



TEXAS DEPARTMENT OF AGRICULTURE
TODD STAPLES, COMMISSIONER

SPECIALTY CROP BLOCK GRANT PROGRAM

2009 FINAL REPORT

Grant # 12-25-B-0951

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Texas Department of Agriculture
Specialty Crop Block Grant Program
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EXECUTIVE SUMMARY

The purpose of the federal Specialty Crop Block Grant Program (SCBGP) is to solely enhance the competitiveness of specialty crops. Specialty crops are defined, as “fruits, vegetables, tree nuts, dried fruits, horticulture and nursery crops (including floriculture).”

The Texas Department of Agriculture (TDA) applied for the 2009 SCBGP funds with projects that enhanced five key areas: 1) food safety, 2) industry development, 3) marketing (domestically and internationally), 4) nutrition and 5) plant health. TDA’s efforts seek to ensure consumers are getting the highest quality produce and farmers/growers have the ability to protect the health of the specialty crop industry. Additionally, the agency focuses on efforts to increase consumption and consumer awareness of Texas-grown produce and plants. The completed educational, marketing and promotional activities assisted specialty crop growers in Texas by showcasing their products, increasing the value of their crops and enhancing their competitiveness in the marketplace.

Impact Statements

Through a competitive grant process, TDA selected projects that provided a strong benefit to specialty crops in Texas. The following is a summary of the projects funded, as well as the impact the project had on Texas specialty crops. In addition, a detailed report on each project has been provided.

Sub granted projects:

- The Texas State Florists’ Association developed a project to train high school agricultural education teachers and students in floriculture and expand the floral certification program in schools. This project has given high school students who may not seek a post-secondary education an opportunity for an alternative career path.
- The Sustainable Food Center (SFC) conducted an assessment of current and potential production capacities, customer interest and input, and best practices related to operations and marketing strategies for the Farm-To-Work program that increases sales of specialty crops for local farmers, and improves access to local food for area worksites. SFC successfully updated standard operating procedures and tools for: new worksite startup; received production capacity information from 8 new farmers and ongoing operations, and completed technical improvements to their website to allow ease of use by customers, farmers and coordinators.
- The Texas Watermelon Association developed a project to conduct in-store demonstrations and increase both consumer awareness and sales of Texas watermelons through a media campaign. The in-store demonstrations indicated that sales of Texas watermelons increased 390 percent during the promotional period. These marketing events benefited more than 200 watermelon producers in Texas.
- The Texas Produce Association hosted a seminar to educate Texas growers and shippers of fresh produce about food safety, plant health and marketing strategies.

More than 300 growers and shippers attended the seminar. Of those who attended and participated in the post seminar survey, 39-57 percent indicated they gained knowledge from each of the sessions and 30-60 percent will adopt the practices learned in the sessions.

- Texas Tech University, in conjunction with the Texas Olive Oil Council, developed a project to identify best management practices in irrigation/plant physiology; effect of temperature/humidity on bloom and fruit set; nutrient management; and weed control in orchards for olive production in Texas. Initial findings indicate irrigation may likely be reduced and tree response will not be adversely affected; however, additional research will enhance comparisons between irrigation regimes, and new data collected will provide greater insight.
- TexaSweat aimed to increase awareness and consumption of Texas Rio Star Grapefruit by conducting mass media outreach via television, a media tour and a series of in-store sampling demonstrations. The media outreach was extremely successful at increasing awareness and consumption of Texas Rio Star Grapefruit in 10 cities throughout the nation. This project reached 9.1 million people, more than doubling the goal of 4 million impressions. Sampling was done in two chains in four cities (Raley's in Sacramento and HEB in San Antonio, Dallas and Houston), and their combined store sales increased by 499 percent, which greatly exceeded the goal.
- Texas AgriLife Extension conducted a market analysis that assessed consumer acceptance and identified potential markets for fresh and processed pomegranate grown in Texas. Results indicate current retail prices may be above the average consumers' willingness to pay unless additional information on taste (product samples) and preparation is provided.
- Texas AgriLife Extension developed a curriculum on food safety for producers, farm managers, packers and shippers to be trained in Good Agricultural Practices and Good Handling Practices. They also conducted workshops that qualify participants for a cost-share fund toward one audit fee by a certified third party company. A total of 65 producers attended at least one of the four workshops. Through a pre- and post-test, on average, 95 percent of the producers increased their knowledge about GAP practices.
- The Texas Pecan Board promoted and raised awareness of the consumer health benefits of eating pecans by partnering with the Texas Co-op Power magazine to sponsor an annual Holiday Recipe Contest along with a redesigned and upgraded website. The Holiday Recipe Contest received a total of 2,000 recipe submissions, and visits to the website increased from 201 in July 2010 to 1055 in November 2010.
- The Texas Lavender Association developed and implemented educational programs to support current growers and potential lavender growers. The association also increased awareness of the Texas lavender industry by providing additional conference topics, speakers, bi-annual workshops and marketing materials to promote

the lavender industry. Conference topics continuing to appeal to participants include culinary use of lavender and agri-related businesses such as agri-tourism.

- Texas A&M University at Kingsville developed a project that would adopt an aggressive eradication effort in the Diaprepes quarantined zones that combined the destruction of declining citrus trees and the control of all development stages of the pest. They also conducted intensive surveys to allow for early detection of the pest in other areas of the Lower Rio Grande Valley. Comparing numbers of Diaprepes caught immediately before the onset project, i.e. January-February 2010 to those recovered from Tedder traps at the end (January-February 2011), a 92-95 percent decrease was observed in Diaprepes population densities.
- The Texas Nursery and Landscape Association worked to assure that the best product possible goes from the grower to the consumer by educating all who are in the distribution cycle of good plant care, essential marketing techniques and effective placements for the plant at the end-consumers destination. Of the responding Business Segment Trainings, 100 percent of attendees rated the trainings as excellent or very good.
- Texas AgriLife Extension established methods to enhance effectiveness of e-beam treatment in order to address the effectiveness of irradiation protocols in reducing contamination risk and improving consumer food safety of fresh leafy vegetables. This project is phase 1 of a multi-year project. Results will translate into any type of leafy vegetable such as lettuce, cilantro and others, as well as other pathogens including Salmonella and Listeria. Currently there are no leafy green producers using irradiation to inactivate pathogens. It is anticipated by the end of the third year of this project, Texas leafy green producers will have the knowledge and training required to improve the safety of their produce using a combination of methods including ozone, packaging and irradiation.
- The Turfgrass Producers of Texas (TPT) worked with Texas AgriLife Extension personnel to develop and distribute four publications on turfgrass selection, installation, maintenance and weed control. In addition, a billboard campaign was created to help drive consumers to TPT's website to find the publication. On average, website hits increased 36.1 percent between 2009 and 2010 after the launch of the billboards.
- The Texas Certified Farmers Market Corporation developed a marketing project to solely promote public awareness of fresh fruits and vegetables sold at local member markets through the use of local and area media advertising. The farmers markets using the grant funding overwhelmingly reported increased sales in their market locations. Specific results were reported, which indicated that sales had increased by 15-23 percent from their 2010 markets and that there was also a noticeable increase in attendance at the markets.

- The USDA/NASS Texas Field Office (TASS) and TDA developed a project to improve the coverage of specialty crop producers in Texas for the upcoming 2012 Census of Agriculture. A higher level of coverage on the 2012 Census Mail List (CML) would enhance an accurate accounting of specialty crop production in the state. This project yielded over 400 new producers that were added to the CML.
- Texas Citrus Mutual developed a project that used outreach as well as a mesh ground cover to reduce the number of Diaprepes root weevil. This project supplemented the Texas A&M Kingsville project, by covering more yards with ground cover, thus helping break the life cycle of the weevil. The goal for this project was to install ground cover in at least 15 acres of commercial and residential citrus groves in McAllen and Bayview, Texas, to reduce the diaprepes population and improve the overall health of citrus groves. In March 2012, approximately 11 acres of citrus have been installed with the ground cover fabric in the Bayview area with growers reporting reduced weevil catches and significantly improved tree health.
- Texas AgriLife Extension worked to identify superior Pierce's Disease (PD) resistant grape varieties and rootstocks to complement PD resistant grapevines and grape acreage in Texas can economically increase. First-year, fruit-bearing plots included 32 tolerant/resistant varieties and selections were evaluated. Vines with unusually high quality, productivity and fungal disease tolerance were identified. Another rootstock trial location was successfully prepared, constructed and planted during this grant period.
- The Texas Nursery & Landscape Education & Research Foundation developed a project to educate the end user on the conservation of water through simple tips and tools by supporting the messages of the Texas Water Smart Coalition. One of the goals of this grant project was to increase consumer knowledge and awareness of water smart principles, and decrease the amount of water used. This specific campaign targeted the Dallas, Texas area. Around 25 percent of Dallas homeowners reported using less water in the summer of 2012 vs. 2011. Of those using less water, 86 percent have reported a decrease of 10 percent or more (approximately 23 percent of homeowners surveyed).

Texas Department of Agriculture projects

- TDA's Marketing and International Trade division created and conducted Market to Menu events to showcase fresh produce available at farmers markets for use in Texas restaurants. TDA also created informational literature and combined media/advertising to increase consumer awareness and sales of Texas specialty crops. Mixed results were received from the various activities. Length and awareness of promotional activities were contributing factors to the varied response levels. Approximately 300 retail nurseries, 100 produce growers and over 75,000 consumers were impacted by these activities.

- TDA's Marketing and International Trade division conducted several educational programs during the grant period to increase consumer awareness and consumption of Texas specialty crops and horticulture plants. Through activities such as regional chef tours, in-store demonstrations, school food service trainings and culinary workshops, TDA staff was able to create links between producers and a variety of end users from traditional grocery store consumers to chefs to school districts and their student populations.

- The Texas Department of Agriculture (TDA) checks vehicles carrying regulated articles for compliance with the state's plant pest quarantine regulations. It was hypothesized that as vehicle operators become "forewarned" about operational road stations, they opted for alternate routes to avoid inspection. TDA positioned inspectors in two locations on alternative routes around the road station in Anahuac, Texas. Results showed that truck traffic, including those carrying regulated articles, did not increase significantly at alternate routes when the road station was operational.

PROJECT 1: BUILDING TOMORROW'S WORKFORCE: HIGH SCHOOL FLORAL DESIGN CERTIFICATION AND TEXAS HIGH SCHOOL AGRICULTURE TEACHERS TRAINING IN FLORAL DESIGN

Name of Organization: Texas State Florists' Association

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Type of Report: Final

Date Submitted: December 2011

Project Summary

The Floral Industry continues to need skilled floral designers. The Texas State Florists' Association (TSFA) has been training high school agriculture teachers with the intention of their students testing to become High School Floral Design Certified. The purpose of this project is to increase sales of Texas floriculture products by preparing youth for careers in floriculture. The project will expand the floral certification program in schools, which will allow school districts to provide more value to a student's diploma, and will help more students follow a career path in floriculture.

Project Approach

Project - Instruct teachers at the annual AgScience Teachers Conference: The Texas Certified Florist Courses (training course) were held in conjunction with the Vocational Agriculture Teachers Association Conference in the summer of 2010. After taking the training courses, teachers became eligible to apply for a scholarship for the Texas Master Florist Certification (TMF) program. TSFA received twenty eight (28) applications from agriculture teachers, and 10 scholarships were awarded. All 10 teachers who received the scholarship passed the courses and final exam and have been awarded the prestigious Texas Master Florists (TMF) designation. The 10 teachers represent an average of 150 high school students who benefited from the certification.

Project - Set up floral educational sessions in the high schools:

TSFA developed the floral education "Guest Lecturer" program for the participating high schools. Applications were made available to more than 500 agriculture high school teachers during the Vocational Agriculture Teachers Association of Texas (VATAT) Conference July 2010.

TMF Guest Lecturers program presented the following design/hands-on class

October 6, 2010 Caddo Mills High School, Caddo Mills, Texas - 35 floral design students.

October 26, 2010 Klein Oak High School, Spring, Texas. - 90 floral design students.

January 11, 2011 Klein Forest High School, Spring, Texas. - 40 floral design students.

Project - Develop a "Careers in Floriculture" website and brochure:

TSFA developed a "Careers in Floriculture" brochure and an information section on TSFA's website outlining available careers. This information included career choices, a sampling of typical job titles and the education and training needed to succeed in the following key industry segments:

- Retail Florist
- Floral Wholesale
- Research
- Commercial Grower
- Other Segments

The brochure will be a valuable asset during career days at high school for teachers and parents.

Project - Teacher/Student Floral Certification:

By preparing Texas youth for careers in floriculture, this project expanded the floral certification program in schools, allowing school districts to provide more value to a student's diploma. A Floral Industry Careers Video has been created to show students the careers available within the floral industry to include floral design instructors, breeders, garden centers and growers. TSFA will be placing video resources on their website for both teachers and students to gain increased floral design knowledge.

A Professional Flower Training video series has been developed to distribute to high school teachers to outline the following training segments:

Plant and Flower Care & Handling, Flowers and Plant descriptions
 TSFA Floral High School Design Certification
 Designing Tools
 Flowers to Wear (Corsages and Boutonniere)
 Hand Tied & Spiral Bouquets
 Basic Flower Arranging
 Sympathy Designs
 Event Planning (Banquets, Weddings, Party, etc).

The videos will be made available to all high school floral design teachers who offer their students the High School Floral Design Certification. Currently 113 high schools received a copy of the video reaching more than 1,695 high school students in the 2011-2012 school year.

Project - Master Florist Certification Courses:

Courses were held from June 3-5, 2010 at Texas A&M University in College Station, Texas. Although several agriculture teachers attended the event, the AgScience Conference provided TSFA dedicated time slots to offer these courses in conjunction with the annual AgScience Teachers conference.

Project - Instruction of High School Agriculture Teachers in Floral Design:

In 2010, the Texas Education Agency recognized Floral Design and the Principles & Elements of Floral Design as a Fine Arts Credit. The State Board for Educator Certification reviewed the qualifications a teacher must have to teach Floral Design as an element in the Fine Arts. A Texas Master Florists Certification is being considered as one requirement (there will be other avenues like any all-level-art certificate, any agriculture certificate, etc).

The Texas Certified Florist Courses were again offered to high school floral design teachers in 2011 at Texas A&M University in their floral design lab. These classes were held on June 9-11, 2011. Nine high school floral design teachers received scholarships for the Texas Master Florist Certification. All nine teachers receiving the scholarship passed the courses and final exam and have been awarded the prestigious Texas Master Florists (TMF) designation. Nine teachers represent an average of 135 high school students that benefited from the teachers certification.

Goals and Outcomes Achieved

TSFA felt that they could double the schools and students receiving floral certifications within the next three years from 160 to 320 students. This was successfully accomplished in 2011 with the testing of 423 high school students in floral design certification.

In addition, one participating high school's floral design certified students assisted a Texas Master Florist presenter at a design show program during the State Fair of Texas in the Food & Fiber Pavilion. Click the link to read the press release about the event.

http://www.agr.state.tx.us/agr/media/media_render/0,1460,1848_17053_40995_0,00.html)

Project - Master Florist Certification Courses:

The Texas Master Florists Program has been embraced by the Texas high school agriculture teachers. The high school teachers are in need of floral design training and Continuing Professional Education (CPE) hours to maintain the Fine Arts for high school students. By making funds available for teachers to attend the Texas Master Florist program, TSFA felt a minimum of ten additional teachers annually would participate in this Master Florist Designation. In 2011, nine teachers participated in this program.

TSFA expected to increase the number of high school teachers participating in the classes offered at the TSFA annual conference from 110 to 165. This was measured by class attendance at the conference. The 2011 classes had a total of 180 teachers attending the TSFA design classes at the Agriculture Teachers Conference.

Beneficiaries

The Texas State Florists' Association certified nine teachers in floral design in 2010 and 14 teachers in floral design in 2011. By having the Floral Design Videos as a teaching aid, teachers will have additional visual elements and follow up testing tools to teach the principles of design elements.

The school districts in Texas are able to offer a Fine Arts Credit to the high school students enrolled in floral design beginning with the 2011-2012 school year. TSFA expects over fifty high school in Texas will offer the Fine Arts Credit to high school floral design students in the 2011-2012 year.

The retail florist will gain a qualified workforce because of students earning their High School Floral Design Certification. There were 367 students (54 high schools) that tested for the High School Floral Design Certification in 2010 and 423 students (59 high schools) that

tested for the High School Floral Design Certification in 2011. Students have a greater opportunity to learn about additional career goals and expand their skills that make them more attractive to potential employers. This opportunity benefits those not attending higher education opportunities.

The growers and wholesalers in Texas have seen an increase in plants and floral product sales because of the interest in Texas high schools offering floral design classes. Each of the high schools that offer floral design education will purchase fresh flowers and plants from Texas plant growers and wholesalers. TSFA estimates that there are 300 high school floral design teachers and approximately 250 high schools based on the numbers attending floral design programs.

Lessons Learned

There was more interest in the Texas Master Florist Program than expected. Currently, the program is offered annually. The Texas State Florists' Association is reviewing the possibility of offering the Texas Master Florist Program twice each year. TSFA feels that all goals were achieved or exceeded in design training.

Teachers and students need a quick, effective method of hands-on training. TSFA found that offering floral design experts as guest lecturers was not effective due to time constraints in the classroom and on the floral design expert. Clearly understanding the need, TSFA developed a Professional Flower Training Video series to answer the needs of hands on design training in the classroom. As the High School Floral Design Certification continues to grow across the state, TSFA will need to offer additional testing locations in the West Texas area.

Additional Information

Information about all the educational programs TSFA offers can be found online at www.tsfa.org

Link to student certification design program in article "The Bloomin' Texan" pages 9 and 10. Click to read the article about the student:

http://www.tsfa.org/btonline/bt_201012.pdf

PROJECT 2: FARM-TO-WORK: ASSESSING FARM-DIRECT MARKETING OPPORTUNITIES THROUGH WORKSITE WELLNESS PROGRAMS

Name of Organization: Sustainable Food Center

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Type of Report: Final

Date Submitted: December 2010

Project Summary

The Sustainable Food Center developed Farm-to-Work (FTW) with the Texas Department of State Health Services to increase marketing opportunities for farmers and improve access to local produce for employees at partner-worksites. Through FTW, employees at partner-worksites order and pay online for local produce delivered weekly to their worksites by area farmers. Weekly advance ordering and payment allows farmers to eliminate much of the risk associated with waste from over-harvesting or lost sales from under-harvesting. In 2008, sales for the 10 participating farmers reached \$172,000 and \$175,600 in 2009. Successful expansion of the project to include more farmers and worksites, and to increase sales at existing worksites, required in-depth assessment of operations, outreach strategies, farmer recruitment and training, and consumer and producer market potential.

Project Approach

The primary goal of the project was to gather and analyze current operations and participant evaluative information. Activities included reviewing and updating standard operating procedures for ongoing operations and new-worksite startup, conducting in-depth evaluations with worksite partners and all participating farmers through surveys, interviews and focus groups, reviewing the Farm to Work Internet-based electronic purchasing and administrative system and assessing interest levels and production capacities of currently participating farmers and new farmers.

SFC staff has updated the standard operating procedures for current participating organizations and for starting up new participant worksites. SFC worked with the Texas Department of State Health Services and WebChronic Consulting, LLC to document startup procedures for providing technical assistance to new worksites, as well as internal procedures for managing ongoing operations. These processes were applied to the start-up of three new participating worksites at the start of the 2010 spring/summer season.

A variety of assessment tools were used in the evaluation process. The results are described in detail in the next section. SFC staff provided support to a professional evaluator who designed and administered surveys for worksite coordinators. Coordinators assist with program outreach and oversight at each partner worksites. Ten worksite coordinators responded to the survey with in-depth feedback on logistics, product quality, scheduling, and internet-based interfaces. Input from the surveys was analyzed and used to design the guide for a follow-up coordinator focus group session, at which five worksites were represented.

Responses from the coordinator focus group helped prioritize improvements to the program and were useful in developing the customer survey.

SFC's evaluator designed a web-based customer survey, which was distributed through email and on worksite wellness web and intranet pages with technical support from web developer WebChronic Consulting, LLC and with assistance of the worksite coordinators. The survey reached frequent Farm-to-Work shoppers, occasional and infrequent users, and employees who have never purchased produce through the program. Based on the feedback from the surveys, the evaluator developed focus group guides to capture more detailed information about specific themes with both frequent and infrequent users. Two sets of two focus groups – two for frequent users and two for infrequent users – with a total of 27 participants were held. Topics included product value and variety, availability of recipes and other information, frequent customer rewards and new customer incentives. SFC is using a compilation of the information gathered to plan for the spring 2011 re-launch of Farm-to-Work and to provide farmers with insight into customer priorities to help them participate more effectively. SFC also used this information to make changes to the online customer interface, including the ordering webpage and recipes, farmer information, and vegetable information pages.

SFC had planned to conduct farmer focus groups, as well, but shifted that strategy because farmers' schedules were difficult to coordinate. Instead, SFC staff visited with farmers individually to get their perspective on the project, and evaluate necessary changes. Farmers were generally satisfied with their participation in Farm-to-Work and the program design. All were willing to participate in customer retention and outreach strategies, to work with other farmers to increase the variety of produce in the baskets, and to make other changes suggested by customers and coordinators in the focus groups and surveys. To date, SFC has gathered interest information from eight farmers, down from the target of ten, although this should be adequate to meet interest at worksites that are currently on the waiting list.

Goals and Outcomes Achieved

This project was designed as a two-phase effort, lasting two years. The goals and outcomes of this first phase of the project primarily focused on the process of gaining the information necessary to make changes to Farm-to-Work, with phase two occurring in 2011 that will result in increased sales for farmers and greater participation among worksites. The second-phase goals for the project include expanding to six new participating farmers and 12 new worksites to increase to a total of 22 worksites. Project staff estimated the new sites would bring in a total of \$150,000 in new sales and a 15 percent increase in sales at existing sites. Phase two is being partially funded with support from Farm Aid; however SFC will share this data next year.

Successful implementation of the work plan in year-one has resulted in successfully meeting the following objectives:

- Updated standard operating procedures and tools for new-worksite startup and ongoing operations
- Technical improvements to the website to allow ease of use by customers, farmers, and coordinators

- Customer evaluation data and operation evaluations gathered from at least six partner worksites
- Evaluation data gathered from all participating farmers
- Production capacity information provided by eight new farmers

Beneficiaries

Ten currently participating farmers and at least eight new farmers will benefit from the improvements to the Farm-to-Work program. Estimated impact will be a 15 percent increase in sales for currently participating farmers and an additional \$150,000 in sales for new farmers during the second-phase of the project. Other beneficiaries are the customers at the worksites, who will enjoy increased access to fresh, local fruits and vegetables.

Lessons Learned

The complete report from the customer survey, customer focus groups, and coordinator survey/focus groups is attached. This document outlines all lessons learned that have led to the improvements to the project for phase-two.

Additional Information

Farm-to-Work Customer Satisfaction Survey

Results Report

The purpose of this report is to summarize the results of the Customer Satisfaction Survey issued in the summer of 2010 to all employees at the worksites that participate in the Farm-to-Work Program. The survey gathered information from employees who purchased the weekly produce delivery at various participation frequencies and those who may have never participated. In this way, the results will help to not only serve and respond better to existing customers but also to recruit and retain new customers. The survey was designed by Sustainable Food Center staff and distributed using the Survey Monkey program. Distribution routes included worksite coordinators providing a link to the survey on various interoffice emails so they could be completed at work; inserting the link into emailed order reminders, order receipts, and pick-up reminders; and, as a link on each agencies website. There were 49 total questions, some multiple-choice and some open-ended response format. The questions were formulated to best reflect the areas of interest: product (quality, quantity, and variety), process (ordering and delivery schedule), outreach and promotion (incentives, activities), information (contents of box, recipes), website usefulness, and behavior of employees regarding such things as vegetable consumption and cooking. The questions also reflect input gathered from individual interviews and a focus group with the worksite coordinators. There were a total of 707 responses to the survey, throughout all the worksites. The results provide an accurate snapshot of the current program as well as indicate the changes that can be made to improve the Farm-to-Work program.

In analyzing the data, results from the three largest response groups would appear to indicate the greatest level of reliability: Department of State Health Services Main Campus (DSHS), 376 responses, Texas Education Agency (TEA), 141 responses, and Texas Water Development Board (TWDB), 44 responses. The trends recognized in these groups are in

line with the responses from the other worksites with smaller response pools. In addition, throughout this report, the distinction is made between the groups who indicated their participation frequency to be high or low, as indicated by Question 1. Frequent users, as this report will refer to them, responded as either “weekly,” “2-3 times per month,” or “monthly.” The low-use respondents answered Question 1 as either “less than 6 times per year” or “never.” Results were cross-tabulated based upon this major distinction. Although the respondents' demographic information might point to few direct correlations, there were some distinct indicators that marketing could be improved to be more inclusive of men, people of color and those who earn less than \$50,000 a year. Responses to Question 3, among the DSHS group, indicate that 76 percent of frequent customers are women, 80 percent are white, and 76 percent earn more than \$50,000 a year.

Product. The survey responses indicated that customers were generally pleased with the product, although they value the quality of the produce over having a large quantity. In fact, both subsets of respondents (frequent and non-frequent customers) indicated that the amount of produce tends to be too large. Question 13 was used as an indicator of this finding. Among non-frequent DSHS customers, 43 percent said the amount of food was “just right,” while 39 percent said that it was “way too much,” or “slightly too much,” and only 21 percent said it was “not quite enough,” or “not nearly enough.” 62.5 percent of frequent customers from the TWDB indicated that there was too much, and 51 percent of infrequent customers said it was too much, with only 21 percent saying it was “just right.” In fact, of respondents at DSHS, 57 percent of non-frequent users and 42 percent of regular users cited “not being able to use all the produce in time” as one of their top four reasons for not ordering regularly (Question 26). Relatedly, 69 percent of non-frequent users there said that they would be more likely to order if the box were cheaper, and given the practicalities for farmers, the only way to do this and not devalue their product is to have a smaller, less expensive box. This would also help to encourage great participation among people in lower income brackets.

Respondents also indicated their desire for greater variety. Their written comments frequently pointed to their desire to choose their specific produce or trade it in for other items. They address their specific produce preferences in the second section of the survey. In terms of solutions, offering a smaller box would not only meet the criteria of having less food, but it would enable farmers to create more variety from one week to the next rather than having to bulk the boxes with the same produce each week. Moreover, farmers can be encouraged to grow a greater variety of seasonal produce so that they can offer at least one new product a week. Another option is for primary farmers to partner with other farmers to expand the variety, with the caveat that all products must be locally grown and the farm identified on the basket contents list.

Process. Overall, respondents were pleased with the process; however, they did indicate wanting a different drop-off time. Question 16 addressed this issue. Of the DSHS employees, 47 percent of frequent customers and 45 percent of non-frequent customers, preferred an end-of-the-day drop-off time. Respondents from the other worksites prefer the lunchtime drop-off, so this may point to a site-specific change that could be made. However, the data suggest that people were pleased or indifferent with the delivery schedule (Question 28). Among frequent buyers, 40 percent were satisfied, and among those who did not participate regularly, 45 percent were satisfied.

Outreach and Promotion. The results of the survey indicate that customers would respond favorably to promotions that reward frequent shoppers. In their response to Question 14, 40 percent of DSHS frequent participants chose “frequent shopper incentives” as their preferred means of promotion, while 33 percent chose “giveaways,” and 16 percent chose “recipe and cooking contests.” At the TWDB, 75 percent of frequent shoppers, and 38 percent of all respondents, which was the largest percentage of responses made, preferred frequent shopper incentives. Giveaways also seem to be a very popular means of promotion. 32 percent of frequent customers at TEA preferred “giveaways,” as did 37 percent of non-frequent users. This data suggests that a giveaway (bag, apron, etc.) may be useful for attracting new customers, while some sort of “Buy 9 boxes get your 10th one free” promotion would work well for retaining customers. When asked whether the program was well promoted (Question 47), respondents overwhelmingly said “yes,” so it would seem that the customer base is aware of the program, but they need the incentives to motivate them to buy.

Information. From the survey data, respondents would like to see more frequent updates of the contents of the box. Several written comments indicated that the list was not updated regularly, nor was it an accurate reflection of what was in the box. For example, one comment said that if the list had on it potatoes, and there were only three potatoes in the box, the list was inaccurate. Customer satisfaction will increase if shoppers know what to expect each week. Customers also wanted to know more about the growing practices of the farmer, but on the whole, not many of them looked at or were even aware of the “Meet the Farmer” section of the website (Question 33). At TEA, 62 percent of frequent buyers and 47 percent of non-frequent buyers indicated that they only look at the farmer profile “once in a while.” More importantly, 30 percent of infrequent buyers said that they did not even know it existed. Survey results as well as data collected from worksite coordinators and farmers suggest that there is a lack of education about the program: how it works, the contents of the website, and maybe most importantly, the details about the farmer who is growing their produce. Making an emotional connection—a connection rooted in understanding—not only to the Farm-to-Work program but also to the farmer would be an important step in retaining existing customers and gaining new ones.

Website. Besides being made more aware of the websites features, customers' attitude about the website appears positive. One of the most important findings was that customers do not prefer to have their credit card account information automatically entered when they log on. Responses to question #36 showed that 68 percent of frequent buyers at DSHS did not want this, 62 percent of those at TEA agreed along with 75 percent of TWDB respondents. There is also a desire for more recipe sharing and picture of food and recipes (Question 39). People, however, are not interested in Twitter or other instant message updates.

Behavior Change. Participation in the program appears to be achieving some of the health and wellness related goals of the program. According to data from Question 38, 78 percent of the TEA frequent buyer respondents indicated that they are eating more fruits and vegetables as a result of the program. Among the less frequent buyers, 60 percent are not cooking more at home (Question 44), which would indicate that more efforts could be made to promote recipe-sharing in order to boost program retention.

