Mississippi Department of Agriculture and Commerce

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PROGRAM CONTACT

Susan Head, Grants Management and Marketing Specialist
Market Development Division
121 North Jefferson Street
Jackson, MS 39201
Phone: (601) 359-1196
Email: susan@mdac.ms.gov

INTRODUCTION

The Mississippi Department of Agriculture and Commerce (MDAC) was awarded $269,262.99 in funding for the Specialty Crop Block Grant Program-FB (SCBGP-FB) in September 2011. MDAC partnered with seven organizations to implement eight projects to enhance the competitiveness of specialty crops throughout the state. The project report for "Public Relations Campaign to Promote Buying Local Specialty Crops" was submitted and approved in the first annual report in 2012. The final reports for the projects, "Tell It Like It Is-Speakers for the MFVGA Conference," "Eat Healthy Mississippi," and "Everything Local Expo," where approved in the second annual report in 2013. The remaining final reports are included in this document.

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DEMONSTRATION OF PERENNIAL SPECIALTY CROP PRODUCTION IN MISSISSIPPI

Project Summary

Mississippi State University researched potential varieties of specialty crops to help diversify the specialty crops industry of our state. Crops initially determined for the study included hops and asparagus. Horseradish and Raspberries were added to the project in the second year. This project was proposed due to the increase in demand of local produce in Mississippi, as evidenced by the increasing number of farmers' markets. Many markets share some of following characteristics:

- The market is dominated by a relatively limited number of different produce (tomato, pepper, eggplant, squash, sweet corn, etc.);
- The limited number of produce is mainly 'annuals' (crops that die under certain conditions, for example frost), which are available during a relatively short period of time (May-September) and need to be re-planted every year;
- When one farmer has certain produce at the market, almost every other farmer in the market also has them, although some farmers have adopted season extension technology including high tunnels.

The motivation of this project was to enhance the competitiveness of specialty crops in Mississippi in two aspects: 1) Suitable specialty crops will be identified and 2) Their production techniques will be refined through the trials.

This project did not build on a previously SCBGP or SCBGP-FB funded project.

Project Approach

Hops

In May 2013, a two-row single wire hop yard was constructed at the MSU Beaumont Horticultural Unit. The top wire used was 1/8" multi-strand galvanized wire and was set at 12' above grade. This height was chosen to allow sufficient room/height for hop bine growth and also to allow harvesting access without any specialized equipment requirements. The wood posts were set into the ground 5' and spaced 20' apart in the row. The two rows were spaced at 10'; allowing ample tractor/equipment access. Each row of posts was secured to the ground with anchors and guy wires at each end. Sacrificial twine was attached at the top wire and secured to the ground at the base of each plant. This twine would provide support for the hop growth but was not needed due to the limited plant development this first year. Each row was amended with aged pine bark and outfitted with drip irrigation. Eight varieties of Hops (Humulus lupulus) were ordered from a supplier in Oregon. These varieties represent a mix of

the more popular varieties grown/sold. The rhizomes were planted on May 23, 2013. Note: this planting date was driven by the ability to complete construction of the hop yard. Ideally, the rhizomes would have been planted earlier (March) but was delayed due to wet field conditions.

The following table lists the varieties and the type of hop that was planted at MSU Beaumont Horticultural Unit.

Variety	Type of Hop
'Mt. Hood'	Aroma
'Willamette'	Aroma
'Cascade'	Aroma
'Perle'	Aroma
'Galena'	Bittering/Aroma
'Nugget'	Bittering
'Magnum'	Bittering/Aroma
'Newport'	Bittering/Aroma

The following table lists the varieties planted in order of performance.

Variety	1st year growth summary
Cascade	5/5 rhizomes sprouted. Average growth <2'.
Nugget	5/5 rhizomes sprouted. Average growth <1.5'.
Mt Hood	4/5 rhizomes sprouted. Average growth <1'.
Perle	3/5 rhizomes sprouted. Average growth <1.5'.
Willamette	3/5 rhizomes sprouted. Average growth <1'.
Magnum	2/5 rhizomes sprouted. Average growth <1'.
Newport	2/5 rhizomes sprouted. Average growth <1'.
Galena	1/5 rhizomes sprouted. Average growth <1'.

It is possible that the late planting date affected the growth of the hops this first year. Most bines showed leaves with burned/yellow/brown edges. The cause for this is not known. Overall, the first year's performance was poorer than expected.

Hops were planted in May 2013. During the 2013 growing season, 'Cascade', 'Nugget' and 'Mt. Hood' appeared to perform better than the other varieties. None of the varieties had more than 3' of growth. No flowers were produced in year 1.

A hops field day was held in June 2013 to discuss growing of the perennial specialty crop; 31 growers were present.

The hops were highlighted again in June 2014 at the Vegetable Field Day at the Beaumont Horticultural Unit. Additionally, contact has been made with a coastal brewery to discuss chemical analysis and use of the hops.

Asparagus

'Jersey Knight', 'Jersey Supreme', 'Jersey Giant', 'Mary Washington', 'NJ1122', and 'NJ1113' were planted in hipped rows at the Beaumont Horticultural Unit in May 2014. The crowns were heavily mulched, and new growth was apparent.

The first harvestable crop is expected in 2016. It generally takes asparagus 3-4 years to reach first harvest. Marketable harvests are expected in 2017.

Horseradish

Czechoslovakian horseradish was planted alongside the asparagus trial. It is a west coast variety that does well throughout the Midwest. This variety has a very attractive top reaching two feett or more. It is known for its productivity and white interior. This crop will be used as a demonstration crop only. Harvestable roots are expected in 2015.

Raspberries

Interest in raspberry production has been increasing among growers for several years. Mississippi's heat and humidity make raspberry production difficult at best. Therefore, two "heat-tolerant" varieties were planted for evaluation. 'Nantahala' is an ever-bearing red raspberry known for good production in the south. 'Heritage' can be grown as a two-crop variety; however, it is recommended that canes be removed before early spring dormancy break and one crop is produced.

Preliminary results indicate that raspberries may be a viable crop for Mississippi growers. However, plants were very susceptible to sun scald. Mid-season the plants were covered with shade cloth material. Marketable fruit set is expected in 2015.

The overall scope of this project was directly related to specialty crops, other commodities would not have benefitted as a result of this project.

Drs. Coker and Porter have provided direct oversight throughout the project's duration. Dr. Coker provided day-to-day operational direction at the study site, the Beaumont Horticultural Unit. Dr. Porter provided research and outreach support on-site and through interaction with growers.

Goals and Outcomes Achieved

Crops placed into production as a result of this project include hops, asparagus, horseradish, and raspberries. This perennial specialty crop project was highlighted at two field days held at the Beaumont Horticultural Unit (June 2013 and June 2014).

Due to the nature of perennial crops, marketable production may not occur for up to 3 years from the time of planting. Actual harvests will begin on these crops beginning next year (2015), at which time growers will be encouraged to visit the station to learn more about production techniques.

The target number of growers to be reached through this project was approximately 200 growers. Approximately 100 growers were directly reached through field days in 2013 and 2014. Additional clientele were reached through information disseminated through WordPress, Twitter, LinkedIn, and Facebook.

Unfortunately, the project timeline was set back a year due to change in PIs. Because perennial crops may take up to three years to come in to production, the entire project was at a disadvantage. Given the circumstances, great progress was made in establishing the project and achieving grower outreach. The outreach and demonstration portions of this project will be continued long after the completion of this grant.

Beneficiaries

Commercial vegetable producers, small market growers, as well as home gardeners benefited and will continue to benefit as they will learn they can also produce the crops demonstrated in this project. The 100 growers in attendance from field days plus others that were reached through WordPress, Twitter, LinkedIn, and Facebook all benefited from the information presented.

Basic cultural practices were used and with little more input than required for annual crops, perennial crops can provide multi-year harvests. An economic benefit of the perennial crops is that they will not compete with traditional annual crops (tomato, pepper, eggplant, etc.), thereby giving growers an advantage in local markets.

Consumers will also benefit by adding more options including local, fresh foods to their diets.

Lessons Learned

This project encountered severe setbacks from the outset. The initial PI left the University prior to the project's funding. It took a considerable amount of time for the University to re-assign the project to the present PIs. Therefore, an entire year of production time was lost. Additionally, the new PIs were unable to successfully connect with the identified grower-collaborators identified in the original project proposal. One collaborator expressed interest early on, but later changed employment out of full-time farming. Significant time was lost as project PIs tried to make contact with the growers and determine how to follow through with the project.

