversify even though diversification does not generally lead to reduced debt and may actually require taking on additional debt in the early stages.

Very few of the farm, farmer or extent of diversification variables were statistically associated with the diversification goals comprising the *Personal Aspirations and Pursuits* factor (F4). Small farms (less than 50 acres) and first-generation farmers assign more importance to interacting with customers as a reason for diversifying (Table 5.8). Farmers and ranchers who have diversified the most consider the opportunity to capitalize on a hobby and interact with customers more important than less diversified operators. This may in part reflect the more out-going personalities of the operators and also that once they begin down the diversification road they see more opportunities to incorporate and market products and services related to their hobbies and special interests (e.g., theater, food, music). In some instances these diversified farms evolve to reflect the personality and interests of the operators. Also, as farms diversify more and attract larger

[57] Diversifying to qualify for state/federal assistance programs was not found to be associated with any of the variables tested.

and more diverse markets, it is sometimes more feasible to incorporate hobby and personal interest related services and products as part of their enterprise lines.

Table 5.8 Differences in the importance assessment of goals loaded in the *Personal Aspirations and Pursuits* factor (F4) by farm characteristics, farmer profile and extent of diversification.

Variables (n=200)	Importance Assessment of Goals – Personal Aspirations and Pursuits Factor (F4) [a]			
	Capitalize on a interest/hobby	Provide a new challenge	Enhance quality of life	Interact with customers
Acres Farmed				
Less than 50 acres	2.3	1.9	2.9	2.9
50 - 149	2.1	2.4	3.0	1.9
150 - 999	2.6	2.3	3.1	2.1
1000 acres or more	1.9	1.7	2.8	1.9
Level of Significance	Not Sig.	Not Sig.	Not Sig.	***F*=3.72, *p*=.012**
Annual Farm Gross Sales				
Less than $50,000	2.3	1.9	2.9	2.3
$50,000 - $99,999	2.2	2.2	3.2	2.4
$100,000 - $499,999	2.0	2.3	2.9	2.4
$500,000 or more	1.6	1.6	2.6	2.0
Level of Significance	Not Sig.	Not Sig.	Not Sig.	Not Sig.
Organization Structure				
Individual proprietorship [b]	2.2	2.2	3.0	2.4
Non-individual proprietorship	2.0	1.8	2.8	2.2
Level of Significance	Not Sig.	Not Sig.	Not Sig.	Not Sig.
Number of Generations on the Farm				
First generation on the farm	2.2	2.1	2.8	2.4
At least second generation	2.0	1.9	3.1	1.9
Level of Significance	Not Sig.	Not Sig.	Not Sig.	***F*=4.13, *p*=.044**
Farmers Principal Occupation				
Farming or Ranching	2.1	2.0	2.9	2.3
Not farming or ranching	2.2	2.1	2.8	2.3
Level of Significance	Not Sig.	Not Sig.	Not Sig.	Not Sig.
Extent of Diversification				
Lightly diversified	1.7	1.7	2.8	1.8
Moderately diversified	2.3	2.1	2.8	2.1
Highly diversified	2.4	2.4	3.3	2.9
Level of Significance	***F*=3.21, *p*=.043**	Not Sig.	Not Sig.	***F*=8.18, *p*<.001**

[a] Anchors: (1) not important; (2) somewhat important; (3) moderately important; (4) fairly important; and (5) very important

[b] Includes family and individual farms.

There is a universal importance of revenue and income generation as a reason for diversifying farms and ranches. Diversified farmers, regardless of their farm characteristics, consider the goals related to the *Revenue Enhancement* factor (F5) likewise important. Longer term, multigenerational farmers, and more diversified operators place significantly more importance on diversification's potential for increasing revenues and productivity of existing farm resources as a reason for diversifying (Table 5.9).

The importance operators assign to the goals comprising the *Family Connection* Factor (F6) is statistically associated with farm size and the number of family generations engaged in farming. Diversifying to keep the farm/ranch in the family is viewed as being a more important goal by the operators of farms and ranches with more than 1000 acres, and also multi-generational farms and ranches. Obviously these farmers and ranchers have longer term ties and larger investments in their farms and ranches (Table 5.10).

The opportunity to employ more family members on the farm or ranch is statistically more important as a reason for diversifying to the operators of more highly diversified farms and ranches, ones that employ more family members, and ones with $500,000+ in annual sales. It appears that the chance to provide family members with employment opportunities and the need/benefit of employing family members are related to decisions to diversify for some but not all operators.

Table 5.9 Differences in the importance assessment of goals loaded in the *Revenue Enhancement* factor (F5) by farm characteristics, farmer profile and extent of Diversification.

Variables (n=200)	Importance Assessment of Goals – Revenue Enhancement Factor (F5) [a]	
	Generate additional income	To generate additional revenues from existing resources
Acres Farmed		
Less than 50 acres	3.8	2.4
50 - 149	3.8	2.4
150 - 999	3.8	2.5
1000 acres or more	3.8	3.1
Level of Significance	Not Sig.	Not Sig.
Annual Farm Gross Sales		
Less than $50,000	3.6	2.5
$50,000 - $99,999	4.2	2.7
$100,000 - $499,999	3.9	3.0
$500,000 or more	3.7	2.2
Level of Significance	Not Sig.	Not Sig.
Tenure Structure [b]		
Only farm own land	3.8	2.6
Mostly farm own land	4.1	3.0
Evenly farm own & rented land	4.7	3.0
Mostly farm rented land	3.8	2.3
Only farm rented land	3.2	1.6
Level of Significance	Not Sig.	Not Sig.
Operators' Age		
Less than 45 years	3.8	2.5
45-64 years	3.9	2.7
65 years or older	3.4	2.2
Level of Significance	Not Sig.	Not Sig.
Number of Generations in the Farm		
First generation in the farm	3.9	2.3
At least second generation	3.8	3.0
Level of Significance	Not Sig.	***F*=8.56, *p*=.004**
Farmers Principal Occupation		
Farming or Ranching	3.8	2.7
Not farming or ranching	3.8	2.4
Level of Significance	Not Sig.	Not Sig.
Extent of Diversification		
Lightly diversified	3.4	1.9
Moderately diversified	3.9	2.9
Highly diversified	4.0	2.8
Level of Significance	Not Sig.	***F*=7.07, *p*=.001**

[a] Anchors: (1) not important; (2) somewhat important; (3) moderately important; (4) fairly important; and (5) very important

[b] *'Farm mostly owned land'* refers to those that own at least 60% of the land farmed; *'Equally farm owned and rented land'* refers to those whose ratio between acreage owned and rented is within 40/60; and *'Farm mostly rented land'* refers to those that farmed at least 60% of rented acreage.

Table 5.10 Differences in the importance assessment of goals loaded in the *Family Connection* factor (F6) by farm characteristics, farmer profile and extent of diversification.

Variables (n=200)	Importance Assessment of Goals – Family Connection Factor (F6) [a]	
	Keep the farm/ranch in the family	Provide employment opportunities for family members
Acres Farmed		
Less than 50 acres	2.1	1.7
50 - 149	2.8	1.4
150 - 999	2.5	1.5
1000 acres or more	3.7	1.9
Level of Significance	***F*=7.52, *p*<.001**	Not Sig.
Annual Farm Gross Sales		
Less than $50,000	2.7	1.6
$50,000 - $99,999	2.4	1.2
$100,000 - $499,999	2.8	1.8
$500,000 or more	3.6	2.6
Level of Significance	Not Sig.	***F*=4.22, *p*=.006**
Tenure Structure [b]		
Only farm own land	2.7	1.5
Mostly farm own land	3.6	2.7
Evenly farm own & rented land	2.8	1.8
Mostly farm rented land	2.7	1.4
Only farm rented land	2.4	1.4
Level of Significance	Not Sig.	***F*=3.44, *p*=.010**
Operator's Level of Education		
At least some school	3.3	2.3
At least some college	2.8	1.8
At least some graduate studies	2.6	1.4
Level of Significance	Not Sig.	***F*=3.24, *p*=.041**
Number of Generations on the Farm		
First generation on the farm	2.2	1.6
At least second generation	3.8	1.9
Level of Significance	***F*=37.4, *p*<.001**	Not Sig.
Number of Family Employees		
None	2.9	1.3
One	2.6	1.7
Two	2.7	1.6
Three or more	2.0	2.2
Level of Significance	Not Sig.	***F*=3.25, *p*=.023**
Extent of Diversification		
Lightly diversified	2.5	1.1
Moderately diversified	2.9	1.8
Highly diversified	2.9	1.9
Level of Significance	Not Sig.	***F*=6.3, *p*=.002**

[a] Anchors: (1) not important; (2) somewhat important; (3) moderately important; (4) fairly important; and (5) very important.

[b] *'Farm mostly owned land'* refers to those that own at least 60% of the land farmed; *'Equally farm owned and rented land'* refers to those whose ratio between acreage owned and rented is within 40/60; and *'Farm mostly rented land'* refers to those that farmed at least 60% of rented acreage.

5.3 Farm Diversification Assessment – The Farmers' Perspective

To develop a better understanding of farmers' and ranchers' perceptions of whether diversification had enhanced their farm/ranch (e.g., improved financial condition, enhanced life-style) they were asked whether they would make the decision to diversify again and if they would recommend others to diversify their farm. They were provided an opportunity to explain their assessments in an open-ended question.

Table 5.11 Percentages of farmers and ranchers who would decide again to diversify and recommend diversification to other farmers and ranchers.

Overall Accomplishment	Respondents (Percent)
Would Diversify Again (n=186)	
Respondents that would not diversify again	2.7
Respondents that would diversify again	97.3
Reasons why they would diversify again:	
Business related (e.g., provide cash flow)	52.9 [a]
Personal/family rewards	33.3
Community return	8.0
Combined (from above) reasons	5.8
Willingness to Recommend Diversification (n=182)	
Respondents that would not recommend diversification	5.5
Respondents that would recommend diversification	94.5
Reasons why they would recommend:	
Business related (e.g., provide cash flow)	64.1 [b]
Personal/family rewards	12.7
Conditional to farmers resources	12.7
Community return	7.5
Combined (from above) reasons	3.0

[a] This is the percentage of respondents that would diversify their farms again.
[b] This is the percentage of respondents that would recommend other farmers to diversify.

The vast majority (97.3%), almost all, farmers and ranchers perceive that diversification was beneficial in that it helped them achieve various business, personal and family objectives (Table 5.11). More than half (52.9%) of these, would diversify

again because of the positive impact in their farm business experienced after diversification, mostly because of financial and marketing successes. The marketing benefits cited include: increased customer base, the expansion of the farm sales in different seasons year, and the more productive use of labor and resources throughout the year. The following quotes from farmers and ranchers exemplify these benefits of diversification:

> *"The year that we began selling our 'value-added' products was a particularly bad late summer season for the farm (due to weather). The addition of our value-added products seemed to bring people to the farm stands who may have not bothered to stop (...)"*

> *"We need over a hundred crops to feel somewhat safe that some of them will make it! Value added items help create more cushion during lean times."*

A third of the respondents (33.3%) considered personal and family benefits as a primary reason why they would diversify again. These benefits include: enhanced family economic situation, the opportunity to have family members involved on the farm or ranch, personal development (e.g., increase of knowledge) and associated intrinsic rewards. The following statements identify some of the family/personal rewards that diversification bring to farm households:

> *"Income from raising farm animals was not enough to support the needs of my family"*

> *"This endeavor has given me the opportunity to work with my family in areas that I never could have in any other"*

> *"It is a rewarding, enjoyable experience that has given us an entirely new way of life, provided new challenges, and given us the opportunity to meet people in a totally different environment and culture. We have learned a great deal (...)"*

Similarly, the majority of respondents (94.5%) would recommend other farmers and ranchers to diversify their operations. Almost two thirds (64.1%) would recommend others to diversify because of the associated economic benefits. Fewer (12.7%) would base their recommendation on personal benefits. Interestingly, 12.7% would recommend diversification to other farmers and ranchers only with certain conditions and requirements. These conditions include a willingness for a hard work, the ability to interact with customers and the capacity to be always innovative. Some would only recommend diversification depending on the location of the farm or ranch (e.g., relative to markets and highways) and the availability of start-up capital. As a case in point, two farmers and ranchers offered these comments:

> *"Yes, and No! Diversification is not for everyone. You have to be willing to think 'outside the box' and not too many folks are that open minded, in our neck of the woods. You have to be open to change (...)"*

> *"Only if you like people and want to put yourself into your business. It is not a job but a lifestyle."*

The results indicate that the vast majority of farmers and ranchers who have diversified their operations perceive that it has produced various benefits –both economic and non-economic- to their business, their families and their communities. Moreover, respondents consider diversification as a viable strategy that can be adopted by other farmers and ranchers. However, personal, financial and business conditions reported to be necessary for the adoption of diversification indicates that although very satisfactory, farm diversification is not an easy strategy.

Accomplishment of Diversification Goals

Farmers and ranchers who indicated that various goals were somewhat, moderately, fairly and extremely important were asked to indicate their perceptions about the degree that they have been accomplished. They evaluated accomplishment on a three-point *Likert* type scale including "Not Accomplished" (1), "Partially Accomplished (2), and "Completely Accomplished" (3). They were not asked about accomplishment of any goals that were not important reasons for them diversifying. Table 5.12 presents the perceived level of achievement of the twenty goals.

Table 5.12 Level of achievement of different diversification goals[a].

Diversification Goals	Level of Achievement [b]			
	1	2	3	Mean
Provide a new challenge (32.7%)[c]	3.2%	35.9%	60.9%	2.58
Interact with customers (38.0%)	4.1%	51.3%	44.6%	2.41
Continue farming/ranching (53.4%)	5.7%	48.6%	45.7%	2.40
Keep the farm/ranch in the family (47.1%)	10.5%	41.1%	48.4%	2.38
Capitalize on an interest/hobby (38.0%)	5.3%	55.2%	39.5%	2.34
Enhance personal/family quality of life (52.4%)	9.7%	50.5%	39.8%	2.30
Provide current customers with new products (32.7%)	8.3%	55.0%	36.7%	2.28
Educate customers (33.7%)	4.5%	64.2%	31.3%	2.25
Provide employment opportunities for family (22.1%)	9.8%	56.1%	34.1%	2.24
Respond to a market need/opportunity (49.5%)	10.3%	59.8%	29.9%	2.20
Increase/diversify the market (44.2%)	8.1%	65.5%	26.4%	2.18
Generate additional income (83.7%)	15.3%	57.1%	27.6%	2.12
Generate additional revenues from existing resources (50.5%)	17.2%	56.5%	26.3%	2.09
Make farm less dependent on outside factors (26.9%)	9.9%	72.5%	17.6%	2.08
Generate revenues during off/non-growing seasons (32.7%)	25.0%	45.3%	29.7%	2.05
Offset fluctuations in farm/ranch revenues (33.2%)	19.1%	61.9%	19.0%	2.00
Enhance ability to meet financial/loan obligations (29.8%)	15.8%	75.4%	8.8%	1.93
Qualify for state/federal assistance program (12.5%)	36.0%	36.0%	28.0%	1.92
Reduce impacts of catastrophic events (25.5%)	24.5%	61.2%	14.3%	1.90
Reduce overall farm/ranch debt (26.4%)	25.5%	62.7%	11.8%	1.86

[a] Only include those participants that considered this goal important to diversify.
[b] Anchors: (1=Not Accomplished; 2=Partially Accomplished; 3=Completely Accomplished).
[c] Percent of the farmers and ranchers who considered "*Provide a new challenge*" as a somewhat, moderately, fairly or extremely important reason for diversifying.

Overall, there is a high level of perceived accomplishment of the important goals that influenced farmers and ranchers to diversify. Sixteen of the twenty diversification goals were at least "Partially Accomplished" (mean = 2+). The goals that had the highest level of accomplishment were to "Provide a new challenge" (mean=2.58), "To interact with customers" (mean=2.41) and "To continue farming/ranching" (mean=2.40). Conversely, the goals with the lowest levels of accomplishment were to "Qualify for state/federal assistance programs" (mean=1.92), "Reduce impacts of catastrophic events" (mean=1.90) and "Reduce overall farm/ranch debt" (mean=1.86).