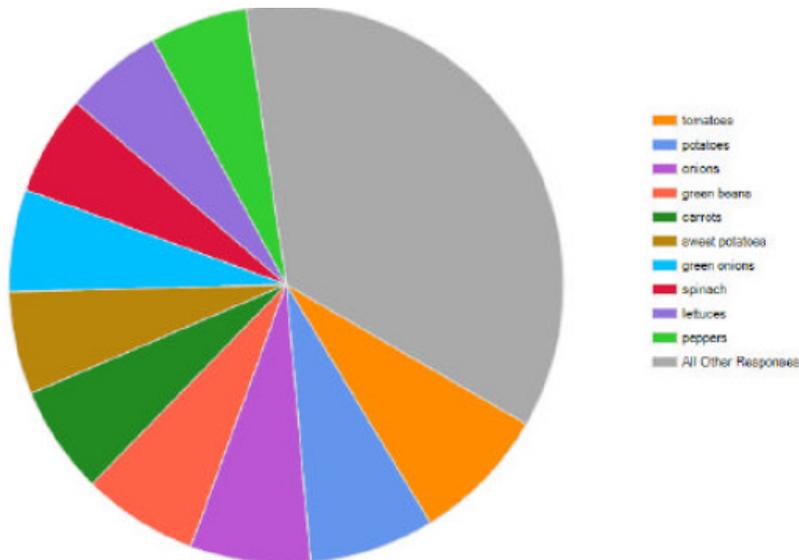
In conclusion, the Customer Satisfaction survey does much to elucidate some of the major issues facing the Farm-to-Work program, namely providing greater education and

more incentives to customers while allowing them to purchase produce in smaller quantities and working with farmers to consistently ensure variety and quality. This information has been shared and discussed with farmers to obtain their input on these issues. The most success will come from a substantial sense of communication and partnership between the farmer and the worksite. SFC can help to facilitate that by improving the structure and functions of the website as well as providing farmers and customers with the necessary information about the program and their roles and responsibilities.

Sustainable Food Center Farm to Work Customer Survey Results Appendix

Favorite Vegetables, by percent of total responses*

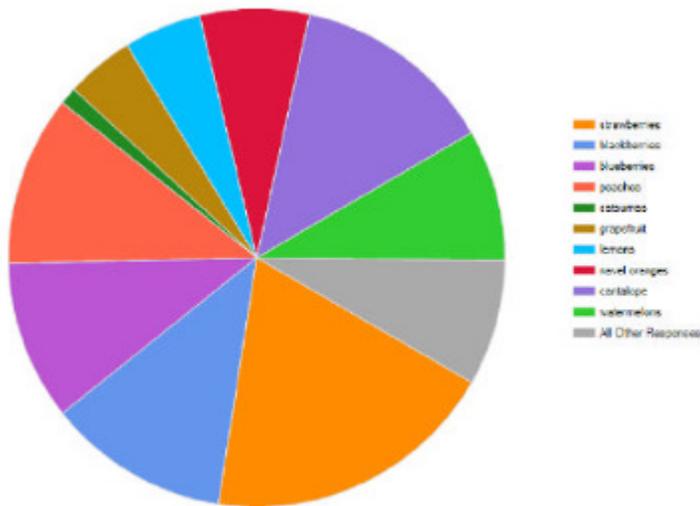
Answer Options	Response Percent		
Tomatoes	81.1 percent	Beets	29.3 percent
Potatoes	74.4 percent	Kale	25.2 percent
Onions	71.3 percent	Collard Greens	24.0 percent
Green beans	68.8 percent	Turnips	19.6 percent
Carrots	64.0 percent	Swiss Chard	18.3 percent
Sweet potatoes	60.6 percent	Mustard Greens	17.0 percent
Green onions	60.6 percent	Pea Shoots	12.3 percent
Spinach	59.0 percent	Kohlrabi	12.0 percent
Lettuces	58.0 percent	Sunflower Sprouts	7.6 percent
Peppers	57.7 percent	Dandelion Greens	4.4 percent
Garlic	57.1 percent		
Cabbage	42.0 percent		
Jalapenos	39.1 percent		
Eggplant	33.8 percent		



* not intended to be an exhaustive list, but provides an overview of some of the most popular vegetables as well as some that are less familiar

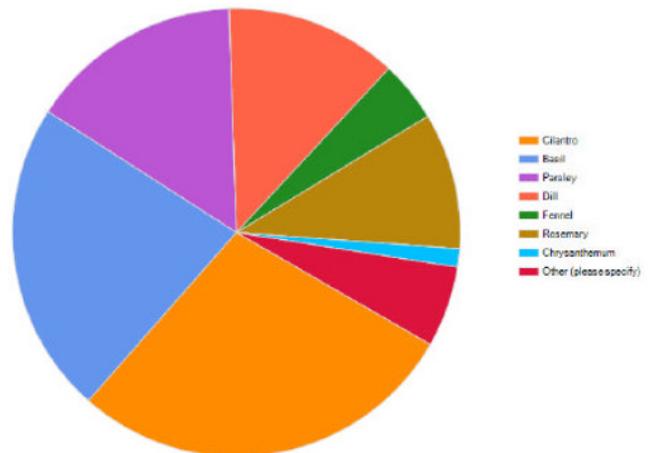
Favorite fruits, by percent of total responses

Answer Options	Response Percent	Answer Options	Response Percent
Strawberries	75.6 percent	Navel oranges	28.2 percent
Cantaloupe	52.2 percent	Lemons	19.9 percent
Blackberries	46.7 percent	Grapefruit	17.5 percent
Peaches	43.6 percent	Other (please specify)	17.5 percent
Blueberries	40.9 percent	Figs	14.8 percent
Watermelons	33.7 percent	Satsumas	4.5 percent



Favorite herbs, by percent of total responses

Answer Options	Response Percent
Cilantro	69.8 percent
Basil	56.0 percent
Parsley	38.2 percent
Dill	30.9 percent
Fennel	10.9 percent
Rosemary	24.4 percent
Chrysanthemum	3.3 percent
Other (please specify)	14.5 percent



PROJECT 3: TEXAS WATERMELON TV CAMPAIGN

Name of Organization: Texas Watermelon Association

Project Manager: Mr. Ward Thomas

Email: ward@majesticproduce.com

Type of Report: Final

Date Submitted: December 2010

Project Summary

Many Texas retailers are bringing in watermelons from other states during peak Texas production seasons. Consumers do not know the difference between a Texas watermelon and one from out of state. The purpose of the TV campaign was to increase consumer awareness and knowledge of Texas watermelons and most importantly increase sales of Texas watermelons. The TV campaign was conducted in partnership with the Texas Department of Agriculture (TDA) and ran throughout the entire Texas growing season from May – September.

Project Approach

The Texas Watermelon Association (TWA) contracted with Chef Michael Flores to conduct the TV campaign. The TWA produced a total of 17 prerecorded commercials and advertising materials. In addition to the production, the TWA worked with Chef Michael to purchase airtime for eighteen commercials that ran in Austin, Dallas, Houston, San Antonio and the Rio Grande Valley. TWA was able to conduct 10 live appearances in Houston, Austin and San Antonio on Lifestyle and news shows such as Great Day Houston on Houston's CBS affiliate, Good Day Austin on the FOX affiliate, FOX News First in San Antonio, and Austin News Today on Austin's NBC affiliate. In addition to the scheduled TV promotions Chef Michael was interviewed on radio stations, newspapers and magazines, culinary websites and blogs. The TWA partnership with Chef Michael was featured on the cover of *The Packer*. TWA and Chef Michael partnered with the Texas Department of Agriculture (TDA) to create, print and ship the recipes to retail outlets in Texas prior to each of the airtime dates.

Goals and Outcomes Achieved

The goal of this campaign was to increase the awareness of Texas watermelons and increase sales of Texas watermelons. Typical sales of watermelon during in store demonstrations increased an average of 120 percent. With the addition of the TV marketing campaign, TWA expected to see an increase of sales of 200 percent. TWA partnered with TDA to conduct 150 demonstrations at United Grocery Stores, HEB stores, Central Market, Whole Foods, Green Fields Market, Randall's, Safeway and farmers markets. These demonstrations were conducted during the same week of the TV campaign. The TV commercials instructed viewers to visit their local grocery store to purchase a watermelon with the GO TEXAN sticker and pick up a recipe. Prior to the demonstrations TDA delivered recipe cards to retailers and worked with growers and shippers to label watermelons with the GO TEXAN produce stickers. As a requirement for participation in the promotion, retailers monitored sales of the watermelons and compared them to the previous week's sales and sales in previous years. The average increase in sales during the weeks of the TV campaign and watermelon promotion campaign was 390 percent.

Beneficiaries

Sales of Texas watermelons increased 390 percent during the promotional period. To obtain these figures TWA worked with TDA, retailers and growers to supply sales of the watermelons prior to the promotion and sales results during and after the promotion. One grower, Jody Wiggins from Caldwell, Texas said, “It seems we have not had enough all season. The TV campaign has increased demand for Texas fruit in Texas. We cannot keep enough fruit in the stores. Mark this one as a success!” These marketing events benefited over 200 watermelon producers in Texas. The overall watermelon season did have its ups and downs. TWA had to deal with heavy rains during the early harvest, which delayed the crop and made it difficult to get watermelons in the stores for the earlier promotions. By the end of the summer, the opposite was taking place, excellent weather and increases in production caused an excess supply of watermelons, which resulted in many fields not being harvested due to oversupply and lower cost to growers.

TWA continues to partner with TDA to develop and participate in marketing campaigns. TWA is participating in the Texas Department of Agriculture’s statewide Restaurant Round-Up program to maintain consumer interest and increase sales of Texas watermelon beyond the scope of the 2009 Specialty Crop Block Grant. In order to build on current success, the TWA has been awarded Specialty Crop Funds for 2010 to develop a complex marketing program including additional TV promotions.

Lessons Learned

Even though the campaign was a success, there is room for improvement. The TV campaign directed consumers to retail stores to pick up a watermelon recipe and to look for the GO TEXAN produce sticker. Due to budget issues, TDA was not able to produce enough stickers to supply all growers with stickers. TWA is working with watermelon producers to increase the development of these stickers at the grower level. The cost of producing the recipe cards was also higher than anticipated, which meant not all stores received recipe cards.

Additional Information

View video promotions here: <http://www.youtube.com/user/TexasWatermelons>

PROJECT 4: 2010 TRAINING SEMINAR

Name of Organization: Texas Produce Association
Project Manager: Nicole Southwell, (956) 581-8632
Email: nicolesouthwell@msn.com
Type of Report: Final
Date Submitted: December 2011

Project Summary

The Texas Produce Association (TPA) hosted a seminar designed to educate Texas growers and shippers of fresh produce about food safety, plant health and marketing strategies. The Texas produce industry desired direction and guidance on these important issues and needed the most up-to-date information available.

The training seminar was held August 11-13, 2010, at the annual Texas Produce Convention on South Padre Island, Texas. Having the seminar during this convention gave TPA a captive audience of growers and shippers and guaranteed attendance.

Project Approach

During January – March 2010 TPA began to line up speakers and graphic design for the marketing side of the 2010 Training Seminar. The final speaker lineup included:

Produce Safety Net: The Future is NOW

Food Safety: Laws & Regulations - *David Gombas, United Fresh Produce Association*

Interface with Food Safety - *Dan'l Mackey Almy – DMA Solutions*

The Status of Traceability - *Dan Vache – United Fresh Produce Association*

The Politics of Pesticides – *Jeff Case, CropLife America*

Safe Food: Washington Update

Dr. Michelle Smith, Senior Policy Analyst for the FDA

Health System Reform: What it Means?

Dr. Cathleen Enright, Western Growers Association

Dolores Briones, Texas Health Institute

Once the speakers were confirmed, TPA ensured attendance through mass mail distributions and email promotions. TPA also contracted Marco Palma with Texas A&M University to conduct a pre/post seminar survey of attendees.

Goals and Outcomes Achieved

The primary purpose of this project was to educate Texas growers and shippers on producing and marketing the best produce. TPA was successful, due in part to the level of speakers TPA was able to provide.

TPA expected a minimum of 250 growers and shippers in the audience and had over 300. For those unable to attend, a Digital Service Kit was produced, which included a video of the seminar and a workbook to help growers implement the information in their business. Once

published, this information will be offered through TPA's website and it is estimated that over 750 additional growers and shippers will be reached.

Texas A&M University conducted a survey for each session and the results indicated:

39 - 57 percent gained knowledge from each of the sessions.

30 - 60 percent will adopt the practices learned in the sessions.

Beneficiaries

Growers and Shippers are the primary beneficiaries of the Training Seminar. The Texas Produce industry over the past twenty years has fallen in rank as a major producing state – Texas ranked third in 1988 and currently does not rank in the top ten. However, due to the amount of imports that come through Texas, the state ranks third as a produce distributor.

TPA believes that these sessions help Texas growers and shippers bring Texas back as a major player, not only as a distributor, but also as a producer. Educating growers on food safety, plant health and marketing strategies will significantly help guide them in the right direction.

Lessons Learned

The biggest lesson learned was to bring in more retail presence for the shippers. Though produce shippers learned a lot that will help them run safe and productive businesses, they indicated a desire to know what the retail side is thinking. A retail focus session will be added to future conferences.

Additional Information

www.texasproduceassociation.com

PROJECT 5: BUILDING THE OLIVE INDUSTRY IN TEXAS THROUGH EXPANSION OF CULTIVATION SITES AND PRODUCTION OF HIGH QUALITY, NUTRITIOUS OLIVE OIL

Name of Organization: Texas Tech University

Project Manager: Dr. Thayne Montague, (806) 742.2838 ext. 235

Email: Thayne.Montague@ttu.edu

Type of Report: Final

Date Submitted: December 2010

Project Summary

As a new specialty crop (first commercial production of olives (*Olea europaea* L.) in Texas was in 2007), there is much to learn about how particular dimensions of the Texas climate, soils, pathogens and pests, and irrigation rates affect olive tree growth and olive oil production. Since 2007, the Texas Olive Oil Council has had numerous requests for information, instruction, education, and tutoring on products, programs, processes, and procedures required to grow, harvest, and market olives and olive oil in Texas. Fresh extra virgin olive oil is known to have excellent organoleptic qualities as well as biochemical properties that are being researched in connection to possible treatments for high blood pressure, hypertension, cholesterol management, immune deficiencies, and cancer. The United States currently consumes more than 20 percent of the world's production of extra virgin olive oil, yet less than 1 percent of olive oil consumed in the United States is produced in the United States. Developing domestic olive oil production in Texas will provide new opportunities for Texas farmers, and address domestic production of a product in increasing consumer demand. This project was implemented to fund Texas Tech researchers working in conjunction with the Texas Olive Oil Council to identify management practices for olive production in Texas. Based upon industry needs, this proposed research addressed the following topics: Irrigation / plant physiology and effect of temperature on bloom and fruit set (tree phenology).

Project Approach

Activities for this project began fall 2009 and carried through until fall 2010. Graduate students Kaylee Whitehurst and Vikram Baliga performed much of the “hands on” work (data collection, experiment upkeep, etc.) set forth in the grant proposal and have completed most of research outlined in the original grant. They were assisted by Amber Bates (PhD graduate student in the Plant and Soil Science Department), Dr. Cynthia McKenney, and Dr. Thayne Montague. In addition, several olive producers contributed time and in-kind donations (orchard trees, harvest equipment, etc.), which helped with completion of this project. For 2009 – 2010, research focused in the following areas:

- **Tree phenology:** Due to the importance of location on olive fruit production within the State of Texas, it is critical to gather data indicating phenological differences (seasonal growth stages as related to climatic factors) between differing orchard locations. Data collected (average date of flowering and first new leaf) allows initial comparisons on flowering of ‘Arbequina’ olive trees in four Texas counties (La Salle, Dimmit, Frio, and Bexar) and five olive orchards. Data collection was initiated early spring and was completed late spring 2010. ‘Arbequina’ flowering data suggest location can influence

average date of first flower (Figure 1). The trend suggests southern orchards (La Salle, Dimmitt, and Frio counties) flowered 19 to 6 days earlier when compared to olive trees in Bexar County (the most northern county where data was collected). A similar trend (but not nearly as strong) was seen for first leaf data (Figure 2).

- **Irrigation / plant physiology:** With costs of energy increasing and water availability decreasing, accurate irrigation volume application is of key concern for olive producers. Research was conducted on field grown olive trees in three orchards (Conly (Asherton, Texas, Picture 1), Texas Olive Ranch (Carrizo Springs, Texas, Picture 2), and Central Texas Olive Ranch (Walburg, Texas, Picture 3) using one olive variety ('Arbequina'). Research investigated variable irrigation regimes (low, medium, and high treatments based upon "normal" orchard production practices) and the influence on tree physiology (stomatal conductance), fruit production, and growth (final growth data will be collected on a trip planned early winter 2011). Kaylee Whitehurst visited each orchard four times (Picture 4) during the summer of 2010 (mid-May, June, July, and August) to collect stomatal conductance (rate of water loss from leaf surface) and leaf temperature data. Stomatal conductance data from each orchard (Figures 3, 4, and 5) indicate similar trends. For example, early in the growing season stomatal conductance of Conly olive ranch trees under low irrigation was similar to medium and high irrigation trees. Later in the growing season (July) low irrigation trees tended to have lower stomatal conductance when compared to other irrigation treatments. However, this trend seemed to reverse during August. Decreased stomatal conductance is an indication of greater water stress, reduced photosynthetic rate, and therefore reduced growth and lower fruit production. Physiological data indicate low irrigation levels reduced stomatal conductance on just a few occasions. In response to irrigation treatments, fruit production was also investigated on 'Arbequina' trees located at Texas Olive ranch. Mean, individual fruit mass and volume (100 fruit from each research tree were harvested, measured, and weighed) (Pictures 5, 6) tended to be greater for trees which received less irrigation while overall mean fruit density (mass / volume) was greatest for trees which received the greatest irrigation volume (Figure 6). Response of fruit and oil quality to irrigation treatments was not investigated, but would be a critical characteristic for future research.

In addition to field data, a greenhouse study was initiated (early July) and completed (early September) which investigated physiological response of potted olive trees (grown in five gallon containers) to variable irrigation volumes (Picture 7). Four varieties of olive trees ('Arbequina', 'Arbosana', 'Mission', and 'Koreneiki') were shipped to Lubbock, Texas, in early March. Trees were planted into 5-gallon containers and maintained at the Texas Tech University greenhouse facility. From early July to late August trees went through two sequences of irrigation treatments. Low irrigation trees were irrigated every fourth day, medium irrigation trees were irrigated every second day, and high irrigation trees were irrigated every day. Throughout the experiment, hourly soil moisture was measured on 'Koreneiki' trees (Figure 7). Every fourth day prior to irrigation mid-day stomatal conductance data was taken on all trees (Picture 8). Each irrigation sequence lasted approximately 16 days. Photosynthetic rate was also measured on two occasions (Picture 9). Stomatal conductance data for 26 July and 20 Augusts (two representative days) indicate differences between irrigation treatments and olive variety (Figures 8, 9). Of varieties examined, there appears to be variability in response to irrigation regimes. 'Mission',

‘Arbequina’, and ‘Arbosana’ each seem adapted to various irrigation regimes (greater stomatal conductance at each irrigation level). Photosynthetic rates also were variable in response to irrigation levels (Figures 10, 11). However, of varieties investigated photosynthetic rates of ‘Koreneiki’ seemed to be the least over all irrigation levels.

Goals and Outcomes Achieved

One of the chief goals of this project was to investigate response of olive tree flowering to weather / climate. Although progress has been made in this area (see Tree Phenology section in Project Approach section above), to date research has not accomplished all that was set out to do. Graduate student Vikram Baliga is gathering historical weather / climate data from areas of olive production orchards to establish data to assist with prediction of tree phenology. Although historical data will assist in this area, research needs to continue to work with producers to learn timing of phenological events in each orchard. Additional data will be collected this upcoming spring. To assist with correlation of phenological events and climate, weather stations were set up this past month in three orchards (Conly, Texas Olive Ranch, and Central Texas Olive Ranch). The hope is that using on site weather data can better correlate phenological events with local weather / climates. Data from each weather station will be collected on a regular basis (weekly) by each producer and emailed to Dr. Montague.

A second goal of the research project was to investigate the physiological response of established and containerized olive trees to various irrigation regimes. Research goals were achieved in this area (see Irrigation / Plant Physiology section in Project Approach section above). Field grown trees in three orchards were subjected to three irrigation regimes. Data indicate trees exposed to low irrigation rates compared favorably with trees exposed to medium and high irrigation rates. Tree physiology and crop production (fruit mass, weight, density) was generally not affected by irrigation regime. Future research will need to give attention to fruit quality as affected by irrigation rate. Greenhouse work found variability between olive varieties expose to three irrigation regimes (every day, every other day, every fourth day). Of varieties investigated (‘Mission’, ‘Arbequina’, ‘Arbosana’ and ‘Koreneiki’) Koreneiki appears to most affected by irrigation regime. Data begins to give insight into olive tree physiology in response to irrigation practices. Findings indicate irrigation may likely be reduced and tree response (physiology and crop production) will not be adversely affected. To gain greater insight in this critical area of research, physiological data will be collected this upcoming growing season in each of the three orchards and within the greenhouse. A second year of data will enhance comparisons between irrigation regimes and olive tree physiology.

Beneficiaries

Those who will benefit from this research are current and future olive producers within Texas. Current producers are in need of greater management information. As mentioned previously, irrigation management in olive orchards is critical for healthy trees and quality of fruit and oil. Data from this research gives current producers information, which will allow them to make decisions to maintain or increase productivity, while reducing costs (energy), and saving a precious natural resource (water). Future growers will benefit by having greater knowledge of olive varieties, which may be best suited for Texas climates and weather. In addition, future growers will have greater knowledge of irrigation requirements of orchard trees. This will assist in planning and installing irrigation systems in new orchards.

Lessons Learned

One lesson learned is it is very difficult to manage a project from a distance of several hundred miles (Lubbock to Asherton, Carrizo Springs, or Walburg, Texas). Because the project is using field grown trees in established orchards the research is getting the benefit of “real world” research. However, data collection at a distance is difficult and time consuming. It would have been better to collect data more frequently (weekly or bi-weekly) during the experiment. However, because of distance and finances this was not possible. Therefore, researchers are taking the best approach and collecting data on a monthly basis. Another lesson learned is olive growers are very interested in our work and very desirable to assist. Researchers have had little difficulty with schedules, travel, site selection, etc. with growers. In addition, whenever a need has come up, growers are anxious to assist in finding solutions.

Additional Information

Dr. McKenney and Dr. Thayne Montague were able to present our research plan and entertain questions from members of the Texas Olive Oil Council at Sandy Oaks orchard in late March, 2010. Also, Dr. McKenney, Dr. Thayne Montague, and graduate students attended the olive harvest at the Texas Olive Ranch (13 - 15 September, 2010) in Carrizo Springs, Texas. At this time a portion of our research data was presented to members of the Texas Olive Oil Council and members of the State of Texas Department of Agriculture. During this visit researchers had opportunities to gain insight and increase interest in our research from olive growers. In addition, producers were able to ask questions about this research and plans for the next growing season. In addition, graduate students Kaylee Decker and Vikram Baliga will present research data at the upcoming (5 – 7 February, 2011) Southern Region American Society for Horticultural Science annual meeting in Corpus Christi, Texas.

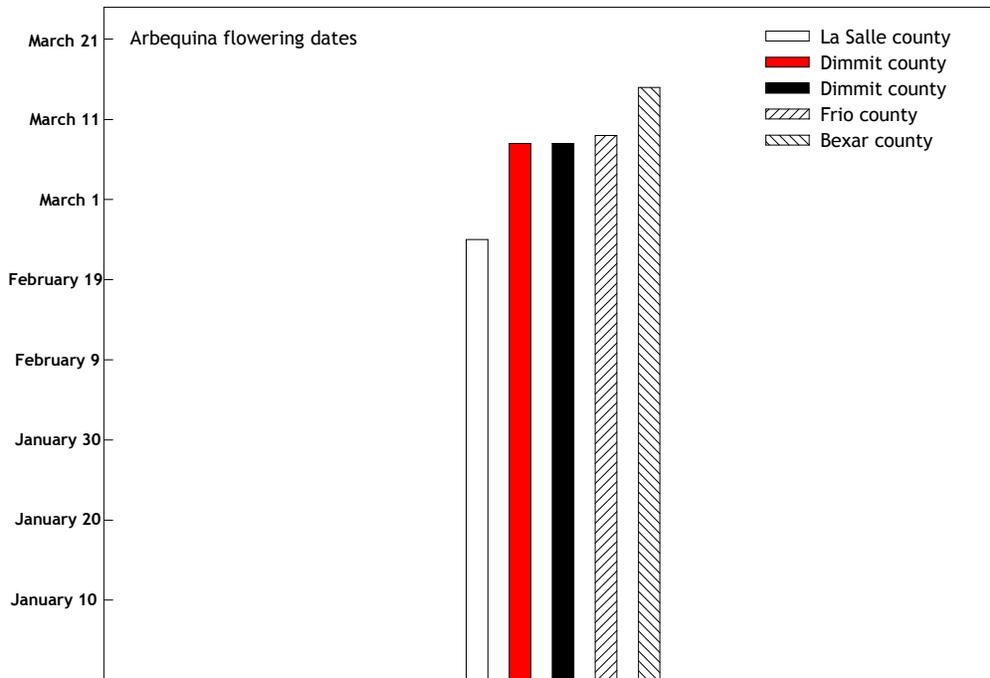


Figure 1.

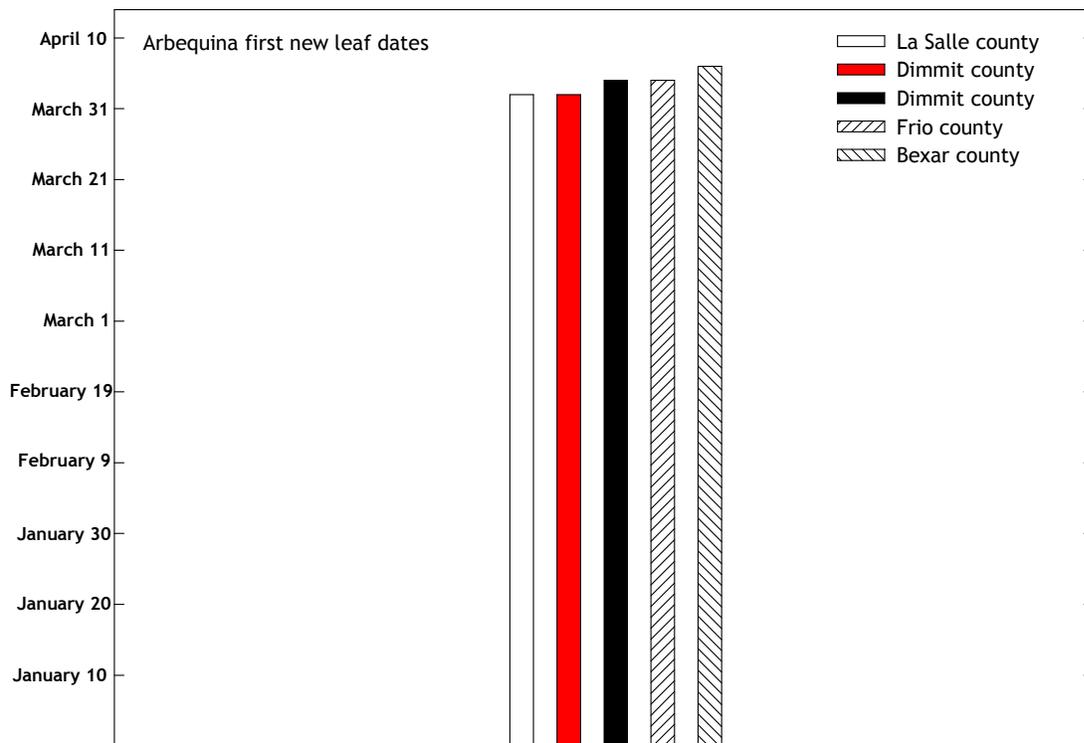


Figure 2.



Picture 1.



Picture 2.



Picture 3.



Picture 4.

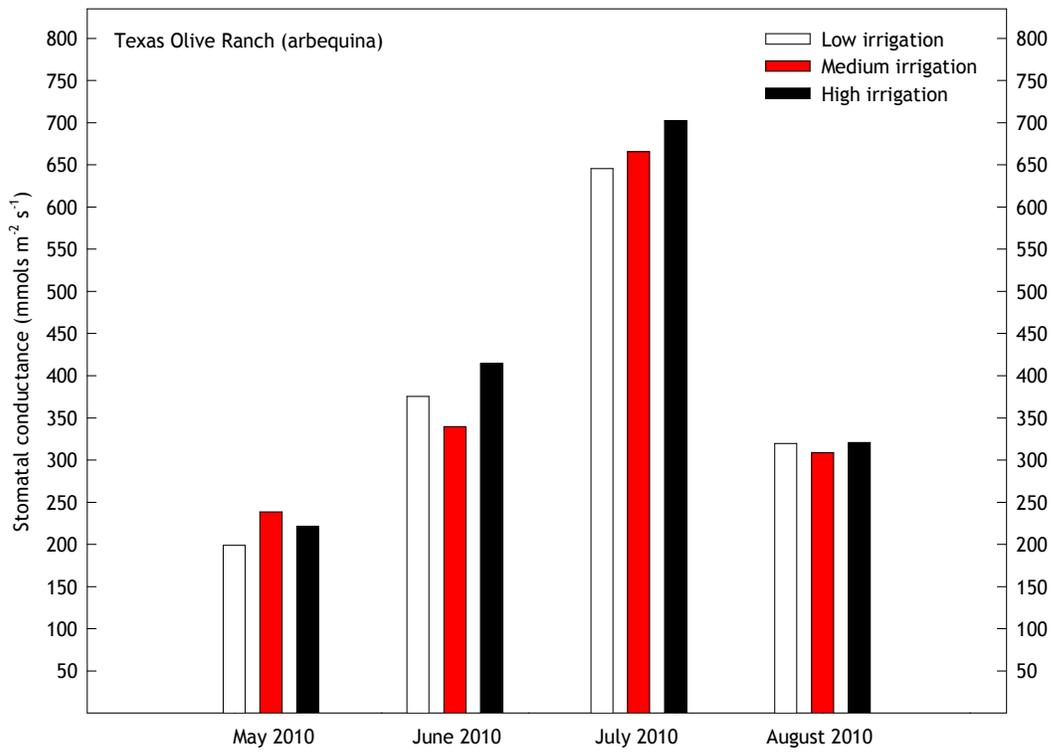


Figure 3.