Lastly, the crops identified in the original proposal were unlikely to be successful for Mississippi growers or feasible for Mississippi markets. Therefore, the number and type of crops were refined to better reflect local conditions and consumer preferences. Hops were chosen because of new legislation allowing for home brewing and the increased interest from many small growers in the state. Asparagus was also chosen because it has been many years since a trial has been conducted; and it has the potential to be a high-value crop for Mississippi growers. Lack of grower participation and cooperation led to uncertainty within the project planning, set-up, and establishment.

However, consumers and growers both expressed considerable interest in the perennial specialty crops that were planted at Beaumont. MSU will continue with plans to host training opportunities for growers and Extension personnel.

Contact Person

Dr. Christine E.H. Coker
228-546-1013
ccoker@ra.msstate.edu

Additional Information

Information was also disseminated via blog at veggiedr.wordpress.com and social media at www.facebook.com/CoastalRandECenter.

PRUNING MANAGEMENT FOR PRIMOCANE-FRUITING BLACKBERRY PRODUCTION IN HIGH TUNNELS UNDER DEEP SOUTH GROWING CONDITIONS

Project Summary

Many limited income farmers are seeking additional ventures to extend their revenue stream for longer periods. The use of high tunnels is allowing farmers to accomplish their goal. In addition, the demand for locally grown fresh fruit is at an all-time high.

Prices for blackberries are at their highest from September to early November. Fall primocane blackberry production offers opportunities to expand the market season and extend production season into this market window. Production during this time would also provide farm income when most small fruit growers have none.

However, yields of primocane blackberries in the south are limited by hot temperatures during flowering and fruit set and then early frost can destroy fruit before it reaches maturity. This limitation may be overcome with techniques to delay flowering and fruiting until more favorable weather occurs and by using high tunnels to protect maturing fruit during colder temperatures.

Primocane blackberry flowering could possibly be delayed with pruning treatments to avoid high summer heat and then harvest could be extended with the use of high tunnels. Previous studies in Arkansas indicate that pruning methods may delay primocane-flowering. In Oregon, successful pruning treatments were developed which delayed bloom and extended fall production. Most previous studies conducted at varied geographic locations have relied on pruning at various heights early in the season to delay bloom. Such treatments alone have not been sufficient to delay bloom in preliminary trials in Arkansas. However, there are a few previous studies of “mowing” primocane plants to the ground that have been shown to be useful as a means of shifting bloom time. Additional research is needed in order to develop a management system which would adequately delay bloom and fruiting in Mississippi and other sites in the deep southern region.

In order to protect developing fruit from early season frost, primocane blackberries were covered with a temporary high tunnel. The rationale is that after the first frost, warmer weather returns and a freeze that would destroy the fruit would not occur for several weeks. Also, during this time the price of blackberry fruit would be much higher and a grower with fresh fruit would benefit financially.

This project was set up to determine pruning strategies in conjunction with temporary high tunnels to extend the production cycle of primocane-fruiting blackberries and provide an extended income flow for the grower.

This project did not build upon a previously funded SCBGP.

Project Approach

October 1, 2011 – September 30, 2012
In the fall of 2011 a soil test was conducted in an area where the blackberry planting was established. Based on the soil test results, the area was limed and fertilized properly.

For this study, the primocane blackberry, 'Prime Ark 45', was purchased and transplanted into replicated plots at B&W Orchards (grower/cooperator). Row spacing of the plants was 2 feet, with rows 10 feet apart.

About 3 weeks later, the drip irrigation system and weed barrier cloth was installed. For the remainder of the growing season, routine maintenance including irrigation and chemical burn down of weeds between rows was conducted. The burn-down treatment was a combination of Rely and Surflan. The plants made excellent growth with even a few primocane berries being produced.

The primary goal for this year was to allow the plants to develop strong root systems and crowns prior to beginning the pruning treatments in the spring of 2013.

2013
Beginning in mid-February 2013, the trellis system to support the blackberry vines was installed. The blackberries fertilized in late-February.

Beginning March 1, the first of the pruning treatments was initiated to remove the previous season's growth. A second treatment on April 1 cut plants back to ground level. The pruning is designed to stimulate primocane formation and delay flowering and subsequent harvest until the fall. On April 1, another replicate of plants were cut back to ground level.

In early June, deer came into the plots and foraged on the young, tender new growth of the blackberry canes. An electric fence plus reflective ribbon was installed. An organic deterrent (Milorganite) was also applied to prevent deer feeding on the new primocane growth.

Because of deer feeding and some of the early pruned plants forming flower buds during warm weather, adjustments were made to several of the original pruning treatments. Plots where deer had grazed, and similar plots in other replications, were cut back and hedged to 2 feet in mid-June.

Plots that had been cut back in March and April were developing flower buds which was not desirable so these plots were topped at 4 feet in mid-June and hedged to 2 feet.

After adjustments due to deer foraging, the final pruning treatments were:

1) mowed down March 1 + cut back to 4' June 20;
2) mowed down April 1 + cut back to 4' June 20;
3) mowed down May 1 + cut back to 4' June 20;

4) mowed down March 1 + cut back to 2' June 20;
5) mowed down April 1 + cut back to 2' June 20.

Summer temperatures were lower than normal and rainfall was higher than normal until late summer when it got very hot. Fruit set therefore declined or fruit was malformed. Leaf-footed bugs also became a problem. An application of Malathion insecticide was made in mid-September to control the stink bugs.

Scattered fruiting occurred during mid-summer but no yield data was taken until September 4, 2013. The scattered fruiting came from canes within the plant canopy that were not topped during the delayed pruning process. Two additional harvests were made in September.

In early October, there was an unexpected outbreak of spotted wing drosophila that destroyed most of the ripe fruit for about a 2 week period. Upon this discovery, a weekly spray application of Malathion insecticide began. The spray greatly reduced damage from this insect. There was also some predation of fruit by mockingbirds. Reflective streamers were hung on the electric wire of the electric fence surrounding the research site but it did little to repel the birds at all.

The portable high tunnels, based on the Washington State University model (http://cru.cahe.wsu.edu/CEPublications/em015/em015.pdf) with slight modifications, were erected over a 2-day period, November 4-5. Nighttime temperatures were beginning to drop into the lower 40s F and the ends of the tunnels were left open to allow bees in for pollination.

The average minimum temperature for mid-November is 39 F. When low temperatures on the mid 20s F were predicted, the ends of the tunnels were closed. On the night of November 13 the temperature went down to 24 F. The tunnel was left closed during the day but on the night of November 14, the temperature went down to 21 F. When the tunnel was opened up on November 15, it was determined that all fruit and all flower buds had been destroyed by the hard freeze. The study was terminated for the year. It had been anticipated that the portable high tunnels would have protected the blackberry fruit from freezing until sometime in mid to late December. However, the relative small size of the portable tunnel may be too small to retain enough residual heat to protect plants much below freezing.

Since the high tunnel was not in place long enough to affect yields, the pruning treatments were averaged across treatments (Table 1). It must be noted that fruit yields were essentially nonexistent in October due to invasion of spotted wing drosophila. In November, after spraying to control the spotted wing drosophila, yields were increasing. All plants contained a significant crop and flowers when the hard freezes occurred.

Looking at the raw averages it is apparent that the early mow down date (March 1) plus heading back to four feet produced the greatest yield. The early cutting allowed time for adequate resprouting of the roots. Delaying the cut down by one (April 1) or two (May 1) months then topping at four feet tended to reduce total yield.

The March 1 mow down that was topped at two feet had lowest yield. It is not clear why the April 1 treatment that was topped at two feet did not produce lower yields. The two-foot topping was not in the original plan but was added after deer feeding problem.

Overall yield was significantly lower than anticipated and way too low to make this concept economically feasible.

Table 1. Effect of pruning treatment on primocane blackberry 'Prime Ark 45' yield, 2013.

Pruning Treatment	9/4 lb./A	9/13 lb./A	9/24 lb./A	10/23 lb./A	11/5 lb./A	11/12 lb./A	Total lb./A
March 1 + topped 4' June 20	121	60	63	3	4	9	260
April 1 + topped 4' June 20	75	20	18	0	21	32	165
May 1 + topped 4' June 20	65	49	17	6	19	12	180
March 1 + topped 2' June 20	40	44	28	0	12	0	124
April 1 + topped 2' June 20	91	16	8	8	32	9	164

2014

Adjustments to the previous year's pruning schedule were made for 2014. Initially all plots were mowed to ground level on April 1 even though they were producing new growth. April 1 was chosen as a starting point based on 2013's research.