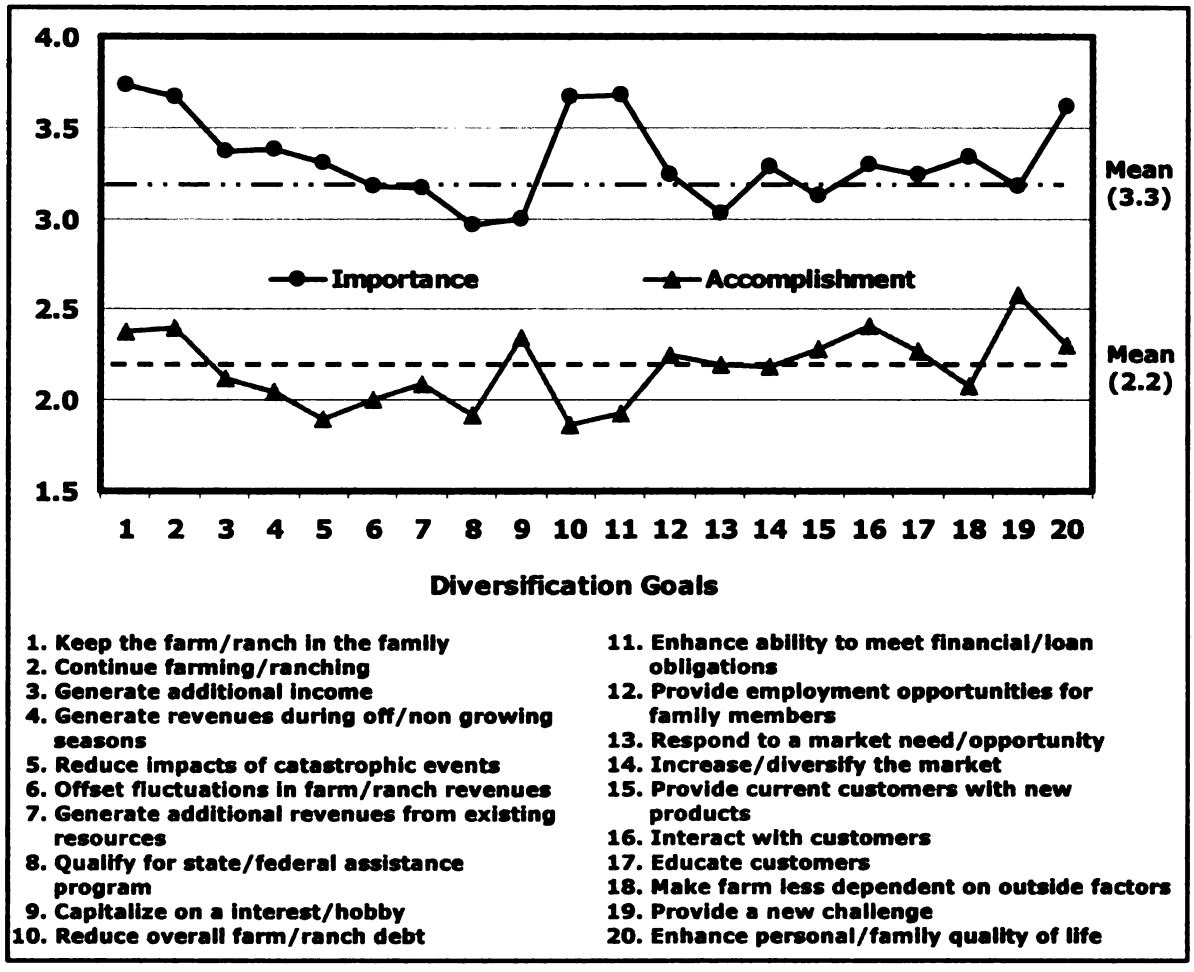

Figure 5.2. Levels of Goals Importance and Accomplishment

Figure 5.2 graphically compares the relative importance (1 = somewhat important; 4 = extremely important) of the twenty goals with the perceived degree of accomplishment (1= not accomplished; 3= completely accomplished). The importance accomplishment graph reveals that for the most part farmers and ranchers perceive that they are accomplishing the most important of these goals. To keep the family farm and ranch in the family (Goal 1) and to continue farming and ranching were considered among the most important reasons for diversification and farmers and ranchers perceive that these goals are being accomplished. However, two important goals - to reduce the farm/ranch debt (Goal 10) and to enhance the ability to meet financial obligations - (Goal 11) had the lowest degree of perceived accomplishment. This may be related to the fact that farmers and ranchers who diversify often take on additional debt to finance the startup of new enterprises.

Table 5.13 integrates and presents: (1) the number of farmers who consider the various goals comprising the six factors as important reasons why they diversified, (2) the mean level of importance assigned these goals by farmers and ranchers who consider them somewhat, moderately, fairly and extremely important, (3) the mean level of perceived achievement, and (4) a combined importance achievement score. An index is calculated by multiplying the mean level of importance by the mean level of achievement. The most important diversification goals with the highest level of perceived achievement have the highest index scores. This table also presents the factor means of the level of importance and the perceived achievement which are means weighted by the number of respondents who considered this goal important. In turn, these

two weighted means were multiplied to obtain an overall factor score reflecting the importance and achievement of the goals included in each factor (*factor weighted mean*).

The table reveals that farmers and ranchers are accomplishing many of the important goals that encouraged them to diversify. Interestingly the individual goals with the highest importance-achievement scores are : (1) to keep the farm/ranch in the family (8.88), (2) to continue farming/ranching (8.81), (3) to enhance the quality of life (8.33) and, (4) to provide a new challenge (8.20). The table shows that the goals comprising the *Family Connection Factor* (8.38), the *Personal Aspiration and Pursuits Factor* (7.91) and *Reducing Uncertainty and Risk Factor* (7.38) have the highest importance-achievement index scores. The *Enhanced Financial Condition* is the goal factor that has the lowest importance-achievement score (6.73). Although important to farmers and ranchers, two of the goals that comprise this factor --to enhance ability to meet financial/loan obligations and to reduce overall farm/ranch debt-- received low perceived achievement assessments.

It appears from these results that farmers and ranchers who responded to this study perceive farm diversification as a very suitable strategy for keeping them in farming and keeping the family connected to the farm or ranch. However, they are not as positive concerning the contribution of diversification to their overall financial condition. While diversification is contributing to higher farm and ranch revenues and increased market size, it is not generally suitable to reducing debt or increasing their ability to meet financial obligations.

Table 5.13 *Importance-Achievement Index* for the goals comprising the six diversification goal factors.

Diversification: Factors and Goals (n=195)	Farmers considering this goal important	Level of Importance (Mean) [a b]	Level of Achievement (Mean) [a c]	Importance/ Achievement Index (Mean)
Reduce Uncertainty and Risk (F1)				
Continue farming/ranching	105	3.67	2.40	8.81
Make farm less dependent on outside factors	51	3.33	2.08	6.93
Offset fluctuations in farm revenues	63	3.18	2.00	6.36
Reduce impacts of catastrophic events	49	3.31	1.90	6.29
Factor Weighted Mean		(3.42)	(2.15)	(7.38)
Grow and Service Markets (F2)				
Provide current customers with new products/services	60	3.12	2.28	7.11
Respond to a market need/opportunity	97	3.03	2.20	6.67
Increase/diversify the market	87	3.28	2.18	7.15
Generate revenues during off/non-growing seasons	64	3.38	2.05	6.93
Factor Weighted Mean		(3.19)	(2.18)	(6.95)
Enhanced Financial Condition (F3)				
Enhance ability to meet financial/loan obligations	57	3.68	1.93	7.10
Qualify for state/federal assistance program	25	2.96	1.92	5.68
Reduce overall farm/ranch debt	51	3.67	1.86	6.83
Factor Weighted Mean		(3.54)	(1.90)	(6.73)
Personal Aspirations and Pursuits (F4)				
Provide a new challenge	64	3.18	2.58	8.20
Interact with customers	74	3.30	2.41	7.95
Capitalize on an interest/hobby	76	3.00	2.34	7.02
Enhance quality of life	103	3.62	2.30	8.33
Factor Weighted Mean		(3.31)	(2.39)	(7.91)
Revenue Enhancement (F5)				
Generate additional income	163	3.37	2.12	7.14
Generate additional revenues from existing resources	99	3.17	2.09	6.63
Factor Weighted Mean		(3.29)	(2.11)	(6.95)
Family Connection (F6)				
Keep the farm/ranch in the family	96	3.73	2.38	8.88
Provide employment opportunities for family members	41	3.24	2.24	7.26
Factor Weighted Mean		(3.58)	(2.34)	(8.38)

[a] Only includes those participants that considered this goal at least somewhat important in their diversification decision-making process.

[b] Anchors: (1=Somewhat Important; 2=Moderately Important; 3=Fairly Important; 4=Very Important).

[b] Anchors: (1=Not Accomplished; 2=Partially Accomplished; 3=Completely Accomplished).

Significant Differences in the Accomplishment of Goals

This next component of the analysis was to determine whether and the degree to which various diversification goals have been accomplished differs depending on farm and operator characteristics and the extent to which the farm is diversified. Two different indicators of goal accomplishment were assessed. The first indicator reflects the percentage of diversification goals that farmers and ranchers perceive have been accomplished. The second indicator combines the importance and degree of perceived accomplishment into a more robust and meaningful indicator.

First Indicator: Proportion of Goals Accomplished

First, the different goals were coded 0= not accomplished and 1= accomplished. Accomplished includes partially and completely accomplished goals. Since there are 20 goals the possible range for this indicator was from 0 to 20. Only farmers and ranchers who considered a goal to be important are included in the analysis. Farmers and ranchers are classified based on the proportion of diversification goals that are accomplished: less than two thirds of their diversification goals accomplished, more than two thirds but not all their goals accomplished, and farmers and ranchers who have at least partially accomplished all their goals for diversification. Table 5.14 shows that almost two thirds (64.5%) of farmers and ranchers have accomplished all the diversification goals that were important reasons why they diversified. A relatively small percentage (12.7%) has accomplished less than two thirds of the goals that inspired them to diversify.

Table 5.14 Proportion of diversification goals accomplished segments[1].

Segments (n=197)	Percentage of Respondents
Few goals accomplished (0 – 65%)	12.7
Most goals accomplished (66 – 99%)	22.8
All goals accomplished (100%)	64.5

[1] Include partially or completely accomplished goals.

Analysis of variance and chi-square tests were then conducted to determine whether different levels of goal achievement are associated with farmer and farm characteristics and also the extent of diversification. Characteristics tested include farm acreage, farm gross sales, type of organization, farmers' demographics, number of generations of the farm in the farmer family, number of family employees, farmer's occupation and off-farm work condition, and extent of diversification. None of these variables are significantly associated with the (3) levels of goal accomplishment (Table 5.15).

Second Indicator: Importance-Accomplishment Mean Score

The second indicator combines the importance of the diversification goal and degree of their perceived accomplishment. This *importance-accomplishment* score was calculated by multiplying a goal importance score by an accomplishment score. A score of 0 was assigned to diversification goals that farmers and ranchers perceived they had not yet accomplished. Goals partially accomplished received a score of 1 and goals completely accomplished received a score of 5. The importance scores are: 1 for somewhat important goals; 2 for moderately important goals; 3 for fairly important goals; and 4 for very important goals. The *importance-accomplishment* scores for each goal

Table 5.15 Significant differences in the proportion of goals accomplished by farm characteristics, farmer profile and extent of diversification[1].

Variables	Few goals accomplished (12.7%)[a]	Most goals accomplished (22.8%)[b]	All goals accomplished (64.5%)[c]	Sig.
Farm Size (n=196)				*Not Sig.*
Less than 50 acres	36.0% (14.5%)	40.0% (29.0%)	27.8% (56.5%)	
50 - 149	28.0% (15.6%)	20.0% (20.0%)	23.0% (64.4%)	
150 - 999	16.0% (12.1%)	15.6% (21.2%)	17.5% (66.7%)	
1000 acres or more	20.0% (7.1%)	24.4% (19.6%)	31.7% (71.3%)	
Annual Farm Gross Sales (n=192)				*Not Sig.*
Less than $50,000	72.0% (17.8%)	56.7% (24.8%)	47.2% (57.4%)	
$50,000 - $99,999	8.0% (7.7%)	11.4% (19.2%)	15.4% (73.1%)	
$100,000 - $499,999	8.0% (4.4%)	20.5% (20.0%)	27.6% (75.6%)	
$500,000 or more	12.0% (15.0%)	11.4% (25.0%)	9.8% (60.0%)	
Type of Organization [b] (n=194)				*Not Sig.*
Individual proprietorship	68.0% (14.0%)	64.4% (24.0%)	60.5% (62.0%)	
Non-individual proprietorship	32.0% (11.0%)	35.6% (21.9%)	39.5% (67.1%)	
Operator's Level of Education (n=187)				*Not Sig.*
At least some school	12.5% (14.3%)	16.3% (33.3%)	9.1% (52.4%)	
At least some college	54.2% (12.5%)	55.8% (23.1%)	55.4% (64.4%)	
At least some grad studies	33.3% (12.7%)	27.9% (19.0%)	35.5% (68.3%)	
Operator's Age (n=192)				*Not Sig.*
Less than 45 years	12.0% (8.6%)	22.2% (28.6%)	18.0% (62.8%)	
45 – 64 years	68.0% (13.5%)	66.7% (23.8%)	64.8% (62.7%)	
65 years or older	20.0% (16.1%)	11.1% (16.1%)	17.2% (67.8%)	
Number of Generations on the Farm (n=200)				*Not Sig.*
First generation on the farm	72.0% (15.3%)	61.4% (22.9%)	59.3% (61.8%)	
At least second generation	28.0% (9.5%)	38.6% (23.0%)	40.7% (67.5%)	
Number of Family Employees (n=187)				*Not Sig.*
None	17.4% (11.4%)	19.0% (22.9%)	18.9% (65.7%)	
One	13.0% (9.7%)	23.8% (32.3%)	14.8% (58.0%)	
Two	34.8% (12.7%)	23.8% (15.9%)	36.9% (71.4%)	
Three or more	34.8% (13.8%)	33.3% (24.1%)	29.5% (62.1%)	
Operator's Principal Occupation (n=194)				*Not Sig.*
Farming or ranching	60.0% (12.7%)	62.2% (23.7%)	60.5% (63.6%)	
Non farming or ranching	40.0% (13.2%)	37.8% (22.4%)	39.5% (64.4%)	
Operator's Off-farm Work (n=193)				*Not Sig.*
Work off-farm	45.8% (13.1%)	42.2% (22.6%)	43.5% (64.3%)	
Do not work off-farm	54.2% (11.9%)	57.8% (23.9%)	56.5% (64.2%)	
Extent of Diversification (n=194)				*Not Sig.*
Lightly diversified	36.0% (18.8%)	22.2% (20.8%)	23.4% (60.4%)	
Moderately diversified	44.0% (12.5%)	37.8% (19.3%)	48.4% (68.2%)	
Highly diversified	20.0% (8.7%)	40.0% (31.0%)	28.2% (60.3%)	

[1] Include partially or completely accomplished goals.
[a] Less than two-thirds of their diversification goals were accomplished.
[b] Between 66% and 99% of their diversification goals were accomplished.
[c] All their diversification goals were accomplished.

could possibly have ranged from 0 (goal not accomplished) to 20 (very important goal completely accomplished). The most important diversification goals with the highest level of perceived achievement have the highest index scores. Goals that are lower in importance but high in achievement receive a higher index score than goals that more important but not as high achievement. Then, the mean of all the *importance-accomplishment* scores that each farmer could have was obtained.

Table 5.16 *Importance-Accomplishment* score segments[1].

Segments (n=201)	Score Range	Observed Range	Observed Mean	Percent
Less satisfied	0.00 – 1.99	0.37 – 1.93	1.29	14.9
Moderately satisfied	2.00 – 4.99	2.00 – 4.95	3.19	34.8
Fairly satisfied	5.00 – 9.99	5.00 – 9.90	7.14	36.8
Highly satisfied	10.00 – 20.00	10.00 – 17.21	12.05	13.5

[1] This is the mean of the scores calculated by multiplying the importance assigned to goals (1=somewhat important; 2=moderately important; 3= fairly important; 4=very important) by the perceived accomplishment (0=not accomplished; 1=partially accomplished; 5=completely accomplished).