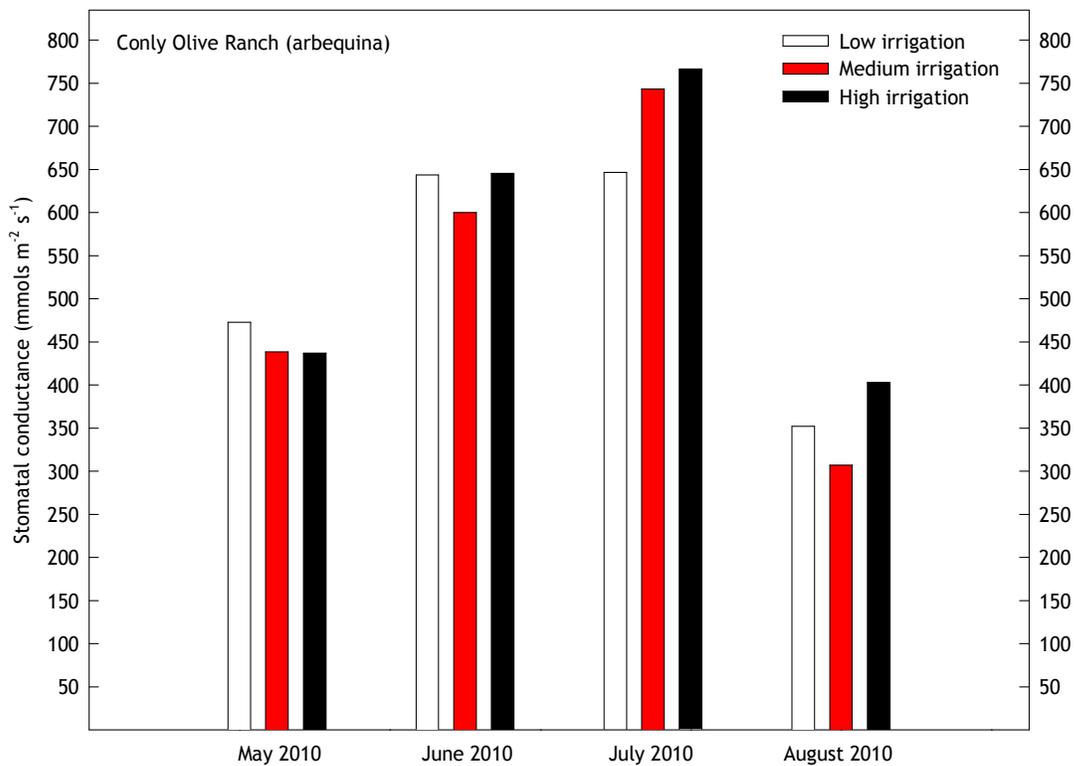


Figure 4.

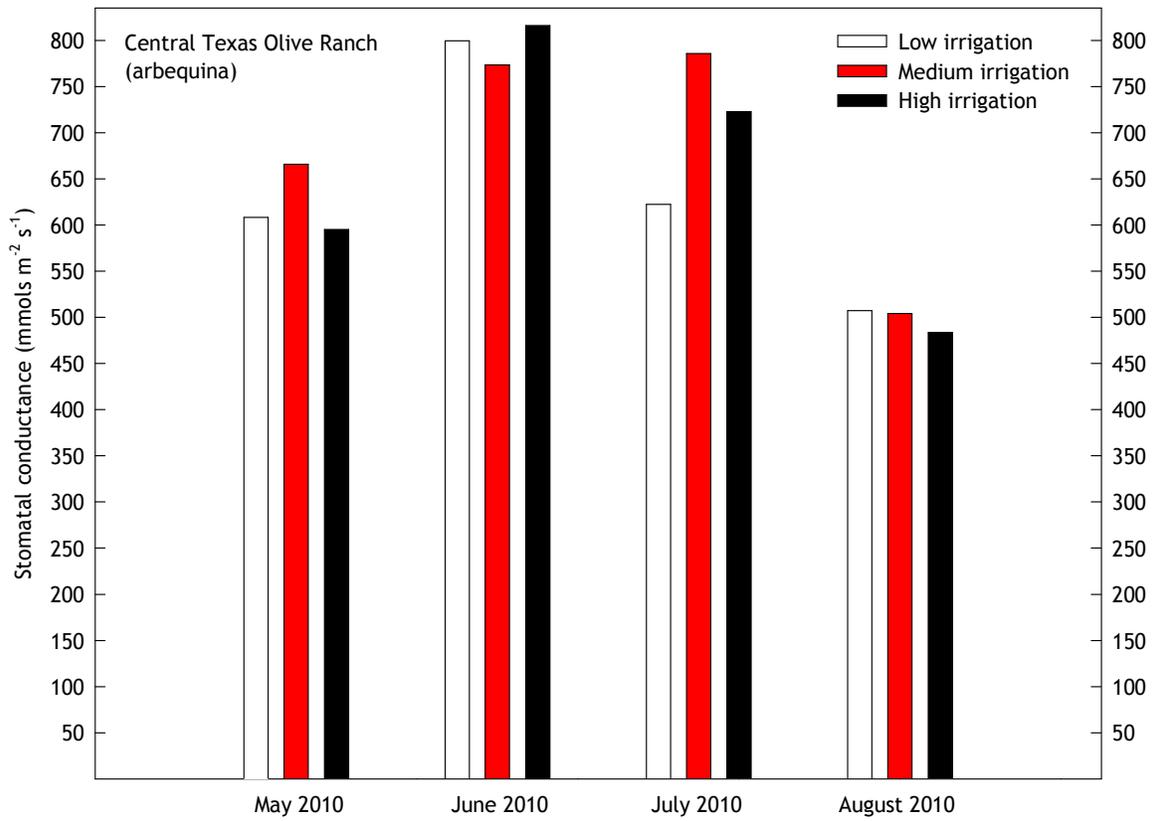


Figure 5.



Picture 5.



Picture 6.

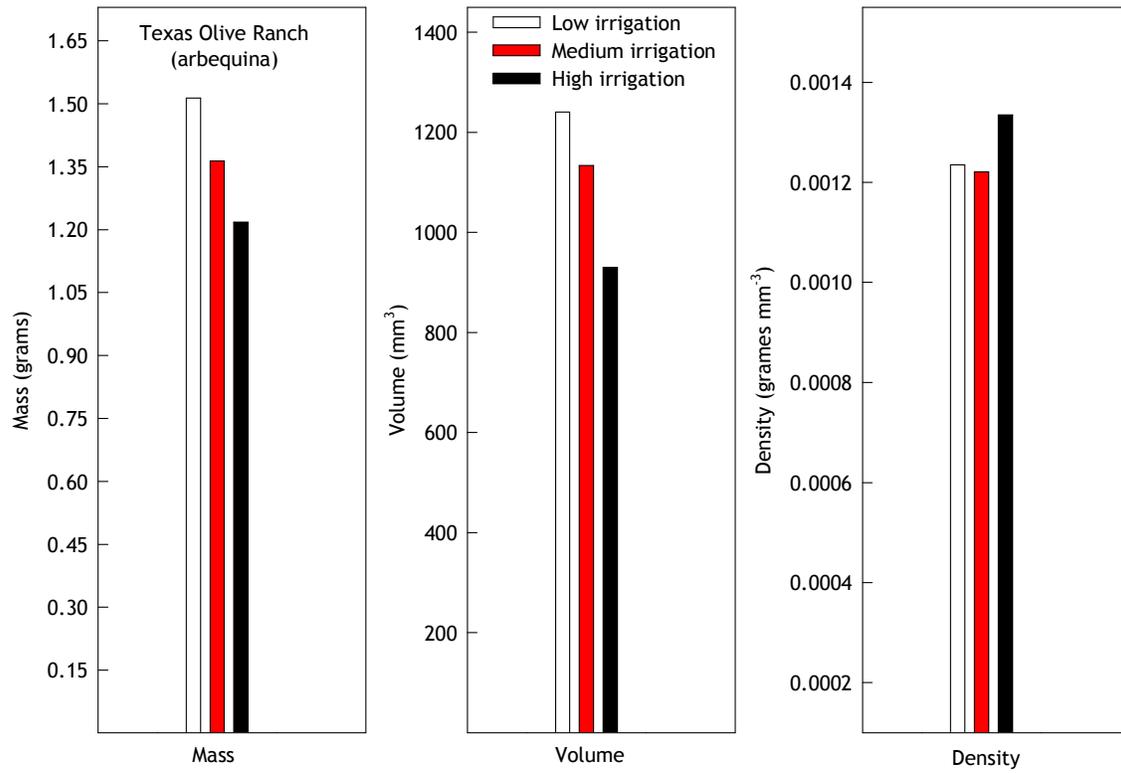


Figure 6.



Picture 7.

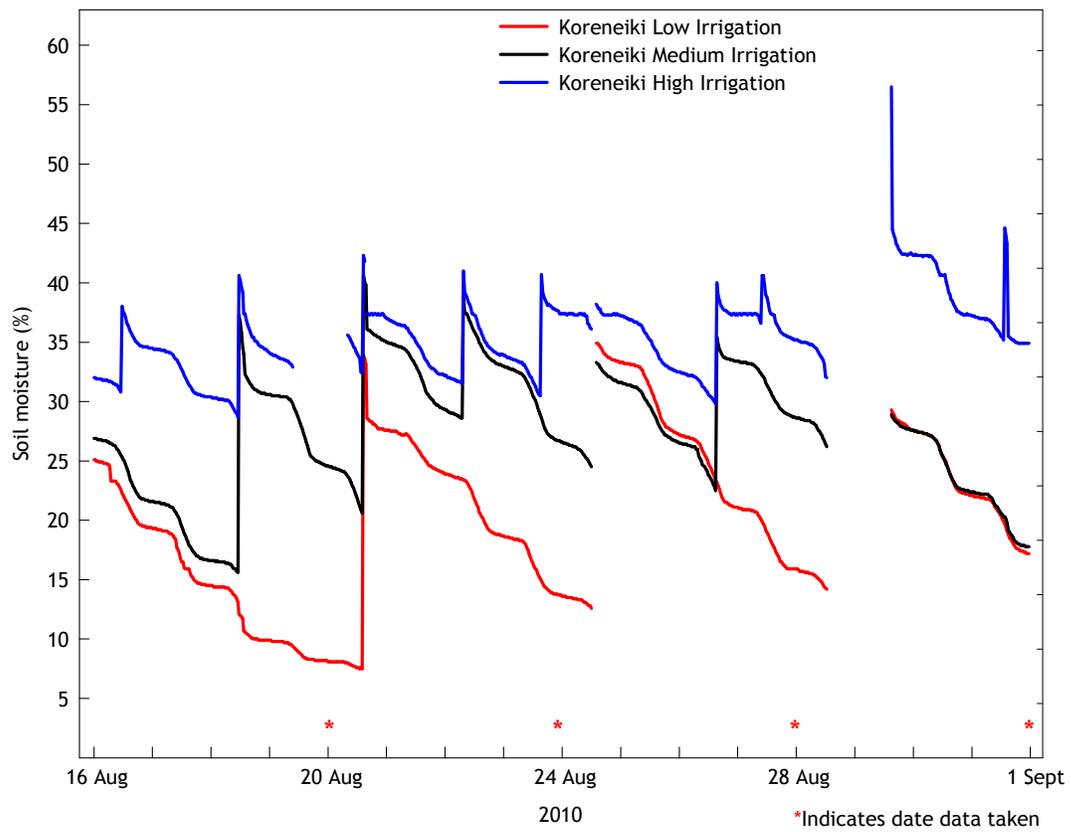


Figure 7.



Picture 8.

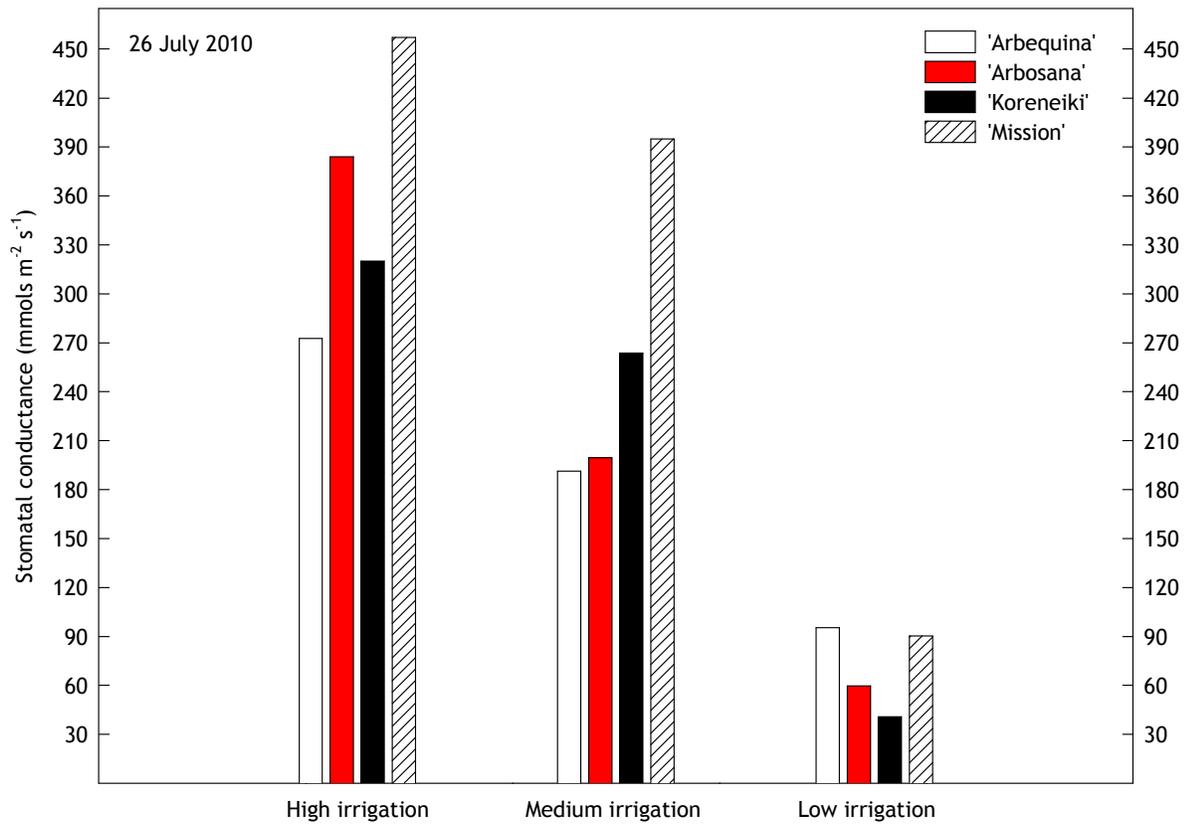


Figure 8.

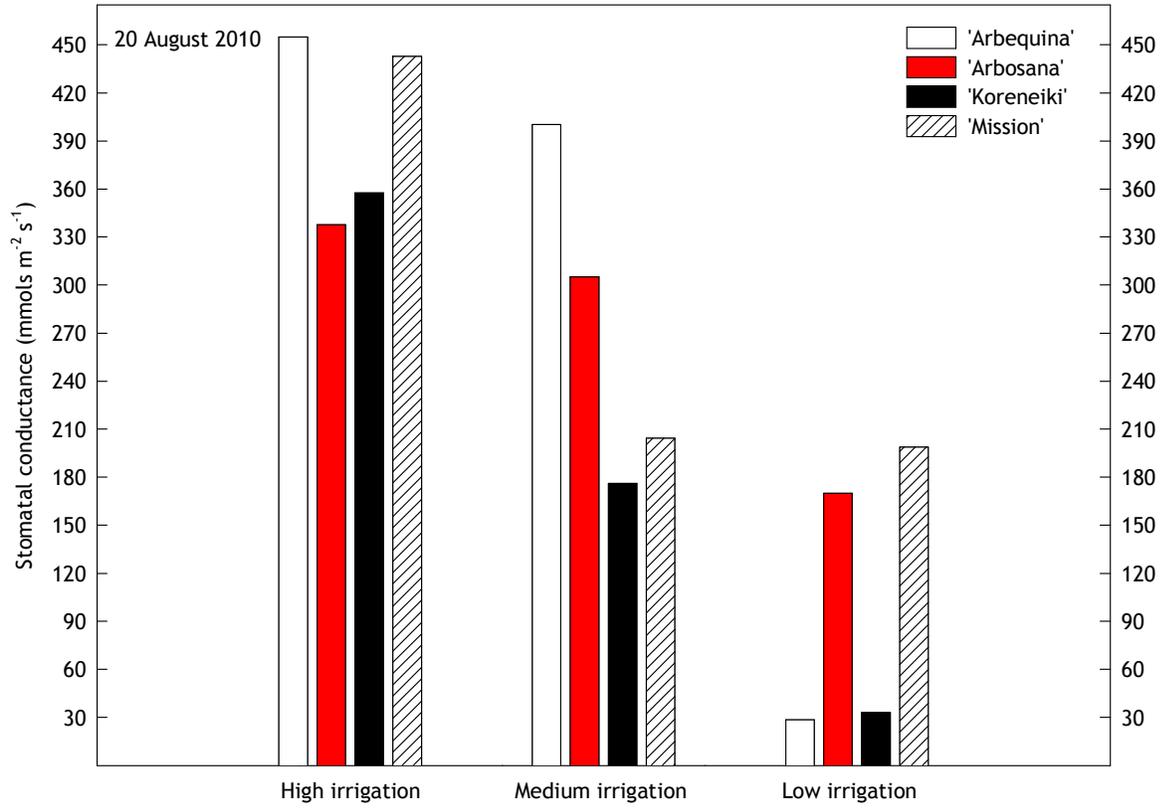


Figure 9.



Picture 9.

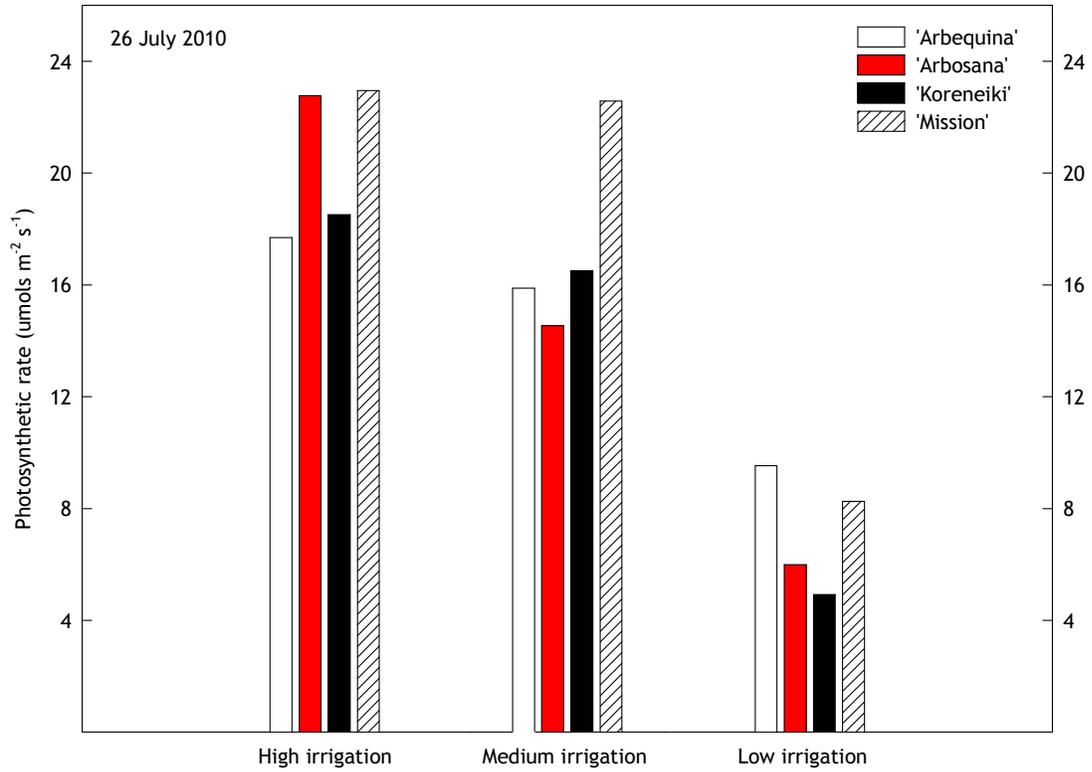


Figure 10.

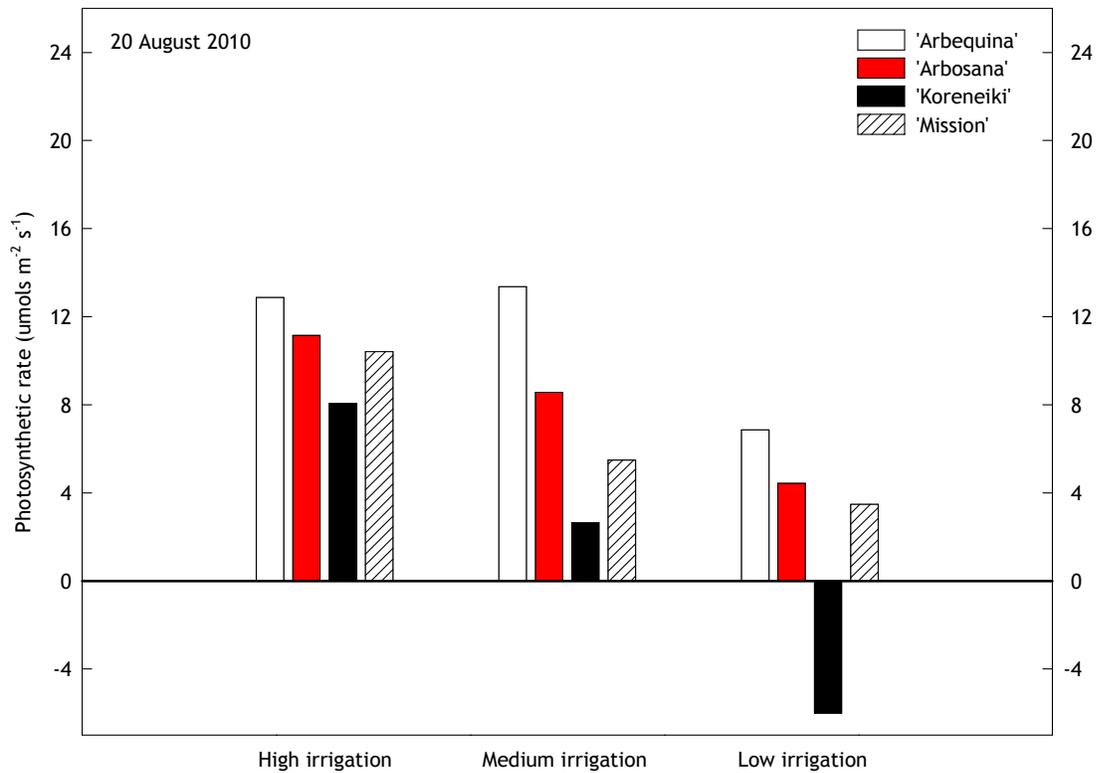


Figure 11.

PROJECT 6: TEXAS RIO STAR GRAPEFRUIT MEDIA AND SAMPLING OUTREACH PROGRAM

Name of Organization: TexaSweat Citrus Marketing, Inc.

Project Manager: Eleisha Ensign, (956) 580-8004

Email: eleisha@texasweet.com

Type of Report: Final

Date Submitted: December 2010

Project Summary

To increase consumption of Texas Rio Star Grapefruit, TexaSweat Citrus Marketing, Inc. conducted a three-phase promotional program, which consisted of 1) a television anchor and meteorologist fruit drop, 2) a four-city media tour, and 3) a series of in-store sampling demonstrations in four cities.

The television news anchor and meteorologist fruit drop focused on television coverage in ten cities during National Grapefruit Month (February 2010). The media tour program focused on four key Texas Grapefruit markets with a Texas chef serving as the spokesperson for Rio Star Grapefruit. The retail-sampling program arranged for in-store demonstrations of Texas Rio Star Grapefruit in retail chains in the same four key markets. The combination of these three programs was designed to create awareness and increase consumption in the top four Texas Grapefruit markets.

Project Approach

a. Phase I - Increasing awareness of Texas Rio Star Grapefruit through television news anchors and meteorologists.

A colorful presentation including Texas Grapefruit was sent to 12 TV stations in ten markets: Portland, Dallas, Kansas City, Salt Lake City, Denver, Chicago, San Francisco, Indianapolis, Houston, and Atlanta. The Thacker Group made initial contact to ask permission to send the basket and followed up to encourage on-air coverage. They prepared the baskets, mailed them, and collected the final data. TexaSweat approved all decisions, and shipped fruit and materials to be included in the baskets.

i. Results

1. 11 segments were aired in which the grapefruit basket and Texas Grapefruit were talked about on air. The estimated audience reached during this program was 1.9 Million. The estimated value of this coverage was \$117,000.

ii. Conclusions & Recommendations

1. This project was a very successful, affordable way to receive on air coverage of Texas Grapefruit. TV coverage can be very difficult to obtain, and this program was very successful in garnering this valuable coverage.

b. Phase II – Media Tour in four key markets

A spokesperson was researched and a contract made with Blanca Aldaco, a chef and owner of Aldaco's Mexican Cuisine in San Antonio. Then media in four markets: Sacramento, San Antonio, Houston, and Austin were evaluated. This is a very in-depth and lengthy process. Media, which included TV, radio, and print, were contacted and scheduled. A Thacker group representative accompanied the spokesperson to each media interview. In these interviews,

the spokesperson demonstrated unique recipes using Texas Rio Star Grapefruit and discussed key marketing points promoting Texas grapefruit. The Thacker group made all of the contacts, scheduled the interviews, attended the interviews, and did the follow up to obtain results. TexaSweat oversaw the entire project and approved all decisions.

i. Results

1. 25 interviews and/or follow-up requests from editors and on-air personalities were attained. Blanca was the featured guest on nine television and eight radio stations during the media tour program. She met with eight newspapers, tabloid and magazine writers on behalf of Texas Rio Star Grapefruit. This entire project reached a potential audience of 7.2 million consumers. The total editorial value of this media tour was \$254,884.

ii. Conclusions & Recommendations

1. This program reached millions of people, and certainly succeeded at increasing awareness of Texas Grapefruit.

c. *Phase III – Sampling Texas Rio Star Grapefruit*

TexaSweat and The Thacker Group worked with retail chains in the same cities as the media tour to coordinate in-store-sampling programs to create awareness and increased sales of Texas Rio Star Grapefruit. Retail chains in Houston, Austin, Houston, and Sacramento were contacted, and the details for the sampling demos were arranged. Materials to distribute to the sampling teams were created and shipped, including: a how-to section sheet and video and key Texas grapefruit message points. A 30-minute conference call with one of the retailers was also arranged to go over all that was expected of the sampling team. Promotional materials were created and mailed. The Thacker group set up and conducted in-store samplings in 5 retail stores in the 4 key market cities: Sacramento, Austin, San Antonio and Houston. 40 sampling periods were preformed, and a Thacker Group representative visited the sites during the retail sampling. TexaSweat oversaw all details and made all final decisions on the project.

i. Results

1. Grocery shoppers in the designated stores were given the opportunity to sample Texas Rio Star Grapefruit during 40 product-sampling periods. Shoppers were educated about sectioning techniques and shown the versatility of Texas Rio Star in an array of menu applications. Before leaving sampling stations, consumers were offered supporting collateral materials and recipes.
2. The retail-sampling program exceeded the industry norm (a sales jump during sampling of 475 percent) by 24 percent. Same store sales reported from Raley's and HEB showed a combined product lift of 499 percent. More than 600,000 consumers filed through produce departments of the participating stores during the sampling sessions.

ii. Conclusions & Recommendations

1. This project reached out to consumers at the retail level, which not only offered the opportunity to taste Rio Star grapefruit, but also educated the consumers about the variety and possible uses. This was combined with the Media tour in

the same markets to reinforce the message to consumers. This project certainly met and even exceeded expectations.

Goals and Outcomes Achieved

- a. The media outreach was extremely successful at increasing awareness and consumption of Texas Rio Star Grapefruit in a total of 10 markets that purchase Texas Grapefruit. The initial goal was to reach a total of 4 million impressions. This project reached 9.1 million, doubling the goal.
- b. The goal of the in store sampling program was to increase sales by 5 percent. Sampling was held in two chains in the four cities (Raley's in Sacramento, CA and HEB in San Antonio, Dallas, and Houston), and their combined store sales increased by 499 percent, which greatly exceeded the goal.
- c. An overall evaluator of the entire program will be website traffic from the markets where the program will be instituted. This was tracked to show increased awareness of Texas grapefruit from the promotional program. (See Appendix 1)
- d. TexaSweat contracted video monitoring service and captured all on-air coverage from each television station. The comprehensive video summary is on file with the Texas Department of Agriculture.

Beneficiaries

It was expected that exposure from this program would create top-of-mind awareness that would translate into increased Texas Grapefruit consumption and sales. The entire Texas Grapefruit industry, as a whole, benefited from the increased awareness, 190 growers and 27 shippers. The potential economic impact on the industry from this project will continue to affect the industry over years to come. The main goal of this program was to increase consumer knowledge and educate them about purchasing Texas Grapefruit. This goal was exceeded by this program. The continuation of this program will be that the initial media impression or retail sample has the potential to change consumers' buying habits for a lifetime, which makes the full impact of this program difficult to quantify.

Lessons Learned

The project was clearly defined as to what the work plan was and how it would be accomplished. Recommendations for future projects includes a work plan for gathering quantitative results throughout the project which would result in a simpler and more effective process for understanding the full impact of the project.