After the old plants were removed, the trellis system supporting the plants was renovated. Additional weed barrier fabric was installed between the rows of blackberries to control weeds and reduce out-of-row sprouting of blackberry plants. The plots were also fertilized (13-13-13) and limed. 'Milorganite' organic fertilizer was also spread around the exterior or the plots as a deterrent to deer browsing on the tender, new growth of the blackberry plants.

On July 17 various topping/hedging treatments were initiated:

1) tipped;
2) cut back to 2 feet;
3) cut back to 2 feet and hedged to 2 feet;
4) cut back to 4 feet; and
5) cut back to 4 feet and hedged to 2 feet.

The blackberry plants averaged 4.5 feet in height at this time. It should be noted that random primocane shoots arising from inside the canopy of the plants were producing flowers.

It was observed that after pruning there was not a uniform bud break and the primocane flowers appeared at random rather than uniformly. Therefore, the initial fall harvest began when the majority of plots had ripe fruit.

Data from the fall harvest is presented in Table 2. Yield data was highly erratic because of the previously mentioned non-uniformity of bud break and eventual flowering.

First harvest data was recorded on September 19, although ripe berries sporadically occurred during the fall. A 27 F low on November 2 froze the blackberry fruit on the outside of the high tunnel but not inside. The high tunnel protected the fruit so two additional harvests occurred.

Even though there were two additional harvests under the high tunnels, there was not a yield advantage i.e. plants topped at 4 feet. Plots where plants were simply tipped or topped at 4 feet were the only ones that showed any indication of producing higher yields.

Plants topped at 2 feet apparently could not regrow enough compared to plants cut at 4 feet. An exception to this was for plants topped at 2 feet with extended harvests under the high tunnel.

Due to the early freeze not clear yield patterns due to pruning treatments could be determined. There did appear to be a trend of increased yield as expected in the plots covered by the high tunnels and would have further increased except for the severe freeze. The blackberry yields were horrendously low compared to the 4,500 lb. /A reported in Arkansas.

Pruning Treatment	9/19 lb./A	9/26 lb./A	10/10 lb./A	10/23 lb./A	10/31 lb./A	11/6 lb./A	11/13 lb./A	% last 2 harvests	Total lb./A
Inside HT									
Tipped 7/17	53	43	43	91	85	91	83	35.7	488
2 ft. 7/17	8	48	16	120	53	59	181	49.5	485
2 ft. + sides 7/17	0	56	13	43	19	53	19	35.5	203
4 ft. 7/17	27	53	19	91	43	37	53	27.9	323
4 ft. + sides 7/17	19	131	29	45	29	21	53	22.6	328
Outside HT									
Tipped 7/17	48	107	85	64	29	0	0	0	333
2 ft. 7/17	51	56	27	48	35	0	0	0	216
2 ft. + sides 7/17	13	59	40	101	56	0	0	0	269
4 ft. 7/17	72	163	48	59	43	0	0	0	384
4 ft. + sides 7/17	27	51	53	109	43	0	0	0	283

Table 2. Yield of 'Prime Ark 45' primocane fruiting blackberries as influenced by pruning treatments and high tunnels, 2014.

This project was implemented to research only blackberry production in Mississippi, no other commodities benefited as a result of this project.

The project partner in this project oversaw the day to day management of the plots. Their primary function was to make sure the plots were irrigated when needed.

Goals and Outcomes Achieved

The various pruning treatments that were used on the primocane-flowering did delay flowering. The challenge was to get a uniform budbreak in order to get uniform and significant flowering /fruiting in the cooler temperatures in the fall. This did not happen. There were flowers and fruit at the time of the first frost, but the quantity of fruit was insignificant from a commercial stand point.

A second goal was to protect the late fruit from frost and extend the harvest season with a portable high tunnel. This was a partial success. In 2013, the first frost event was a hard freeze event, so fruit inside and outside the protective tunnels was destroyed. In 2014, the high tunnel extended the harvest season by two weeks. Blackberry yield somewhat increased, but the lack of uniform flowering /fruiting complicated any conclusion on pruning treatment effects.

Research in Oregon found that pruning treatments would delay bloom and extend fall production of primocane-fruiting blackberries in commercially significant quantities. Since this did not occur in these studies, an environmental effect must be the reason for poor fruiting performance. The temperatures, day and night, are too high compared with Oregon for the primocane-fruiting blackberries to develop good fruiting potential.

The overall goal of this project to extend the blackberry production and increase profits to growers was a failure. Possibly a different outcome would occur with different blackberry genetics and larger high tunnels or minimally heated high tunnels.

Beneficiaries

Data collected from this project will be presented NE Mississippi Fruit and Vegetable Grower meeting in February 2015 and published on-line for use by blackberry growers and others. The number of growers that typically attend this meeting is 100. Of these, 10 or more grow blackberries as part of their operation. Other growers are potential blackberry growers because many of them are looking for crops to extend their income stream.

Based on the results of this study, growers will be advised not to attempt to extend the production system using portable high tunnels. Low yields, extra expenses, and the possibility of early season hard freezes greatly reduce the chance of profitability.

Growers might however consider growing the primocane variety to extend the normal blackberry production season that typically ends in late July. The fruit produced in September – October could fill a local market niche but unless yields can be increased, it might not be profitable to make extensive plantings just for that purpose.

Lessons Learned

The greatest challenge on the project the first year was the deer browsing. This was unexpected since there were many tender vegetable crops growing in the immediate vicinity of the blackberries. Fortunately, the electric fence and an organic deterrent worked and there was no further damage.

However, changes were made to the pruning treatment protocols because of the feeding damage. Since the damage was localized within the test area, it was decided to adjust the other plots to simulate the topping the deer had done. In other words, where the deer had eaten the plants in the plots back to 2 feet, the PI pruned plants similarly in other replicates.

Another somewhat unexpected development occurred in October 2013 which was an infestation of spotted wing drosophila. This resulted in the loss of 2 harvests before they were under control. In 2014, a preventative spray program prevented this problem from reoccurring.

Historically, in the fall season, after the first frost, there is a period of several weeks afterwards before a freeze and even longer before an extreme freeze event. Also, research and observation of other fall-grown crops in a high tunnel showed that the extending the production period of freeze-sensitive crop could be extended by up to four weeks. So the rationale was that a simple covering would delay freezing of the blackberry fruit. With the later, and off-season, production the grower would receive a premium price for the fruit.

In both the fall of 2013 and 2014 severe freezing temperatures occurred in mid-November (24 F on November 12 and 21 F November 13 in 2013 and 26 F on November 14 and 24 F on November 15 in 2014). These temperatures were 14 – 18 degrees below normal for this time of year.

In 2013, the freezing event was the first freeze of the season, so blackberry fruit inside and outside the high tunnels was destroyed. In 2014, a 27 F low on November 2 froze the blackberry fruit on the outside of the high tunnel but not inside. The high tunnel protected the fruit so two additional harvests occurred. The additional harvests did not provide enough extra yield to make the high tunnels economically beneficial.

Based on the yield of blackberries in this study, primocane-fruiting blackberries will only be a novelty item for homeowners. The highest yields were only about 1/10 of what was reported in Arkansas where the variety was developed.

Contact Person

Dr. Wayne Porter
410 Constitution Ave. 5th Floor
Meridian, MS 39301
Phone: 601-482-9764
Fax: 601-482-9777
wporter@ext.msstate.edu

Additional Information

Information related to this project is posted on the following blog:
http://mississippihightunnels.blogspot.com/.

Portable high tunnels, 2014.

Frozen blackberries after first frost outside the high tunnel, November 2014.

Blackberry fruit and flowers inside high tunnels after first frost, November 2014.

DEVELOP A WEBSITE FOR MISSISSIPPI PECAN GROWERS

Project Summary

Improved varieties of pecans are grown across the southern United States from North Carolina to southern California. Since improved varieties require extensive cultivation and production management, state growers' associations provide production assistance in all states involved in commercial production of improved varieties. The Mississippi Pecan Growers Association (MPGA) serves this function in Mississippi.