Farms and ranchers were divided into four categories based on their *importance-accomplishment* mean scores (Table 5.16). The first segment –*less satisfied diversifiers*– include the 14.9% of the operators who had a mean score of less than 2, meaning that they have not accomplished their goals or had partially accomplished goals that had a low importance in their diversification process. *Moderately satisfied diversifiers* with an importance-accomplishment mean score of 2-5, represent about a third (34.8%) of farmers and ranchers. This segment is composed of those farmers who perceive their goals partially accomplished. Another third (36.8%) of farmers and ranchers, who were classified as *fairly satisfied diversifiers*, has importance-accomplishment mean scores ranging from 5-10. This group of farmers perceives their somewhat and moderately

Table 5.17 Significant differences in the *Importance-Accomplishment* score segments by farm characteristics, farmer profile and extent of diversification.

Variables	Less Satisfied (14.9%)[a] (Percent)	Moderately Satisfied (34.8%)[b] (Percent)	Fairly Satisfied (36.8%)[c](Percent)	Very Satisfied (13.5%)[d] (Percent)	*Sig.*
Farm Size (n=196)					*Not Sig.*
Less than 50 acres	33.3(15.6)	40.6 (43.8)	28.8 (32.8)	18.5 (7.8)	
50 - 149	26.7(18.2)	14.5 (22.7)	27.4 (45.5)	22.2 (13.6)	
150 - 999	13.3(11.5)	15.9 (31.4)	19.2 (40.0)	22.2 (17.1)	
1000 acres or more	26.7(14.3)	29.0 (35.7)	24.7 (32.1)	37.0 (17.9)	
Annual Farm Gross Sales (n=192)					*Not Sig.*
Less than $50,000	80.0(23.1)	52.2 (34.6)	47.9 (32.7)	41.7 (9.6)	
$50,000 - $99,999	3.3 (4.0)	14.5 (40.0)	15.5 (44.0)	12.5 (12.0)	
$100,000 - $499,999	10.0 (6.7)	23.2 (35.5)	25.4 (40.0)	33.3 (17.8)	
$500,000 or more	6.7(10.0)	10.1 (35.0)	11.3 (40.0)	12.5 (15.0)	
Type of Organization [b] (n=194)					*Not Sig.*
Individual proprietorship	66.7(16.3)	63.8 (35.8)	56.9 (33.3)	69.2 (14.6)	
Non-indiv. proprietorship	33.3(13.5)	36.2 (33.8)	43.1 (41.9)	30.8 (10.8)	
Operator's Level of Education (n=187)					*Not Sig.*
At least some school	11.1(13.6)	11.6 (36.4)	12.9 (40.9)	8.0 (9.1)	
At least some college	51.9(13.3)	53.6 (35.2)	58.6 (39.0)	52.0 (12.4)	
At least some grad. studies	37.0(15.6)	34.8 (37.5)	28.6 (31.3)	40.0 (15.6)	
Operator's Age (n=192)					*Not Sig.*
Less than 45 years	13.3(11.1)	18.6 (36.1)	24.3 (47.2)	8.0 (5.6)	
45 – 64 years	60.0(14.2)	68.6 (37.8)	58.6 (32.3)	80.0 (15.7)	
65 years or older	26.7(25.0)	12.9 (28.1)	17.1 (37.5)	12.0 (9.4)	
Number of Generations on the Farm (n=200)					*Not Sig.*
First generation on the farm	76.7(19.2)	63.2 (35.8)	51.4 (30.0)	66.7 (15.0)	
At least second generation	23.3 (9.3)	36.8 (33.3)	48.6 (45.3)	33.3 (12.1)	
Number of Family Employees (n=187)					*Not Sig.*
None	14.8(11.4)	21.5 (40.0)	21.4 (42.9)	7.7 (5.7)	
One	14.8(12.9)	16.9 (35.5)	18.6 (41.9)	11.5 (9.7)	
Two	37.0(15.9)	30.8 (31.7)	34.3 (38.1)	34.6 (14.3)	
Three or more	33.3(15.3)	30.8 (33.9)	25.7 (30.5)	46.2 (20.3)	
Operator's Principal Occupation (n=194)					*Not Sig.*
Farming or ranching	56.7(14.3)	57.1 (33.6)	68.1 (41.2)	52.0 (10.9)	
Non farming or ranching	43.3(16.7)	42.9 (38.4)	31.9 (29.5)	48.0 (15.4)	
Operator's Off-farm Work (n=193)					x^2=9.5, p=.023*
Work off-farm	43.3(15.1)	52.9 (43.0)	30.6 (25.6)	58.3 (16.3)	
Do not work off-farm	56.7(15.5)	47.1 (30.0)	69.4 (45.4)	41.7 (9.1)	

[a] Importance-Accomplishment score lower than 2.
[b] Importance-Accomplishment score between 2-5.
[c] Importance-Accomplishment score between 5-10.
[d] Importance-Accomplishment score between 10-20.
* Pairwise comparisons show that the fairly satisfied diversifiers work significantly less off-farm than the moderately and very satisfied segments (x^2=0.01 p=.006 and x^2=0.02 p=.023).

important goals completely accomplished. The remaining 13.5% of farmers and ranchers have importance-accomplishment index scores of 10 or higher. These operators are identified as *very satisfied diversifiers* and their scores ranged from 10 to 20.

Statistical tests to determine whether diversification goal accomplishment segments are associated with farm(er)/ranch(er) characteristics and extent of diversification revealed statistically significant associations with one characteristic. Farmers that are more satisfied with diversification are more likely to be employed off the farm (Table 5.17). It is not evident why this might be the case except possibly that non-farming related revenues often contribute to diversification capacity (e.g., investment).

There is a statistically significant relationship between the *Importance-Accomplishment* score segments and the extent of diversification. A linear regression of the level of the importance/accomplishment score (dependent variable) on the number of enterprises developed at the farm (independent variable) was performed. Table 5.18 shows that the more diversified the farm or ranch, the more accomplished their operators are (F=6.74, p=.01). For each additional enterprise, the accomplishment perception increases by almost one point (B=0.93).

Table 5.18 Linear regression of the level of the *importance/accomplishment* score (dependent variable) on the number of enterprises developed at the farm (independent variable).

Variables	R Square (R^2)	Unstandardized Coefficient (B)	*F* Value	*Sig.*
DV: Importance/Accomplishment score				
IV: Number of enterprises developed (1-8)	.033	.93	6.74	p=.01

As expected, follow-up Chi-square Tests reveal that highly diversified farmers are more likely to be more satisfied with diversification than less diversified farmers (χ^2=12.9, p=.044) as shown in Table 5.19. Of course, it should be recognized that the survey did not include farmers and ranchers who were once but not longer diversified because they were not satisfied with the results of diversification. However, the high degree of satisfaction among currently diversified farmers/ranchers provides some evidence of the success of diversification.

Table 5.19 Chi-square between the extent of diversification and *Importance-Accomplishment* score segments.

Extent of Diversification	Less Satisfied (14.9%)	Moderately Satisfied (34.8%)	Fairly Satisfied (36.8%)	Very Satisfied (13.6%)	*Sig.*
Lightly Diversified	44.8%	21.8%	27.8%	11.1%	χ^2=12.9, p=.044
Moderately Diversified	44.8%	44.9%	44.4%	44.4%	
Highly Diversified	10.4%	33.3%	27.8%	44.4%	

Two-way comparisons show significant differences between the less and moderately satisfied segments (χ^2=7.88 p=.019) and the less and the very satisfied segments (χ^2=11.63 p=.003).

5.4 An Objective Assessment of Diversification

The aggregate results from the previous analyses indicate that from a goal-directed perspective diversification is a satisfactory strategy in many ways. However, there is also value of employing more objective measures of diversification and examining the relationship between goal-directed assessments and more objective assessments. In addition to goal achievement the survey collected data on: (1) the effect of diversification on farm net revenues, (2) the percent increase in net revenues

attributable to diversification, (3) whether and to what extend diversification reduced farm/ranch debt and (4) diversification-related farm employment.

The operators of diversified Texas farms and ranches reported that revenues from diversified enterprises represent a significant share of their total farm/ranch revenues. On average, diversifiers reported that diversified operations contribute over twenty percent (21.5%) of their total revenues (Table 5.20). They also consider these revenues as important for the continued operation of their farms (mean=2.9 in a four point *Likert* type scale, anchored 1 as non important and 4 as important).

Table 5.20 The percentage of farm/ranch revenues derived from diversification enterprises and the relative importance of these revenues to the continued operation of the farm/ranch.

Diversified Enterprises	Percent of farmers offering these enterprises	Percent of total revenues from these enterprises		Level of Importance[1]				
		Range	Mean	1	2	3	4	Mean
Recreation, Tourism & Special Events (n=119)	60.8	0 - 100	36.0	5.7	11.4	23.8	59.0	3.4
Processing of Foods & Beverages (n=29)	15.5	0 - 100	29.3	12.0	12.0	20.0	56.0	3.2
Leasing (n=24)	11.5	0 - 100	22.2	23.1	23.1	15.4	38.5	2.7
Lodging and Accommodations (n=49)	23.0	0 - 100	20.1	10.8	18.9	13.5	56.8	3.2
Restaurants and Food Services (n=13)	7.8	0 - 50	16.9	18.2	9.1	27.3	45.5	3.0
Other Agriculture Products and Services (n=51)	24.4	0 - 50	12.6	35.3	17.6	26.5	20.6	2.3
Arts and Crafts (n=29)	16.1	0 - 40	7.9	24.0	32.0	16.0	28.0	2.5
Health and Cosmetics (n=10)	6.0	0 - 50	7.8	33.3	11.1	0.0	55.6	2.8
Educational Activities (n=57)	30.4	0 - 66	6.2	23.4	23.4	27.7	25.5	2.6
Total (weighted means)			21.5					2.9

[1] Anchors: (1) not important; (2) somewhat important; (3) important; and (4) very important.

The enterprises that have greater impact on farm net revenues are recreation-related enterprises and value-added through food and beverage processing. On average, recreation enterprises contribute 36% of total farm and ranch revenues on the farms and ranches that provide recreational opportunities. Similarly, value-added food and beverage processing generates 29.3% of the farm revenues on farms that do this type of processing. Even though other diversified enterprises generate a smaller percentage of overall revenues, the operators generally consider these revenues important to the sustainability of their farms and ranches.

Table 5.21 The percentage of diversified farmers reporting positive net revenues from their diversified enterprises.

	All enterprises generate positive net revenues	All enterprises operate at a loss	Other [a]	*Sig.*
Number of respondents	53	38	105	
Percent of respondents	27.0	19.4	53.6	
Diversification experience in years (mean)	12.1	6.9	9.1	F=3.5, p=.032*

Tukey post-hoc yield significant differences between those diversifiers that have all their enterprises generating positive net revenues and those that have all enterprises operating at a loss (p=.026).

[a] This includes those respondents that have some enterprises generating positive net revenues, some operating at a loss or their enterprises are breaking even.

Over a quarter (27%) of the Texas diversified farms and ranches are generating positive net revenues from all their various diversified enterprises (Table 5.21). About twenty percent (19.4%) of the farmers/ranchers reported that all their diversified enterprises are operating at a loss. However, it is important to consider other factors including the number of years the enterprises have been operating. As a case in point, ANOVA tests reveal a positive association between the time a farmer/rancher has

diversified and whether their diversified enterprises are generating positive net revenues. Farmers that have all their diversified enterprises generating positive net revenues have more years diversified (mean = 12.1 years) than those having all their enterprises operating at a loss (mean = 9.1 years).

What was totally unexpected was that almost three quarters (73.0%) of diversified farmers and ranchers are generating revenues from adaptive re-use of heritage resources (Table 5.22). Even more surprising is that for almost half of these farmers the revenues derived from the adaptive re-use exceed the restoration costs, and the majority produce revenues that at least match the restoration costs. Adaptive re-use and restoration can contribute positively to various intrinsic goals and also to farm net revenues.

Table 5.22 Contribution of adaptive re-use of heritage resources to farm/ranch revenues.

	Percentage (n=63)	
Adaptive re-use is not generating revenues	27.0 [a]	
Adaptive re-use is generating revenues	73.0	
Revenues exceed the restoration costs		48.9 [b]
Revenues matched the restoration costs		13.3
Revenues are smaller than the restoration costs		37.8

[a] Only include participating farmers and ranchers that are adaptively re-using the heritage resources on their farms/ranches (n=91)

[b] Only includes farmers and ranchers who are generating net revenues for adaptive re-use of heritage resources (n=46)

The survey results provide evidence that diversification can have a positive impact on the net farm/ranch net income. Over a third (37.6%) of the diversified operators report significant increases in net revenues after diversifying their operations and the majority (69.1%) reported at least a slight increase (Table 5.23). Only 3.8% of

the respondents experienced reduced net revenues after diversification. The average increase in net revenues is 68.0% and the average decrease is 49.3%. The weighted average impact is +45.1% meaning that on average all farmers and ranchers who diversified their farms and ranches, including those that experienced reduced net income, increased their net revenues by about half a percent.

Table 5.23 Effects of diversification on the farm/ranch net income.

Effects on Farm/Ranch Net Income (n=181)	Percentage
Types of Effects	
Net income significantly increased	37.6
Net income slightly increased	31.5
Net income did not change	27.1
Net income decreased	3.8
Extent of Change	
Average increased (in percent) [a]	68.0
Average decreased (in percent) [b]	49.3
Overall Impact on Net Income	
Weighed impact (in percent)	+45.1[c]

[a] Includes net income variations reported by participants having an increase in their net incomes (n=125)
[b] Includes net income variations reported by participants having a decrease in their net income (n=7)
[c] (.691 x .680) - (.038 x .493) = .451 (45.1%)

There is a positive relationship between impact of diversification on net farm income and overall gross farm income and extent of diversification. Diversification had a statistically greater impact on net farm income of farms with higher gross farm sales (Table 5.24). More diversified farms and ranches are also likely to experience a larger net increase in diversification generated net farm income. There are no significant associations between the impact of diversification on net income and the size of the farm, the main occupation and diversification experience of the farmer.

Table 5.24 Differences in the diversified farms and farmers among different effects of diversification on farm/ranch net income.

	Net Income Increased Significantly (37.6%)	Net Income Increased Slightly (31.5%)	No Change in Net Income (27.1%)	Net Income Decreased (3.8%)	Significance
Farm Annual Gross Sales (n=177)					
Less than $50,000	35.8%	54.5%	71.4%	50.0%	χ^2=18.9, p=.025*
$50,000 - $99,999	20.9%	12.7%	6.2%	0.0%	
$100,000 - $499,999	29.9%	25.5%	10.2%	33.3%	
$500,000 or more	13.4%	7.3%	12.2%	16.7%	
Farm Size (n=180)					
Less than 50 acres	31.3%	28.1%	40.8%	28.6%	*Not Sig.*
50 - 149	20.9%	24.6%	24.5%	28.6%	
150 - 999	12.0%	19.2%	14.3%	28.6%	
1000 acres or more	35.8%	28.1%	20.4%	14.2%	
Farmer's Main Occupation (n=179)					
Farming or ranching	65.7%	56.1%	58.3%	57.1%	*Not Sig.*
Non farming or ranching	34.3%	43.9%	41.7%	42.9%	
Farmer's diversification experience (n=169)					
Range (min. – max.)	0 - 31	1 - 40	0 - 58	2 - 5	*Not Sig.*
Mean (number of years)	10.3	9.6	8.6	3.3	
Extent of Diversification (n=177)					
Range (min. – max.)	1 – 7	1 – 8	1 – 6	2 – 5	F=4.3, p=.006**
Mean (number of enterprises)	4.0	3.5	3.0	3.9	

* Pairwise comparisons show that farmers that had a significant increase in their net income after diversifying have larger gross sales than those that did not experience any income effect after diversification (χ^2=16.4 p=.001).

** Tukey Post-Hoc tests show that those farmers that evidenced a significant increase in their net income after diversifying their operations have more enterprises than those farmers that did not evidence a change in their net income (significant at 0.05 level).