Additional Information

News Anchor Gift Basket : News Coverage Link:

http://www.abc4.com/content/about_4/gtu/story/Texas-Sweet-grapefruit/gj5_vVgC7UiFn6Hvj3ogfg.csp



Media Tour

San Antonio Media Tour Coverage:

http://www.mysanantonio.com/life/food/How_to_cook_Alamo_City_meets_Valley_in_tangy_salsa.html?showRelatedVideo=y&vid=0

http://www.mysanantonio.com/slideshows/food/How_to_Cook_grapefruit.html?c=n#1



LINKED TO VIDEO



LINKED TO VIDEO

Houston Chronicle Links:

<http://www.chron.com/dispatch/story.mpl/life/food/6881299.html>



LINKED TO WEBSITE



Appendix 1.

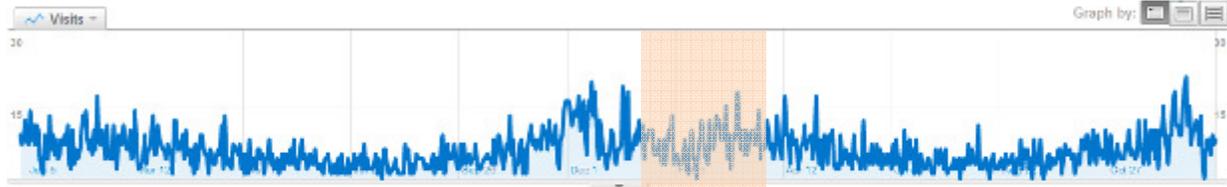
(Highlighted area details when Media and promotions were conducted for this program. These graphs show a 2 year period.)

Houston

[Overview](#) » [Map Overlay](#) »

City Detail:
Houston

Jan 1, 2009 - Jan 1, 2011



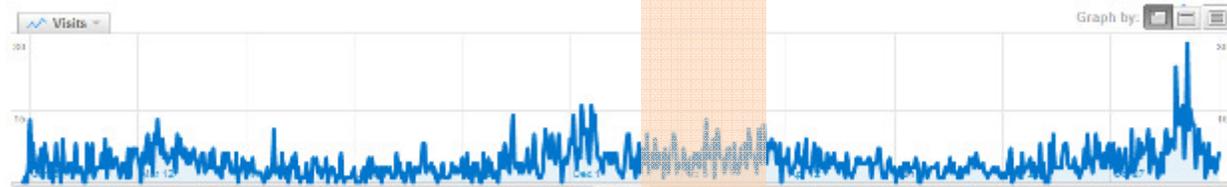
This city sent 4,325 visits

Austin

[Overview](#) » [Map Overlay](#) »

City Detail:
Austin

Jan 1, 2009 - Jan 1, 2011

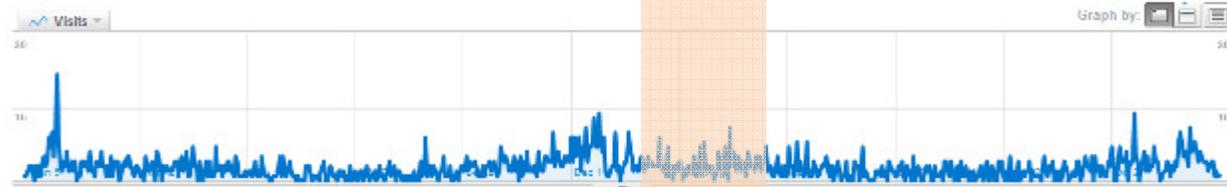


This city sent 3,086 visits

San Antonio

City Detail:
San Antonio

Jan 1, 2009 - Jan 1, 2011

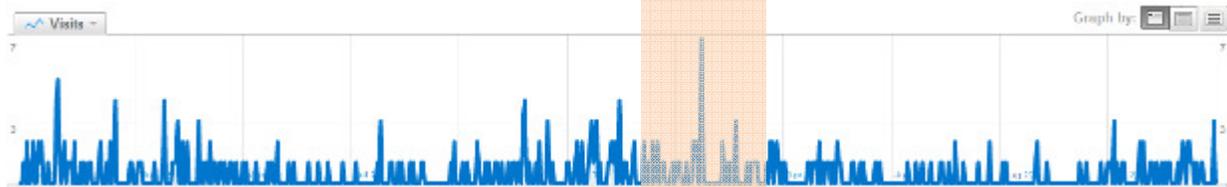


This city sent 1,993 visits

Sacramento

City Detail:
Sacramento

Jan 1, 2009 - Jan 1, 2011



This city sent 316 visits

PROJECT 7: A MARKET ANALYSIS FOR POMEGRANATE SALES IN TEXAS

Name of Organization: Texas Pomegranate Growers Cooperative and Texas AgriLife Extension Service

Project Manager: Marco A. Palma, (979) 845-5284

Email: mapalma@tamu.edu

Type of Report: Final

Date Submitted: December 2011

Project Summary

The purpose of this project was to assess consumer acceptance and identify potential markets for fresh and processed pomegranates grown in Texas with an emphasis on Texas-grown pomegranate. In addition, the project compiled seasonal wholesale prices paid for whole pomegranate and pomegranate juice, annual sales and the major buyers including wholesalers, major grocery chains, and food processors in Texas.

Project Approach

Pomegranate production provides an opportunity for Texas growers to capitalize on this market, diversify their production system and provide the Texas market with a Texas grown product. The climates and soils of south and far West Texas are well suited to growing pomegranate, which prefers hot, dry conditions. Research by Texas AgriLife Extension has identified varieties of pomegranates adapted to Texas conditions and fruit quality has been excellent.

The project manager conducted a real market setup to determine consumer acceptance, willingness to purchase and willingness to pay for pomegranate products. This allowed for the estimation of potential market for Texas grown pomegranates in Texas. The marketing information generated by this project will be critical in gaining additional grower interest and investment in the development of commercial pomegranate production in Texas.

Goals and Outcomes Achieved

The purpose of the project was to identify and quantify potential markets for fresh and processed pomegranates grown in Texas. Commercial production of pomegranates in Texas is an emerging possibility, yet there is little information on potential buyers, prices or seasonal demand for pomegranates grown in Texas.

Texas AgriLife Extension horticulturalists have identified several adapted varieties of pomegranates in experimental planting at Texas AgriLife Experiment Stations at Uvalde and Pecos, Texas. Fruit harvested from these sites are of high quality and well suited for commercial markets.

Potential Variety Selection

Pomegranate is a new crop to Texas and little is known about variety performance under Texas' growing conditions. To identify adapted and productive varieties, several varieties of pomegranate were evaluated at the Texas AgriLife Research and Extension Centers at

Uvalde and Pecos, TX. In November 2009, fruit from 22 pomegranate varieties was informally evaluated by a public gathering in Uvalde, Texas, of individuals interested in pomegranates. Whole fruit, fruit juice and a bowl of arils of each variety were provided on a long table and identified by a label. Participants were given a score sheet and asked to rate each variety on fruit appearance, juice flavor, seed hardness, and aril flavor. The commercial standard variety Wonderful was included as a reference.

The partnership with Texas Pomegranate Growers Cooperative was fundamental in successfully identifying some potential varieties to include in the experimental design.

Experimental Auctions

Texas Pomegranate Growers Cooperative developed an experiment to evaluate consumer preferences for pomegranates. Specifically project staff wanted to compare (baseline) currently-grown California varieties with Texas-grown varieties in terms of consumer preferences and willingness to pay. They used the products developed in Uvalde and Pecos to design an experimental auction procedure. Participants were given \$35 to simulate a real market and were asked to bid on pomegranate products and if they won the bid they were responsible for payment of the product. However, participants were allowed to choose not to purchase any pomegranate products and keep the money. This process ensured consumers' real preferences for pomegranate products were captured. A copy of the survey may be obtained from the project manager.

There were eight sessions of experimental auctions with about 25 people per sessions conducted on November 2-4, 2010. Overall there were 203 participants in the experimental auctions.

Summary of Study Findings

Pomegranate production offers an opportunity for crop diversification for agricultural producers in the state of Texas. Pomegranates have been a widely discussed food product in the past few years due to the numerous antioxidants they contain and the health benefits they may possess. In addition, numerous pomegranate variety trials are ongoing on individual farms and AgriLife Research Stations to determine the best varieties for production in Texas. However, the market potential for these products was largely unknown. This study was conducted to focus on gathering information on answering these questions:

- What is the level of acceptance of pomegranate products by Texas consumers?
- What types of information influence consumer preferences for pomegranate products?

Pomegranates are a crop that have been cultivated by humans for thousands of years; however, their popularity in the western world has grown tremendously in the last decade. This growth has been spurred by a combination of factors, including the interest in healthful eating, in general, and functional foods, in particular. Pomegranate fruit and other plant components of pomegranate are known to have high levels of antioxidants, particularly hydrolysable tannins and flavonoids. A number of health benefits have been proposed for those who consume these polyphenols, particularly in the areas of reduced cardiovascular disease and reduced risk of certain cancers. Worldwide pomegranate production is expanding

in order to meet the increasing demand for pomegranate fruits. The primary production area in the world is Iran, where the pomegranate is believed to have originated. Within the United States, California accounts for the overwhelming majority of production. A number of cultural practices must be considered for pomegranates, including fertilization and irrigation practices and management of insects and disease.

Recent innovations have led to a boom of pomegranate products in the marketplace, including pomegranate juice, ready-to-eat fresh fruit products, and everything from lotion to energy supplements with pomegranate as an ingredient. Despite this, there are still a number of challenges within the pomegranate market. These include the need for further research to verify health claims on pomegranate, the potential for lower prices as supplies increase, further development of best production practices, and overcoming the novelty of the pomegranate fruit for many consumers. The pomegranate industry is poised for growth, but growth will not come without innovation as well as scientific and crop management developments.

In this study, two common techniques in experimental economics were combined into one non-hypothetical procedure to provide paired comparisons of the information provided by participants. The participants in this study were asked to participate in repeated rounds of preference rankings and uniform 11th-price auctions for a baseline and three subsequent information treatments. There has been extensive discussion in the literature for willingness-to-pay (WTP) estimation and preference elicitation on what type of methods provide the most accurate measures of preference.

In particular, the application of this combined ranking and bidding preference elicitation mechanism provided a useful means of gaining information on preferences for novel products and the effects of information treatments. For any good that is not currently available on the market, there will be a greater challenge in determining WTP for products; this is particularly true for those products that derive a large portion of their value from consumption of the item. To mimic the gain of information on a novel product, a baseline set of preferences and bids was collected on the assumption that the relative knowledge base on the products would vary across consumers.

Seven products were included in the study: California Wonderful whole pomegranate fruit, Texas Red whole pomegranate fruit, Texas Salavatski pomegranate fruit, ready-to-eat California Wonderful pomegranate arils, ready-to-eat Texas Salavatski pomegranate arils, mixed pomegranate juice, and pineapple. Subjects were asked to submit bids on these seven products in the experimental auction portion of the study, and to also rank the seven products and the option of no product on a scale of one to eight. The preference for the items was expected to be individual-specific. Marketers of novel products must carefully consider what types of information they target at which types of consumers if they have the aim of increasing WTP for their products.

Thus, a series of information treatments were implemented to make comparisons about three possible types of information that consumers might gain about the products of interest in this study. Those three information treatments were:

- 1) Tasting Information,
- 2) Health and Nutrition Information, and
- 3) Anti-Cancer Information.

Overall, the average willingness-to-pay for pomegranate products was below the current local retail price at the time of the study, indicating that the majority of participants would not be willing to purchase the pomegranate products at the current retail prices. However, the mean WTP was higher for ready-to-eat, juice, and the control products as compared to whole pomegranate fruits. On average, there was no premium for Texas pomegranates over the standard California variety (Wonderful) based on the levels of willingness-to-pay. However, the willingness-to-pay for products increased more when additional information was provided for Texas varieties than for the California variety, indicating that providing more information on the taste and health benefits of pomegranate could increase the maximum amount that an individual would pay for a Texas pomegranate. This effect was seen regardless of whether a price was provided to subjects for the pomegranate products.

Further, providing additional information (in the form of the three information treatments described) increased subject WTP for whole fruit products more than it affected WTP for the ready-to-eat and juice products. The results suggest that larger households have a lower willingness-to-pay for pomegranates, suggesting that this may be seen as a luxury good for households who need to emphasize the quantity of food purchased in their food expenditures. However, most other demographic factors did not predict the level of willingness-to-pay for pomegranates. This suggests that there are a diverse range of individuals who would be willing to pay a premium for Texas pomegranate products.

Providing information on pomegranate tastes and health benefits increased WTP for Texas Red pomegranates, Texas Salavatski pomegranates, and ready-to-eat Texas pomegranate arils. Additionally, the effect on the change in an individual's bid varied depending on which information treatment was applied; however, the tasting information had the largest average effect on changes in individual willingness-to-pay for the whole fruit and ready-to-eat pomegranates. Still, there was a significant portion of participants for whom the information treatments was associated with a decrease in willingness-to-pay for the pomegranate products. Demographics were still not predictive of the change in valuation for the pomegranate products when additional information on pomegranates was provided, with the notable exception of the effect that providing anti-cancer information had on the change WTP by smokers.

Subjects in the study were also asked to indicate a ranking of the included pomegranate products. Subjects indicated that they would prefer Texas varieties of pomegranate over California varieties, which was inconsistent with the responses in which they indicated how much they would actually pay. There was a disconnect between the products that subjects said they preferred most and the products that they would be willing to pay the most for. Also, the anti-cancer information made the pomegranate products more preferred relative to the control product; thus, providing information on these types of health benefits may increase the preference for pomegranates relative to other products in the marketplace.

This research has indicated that certain actions or developments could be extremely beneficial to the pomegranate industry in Texas. First, one component of success for pomegranate growers will be to have plenty of pomegranate fruits to market, and selection of a high-yielding, marketable cultivar will play an important role in this. The prices that would be received for whole pomegranate fruits are seasonal, but targeting the early part of the season would need to be balanced with the yield and other growing considerations for the earlier cultivars. This study suggests that both the Texas Red and Salavatski varieties grown in Texas are acceptable to consumers in comparison to the Wonderful variety grown in California. Also, the use of specific protocols to extend storage time will also enhance the ability of growers and marketers to market a larger portion of the crop. Implementation of a means of mechanical separation of pomegranates for marketing of ready-to-eat pomegranate arils has potential, as there was a higher willingness-to-pay for pomegranate arils relative to whole pomegranate fruits. Finally, this study indicates that providing additional information on pomegranates, particularly in the form of opportunities to taste the products and instructions on how to prepare the whole fruits may positively influence consumer willingness-to-pay for pomegranates.

Beneficiaries

This project was developed in response to grower interest in commercial pomegranate production; the Texas Pomegranate Growers Cooperative was organized in March 2009. The purpose of this organization is to promote the development of commercial pomegranate production, processing and marketing in Texas. During the first three months, nine members have joined the Cooperative and five more are expected to join in the next month. Currently, about 20 acres of pomegranate have been planted and another 25 acres has been planned by current cooperative members. The marketing information generated by this project will be critical in gaining additional grower interest and ultimately investment in commercial pomegranate production in Texas.

Lessons Learned

Pomegranate is becoming increasingly popular by consumers, but there is very limited knowledge about fresh pomegranate products. Most of the consumer awareness of pomegranate products is for processed products used in combination with other fruits.

Additional Information

A more in depth report was prepared for the Texas Pomegranate Growers Cooperative (TPGC). The report expands on the findings and usefulness of this project. TCGP may be contact at (325) 646-6857, or the Principal Investigator of the project mentioned at the beginning of this report.

PROJECT 8: PRODUCE SAFETY IN TEXAS: A SYSTEMS APPROACH (GAPS CURRICULUM DEVELOPMENT, WEBSITE, TRAININGS, AND CONFERENCE)

Name of Organization: Texas Agrilife Extension Service

Project Manager: Juan Anciso, (956) 968-5581

Type of Report: Final

Date Submitted: December 2010

Project Summary

Food safety has been a widely discussed issue in the past few years. Although the industry agrees that this is a topic of much importance, it has been difficult to come together as a whole and agree on one set of standards. Presently there are many different government and private agencies regulating food safety, all with their own set of guidelines. This makes producers hesitant to undertake third party audits, especially because they are not currently mandatory. There is a great need for a standardization of all the guidelines currently available to the produce industry. In addition, there is a demand for education from producers of all sizes, large and small. The task of preparing for a third party audit can seem overwhelming for a producer or packing shed manager who is not properly educated in the area of food safety, consequently many do not follow through with third party audits. The idea behind the food safety curriculum and training workshops was to gather all the research and information available and present it in a comprehensive and easy to understand manner. First, educate producers, managers and others in the produce industry in how contamination can occur, then how to prevent it and finally what kind of policies and documentation they should have in place for an audit. In turn, the hope is that the more educated producers are on food safety the more likely they will be to voluntarily have third party audits of their operations. As an added incentive to those who participate in the training workshops, once they pass a third party audit they are eligible to be reimbursed up to \$750 of the cost of their audit.

In the past couple of years there has been a strong push from consumers and lawmakers to require farm food safety audits by law. The timing of this curriculum and workshop could not be better to prepare producers for what may soon be required legally instead of voluntarily. In the event that a law does pass requiring all produce growers to receive third party audits of their operations, education and preparation will be needed to help ready their operations for audits. By educating and preparing producers in food safety and third party audits, transition time may be reduced and hopefully alleviate some of those costs.

Project Approach

In the effort to make this curriculum as comprehensive as possible, Texas AgriLife Extension Service reached out to several departments from Texas A&M University to contribute their expertise to the manual. In total, 19 people contributed to the content of the manual and it was reviewed by an additional seven people who are leaders or professionals in the agricultural industry. The final product is a 58 page manual (Texas AgriLife publication B-6244) that has a total of eight chapters, including follow up questions for each chapter. It covers most aspects of food safety starting from the farm all the way to the packing shed and can be purchased for \$10 at the Texas AgriLife Bookstore.

The other half of the project was to use the curriculum from the manual to develop four workshops across Texas. The workshops consisted of a pretest, presentation and questions throughout the presentation to test what information was being retained. TDA is also offering grants to producers who complete the GAP training and pass an audit for GAP certification, which is a standard, used by retail and food service industries to verify suppliers are conforming to specific agricultural best practices. Reimbursements up to \$750 will be awarded to defray the costs of completing a successful audit.

The cost to attend one of the voluntary GAP and GHP training sessions was \$40 per person. The following four workshops were held in 2010:

Aug. 18 - McAllen, Texas
Sept. 1 - Uvalde, Texas
Sept. 22 - Lubbock, Texas
Oct. 6 - Tyler, Texas

The final phase of the project was the development of a Food Safety website (<http://agriflifefoodsafety.tamu.edu/>). This website will be even more inclusive than the curriculum as it will address all food safety issues not just produce and will focus on both producer and consumer information.

Goals and Outcomes Achieved

The goal of this project was to conduct four workshops to train at least 25 producers at each session.

A total of 65 producers attended at least one of the four workshops that were conducted. The workshops consisted of a pretest, presentation and questions throughout the presentation to test what information was being retained. Results of the pre- and post- test:

McAllen, Texas

- Pretest - 7 percent of the participants rated their overall knowledge of food safety at above average to excellent.
- Posttest - indicated that 85 percent of participants increased their knowledge of food safety at above average to excellent.

Uvalde, Texas

- Pretest - 31 percent of the participants rated their overall knowledge of food safety at above average to excellent.
- Posttest - indicated that 100 percent of participants increased their knowledge of food safety at above average to excellent.

Lubbock, Texas

- Pretest - 25 percent of the participants rated their overall knowledge of food safety at above average to excellent.

- Posttest - indicated that 100 percent of participants increased their knowledge of food safety at above average to excellent.

Tyler, Texas

- Pretest – 37.5 percent of the participants rated their overall knowledge of food safety at above average to excellent.
- Posttest - indicated that 100 percent of participants increased their knowledge of food safety at above average to excellent.

Overall, this project was successful. The manual “Texas GAPs and GHPs Food Safety Training Curriculum”, covers a wide range of food safety issues and is available from the AgriLife bookstore for \$10, and is available for the public to purchase. Over 1,000 copies were printed. At each workshop the participants were provided with evaluation forms and all the comments were positive, most felt the information was relevant, up to date and needed. Majority of people were completely satisfied with the presentations and said despite feeling well informed they learned a lot from the training. Even though some may have expected a larger turnout for the workshops, project leaders felt that the turnout was realistic as this issue is still being introduced to an industry that is steeped in practices that have not change much in the last decade with regard to food safety. Many producers are waiting and watching to see what becomes mandatory before taking on the cost and extra work that food safety programs require. There is no argument that producers want to provide a safe product, but at this time there is little incentive for them to take on more cost as they will have to absorb most of it since being third party certified does not equate a higher price for their product. The success was creating a great educational resource that is now available for them when they are ready to get started.

The website will provide up to date information and all the resources they need to move forward with their food safety plans. The workshop training material is available to all producers in the form of an online course that they can take at their leisure and complete on their own schedule. The website will continue to reach and educate producers and consumers long after this project has ended.

Through this project we learned that there is an even greater demand for education at the entry level. There is a need for more programs and training for harvest crew leaders, harvest crews and packing shed employees.

Beneficiaries

People from all levels of the produce industry benefited from this project. Small producers, food safety managers from large operations, packing shed operators, harvest crew leaders and consumers were all educated by this project. Besides gaining a wealth of education there is the reimbursement that will really help smaller operations with the cost of their first third party audit. The Texas produce industry as a whole benefited because when employees, managers and crews are educated, everyone benefits. The people who were trained pass the information that they learned along to the people they work with and increase the number of people reached.

Lessons Learned

Although there was significant advertisement of the workshops, TDA sent out flyers, AgriLife Extension office emailed and phoned local contacts and several press releases were issued, there was not an overwhelming turnout. Through this project it was discovered that there is a greater need for education for the entry-level positions. At the first workshop one of the participants suggested having a training workshop for harvest crew leaders. Subsequently a 5th training was organized on October 15 in McAllen, Texas with a total of 130 harvest crew leaders showing up. This material was slightly different than the content of the other 4 workshops as this was a “Train the Trainer” program. Where the idea is that harvest crew leaders are trained in what they need to know about food safety in the field and then expected to pass that information on to the individuals in the harvest crews. This training was focused specifically on issues at the field and was very successful. There have already been several requests for more of these trainings and if the training is something that could be done seasonally or yearly.

Part of this project was to partner with the TDA, to develop a cost program to reimburse specialty crop producers up to \$750 of the cost of having USDA, or a qualified private auditing company, conduct third party audit(s) to verify an establishment’s food safety program. Producers must have also completed Texas AgriLife Extension Service Good Agricultural Practices (GAPs) Food Safety training to be eligible for this program. However, TDA found this program was not as well received as anticipated, and only two cost shares were completed.

TDA provided USDA with a project revision, which resulted in a new separate project titled, Good Agriculture Practices (GAP) Third Party Assistance Program. The new purpose of the additional project is to encourage third party audit companies to apply to TDA to use funds to incentivize new Texas specialty crop producers that have not participated in a third party food safety audit to become Good Agriculture Practices (GAP) certified. Texas specialty crop producers, including fruit and vegetable, citrus, pecan, peach and berry producers will be encouraged in Good Agricultural Practices training by assisting them with the cost of completing and passing the GAP food safety third party audit. Additional information about this project can be found in on page 115.

Program Income

Income generated from sales of the GAP manual will promote specialty crops in regards to food safety in the form of continued education. As food safety continues to evolve, Texas AgriLife will continue to provide workshops and training as needed to keep producers current on all food safety issues, legislation and research. Specifically, program income will be used for travel, fees and training materials, related to workshops/training sessions.

Additionally, Texas AgriLife developed a food safety application for smart phones for \$1.99 allowing instant access to food safety information. Although this was not funded through the Specialty Crop Block Grant Program, project felt that this was significant additional information

PROJECT 9: THE TEXAS PECAN BOARD PROJECT

Name of Organization: The Texas Pecan Board

Project Manager: Mike Adams

Email: bma@royaltypecans.com

Type of Report: Final

Date Submitted: December 2010

Project Summary

This project was comprised of two parts, both of which have been successfully executed.

- The Texas Pecan Board (TPB) launched a promotional campaign with Texas Co-op Power magazine with half-page advertisements in six issues (April – September) and then concluded with sponsorship of the magazine’s annual Holiday Recipe Contest.

- The Texas Pecan Board website was re-designed to better serve pecan producers and to provide more information to consumers.

Project Approach

These two components of the project complemented each other. The advertising campaign created an awareness of the Texas Pecan Board and drove the public to the TPB website. As the holiday recipe contest was completed, publicized and featured at the Texas Co-op Power magazine’s online site, as well as in the printed version of the magazine, readers (consumers) were provided with links to the newly designed TPB website. The TPB website now includes photos, recipes and information from the Holiday Recipe Contest. The new website was activated in early fall 2010 and was ready to feature the Holiday Recipe Contest as soon as results of the contest were published in Texas Co-op Power magazine, thus the timing of the projects was extremely advantageous for both components of the project.

Additionally, the timing of the Holiday Recipe Contest was perfect for the Texas pecan industry since it happened during the harvest season and fresh pecans were available for consumers to use in their recipes.

Goals and Outcomes Achieved

During April 2010 through December 2010, the project with Texas Co-op Power magazine was completed. The magazine reported to Texas Pecan Board that they had the highest participation rate in the recipe contest that year with 2,000 recipes submissions. The anticipated goal was that over 100 recipes would be entered.

The Texas Pecan Board website was redesigned and launched at a cost of \$15,000. Services have been retained for maintenance and updates. The redesigned website enhances the view of Texas pecans to the world through photos, grower information, buyer information and consumer information. The user friendly, interactive site is much more useful for producers and consumers alike. Since launching only recently, the number of inquiries and responses is noticeable – ranging from recipe requests to requests for local pecan shelling services.

The new website, <http://www.texaspecans.org/>, was first promoted to the industry at the July 2010 Texas Pecan Growers Conference and was then featured in a press release in Pecan

South magazine in November 2010. Visits to the website increased from 201 in July 2010 to 1055 in November.

The demand for Texas pecans is at an all-time high, and as a result of the grant, the Texas Pecan Board's literal "window to the world" is open for viewing.

Beneficiaries

The Texas pecan industry is the primary beneficiary of these two projects' because both projects will spur awareness and consumption of pecans. Further, some pecan growers may become more aware of the benefits of the pecan check-off program which will enhance support of the program and provide opportunities industry promotion efforts.

Consumers will also benefit from an increased awareness of the nutritional qualities of pecans, one of the elements of the newly redesigned website.

Lessons Learned

The Texas Pecan Board found that Texas Co-op Power magazine was an excellent, effective partner in its efforts to promote pecans, and TPB planned to sponsor the Holiday Recipe Contest in 2011. There were no negative aspects of this project.

The redesign of the Texas Pecan Board website will have an ongoing positive impact for the Texas Pecan check-off program and provide helpful consumer resources, which will continue to be enhanced and updated over the coming year.

PROJECT 10: PROMOTE, SUPPORT AND EXPAND THE TEXAS LAVENDER INDUSTRY

Name of Organization: The Lavender Association

Project Manager: Chelita C. Riley

Email: rileychelita@yahoo.com

Type of Report: Final

Date Submitted: November 2012

Project Summary

Considered by USDA as both a culinary and medicinal herb, lavender has a range of uses that supports its increasing interest as a specialty crop. Texas is considered one of the top three states in lavender production. In recognition of the growing Texas lavender industry, the Texas Lavender Association (TLA) was formed in August 2008 as a nonprofit corporation to promote the education, market development, distribution and research of lavender and lavender products. TLA is the only Texas association with a goal of promoting the interest of lavender growers on a statewide basis.

This project encompassed the following components required to promote the lavender industry:

- education for current and potential lavender growers,
- develop marketing channels for cooperative farming efforts,
- increase the number of Texas lavender farms,
- increase exposure for and promote lavender products and agri-tourism, and
- educate the public on the benefits of lavender and its many uses.

Project Approach

Project: Develop and Implement Educational Programs to Support Lavender Growers and Potential Lavender Growers and Increase Awareness of the Texas Lavender Industry

Lavender Conferences /workshops: Two major Lavender Conferences were held during the grant period. The 4th Annual Southwest Lavender Conference was held February 18-21, 2011, in Kerrville, Texas, and the 5th Annual Southwest Lavender Conference was held Sept 28-30, 2012, in Grand Junction, Colorado. These conferences attracted both current and potential lavender growers, and lavender enthusiasts from within and outside of the U.S. While the conferences' agendas were primarily targeted to commercial growers, specific sessions also targeted agri-related businesses using lavender as a complementary crop and sessions that educated the general public about lavender. A key topic continuing to appeal to growers and the general public is the diverse culinary use of lavender. These conferences provided a platform for lavender growers across the United States to network. The 4th Annual Southwest Lavender Conference in Kerrville provided introductions which resulted in the formation of the United States Lavender Growers Association (USLavender.org).

Educational Demonstrations: Educational demonstrations included culinary demonstrations, oil distillation demonstrations general cultivation discussion and product marketing presentations.

Specific forums included:

- Fredericksburg Wine and Food Festival - Fredericksburg, Texas
- The Pearl Brewery Farmers Market - San Antonio, Texas
- Austin Farmers' Market Downtown - Austin, Texas
- Social media training session for TLA members - Vanderpool, Texas

Project: Marketing Program and Create Marketing Materials to Promote Texas Lavender Industry

In addition to program specific brochures for the Southwest Lavender Conferences, advertisements were placed in key magazines to promote the conferences and lavender industry. General TLA brochures were also produced for members to provide to attendees of their events or at local farmers markets. Local farmers markets have turned out to be a key source in distribution of lavender products. Promoting the lavender industry has also been expanded to the web and social media. See the additional information section for links.