Pecan exports of improved varieties are being promoted very aggressively to China and other world markets such as Canada and India by the National Pecan Growers Council under the *"US Pecans – Nature's Health Food"* label. This marketing effort is creating a significant increase in the worldwide demand for pecans. Since approximately 75% of the world's pecan production comes from the United States, this increasing world demand has resulted in a more limited supply of pecans domestically. Therefore, growers of a good quality improved variety pecan can demand a very attractive price. A Mississippi oriented website was developed to help growers participate in this increasing demand. The site will use the internet to draw together education and training applicable to Mississippi soils and climate. Access to consumers, wholesale buyers, and suppliers will be made available to growers of Mississippi improved variety pecans.

With this steadily increasing demand for pecans grown in the pecan belt across the United States, new plantings and reactivation of dormant orchards have been happening from Georgia to California in the past few years. Mississippi needs to participate in this dynamic market. Newly planted pecans take 8 - 10 years to become productive. Renovated pecan orchards only take 1 - 3 years to become productive.

MPGA addressed this opportunity in two phases:

- Phase 1 – Develop a growers' website for improved communication, education, and training, which will be critical in the revitalization process that follows.
- Phase 2 – Increase production of improved variety pecans in Mississippi by locating underutilized orchards and assisting in the revitalization of these orchards. The website will be a vital part of education and training and must be in place before this phase begins.

The purpose of this project was to take the first step and create a website to benefit Mississippi growers of improved variety pecans. The sharply increasing demand for pecans means that the supply must increase rapidly. Renovating underproductive orchards is the quickest way to increase production. Therefore, with more than 700 orchards, Mississippi has an excellent opportunity to join with growers in the rest of the pecan belt in meeting this demand with efficiently run orchards producing quality improved variety pecans. Information, speed of communication, and global contacts are keys to success that this website will bring to Mississippi growers.

The internet has been an integral part of the world market expansion of improved variety pecans. It has improved grower access to an ever increasing research and production knowledge base. It has rapidly brought together buyers and sellers from across the world. It has also enhanced the local consumer's education and access to local products. A well designed website has become a vital business tool and,

Mississippi is one of the few commercial pecan states without a website to help its growers. MPGA wants its members to be recognized as a viable partner on the national pecan scene.

The Mississippi Pecan Growers Association (MPGA) recognized a need to create a website with grower information and educational materials, in addition to consumer information and grower links for retail consumers and wholesale buyers. Many other pecan producing states in the South have their own website specifically tailored to the respective state's soils, climates, and other factors of production. A website is a crucial step in order to revive the Mississippi pecan industry.

This project does not build on a previously SCBGP or SCBGP-FB funded project.

Project Approach

The following is a chronicle summarization of the tasks performed to accomplish this project:
- A survey was made of existing information and training sites.
- A basic hardcopy of the site was created.
- The prospective site was reviewed with board members in order to receive input.
- The prospective site was reviewed for input from members at the association's annual meeting.
- The proposed website design was presented to several professional website designers.
- A professional website designer was selected.
- The Association worked with the selected designer to create the site.
-The Association added administrative ability so the site can be maintained by MPGA.
- The website was uploaded and activated on the internet.
- The website was tested for functionality.
- The Association tested the administrative functionally.
- The Association promoted the site and measured the site activity with Google Analytics.

The overall scope of this project only benefitted pecans, no other specialty crops or other commodities were involved in this project.

The MPGA board and membership were all instrumental in creating the website and providing feedback. They will also remain heavily involved with site management, updates, etc.

Goals and Outcomes Achieved

The goal to provide Mississippi pecan producers with a website that provides access to local and national pecan issues has been accomplished by designated pages on the site to include local and national pecan information. As proposed, the site has grower information and educational materials including pages for growing pecans, disease and pest control, harvesting, and yard trees. The site also has grower links for consumer and wholesale buyers and a section for pecans listed for sale and pecans wanted for purchase. Consumer information about pecans is also provided by pages for frequently asked questions, nutritional information, and recipes.

This site is continually updated by MPGA members to provide updated pecan information. A “Pecan Blog” run by a Mississippi State University scientist also provides fresh information for education and discussion. There are 10 different areas of the site with updated information to create return visits.
Based on analysis of Google Analytics data, the most recent year of site traffic includes 2,388 unique visitors to this new site. Of these visitors, 87% were new and they visited 2.65 pages per session. The most popular pages were:
- Pecans for Sale
- Growing Pecans
- Pecan Trees for Sale
- News
- Pecan Pest Control
- Events

Georgia, Alabama, Louisiana, and North Carolina in the southeast and Texas, Oklahoma, and New Mexico in the southwest all have websites focusing on local production and national issues that affect their growers. Mississippi pecan growers now have a localized website linked to these existing sites.

Beneficiaries

Commercial pecan production of improved pecan varieties in the United States has increased by 205 percent in the last 50 years. However, in the same time period Mississippi pecan production of improved pecan varieties has declined by 68 percent. Assuming that Mississippi’s pecan production had increased at the same rate as the US production, this represents a loss of $7,687,000 for Mississippi in 2010. In 2010, the value of production of improved pecan varieties was $1,760,000.

The MPGA currently assists 25 growers. Mississippi State University reports that there are currently 15,000 acres of orchards, excluding yard trees, in Mississippi. The USDA National Agricultural Statistics Service reports that in 2002 there were 782 orchards greater than one acre in Mississippi. Of that total, 719 orchards have less than 50 acres. MPGA needs to upgrade and expand its services to many more growers with a focus on smaller growers. This website is the first step to revive Mississippi’s pecan industry.

Lessons Learned

The Association attempted to have an area on the site to let growers and the public ask pecan questions that would be answered by MPGA members. However, the huge volume of spam that flowed to this area forced us to remove this page. That page was replaced by the “Pecan Blog” that is continually updated.

The MPGA has increased its membership through a “Join Now” link on the site. MPGA members are allowed to post that they have pecans, trees, equipment, and services for sale. This has had a positive impact because the association gets new members, which assists in the maintenance of the site in the future. This will also provide a good database for growers to purchase equipment, trees, or services. Also, consumers will have a good database to buy pecans locally.

Contact Person

Joe Buzhardt
601.852.2338
joebuz@hughes.net

Additional Information

Website - http://www.mspecans.org/

Mississippi Sweet Potato Promotion/Marketing and Research Campaign

Project Summary

The purpose of this proposed project, implemented by the Mississippi Sweet Potato Council (SPC) was two-fold:

1. To influence purchasing decisions of produce buyers by promoting Mississippi sweet potatoes at the Produce Marketing Association's (PMA) annual trade show and
2. To evaluate bio-fungicides in pre- and post-harvest applications to reduce the incidence of tip/end rots in sweet potato and improve pack out efficiency through research with cooperation from Mississippi State University (Tip Rot Research).

PMA:

In previous years, the SPC has obtained SCBGP funding to promote Mississippi sweet potatoes through various activities with one being participation in the PMA tradeshow. Marketing studies show brand awareness requires long term commitments over several years. With the current consumption trend ticking upward for sweet potatoes, it was vital that the SPC continue with the marketing/promotion program proposed in this project. This activity highlighted the availability and quality of Mississippi's sweet potatoes to a targeted audience of national and international produce industry executives. The timing of this proposed project was perfect to raise awareness and increase sales of Mississippi sweet potatoes.

This project built on market share gained through the efforts funded in the past by Specialty Crop Grants and included a new aspect of research. The SPC received SCBGP-FY2009 and SCBGP-FY2010 funding to promote Mississippi sweet potatoes by participating in the Produce Marketing Association's annual tradeshow. As a result of past Specialty Crop Grant Program projects, Mississippi sweet potatoes are starting to gain brand awareness and allegiance among consumers and some buyers. As a result of participation at the 2010 PMA tradeshow, orders were obtained from new buyers totaling over 14,000 cartons of sweet potatoes valued at $224,000.

Tip Rot Research:

Mississippi farms about 20,000 acres of sweet potatoes and is currently facing substantial pack out losses to soil-borne diseases. Restricted tip rot of unknown etiology is visible after 3-4 weeks in postharvest and is enhanced by ethephon induced stress. Soft rot caused by Rhizopus stolonifer and unrestricted end rot associated with soil-borne diseases (Fusarium spp, Lasiodiplodia theobromae, Macrophomina phaseolina and others) are the main postharvest diseases that affect pack out efficiency and profitability. The objective of this project was to evaluate sustainable technologies to suppress/reduce the incidence of postharvest diseases. On-farm and on-station studies were conducted for 2 years to determine the effect of bio-fungicide applications at planting on rot incidence in postharvest. On-farm studies allowed the participating farmer to determine by himself the effectiveness of the technologies under his own field conditions. Bio-fungicides were also evaluated in postharvest to determine their effect on wound healing after skinning and the incidence of rots. The generated information was presented to sweetpotato farmers at the annual sweet potato production meeting in 2013 and 2014 and to the scientific community at the American Society for Horticultural Scientists

(ASHS) 2014 meeting. Adoption of the technologies, however, has been inconsistent due to the inconsistency of the results. A Mississippi Agricultural and Forestry Experiment Station (MAFES) bulletin is expected to be published within a year.