The effect of diversification on the farm debt, although also somewhat positive, is mixed. About a quarter (25.9%) of diversified farmers and ranchers reduced their debt after diversifying, but a majority (60.3%) reported no change (Table 5.25). Among farmers and ranchers who reduced their debt, the average decrease is 34.2%. Conversely, the average increase in debt among farmers who experienced an increase in debt after diversification is 49.4%. Across all farmers the debt decreased an average of 2.4% after diversification.

Table 5.25 Effects of diversification on the farm/ranch debt.

Effects on Farm/Ranch Debt (n=174)	Percentage
Types of Effects	
Debt decreased significantly	11.0
Debt decreased slightly	14.9
No change in debt	60.3
Debt increased	13.8
Extent of Change	
Average debt decrease (in percent) [a]	34.2
Average debt increase (in percent) [b]	47.0
Overall Impact on Debt	
Weighted impact (in percent)	-2.4 [c]

[a] Includes debt variations reported by participants having a decrease in their net income (n=45)
[b] Includes debt variations reported by participants having an increase in their net income (n=24)
[c] (0.138 x .470) - (.259 x .342) = -.024 (-2.4%)

Table 5.26 Differences in the diversified farms and farmers among different effects of diversification on farm/ranch debt.

	Debt Decreased Significantly (11.0%)	Debt Decreased Slightly (14.9%)	No Change in Debt (60.3%)	Debt Increased (13.8%)	Significance
Farm Annual Gross Sales (n=171)					
Less than $50,000	36.8%	36.0%	64.4%	26.1%	χ^2=26.8, p=.002*
$50,000 - $99,999	10.5%	16.0%	14.4%	8.7%	
$100,000 - $499,999	31.6%	36.0%	15.4%	34.8%	
$500,000 or more	21.1%	12.0%	5.8%	30.4%	
Farm Size (n=173)					
Less than 50 acres	36.8%	23.1%	36.5%	29.2%	*Not Sig.*
50 - 149	15.8%	15.4%	26.9%	20.8%	
150 - 999	5.3%	19.2%	17.4%	12.5%	
1000 acres or more	42.1%	42.3%	19.2%	37.5%	
Farmer's Main Occupation (n=172)					
Farming or ranching	57.9%	72.0%	56.7%	70.8%	*Not Sig.*
Non farming or ranching	42.1%	28.0%	43.3%	29.2%	
Farmer's diversification experience (n=163)					
Range (min. – max.)	1 - 30	1 - 25	0 - 58	1 - 19	*Not Sig.*
Mean (number of years)	13.6	8.5	9.3	6.9	
Extent of Diversification (n=170)					
Range (min. – max.)	1 – 7	1 – 6	1 – 7	2 – 8	F=3.3, p=.022**
Mean (number of enterprises)	3.9	3.9	3.2	4.0	

* Pairwise comparisons show that farmers that did not change their debt levels after diversification have smaller gross sales than the other groups (significant at 0.05 level).
** Tukey Post-Hoc tests did not yield any significant difference between groups.

Once more, the farm size in terms of gross annual sales and the extent of diversification are the only variables associated with different levels of diversification impact on the farm debt. Comparisons between groups show that farmers that did not change their debt levels after diversification have smaller gross sales than the other groups (Table 5.26). ANOVA tests show a significant difference among the different levels of diversification impact on farm debt in regards to the number of diversified enterprises developed (χ^2=26.8, p=.002), although Tukey Post-Hoc tests did not yield any significant difference between groups. There are no significant associations between the impact of diversification on net income and the size of the farm, the main occupation and diversification experience of the farmer.

Although diverting in some extent from the scope of this study, the impact of diversification on the farm labor was investigated. The labor impact was constructed subtracting the estimated number of employees without engaging in diversified operations from the actual number of employees in four categories (full time, part-time, seasonal and year-round) by two categories (family and non-family members).

Table 5.27 shows that farm and ranch diversification enterprises employ both family and non-family members. On average, diversification supports six (6.4) jobs on these farms and ranches. Clearly, adding diversification enterprises provides the ability to employ family members on the farm. In fact, often these enterprises are designed around the special skills and talents of family members. On average diversification employs one family member. It is interesting to note that on some farms and ranches diversification actually results in a reduction in the number of persons employed and costs. Value-added processing can often generate more revenues for less cost (e.g.,

employees) than traditional wholesale farming. Often, diversified farms and ranches contract for products and services (e.g., jams, jellies, catering, and recreation programs) that they sell. Shifting to pick-your-own and to recreation and tourism activities rather than labor intensive farming can actually reduce the number of farm employees

Table 5.27 Impact of diversification on the farm/ranch employment.

Types of Employees (n=176)	Percentage of Farms	Number of Employees Supported by Diversification		
		Minimum	Maximum	Mean
Family Employees				
Full time year round	56.3%	-2	5	0.3
Full time seasonal	9.9%	-1	6	0.2
Part time year round	22.9%	-2	7	0.2
Part time seasonal	23.4%	-8	8	0.3
Total	81.3%	-8	9	0.9
Non-Family Employees				
Full time year round	39.1%	-2	53	1.5
Full time seasonal	19.3%	-2	170	1.8
Part time year round	26.6%	-24	25	0.7
Part time seasonal	40.6%	-1	40	1.6
Total	81.3%	-2	161	5.6
All Employees				
Full time year round	71.9%	-4	58	1.8
Full time seasonal	24.0%	-2	170	2.0
Part time year round	42.2%	-24	25	0.9
Part time seasonal	47.4%	-3	43	1.9
Total	97.4%	-4	162	6.4

5.5 A Holistic Farm Diversification Assessment – Failure or Success

The next step in the analysis is to determine the degree of consistency between farmer/rancher (subjective) assessments of the degree to which diversification has or has not accomplished various goals and more factual/objective measures of goal achievement of these goals. Three different objective measures -net income changes,

debt changes and employment of family members– were compared with farmer and rancher perceptions of accomplishment of related goals. For example, farmer/rancher perceptions of the degree to which diversification has achieved --not accomplished, partially accomplished and completely accomplished -- their goal of enhancing income is compared with actual impact on farm income and the actual change in net income that they reported. The contribution of diversification was also assessed for farmers and ranchers who did not diversify to accomplish specific objectives. As a case in point, about 21% of farmers did not diversify for the purpose of enhancing their income, yet almost half (48.3%) of them increased their net income an average of 27% after diversifying (Table 5.28).

Table 5.28 Objective effect of diversification on income enhancement among different levels of perceived outcome.

	Enhancing income was not a goal (20.9%)	Enhancing income was a goal but not accomplished (12.2%)	Enhancing income was a goal and partially accomplished (45.1%)	Enhancing of income was a goal and totally accomplished (21.8%)	*Sig.*
Impact on Farm Net Income (n=179)					
Significant increase	13.8%	9.5%	39.3%	67.5%	χ^2=46.4, p<.001*
Slight increase	34.5%	23.8%	34.8%	25.0%	
No change	51.7%	52.4%	21.3%	7.5%	
Decrease	0.0%	14.3%	4.6%	0.0%	
Extent of Farm Net Income Change (n=117)					
Percent increased (mean)	26.9	37.7	49.2	122.7	F=3.8, p=.012**
Percent decreased (mean)	n/a[a]	n/a	n/a	n/a	

* Pairwise comparisons show significant differences between all groups except between farmers who did not have income enhancement as a goal and those farmers who assessed this goal as not accomplished (significant at 0.05 level).

** Tukey Post-Hoc tests yield significant differences between the farmers who assessed this goal as partially and completely accomplished significant at 0.05 level).

[a] Too few cases to report.

The results show a high degree of consistency between perceived accomplishment of various diversification goals and objective measures of accomplishment. Two thirds of the almost 22% of farmers and ranchers who diversified to increase income and indicated that they had completely accomplished this goal reported significant increases in their net income because of diversification (Table 5.28). Their net income increased an average of about 123%. About three quarters of farmers/ranchers who indicated that they had partially accomplished their objective of increasing their income reported an increase (significant or slight) in net income and they reported a 49% average increase in net income. So there is a high degree of consistency between perceived and actual accomplishment of the goal to increase income.

Table 5.29 Objective effect of diversification on debt reduction among different levels of perceived outcome.

Impact on Farm Debt (n=173)	Debt reduction was not a goal (76.1%)	Debt reduction was not accomplished (6.1%)	Debt reduction was partially accomplished (15.0%)	Debt reduction was totally accomplished (2.8%)	*Sig.*
Significantly decreased	8.8%	9.1%	12.5%	n/a[a]	χ^2=21.1, p=.012
Slightly decreased	11.2%	18.2%	31.3%	n/a	
Did not change	68.0%	63.6%	37.4%	n/a	
Increased	12.0%	9.1%	18.8%	n/a	

Pairwise comparisons show significant differences between those that debt reduction was not a goal and those that were partially and totally accomplished regarding this goal (significant at 0.05 level).

[a] Too few cases to report.

Three quarters of farmers and ranchers did not diversify to reduce their overall debt (Table 5.29). However, 20% reduced their debt after diversifying. About 44% of the 15% of farmers who had debt reduction as a goal and indicated that they had partially accomplished this goal reduced their debt significantly (12.5%) or slightly (31.3%). To

few farmers and ranchers (2.8%) indicated that they had completely accomplished their goal of debt reduction, preventing additional analyses.

There was a statistically significant relationship between perceived level of accomplishment of the goal of creating jobs for family members and the number of full time jobs created as a result of diversification. Those farmers and ranchers who perceived the highest level of accomplishment created the most number of jobs for family members (Table 5.30). There was no statistical relationship with the number of part-time positions created for family members.

Table 5.30 Average number of jobs created for family among different levels of perceived outcome of diversification to create position for family members.

Types of Jobs Created (n=176)	Creating jobs for family members was not a goal (80.7%)	Creating jobs for family members was not accomplished (1.9%)	Creating Jobs for family members was partially accomplished (10.8%)	Creating jobs for family was totally accomplished (6.6%)	*Sig.*
Full time - year round	0.2	-1.0	0.4	0.7	F=5.0, p=.002*
Full time - seasonal	0.1	0.0	0.6	0.1	F=2.8, p=.041**
Part time - year round	0.1	0.0	0.3	0.4	*Not Sig.*
Part time - seasonal	0.3	0.0	0.4	0.4	*Not Sig.*
Total	0.6	-1.0	1.7	1.6	F=3.7, p=.013***

* Tukey Post Hoc test shows that those farmers who did not perceive this goal accomplished created significantly less jobs for their family than those that perceived this goal partially or totally accomplished. It also showed that there are no significant differences between the first and second segment and between those that perceived their goals accomplished (significant at 0.05 level).

** Tukey Post Hoc tests were significant only between those farmers who did not have this goal and those who assessed it as partially accomplished (p=.023 at 0.05 significance level).

*** Tukey Post Hoc test did not yield any significant differences between segments.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Agriculture is an important economic activity in Texas, especially as an employment source. About five percent of all Texas production of goods in 2004 came from agriculture, corresponding to 10.10 billion dollars (Texas Comptroller of Public Accounts, 2004). Farm and farm-related enterprises and organizations in 2001 employed about fifteen percent of the state's population or 1,805,650 Texans (USDA: Economic Research Service, 2004b).

The number of farms in Texas increased from 189,000 farms in 1975 to 229,000 in 2003 (USDA: National Agricultural Statistics Service, 2004b) while the average farm size decreased from 610 acres in 1993 to 570 in 2003. This special situation is occurring since medium sized farms are vanishing either because of their fragmentation into smaller farms or because they are being incorporated into larger corporations that have a intensified production model. This agricultural context is having a negative impact and is posing economic and financial challenges to small and medium farms/ranches.

Farmers and ranchers in Texas are having to become more entrepreneurial and are developing different enterprises as a means of confronting a challenging agricultural context (Wood, 2004). However, the results from the literature review revealed little in the way of scientific information regarding the extent and characteristics of farm diversification in Texas. First, the types and combinations of enterprises farmers are developing on their farms is not known. Second, information is inconclusive concerning the economic and non-economic motivations and goals of farmers and ranchers who are

diversifying their farms and ranches. Third, and most important, it is not yet determined whether, and to what extent, diversification is effective at accomplishing both economic and non-economic objectives of farmers and ranchers.

Previous studies have determined that a farmer or rancher's decision to diversify is based on complex set of goals, including both economic and non-economic goals (McGehee and Kim, 2004; Getz and Carlsen, 2000). Past studies have verified the value of diversification including enabling the survival of the farm and making farms and ranches more profitable (Nilson, 2002; Sharpley 2002, Ventura and Milone, 2000). However, no studies could be identified that assess the extent to which various diversification goals are accomplished, or the degree to which they are achieved. In general there are very few studies of diversification in the U.S. and none in Texas.

This study advances the knowledge of diversification by assessing the accomplishment of both economic and non-economic goals that farmers pursue through diversification. The following section summarizes the major findings from this study. This is followed by a discussion of the implications and applications of the results, the study's limitations, and recommendations for future research.

6.1 Summary of Major Findings

The purpose of this study was to assess the success of agriculture diversification on a number of different dimensions. To do so, this study used a goal-directed behavior model, based on the central actor role of farmers/ranchers in the diversification decision-making process. *Success* (of diversification) was defined as the satisfaction with the extent to which diversification has achieved various goals, both personal and extrinsic,

that initially motivated farmers to diversify their farms. Since there was a lack of theoretical knowledge concerning agriculture diversification in Texas, a preliminary stage of this study included the validation of the agriculture diversification model. The purpose was to better understand the types and extent of diversification that farmers are developing as well as verify of the dynamic nature of this strategy. As presented in figure 6.1, three objectives and nine research questions were developed and tested to assess and better understand the success of agriculture diversification.

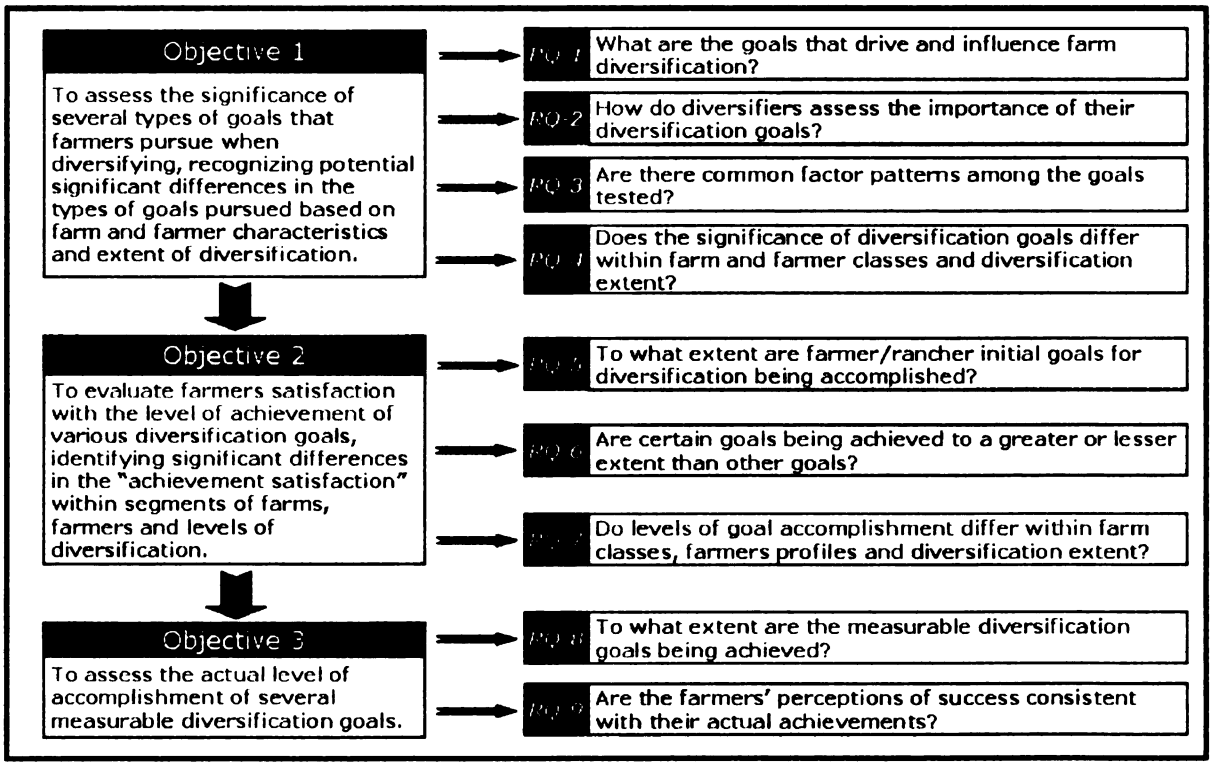

Figure 6.1. Study Objectives and Research Questions

The Conceptual Model of Agriculture Diversification

Texas farmers and ranchers are diversifying their revenues by integrating eight different diversification enterprises and activities: 1) value-added processing and

packaging (34.4%); 2) non-traditional crops, livestock and practices (68.9%); 3) new marketing and distribution methods (88.2%); 4) recreation, tourism and hospitality (64.6%); 5) historic preservation and adaptive re-use (42.9%); 6) leases, easements and timeshares (13.2%); 7) contracts and services (6.1%); and 8) expertise, consulting and education (31.1%). Almost three quarters (71.3%) of these farmers and ranchers are involved in three or more categories of diversification. The average is 3.5 categories.