Goals and Outcomes Achieved

- The two southwest lavender conferences and individual workshops were resulted in the attendance of over 200 current and potential lavender growers from throughout the United State and Puerto Rico.
- Supplementing the conferences/workshops, lavender demonstrations were conducted at farmers markets and fairs, reaching another 500 to 1,000 potential growers and expanding the public's knowledge of the lavender industry and lavender's many uses
- Over 3,000 brochures were printed and distributed by TLA members at their farms and at selected tourism venues and chambers resulting in expanding the knowledge of the lavender industry.
- Mechanization and distillation demonstrations were conducted at the southwest lavender conferences, educating lavender growers on improved methods to process the lavender crop resulting in cooperative efforts between growers.
- The TLA website (www.texaslavenderassociation.org) was supplemented with links and social media to expand the reach of promoting the lavender industry and connecting lavender growers.
- The economic impact provided has been to redirect lavender growers to the most profitable end products and the most profitable venues for sales. Through the education provided in the conferences/workshops, lavender growers were able to network with other growers and, by coordinating skills, were able to maximize the

potential of individual businesses. For example: one lavender grower had an excess of lavender honey without a clear market while another lavender grower had a strong presence at a farmers market. In this case, the second lavender grower was able to increase her sales by procuring the lavender from the first lavender grower. In another case, lavender growers realized that the location of their farm was in an area that was not in the tourist path. They also recognized that a complementary crop would be beneficial to marketing lavender, so they purchased a small peach farm on a high traffic road which provides a retail outlet for their lavender with the ability to expand into other specialty crops.

Beneficiaries

Beneficiaries from this project were lavender growers who have made the commitment to lavender as their agricultural product. For 'hobby farmers', it provided a realistic view of the rewards and downfalls of being a farmer.

Lessons Learned

Unfortunately, the majority of the project took place during a drought, which devastated most lavender farms. Many of the farms lost 100 percent of their crops, but are also committed to replanting once they are sure the drought is over. The drought not only caused the number of lavender farms to decrease, but it also negatively affected the goal of increasing the number of Texas lavender growers.

From an economic perspective, lavender still maintains the ability to 'draw a crowd'. While some farms are focused primarily or solely on lavender, other agri-tourism forums have found that lavender is a key tourism draw even if used only complimentary, resulting in an increased economic benefit.

Crop health is still an issue with lavender. Extending the life and increasing yield of lavender in the southwest is still elusive. This is particularly true in soils with high clay content and extreme weathers as are produced in the Texas Hill Country, an area that has traditionally been the home of the highest number of lavender farms.

The lavender industry in Texas remains a viable industry. The farms that were able to 'weather' the drought are more enthusiastic than ever. Many have found their niche in local farmers markets, complementing their efforts with farm events and regional festivals. With a return of a somewhat 'normal' weather pattern, the number of farms will again increase and as the farms continue to network and increase their joint marketing efforts, the number of farms will increase. Lavender will always remain a specialty crop, but by continuing the focus, it can be a key factor in the Texas agri-tourism economy.

Additional Information

www.texaslavenderassociation.org , www.texaslavenderconference.com

http://www.facebook.com/pages/Texas-Lavender-Association/136807026368393?sk=photos_stream

www.coloradolavender.org/swlavender

<http://discoverlavender.wordpress.com/2010/12/10/the-romance-and-reality-of-growing-lavender-in-the-southwest/>

PROJECT 11: CONTROLLING THE CITRUS ROOT WEEVIL *DIAPREPES ABBREVIATUS*

Name of Organization: Texas A&M University – Kingsville

Project Manager: Dr. Mamoudou Setamou, (956) 447-3370

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Type of Report: Final

Date Submitted: December 2011

Project Summary

Diaprepes abbreviatus is a polyphagous pest that has invaded South Texas in the last decade. While adult weevils feed on citrus foliage without any significant damage, the feeding injury of larvae on roots is of economic importance. Larval feeding creates openings on the roots that favor growth of the Phytophthora fungus, thus accelerating root and tree death. Because of its economic significance, *D. abbreviatus* is a quarantined pest in Texas whose eradication efforts are ongoing. These efforts initiated by TDA have been successful in preventing the spread of the pest beyond the initial detection site in Hidalgo County. However, in October 2008, the rapid decline of citrus trees in Cameron County prompted an intensive survey, which resulted was the detection of a second infestation site of the root weevil, which most likely is an independent introduction. The new detection called for immediate action to eradicate the pest and to further prevent its spread. In addition, valley-wide surveys were useful in permitting early detections in other sites, which are the prerequisite for any successful eradication program. The objectives of the proposal were two-fold: first, it was intended to adopt an aggressive eradication effort in the *Diaprepes* find sites that combined the destruction of declining trees and the control of all development stages of the pest, and second, to conduct intensive surveys to allow for early detection of the pest in other areas of the Lower Rio Grande Valley if present.

Project Approach

The objectives of the project were to adopt aggressive control to dramatically reduce the incidence of this destructive pest in Texas. Much of the control efforts that combined roughing of declining trees, chemical treatments and deployment of ground cover were very successful at reducing *Diaprepes* numbers by almost 25-fold from the onset of the program in February 2010 to February 2011. New detection of *Diaprepes* was also made in the Houston area (Harris County) and in a grove in McAllen that is adjacent to the first quarantine site. These two locations were immediately quarantined following the regulations put in place by TDA and treatment programs were started in these locations. Given the success recorded in the Bayview quarantine area, project staff recommended that a similar program be implemented in the first quarantine site in McAllen, and adjustments be made in the ongoing eradication efforts in residential areas.

Goals and Outcomes Achieved

The objectives of the present proposal were two-fold:

1. To adopt an aggressive eradication effort in the *Diaprepes* find sites that combined the destruction of declining trees and the control of all development stages of the pest;

2. To conduct intensive surveys to allow for early detection of the pest in other areas of the Lower Rio Grande Valley if present.

Major accomplishments of the project include:

- Five chemical treatment applications were conducted from the onset of the project to the end. These include a soil application in March 2010, and three foliar sprays during the three major flushes of the year with Micromite.
- All infested trees that were declining have been removed and burned. A total of 213 trees have been destroyed.
- All three groves in the Bayview quarantine area have been entirely covered with plastic mesh to create a physical barrier against emerging adults and also prevent any larvae from entering the soil and start root colonization (Figure 1). The ground cover was deployed over 12 acres in the entire quarantine site.
- In residential settings, 6 spray applications were performed during the duration of the project.
- A total of 124 traps were set in the Bayview quarantined area, 64 in the citrus orchards and 60 in dooryards. An additional 16 traps were deployed outside, but in the vicinity of the quarantined area.
- A gradual and dramatic decrease was observed in Diaprepes trap catches from the beginning of the aggressive psyllid control program to February 2011 (Figure 2). Comparing numbers of Diaprepes caught immediately before the onset project, i.e. January-February 2010 to the those recovered from Tedder traps at the end (January-February 2011), a 92-95 percent decrease was observed in Diaprepes population densities. These results clearly show that the program has been highly effective. Similar efforts are underway in the first quarantine site to deploy the ground cover in addition to the ongoing pesticide application.

Beneficiaries

Although three growers and 15 homeowners within the Bayview quarantine area directly benefited from the project activities, the spillover benefits of this important project are for all stakeholders of the Texas citrus industry including growers and nurserymen. The dramatic reduction in Diaprepes numbers is good news in that the threat of the pest is reduced in South Texas. The early detection of the pest in new areas that were put under quarantine is also important for the state nursery and citrus industry as this detection and subsequent control will prevent the large-scale distribution of this invasive pest.

Lessons Learned

Project staff had the opportunity to compare two methods of Diaprepes control. In the first quarantine area in McAllen, only chemical control was implemented, while in the second quarantine site in Bayview, removal of infested trees and deployment of ground cover was coupled with chemical spray application. It appears clearly that the addition of the physical barrier in the form of ground cover to disrupt the life cycle of Diaprepes provided an added benefit to the control of this root weevil as shown in the dramatic reduction in Diaprepes numbers in traps. The ground cover probably prevented larvae from penetrating the soil and establishing themselves in citrus roots while preventing emerging adults from reaching the citrus foliage. Many dead adults were recovered from beneath the ground cover indicating

that they could not pass this plastic barrier. Such physical control needs to be implemented everywhere *Diaprepes* occurs and could also be adopted by citrus growers on established groves and new plantings.

PROJECT 12: WITH HORTICULTURE GROWERS IN MIND: EDUCATION FOR THE ENTIRE DISTRIBUTION CYCLE

Name of Organization: Texas Nursery & Landscape Association

Project Manager: Chelsey Thomas, 512-579-3860

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Type of Report: Final

Date Submitted: November 2012

Project Summary

Over the past year, the Texas Nursery & Landscape Association (TNLA) has worked to complete a series of projects that will increase the knowledge of the distribution cycle of the Green Industry. With the support of the Specialty Crop grant dollars, TNLA was able to provide three business segment trainings at the annual Nursery/Landscape Expo, improve the quality and content of the keynote speakers at the Management Workshop Conference, complete the redesign of the Landscape Pro online training, complete the conversion of the Plant Materials section of the Texas Certified Nursery Professionals manual into an online educational training, complete the Economic Impact Study's Annual Scope Reports, and create a photography library of plants.

Amendment 1: TNLA began a project to redesign and reformat the Landscape Texas consumer website.

Amendment 2: The additional funds awarded to TNLA were used to provide business education prior to the Nursery/Landscape EXPO on Friday, August 17th and Saturday, August 18th, 2012. These funds were also used to provide free demonstration stage opportunities for education entities at the Nursery/Landscape Expo. Funds were also used to create and market a 2012-2013 webinar series.

Project Approach

The goal of TNLA was to increase the educational opportunities and services for each segment of the Nursery and Landscape industry; including the growers, retailers, suppliers and landscapers. The photography library provides quality, photos with a name and a short description of the plant that can be used by and for increasing the knowledge of this industry. In August 2010, three industry experts came to the Nursery/Landscape Expo to offer business segment trainings for landscape, retail and grower education. Bringing in three separate, segment specific speakers provided attendees with a new opportunity to discuss issues specific to their sector of the industry. As the times have changed, it has become increasingly more obvious that social media will play a vital role in the success or failure of companies during these difficult times. In order to bring this topic to the forefront and to keep the industry in front of the curve, TNLA brought in two social media authorities to educate attendees on the successful methods of using social media to promote their businesses at the 2010 Management Workshop. As a way of expanding TNLA's outreach to the landscape and retail segments, Specialty Crop grant dollars were used for the completion of the creation of the second phase of the Landscape Pro and the third section of retail online training.

Amendment 1: In order to increase consumer education and awareness, TNLA focused on creating a better vehicle to reach the consumer. The LandscapeTexas.org website was cumbersome and did not allow for new content, media, or updates and was thus not a convenient method for communicating information to the end consumer. By creating a new and redesigned platform, it is now much more efficient and streamlined to add new educational pieces to the consumer website.

Amendment 2: TNLA contracted with Dr. Charlie Hall to provide a series of webinars with a wide range of topics to meet the entire distribution cycles needs. These topics range from consumer trends to generating grower sales, and social media to the economic outlook. By having a wide range of opportunities to choose from, without ever having to leave the office, these webinars are likely to reach more people over a longer period of time. For those that prefer a face-to-face education opportunity, TNLA used Specialty Crop grant funds to bring in two speakers for the Pre-Show business education at the 2012 Nursery/Landscape Expo. Those grant dollars covered portions of the speakers, audio/visual needs, and marketing these opportunities. Last but not least, there were several opportunities at the 2012 Nursery/Landscape Expo to advertise and promote products, but for education purposes, it can be more difficult to compete. With specialty crop grant dollars TNLA was able to provide education entities, with time slots at the Nursery/Landscape Expo Demonstration Stage to cover the following topics: marketing with social media (given two time slots back-to-back), water restrictions: cause, effect, and aftermath (given two time slots back-to-back), Texas Water Smart, Texas AgriLife Extension horticulture, Texas Plant Disease Diagnostic Lab, and soil testing.

Goals and Outcomes Achieved

- The Business Segment Trainings were attended by well over 100 attendees, with 100 percent of attendees rating the trainings as excellent or very good. Comments included the following.
 - “I would recommend to anyone to get the best information to grow their business.”
 - “How could you top this? We don't have problems, we have challenges.”
 - “Unbelievably professional and organized in work and presentation. Perfect class for me. Have him again!”
- Retail and Landscape Online Trainings- Since these portions of the online trainings were completed at the beginning of November 2010, already 12 participants have taken the online trainings. The goal for these trainings was to increase the number of people trained “from the current 72 people trained to 80 people trained”, and that goal has been achieved and surpassed. One trainee said that the trainings are “Very informative. Very useful information that is needed to help our customers in the horticultural industry. I would recommend these online training classes to anyone in the retail or landscaping segment of our industry.”
- The Economic Impact Study’s Annual Scope Reports were covered in Green Magazine which is sent out to over 7,400 industry professionals and has also been hosted on the TNLA website.
- Amendment 1: When the new LandscapeTexas.org website went live in March 2012, it was visited 112 times by 103 visitors in the first month—four times more than the

original website. As we add the newly created content, the LandscapeTexas.org website will see bounce rates decrease and returning visits increase.

Beneficiaries

Over 300 education session attendees have benefited from the 2010 Management Workshop and Expanded Business Segment trainings, and already twelve industry professionals have taken the new online trainings. As an association that represents a large portion of the \$14.1 billion green industry in Texas, these trainings, educational opportunities, photography library, and economic impact scope reports have the ability to affect over 715 member companies, as well as the entire industry and consumers. These opportunities for knowledge and growth will keep this industry and the products and services that are sold at their optimal quality and performance.

Amendment 1: As the professionalism and excellence of the industry are enhanced, message is taken one step further, to the end consumer. The importance of hiring professionals, buying quality products, care for those products, and overall, participation in the Green Industry are all things that are being shared with consumers from across the state through the LandscapeTexas.org website.

Amendment 2: The Demonstration Stage was showcased in the middle of the show floor with an estimated 5,000 plus attendees. The seven scheduled webinars were recorded, so not only did they reach their initial audience, but also anyone that wants to watch the recorded webinars.

Lessons Learned

The biggest lesson that TNLA has gained from its experience with Specialty Crop Grant dollars is the effort and time that the production of online education takes. From content development to the reviewing process, the development progression is highly complex and time consuming. Volunteer engagement has been a highly successful endeavor in creating worthwhile online education, but TNLA has learned from experience that getting the trainings to the volunteers to review can be a hurdle as well. Not only did this project work to create the online education, TNLA is also teaching the industry how to use online education. It was surprising how many people have needed instruction on how to take an online training course. Through the photography library, TNLA has come to realize that there is a continuing need in the industry for accurate, up-to-date industry resources.

Amendment 1: There is always another step that you want to do, but narrowing it down to what needs to be done, right now, is very important. With limited time to contract and design the website, find a content expert and create the content, getting results was a challenge. Better results are expected in the coming years.

Amendment 2: Promotion of webinars, TNLA utilized several different approaches to promote webinars and is still learning what works and what does not. With every new technology there is a learning curve, and identifying that curve in the green industry has been a learning experience.

PROJECT 13: IMPROVING SAFETY OF TEXAS LEAFY VEGETABLES

Name of Organization: Texas A&M University

Project Manager: Rosana Moreira

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Type of Report: Final

Date Submitted: December 2010

Project Summary

Escherichia coli O157:H7 and *Salmonella Typhimurium* are a public health concern, since these microorganisms have been associated with foodborne outbreaks from consumption of spinach, lettuce, and other leafy vegetables.

Most fresh produce in the US does not receive a highly important step to inactivate pathogens during processing and/or handling. Recent studies indicate the internalization of pathogenic organisms into the core of leafy vegetables rather than contamination in the exposed surface only. This bacterial mobility makes surface treatments to reduce *E. Coli* O157:H7 very ineffective. In addition, most of the commercially used interventions employ chemical agents, with detrimental effects on the organoleptic properties of the food. Thermal processing of fresh produce is not an option. Therefore, non-thermal interventions such as electron beam irradiation are the only alternatives currently available to include as a lethality step in fruits and vegetables processing.

Despite its obvious advantages, before irradiation can be implemented in the process of fresh and fresh-cut leafy vegetables, the technology needs to be evaluated, in combination with dose-reducing technologies to (a) minimize produce quality degradation, (b) improve dose accuracy, and (c) reduce operating costs. In addition, a risk-analytic framework will provide both an operational tool for ensuring safety, cost, and quality targets, as well as a strategic tool for guiding new investments and developing risk-based standards for global food safety.

The goals of this project were to (1) conduct preliminary research to provide reliable data and help establish the most cost effective technology using quantitative risk analysis approach in a near future; and (2) educate producers, processors, and consumers about the advantages of the technology(s).

Project Approach

- 1) Identified the current problems concerning foodborne illnesses due to consumption of spinach.
- 2) Obtained experimental data on actual growth conditions for *Salmonella* in spinach.
 - Data was used to develop prediction models of *Salmonella* growth in spinach during different storage scenarios.
- 3) Identified critical data needed to begin development of quantitative risk assessment tool.
 - Quantified effect of temperature on pathogen growth which was incorporated into a model.

- As a result, baby spinach leaves must be free of Salmonella sp. and stored at refrigeration temperatures, avoiding temperature abuse (i.e., exposed to high temperatures) during transport and storage.
- 4) Evaluated the effect of intervention technologies (washing and irradiation) on produce quality.
 - These data were critical components to be incorporated into the risk assessment. The purpose was to determine whether the intervention would help avoid future outbreaks due to Salmonella contamination.
 - 5) Developed initial framework of risk assessment tool.
 - This activity was continued during Phase 2 of the project (funded by the SCFB 2010 award).
 - Conducted preliminary educational activities.
 - 6) Several presentations on different topics on food safety were prepared for delivery via Internet.
 - This activity was continued and expanded during Phase 2 of the project.

Goals and Outcomes Achieved

No problems or challenges caused any delays toward pursuit of project goals. One distinct outcome from this project was to create a set of industry guidelines to inactivate pathogens in fresh and fresh-cut spinach using e-beam. That translated into any other type of leafy vegetable such as lettuce, cilantro and others, and other pathogens including Salmonella and Listeria. Currently there are no leafy green producers using irradiation to inactivate pathogens. Thus, it was anticipated that by the end of the third year of this project, Texas leafy green producers will have the knowledge and training required to improve the safety of their produce using a combination of methods including ozone, packaging and irradiation.

A. Conduct a literature search on spinach contamination problems and decontamination strategies including irradiation and risk assessment models.

Result: Literature search completed. More specifically, information was gathered on models for bacterial growth that could be implemented in a quantitative risk assessment framework. This is critical since commonly used models do not address changes in temperature during storage.

B. Start preliminary work on establishment of initial pathogen population levels, dose ranges and other process parameters.

Result: These parameters are required to set up risk management protocols. Mr. Puerta and Dr. Kim have carefully searched literature, including the Investigative report of the 2006 *Escherichia coli* O157:H7 outbreak associated with Dole pre-packaged spinach (March 2007, California Department of health Services and USDA). This report provided good insight on process parameters to address, such as initial inoculums (pathogen population levels), temperature fluctuation during processing and storage, and sanitation procedures (e.g, washing with chlorinated water). An outcome of such a report is that current practices were not sufficient to prevent the outbreak. This conclusion supports the central hypothesis that an additional step (irradiation or combination with other pre-treatments) is the only way to avoid

further outbreaks. Dr. Kim conducted search on adequate dose levels (1-4 kGy) for bagged spinach. The dose levels were adjusted during the experiments with other sterilizing agents as stated in Specific objective 1: “ Establish methods to enhance killing effectiveness of e-beam treatment. Combining e-beam with other sterilizing agents (e.g., ozone and modified atmosphere packaging) will produce the same degree of decontamination at doses lower than 1.0 kGy. Project staff determined factors (temperature, oxygen concentration in package) affecting pathogen survival (*E. Coli* O157:H7) and measured produce quality and shelf-life.

C. Determine what is needed for preliminary development of a framework for the quantitative assessment.

Results:

1. Dr. Klutke met with Dr. Kim and Mr. Puerta on February 22, 2010 to determine critical data to fit in a Microbial Risk Assessment Model for Spinach leaves. Specific factors include initial pathogen contamination levels, incorporation of process parameters fluctuation (e.g., temperature, radiation dose), and time that produce spends are each processing step (washing, irradiation, storage, etc.).

2. To simplify the Risk Assessment Model, Dr. Klutke suggested covering only the steps from harvest to shipping out of the packinghouse. Otherwise, considering the logistic of product distribution would complicate the model due to uncertainty and variability on the distributors and retailers practices.

D. Developed a tentative general flow-processing chart for fresh leafy vegetables to start developing a framework for the risk assessment model.

Result: After talking to several processors and producers, the team was able to develop a general flow-processing chart for fresh leafy vegetables. This information was necessary to determine critical points for inclusion in the risk assessment model (e.g., storage vs. washing lines, etc.).

E. Developed a framework for the quantitative assessment model based in the tentative flow processing chart and microbial growth and quality evaluation models.

Result: It was concluded that growth curves for *Salmonella* Typhimurium as a function of storage temperature (10, 20, 30 and 37 °C) and quality data for irradiated fresh baby spinach leaves would be collected. These data are currently unavailable in the literature.

F. Began validation of current microbial growth models and quality data using experimental and literature data. Analyzed data according to distribution occurrence of independent measurement is essential for probabilistic risk assessment.

Result: Evaluated the effect of dose on the quality of fresh baby spinach leaves. Samples were irradiated using a Van De Graaff accelerator (2.0 MeV) located at Texas A&M University. A total of 24 samples were irradiated at each dose level (0.3, 0.6, and 1.0 kGy). Color, texture (firmness), moisture content and sensory testing were completed. Panelists

were asked to evaluate the samples by visual inspection of color, odor, texture, and overall quality for days 0, 7, and 15 of samples stored at 4°C and days 1, 5 and 11 of samples stored at 10°C. Growth data for *Salmonella* Typhimurium at three different temperatures was collected.

G. Assessed whether any changes in methods were required to achieve the overall goal of “establishing methods to enhance killing effectiveness of e-beam treatment in order to address the effectiveness of irradiation protocols in reducing contamination risk and improving consumer food safety of fresh leafy vegetables”.

Result: The team decided to wait until the quality and microbial growth data collection were completed; project staff will test the hypothesis regarding the killing effect of irradiation and start testing the quantitative risk assessment model.

H. Finalized data collection and development of prediction models

H.1. Began to incorporate produce quality data into the model since any food safety intervention should maintain produce quality.

Result: Quality data for baby spinach leaves was still being collected. Three different studies were conducted to obtain data needed for model development: (1) irradiation tests, (2) growth prediction curves for a pathogen (*Salmonella* Typhimurium LT2) and (3) produce quality tests.

H.2. Quantified the effect of temperature on pathogen growth

Result: Fresh baby spinach leaves were obtained from a major supplier (Fresh Express Inc.). All leaves showing decay were removed and then 10-g portions were dispensed into sterile stomacher bags (18 oz Whirl Pak bag) and inoculated with 1 mL of the 10^4 CFU/ml. The bags were then vigorously shaken manually for 1 min to spread the inoculum (*Salmonella* Typhimurium LT2) over the sample. Five bags were prepared for each sampling time and the experiment was done by duplicate. The inoculated samples (stomacher bags) were placed in an incubator (VWR International) maintained at constant temperatures.

Pathogen growth curves in baby spinach leaves were fitted using the function of Baranyi and Roberts (1994) to predict the growth of *Salmonella* Typhimurium LT2 Rifampicine resistant at 10, 20, 30 and 37 °C. The modified Ratkowsky equation (1982) was used to describe the effect of temperature on pathogen growth rate. The theoretical minimum (T_{min}) temperature at which *Salmonella* Typhimurium LT2 was capable of growth in baby spinach was estimated at 5 °C.

At 10°C, the maximum cell concentration was $3.71 \log_{10}$ CFU/g, so the difference from the initial cell concentration was $0.11 \log_{10}$ CFU/g. Thus, 10 cells of *Salmonella* Typhimurium LT2 only grew up to 13 cells in 12 days even at abusive refrigerated temperature (10°C). This finding shows that baby spinach stored at < 10°C up to 2 weeks

(normal shelf life) will be safe to eat only if the contamination load of *Salmonella* sp. is below the infective dose (as few as 15-20 cells; depending upon age and health of the host), which may not be always the case. Even at room temperature (20°C), 10 cells of *Salmonella* Typhimurium LT2 only grow up to 52 cells in 4 days. However, at storage a temperature higher than 30°C, *Salmonella* Typhimurium LT2 grows up to levels high enough to make people ill. More specifically, at 37°C, a single cell of *Salmonella* LT2 can grow up to 3 log₁₀CFU/g in only 8 hrs.

H.3. Evaluated the effect of intervention technology (e.g., irradiation) on produce quality

Result: Irradiation of samples was carried out with a Van De Graaff accelerator (2.0 MeV) located at Texas A&M University. Eight-gram portions (about eight leaves) of baby spinach leaves were removed from the original packaging and placed in the center of Petri dishes at a thickness of 0.5 cm, which is the penetration depth of the accelerator. A total of 24 Petri dishes were irradiated at each dose level (0.3, 0.6, and 1.0 kGy). Leaves that appeared defective (with bruises or stained) were discarded. After irradiation, the baby spinach leaves were placed in polyethylene bags (Ziploc™) and stored in a cold chamber at 4 and 10°C and 90 percent RH for 10-15 days. Non-irradiated samples served as controls.

Quality (texture, color, moisture, Vitamin C, total chlorophyll and carotenoid content) and sensory attributes of the produce were determined at 1-, 7-, and 15-days intervals for 4°C and 1, 5 and 11 days for 10°C. Students, staff, and faculty at Texas A&M University were asked to evaluate the samples by visual inspection of color, odor, texture, and overall quality for days 0, 7, and 15 of samples stored at 4°C and days 1, 5 and 11 of samples stored at 10°C. The panelists scored the samples using a 9-hedonic scale, where a score of 1 represented attributes most disliked and a score of 9 represented attributes most liked. Scores higher or equal to 5 were considered acceptable. About 10-g samples from each treatment (3 dose levels and the non-irradiated control) were placed in covered glass containers labeled with a random 3-digit number and presented to each panelist at once for a total of 4 samples.

I. Preliminary model development to quantify risks at different steps of the processing line

Result: Preliminary work on risk assessment model was completed by the end of October 2010.

J. Begin education of Texas producers in food safety technology

J.1. Assisted with harvesting vegetables for the project to gain firsthand experience of field conditions and food safety issues.

Result: An undergraduate student spent the summer of 2010 under the supervision of Dr. Anciso to gain experience.

J.2. Prepared educational materials to be presented via the internet

Result: The student took power point presentations that were recorded with Camtasia software and edited them in preparation for posting them on the food safety website. In addition, the student developed and did voice over for 3 food safety video presentations for the food safety website (http://extensiononline.tamu.edu/courses/food_safety.php).

J.3. Finalized collection of produce quality data.

Result: Data on quality of spinach exposed to irradiation and washing (pure water and water with 200 ppm chlorine) were evaluated. These data will be incorporated into the dynamic model during Phase 2 of this project.

K. *Developed preliminary framework for quantitative risk assessment in a process line for spinach.*

Result: A preliminary model to predict the growth of the pathogen when temperature oscillates within a process line was developed. Initial distribution of pathogens, and predictive microbiology models for growth and the effect of several intervention strategies (water and chlorine washing and ionizing radiation) were integrated to create the model. Monte Carlo simulation, a stochastic approach, was used to take into account the variability of the model parameters (input and output).

L. *Developed preliminary guidelines for proper handling of baby spinach to drastically reduce risk of foodborne illness.*

Result: The risk assessment indicated ionizing irradiation reduces the median probability of infection ($10^{-7.01}$) and provides a highly safe product in a scenario of field contamination ($2.0 \log_{10}\text{CFU/g}$), low harvesting temperature (20C) for average time of four hours, water washing, chlorine washing, and irradiation treatment of 1 kGy (*Salmonella* sp. D_{10} is 0.19 kGy). In the case of cross contamination ($0.9 \log_{10}\text{CFU/g}$) after water washing or chemical treatment, the infection rate ($10^{-6.62}$) remains very low. At a higher level of field contamination ($4.5 \log_{10}\text{CFU/g}$) and higher harvesting temperature (30C), the infection rate was still low ($10^{-4.25}$) thus ensuring a safe product. However, when the contamination level and harvesting time increased to five hours and $5 \log_{10}\text{CFU/g}$, the infection rate increased to $10^{-3.77}$; thus, upper 7.3 percent of the products will be at a compromised risk for the market. In contrast, for a similar scenario with low level of initial contamination ($2.0 \log_{10}\text{CFU/g}$) but without irradiation treatment, the infection rate jumps to $10^{-1.78}$, indicating a greatly increased chance of potential outbreak.

M. *Prepared experimental setup and model fine-tuning for Phase 2 of proposal, which is funded under the 2010 Specialty Crop Block Program.*

Result: The team agreed that Phase 2 funded under the 2010 Specialty Crop Block should address data collection on another pathogen (*Salmonella*) and include one more produce (lettuce) and experimental protocols were designed.

Beneficiaries

This project will benefit over 50 Texas leafy vegetables producers (spinach, cabbage, cilantro, parsley) and consequently the U.S. consumer. The extension activities will be designed to reach as many producers and consumers as possible. For instance, staff expects to work directly with at least one large retailer (HEB) who deals with around 100 producers covering an area over 100,000 acres on the first year and expand the work to other producers as the project progresses through years 2 and 3.

The dynamic models developed in this project could be used by the fresh produce industry to evaluate their baby spinach cooling practices at the collection facility as well as during handling and distribution to minimize the risk of *Salmonella* Typhimurium LT2 growth. This practice could significantly avoid economic losses due to produce recalls.

Lessons learned

The original outcome of “a set of industry guidelines to inactivate pathogens in fresh and fresh-cut spinach using e-beam” had to be extended for two years due to the complexity of the processing/distribution process. Therefore, project staff will develop a set of preliminary guidelines during Phase 2 of the project.

Additional Information

The team is planning to prepare a publication for submission to a professional journal early next year. If accepted, the manuscript and abstracts will highlight the performance and usefulness of the preliminary quantitative risk assessment framework and predictive growth models.

In addition, two abstracts have been submitted for presentation and the Institute of Food Technologists (IFT) Annual International meeting to be held in New Orleans in June 2011.

1. Kim, J., Puerta, A., Moreira, R.G., Castell-Perez, M.E. and Klutke, G.A. 2011. Dynamic growth model of *Salmonella* Typhimurium in baby spinach. Submitted for presentation at the IFT) Annual International meeting to be held in New Orleans in June 2011.
2. Kim, J., Puerta, A., Moreira, R.G., Castell-Perez, M.E. and Klutke, G.A. 2011. Development of a quantitative risk assessment model for *Salmonella* Typhimurium in fresh baby spinach. Submitted for presentation at the IFT) Annual International meeting to be held in New Orleans in June 2011.