Through this project, the Mississippi Sweet Potato Council (SPC) is promoting and marketing Mississippi sweet potatoes and conducting research for the cause and control of sweet potato tip rot disease. Both of these activities will enhance the Mississippi sweet potato industry by influencing purchasing decisions of produce buyers and by reducing loss to tip/end rot disease, and growers will be able to market more of their product.

Project Approach

The PMA Fresh Summit was held at the Orange County Convention Center in Anaheim, California on October 26-28, 2012. The three growers and packers attending the show made contacts with over 200 buyers and sweet potato sales were enhanced. Additional sales generated by contacts made at the Trade Show are estimated to be 15,500 cartons as of July 31, 2014. It is recommended that the PMA Fresh Summit Trade Show continue to be supported.

Tip Rot Research:
The purpose of this study was to evaluate bio-fungicides in sweet potato and improve pack out efficiency and therefore sustainability of the sweet potato industry. Soil-borne pathogen such as Fusarium spp., M. phaseolina, and L. theobromae have been associated with end rots, but the tip rot symptoms differ from the traditionally described symptoms for these pathogens. Since sweet potato storage roots are not washed at harvest, soil-borne pathogens in the soil residue may infect storage root through wounds in postharvest. Therefore, on-farm and station studies with bio-fungicides were conducted to test their efficacy in suppressing soil-borne diseases. In addition, on-farm studies gave the farmer the opportunity to experience by himself the effectiveness of the technologies. The following experiments were conducted over 2 years of studies.

Experiment I:
The purpose of this study was to evaluate the efficacy of bio-fungicides applied at planting in reducing the incidence of restricted tip rot, unrestricted end rot and soft rots in postharvest and improve pack out efficiency. On-farm (BHF farms, Pontotoc, MS) and on-station (Pontotoc Ridge-Flatwoods branch, Pontotoc, MS) field trials were conducted with 'Beauregard B14' sweetpotato over 2 years. Bio-fungicides used were Serenade® Soil (AgraQuest, Davis, CA), Actinovate® SP (Natural Industries, Inc., Houston, TX) and RootShield® (BioWorks, Victor, NY). The application method was dipping the transplants in bio-fungicide solution at recommended rates. Prior to harvest (1 week), half of the plots were sprayed with ethephon to promote restricted tip rot incidence and the other half was devined mechanically. Two months after harvest, 2 bushels of storage roots from the station studies were evaluated for rots. In the case of on-farm studies, 2 bins from each treatment were run through the packing line and rotten roots were separated from marketable roots and pack out efficiency was determined.

Results indicate that the reduction of unrestricted end rots and soft rots were inconsistent with the bio-fungicides tested. Soil moisture prior to harvest appeared to have been involved in unrestricted end rot incidence and the reduction by the bio-fungicides: high soil moisture increased incidence, but at a reduced level in the presence of bio-fungicides. There were no differences in unrestricted end rot and soft rot between bio-fungicides and untreated control when soil moisture was reduced at harvest. Preharvest application of

ethephon enhanced the incidence of restricted tip rot in sweetpotato which is in agreement with previous studies. Bio-fungicides, however, were unable to reduce the incidence of restricted tip rot in comparison with the ethephon treated control.

Roots from the on-farm study (in partnership with Tommy Harrison at BHF farms) were evaluated 3 months after harvest. Storage roots were separated in a commercial packinghouse (in partnership with Edmondson farms) following commercial standards. There were no differences in rot incidence, pack out proportion, and US no.1 grade roots among the treatments. This experiment was conducted in 2013 only, but results are in agreement with the other studies.

Experiment II:

a. Bio-fungicides were tested on their effect on disease suppression on plants grown in pots in a greenhouse. Beauregard plants originated from tissue culture were grown in pots in the greenhouse. At planting, slips were dipped in solutions with biological agent (Serenade® Soil, Actinovate® SP, RootShield® and water as control). Once plants were established, pots were inoculated with three Fusarium spp isolates with different pathogenicity traits in a randomized factorial design (bio-fungicide x F. isolate x rep). These isolates were obtained from commercial MS sweetpotatoes. Roots were harvested at the commercial stage and after 2 months in storage at 60°F and 70%-80% humidity, roots were evaluated for rot incidence.

Results indicate that unrestricted end rots were increased in roots from Fusarium inoculated pots. Dipping slips in bio-fungicide solution reduced the incidence of unrestricted end rots from 38% on average (inoculated controls) to 23% on average. Therefore, dipping slips in bio-fungicides at planting have the potential to reduce postharvest diseases caused by soil-borne diseases under controlled conditions.

b. Bio-fungicides were tested on their effect on wound healing and disease suppression of injured storage roots inoculated with selected soil-borne pathogens. Beauregard plants originated from tissue culture were grown under isolated conditions in pots in the greenhouse. At harvest, roots were inoculated with three Fusarium spp isolates by placing a drop of spore suspension at the end cut wound. Once drop had dried, wounds were sprayed with solutions of bio-fungicide (Serenade® Soil, Actinovate® SP and RootShield®) including water control. Roots were cured at 85°F and 80%-85% humidity for 7 days and then stored at 60°F and 70%-80% humidity. Rot incidence was monitored daily during the initial curing period and then once a week to determine the degree of pathogen suppression and wound healing.

Results indicate no differences in rots incidence in comparison with the control non-inoculated. The incidence of rots was insignificant, most likely due to the curing process. These results corroborate previous studies and support the recommendation of curing sweetpotato immediately after harvest to reduce the incidence of rots.

Experiment III:

Similarly, field grown storage roots were injured (skinned) at harvest and sprayed with bio-fungicides to suppress potential infection. Three bushels per treatment were stored without curing at 60-65°F to promote infection. Roots were evaluated for rot incidence after 3 months in storage. Tissue from rotted roots was plated for pathogen identification.

Results indicate that bio-fungicides have the potential to suppress infections in wounded tissue since a 16% reduction in soft rots was detected in the wound of treated roots. Soft rots caused by Rhizopus stolonifer is a major postharvest disease, so sustainable control treatments are critical for long distance shipments.

Unrestricted end rot ranged between 17% and 31%, but there were no differences among treatments. Fusarium spp. was the main pathogen isolated from unrestricted rots. Macrophomina phaseolina was isolated occasionally.

Overall results suggest that bio-fungicides have the potential to reduce postharvest diseases under controlled conditions (greenhouse pot studies). Many unknown factors are influencing field conditions, so disease reductions by bio-fungicides in field studies were inconsistent and apparently depended on soil moisture.

Bio-fungicides were unable to reduce restricted tip rot incidence which was enhanced by preharvest ethephon induced stress. This result supports previous studies that associated restricted tip rot with ethephon induced stress and suggest that this response appears to be a physiological disorder.

The overall scope of this project only pertained to sweet potato promotion and research, no other crops would have benefited as a result of this project.

Mississippi Sweet Potato Council coordinated the tradeshow activities and all the research projects with MSU.

Goals and Outcomes Achieved

PMA

We attracted five new buyers for Mississippi sweet potatoes by attending the 2012 PMA Fresh Summit Trade Show as an exhibitor. Additional sales of 15,500 cartons of sweet potatoes were made as a result of new buyer orders. The project goal of increasing sales by 10% above 14,000 cartons was achieved. The five new buyers that were secured by attending the Trade Show and this number is above the existing pool of buyers prior to the event.

Tip Rot Research:

1. To evaluate bio-fungicides in reducing the incidence of soil-borne diseases in sweet potatoes.

This project produced positive outcomes that have facilitated the decision to adopt bio-fungicides or not to reduce the incidence of restricted tip rot, unrestricted end rot, and soft rot. Growers and packers had an opportunity to experience the effectiveness of dipping slips in bio-fungicides prior to planting. The studies generated information about the field conditions that favors the suppressing effect of bio-fungicides on the incidence of rots in sweetpotato. Although the conditions at harvest cannot be predicted, bio-fungicides is an additional tool that sweetpotato growers have to reduce the incidence of postharvest diseases.