The more diversified a farm or ranch, the more likely it is to be engaged in various types of resource stewardship and environment-friendly agriculture practices. On average, highly diversified farms employ more stewardship and environment-friendly practices (5.8 practices) than lightly diversified farms (3.4 practices). Not surprisingly, the more diversified a farm or ranch is, the lower the percentage of wholesale product sales, and the greater the number of different marketing methods employed.

This study confirms that diversification is a dynamic process that stimulates and supports additional diversification. Over two thirds (69.9%) of the respondents phased in their diversification enterprises over time. Almost all (98.1%) started by growing crops or raising livestock and started to diversify five years of starting farming. Almost half of the diversified farms and ranches plan to further diversify by adding new enterprises, most of them during the next three years. Interestingly, a relatively high percentage (12.8%) anticipate diversifying additionally in three years or less by adding enterprises not currently included in the diversification model. More diversified farms are more likely to continue to add new enterprises in their farms, while farms with larger annual gross income ($500,000+) are less likely to continue diversification.

Goals that Encourage Agriculture Diversification

A broad range of goals, both financial and non-financial, are important in farmer's decisions whether or not diversify. The majority of respondents diversified to generate additional income (83.7%), to allow them to continue farming (53.4%), to enhance their (family's) quality of life (52.4 %) and to generate additional revenues from existing resources (50.5%). The generation of additional income is the most important reason to diversify (mean=3.8, on a five point *Likert* type scale with 1 being and not important and 5 being extremely important)[58]. Three other reasons, all related to the perpetuation of farming, were also very important: the continuance of farming and ranching (mean=2.94), the enhancement of quality of life (mean=2.93) and keeping the farm/ranch in the family (mean=2.78). Enhanced utilization of farm resources to generate additional income is also an important reason encouraging farmers and ranchers to diversify (mean=2.6).

Since multiple goals contributes to decisions to diversify farms and ranches, and since goals have a hierarchical organization based on their importance, a principal component factor analysis was performed on the importance ratings that farmers and ranchers assigned to various diversification goals to identify the underlying pattern of relationships among the goals[59]. Six factors were identified. (1) *Reduce Uncertainty and Risk* comprised of four goals related to the risk and insecurity inherent to farming including: to offset fluctuations in farm/ranch revenues; to reduce the impacts of

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[58] It was used a five-point *Likert* type scale that the following points: (1) not important; (2) somewhat important; (3) moderately important; (4) fairly important; and (5) extremely important.

[59] The factor analysis was performed using *varimax* rotation. A loading higher than 0.50 was the threshold for including a goal as part of a factor. The factors identified had *eigenvalues* over 1.5 and accounted for 60.9% of the variance. A loading higher than 0.50 was the threshold for including a goal as part of a factor.

catastrophic events; to make the farm less dependent on outside factors; and to continue farming/ranching. (2) *Grow and Service Markets* comprised of goals that are associated with retaining and expanding markets, such as providing current customers with new products/services; generating revenues during off/non growing seasons; responding to market needs/opportunities and diversifying markets. (3) *Enhanced Financial Condition* included goals associated with the financial well being and performance of farm and ranch businesses, such as enhancing the ability to meet financial obligations, the reduction of farm debt, and the ability to qualify for an assistance program. (4) *Individual Aspirations and Pursuits* comprised goals that are personal in nature including the capitalization on an interest/hobby, a new challenge, quality of life enhancement and personal interaction with customers. (5) *Revenues Enhancement* included two important goals: the generation of additional income derived, for example, from the additional value added to the agriculture product and the maximum utilization of farm resources. (6) *Family Connections*, the last factor, included two goals: diversifying to keep the farm in the family and to generate employment for family members.

Accomplishment of Diversification Goals

Farmers and ranchers perceive that most (sixteen out of twenty) of their diversification goals have been accomplished. The goals that had the highest level of accomplishment were to "Provide a new challenge" (mean=2.58), "To interact with customers" (mean=2.41) and "To continue farming/ranching" (mean=2.40)[60]. Conversely, the goals with the lowest levels of accomplishment were to "Qualify for

[60] In a three point *Likert* type scale, where 1=not accomplished, 2=partially accomplished, 3=completely accomplished.

state/federal assistance programs" (mean=1.92), "Reduce impacts of catastrophic events" (mean=1.90) and "Reduce overall farm/ranch debt" (mean=1.86).

Since the goal-directed behavior model recognizes a hierarchical organization of individuals' goals, a combined *importance/achievement* score was developed for each factor. This score concurrently combined the importance of the goals comprising a certain factor and the perceived degree of accomplishment[61]. The goals comprising the *Family Connection Factor* (8. 38), the *Personal Aspiration and Pursuits Factor* (7. 91) and *Reducing Uncertainty and Risk Factor* (7.38) were among the most important and most achieved. The *Enhance Financial Condition Factor* has the lowest importance-achievement score (6.73). Although two of the goals that comprise this factor --to enhance ability to meet financial/loan obligations and to reduce overall farm/ranch debt-- are important to farmers and ranchers they received low perceived achievement assessments.

Results indicate that current diversified farmers perceive farm as a very suitable strategy for keeping them in farming and keeping family members connected to the farm or ranch. However, they are not as positive concerning the contribution of diversification to their overall financial condition. While diversification contributes to higher farm and ranch revenues and increased market size, it is not recognized their value in reducing debt or increasing their ability to meet financial obligations.

Two indicators of success were developed to determine whether different levels of accomplishment were associated with different farm and operator characteristics and

[61] This score was calculated by multiplying the mean level of importance by the mean level of achievement for the goals that compose each factor, weighted by the number of respondents who considered these goals important. The most important diversification goals with the highest level of perceived achievement have the highest index scores.

the extent to which the farm/ranch is diversified[62]. One indicator reflected the percentage of goals that farmers and ranchers perceive were accomplished after diversification. No statistically significant associations were found between the percentage of diversification goals accomplished and farm acreage, farm gross sales, type of organization, farmers' socio-economic characteristics, number of generations the farmer family has held the farm, number of family employees, farmer's occupation and off-farm work condition, or extent of diversification.

The other indicator combined the importance and degree of perceived accomplishment of diversification goals into a more robust and meaningful indicator (*importance-achievement* score)[63]. This can also be viewed as an indicator of satisfaction. Farmers and ranchers who are most satisfied with the results of diversification are more likely to be employed off the farm and tend to be more diversified. For each additional diversification category, the importance-performance indicator increases by almost one point (1.0). This result is very likely due to the positive complementarity of various diversification enterprises and that more enterprises contribute to critical mass and broaden market appeal. In other words, the likelihood of perceived satisfaction increases when farmers and ranchers add enterprises that increase and diversify their markets and leverage and cross-market different enterprise lines.

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[62] Characteristics tested included farm acreage, farm gross sales, type of organization, farmers' demographics, number of generations of the farm in the farmer family, number of family employees, farmer's occupation and off-farm work condition, and extent of diversification.

[63] This satisfaction score was calculated by multiplying a goal importance score (1=somewhat important; 2=moderately important; 3=fairly important; and 4=very important) by an accomplishment score (0=not accomplished; 1=partially accomplished; 5=completely accomplished). The satisfaction score could range from 0 to 20. The most important diversification goals with the highest level of perceived achievement have the highest index scores. Goals that are lower in importance but high in achievement receive a higher index score than goals that more important but not as high achievement.

Objective Indicators of Diversification Accomplishment

The findings indicate that diversification contributes to increasing farm gross revenues and profits, reducing the amount of debt and increasing the number of farm employees. First, operators of diversified Texas farms and ranches reported that revenues from diversified enterprises represent a significant share of their total farm/ranch gross revenues. On average, diversified enterprises contribute over twenty percent (21.5) % of the total farm revenues and operators consider this important in supporting the continued operation of their farms and ranches. The enterprises that have greatest impact on farm net revenues are those related to recreation, contributing on average 36% of total farm and ranch revenues, and value-added food and beverage processing, contribute on average 29.3% of the farm revenues. Farmers and ranchers even diversified enterprises that generate a smaller percentage of overall revenues but are important to the sustainability of their farms and ranches.

The results show that diversification increased farm profits (i.e., net revenues) of the participating farms and ranches. Over a quarter of respondents (27.0%) reported that all their diversified enterprises are profitable. Over one third of the current diversifiers (37.6%) had a significant increase of their profits after diversifying their operations and the majority (69.1%) reported at least a slightly increase in profits. On average, diversified farmers in Texas increased their revenues by about half (45.1%) after incorporating new enterprises into their agriculture firm. Farms that had a significant increase in their net income tend to be larger, in terms of annual gross sales, and they are generally more highly diversified.

Although farmers and ranchers generally perceive that diversification does not contribute significantly to reducing farm debt, a quarter (25.9%) of them experienced at least some decrease of farm debt after diversification, but the majority (60.3%) reported no changes. The average debt decrease was about a third (34.2%) while the average debt increase was almost fifty percent (49.4%), resulting in an overall debt decrease of 2.4%. Farmers that did not experience any change in their debt levels generally have smaller gross sales.

The findings also reveal that farm and ranch diversification generates and support jobs, suggesting a positive impact of diversification on local communities. On average, diversified operators estimate that diversification supports more than six positions (6.4). Diversification also appears to be a good strategy to incorporate family members into the business, supporting the employment of an average of one (0.9) family member.

A Holistic Assessment of Farm and Ranch Diversification

There is a great deal of consistency between motivational and more objective indicators of the outcome of diversification. Three different objective measures -net income changes, debt changes and employment of family members- were compared with farmer and rancher perceptions of accomplishment of related goals, revealing a high degree of consistency between perceived accomplishment of various diversification goals and objective measures of accomplishment.

First, there is a strong association between the degree that farmers and ranchers perceive that their goal to increase farm income is accomplished and the actual increase in net income attributed to diversification. Farmers who diversified for the purpose of

increasing their farm income and indicated that they had completely accomplished this goal, reported significant increases (+123% average increase) in their farm net income because of diversification. Farmers/ranchers who indicate that they had partially accomplished their objective of increasing their income reported a +49% average increase in net income.

There was also consistency in the perception of accomplishment regarding the reduction of farm debt and the actual percent of debt reduction because of diversification. About 44% of farmers who had debt reduction as a diversification goal and indicated that they had partially accomplished this goal actually reduced their debt. There is also a significant relationship between perceived level of accomplishment of the goal of creating jobs for family members and the number of full time jobs created as a result of diversification. Those farmers who perceived the highest level of accomplishment for this goal created the most number of full time year round jobs for family members.

6.2 Implications and Applications of the Study Results

This study confirms that farms and ranches with different characteristics are diversifying to adjust and capitalize on changing market expectations and competitive situations. The results suggest that diversification is a feasible and suitable strategy for different types of farms and ranches (e.g., small as well as large) and for a diversity of operators with different characteristics (e.g., new entrants to farming or multigenerational farmers). The findings also suggest that diversification has certain advantages over other farm adjustment strategies (e.g., intensification) that require certain *sine-qua-non* conditions to be applied, such as the large amounts of capital required for intensification.

The dynamic (i.e., extended plans for continued diversification), flexible (i.e., the broad variety of potential diversification enterprises) and integrative (i.e., the capacity and benefits to incorporate and leverage different types of enterprises) nature suggests that diversification is a strategy that can enable farmers and ranchers to respond to new market opportunities and to adapt their farms to emerging agricultural contexts on continued bases. Diversified farmers and ranchers that participated in this study appear to be entrepreneurial in terms of the range of marketing methods and distribution channels that they utilize to direct market their products, services and experiences. There is also a beneficial association between farmers' need to diversify their revenues and the needs and wants of various markets and the fact that more consumers are concurrently demanding healthy food that is produced locally and environmental protection. The increased emphasis on sustainable and community agriculture will only further enhance the potential for greater farm and ranch diversification.

Diversification appeared as a strategy that simultaneously accomplished the economic and non-economic goals of the participating diversified farmers and ranchers. The multi-motivational dimension of diversification decisions suggests that this strategy should not be evaluated solely on its economic contribution but also for the non-economic values that it provides farmers and local communities. Performance assessments of diversification –success or failure- must incorporate valid measures of the accomplishment of a range of different goals that encourage farmers to diversify. It is probably best to assess diversification using and index of relevance (i.e., they correspond to farmer/rancher goals) measures.

The most important economic value that diversification brings to farmers and ranchers is the capacity to increase their revenues. It was confirmed in this study that diversification contributes to increased farm gross revenues. Certainly, this is a positive effect, especially during non-growing seasons, because it generates needed cash flow to pay continuing fixed costs (e.g., mortgage, taxes, and equipment payments) associated with farming and ranching. The study also confirms that diversification contributes to enhanced net revenues. This has a major implication because it is the capacity to realize profits, not just increase revenues, that sustain farms and ranches over time. Often traditional farming and ranching activities can produce increased revenues but the costs (including capital requirements) often equal or exceed the additional revenues, threatening the business survival.

Diversified farm and ranch businesses also benefit from expanding their customer base compared to traditional wholesale dependent operators by offering a more diverse product line, utilizing a variety of direct marketing methods and through various farmer-customer relationships. Although there are additional costs (e.g., labor, advertising, distribution, packaging) associated with more direct marketing approaches, their great advantage is that farmers and ranchers have the potential of increasing their percentage of the price that final products are sold for including the money that usually accrues other actors comprised in long distribution chains. Diversification can also help farmers and ranchers produce more, and sometimes year-round revenues from farm resources including buildings, equipment and staff. Results indicate that the extended and adaptive re-use of various farm resources, such as old buildings or dated machinery, not only increases the value of these assets but also generates additional net revenues. In some

instances this leads to increased investment in environmental and cultural resource stewardships.

The survey found a high degree of farmer and rancher satisfaction with diversification's contribution to goals related to strengthening or maintaining the family links to farming (e.g., keeping the farm in the family or continuing farming) and also their goals related to individual aspirations (e.g., pursuing a challenge or gaining a closer interaction with customers). Again, this suggests that non-economic values are important driving forces in encouraging diversification and are also instrumental in how farmers and ranchers evaluate the success or failure of diversification.

Although beyond its initial scope, the findings from this study indicates that diversification produces externality that accrue to the broader community especially communities where these farms are located. First, as mentioned above diversification encourages the stewardship of natural and cultural resources. Almost all diversified farms surveyed are engaged in environment-friendly agriculture practices and perform some kind of natural resources stewardship, including restoration of habitats and propagation of native plants. More highly diversified farms or ranches are more likely to be engaged in more of these practices. Second, diversification is helping to preserve farming and ranching heritage, including maintaining rural landscapes that contribute to the quality of life in rural communities and also their ability to attract tourism and tourists. The nearly fifty percent of respondents that are preserving and restoring historic and cultural elements on their farms and ranches, such as buildings, artifacts and even heritage agricultural practices, are not only embellishing and augmenting the value of their properties, but they are also helping maintain and make accessible regional and

community heritage. The generation of jobs is certainly an important local impact. It was reported that on average, diversification creates more than six jobs that are most likely filled by local people. Finally, an emerging type of customer, more concerned with locally produced foods, healthier food options and more environmentally aware, also benefits from a more direct relationship with the farmer.