Significant contributions and role of project partners in the project:

- **PI: Dr. Moreira:** Scheduled meetings, discussed procedures with all partners, managed budget, in charge of irradiation tests.
- **Co-PI: Dr. Castell-Perez:** Provided assistance to graduate student (Mr. Puerta) regarding experiments on microbial growth and spinach quality procedures.

- ***Co-PI: Dr. Klutke:*** Provided assistance on information required to develop quantitative risk assessment preliminary model.
- ***Co-PI: Dr. Anciso (extension):*** Established communication with project PI regarding needs from producers in San Antonio area. Supervised student for development of educational tools.
- ***Research Associate: Dr. Kim:*** Worked with graduate student on collection of literature data regarding doses required to induce microbial inactivation. Worked on development of predictive microbial growth models.
- ***Graduate student: Mr. Puerta:*** Conducted microbial growth and quality data for irradiated baby spinach leaves.

PROJECT 14: EDUCATION OF CONSUMERS ABOUT THE SELECTION, INSTALLATION AND MAINTENANCE OF TURFGRASS SOD IN TEXAS AND THE DEVELOPMENT OF A WEED CONTROL GUIDE FOR TEXAS TURFGRASS PRODUCERS

Name of Organization: Turfgrass Producers of Texas

Project Manager: John Cosper, (979) 282-9305

Email: tpt@txsod.com

Type of Report: Final

Date Submitted: December 2010

Project Summary

Turfgrass is a valuable resource for the urban environment. Most consumers are unaware of the benefits provided by turfgrass and need more information on the selection, installation and management of it. The objectives of the marketing effort were 1) to develop educational materials to aid consumers in the selection, installation and management of turfgrass; and 2) to conduct marketing efforts involving billboards to direct consumers to the website where they could learn the benefits of turfgrass, obtain educational materials to help them choose the proper grasses and install and maintain them properly while contributing to the urban environment. In addition, members of the Turfgrass Producers of Texas (TPT) were in need of assistance in identifying and controlling weeds on their farms in order to provide a quality product to consumers.

Project Approach

TPT developed four publications.

1. *Turfgrass Selection for Texas*, a publication that lists the species of turfgrasses being produced for the Texas market. It details where each grass is recommended and the advantages and disadvantages of each grass.
2. *Turfgrass Establishment for Texas*. This publication informs consumers on various subjects including, how to estimate and purchase sod, site preparation, installation and management of newly planted sod.
3. *How to Select and Install Sod*. This was developed for turfgrass producers to give to customers so that they would have the basic information needed to care for the sod.
4. *Weed Control Suggestions for Professional Turf Managers*. This publication gives homeowners and turf grass professionals alike a benefit by employing an integrated approach to weed management.

TPT engaged a marketing firm to develop the billboard campaign. They also formed a marketing committee composed of growers from across the state. The group came up with a “Get the Grass Facts” theme emphasizing bare feet on grass. Due to limited funds, the cities of Austin and San Antonio were targeted. The following billboard was developed and displayed at five locations from March through September.



The billboard campaign was designed to grasp the attention of consumers, decision makers and the general public and get them to visit the website in order to obtain information on turfgrass. The five billboards have a Daily Effective Contact of over 411,000. Locations are: Bastrop, San Marcos, Bulverde, Fair Oaks and Jarrell. The locations are all in the San Antonio and Austin, Texas markets.

Among other benefits, turfgrass cools the environment, prevents soil erosion and cleans air and water. However, some view turfgrass as a liability due to water needs for maintaining it. In some cases, cities have limited the amount of turfgrass that can be planted and have banned certain types of grasses. There have been decades of research to show that the benefits of turfgrass far outweigh the need to restrict its use. TPT worked with Turfgrass Producers International (TPI) to obtain permission to use a video they developed on the many benefits of turfgrass. The video was segmented and placed on the TPT website. Visitors can view various benefits and see a short clip explaining them. They can also access publications and locate growers of a particular type of turfgrass.

Visits to the website increased over 36 percent in the first three months (compared to a year earlier) that the billboards were in place. Posters were also developed using the billboard format for TPT members to use in outlets and other locations.

Goals and Outcomes Achieved

With the help of Texas AgriLife Extension personnel and involvement of the TPT membership, four publications were developed and distributed. These publications include information on Turfgrass Selection, Installation, Maintenance and Weed Control. The publications may be downloaded through TPT's website and shared with appropriate audiences. Links to the publication may also be found in the *Additional Information* section of this project. Unfortunately, the publications were not completed in time for prime distribution (the prime time is January-March) during educational programs in 2010, but they will be available and used extensively in 2011 as Extension Agents and others conduct trainings for the coming year. Visits to the website are up compared to a year ago. The true measurement of the outcome will be long term. However, over 36 percent more people are visiting the website where they can learn about the benefits of turfgrass as well as how to select, install and maintain it while conserving water.

The effectiveness of the billboards was measured by the number of visits to the TPT website. The statistics are as follows:

	Base 2009	New 2010	Percent change
March	1934	2745	41.9
April	1810	2424	33.9
May	1700	2243	31.9
Average increase:	5444	7412	36.1 percent

Beneficiaries

- Consumers: Research based publications were developed to help consumers select, install and maintain turfgrass. Online resources are available for consumers to locate selected turfgrass growers.
- The general public: By accessing TPT’s website, anyone can obtain science based information on the benefits of turfgrass to the environment and their well-being.
- TPT members: Members report increased contacts as a result of the website. Although difficult to measure, several have stated that it took a program of this nature to get them thinking that, by joining forces, everyone can accomplish the mission of getting “The Grass Facts” out to the public. Some have expressed interest in using the materials to advertise their individual farms. Members received a supply of the publications that were developed for use with their customers and information on obtaining them via the website.

Lessons Learned

- Publication development: This takes more time than expected, especially when going through a University system. The University has more policies for review and approval.
- Mass marketing: Being novices at marketing, TPT was very satisfied with the marketing firm they chose. They were very cooperative with the TPT marketing committee and encouraged input in the design and placement of the billboards. TPT learned to keep the message simple and direct the public to the website to get “the rest of the story”.
- Website improvements: In order to get the information on the website, TPT worked with a designer to place the video and other materials in a way that would make it easier for visitors to view. TPT still has some work to do, but the quality of the website has improved.

Additional Information

In the 2009 SCBG project, TPT received a timeline extension since some of the projects within the TPT workplan came in under budget. Additional funds were not reallocated from other SCBG projects. With this extension TPT was able to begin work on producing a TV spot to be used during peak marketing times in the spring of 2011. TPT also received a 2010

Specialty Crop Block grant. TPT will use the 2010 grant to finalize production of the TV spot and buy media time in targeted markets to reach thousands of consumers.

Three publications can be accessed by going to TPT's website, www.tx sod.com and clicking on Publications. The direct links are:

How to Select and Install Sod: http://txsod.com/docs/Select_&_Install_percent20Sod.pdf

Turfgrass Selection for Texas: <http://txsod.com/docs/TurfgrassSelection.pdf>

Turfgrass Establishment for Texas: <http://txsod.com/docs/TurfgrassEstablishment.pdf>

The fourth publication, *Weed Control Suggestions for Professional Turf Managers*, can be found on Texas AgriLife's direct link website:

http://varietytesting.tamu.edu/weeds/Weed_percent20Control_percent20Professional_percent20Turf_percent20SCS-2010-05.pdf

PROJECT 15: ADVERTISING CAMPAIGNS FOR THE 85 TEXAS CERTIFIED FARMERS MARKETS FOR THE PURPOSE OF INCREASING SALES OF FRESH FRUITS AND VEGETABLES

Name of Organization: Texas Certified Farmers Market Corporation (TCFMC)

Project Manager: Susan Brints

Email: sbrints@applecountryorchards.com

Type of Report: Final

Date Submitted: December 2010

Project Summary

TCFMC is a Texas corporation, made up of 85 member farmers markets across the state. Some 600 farmers produce fresh fruits and vegetables and other value-added products for sale at these markets. According to TDA records, the Texas Certified Farmers Markets currently have an economic impact of over \$2.9 million.

It has long been recognized that farmers will produce fresh fruits and vegetables if a market is available to the farmer. Likewise, today more than ever, the consumer is looking to buy more local, fresh produce. The purpose of this project was to promote public awareness of local TCFMC member markets through the use of local and area media advertising, by publicizing the variety of produce available at the markets, the days and hours of operation, the location of the markets, special events that are held at the markets, etc. Thus, traffic was increased at these markets, increasing the sales of fresh fruits and vegetables.

The consumer benefits through increased knowledge of local farmers, crops, food preparation and agriculture, and through food cost savings by purchasing produce directly from the producer.

The nutritional benefits of consuming fresh fruits is increasingly recognized and encouraged by health professionals across the state of Texas. This project was geared toward encouraging consumption of locally grown, fresh produce by advertising the local Certified Farmers Markets.

Project Approach

The SCBGP funding benefitted both the producers and consumers since few markets can incur typical advertising costs and must rely on word-of-mouth and their year-to-year regular customers for publicizing their markets. The advertising campaign involved TV, radio and newspaper spots and other types of advertising, which were run in the local media markets.

The farmers' markets used the SCBGP funding for creative advertising to increase the sales of their specialty crops. The markets designed over the street banners to promote their market days and produce availability; newspaper ads listed the specialty crops for sale with color photographs of the fruits and vegetables; handouts listed their specialty crops with days and hours of operation; flyers included in community utility mailings with specialty crops listed; radio spots listed the hours of operation and the seasonal produce being sold; TV spots explained their market purpose and included displays of the specialty crops that were

available; and brochures with photos of their specialty crops were printed and distributed. These methods of advertising allowed the farmers' markets to better publicize and promote their farm grown specialty crops in their communities along with the dates and times of their market days.

Goals and Outcomes Achieved

The farmers' markets using the grant funding overwhelmingly reported increased sales in their market locations. Specific results were reported from a few markets, which indicated that according to the sales figures from their 2010 markets, sales had increased by 15 – 23 percent and that there was also a noticeable increase in attendance at the markets. TCFMC has also received verbal confirmations from other markets that they estimate sales to be up about 20 percent. Data is still being collected and measure and more formal results were given at the Texas Certified Farmers Market Annual Meeting in February, 2011. Various types of advertising methods included over-the-street banners, road signage, newspaper ads, TV commercials, inserts in community mailings, brochures, radio, market handouts, flyers, money mailers, and signage on tents. The impact of the advertising between 2009 and 2010 will create a positive atmosphere for the markets as they open for business in the spring. Additionally, the markets will be able to reuse some items such as the banners and other advertising materials purchased with this grant.

At the implementation of the grant, TCFMC noticed delays due to the fact that the organization had no experience is managing and instructing the individual markets in the use of grant funds. But as the summer began, the individual markets began to implement their advertising plans. The goal was to have every market use these grant funds. TCFMC found that some of the smaller markets could not afford to expense their advertising funds up front for later reimbursement.

Many markets do not have the resources to advertise their locations and fresh local produce, and the grant has allowed them to take advantage of the media types. Also, many of the markets used the phrase "eat local, eat fresh", bringing about a renewed awareness of the importance of eating fresh and using the local fruits and vegetables which are available in the various communities.

Beneficiaries

The beneficiaries of the grant funds include the farmers' markets with increased sales, the general public who were able to buy fresh, local produce, and the local merchants who were able to provide advertising assistance to the farmers' markets. Local dollars stayed in the communities and provided positive cash flow for the farmers who bring their produce to the markets.

Consumers were impacted by increased awareness of the farmers' market locations, market hours of operations, types of fruits and vegetables offered, direct interaction with local growers, increased knowledge of local agriculture, increased knowledge of produce preparation, improved nutrition from eating more fresh, local produce, etc.

Lessons Learned

Implementation of the grant took longer than the project staff projected. This grant was the first of its kind to be used by TCFMC, therefore, development of forms and procedures to be used took some trial and error before the staff was comfortable with implementation. Another challenge was to educate the individual markets via email, telephone and fax on these procedures, so as to not lose the selling window of the summer and early fall months for the markets. Some challenges faced in implementing the grant include:

1. The grant was a reimbursable grant, therefore, the markets' advertising methods needed to be approved before they could implement their portion. Individual market advertising needed to be pre-approved by TDA to ensure they were solely marketing specialty crops. This procedure took more time than originally planned.
2. The project staff helped the markets understand the use of various types of advertising, which would be approved by TDA and how to maximize their grant dollars in their communities.
3. There was no "one advertising method suits all" which could be used in the market communities. The project staff directed ideas and information to each market's situation.
4. Reimbursements from TDA to the markets took longer than expected, and deterred some markets from additional advertising.
5. The project staff's goal was 100 percent participation by the member markets. This was not achieved with this grant for various reasons: time constraints, markets with small budgets who could not afford advertising costs up front, lack of complete understanding and uneasiness in using grant funding, lack of communication within the markets. But with the experience, TCFMC plans to involve all markets with future advertising grants.

TCFMC project staff plans to allot time during the Annual Meeting in February 2012 to update and further train the markets about future grant funding, specifically how-to proceed with advertising in their market areas. TCFMC plans an update on the grant application procedure, both reducing the application time and clarifying the instructions. The expectation is that more information and dialog between the markets and the project staff in the future will expedite problem-solving techniques.

Additional Information

Specialty Crop dollars were supplemented by the Certified Farmers Markets to leverage advertising dollars and achieve the most benefits to the individual markets. For example, Certified Farmers Markets utilized their own advertising budget to pay for portions of advertisements that included non-specialty crop items. TDA was vigilant in reviewing tear sheets to verify Specialty Crop dollars were used solely to promote specialty crops at these markets. If an advertisement promoted non-specialty crop items such as bread, eggs or soap, TDA calculated the percentage (based on number of words or approximate space) and only reimbursed the organization for the remaining portion that solely promoted specialty crops.

PROJECT 16: CREATION OF INFORMATIONAL MATERIALS AND SUPPORTING ADVERTISING CAMPAIGN

Name of Organization: Texas Department of Agriculture

Project Manager: Richard De Los Santos, (512) 463-7472

Email: Richard.DeLosSantos@TexasAgriculture.gov

Type of Report: Final

Date Submitted: November 2012

Project Summary

Producers of Texas specialty crops continue to face tough economic times, with increased production costs cause many producers to reduce their production acreage. USDA stats show that from 2009 to 2010 planted acreage decreased from 140,250 to 121,350. Marketing costs are often the first expense many companies cut during economic difficulties. As a result, consumer awareness of horticulture and produce items decline, which negatively affects sales of Texas specialty crops. The purpose of this marketing project was to increase the awareness of Texas specialty crops at the consumer level and increase consumption and sales of Texas produce and horticulture plants through both consumer and producer driven projects. This included the development of informational materials and exposure through a supporting advertising campaign. Conducting the marketing promotions during the harvest season ensured the maximum return to producers. In order to build on previous success, these projects reflected continuation of produce and horticulture campaigns previously funded with specialty crop funds. The following projects were completed as part of the specialty crop project:

- Consumer/Producer Surveys
- Texas Superstar Plant Tags
- Market to Menu
- Information development and distribution
- Brochure Advertising

Project Approach

For the 2009 Creation of Informational Materials and Supporting Advertising Campaign project, TDA completed the following activities:

Consumer/Producer Surveys

TDA contracted with Texas A&M University (TAMU) to conduct a survey to determine the success of the TDA specialty crop media campaigns. TAMU surveyed both consumers and producers. This survey of producers and retailers indicated a 7 percent increase in consumer awareness of Texas Superstars over the past year. Producers of Earth Kind® Roses did not indicate any increase in sales as a result of the promotion. Producers of herbs indicated sales increases between 5–25 percent. All aspects of this project were conducted on schedule without delays or problems.

The growers and retailers expressed excitement about the project and the opportunities they felt would develop as a result of it. Herb producers were extremely satisfied with the

promotions conducted and anticipate long-term benefits. Earth Kind[®] Rose producers were also satisfied with the promotions and partnerships with retailers even if an immediate increase in sales was not achieved. The poor results are attributed to the economy and the economic uncertainty that was prevalent during and after the promotions. Requests for Earth Kind Rose brochures continued months after the completion of the project, demonstrating interest and growth in the Earth Kind[®] program.

Consumer/Producer Survey Results:

Texas Superstars[®]

- Estimate of \$8.5 million in sales of Texas Superstars[®] for 2009. Although sales data for 2008 is not available for comparison, this is considerably more than the \$9 million total cumulative sales from 1989-2004. From 2004 – 2009 TDA conducted minimal promotions, but did not have actual sales data until this survey was conducted.
- Fifteen percent of consumers surveyed were aware of the Texas Superstars[®] program.
- Further results indicate that 94 percent of the consumers who were aware of the brand and purchased Texas Superstars[®] would repurchase Texas Superstars[®].
- As a result of the marketing campaign, 56 percent of the consumers surveyed were willing to pay up to 10 percent more for Texas Superstars[®]; 23 percent would pay up to 20 percent more; and 4 percent would pay up to 31 percent more.
- The promotional campaign conducted by TDA increased consumer awareness of Texas Superstars[®] by 7 percent.

Earth Kind[®] Roses

- Estimate \$6.9 million annual sales for 2009.
- 10 percent of consumers surveyed were aware of the Earth Kind[®] Rose program.
- In addition, 96 percent of those that were aware of the program had purchased Earth Kind[®] Roses and would purchase them again.
- As a result of the marketing campaign, 58 percent of the consumers surveyed were willing to pay up to 10 percent more for Earth Kind[®] Roses; 16 percent would pay up to 20 percent more; and 8 percent would pay up to 31 percent more.
- Promotional campaign conducted by TDA had no effect in increasing awareness of Earth Kind[®] Roses.

Herbs

- Annual sales in 2009 for herb industry were estimated at \$6.2 million.
- 89 percent of total grower sales were made outside of Texas. Herb producers are able to sell their product to wholesale buyers who then resale to buyers and retailers. Some are being sold on the Internet as well, but companies like Bonnie's Plant Farm and others sell a lot of herbs outside the state.

- Most popular outlets – supermarkets (35.6 percent), wholesalers (19.4 percent), direct to consumers (12.6 percent) and other (17 percent).
- 72 percent of grower sales were to repeat customers.
- Most popular herbs were basil, mint, rosemary, parsley and thyme.
- All of the growers surveyed were familiar with GO TEXAN program and 95 percent were GO TEXAN members.
- Fifteen percent were members of the Herb Association of Texas.
- 32 percent reported an increase in sales as a direct result of TDA’s marketing campaign.
- Growers estimated a 5–25 percent increase in sales.
- As a result of the marketing campaign, 53 percent of the consumers surveyed were willing to pay up to 10 percent more for Texas herbs; 15 percent would pay up to 20 percent more; and the rest would not pay a premium.

Willingness to pay a premium is correlated to consumer awareness, and while overall last year’s marketing campaign did show some positive results, the results were comparable to the amount of money contributed to the program. The Texas Superstars[®] and herb programs showed better results because TDA has a well-established campaign which has developed over several years.

Texas Superstar[®] Plant Tags

TDA printed Texas Superstar[®] plant stakes and hangs tags for distribution to wholesale nurseries to meet the ongoing demand for the plants as a result of the TV campaign. TDA distributed 76,000 Texas Superstar[®] plant stakes and 19,200 hang tags to 12 wholesale growers. As partners in this project, the producers invested their time and labor cost to place the plant stakes and hang tags on the Texas Superstars[®] they were producing. As noted above, the results of the overall promotion including the development of the plant tags were very good. In the TAMU survey, growers estimated \$8.5 million in annual sales of Texas Superstars[®] for 2009. This is considerably more than the \$9 million TOTAL sales from 1989 - 2004.

Market to Menu

TDA conducted 10 Market to Menu promotions in which TDA worked directly with 10 certified farmers markets to conduct chef demonstrations with produce from the local market. Overall, the demos were successful. The participating markets distributed 7,400 samples of fresh produce. In addition, markets reported 114,112 consumers attended the events which was a 30 percent increase compared to the previous weeks and months when no events were taking place. Sales however were slightly down which can be attributed to weather issues that impacted produce availability. Markets reported \$92,400 in sales of fresh produce compared to a normal weekend of \$98,200. We did not see the 10 percent increase in sales as expected. Although the results were not what were expected, TDA is committed to helping small producers find venues to sell their produce. Farmers market produce promotions are in the long-term TDA plan and supported by both the specialty crop and state funds. Based on the success of these types of events, farmers markets in San Antonio, Houston and Austin have developed their own self-funded chef demonstrations.

Information Development and Distribution

TDA printed the Texas Superstar[®] brochure, Earth Kind[®] Rose brochure and the GO TEXAN Herbs brochure as part of the overall media promotion. All brochures continue to be available to consumers on the GO TEXAN website. Retail nurseries partnered with TDA to distribute all of these brochures during the promotional period. In addition to the 2,000 brochures distributed at the State Fair of Texas, the partnership with retail nurseries and the online advertisements resulted in the distribution of 10,000 additional Texas Superstar[®] brochures, an additional 2,000 Earth Kind Rose brochures and an additional 1,500 Texas Herb brochures.

- Earth Kind[®] Rose Brochure – Printed 50,000
- Herb Brochure – Printed 50,000
- Texas Superstar[®] Brochure – Printed 55,000
- Pecan Recipe Book – Printed 35,000
- Farmers Market/Pick Your Own Brochure – Printed 10,000
- Watermelon Recipes – Printed 24,000
- TRA Chef Education Recipes – Printed 50,000
- Produce Stickers – Printed 300,000

The State Fair of Texas promotion helped inform consumers about the availability of Texas Superstars[®], Earth Kind Roses and Texas herbs. 1.5 million people passed through the TDA displays to view the Texas Superstars, Earth Kind Roses and Texas Herbs displays and signage. As partners in this project, the producers of Texas Superstars[®], Earth Kind[®] Roses and Texas Herbs provided the plants to create the display.

As part of the Information Development project, TDA contracted with TAMU to update the Texas Superstar[®] website and increase information available to consumers and producers. The updated website provides information on Texas Superstar[®] plants, retailers that supply the plants, and allows producers a chance to list their information for retailers to source wholesale quantities of Texas Superstar[®] plants. TAMU reported a 49 percent increase in visits to the Texas Superstar[®] website following the update.

Brochure Advertising

TDA worked with a variety of media outlets that target consumers interested in gardening and landscaping. TDA worked with Neil Sperry radio to inform consumers about the benefits of landscaping with Texas Superstars[®]. The listening audience average range for a 12 month period is 28,000-40,000 per three hour program. The Neil Sperry program is the top-rated AM station program for Sunday's 8–11 a.m. timeslot and ranks 11th overall out of 55 stations in the Dallas-Fort Worth area. In addition to the radio promotions, TDA created online ads that ran from March – May 2010 in the following online publications:

- Dirt Doctor
- Austin American-Statesman
- Corpus Christi Caller
- Dallas Morning News
- Houston Chronicle
- Neil Sperry Garden Magazine
- Rio Grande Valley Newspaper networks
- San Antonio Express News
- Texas Gardener
- Texas Monthly

Overall, the marketing programs conducted with Specialty Crop funds are effective. Any time you increase the amount a consumer is willing to pay, you increase the income to the producer and the industry can grow.

Goals and Outcomes Achieved

The proposed goals of the *Creation of Informational Materials and Supporting Advertising Campaign* were to see the following:

1. An increase in sales of Texas herbs of 5 percent.
2. An increase in sales of Texas Superstars[®] and Earth-Kind[®] Roses of 5 percent and/or increase in grower margins (price premiums for Texas Superstars).
3. Increase consumer awareness by 5 percent as a result of information gathered by consumer surveys and by reports of requests made to the grow.texas@TexasAgriculture.gov.
4. Increase website traffic by 25 percent during the media-advertising period. Information will be tracked through an analytical program tool at the agency.
5. Increase sales of fresh produce at farmers markets by 10 percent through the development the Market to Menu program.

Even though not all goals were met, the overall results do show that the projects conducted were successful short-term and continue to show positive results for the future. Sales of Texas Superstars[®] are estimated at \$8.5 million in 2009. This is considerably more than the \$9 million total sales from 1989–2004. Most importantly, the survey showed consumers' willingness to pay 10–31 percent more for Texas Superstar[®] plants. TDA did not reach the 5 percent increase in sales for Earth Kind[®] roses as a result of the marketing campaign; however, the survey showed 58 percent were willing to pay up to 10 percent more for Earth Kind[®] Roses; 16 percent would pay up to 20 percent more; and 8 percent would pay up to 31 percent more. Herb producers saw between a 5–25 percent increase in sales. Consumer willingness to pay is directly correlated to consumer awareness and while overall last year's marketing campaign did show some positive results, the results were comparable to the amount of funds that were available for the program. The Texas Superstars[®] and herb programs showed better results because of previous projects that have supported the programs.

Texas Superstar website goals were reached. The upgraded website combined with the promotional activities yielded a 49 percent increase in visits.

The Market to Menu program was successful from the standpoint of the markets reporting a 30 percent increase in attendance, but TDA did not achieve the 10 percent increase in sales as anticipated. According to the surveys the markets reported weather issues as the reason for lower sales.

Beneficiaries

Producers, retailers and consumers benefited from the promotions. Twelve wholesale nursery growers and more than 300 retail nurseries participated in the horticulture promotions. In addition, 70,000 consumers received Texas Superstar[®] brochures, Earth Kind Rose brochures and Texas Herb brochures.

The Market to Menu promotions benefited 10 farmers' markets and 100 produce growers. Samples of Texas produce were distributed to 7,400 consumers/visitors to farmers markets enticing them to try new items and make spot purchases.

The retailers and producers were very excited to be a part of these promotions and consumer comments were extremely favorable. Consumers commented on the timeliness of the information, quality of information and the need for it to continue and be updated on a regular basis. A survey to measure retail and producer satisfaction was not completed; comments were received from retailers, producers and wholesalers during the distribution of Texas Superstar brochures, plant stakes and the online promotions

Lessons Learned

This was the first year Texas Superstar[®] tags were created. The Department learned ordering the tags at least one month earlier would ensure the tags can be distributed on time to wholesale growers.

Additional Information

Online Brochures

- Texas Herbs:
<http://www.gotexan.org/LinkClick.aspx?fileticket=io1bJ8HgFDgpercent3d&tabid=515&mid=1508>
- Texas Superstars:
http://www.gotexan.org/LinkClick.aspx?fileticket=tPkpRos_abwpercent3d&tabid=515&mid=1508
- Earth Kind Roses:
<http://www.gotexan.org/LinkClick.aspx?fileticket=PO7KNdo7EiIpercent3d&tabid=515&mid=1508>

Texas Superstar[®] website: <http://texassuperstar.com>.

PROJECT 17: TEXAS DEPARTMENT OF AGRICULTURE EDUCATIONAL PROGRAM

Name of Organization: Texas Department of Agriculture
Project Manager: Richard De Los Santos, (512) 463-7472
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Type of Report: Final
Date Submitted: November 2012

Project Summary

Consumer education is a key to the success of any marketing program. Producers continue to request projects that help educate not only the end consumer, but also local chefs, retail produce buyers, food service staff and producers. Since produce and horticulture crops are seasonal, the success of educational projects depends on quality and timeliness. Educational projects conducted during the harvest period benefited the consumer by promoting produce and horticulture plants at peak season. It benefited chefs and producers by allowing the Texas Department of Agriculture (TDA) to create timely educational events which included the development of culinary workshops to train chefs on the use of fresh Texas produce, producer training to educate growers on marketing opportunities and in-store demonstrations for consumer awareness to help educate consumers on how to use fresh produce in the kitchen. Education is also important for both school food service employees and students. With demand for local produce increasing, training school food service staff on purchasing and using local produce is important and has the potential to directly impact producer sales. By distributing nutrition information during Fruit and Vegetable Month, TDA was able to reach elementary students and reinforce the importance of nutrition education and eating right.

The purpose of this educational project is to increase the awareness of Texas specialty crops at the consumer level and increase consumption and sales of Texas produce and horticulture plants through consumer- and producer-targeted projects. The following six projects were conducted to complete the educational program:

- Culinary workshop development
- Regional chef tours
- Kiosk - produce portion of GO TEXAN commercial
- In-store demonstrations
- School food service training
- Fruit and Vegetable Month

Project Approach

TDA completed the following activities:

Culinary Workshop Development

TDA conducted chef and consumer educational events to increase both the awareness and sales of Texas produce. These training events included the Texas Restaurant Association Educational Event, State Fair Culinary Workshop, Culinary Institute of America Chef Training, and a Chef for Farmers event. The target audience included the general public, restaurant owners and chefs from across the state.

Overall, 1,950 samples of produce were distributed and a total of 5,000 attendees participated in the educational events. TDA distributed 5,000 Texas produce recipe cards and produce availability information pieces. Surveys taken at the events indicated 75 percent of both consumers and chefs participating would have made an effort to search out locally grown produce when it was in season instead of solely purchasing from the suppliers inventory sheet or what is on the shelves of their grocery store.

Events were very well attended. Continued education on produce availability is a necessity. With changes in cooking habits, cultures and demographics every year, both consumers and chefs are constantly looking for new ideas for food preparation. Chefs and producers benefited from the increased exposure to the public and to the industry.

Regional Chef Tours

TDA conducted six chef tours in Cameron County, Dallas County, Harris County Hidalgo County, Tom Green County and The High Plains (Lubbock, Crosby and Hockley counties).

A total of 150 chefs participated in the tours. Sixty producers benefited from chefs visiting farms and chefs reported a 15 percent increase in purchases of Texas produce as a result of participating in the farm tours.

Surveys showed positive responses from both chefs and producers. Surveys indicated that chefs participating in the events would begin sourcing local produce from participating producers. The tours helped both the chef and the producer answer questions and work out details of packaging and delivery concerns. Chef tours give producers the opportunity to meet potential buyers and chefs opportunities to find new local sources of produce. These tours were extremely successful and continue to show long-term benefits to the producers.