2. To improve pack out efficiency by using bio-fungicides in pre- and post-harvest.

This study also generated information on the effectiveness of bio-fungicides to improve pack-out efficiency in a commercial farm study (Tommy Harrison at BHF farms). Although this particular on-farm study was unable to show an improvement in pack-out efficiency, results of field and greenhouse studies suggest that pack-out efficiency is influenced by the level of disease control by the bio-fungicides and the curing treatment after harvest.

Beneficiaries

PMA:
103 Mississippi sweet potato growers/shippers were the group that benefitted from the completion of this project. The Town of Vardaman and the State of Mississippi benefitted from the economic activity generated from increased sales.

Tip Rot Research:
The main beneficiaries of the information generated by this project are the sweetpotato farmers in Mississippi and potentially other states and the around the world. On-farm studies, presentations at the production meeting and one-on-one discussions were used to disseminate the information and facilitate informed decision about adopting the technologies. The information generated by this project has already influenced the decision to adopt dipping the slips prior to planting. To our knowledge, seven farmers adopted dipping slips in bio-fungicides in 2012, but 3 of them did not repeat the treatment in 2013. Those that adopted the treatment have indicated that rot incidence has been reduced in their production systems.

Lessons Learned

PMA:
As a result of completing this project, we learned that the PMA Trade Show continues to be a very effective venue to make contact with buyers looking to buy Mississippi sweet potatoes.

Sales of sweet potatoes increased above set goal. All goals and outcomes were achieved.

Tip Rot Research:
One of the lessons learned was that the sweet potato growers could reduce the loss to tip rot diseases if they would dip their transplants prior to planting in a recommended bio-fungicide.

Another lesson learned was that timely and proper curing of potatoes after harvest helps to heal injuries incurred during the harvest process to the potato skin which then reduces postharvest rots.

This research project shows that growers need to reduce the use of ethephon as a harvest aid under wet harvest conditions because it increases the incidence of Tip Rot in the stored potatoes.

All of these lessons will be used to advise growers in the future on how to better manage tip rot in their sweet potatoes.

Contact Person

Benny Graves
662-773-7300
benny.spcouncil@gmail.com

RANKIN COUNTY YOUTH COURT H.A.R.V.E.S.T. PROJECT (HELPING ADOLESCENTS IN RANKIN VALUE ENVIRONMENTAL SKILLS TODAY)

Project Summary

The purpose of this initiative was to create a hands-on learning opportunity related to the art and science of gardening for the youth who have become involved in the Rankin County juvenile justice system by committing delinquent acts (i.e., acts that if they were committed by an adult would constitute a criminal offense). Because this was a brand new project, the youth were able to be involved in every aspect of creating the garden from designing the garden's lay-out to harvesting the final products. Through this project the youth learned about creative expression, civic/community collaboration, healthy food, and sustainable living. The hope was that the project inspired some of the youth to pursue a career in growing their favorite specialty crop and provided them with the knowledge and skills to create a garden of their own, but at a minimum it helped them to make healthier decisions about the food they eat.

The timeliness of this project coincided with Rankin County completing a brand new, state-of-the-art juvenile detention facility in Pelahatchie, Mississippi with over six (6) acres of green space available which has now been transformed into an agricultural oasis. Various fruit trees were planted around the property, as well as small container gardens growing various specialty vegetables, plants, and herbs. Additionally, there are two high-tunnel greenhouses on-site allowing for year-round planting and cultivation.

This project did not build upon a previously funded Specialty Crop Block Grant project.

Project Approach

The Rankin County Youth Court (RCYC), along with the Rankin County Sheriff's Department obtained soil samples to determine what steps should be taken to improve the soil conditions at the site. During the first few months of planning, meetings were held with the MSU Extension Service to solicit advice on the appropriate crops to be planted at our facility. In November 2011, three members of the Youth Court staff attended the MS Fruit Grower's Conference to obtain additional information concerning the process, preparation, and selections of what was to be planted in our garden. RCYC also visited a community garden hosted by MadCAAP (Madison Countians Allied Against Poverty). RCYC was able to learn how they established a garden similar to the needs of the facility and obtained recommendations from their experiences.

RCYC decided it would be best to install high tunnels for our project so they could work year round with the children at the facility. Two 24' x 40' high tunnels were installed on the project site. The process the Youth Court must adhere to is the purchasing procedures followed by the Rankin County Board of Supervisors. If the purchase is over a certain amount, the county must receive multiple bids for the high tunnels from different companies. This took much longer than expected. Once all bids were in and a company was chosen, the Youth Court had to wait for the company to schedule the instillation. Again this took much longer than expected.

The team evaluated various design layouts for raised beds in order to maximize the efficiency of space available in the high tunnels and provide easy access for maintenance of the plantings. Additionally the design was selected to allow the students to be able to have a place to sit and work the beds. Ultimately a 4' x 12' bed with seating caps was selected using 2" x 10" dimensional treated lumber. Also, the design size was chosen to standardize the irrigation/watering schedule since 48 square front areas are the easiest to manage from a horticultural standpoint. Weather conditions were not favorable for construction, preparation, or planting after the installation of the high tunnels due to excessive rain. Heavy rainfall, high winds, cold ambient temperatures, and large hail storms in the immediate area caused a delay to construction of the beds.

Community work groups, including many members from Trustmark National Bank, joined with the students in detention and court staff to construct the eighteen (18) raised beds for use in the high tunnels. The beds were built utilizing decking screws to allow the beds to be easily altered if necessary to accommodate future planting or irrigation needs.

The amount of topsoil needed for filling the beds was computed assisting in the hands on applied mathematics with the school students. Topsoil order was placed with the road department and subsequently was delivered in bulk to both the interior high tunnel (within the secure area of detention) and the exterior high tunnel (accessible outside the secure area). The shredded and composted leaf material previously acquired from the City of Brandon landfill was moved using a loaned tractor and front end loader. It was mixed with the topsoil to help aerate the bedding mix.

The interior and exterior tunnels were prepped for the installation of the raised beds using a hand held sprayer to deliver Ranger Pro herbicide applications to kill the grasses and native weeds. The vast amount of rain received in late spring required a second round of spraying to eliminate all the herbaceous competition. After the plant morbidity occurred, the site of both high tunnels was mechanically cleared using a string trimmer.

The exterior curtains of the high tunnels were raised for a period of four weeks to allow the excess site water to dry. Runoff from the spring rains puddled on the site which resulted in a lengthier delay than anticipated in the installation of the raised beds. This in turn caused RCYC to miss the spring growing cycle and put the projected plantings beyond the end of the academic school year for the Rankin County School District.

The pre-test and post-test surveys were developed to measure the horticultural, silvicultural, and nutritional educational goals of the participating students and volunteers. Utilizing information from other community garden projects, we drafted and copied materials that the students found to be instructional, interesting, and entertaining. The education and testing component began with the planting of the fall garden.

During the construction of the raised beds, some small scale horticultural plantings were made by the student participants and community volunteers in the secure area of the detention yard in exterior spaces between some of the day rooms. The plants were donated by some of the volunteers and the beds were prepped and mulched by the student detainees. The students continued maintaining those beds.

Black landscaping fabric rolls were purchased from Forestry Suppliers in Jackson, Mississippi, to block out the lanes and alleys between the raised beds inside both high tunnels. Additionally, some of the fabric has been cut into 4'x4' squares to protect the roots of the trees being planted. It will eliminate unnecessary and unwanted competition, and also it will help with maintenance efforts and minimize damage to the trees and other plantings.

The Sheriff's Department employees worked with youth to demonstrate proper planting of vegetables in high tunnels. Three different varieties of tomatoes were planted: Cherry, Roma, and Better Boy. The youth also planted watermelons, cucumbers, green beans, butter beans, squash, and various bell peppers.
The Court Staff also worked with the youth to explain landscaping of buildings. The youth participated in the complete landscaping process. The shrub and flower beds were prepared for planting by removing debris, tilling, planting, and mulching. The youth learned the proper depth for different size trees as well as placement of same.

The youth were also able to create two planters to place beside the entrance to the courthouse. Staff explained the types of flowers and difference in planting in a planter as opposed to in-ground or above-ground planting. The youth were able to design the arrangement of Petunia, Colors of Coleus, Caladium, and Reullia plants.