As discussed in the introduction agriculture in Texas is confronting significant challenges and change characterized by farmland division that is reducing the capacity of farmers and ranchers to compete and generate sufficient revenues to pay the increasing costs of operating farms and ranches. This is threatening the existence of many small farms and ranches and the communities that they created and sustain. This situation is causing farm exodus, especially of young people and women, who look for more profitable occupational options outside agriculture. The fact that the range of values associated with farm and ranch diversification benefit various actors involved in agriculture (i.e., producers, consumers and local communities) should be recognized and incorporated into various efforts to promote this strategy as a means to sustaining and strengthening farming and ranching in Texas.

According to the results of this study, diversification can help to strengthen Texas farming and ranching, keeping existing farmers and farm household members in farming and ranching, especially young generations of farming families and women. *Agripreneurs* that responded to the survey are younger than the average farmers, suggesting that younger farmers are interested in alternative ways to generate revenues and diversified enterprises provide opportunities for them to capitalize on their non-agriculture related skills and knowledge including value-added processing, recreation.

Similarly, there was evidence of a high involvement of women in Texas diversified farms: almost a third of operators who participated in this study were women and the majority of farmers' spouses work on their farms.

Besides sustaining farm and ranch businesses and keeping farm families engaged in farming, results show that diversification is an avenue for new persons to enter farming. Over half of diversified farmers are first generation farmers. It appears that the complex set of motivations that lay behind diversification is attracting a group of people that would not traditionally be related to agriculture, such as retirees from other professions. Almost half (49.2%) of the diversified farmers and ranchers that are first generation farmers -new entrants to agriculture- are retired from another profession and the majority (82.0%) don't have any formal training in agriculture.

6.3 Study Limitations

There are three limitations related to the methods utilized in this study. The major limitation of this study is related to the sample frame that was utilized. Since neither the U.S. Department of Agriculture (USDA) nor the Texas Department of Agriculture (TDA) had an inventory that accurately identified diversified farms in Texas, it was necessary to develop a new sampling frame. A key word search of the Internet was used to identify the diversified farms and ranchers. This method most certainly over-represented diversified farms and ranchers involved in recreation/tourism and direct marketing because they are more prone to have a web presence. This method also under- represented diversified farms and ranchers that are small and have a high percentage of loyal local clientele because they are less likely to be engaged in web-based

marketing. It is also possible that there are diversified farms and ranches that only or primarily market on the web their predominant product (e.g. cattle) and not other enterprises they may have been engaged in. Therefore, although the list of 638 diversified farmers and ranchers that was identified was an important product it is questionable whether it represents the population of diversified farms and ranches in Texas. Certainly there are more than 638 diversified farms and ranches in Texas. Therefore, this study can not claim to be representative.

Another limitation was the number of survey respondents which effectively limited the range of statistical analyses that could be performed. For example, cluster analysis could have been utilized to group/segment farmers and ranchers based on their Goal *Factors* scores. However, the relatively few number of survey responses prevented the use of cluster analysis. This also prevented the use of other segmentation bases/variables including geography and types of diversification enterprises.

Although the Texas Agriculture Diversification Survey gathered enormous amounts of information on diversified farms and ranches and their operators, more specific information is needed to better understand the economic benefits of diversification. Besides diversification produced revenues, profits and debt reduction, it would have been interesting and useful to collect specific information on both pre and post diversification net income and debt as well as other objective indicators of values gained with diversification, such as impact on farm value, their customer base, and marketing and distribution networks.

6.4 Recommendations

Recommendations from this study deal with the implementation of farm and ranch diversification in the applied world (i.e., extension/agencies dimension) and for further research (i.e., academic dimension).

This study provides evidence that diversification is one way that farmers can attain both economic and non-economic goals. It is a value(s)-added strategy in that different benefits flow to farmers and ranchers, to nearby communities, and also to the customers who consume and experience the products and services that these farmers and ranchers produce. Agriculture also benefits from the perspective that diversification helps build direct and lasting relationships with non-traditional agricultural stakeholders who visit farms and ranches and buy directly. The results of this research suggest various changes in programs and policy to enhance the success of diversification.

First university extension programs should continue to develop and implement educational and technical assistance programs designed to assist farmers and ranchers: 1) understand the potential of diversification; 2) evaluate the fit and feasibility of alternative diversification enterprises; and 3) understand the intricacies of managing and marketing these enterprises. Agricultural agencies should cooperate with universities to identify and construct case studies of diversification successes and failures and make them available to farmers and ranchers.

While agricultural agencies have demonstrated interest in diversification, relatively few States have aggressively encouraged diversification through integrated policies, incentives, and educational programs. It would be beneficial for State agricultural agencies to identify and encourage programs that will support various types

of diversification such as AgriTourism and value-added processing. Also, current agricultural incentives should be objectively assessed to determine if, and how, they could be modified to encourage greater diversification. For example, a number of European countries are redirecting traditional agricultural support programs to encourage AgriTourism and other types of diversification entrepreneurship.

The rational and benefits for programs and policies encouraging and promoting diversification are described in various policies. The primary purpose and focus of the Small Farms Policy (September 1999) is to promote and encourage diversity in food, fiber and wood productions, to create opportunities to connect farmers with consumers and to support agricultural systems that sustain and strengthen rural communities, cultural diversity, and a traditional way of life. Specifically, this policy mandates the development and support of research, regulations and outreach programs and initiatives that focus on the special needs of small farms for developing alternative enterprises, value added products, and collaborative marketing efforts.

Similarly the current Farm Bill (Farm Security and Rural Investment Act of 2002, Public Law 107-171, May 2002) encourages various types of farm and ranch diversified enterprises through the creation of a series of economic incentives (e.g., payments, grants, loans). For example, it creates payments to promote agricultural production and environmental quality as compatible goals; mandates the farmland protection program to purchase conservation easements in eligible land that is subject to a pending offer to limit their nonagricultural uses; strengthens the seniors farmers' market nutrition program to increase the consumption and production of healthier products; and creates a program for restoring historic barns that can trigger diversification through historic preservation and

adaptive re-use. Interestingly, the Farm Bill fosters what can be a more frequent type of diversification in the future, creating grants to assist in paying the cost of development and construction of biorefineries to demonstrate the commercial viability for converting biomass to fuels or chemicals. It also focuses on incentives promoting economic diversification and marketing opportunities for the value-added agricultural product that may have an impact on creation of wealth and job opportunities in rural areas. Farm and ranch diversification also benefits from this bill since high-priority research is mandated focusing on Agrotourism and agricultural marketing.

Federal policies fostering diversification (i.e., Small Farms Policy and Farm Bill), are programmatic in nature and require supportive State regulations and programs to be effective. Therefore, compliance of these policies requires the creation of State regulations to channel the funds created to their beneficiaries. It also requires the development and strengthening of programs that 1) transfer technical –information and expertise- assistance to farmers regarding farm and ranch diversification; 2) provides financial assistance (e.g., soft loans, tax relief) to those developing or expanding diversified enterprises; 3) reduces regulatory barriers for the diversified products/services. An example would be the Texas Department of Agriculture (TDA), the Natural Resource Conservation Service (NRCS) and Texas Cooperative Extension (TCE) partnerships to provide technical assistance, educational programs and applied research results to rural entrepreneurs for two years in topics related to marketing, financial, risk management and marketing considerations of farm and ranch diversification. States also need to expand their financial assistance programs from their current focus on the alleviation of marketing costs (e.g., matching funds for promotion of

diversified products) to other areas like mitigation of investments costs for creating or expanding diversified operations (e.g., soft loans or tax relief to preserve historic buildings for adaptive re-use or to acquire machinery for value-added processing). Finally, it is recommended that States evaluate and eliminate excessive regulatory barriers such as new laws that reduce the selling and shipping restrictions related to wine sales in Texas.

Given the limitations encountered in this study regarding the sample frame, it is suggested that the USDA as well as state agricultural agencies s (e.g., Texas Department of Agriculture) invest in the development of an inventory of diversified farms and ranches. This inventory will be an essential first step in monitoring of this strategy and also will enable a continued two-way communication between diversified farmers and agriculture agencies that will help to identify new trends and needs regarding farm diversification. Data needed for this study could be developed by the addition of few questions in the Agriculture Census.

The fact that farmers and ranchers diversify to achieve a variety of economic and non-economic goals coupled with the fact that diversification produces benefits to farmers and ranchers, communities and consumers, suggests that efforts to encourage and enhance the values of diversification should be a partnership between various agricultural, economic development, cultural and tourism agencies and organizations. For example, combined action from agriculture interests and cultural/arts related institutions for the promotion and/or implementation of the preservation and adaptive re-use of heritage on farms would be worthwhile.

This study also reveals that there is a need and potential for a variety of further diversification research. One recommendation for future research is the need to monitor agriculture diversification on a continued basis by collecting diversification relevant information as part of on-going surveys and information collection efforts conducted by federal and state agencies. Diversification is a dynamic strategy and diversified farmers and ranchers are constantly incorporating new enterprises to better respond to their customers; it can also be inferred that other enterprises are being abandoned. A focus of future research should be the identification new diversification enterprises that become less common.

Future studies concerning farm diversification need larger and more diverse samples to facilitate the design and application of statistical methods that help to enhance the understanding of the outcome of the diversification strategy. As previously stated, cluster analysis based on the motivations for diversification will help researchers better understand the different profiles of *agripreneurs*.

This study confirms previous findings regarding the active role of women in diversification. However, more detailed information on the role of women is needed, especially in understanding the types of activities in which they are involved, the extent to which they participate in managerial roles, and the degree to which they assume responsibility for both farm and farm household tasks. Another important topic that needs further exploration is the process of insertion of women in the farm business, that is, the process of farm succession from a traditional father-son model to a father-daughter model, inquiring whether diversification is the cause or the effect of this new type of farm

succession. Another interesting area of research would be the number and characteristics of women entering farming and ranching as diversified entrepreneurs.

Farm and ranch diversification through the preservation and adaptive re-use of historical and cultural heritage was an unexpected, but very exciting finding. While it was anticipated that some farmers and ranchers were involved in cultural resource preservation, the fact that almost half are preserving agriculture heritage was not expected. More surprising was the high proportion of the farmers involved in preservation and adaptive re-use of heritage that were realizing net income as a result. These findings stand by themselves and urge further research to identify the types, motivations, and values associated with this type of farm diversification. It also reveals the potential connection between Agritourism and cultural tourism. Also, there may be benefit in encouraging farmers and ranchers to take greater advantage of various federal, state and local financial incentives and programs designed to encourage historic preservation.

Farm diversification did not appear in this study as a viable strategy to alleviate debt. Debt reduction was the goal with least degree of accomplishment, with over a quarter, 25.5%, of those having this goal reporting not having accomplished it at all. Moreover, 13.8% of respondents had an after diversification average debt increase of almost 50%. In some cases farmers and ranchers may take on additional debt to finance the capital improvements related to a diversification enterprise, but the result is that their revenues and net income increases. This study also found that other factors, such as the return on the investment of time, influenced the assessment of debt impact. It is

recommended that more detailed attention be given in future research to better understand the impact of diversification on farm and ranch debt.

A final recommendation for future research is to identify and better understand the factors that limit and impede the success of various types of diversification enterprises. This research shows that not all diversification ventures are successful. The sampling frame for this survey were farms and ranches currently operating various types enterprises and did not include ones that failed and were out of business. A research effort that both continuously identifies and monitors diversified farms and ranches and does follow-up investigations of failed enterprises would be valuable and could help develop a "what-not-to do" inventory. This research could also help in developing parameters for assessing the feasibility of proposed diversification enterprises.

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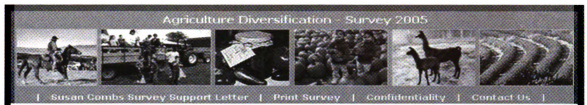
APPENDIX A

TEXAS AGRICULTURE DIVERSIFICATION SURVEY HOME PAGE



Instructions

Survey Purpose:

The Farm and Ranch Diversification Survey gathers information about farms and ranches that have developed several enterprises on their farm/ranch, offering several products and services to the public and other farmers/ranchers (e.g., processing of foods, tours, on-farm direct sales).

Instructions:

Answering the survey on-line is actually very easy and convenient! For some questions all you will have to do is to click on the appropriate response category, for example *"Yes"* or *"No"*. We have made it easy to answer some questions by providing *"drop down boxes"* that show a number of different potential answers such as the state where your farm or ranch is located. For other questions all you have to do is type a short response in the appropriate space.

In addition, the Farm and Ranch Diversification Survey is tailored to your unique farm/ranch characteristics based on your responses. For example, Section III will ask you about the products/services that you produce/offer according to the production categories that you selected in section II. This customized system is very convenient because you do not need to go through questions that are not applicable to your farm or ranch. However, to properly tailor the survey to your characteristics, we need you to carefully read the survey questions and that you select the option(s) that better fits to your business.

You can complete the survey entirely during one on-line session going to:
http://www.agriculturediversity.com/registration.html

Or you can re-enter the survey at any time to complete remaining sections login with the email address and the zip code that you provided at the time you registered at:
http://www.agriculturediversity.com/login.html

It will take you between 10 and 20 minutes to complete the survey, depending on the extent of your farm/ranch diversification. It is **crucial** that after completing each section of the survey you click on the **"Submit"** button located at the end of the page. If you are somehow interrupted before pressing the "Submit" button, your responses to your questions will not be saved or sent to us.

You can also print the survey before you go on-line to answer it. However, the printed version of the survey is not customized to your farm or ranch, so you will notice that it is considerably larger compared to what you will need to complete on-line. To print the survey, please click on the "Print Survey" link at the top of the page.

It is important to remember that although you will be completing this survey in 2005, we are asking for **information relating to 2004.** Please answer the questions for 2004, not what you expect or plan to do in 2005.

Accessing the Survey:

To access The Farm and Ranch Diversification Survey you need to register first. After you have registered you can login to the survey at any time, providing the email address and the zipcode that you provided at the time you registered.

Registration: If this is your first time accessing the survey, please click below: http://www.agriculturediversity.com/registration.html
Login: If you have already registered for the survey, please click below: http://www.agriculturediversity.com/login.html

APPENDIX B

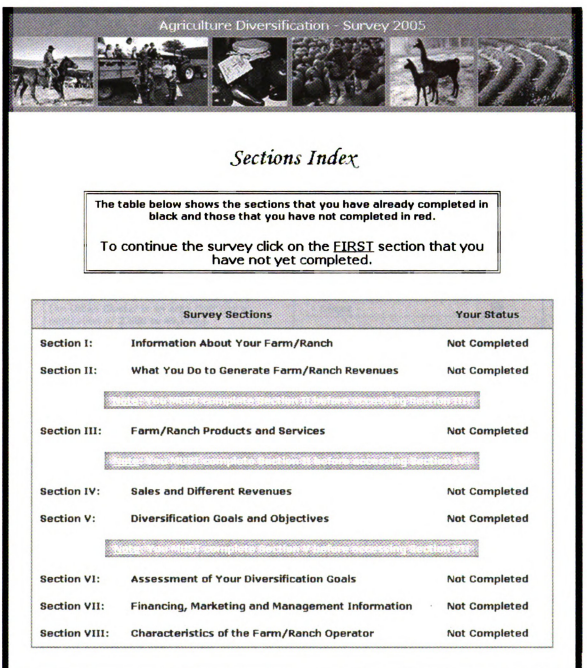
SURVEY REGISTRATION PAGE

APPENDIX C

SURVEY LOGIN PAGE

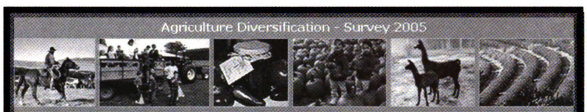
APPENDIX D

SURVEY SECTIONS INDEX PAGE



APPENDIX E

SURVEY SECTIONS



Section I
Information About Your Farm/Ranch

1. How far is your farm or ranch from/off a paved highway and from the following urban areas?

Distance from/off a paved highway:	- Select -
Distance from an Urban Cluster (UC): [An Urban Cluster is an area that has a population of 2,500 to 49,999.]	- Select -
Distance from an Urbanized Area (UA): [An Urbanized Area is an area that has a population of at least 50,000.]	- Select -

2. What is the total acreage of your farm or ranch? Please, respond with numbers only. Do not insert commas when answering the questions. Round to the nearest acre.