Kiosk at State Fair

In order to maximize exposure of Texas produce at the State Fair of Texas and be able to use the information at future events, TDA created a computer kiosk. The kiosk, video development and purchase of TV and radio spots were cost shared with other agency program funds. The educational video was developed to inform the public about GO TEXAN and fresh Texas fruits, vegetables and flowers. The video directed consumers to visit farmers markets, restaurants and retail stores to buy Texas fruits, vegetables, flowers and other Texas produce and horticulture products. In total, including cost-share purchases, over 9,300 TV and radio spots were purchased across Texas.

TDA aired the TV and radio spots to coincide with the retail in-store demonstrations. Retailers reported an average of 175 percent increase in sales of Texas produce. Growers reported an average of 17 percent increase in shipments of Texas produce.

When managed correctly, media projects like this can increase the exposure and success of a marketing campaign. This project allowed TDA to complete the planned project while maximizing the funding to be able to create long-term results.

In-Store Demonstrations

TDA worked with partners to conduct 183 produce demonstrations with an average of 250 samples distributed per demo. TDA reached 45,750 consumers. Products used include: Basil, blue berries, cantaloupe, grapefruit, oranges, tangerines, watermelons, honey dew melons, sweet corn, mushrooms, squash, onions, pumpkins, tomatoes, carrots, strawberries, cucumbers, peppers, cilantro and blackberries. Partnering retailers included: HEB, Wal-Mart, Safeway, Randall's, Whole Foods, Central Market, Greenfields Market, and United. TDA also worked with retail chains to host "farmers markets" in their parking lots as a way to show consumers the freshness of Texas produce. TDA provided signage, grocery bags, recipes and produce availability information to consumers.

The retail demonstrations were conducted to coincide with the GO TEXAN commercials. This allowed for a complete marketing program. As a result, retailers reported an average of 175 percent increase in sales of Texas produce. Growers reported an average of 17 percent increase in shipments of Texas produce.

Retail product demonstrations continue to yield significant results for both the retail grocery store and the producers that supply them. The produce demonstrations conducted as part of the Specialty Crop Block Grant were extremely successful.

School Food Service Training

TDA worked with the Texas Education Agency to educate school districts on where to locate fresh Texas produce. This included providing school districts with information for school tours on Pick-Your-Own farms and farmers markets as well as produce availability. TDA worked directly with school districts and Educational Service Centers (ESC) on a monthly basis to identify seasonal items. For those unable to participate in the video conference, TDA regional staff held local educational events to expand on the delivery of information to schools. TDA worked with produce suppliers not currently selling to schools to educate them on the procedures and requirements.

According to the Texas Department of Agriculture Farm to School report and data received from the Department of Defense (DoD) Philadelphia sales of Texas produce to schools in 2009-2010 school year totaled \$1.84 million which is up 4 percent from \$1.77 million in 2008-2009.

Even though this was a successful project, the opportunity to increase sales to schools continues to be available to the industry. There are many smaller producers that are interested in the opportunity to sell their products directly to a local school but need additional assistance to understand the process. Each ESC's/School District has their own procedures for purchasing products from a local vendor.

Fruit and Vegetable Month

TDA conducted a coloring contest to promote "Texas Fruit and Vegetable Month" in schools during the month of April. Students in grades K-2 participated in the contest. TDA sent information packets on the importance of eating fruits and vegetables to 4,275 schools and 1,102,668 students. In addition to fruit and vegetable information, these packets included

contest instructions and coloring sheets. One hundred and twenty-two schools submitted artwork to TDA to participate in the promotion. TDA selected 15 winners state wide.

TDA partnered with farmers markets to create Woman and Infant Children (WIC) posters to educate parents on the availability of fresh produce at farmers markets. These posters identified which markets accepted the Farmers Market WIC vouchers and which are redeemable only for fresh fruits and vegetables at farmers markets.

Educating children at a young age about the importance of eating a well-balanced diet that includes fruits and vegetables will not only help improve the health of children over the coming years, but will strengthen the long-term demand for fruits and vegetables.

Goals and Outcomes Achieved

As planned, TDA developed culinary workshops using fresh Texas produce, an informational produce kiosk at State Fair, the development of child nutrition projects and informational materials as well as the development of retail educational events which directly enhanced the consumption of fresh fruits and vegetables. TDA was unable to complete the senior nutritional education activities, because more funding was needed for the produce kiosks.

TDA survey results from chefs participating in the Regional Chef Tours indicate a 15 percent increase in purchases of Texas produce. In-store produce demonstrations were timed to coincide with the TV campaign and resulted in an average increase of 175 percent of specialty crops at retail establishments, exceeding TDA's goal.

TDA worked directly with the Texas Education Agency to educate school districts on where to locate fresh Texas produce, and provide school districts with information for school tours on Pick-Your-Own farms and farmers markets. Although TDA met the anticipated training goals, sales of Texas produce to schools only increased 4 percent.

TDA was unable to fulfill the original senior nutrition activities. The initial goal of this project was to promote produce and educate young students, parents and seniors on the benefits of eating fresh produce. Through the Fresh Fruit and Vegetable Month coloring contest TDA reached 122 schools throughout Texas. Due to the lack of available funds, seniors were not targeted.

Beneficiaries

The educational activities assisted specialty crop growers in Texas by showcasing their products, increasing the value of the crops they produce and enhancing their competitiveness in the marketplace. The marketing efforts have created a steady increase in sales in all areas of production and sales at farmers markets, retail stores, restaurants and schools. More than 300 Texas fruit and vegetable producers benefited from these educational programs through increased consumer awareness and sales. In addition, thousands of students, consumers and chefs benefited directly from the information received.

Lessons Learned

Consumers, producers, retailers and chefs continue to request information to be able to make informed buying decisions. Chefs, producers and retailers take the opportunities to share this information with their consumers/buyers whenever possible. The chef tours, retail demonstrations, culinary training events and all other educational projects conducted were extremely well-received by all. The participation by students, although good, was down from previous Fruit and Vegetable Month Coloring Contest events. TDA will be taking a different direction in years to come to increase student participation.

Additional Information:

BUILDING SOLID RELATIONSHIPS

HOW GROWERS CAN EFFICIENTLY MOVE PRODUCTS FROM FARM TO TABLE

GO TEXAN.
www.gotexan.org



Agriculture is a high producing sector that stimulates the Lone Star State's economy and touches Texans in many ways. The food on our tables is closely connected to the people and communities that surround us. Texas offers top-notch products resulting from the tireless efforts of Texas producers.

The Texas Department of Agriculture (TDA) and the GO TEXAN Restaurant Program encourages you to build relationships with restaurants and help bring the quality and freshness of your products to the table.

Tips on cultivating relationships with restaurant owners and chefs:

- 1 List your farm's products in the GO TEXAN Food Service Buyers Guide which is handed out by TDA to restaurant owners and chefs
- 2 Provide restaurant food buyers with a list of seasonal products and your delivery amounts
- 3 Ask chefs what they serve on their menus and tell them which items your farm can exclusively grow
- 4 To determine how many pounds of a specific product to provide to a restaurant, ask how many customers are typically served and what menu item (s) the product will be used in
- 5 Prepare an invoice to the restaurant for their purchase (most work on a 30-day net, so be patient to receive your payment) and provide reasonable product prices
- 6 Set realistic delivery dates and act on short notice to make changes when necessary
- 7 Maintain quality-control measures when providing products to restaurants to ensure your product size is complete and has been cleaned and handled appropriately
- 8 After establishing the restaurant contact person, be sure to ask for the best method of communication such as cell phone, restaurant phone, fax or e-mail
- 9 Invite restaurant chefs, cooks, owners and waitstaff to visit your farm to help plant or gain a better understanding of the products they serve to their customers to help bring the story of each menu item to life for their consumers

COMMISSIONER TODD STAFFLES • TEXAS DEPARTMENT OF AGRICULTURE • P.O. BOX 12847 • AUSTIN, TEXAS 78711

PROJECT 18: ADDITION OF TRAFFIC SURVEYS TO ROAD STATION CHECKPOINTS: DOCUMENTATION AND ASSESSMENT OF ALTERNATE ROUTES USED BY TRUCKERS

Name of Organization: Texas Department of Agriculture

Project Manager: David Koustroun (512) 463-7476

Type of Report: Final

Date Submitted: December 2010

Project Summary

The Texas Department of Agriculture (TDA) checks vehicles carrying regulated articles for compliance with the state's plant pest quarantine regulations. This activity is conducted at strategic weigh station checkpoints in cooperation with the Texas Department of Public Safety (DPS). It was hypothesized that as vehicle operators become "forewarned" about operational roadstations, they opt for alternate routes to avoid inspection. By positioning inspectors in two locations on alternative routes around the road station in Anahuac, Texas, TDA/DPS were able to maintain the traffic and record the use of these routes when the roadstation was operational or idle.

Data was recorded over a 12-hour segment, once each in March, April and May of 2010, at three locations (Anahuac roadstation, and two alternate routes – Devers and Winnie). Results showed that the truck traffic, including those carrying regulated articles, did not increase significantly at alternate routes when the road station was operational. Generally, the percentage of trucks carrying regulated articles declined on alternate routes when the roadstation was operational. Consequently, deploying inspectors at alternate route locations would be unproductive.

Project Approach

TDA examined previously collected road station data and determined a trend of the highest number of regulated articles seen entering the state, is during the daylight hours, 6 a.m. – 6 p.m. Another factor of conducting a daylight-only survey was the safety of the inspectors, especially the inspectors at the alternate route locations that did not have access to additional light sources. Historically, an increase of regulated articles are intercepted during spring planting and growing seasons, therefore, the optimum months of survey were determined to be March, April and May.

A road station survey criteria and data collection sheet was developed and implemented for each survey. Inspectors were placed at alternate route locations to capture the number of suspected regulated articles that were bypassing the road station inspection points. Key TDA employees helped determine the alternate route locations that truckers were most likely to use to avoid the roadblocks.

The survey locations selected:

Location 1 - Interstate -10 (I-10) West Road Station – Anahuac

Location 2 - U.S. Highway 90 North in Devers

Location 3 – I-10 at Highway 124 in Winnie

Each location was surveyed during a control (without DPS), a routine roadstation inspection and 72-hour road station inspection. In addition, a similar survey was conducted at the I-10 travel center located on Texas/Louisiana border.

TDA has the authority to stop and inspect vehicles entering or moving through the state to determine if they contain plants, plant products or other substances capable of introducing or disseminating a pest or disease. TDA, however, does not have the inspection facilities and the general law enforcement presence on the highways required to implement a roadstation vehicle inspection operation and to facilitate inspection of vehicles. In addition, the presence of law enforcement personnel and vehicles improves the safety of TDA staff working in the inspection stations. TDA contracts the assistance and cooperation of the Texas Department of Public Safety (DPS) to provide use of its vehicle inspection facilities for conducting roadstation inspection operation and providing security for TDA inspectors, through the presence of marked patrol vehicles and uniformed troopers. DPS assisted TDA inspectors during the routine roadstations inspections and was contracted for their participation in the 72-hour roadstation inspections.

Goals and Outcomes Achieved

The goal of the survey was to determine if truckers opt for alternate routes when a roadstation on a thoroughfare is operational. The data in Appendix C showed that number of trucks transiting the Devers alternate route increased slightly when the roadstation became operational (8.51 percent when the Anahuac roadstation was idle vs. 9.43 percent and 11.22 percent when it was operational). However, no such trend was observed at Winnie (3.17 percent vs. 3.66 percent and 3.21 percent). Overall, the percentage of trucks carrying regulated articles on alternate routes declined when roadstations at the main thoroughfare at Anahuac was operational. The number of trucks transiting through the Anahuac location showed a slight decline from the numbers recorded at the state line location when the Anahuac roadstation was operational.

Lessons Learned

This survey only provides a snapshot of the data to be collected. It does not capture all of the alternate routes and article influx into Texas. The need to deploy teams of inspectors and contracted DPS personnel at each alternate route location simultaneously does not warrant the expense for the value-added return of monitoring only 14.10 percent of the regulated trucks observed.

By conducting this survey, it was found that there was not a significant increase of regulated articles entering Texas via alternate routes during road station inspections. The concern that articles may be “bypassing” inspections during roadstation operations was not validated by the survey.

If TDA were to consider an alternate route road station location, this survey would need to be repeated with different variables to ensure all data is captured.

Additional Information

Road station Survey Criteria

Timeframe

March 2010 – May 2010

Hours

6 a.m. – 6 p.m.

Personnel:

Control (Survey without DPS) - Alternate Routes

- 5 Inspectors (2 counters/location and 1 Floater)
- Floater is used to relieve counters for restroom and other breaks as necessary. May rotate with other counters on alternate dates.
- Location #1 - U.S. Hwy 90 – Devers (North)
- Location #2 – I-10 @ 124 Winnie
- Location #3 – I-10 Westbound Travel Center – Stateline
- Interstate road station site (Anahuac)

Roadstations (Survey with DPS)

- Routine - (3) Inspectors (Anahuac Location)
- 72-Hour - (12) Inspectors (Anahuac Location)

Dates:

Control (Survey without DPS)

March 10, 2010; April 14, 2010; May 12, 2010

- Control – assessment of vehicles that traveled interstate and alternate routes when there were no TDA roadstations or DPS inspection activities being conducted. Surveys were conducted during the hours of 6 am – 6 pm.

Routine (Survey with DPS)

March 17, 2010; April 21, 2010; May 19, 2010

- Routine – A collaborative venture involving TDA roadstation operations and DPS inspection activities, which are routinely conducted from 6 am to 12 pm. Roadstation coordinators conducted assessment of vehicles traveling interstate through 6 pm. Personnel for surveying beginning at 12 pm through 6 pm were conducted by and determined by roadstation coordinators. In addition surveying was conducted simultaneously during the hours of 6 am – 6 pm at the alternate route locations.

72 –Hour (Survey with DPS)

March 23-26, 2010; April 27-30, 2010; May 25-28, 2010

- 72 Hour – TDA roadstation operations at the Anahuac location assisted by DPS Troopers throughout a 72-hour period. The period was divided into 3 shifts beginning 7am-3pm, 3pm-11pm and ending 11pm-7am. The 72 Hour roadstation typically begins on Tuesday and ends on Friday. The survey was conducted at the Anahuac location on Wednesdays only (March 24, April 28 and May 26) at 6 am and continue through 6 pm. Roadstation Coordinators

were responsible for collecting data. In addition, the survey was conducted simultaneously during the hours of 6 am – 6 pm at the alternate route locations.

Data:

- Number of Trucks – includes all vehicles which by its type of construction and equipment are designed for and capable of transporting goods and materials including commercial semi-tractor trailer trucks, flatbed trucks, refrigerated trailers enclosed or boxed trucks.
- Number of Suspect Trucks – refrigerated trailers, enclosed or boxed trucks and other vehicles which could potentially haul or carry regulated nursery or floral stock that are not visibly apparent.
- Number of Regulated Trucks – Any vehicle visibly and apparently transporting regulated nursery or floral stock.

Alternate Route Survey Form

Date:		Inspector:		Location:
Time	Number of Trucks*	Number of Suspect Trucks**	Number of Regulated Trucks***	Comments (include notes on regulated items observed in transit)
6:00 - 6:59 AM				
7:00 - 7:59 AM				
8:00 - 8:59 AM				
9:00 - 9:59 AM				
10:00 - 10:59 AM				
11:00 - 11:59 AM				
12:00 - 12:59 PM				
1:00 - 1:59 PM				
2:00 - 2:59 PM				
3:00 - 3:59 PM				
4:00 - 4:59 PM				
5:00 - 6:00 PM				
Totals	0	0	0	

***Number of Trucks:** Includes all vehicles which by its type of construction and equipment is designed for and capable of transporting goods and materials to include commercial semi-tractor trailer trucks, flatbed trucks, refrigerated trailers enclosed or boxed trucks.

****Number of Suspect Trucks :** Refrigerated trailers, enclosed or boxed trucks and other vehicles which could potentially haul or carry regulated nursery or floral stock that is not visibly apparent.

*****Number of Regulated Trucks :** Any vehicle visibly and apparently transporting regulated items such as nursery, floral stock or any other quarantined items.

Number of Trucks transiting at different locations

Roadstation idle, DPS Troopers not present (Control)						
Location	Trucks*		Suspect Trucks*		Regulated Trucks*	
	Number	percent of Total	Number	percent of Total	Number	percent of Total
Anahuac (DPS roadstation)	9668	88.31 %	2916	94 %	32	62.70 %
Devers (Alternate route)	932	8.51 %	136	4.38 %	14	27.45 %
Winnie (Alternate route)	347	3.17 %	50	1.61 %	5	9.80 %
Total	10947		3102		51	
Stateline (travel center on TX/LA border)	8,491		1163		35	

Routine roadstation operational, DPS troopers present						
Location	Trucks*		Suspect Trucks*		Regulated Trucks*	
	Number	percent of Total	Number	percent of Total	Number	percent of Total
Anahuac (DPS roadstation)	8248	87.00 %	1697	89.32 %	6	50.00 %
Devers (Alternate route)	894	9.43 %	153	8.05 %	1	8.33 %
Winnie (Alternate route)	347	3.66 %	50	2.63 %	5	41.67 %
Total	9489		1900		12	
Stateline (travel center on TX/LA border)	8,636		1090		21	

72-hour roadstation operational, DPS troopers present						
Location	Trucks*		Suspect Trucks*		Regulated Trucks*	
	Number	percent of Total	Number	percent of Total	Number	percent of Total
Anahuac (DPS roadstation)	7750	85.60 %	**		67	85.90 %
Devers (Alternate route)	1016	11.22 %	150		11	14.10 %
Winnie (Alternate route)	291	3.21 %	30		0	0
Total	9057				78	
Stateline (travel center on TX/LA border)	8,942		1110		25	

* See Appendix B for definitions.

**Suspect truck data during this 72-hour roadstation operation was not collected due to data collection variation.

Breakdown of the project costs excluding salaries

Employee	Total for March Operations Per Person	Total for April Operations Per Person	Total for May Operations Per Person	Grand Total Per Person
Benavides	\$0.00	\$343.11	\$355.11	\$698.22
Blackwell	\$157.02	\$193.65	\$262.26	\$612.93
Bowman	\$299.40	\$182.52	\$0.00	\$481.92
Breed	\$318.11	\$313.11	\$0.00	\$631.22
Burnett	\$0.00	\$94.00	\$0.00	\$94.00
Jackson	\$305.11	\$0.00	\$0.00	\$305.11
Murphy	\$331.11	\$334.11	\$332.11	\$997.33
Ondruch	\$404.12	\$410.17	\$99.00	\$913.29
Peacock	\$456.11	\$397.61	\$455.11	\$1,308.83
Sellers	\$233.74	\$67.65	\$0.00	\$301.39
Sheppard	\$51.70	\$51.70	\$51.70	\$155.10
Smith	\$408.30	\$307.00	\$276.00	\$991.30
Weyand	\$399.68	\$543.27	\$669.63	\$1,612.58
White	\$300.28	\$316.44	\$321.57	\$938.29
Williams	\$447.42	\$455.02	\$472.64	\$1,375.08
Grand Total				\$11,416.59

DPS	Hotel Totals	Meal Totals	Rental Car Totals	Gasoline Totals	Mileage Totals
March	\$2,042.13	\$1,064.10	\$636.00	\$318.17	\$51.70
April	\$1,948.59	\$1,039.95	\$685.00	\$384.12	\$51.70
May	\$1,636.35	\$851.81	\$520.00	\$235.27	\$51.70
Grand Total					\$24,999.96

PROJECT 19: TDA MONITORING, OVERSIGHT AND OUTREACH OF SCBGP PROJECTS

Name of Organization: Texas Department of Agriculture

Project Manager: Mindy Fryer, (512) 463-6908

Email: Grants@TexasAgriculture.gov

Type of Report: Final

Date Submitted: December 2011

Project Summary

In order to properly monitor funded projects from Texas' SCBG State Plan, as well as any future Specialty Crop projects, and ensure each sub grantee follows the rules and guidelines set by both USDA and the Texas Department of Agriculture (TDA), TDA hired a half position to oversee the projects and be a resource to the subgrantees.

Project Approach

TDA's responsible staff member continually monitored all the subgrantees to ensure that they met all requirements of the SCBG program. This grants specialist reviewed all sub grantees' workplans in comparison to the performance reports submitted to ensure the projects were on target.

The grants specialist is the primary point person for specialty crop outreach; sub grantee proposal intake, proposal/award facilitation and providing assistance regarding any specialty crop grant program issues or questions throughout the grant period. During the year, the grants specialist also conducted outreach to potential sub grantees by working with TDA's Marketing and International Trade division to send out email blasts of upcoming Specialty Crop grant opportunities. The grants specialist also conducted a series of post award webinars.

Goals and Outcomes Achieved

In 2008, Texas established a three-year plan with stakeholders. At that time, the stakeholders were quite aggressive in setting priorities, but now that the three-year plan is complete it has been a struggle to obtain a long-term plan of action. To obtain a future plan, the grants specialist developed a survey for the Specialty Crop task force. The survey sought feedback from task force members about potential ideas and the future direction TDA should pursue with the Texas specialty crop industry. Unfortunately, the survey was not as successful as hoped. Participants tend to focus more on individual project ideas rather than broader specialty crop priorities. Additional planning approaches will be attempted in the future.

The grants specialist tracked the expected measureable outcomes listed in each project's profile. She worked with all sub grantees to ensure their project funds were solely utilized to benefit the specialty crop industry. Any problems or obstacles were discussed with the sub grantees.

Beneficiaries

The Texas specialty crop industry as a whole benefited from this project. The grants specialist continues to make great strides on program improvements for future project cycles of the Grant Program to ensure applicants fully understand the process and scope of the Specialty Crop Block Grant.

Lessons Learned

The Grants Specialist learned more about the application process for the Specialty Crop Block Grant Program and has applied that knowledge to application updates, eligibility review, project profile development and program administration.

PROJECT 20: SPECIALTY CROP LIST BUILDING FOR TEXAS 2012 CENSUS MAIL LIST

Name of Organization: USDA/NASS Texas Field Office (TASS)

Project Manager: Joel Moore, (512) 916-5581

Type of Report: Final

Date Submitted: December 2010

Project Summary

The Census of Agriculture, conducted every five years by National Agricultural Statistics Service (NASS), serves as a benchmark for measuring the value of numerous commodities produced in the United States, including specialty crops. An accurate and complete accounting of specialty crops is important in evaluating the relative importance of these commodities across states. The 2007 Census Mail List (CML) did not include all of the small specialty crop producers and although the published state and county numbers included estimates for the non-covered producers; it is in the best interest of every state to have a more complete coverage.

The purpose of this project was to improve the coverage of specialty crop producers in Texas for the upcoming 2012 Census of Agriculture. A higher level of coverage on the 2012 CML will enhance an accurate accounting of specialty crop production in the state. Like other major producing states, Texas has large commercial specialty crop industries including citrus, vegetables, nursery crops and turfgrass. However, a portion of the State's specialty crop production comes from thousands of smaller, independent fruit, nut and vegetable growers selling locally within their communities. It was this group of producers on which this project focused.

The staff of the USDA/NASS Texas Field Office is routinely engaged in large-scale list building and record linkage projects with the purpose of identifying potential new farms of all types. Reaching the coverage target for specialty crop producers in time to be included in the 2012 CML required intensive, targeted research, and extra staff resources. The extra staff resources used for this project were primarily employees of the National Association of State Departments of Agriculture (NASDA), although other state and federal employees participated as well.

Project Approach

The Texas Department of Agriculture (TDA) developed and provided inserts, which were mailed with the 2010 annual fruit, vegetable, and nut survey questionnaires to encourage participation. There were approximately 1,200 specialty crop operations that received the insert.

Using a previously created Texas Field Office list of 2010 farmers markets, updates were made utilizing TDA's on-line listing of Certified Farmers Markets, "Your Handy Guide to Texas Farmers Markets and Fresh Produce" publication, and other Internet sites. Through this process of creating a complete list of all farmers markets, it was discovered that a number of the markets had websites with vendors listed. Vendors from these websites were

the first group of names that were reviewed. As the markets began to open for 2011, the websites were reviewed again for any new vendor names.

For those markets with websites but no vendors listed or those with no websites, the plan was to follow-up with via mail, email, telephone calls, or personal visits. After this, the plan was to focus on web based searches for fruit, nut and vegetable producers through online ads in local papers, Craigslist searches by city across the state, producer organization lists, CSA listings, Google searches, yellow pages searches, etc.

Goals and Outcomes Achieved

The Census of Agriculture methodology provides full coverage estimates for all commodities. Although the value of specialty crop production had a high level of coverage by farms on the 2007 CML, the number of specialty crop farms represented on the CML covered about 85 percent of all specialty crop producers. Another way of stating this is to say that an estimated 15 percent of specialty crop producers (mostly small) did not receive a Census form in 2007. The goal was to reduce the amount of under coverage of specialty crop producers on the Texas CML to 10 percent. Based on 2007 data, this would require adding around 360 previously unidentified specialty crop producers to the Texas 2012 CML.

The Texas Field Office staff reviewed on-line vendor lists for a total of 49 markets. Of the total of 1,255 vendor names reviewed, 702 were farms currently on the TASS list frame, and 249 were added as possible farms. About 60 personalized letters were mailed to farmers markets' managers requesting names of vendors. Of the requests mailed, only seven managers responded, with six providing names. From these six markets, there were a total of 67 vendors names provided, 48 were already accounted for on the TASS list frame, and 18 were added.

Between the end of April and mid-May 2011, email messages were sent to 28 markets asking for help in identifying addresses, phone number, etc for vendors which were listed on their website, but who project staff could not find sufficient information to add them to the list frame. Of these, five market managers responded with the information needed. Between the end of May and the first of June 2011, emails were sent to 46 markets requesting the names of their vendors. Only two markets responded with only one providing names, all of which were already accounted for on the TASS List Frame.

The *Go Texan Herbs* listings resulted in 16 new names from the total 90 producers on the website. We have also reviewed the *Pick Your Own* listing on the *Go Texan* website. 78 operations were already on the list, 3 were added. The Christmas tree farms listed on the *Go Texan* website contributed to 15 new contacts with 95 already accounted for on the list.

A total of 301 new records were added for the September 1, 2010 to August 4, 2011 timeframe from research done on the Farmers Markets and TDA's *GO TEXAN* website. Other internet searches from association websites, Craigslist, on-line classified ads, etc. contributed to approximately another 100 new contacts to the list for a total of 400 records.

Beneficiaries

With an improved CML of specialty crop producers, the Texas Field Office expects better coverage on the 2012 Census resulting in more accurate statistics. This will benefit the different specialty crop organizations in Texas by having timely and reliable information to support the importance of their contribution to the state's agriculture.

It will benefit TDA in receiving the correct allocation of funding from any USDA programs supporting specialty crop production. It will also benefit researchers, state institutions and universities and agribusiness in providing the scope and location of the many different specialty crops produced in the state. And lastly, it will benefit individual producers in providing unbiased information to use in making decisions about their farm.

Lessons Learned

Unfortunately, there is no way to measure the impact of the TDA developed inserts on the response rates to the NASS year-end fruit, vegetable, and nut surveys. The Texas Field Office continues to believe, however, that any promotional materials from TDA contribute to the positive image of the usefulness of NASS data.

With regard to the work done with the state's farmers markets, one market manager provided the following in response to our request for names: *"Some of the people in my group have never been to school, some do not read English, and some will not be able to understand. Some of these people are very suspicious of anything government - how much qualifies as a "farm?" It has taken me two years to get them to fill out a form for me telling me what they sold at market."* Others managers indicated that they would have to have permission from the vendors to provide their contact information to us. This probably explains why we heard back from so few markets.

Also, limited information, i.e. no mailing address or phone number, on internet searches caused additional work and prevented some operations from being added to our list frame. Until a new operation responds to either a NASS criteria survey or the Census, there is no way to know definitely if they are in business, qualify as a farm, or produce specialty crops.

Name of Organization: Texas Citrus Mutual
Project Manager: Ray Prewett (956) 584-1772
Type of Report: Final
Date Submitted: November 2012

Project Objective

Texas Citrus Mutual's (TCM) objective was to contain the spread of Diaprepes Root Weevil (DRW) and reduce the overall impact in infected groves as much as possible. The objective of this particular project was different from Project 11: Controlling the Citrus Root Weevil Diaprepes Abbreviatus that was completed by Texas A&M Kingsville (TAMUK). Together these projects supplement each other and increase the chances of successfully containing DRW.

DRW was first detected in McAllen, Texas on March 16, 2001. In October of 2008, DRW was detected in the Bayview area, and in December of 2008, it was detected just outside the initial quarantine area in McAllen, Texas. Based on these findings, and considering that eradication efforts had been ongoing since 2001, it was evident that eradication did not appear to be working.

Texas Citrus Mutual decided to pull together a technical working group in July of 2011 to review the program components, historical results, visit impacted groves, discuss alternative plans, and develop a new direction for the program. Based on the working groups decisions and historical information, the project objective was focused on containing and preventing the further spread of the DRW, which if uncontrolled, can cost growers as much as \$250 per acre annually for treatment, or worse, decline and death of productive groves due to the combined impact of root damage and phytophthora bacteria infiltrating the damaged root system.

It should be noted that two projects were awarded for the control of DRW, one for dooryards (2010 SCBG funding), and one for groves (discussed here). Based on the limited funds available, and that several of the dooryards in the impacted areas would also be considered commercial groves, because they have two to six acres of managed citrus, the two projects were managed as one effort focusing on the impacted commercial groves, and the dooryard/groves, in order to obtain the greatest impact.

Project Approach

A diaprepes technical review took place in July 2011 with a several researchers, government officials, and industry representatives. These individuals included Dr. Shashank Nilakhe (Texas Department of Agriculture (TDA)), Jose Sanchez (TDA), Ray Prewett (TCM), Bret Erickson (TCM), Dr. Mamoudou Setamou (TAMUK CC), Dr. Mani Skaria (TAMUK CC), Dr. John da Graca (TAMUK CC), and a number of key citrus growers in the Rio Grande Valley, including the two most impacted by diaprepes.