The youth are also involved in the continued maintenance of the landscaping areas, the planters as well as the high tunnels (including watering and weeding).

Our school partners conducted lessons about agriculture and healthy eating. Twenty-three students were given the pre-test prior to the lessons and various demonstrations and the average score was 47%. Eighteen students were given a post-test after lessons and demonstrations and the average score was 70%.

While no grant funds were used, the staff also built a garden shed to store all of the gardening tools and supplies. This also teaches the youth life skills about maintenance and managing of tools and supplies.

Steps and a path were constructed for safety accessing the high tunnels. The students have harvested their vegetables and participated in cooking and preparation demonstrations. RCYC continues to work with school partners to emphasize healthy living skills and nutrition decisions. Activities are structured to allow sufficient flexibility to maximize the opportunities for the students to get 'hands on' experience at the same time learning life lessons.

Students participating in this project only learned about specialty crops, no other commodities were utilized in this project.

Goals and Outcomes Achieved

The goal of this project was to provide an educational opportunity for at-risk youth and to expose the next generation to both the individual and community benefits of growing specialty crops and to increase participants' knowledge of agriculture and forestry (particularly in the area of gardening) and promote healthy living and eating habits for participants and their families. Through hands-on experiences and school partners providing lessons about agriculture and healthy eating, participants' knowledge increased as evidenced by the pre-test and post-test given. Twenty-three students were given the pre-test prior to the lessons and various demonstrations and the average score was 47%. Eighteen students were given a post-test after lessons and demonstrations and the average score was 70%.

Additionally, as with all of the programs and services provided at the Youth Court and RCJDC, our overarching goal is to rehabilitate the youth who come through the Youth Court so they do not re-offend. Many of the repeat offenses committed by the youth are the product of too much free time and lack of responsible supervision. By incorporating those youth who are on probation into the program, a facility like Rankin County can constructively fill much of the time between school and when a parent/guardian/custodian can provide responsible supervision. Over the long term, RCYC will be monitoring the recidivism rates of participants and comparing that data with historical rates and the rates of youth who may choose not to participate in this project. It is anticipated that this program will lower the overall rate of re-offense and/or probation violations and that those involved in the program will re-offend/violate their probation significantly less than those who do not participate.

Furthermore, this program will affect the life choices made by the participants and their families. While this affect is difficult to measure, RCYC has seen the participant's self-confidence and over-all mental attitude change during the hands-on experiences and demonstrations.

Beneficiaries

The intended primary beneficiaries of this project were the at-risk youth that became involved at the Rankin County Youth Court, it is estimated that 100 students participated in this project in some way and more than 30 staff and volunteers. In addition to the positive quantitative results of the participants' post-tests, many of the participants indicated a new appreciation for gardening. Staff members working with the youth also reported observing that participants seemed to display a greater self-confidence from having learned new skills like preparing the garden plot for planting, actually planting the specialty crops, trees, and other plants, and then learning how to harvest and prepare those crops. Additionally, the participants were given a new opportunity to experience new things by learning how to prepare certain dishes from the produce (e.g., pepper and squash). Many of the participants indicated they had never seen a pepper or a squash, much less had an opportunity to cook and then eat them. The results of the pre-test and post-test results from the tests given before and after these activities provided additional evidence that the participants were learning through the hands-on experiences and lessons on agriculture and healthy eating.

Another goal of the project, albeit one that is more difficult to measure quantitatively, was to provide an opportunity for greater community engagement. Given the demands of this project, the staffers from both the JDC and the Youth Court were provided an opportunity to engage with the participants in a different posture than is typical for staffers and youth. Whether preparing the plot, planting the crops, harvesting, and cooking, the staffers and youth were working side-by-side. Whereas, the staffers are usually required to engage with youth to correct bad behavior, the gardening project provided continuous opportunities to praise participants for the good work they were doing and re-affirm their potential for living a healthier life.

Through this project, the Youth Court gained additional community partners by working with volunteers from Trustmark Bank to build the raised beds as well as the instructors/volunteers from the local gardening club. Even some of the participants who were being detained by other counties that use the Rankin County's JDC indicated they wished to come back so they could continue to help with the project. At this point though, it is difficult to determine the potential economic benefits that this project will produce.

Lessons Learned

The most significant lesson was that the RCYC underestimated the amount of time that the project would demand. The prep work by far was the most time-consuming, but also critical in that proper preparation of the grounds, high tunnels, and raised beds would be a major determining factor in the success of all the crops to be planted. Additionally, once the plants began to produce crops, it was discovered the yields were underestimated from the first years' crops and it then became an issue of how best to harvest and preserve the produce. Other trees, however, despite the preparation, did not survive as hoped. Both situations provided an important lesson to both the staff and the participants on timing as well as the importance of preparation.

Contact Person

Paul Bowen, Court Administrator
Rankin County Youth Court
100 Court Cove
Pelahatchie, MS 39145
601-824-2545
pbowen@rankincounty.org

Additional Information

Landscape Description:
As you enter the RCYC grounds in front of the sign, a bed of yellow and red day lilies are flanked by white azalea bushes. On either end are little gem magnolia trees.

The entrance to the building has seasonal planters on either side. The front nooks of the building sport beds of scattered juniper bushes. The front of the building itself is outlined by lorapetalum plants in the back with Carissa holly bushes staggered in the front of the beds. Little gem magnolia trees anchor the front flower beds on either end. Ornamental grasses are also planted on the right side to aesthetically disguise a utility box.

Leyland cypress trees are staggered in front of the right security fence line. This leads to the high tunnels which are planted seasonally with vegetables.

Emerald green arborvitaes line the employee parking fence line. Holly bushes were transplanted along with new juniper plants at the employee entrance. A center grassy area inside the secure employee is planted with fig trees, blueberry bushes, and peach trees.

Apple and pear trees are planted to the right front of the building in a large field expanse. A row of muscadine vines are the final addition to the project.

Victory Garden and Specialty Crops Explore Classroom

Project Summary

This project is focused on providing teaching links between the garden experience and the impact of specialty crops on everyday life for students, families, and community members. Activities and educational workshops will be provided to make the connection from soil and seed to the dinner plate, ultimately answering the question, "Where does my food come from?" This project has the potential to enhance the competitiveness of specialty crops through education and demonstrations.

The addition of an interactive garden is critical to the interpretive experience and story of Mississippi agriculture. The Ag Museum serves as a hands-on laboratory for teachers, parents and grandparents to expose students to not only Mississippi history, but also core curriculum subjects in a creative way. The purpose of the exhibits is to serve as teaching tools where students and adults alike can learn about historic farming practices and how production practices have evolved through innovation over time. Live interpreters immerse visitors into the life of the farmer. When interpreters are not present the static exhibits, artifacts, interpretive signage, and digital media will engage visitors by providing intellectual and emotional connections to agriculture as a way of life and its essential for survival. The addition of this garden will increase the educational value of each visitor's experience by including education specific to specialty crops.

This project did not build upon a previously funded Specialty Crop Block Grant project.

Project Approach

Tasks performed during the grant period included design and construction of a muscadine arbor, three potato tuber viewer boxes, three herb walls, and a vermicompost station. Five educational signs were installed containing information on soil fertility, parts of the plant, and specific information about specialty crops. A rack card was produced specifically focused on muscadines, blueberries, and sweet potatoes for use as a teacher's guide to assist with in-classroom enrichment and for visitor tours. Each of these crops along with the following was planted in the garden: Rosemary, Basil, Mint, Lavender, Chives, Broccoli, Cabbage, Kale, Lettuce, Asparagus, Plums, Peaches, Blueberries, Muscadines, Potatoes.

Two groups received information about the garden. One of the tours offered was to a group of 21 student teachers which gave the opportunity to expand our reach to students by educating this group about our new resource.

Five different pre- and post- tests were developed for future use which will allow the Museum to relate to different age groups.

The overall scope of this project only funded/benefitted specialty crop activities as approved in the original USDA proposal. The MS Ag and Forestry Museum staff oversaw all activities and ensured the project was completed in a timely manner.

Goals and Outcomes Achieved

A group of 21 young student teachers took the pre-test, toured the garden, received information, and then took the post-test. Information discussed included soils, parts of a plant, seasonal vegetables, and specialty crops in Mississippi. Average score of the pre-test was 44.7% and post-test was 97.5% for measurable increase of 52.8% in knowledge of materials. 100% of group attendees showed an increase in knowledge of specialty crops production.