Total acreage of your farm/ranch. Include only acres that **you own**.	acres
Number of acres of your farm/ranch that you rented or leased **to others** for farming or ranching in 2004.	acres

3. How many acres did you farm or ranch in 2004? Please, respond with numbers only. Do not insert commas when answering the questions. Round to the nearest acre.

Number of acres that **you own** that you farmed or ranched in 2004.	acres
Number of acres of land that you rented or leased **from others** and you farmed and ranched in 2004. Do not include land used on a per-head or animal unit month basis under a grazing permit.	acres
Number of acres of land that you farmed or ranched in 2004 under a grazing permit on a per-head.	acres

4. **Do you raise or produce agriculture products (e.g., crops, livestock, fish in captivity, woodlot) for commercial sale?**

○ Yes ○ No

5. **Which of the following best describes your current farm/ranch organization?**

○ Individual or family operation (sole proprietorship)
○ Partnership (including family partnerships)
○ Incorporated under state law
○ Limited Liability Company (LLC)
○ Other. Please specify:

6. **How did you and/or your family start this farm/ranch business?**

○ Purchased the land and started the farm/ranch
○ Purchased it as an already existing farm/ranch
○ Inherited an existing farm/ranch
○ Inherited the land and started the farm/ranch
○ Other. Please specify:

7. **How many generations has the farm/ranch been in your family?**

○ We are first generation farmers/ranchers
○ 2 Generations
○ 3 Generations
○ 4 Generations or more

8. **Some farmers/ranchers expect to keep their farm/ranch in the family. Is it your expectation to pass your farm/ranch to your children or grandchildren?**

○ Yes ○ No

9. **Which of the agriculture methods do you currently practice on your farm/ranch? Please check all that apply.**

- ☐ Crop rotation
- ☐ Organic/natural growing/raising (e.g., grass fed)
- ☐ Farm/ranch waste management (e.g., composting)
- ☐ No additives (e.g., pesticides/hormone free)
- ☐ Certified organic
- ☐ Integrated pest management (IPM)
- ☐ Biological control
- ☐ None of the above
- ☐ Other 1. Please specify:
- ☐ Other 2. Please specify:

10. **Which of the following stewardship methods do you currently practice on your farm/ranch? Please check all that apply.**

- ☐ Soil conservation
- ☐ Water conservation
- ☐ Protect, propagate and encourage native plants
- ☐ Wildlife habitat improvement
- ☐ Fisheries habitat improvement
- ☐ None of the above
- ☐ Other 1. Please specify:
- ☐ Other 2. Please specify:

11. **Have you preserved or restored any heritage/cultural building, equipment, artifact or other objects on your farm or ranch?**

- ○ No. Please, go to the end of the section and click the "Submit" button.
- ○ Yes

What have you preserved? Check all that apply.

- ☐ Building (e.g., barn, mill, centennial farm house)
- ☐ Equipment (e.g., tractor, tools, oil rigs, windmills)
- ☐ Artifact (e.g., Indian ceramics, fossils)
- ☐ Other. Please specify:

Why have you preserved such heritage/cultural objects? Check all that apply.

- ☐ These objects are important to me and my family
- ☐ Their intrinsic value
- ☐ Their potential to generate revenues
- ☐ Cost savings for using the structure(s) for other purposes
- ☐ Other. Please specify:

12. Have you adaptively re-used the heritage object(s) that you have preserved or restored on your farm or ranch? For example, conversion of a historic barn into a dance room, use of antique tractor for wagon rides, exhibits of artifacts.

- ○ No. Please, go to the end of the section and click the "Submit" button.
- ○ Yes

13. Is this adaptive re-use generating revenues?

○ No. Please, go to the end of the section and click the "Submit" button.	
○ Yes	**Indicate the levels of the revenues generated compared to the restoration costs:** ○ Revenues exceeded the restoration costs ○ Revenues have matched the restoration costs ○ Revenues are smaller than the restoration costs

Section II

What You Do To Generate Farm/Ranch Revenues

Which of the following did you grow, raise, produce or offer on your farm/ranch during 2004 for the purpose of generating revenues? Please, check all that apply.

☐ **Crops** (e.g., grains, nursery, herbs, grapevines)
☐ **Livestock and Other Animals** (e.g., cattle, emus, mink, apianes, fish)
☐ **Other Agriculture Products and Services** (e.g., eggs, meats, wool, woodlots, feedlots, animal training)
☐ **Processing of Foods and Beverages** (e.g., wine, cheese, dried herbs, baked goods)
☐ **Recreation, Tourism and Special Events** (e.g., tours, pick-your-own, corn maze, horse riding, hunting, weddings, festivals)
☐ **Lodging and Accommodations** (e.g., B&B, cottages)
☐ **Restaurants and Food Services** (e.g., dairy store, catering, deli)
☐ **Health and Cosmetics** (e.g., soaps, spas)
☐ **Arts and Crafts** (e.g., dried flowers, photography, candles)
☐ **Educational Activities** (e.g., workshops, seminars, horse clinics)
☐ **Leasing** (e.g., land, equipment)
☐ **Easements** (e.g., conservation easements)
☐ **Time Shares**
☐ **Other Products and Services** (e.g., contracting, composting, recycling)

Section III
Farm/Ranch Products and Services

1. Which of the following did you grow, raise, produce or offer on your farm/ranch during 2004 for the purpose of generating revenues? Please, check all that apply.

The different products/services that appear in the table(s) below are based on the responses that you provided in Section II.

Crops	
☐ Grains (e.g., wheat, sorghum)	☐ Fruit, nut or citrus trees
☐ Corn	☐ Grapevines
☐ Soybeans	☐ Tobacco
☐ Dry beans, rice or potatoes	☐ Vegetables and/or melons field grown
☐ Vegetable seeds or plants under protection	☐ Vegetables under protection
☐ Berries (e.g., raspberries, strawberries)	☐ Herbs (medicinal and culinary)
☐ Hay or haylage	☐ Nursery (include shrubs)
☐ Bulbs, flowers or flower seeds	☐ Mushrooms
☐ Sod	☐ Maple sap/syrup
☐ Pumpkins or gourds	☐ Native, heirloom or endangered plants
☐ Christmas trees	
☐ Other 1. Please specify:	
☐ Other 2. Please specify:	

Livestock and Other Animals	
☐ Cattle	☐ Horses, ponies or other equine
☐ Sheep or lamb	☐ Hogs or pigs
☐ Goats	☐ Buffalo or bison
☐ Deer or elk	☐ Emus or ostriches
☐ Llamas and/or alpacas	☐ Chickens or other poultry
☐ Mink or rabbits	☐ Fish or shellfish in captivity
☐ Apiaries	☐ Miniature animals
☐ Other 1. Please specify:	
☐ Other 2. Please specify:	

Other Agriculture Products and Services	
☐ Milk	☐ Feedlots
☐ Eggs	☐ Other cattle products (e.g., semen)
☐ Fresh meats	☐ Rental stalls for horses
☐ Wool or fibers	☐ Ferrier services
☐ Pelts, hides or leather	☐ Other horse products (e.g., semen)
☐ Feathers	☐ Honey and other apiary products
☐ Garden rentals	☐ Welding/mechanics
☐ Seeds	☐ Woodlot products (e.g., logs, lumber, firewood)
☐ Other 1. Please specify:	
☐ Other 2. Please specify:	

Processing of Foods and Beverages	
☐ Wine	☐ Teas
☐ Juice and ciders	☐ Frozen fruits/vegetables/berries
☐ Jams/jellies/preserves	☐ Frozen meats
☐ Hams and sausages	☐ Smoked meats
☐ Cheese (include gourmet)	☐ Oils and vinegars
☐ Ice-cream (include gourmet)	☐ Condiments/seasonings/sauces
☐ Other dairy products (e.g., yogurt)	☐ Tofu
☐ Dried fruits/vegetables/berries	☐ Candies (e.g., caramel apples)
☐ Dried herbs	☐ Syrups
☐ Dried meats	☐ Pickles (include olives)
☐ Bread and baked goods (include doughnuts)	
☐ Health/medicinal enhanced foods (e.g., omega-3 eggs)	
☐ Other 1. Please specify:	
☐ Other 2. Please specify:	

Recreation, Tourism and Special Events	
☐ Tours (include customized tours)	☐ Wildlife observation (include exotics)
☐ Wagon/sleighs/hay rides	☐ Fishing (for a fee)
☐ Pick-cut your own (e.g., fruits, trees)	☐ Paid hunting and customized hunting tours
☐ Corn maze	☐ Hiking/biking
☐ Haunted house/barn	☐ Horse riding
☐ Barn dances	☐ Winter sports (e.g., skiing)
☐ Tasting rooms	☐ Museums
☐ Petting zoo	☐ Weddings
☐ Private parties	☐ Corporate retreats
☐ Rodeos	☐ Cowboy camps and activities
☐ Festivals, events and shows (e.g., arts/craft shows, concerts)	
☐ Other 1. Please specify:	
☐ Other 2. Please specify:	

Lodging and Accommodations	
☐ Farm/ranch vacations	☐ Cottage/cabins
☐ Hotel/Inn/Lodge	☐ Resort complex
☐ Bed and Breakfast	☐ RV's and campground
☐ Other 1. Please specify:	
☐ Other 2. Please specify:	

Restaurants and Food Services	
☐ Dairy store	☐ Sit-down dining
☐ Cookouts/barbecues	☐ Take-out foods/beverages
☐ Picnics	☐ Catering and customized meals
☐ Deli Store	
☐ Other 1. Please specify:	
☐ Other 2. Please specify:	

Health and Cosmetics	
☐ Soaps	☐ Creams and lotions
☐ Aromatherapy products (e.g., salts, oils)	☐ Spas and massages
☐ Other 1. Please specify:	
☐ Other 2. Please specify:	

Arts and Crafts	
☐ Paintings	☐ Native crafts
☐ Ceramics/pottery	☐ Clothing
☐ Yarns/textiles	☐ Dried flowers
☐ Photography	☐ Wood crafts
☐ Candles	☐ Gift boxes (include customized baskets)
☐ Christmas ornaments (e.g., wreaths)	
☐ Other 1. Please specify:	
☐ Other 2. Please specify:	

Educational Activities	
☐ Educational tours	☐ Summer camps
☐ Horse riding/cutting lessons	☐ Apprenticeships
☐ Classes (e.g., organic farming, permaculture)	
☐ Seminars (e.g., Native cultures, stewardship/conservation)	
☐ Workshops (e.g., wine making, cooking/canning)	
☐ Other 1. Please specify:	
☐ Other 2. Please specify:	

Leasing	
☐ Land	☐ Equipment
☐ Buildings	
☐ Animals (e.g., for petting zoos, trekking llamas, for pony rides)	
☐ Other 1. Please specify:	
☐ Other 2. Please specify:	

Easements	
☐ Scenic Easements	☐ Development rights
☐ Conservation easements	☐ Utilities
☐ Recreational easements (e.g., hunting, fishing, trails)	
☐ Other 1. Please specify:	
☐ Other 2. Please specify:	

Time Shares
Please describe time share

Other Products and Services
☐ Other Product/Service. Please specify:
☐ Other Product/Service. Please specify:
☐ Other Product/Service. Please specify:

2. Were your different enterprises developed at the same time or phased in over time?

○ Developed at the same time

○ Phased in over time

If phased in over time, please indicate the order in which your enterprises were developed (1 = the first developed). For example, if 'Processing of Foods and Beverages' was the first enterprise you developed, it should receive a '1'. The different production/enterprise categories that appear in the table below are based on the responses that you provided in Section II.

Production/Enteprise Categories	Order of Development
Crops Sales (e.g., grains, nursery, grapevines, herbs, flowers, christmas trees)	(Numbers only)
Livestock and Other Animals Sales (e.g., cattle, emus, mink, chickens, fish, apiaries)	(Numbers only)
Other Agriculture Products and Services (e.g., milk, meats, wool, woodlots, feedlots, animal training)	(Numbers only)

Continue...

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Processing of Foods and Beverages (e.g., wine, cheese, dried herbs, baked goods)	(Numbers only)
Recreation, Tourism and Special Events (e.g., tours, pick-your-own, corn maze, horse riding, hunting, weddings, festivals)	(Numbers only)
Lodging and Accommodations (e.g., B&B, cottages)	(Numbers only)
Restaurants and Food Services (e.g., dairy store, catering, deli)	(Numbers only)
Health and Cosmetics (e.g., soaps, spas)	(Numbers only)
Arts and Crafts (e.g., dried flowers, photography, candles)	(Numbers only)
Educational Activities (e.g., workshops, seminars, horse clinics)	(Numbers only)
Leasing (e.g., land, equipment)	(Numbers only)
Easements (e.g., conservation easements)	(Numbers only)
Time Shares	(Numbers only)
Other Products and Services (e.g., contracting, composting, recycling)	(Numbers only)

Section IV
Sales and Different Revenues

1. What was the total gross value of sales for your farm/ranch in 2004? Include sales of all crops, livestock, agriculture products, and other products/services sales related to your farm/ranch.

○ None	○ $25,000 - $49,999
○ Less than $1,000	○ $50,000 - $99,999
○ $1,000 - $2,499	○ $100,000 - $249,999
○ $2,500 - $4,999	○ $250,000 - $499,999
○ $5,000 - $9,999	○ $500,000 - $999,999
○ $10,000 - $24,999	○ $1,000,000 or more

2. What percentage of your farm/ranch revenues came from each of your production/enterprise categories in 2004 and how important are these revenues to the continued operation of your farm/ranch?
The different production/enterprises categories that appear in the table below are based on the responses that you provided in Section II.
The %'s should add up to 100%.

Production/Enterprises Categories (Sources of Revenues)	% of Farm/Ranch Revenues (2004)	How important are these revenues to the continued operation of your Farm/Ranch?
Crops Sales (e.g., grains, nursery, grapevines, herbs, flowers, Christmas trees)	.00 % (Numbers only)	○ Very Important ○ Important ○ Somewhat Important ○ Not Important
Livestock and Other Animals Sales (e.g., cattle, emus, mink, chickens, fish, apiaries)	.00 % (Numbers only)	○ Very Important ○ Important ○ Somewhat Important ○ Not Important
Other Agriculture Products and Services (e.g., milk, meats, wool, woodlots, feedlots, animal training)	.00 % (Numbers only)	○ Very Important ○ Important ○ Somewhat Important ○ Not Important
Processing of Foods and Beverages (e.g., wine, cheese, dried herbs, baked goods)	.00 % (Numbers only)	○ Very Important ○ Important ○ Somewhat Important ○ Not Important
Recreation, Tourism and Special Events (e.g., tours, pick-your-own, corn maze, horse riding, hunting, weddings, festivals)	.00 % (Numbers only)	○ Very Important ○ Important ○ Somewhat Important ○ Not Important
Lodging and Accommodations (e.g., B&B, cottages)	.00 % (Numbers only)	○ Very Important ○ Important ○ Somewhat Important ○ Not Important
Restaurants and Food Services (e.g., dairy store, catering, deli)	.00 % (Numbers only)	○ Very Important ○ Important ○ Somewhat Important ○ Not Important
Health and Cosmetics (e.g., soaps, spas)	.00 % (Numbers only)	○ Very Important ○ Important ○ Somewhat Important ○ Not Important
Arts and Crafts (e.g., dried flowers, photography, candles)	.00 % (Numbers only)	○ Very Important ○ Important ○ Somewhat Important ○ Not Important

Continue...