Based on all the facts and grove tours, the consensus of the team was that the current goal of eradication was not going to be feasible and the focus needed to shift to a containment strategy. The technical review team discussion focused on how to utilize the Specialty Crop Block grants in a way that Texas could attain some longer term effectiveness, as opposed to only conducting periodic chemical treatments. Per the recommendation of the technical review team, a long term sustainable program that does not just focus on chemical applications in the quarantine zones needed to be developed. After 10 years of trying to eradicate the diapaes weevil, interested parties continue to see a slow spread of diapaes damage within citrus groves within the quarantine zones in Texas. This is not to say the eradication effort was in vain, in fact the treatment efforts have had a positive impact on helping suppress the spread of the weevil. Unfortunately, the team determined that eradication is unrealistic considering the limited resources and difficulty in killing the diapaes weevil.

In July and August of 2011, TCM worked with Dr. Clay McCoy, and then in early January 2012, TCM worked with Dr. Mamoudou Setamou to complete a Recommended Action Plan for Diapaes Control. This document was partially the result of findings of the technical review team, but more so utilized the expertise of the TAMUK Citrus Center and Dr. McCoy, to provide detailed recommended action items for citrus groves impacted by, and in the vicinity of DRW infested areas. The document was finalized in mid-January 2012 and was presented at a meeting of the Texas Citrus Producers Board (TCPB) for adoption on January 16, 2012. TCPB made a motion to endorse those recommended action items, and was utilized as a method to help encourage impacted growers within the quarantine to follow the guidelines to help manage diapaes, which not only would benefit that grower, but help protect the industry as a whole by limiting the spread of the weevil.

The recommended action items focused heavily on utilizing a mesh groundcover fabric that would help break the life cycle of the weevil, as the adult feeds on and lays eggs in the tree canopy, then the larvae emerge, burrow deep into the soil and feed on the root system, causing severe damage to the tree, and ultimately mature into adults that emerge from the soil, climb back up the tree and the cycle starts over. The fabric placed across the grove floor is a dual action means of breaking the life cycle both preventing larvae from burrowing down into the ground, and preventing adults from emerging up from the ground.

Between December 2011 and March 2012, Texas Citrus Mutual and Dr. Mamoudou Setamou conducted grove visits with the impacted growers in both North McAllen and Bayview. During these visits, Dr. Setamou provided treatment recommendations, and discussed the successful impacts of the ground cover control method. Based on numerous visits, the grove owners/managers came to the agreement that with a labor cost share, and if ground cover materials were provided, they would agree to do the installations.

Goals and Outcomes Achieved

In 2009, approximately two acres of citrus groves in Bayview, Texas were installed with ground cover barrier as a means to reduce diapaes populations. The Bayview groves showed a severe decline and had a large infestation of diapaes. After the installation of the fabric, the groves have shown significant overall improved health. At the same time, the

infested groves that did not receive the ground cover treatment continued to show decline as diaprepes populations persisted and spread. Similar applications have been successfully utilized in Florida and the Caribbean to reduce impact of diaprepes by helping to break the life cycle of the weevil.

The goal for this project was to install ground cover in at least 15 acres of commercial and residential citrus groves in McAllen and Bayview to reduce the diaprepes population and improve the overall health of citrus groves. As previously mentioned, the areas impacted by DRW were primarily commercial, and the dooryard situations most impacted were homes that had between two and six acres of solid citrus tree plantings, making it a unique situation, where the significant dooryard settings could be managed like commercial citrus. These were the primary areas of concern and focus, where the project could get the most significant results for the dollars available.

The Texas Citrus Producers Board held a meeting on January 16, 2012, with 22 people in attendance, 11 of which were growers. All of the attendees received a copy of the recommended action plan that was developed by Dr. M Setamou for review and adoption.

The motion was stated such that growers who had groves known to be infested with DRW should follow these recommended actions to the best of their ability. In return, those growers may be considered for financial assistance by TCPB to help them continue to combat DRW infestation even after the TDA Specialty Crop Block Grant funds had expired.

In addition to the growers on the TCPB, the recommended action was also shared with TCM board grower members, and especially those growers who were impacted by DRW. A copy of this report has been provided in the additional information section/

Beneficiaries

To date, in the Bayview area, approximately 11 acres of citrus have been installed with the ground cover fabric, with growers reporting reduced weevil catches, and significantly improved tree health. In addition, approximately two new acres were planted with young trees, with raised beds and the ground cover fabric in place, and a strict treatment plan. These trees would typically be extremely susceptible to DRW damage, but are healthy and strong.

In the McAllen area, TCM has commitments on ten acres on two different groves that been heavily impacted by diaprepes. The labor cost share funds have been disbursed, and the fabric and anchoring pins have been purchased and are staged, ready to be installed. The ground has already partially been prepped for fabric installation, although there have been a couple of setbacks due to weather issues, and spray program timing issues, but it is estimated that the final ten acres of installation in the McAllen area will be completed by the end of July 2012, if not sooner.

Ultimately, a total of 22 acres of commercial/residential grove acres will have been covered by this program which will provide at least three to five or more years (depending on life of ground cover) of good ongoing control helping to break the life cycle of the weevil, and

significantly reduce DRW populations. This greatly reduces the risk of the spread of the weevil to other citrus producing areas.

Lessons Learned

One of the biggest challenges in this process was convincing some growers in the McAllen to agree to install the landscape fabric. The reasons are numerous including the likelihood that several of these groves will soon be developed into high end residential or commercial properties. Also, several of the sites have which created concerns about the aesthetic aspect of installing the fabric and plastic. Cost of installation and cost of future removal remains a high concern for some of the growers.

In the future, project staff will continue to hold meetings and stay in touch with these growers and homeowners to educate them and work to convince the growers in particular that this is an industry issue.

There will need to be ongoing enforcement of the quarantined areas to ensure that city brush hauling and residents of those areas adhere to the necessary restrictions to help prevent the unintended spread of the weevil outside of those areas. TCM will continue to work with TDA to ensure these efforts continue.

Additional Information

DRW will likely continue to persist as an ongoing issue in South Texas. The nature and life cycle of the insect make it incredibly difficult to control. Ongoing efforts will need to be made to help continue to monitor, survey, and suppress growing DRW populations. Project staff will continue these types of efforts in conjunction with TAMUK, Texas Citrus Producers Board, and TDA and USDA where possible.

Texas Citrus Mutual sincerely appreciates the partnership with the Texas Department of Agriculture and the USDA Specialty Crop Block grant program to obtain funding to assist in the battle to prevent the further spread of the diaprepes root weevil. Project staff wants to thank other partners who have helped in this project including Texas A&M University Kingsville, Citrus Center at Weslaco and Dr. Clay McCoy. TCM also want to thank the grower partners who have participated in this process, and for those impacted growers who agreed to participate in this effort.

Additional Documentation

Recommended Action Plan for Diaprepes Control in Texas Citrus
Approved by The Texas Citrus Producers Board

Impact of Diaprepes Root Weevil in Texas

Diaprepes root weevil (DRW) is a quarantine pest in Texas where the infestation has so far been confined to a relatively small area, however it is spreading. If DRW continues to spread, its impact will be devastating to the Texas citrus industry and certain ornamental plants including palm trees. Once a citrus grove becomes infested, all trees can easily be decimated within one to two years.

To prevent the further spread of DRW in South Texas and improve control in the quarantine areas, a technical review committee was assembled to review the eradication efforts that have been in effect for the last 10 years. The review team concluded that DRW has spread too far for it to be eradicated, at least with the current technology. While eradication is not an option, the review team also concluded that containment and management of the pest is potentially feasible and absolutely worth pursuing in order to prevent the spread of DRW from infesting larger citrus producing areas in South Texas. The consequences of giving up on any type of control strategy will result in an acceleration of the spread of the pest, and could cost the citrus industry significant production and financial losses.

Once DRW becomes established in an area, it becomes nearly impossible to control with pesticides due to the fact that the larvae live below the soil surface, as deep as 4'. DRW larvae feed on the root system of trees destroying the fibrous roots and bark of larger roots that will ultimately kill the tree. Larval injuries by DRW serve as preferred infection points for root rot diseases caused by soil borne fungal pathogens such as *Phytophthora* spp. The interaction between root weevils and soil-borne fungal pathogens results in one of the deadliest and severe decline syndromes affecting citrus in DRW infested groves. As such, DRW is one of the most important citrus pest issues impacting Texas citrus.

Control Strategy Recommendations

The following recommendations were made based on the best science currently available and the specific DRW infestation scenarios in groves and residential areas in south Texas.

1. Recommendations for infested groves

Whenever a grove is known to be infested with DRW, it is automatically quarantined and all quarantine regulations as defined by the Texas Diaprepes Quarantine Rule §19.161 apply to that grove.

In addition, the following recommendations should be followed:

a. DRW-infested grove still productive

- Use plastic mesh to mat the grove floor, thus preventing adult from emerging and spreading. At a minimum, matting will go out to the drip-line, but may preferentially go as far as covering the entire grove floor.
- Conduct foliar sprays during each new flush cycle to target adults and eggs. Use chemicals such as zeta-cypermethrin (Mustang), fenpropathrin (Danitol), imidacloprid (Admire-Pro, Provado, Sherpa) and diflubenzuron (Micromite).
- All plant materials generated after pruning, hedging or topping must remain and be disposed of on-site within the quarantine area.
- Fruit can be harvested and taken out of the grove, but care should be taken to ensure that other materials such as leaves and twigs are not transported out of the grove. Furthermore, bins should be sprayed with pyrethroids before being transported to the packing shed.

b. DRW-infested grove with declining and non-productive trees

- If trees are dramatically declining and cannot be salvaged, these trees need to be destroyed.
- Trees must be cut at the base of the trunk and the brush should be piled and disposed of within the quarantine zone. The brush pile must be sprayed with a pyrethroid immediately. Brush can be chipped or burned as soon as possible.
- The entire grove floor must be covered with black plastic tarp for at least the months of May through August.
- After the required exposure time of the black tarp, the stumps can be uprooted and burned.

2. Recommendations for groves at risk and new plantings

a. Groves at risk

- If DRW has not been detected in a grove, but the grove is within the quarantine area or its immediate vicinity within ¼ mile, the grove floor needs to be covered with plastic mesh (to the drip line at a minimum) and foliar sprays of insecticides made during each flush cycle (see section 1.a.)

b. New grove plantings

- If a new grove is to be established within the quarantine area or its immediate vicinity, a minimum of 8-foot wide plastic mesh must be used to cover all planting rows. Or preferably the entire grove can be matted with plastic mesh

3. Recommendations for Residential Areas

- Quarantine enforcement
- Outreach and education for homeowners
- Biological control
- Proper handling of plant materials

Implementation Strategy

An effective implementation strategy will be critical to the overall success of the recommended actions for DRW control. The Diaprepes Control Action Plan is intended to be a specific set of guidelines that will be presented to the Texas Citrus Producers Board (TCPB) for adoption as an industry.

Stakeholders in the Texas citrus industry must have a clear understanding of the potentially devastating impacts of the spread of DRW outside of the quarantined areas and into larger commercial citrus production areas. The industry must also have a willingness to support these recommendations and strongly encourage those individuals operating within the quarantine zones to follow the recommended actions.

Principles for implementation of citrus industry diaprepes program to prevent spread include:

- a. The citrus industry will take ownership of the DRW issue including the funding for the program because no one else is going to do so.
- b. The goal is to minimize additional spread of DRW and to reduce the population where it is found.
- c. For this program to be as effective as possible, all growers need to support a common approach which has been vetted by the best science available regarding the most effective control strategies and approved by the Texas Citrus Producers Board.
- d. TCPB should review the recommended action items, make any changes or recommendations as necessary and endorse the action plan.
- e. Assistance is available for growers impacted by DRW.
 - Growers with diaprepes issues may be eligible to receive assistance in the form of ground cover material and labor cost share opportunities.
 - In order to receive TCPB assistance, growers will need to adhere to a written agreement which will include:
 - i. Adherence to Control Strategy Recommendations listed in this document
 - ii. Utilization of plastic mesh per diaprepes technical review team recommendations
 - iii. Pesticide applications as recommended by diaprepes technical review team
 1. Commercial Groves:
 - a. **Capture 2EC Insecticide/Miticide (bifenthrin)** at the rate of 16 ounces of product per acre. Apply twice annually, once in the spring and once in the summer. To be effective Capture 2EC must be applied to the soil surface. Weeds must be removed prior to application to allow treatments to reach the soil. Capture 2EC serves as a soil barrier for newly hatched larvae that drop to the ground from the citrus foliage.
 - b. **Sevin 80WSP Insecticide (carbaryl)** at 10 pounds of product per acre, or Sevin 4 Flowable (carbaryl) at 2.5 gallons of product per acre, or Sevin XLR Insecticide (carbaryl) at 2.5 gallons of product per acre. Apply twice per year: once during the spring and once during the fall. Add a gallon of Petroleum Oil such as FC435-66 to each of the Sevin sprays. If necessary, one of the Sevin sprays may be replaced with Guthion 50WP (azinphos-methyl) at 4 pounds of product per acre. One gallon of Petroleum Oil may also be added to the

Guthion spray. These foliar sprays help control *Diaprepes* adults.

- c. **Mustang Max (zeta-cypermethrin)** at rate of 4 ounces of the product per acre. Apply a foliar spray of Mustang Max four times per year: early spring, later spring, summer and fall. Mustang Max foliar sprays help control *Diaprepes* adults. Add one gallon of Petroleum Oil such as FC435-66 to each of the Mustang Max sprays.
- d. **Micromite 25 WS Insect Growth Regulator (diflubenzuron)** at the rate of 1.25 pounds of the product per acre. Micromite 25WS prevents eggs from hatching and oil deters the attachment of egg masses to leaves. Three applications of Micromite will be performed under this contract. Micromite will be tank mixed with Mustang Max during early spring, late spring and summer applications.

2. Residential

- a. Talstar One – the treatment of Talstar One will be applied to the drip lines of the trees and shrubs using the labeled rate.
 - b. Sevin 80WSP Insecticide (carbaryl) – the treatment of Sevin will be applied to the foliage of the trees and shrubs using the labeled rates.
- The growers who support the common industry approach will receive priority in funding compared to those who choose to pursue an alternative approach.
- i. For those growers impacted by DRW
 - 1. Ground cover material will be provided at no charge to the grower for as long as supplies and funds are available.
 - 2. 50/50 labor cost share will be available if requested and agreement entered into before March 31, 2012.
 - ii. Growers who seek assistance after 3/31/2012 will be considered for assistance only if TCPB approves the request and if additional outside funds are available.
- f. For those growers impacted by DRW who are unwilling to adhere to these recommended actions, TCPB strongly encourage those growers to push those impacted groves and follow recommended actions as outlined for declining and non-productive groves. Financial assistance for this to be determined by TCPB.

The Texas Citrus Producers Board has reviewed and approved the Action Plan for *Diaprepes* Control in Texas Citrus. TCPB encourages any and all growers impacted by DRW to follow

these guidelines in order to protect the entire Texas citrus industry from the devastating impacts of the Diaprepes Root Weevil.

PROJECT 22: GOOD AGRICULTURE PRACTICES (GAP) THIRD PARTY AUDIT ASSISTANCE PROGRAM

Name of Organization: Texas Department of Agriculture

Project Manager: Mindy Fryer, (512) 463-6908

Email: Grants@TexasAgriculture.gov

Type of Report: Final

Date Submitted: November 2012

Project Summary

The purpose of the Good Agricultural Practices (GAP) Third Party Audit Assistance program is to encourage third party audit companies to apply to Texas Department of Agriculture (TDA) for funds that will incentivize new Texas specialty crop producers, who have not participated in a third party food safety audit, to become GAP certified. Texas specialty crop producers, including fruit and vegetable, citrus, pecan, peach and berry producers were encouraged to become GAP certified through financial assistance associated with completing and passing the GAP food safety third party audit.

Project Approach

Consumer safety has become one of the most critical and highest priority issues for the produce industry, both at the production level and throughout the supply chain. Despite the best efforts by fresh produce supply chain participants, food safety problems may never be completely eliminated; however, an effective and cost-efficient production system can minimize the risk of a problem and can reduce the negative economic impact on the supply chain participants.

As part of Project 8: Produce Safety in Texas: A Systems Approach (GAPs Curriculum Development, Website, Trainings, and Conference), TDA was responsible for working directly with specialty crop producers to reimburse them for a passed GAP audit upon the completion of the GAP training they received. This portion of the project did not have the interest level that was anticipated.

Trying to maintain the core benefit, but retool the approach, TDA worked with several members of the produce industry to develop a grant program that would still incentivize new Texas specialty crop producers that have not participated in a third party food safety audit to become GAP certified. Project staff developed a grant program that would work directly with third party audit companies to reach out to Texas specialty crops producers to offset the cost of a completed GAP audit.

Goals and Outcomes Achieved

To achieve this program, staff developed a request for proposal to solicit assistance from private third party audit companies to reach approximately 100 specialty crop producers in Texas and provide a cost share to offset the cost of GAP or GHP audit.

TDA contracted with two audit firms, Primus Labs and NSF, but the project was very slow going. Due to a lack of results as required by benchmark requirements in the grant agreement, TDA decided to shift this project to the 2010 Specialty Crop Block Grant. Since the completion of this project more audits and training class have been completed and will be discussed in the 2010 final report.

TDA reimbursed two growers for successfully completing a third party audit through this project.

Beneficiaries

By partnering with the audit companies TDA believed it would be able to reach a group of producers that previous marketing and training efforts could not access. Recall numbers are up significantly, which transfers to increased demand from buyers who wish to purchase produce from producers who have engaged in Food Safety programs and third party audits to verify those programs. Improving food safety in vegetables requires that everyone involved in the food system, from farm to fork, understands how they are involved in the process and what they can do to protect fresh vegetables from contamination.

Lessons Learned

TDA provided several opportunities for producers to participate in this program. However, TDA found a significant lack of interest in the program. TDA believes the main reason growers are not participating is that this is still a voluntary program. Although TDA is cost sharing the expense for a first-time audit, the producer may incur significant costs to reach initial compliance and maintain certification in the future.

PROJECT 23: IDENTIFYING SUPERIOR PIERCE'S DISEASE RESISTANT GRAPE VARIETIES: 2012 LABORATORY AND FIELD EVALUATIONS OF HOST PLANT RESISTANCE

Name of Organization: Texas AgriLife Extension

Contact Information

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Type of Report: Final

Date Submitted: November 2012

Project Summary

Pierce's disease (PD), caused by the bacterial pathogen *Xylella fastidiosa*, has long limited production of wine grapes in Texas and much of the Southern United States. The pathogen and a major insect vector of the disease, the *glassy-winged sharpshooter* (GWSS), are endemic to major areas of Texas and the Southern U.S. Traditional grapevine varieties (*Vitis vinifera*) are highly susceptible to PD for which there is no chemical cure. Current strategies for disease management depend entirely on cultural practices (site selection, vegetation management, etc.) and chemical control of insect vectors. Even with these tools, grape production in much of the state remains limited. In recent years there has been substantial growth of the Texas wine industry along with an increase in consumer demand for Texas wine. Significant opportunities exist to expand the high value specialty crop of winegrapes in Texas *provided* an effective, non-genetically engineered answer to PD can be found. (Studies show that consumers currently are not inclined to purchase wine made from grapes grown on genetically modified vines.) In addition to identifying commercially viable tolerant scion (fruiting) varieties, identification of superior rootstock varieties is also necessary to survive Pierce's disease and to provide acceptable viticultural growth characteristics when grafted to tolerant varieties. Rootstock trials were established in Real County and Gillespie County in 2011 and a third site in Austin County was developed for planting in 2012.

The primary purpose of this project was to proceed in identifying superior PD resistant varieties as well as those rootstocks which will complement PD resistant grapevines so that grape acreage in Texas can economically increase. More specifically, the effort seeks to aid in the development of long-term approaches to the management of PD, to increase productivity, and to expand the opportunities for commercial grape production in Texas. The Texas PD Grower Advisory Board identified this project's goal of more fully exploring host plant resistance options as a priority area. Two strategies were identified to achieve this goal: 1) evaluate the level of PD resistance, viticultural characteristics, fruit quality and wine quality of existing and newly bred PD resistant grape varieties; and, 2) evaluate existing and

newly-bred grape rootstocks for their impact on disease development, vine growth, survival and productivity of the scion variety when used in areas with PD pressure.

Project Approach

A PD tolerant grape variety test block was established in 2009 at a commercial grape growing site in Austin County, Texas. Thirty two tolerant/resistant varieties and selections were planted in nine vine plots and are being evaluated for:

- Ability to truly resist PD under high disease pressure
- Ability to bear commercially viable fruit yields
- Tolerance to fungal disease pathogens
- Ability to ripen fruit properly under local environmental conditions
- Fruit quality (sugar, acid, pH)
- Wine quality (experimental lots of wine made from fruit)

2012 is the first year these plots will bear fruit for harvest and fruit quality evaluation. A companion trial was established at another evaluation site near Leakey, Texas in 2011 and should bear its first crop in 2013.

Rootstock plots were established in Real and Gillespie Counties (Texas) in 2011 and a third site in Austin County was developed for planting in 2012. These plots will compare and contrast the growth and performance of a scion variety ('Sangiovese' in Real and Gillespie Counties, 'Blanc du Bois' in Austin County) grafted on eleven different rootstocks compared with the growth of own-rooted vines. Grapevine petioles were collected from the Real and Gillespie County rootstock blocks for analysis to compare the nutrient uptake ability of each rootstock. Dormant pruning weights will be taken in the winter of 2012-2013 to measure the impact of rootstocks on relative vine vigor.

Plot maintenance in all scion and rootstock blocks was conducted throughout the 2012 growing season and consisted of pruning, training, insect and disease control, vineyard floor management, and maintenance of appropriate water irrigation and nutritional inputs. Yield and fruit quality assessments on bearing variety trial plots were also conducted. In addition to similar management on the rootstock plots, the third evaluation site was prepared and vines were planted.

At the Austin County variety evaluation site, vines were rated for their commercial production potential and twenty percent of the accessions will be identified for removal this coming winter. New, more advanced selections have been acquired and propagated and will be planted in the plots chosen for removal in 2013. All varieties were sampled in late summer and subjected to a PCR analysis that will identify relative pathogen concentrations which should be an indicator of an individual variety's ability to withstand Pierce's disease.

Reports were summarized and an on-site educational meeting was held in Austin County for Gulf Coast grape growers. Data will be summarized and presented at upcoming extension and industry educational events.

Goals and Outcomes Achieved

PD tolerant variety plots were successfully evaluated and vines were identified that had unusually high quality, productivity and fungal disease tolerance. Fruit was analyzed from all evaluation plots and test lots of wine were produced from the most promising selections. These wines will be evaluated by a sensory panel in the winter of 2012/2013. Likewise, 25 percent of varieties in the test plot have been deemed unsuitable for further evaluation because of poor fruit quality, inability to tolerate weather conditions (fruit cracking due to seasonal rainfall), or high susceptibility to fungal pathogens. Varieties and selections to be removed include: 'Delicatessen', 'Bailey', 'MissBlue', 'Wineking', O-47-3-7, C30-5-1, C30-7-1 and D16-13-1. In addition, PCR analysis of vine foliage will shed greater light on Pierce's disease tolerance.

A third rootstock trial location was successfully prepared constructed and planted. In addition to evaluation of six standard rootstocks, five new rootstocks from the U.C. Davis rootstock breeding program are included in all three of these trial locations. There appeared to be marked differences between rootstocks' ability to adequately uptake nutrients. Visual deficiency ratings were recorded and timely petiole sampling conducted to quantify these differences. Annual pruning weights taken after upcoming dormant pruning will provide quantitative differences between the rootstocks ability to impart or restrict scion vigor. In addition to benefiting growers in areas at risk to Pierce's disease, these trials will provide important comparative information on vigor, adaptability to specific soil conditions and tolerance to other soil-borne pathogens to all grape growers across Texas.

All plots were successfully managed and variety and rootstock trial blocks should provide significant information on vine performance in the 2013 growing season. Growers were given their first chance to see the fruit from the PD tolerant variety trials at a tailgate meeting held in Austin County on July 13, 2012 (40 participants). Some of the varieties under evaluation produced fruit of extremely high quality-several orders of magnitude greater than some of the varieties under commercial cultivation. Because of the extremely high quality of some of the new varieties and selections, growers are extremely interested in following the developments of this project. Data analysis was conducted during fall 2012. Results were presented at the TWGGA Grape Camp event held in Fredericksburg in November 2012 (183 participants) and will be presented in February 2013 at the TWGGA Annual Conference (estimated 150 participants) and the Gulf Coast Grower's Field Day (estimated 125 participants) among other events.

Beneficiaries

The outcome of the PD tolerant variety trials will directly benefit grape growers currently producing grapes in areas with high to moderate risk of Pierce's disease. Plus, the numerous prospective grape growers considering this specialty crop option will benefit from seeing a better opportunity to be successful economically. Once identified and released for commercial production, these new varieties will provide increased varietal choices for growers to meet the demand for higher quality fruit. With increased production, it is logical

to assume the number of wineries in these areas also will increase. In addition to members of the wine and grape industry, these new varieties and their impact could result in increased agro-tourism and community development in rural areas of Texas. The rootstock trials, in addition to providing information on the management of Pierce's disease, will identify the viticultural traits of these stocks.

Lessons Learned

The distance between the plots in Real County and those at Austin County proved to be a major obstacle in the ability to provide needed cultural practices during the course of the growing season. The program is operating short-handed and the staff was challenged to perform all of the needed tasks at all sites. This was further complicated by the installation of the third rootstock trial. Staff trusts that now that all experimental sites are established that concentrating on maintenance will be easier in the future. Project staff is encouraged by the enthusiasm of the grape growing community and are looking forward to the continuation of this project.

Additional Information



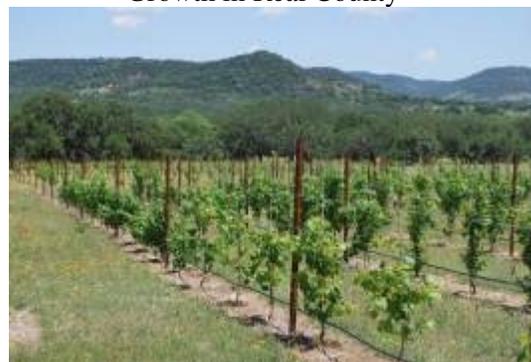
Final Rootstock Plot is established in Austin County



Rootstock Trial Vines Make Good Growth in Real County



Ripe Fruit at Austin County Site



Variety Trial in Real County Will Bear Fruit in 2013

PROJECT 24: ARE YOU PREPARED TO SURVIVE THE DROUGHT? NOT YET.

Name of Organization: Texas Nursery & Landscape Association

Project Manager: Chelsey Thomas (512) 589-2860

Type of Report: Final

Date Submitted: November 2012

Project Summary

The purpose of the “Are You Prepared to Survive the Drought? Not Yet.” project was to educate the end user on the conservation of water through simple tips and tools by supporting the messages of the Texas Water Smart Coalition. As Texas faced one of the worst droughts in our history, consumers were unable to cope with water restrictions, the intense heat, and the lack of rain. Cities restricted water use; essentially putting a death sentence on plants and yards that were not drought tolerant. In turn, the choices being made by home owners and cities were having an extremely negative effect on the specialty crop industry of Texas. Landscapers were no longer being hired to install landscapes, many were letting their landscapes die, retailers were losing business, and companies were losing the battle to stay in business. When TNLA joined the Texas Department of Agriculture, local municipalities, private business and associations to work together to promote these messages, these grant dollars were able to increase the impact of the coalition’s message and contribute to the saving of up to 10 percent of this vital resource by helping the consumer make choices that can be sustained through the continuing drought. These efforts effectively increased the likelihood that many specialty crop businesses stayed in business by inducing sustained consumer demand, both now and in the future.

Project Approach

562 radio spots were purchased in the Dallas area to carry the Water Smart messages to end users. The radio spots that were aired during this time covered a range of water saving tips including using an extra layer of mulch, installing drip irrigation systems, not watering the sidewalk, and other simple and cost effective tips. Messages paid for with Specialty Crop Block Grant funds focused on maintaining yard and garden health with less water. All messages featured Commissioner Todd Staples, the spokesperson for the Texas Water Smart Coalition and were 15 to 30 seconds in length. Dollars used to fund the radio spots were successful in conserving water in the months of May and June 2012.

Goals and Outcomes Achieved

Recently, an impact study was conducted to measure the success these efforts made by interviewing 216 respondents from August 6 to 9, 2012. The majority of homeowners surveyed recall some water conservation message, with more than a third attributing awareness to Texas Water Smart and radio spots aired.

One of the goals of this grant project was to increase the consumers’ knowledge and awareness of water smart principles, and to decrease the amount of water used while maintaining yard and garden health.

- Around 25 percent of Dallas homeowners report using less water in the summer of 2012 versus 2011.
- 86 percent of those using less have reported a decrease of 10 percent or more (approximately 23 percent of homeowners surveyed).

In May of 2012, there were 570 visits to the Texas Water Smart website. When the radio spots began running in June, traffic increased to 863 visits, up over 51 percent from May. In July, visits were up 18 percent from May.

Beneficiaries

The Dallas/Fort Worth area was the most positively impacted entity. Through this campaign, a significant amount of water was saved, allowing Green Industry companies to stay in business, increasing the quality of life for area residents and prevented further regulations.

Prior to this campaign, many people misunderstood what being water smart really meant, and pre-campaign versus post-campaign indicator measurement lends strong evidence to support the idea that the campaign was able to alleviate many of the misconceptions. Being water smart doesn't mean an end for the specialty crop industry; it means that the industry needs to make better, conscious decisions and efforts to protect what they have. The right plant for the right environment and using drip irrigation system or watering in the morning and evening to make better use of our available water are just a few ways to conserve water and sustain the plants.

Each of the lessons learned translates into more business for specialty crop producers and retailers. It's another sale at a retail garden center, it is the installation of drip irrigation, and it's a landscaper coming out to recommend drought tolerant plants that are appropriate for the consumer's region.

A more educated public, that can make appropriate decisions for their landscape needs, translates into a more stable and productive specialty crop industry.

Lessons Learned

There were no significant lessons learned at this time.

Additional Information

<http://www.texaswatersmart.com/>