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Educational Activities (e.g., workshops, seminars, horse clinics)	.00 % (Numbers only)	○ Very Important ○ Important ○ Somewhat Important ○ Not Important
Leasing (e.g., land, equipment)	.00 % (Numbers only)	○ Very Important ○ Important ○ Somewhat Important ○ Not Important
Easements (e.g., conservation easements)	.00 % (Numbers only)	○ Very Important ○ Important ○ Somewhat Important ○ Not Important
Time Shares	.00 % (Numbers only)	○ Very Important ○ Important ○ Somewhat Important ○ Not Important
Other Products/Services (e.g., contracting, composting, recycling)	.00 % (Numbers only)	○ Very Important ○ Important ○ Somewhat Important ○ Not Important
TOTAL FARM/RANCH REVENUES	100%	

3. Are your diversification enterprises: Check all that apply.

☐ All enterprises are generating positive net revenues.
☐ Some enterprises are generating positive net revenues.
☐ All enterprises are breaking even.
☐ Some enterprises are breaking even.
☐ All enterprises are operating at a loss (costs > revenues).
☐ Some enterprises are operating at a loss (costs > revenues).

Section V
Diversification Goals and Objectives

Which of the following goals/objectives were important for your decision to diversify your farm/ranch? Please, check all that apply.

- ☐ To keep the farm/ranch in the family.
- ☐ To allow us to continue farming or ranching.
- ☐ To generate additional income.
- ☐ To generate revenues during off/non-growing season(s).
- ☐ To reduce the impacts of catastrophic events (e.g., crop loss, diseases, loss of market).
- ☐ To offset fluctuations in farm/ranch revenues (e.g., reduced production, lower prices, weather problems).
- ☐ To generate additional revenues from already existing farm/ranch resources (e.g., land, buildings, equipment).
- ☐ To qualify for a state/federal assistance programs (e.g., price supports, state grant, tax incentive).
- ☐ To capitalize on a special interest or hobby.
- ☐ To reduce overall farm/ranch debt.
- ☐ To enhance our ability to meet financial/loan obligations.
- ☐ To provide employment opportunities for family members.
- ☐ To respond to a need or opportunity in the market (e.g., demand for a specialty product).
- ☐ To increase and/or diversify my market.
- ☐ To provide current customers with new products and services (e.g., B&B for hunters).
- ☐ To get to know and interact with customers/visitors.
- ☐ To educate customers concerning farming or ranching (e.g., organic production, conservation practices).
- ☐ To make the farm/ranch less dependent on outside factors (e.g., not dependent on commodity prices and export markets).
- ☐ To provide a new challenge.
- ☐ To enhance the quality of life of myself or my family.
- ☐ Other Reason. Please Explain: _____
- ☐ Other Reason. Please Explain: _____

Section VI
Assessment of Your Diversification Goals

1. In Section V, you indicated some initial goals (i.e., objectives) that were important for diversifying your farm/ranch. Please, indicate the level of importance of such goals. The goals that appear in the table below are based on the goals that you selected as important in Section V.

Your Initial Goals	Level of Importance			
	Extremely Important	Fairly Important	Moderately Important	Somewhat Important
To keep the farm/ranch in the family.	○	○	○	○
To allow us to continue farming or ranching.	○	○	○	○
To generate additional income.	○	○	○	○
To generate revenues during off/non-growing season(s).	○	○	○	○
To reduce the impacts of catastrophic events (e.g., crop loss, diseases, loss of market).	○	○	○	○
To offset fluctuations in farm/ranch revenues (e.g., reduced production, lower prices, weather problems).	○	○	○	○
To generate additional revenues from already existing farm/ranch resources (e.g., land, buildings, equipment).	○	○	○	○
To qualify for a state/federal assistance programs (e.g., price supports, state grant, tax incentive).	○	○	○	○
To capitalize on a special interest or hobby.	○	○	○	○
To reduce overall farm/ranch debt.	○	○	○	○
To enhance our ability to meet financial/loan obligations.	○	○	○	○
To provide employment opportunities for family members.	○	○	○	○
To respond to a need or opportunity in the market (e.g., demand for a specialty product).	○	○	○	○
To increase and/or diversify my market.	○	○	○	○
To provide current customers with new products and services (e.g., B&B for hunters).	○	○	○	○
To get to know and interact with customers/visitors.	○	○	○	○
To educate customers concerning farming or ranching (e.g., organic production, conservation practices).	○	○	○	○

Continue...

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To make the farm/ranch less dependent on outside factors (e.g., not dependent on commodity prices and export markets).	○	○	○	○
To provide a new challenge.	○	○	○	○
To enhance the quality of life of myself or my family.	○	○	○	○
Your other reason: "Your other reason #1 is inserted here"	○	○	○	○
Your other reason: "Your other reason #2 is inserted here"	○	○	○	○

2. To what extent were your initial goals accomplished after you diversified your farm or ranch?
The goals that appear in the table below are based on the goals that you selected as important in Section V.

Your Initial Goals	Level of Accomplishment		
	Completely Accomplished	Partially Accomplished	Not Accomplished
To keep the farm/ranch in the family.	○	○	○
To allow us to continue farming or ranching.	○	○	○
To generate additional income.	○	○	○
To generate revenues during off/non-growing season (s).	○	○	○
To reduce the impacts of catastrophic events (e.g., crop loss, diseases, loss of market).	○	○	○
To offset fluctuations in farm/ranch revenues (e.g., reduced production, lower prices, weather problems).	○	○	○
To generate additional revenues from already existing farm/ranch resources (e.g., land, buildings, equipment).	○	○	○
To qualify for a state/federal assistance programs (e.g., price supports, state grant, tax incentive).	○	○	○
To capitalize on a special interest or hobby.	○	○	○
To reduce overall farm/ranch debt.	○	○	○
To enhance our ability to meet financial/loan obligations.	○	○	○
To provide employment opportunities for family members.	○	○	○
To respond to a need or opportunity in the market (e.g., demand for a specialty product).	○	○	○
To increase and/or diversify my market.	○	○	○
To provide current customers with new products and services (e.g., B&B for hunters).	○	○	○

Continue...

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To get to know and interact with customers/visitors.	○	○	○
To educate customers concerning farming or ranching (e.g., organic production, conservation practices).	○	○	○
To make the farm/ranch less dependent on outside factors (e.g., not dependent on commodity prices and export markets).	○	○	○
To provide a new challenge.	○	○	○
To enhance the quality of life of myself or my family.	○	○	○
Your other reason: "Your other reason #1 is inserted here"	○	○	○
Your other reason: "Your other reason #2 is inserted here"	○	○	○

3. Based on your experience and knowing what you know now, would you again make the decision to diversify your farm/ranch?

○ Yes. Please explain why:

○ No. Please explain why not:

4. Would you recommend others that they diversify their farms or ranches?

○ Yes. Please explain why:

○ No. Please explain why not:

5. How many total persons did you employ in your farm/ranch operation including all production categories (e.g., crops and livestock, recreation, tourism and special events, processing of foods and beverages) in 2004?

	Full Time Year Round	Full Time Seasonal	Part Time Year Round	Part Time Seasonal
Family Members				
Non-Family Members				
TOTAL				

6. **How many persons could you have employed if you had only engaged in traditional farming and ranching, and *had not* diversified your operation?**

	Full Time Year Round	Full Time Seasonal	Part Time Year Round	Part Time Seasonal
Family Members				
Non-Family Members				
TOTAL				

7. **To what extent did the farm/ranch net income change because you diversified?**

○ Net income significantly increased after diversified	**What was the percent increase of the farm/ranch net income?**
○ Net income slightly increased after diversified	%
○ Net income did not increased nor decreased after diversified	
○ Net income decreased after diversified	**What was the percent decrease of the farm/ranch net income?** %

8. **To what extent did the farm/ranch debts change because you diversified?**

○ Debts significantly decreased after diversified	**What was the percent decrease of the farm/ranch debts?**
○ Debts slightly increased after diversified	%
○ Debts did not decreased nor increased after diversified	
○ Debts increased after diversified	**What was the percent increase of the farm/ranch debts?** %

Section VII
Financing, Marketing and Management Information

1. **Who is the decision-maker regarding agriculture and business matters in your farm/ranch?**

Decision-Maker in Agriculture Matters	Decision-Maker in Business Matters
○ Owner/manager	○ Owner/manager
○ Manager other than owner	○ Manager other than owner
○ Farmer/rancher and significant other	○ Farmer/rancher and significant other
○ Farmer/rancher household (i.e., family)	○ Farmer/rancher household (i.e., family)
○ Other	○ Other

2. How did you finance the start-up and the operation of your diversified enterprises? Check all that apply.

☐ Bank Loan	☐ Investor(s)
☐ Personal financing	☐ Family financing
☐ State grant or program funding	☐ Other

3. What sources of information have been the most useful in the start-up and operation of your diversified enterprises? Check all that apply.

Start-up of Your Diversified Enterprises Check all that apply.	Operation of Your Diversified Enterprises Check all that apply.
☐ University Extension Services	☐ University Extension Services
☐ Universities/Colleges	☐ Universities/Colleges
☐ Federal Agriculture Agencies	☐ Federal Agriculture Agencies
☐ State Agriculture Agencies	☐ State Agnculture Agencies
☐ Paid Consultant	☐ Paid Consultant
☐ World Wide Web (Internet)	☐ World Wide Web (Internet)
☐ Economic Development Agencies	☐ Economic Development Agencies
☐ Chamber of Commerce	☐ Chamber of Commerce
☐ Conferences/Workshops	☐ Conferences/Workshops
☐ Small Business Agencies	☐ Small Business Agencies
☐ Farm/Ranch Organizations (e.g., Farm Bureau)	☐ Farm/Ranch Organizations (e.g., Farm Bureau)
☐ Natural Resources Conservation Services	☐ Natural Resources Conservation Services
☐ None	☐ None
☐ Other	☐ Other

4. Do you have any plans to add a new enterprise in your farm /ranch? Check all that apply.

○ No

○ Yes.
If yes, please indicate what type(s) of category you are planning to develop and when.

Production/Enterprise Categories	Development Time Frame
☐ **Crops Sales** (e.g., grains, nursery, grapevines, herbs, flowers, Christmas trees)	- Select Time Frame -
☐ **Livestock and Other Animals Sales** (e.g., cattle, emus, mink, chickens, fish, apiaries)	- Select Time Frame -
☐ **Other Agriculture Products and Services** (e.g., milk, meats, wool, woodlots, feedlots, animal training)	- Select Time Frame -
☐ **Processing of Foods and Beverages** (e.g., wine, cheese, dried herbs, baked goods)	- Select Time Frame -

Continue...

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☐ **Recreation, Tourism and Special Events** (e.g., tours, pick-your-own, corn maze, horse riding, hunting, weddings, festivals)	- Select Time Frame -
☐ **Lodging and Accommodations** (e.g., B&B, cottages)	- Select Time Frame -
☐ **Restaurants and Food Services** (e.g., dairy store, catering, deli)	- Select Time Frame -
☐ **Health and Cosmetics** (e.g., soaps, spas)	- Select Time Frame -
☐ **Arts and Crafts** (e.g., dried flowers, photography, candles)	- Select Time Frame -
☐ **Educational Activities** (e.g., workshops, seminars, horse clinics)	- Select Time Frame -
☐ **Leasing** (e.g., land, equipment)	- Select Time Frame -
☐ **Easements** (e.g., conservation easements)	- Select Time Frame -
☐ **Time Shares**	- Select Time Frame -
☐ **Other Products/Services** (e.g., contracting, composting, recycling)	- Select Time Frame -

5. **Do you have a written business plan?**
   ○ Yes ○ No

6. **Do you have a marketing plan that identifies your target markets, marketing objectives and marketing methods (e.g., advertising)?**
   ○ Yes ○ No

7. **Which of the following methods did you use in 2004 to sell your products/services? What percentage of your total farm/ranch sales was sold through various methods? The total should be 100 percent.**

Type of Market Please check all that apply	Percent of Total Sales Total should be 100%
☐ Wholesale sales of products	.00 %
☐ "On farm/ranch" market	.00 %
☐ "Off farm/ranch" retail stores/supermarkets that ***we own***	.00 %
☐ "Off farm/ranch" retail stores/supermarkets owned ***by others***	.00 %
☐ Internet and/or virtual market	.00 %
☐ Farmers' markets	.00 %
☐ "Off farm/ranch" non-store locations (e.g., roadside, gas station)	.00 %
☐ Direct sales to customers	.00 %
☐ Direct sales to resorts and restaurants	.00 %
☐ Other. Please specify:	.00 %
TOTAL	100%

8. **Are you currently a member of any business related associations?**

○ No	
○ Yes	**If yes, specify the type of business related associations/organizations. Please check all that apply.** ☐ Farm/ranch diversification related associations (e.g., farm tourism) ☐ Business associations (e.g., B&B, Christmas tree, maple syrup, sheep producers) ☐ Chamber of Commerce ☐ Economic Development Organization ☐ Tourism organization ☐ Other

9. **What methods did you utilize to market your products and services in 2004? Please check all that apply.**

☐ Web page
☐ Direct mail to current and potential customers
☐ Sales promotions (e.g., coupons, specials)
☐ Direct shipping of products
☐ Customer newsletters
☐ Listings in specialized directories (e.g., farm market directories, tourism directories)
☐ Customer loyalty clubs (e.g., wine club)
☐ Product subscriptions (e.g., wine subscriptions)
☐ Through an Association (e.g., Christmas trees, maple syrup, B&Bs)
☐ Ads in media (newspapers, radio, magazines, TV)
☐ Printed materials (e.g., brochure)
☐ Trade shows and special events (e.g., fairs)
☐ Special labeling (e.g., pasture fed, antibiotic free)
☐ Other. Please specify:

Section VIII
Characteristics of the Farm/Ranch Operator

1. **What is the age, gender, race/ethnicity and education of the farm/ranch operator (or senior partner)?**

Age	- Select Age -
Gender	○ Male ○ Female
Race/Ethnicity	- Select Race/Ethnicity -
Education	- Select Highest Level of Education - - Select Discipline -

2. **At which occupation did the operator (or senior partner) spend the majority (50 percent or more) of his/her work time in 2004?**

○ Farming or ranching occupation
○ A non-farming/ranching occupation

3. **Is the operator retired from a previous profession/job?**

○ Yes ○ No

4. **Did the operator (senior partner) *work off* the farm/ranch during 2004?**

○ No	
○ Yes	**How many days did the operator (or senior partner) work at least 4 hours per day off the farm/ranch in 2004?** - Select Number of Days -

5. **Does the farm/ranch operator (or senior partner) live on the farm/ranch?**

○ Yes ○ No (You will be skipped to question 7)

6. **What is the relationship to the operator, the age and gender of the operator's family members living on-farm? Do not include the operator.**

	Relationship to the Operator	Age	Gender
Person 1	- Select Relationship -	- Select Age -	○ Male ○ Female
Person 2	- Select Relationship -	- Select Age -	○ Male ○ Female
Person 3	- Select Relationship -	- Select Age -	○ Male ○ Female
Person 4	- Select Relationship -	- Select Age -	○ Male ○ Female
Person 5	- Select Relationship -	- Select Age -	○ Male ○ Female
Person 6	- Select Relationship -	- Select Age -	○ Male ○ Female

7. **Did the spouse or significant other of the operator (or senior partner) work in 2004 Please, check all that apply**

○ Do not have spouse or significant other	
○ No	
○ Yes	**Did he or she work on the farm?** ○ No ○ Yes. **If Yes, check the activities that he or she performed on the farm. (Check all that apply).** ☐ Farming/ranching activities ☐ Assisted with diversified activities (e.g., foods processing, farm tours)
	Did he or she work off the farm? ○ No ○ Yes. **If Yes, select the number of days that he or she worked at least 4 hours per day off the farm/ranch.** - Select Number of Days -

8. **In what year did the operator (or senior partner) begin operating the farm/ranch?**

☐ **(Insert only numbers. For example: 1963)**

9. **In what year did the operator (or senior partner) first diversify the farm/ranch?**

☐ **(Insert only numbers. For example: 1963)**

10. **Which of the following best represents the annual household income before taxes of the operator? (Include farm net income, wages, salaries, social security and retirement benefits).**

○ Less than $25,000	○ $75,000 - $99,999
○ $25,000 - $34,999	○ $100,000 - $149,999
○ $35,000 - $49,999	○ $150,000 - $199,999
○ $50,000 - $74,999	○ More than $200,000

End of Survey!

Thanks for your Participation!