Another group of adults took the pre-test. Following tours and discussion of information presented, they took the post-test. Average score was 60% and post-test was 97% for a measurable increase of 37% in knowledge of materials. 100% of the group attendees showed an increase in knowledge of specialty crops.

The expected goal of this project was to develop a working garden for use as a living laboratory to support teaching and learning through field trips, volunteer days, public events, teacher training, and farm apprenticeship. The garden is indeed a tool to those who do not have such a resource in the community. Not only did we achieve the goal of engaging future teachers in a resource to teach students about making the connection from farm to grocery, the Museum will continue to educate visitors long after the grant period.

Beneficiaries

The Ag Museum is accessible to the public Monday-Saturday from 9:00 am-5:00 pm. An average of 150,000 people visit the facility each year. The addition of this garden has increased the educational value of each visitor's experience by including education specific to specialty crops. The connection made with the 21 student teachers has the potential to bring 500 new visitors each year to tour the garden and learn about specialty crops. This example is the tip of the ice berg. Outreach to various commodity groups and organizations will continually provide support for sustainability of the specialty crops garden.

Lessons Learned

The project was completed with funds relinquished from previous grantees. The timeline of the project from proposal to completion was less than 90 days. Although this was known going into the project, and the design, construction, and educational materials were completed, time was limited for outreach and promotion to host tours before the grant period ended.

Other than that, the project went very smoothly, the goals were met, and the garden will continue to serve as a wonderful asset and addition to the Ag Museum grounds!

Contact Person

Lise Foy
601-432-4500
lise@mdac.ms.gov

Additional Information

Front and Back of Rack Card:

MISSISSIPPI AGRICULTURE & FORESTRY MUSEUM

VICTORY GARDEN

Victory Gardens, sometimes called war gardens or food gardens for defense, first came about during World War I as a campaign to decrease pressure on the public food supply in March 1917. During World War II, the Victory Garden movement was emphasized to curb food shortages. Eleanor Roosevelt even planted a Victory Garden on the White House grounds.

Magazines such as the Saturday Evening Post and Life printed stories about victory gardens. Women's magazines gave instructions on how to grow and prepare garden produce. Families were encouraged to can their own vegetables to save commercial canned goods for the troops. In 1943, families bought 315,000 pressure cookers (used in the process of canning), compared to 66,000 in 1942. The government and businesses urged people to make gardening a family and community effort.

When World War II ended, so did the government's promotion of victory gardens. Many people did not plant a garden in the spring of 1946, but agriculture had not yet geared up to full production for grocery stores, so the country experienced some food shortages.

Any space, including backyards, apartment rooftops, vacant lots and public parks can be used to grow food. Our garden includes a variety of Specialty Crops that can be grown in Mississippi. The crops growing here will help you make the connection from soil and seed to your dinner plate.

SWEET POTATOES:

In 1915, a few families from Martin, Tennessee migrated to Vardaman, Mississippi. Their knowledge of the sweet potato and the unique geography, geology and climate of Calhoun County led to the production of some of the world's finest sweet potatoes. Sweet potatoes are an excellent source of vitamin A, vitamin C, and vitamin B6. They are also low in sodium. It takes approximately 90 to 120 days to grow a number one size sweet potato.

MUSCADINES:

Muscadines are native to the southeastern United States. They are used for fruit, jellies, pies and juice. Muscadines have very few pests when compared to other crops. The muscadine is one of the most productive of all the berries. Some muscadines are female and some are self fertile. Muscadines are high in vitamin C, calcium, magnesium, potassium, and iron and low in sodium.

BLUEBERRIES:

Native Americans once called them "starberries" because the five points of blueberry blossoms make a star shape. Native Americans also used blueberries in non-traditional ways like making dye for textiles. During the Civil War of the 1860s, blueberries were collected, packaged, and sent to Union troops for food. Blueberries are an excellent way to eat healthy! Blueberries contain anthocyanin, which is good for eyesight. They contain more antioxidants than most other fruits or vegetables. Blueberries are also naturally low in both fat and sodium.

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A few signs located at Specialty Crops Classroom:

POTATO TUBER VIEWER

Tubers are swollen, underground plant parts that store food. There are two types of tubers, stem tubers and root tubers. Potatoes are stem tubers. Some plants use tubers to survive drought or the winter months. When fall comes, the above-ground structure of the plant dies, but the tubers survive over winter underground until spring. When they regenerate new shoots use the stored food in the tuber to grow.

In 1915, a few families from Martin, Tennessee migrated to Vardaman, Mississippi. Their knowledge of the sweet potato and the unique geography, geology and climate of Calhoun County led to the production of some of the world's finest sweet potatoes.

Examples of plants with notable tuberous roots include the sweet potato, cassava, yam and dahlia.

What is the difference between a sweet potato and a yam?

Sweet potatoes and yams are both starchy, edible roots. True yams (Dioscorea genus) are native to Africa and are rough and scaly. They grow only in tropical climates since they require a longer growing season. True yams are low in beta-carotene, vitamin A and vitamin C. They are popular in South and Central America, the West Indies and parts of Asia. There are no true yams produced in the United States for food. Actually, all "yams" grown in the United States are sweet potatoes. In general usage in the U.S., however, the terms sweet potato and yam are used interchangeably.

VICTORY GARDEN & SPECIALTY CROPS EDUCATION GARDEN

Victory Gardens, also called war gardens or food gardens for defense, first came about during World War I. The US National War Garden Commission launched the campaign in an effort to decrease pressure on the public food supply in March of 1917. During World War II, the Victory Garden movement was emphasized even more to curb food shortages. Eleanor Roosevelt even planted a Victory Garden on the White House grounds.

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Building Soil Fertility
- Incorporate organic matter
- Incorporate natural fertilizers
- Physically remove weeds and insects
- Use shade crops for weed control

Nutrient Management
- Recycle on-farm nutrient sources for fertilizers
- Manure and compost reduce fertilizer costs
- Apply natural mulches such as leaves or straw

Practicing Conservation Tillage
- Prevent soil loss from wind and water erosion
- Minimize compaction
- Conserve water
- Methods include contour tillage, reduced tillage, and no-till

Crop Rotation and Diversification
- Grow a wide variety of crops, also called poly-cropping
- Use annuals and perennials
- Rotate crops
- Allow for fallow or rest periods
- Incorporate cover crops such as rye, clover, or vetch

Mississippi Back to School-Farm to School

Project Summary

The Mississippi Department of Agriculture and Commerce (MDAC) has witnessed an increase in demand for fresh, local fruits and vegetables from consumers across the state; this is evident in the drastic increase in the number of farmers markets not only in Mississippi but the entire country as well. This statement was further proven during the request for fresh fruits and vegetables for the 2014-2015 school year. MDAC and the Mississippi Department of Education (MDE) have collaborated for over a decade in purchasing local fruits and vegetables from Mississippi farmers to serve in our state's schools. Total sales for MS produce for the 2013-2014 school year were over $250,000; the request for MS produce for the 2014-2015 exceeded $1 million dollars. Produce offerings also increased to 19 different fruit and vegetable products for the 2014-2105 school year, the most ever offered.

While the availability of locally-grown produce is rapidly growing in schools all over the state, many private schools across the state do not or are not able participate in the statewide Department of Defense (DoD) purchasing program. Many parents and students also prefer to take their own lunch to school; our 'Back to School-Farm to School' event at the Mississippi Farmers Market was created to focus on those families that may not hear about Farm to School in the school cafeterias.

The trend to eat locally can be focused on every meal, whether at home or at school. MDAC educated and informed MS consumers on how they can prepare tasty and healthy options for children to take to school. MDAC created information with the objective to educate customers about year-round availability and seasonality of produce. This event proved timely as it was held within the first month of the school year in order to give parents the opportunity to start the school year off with healthy, local options.

This project has not been submitted to or funded by another state or federal grant program. This was a new project, but essentially builds on our Farm to School efforts through previous SCBP from years FY2010 and FY2013. The project in FY2010 created materials for the Farm to School program to build on Mississippi Farm to School Week. The FY2013 project is a garden grant program for schools in MS. This proposed project will assist in the overall promotion of the Farm to School program by offering ideas and information to parents. Our audience in the past has been directed towards the nutrition directors at schools, teachers, and students. This will be the first time MDAC has also directed attention towards parents and kids who bring their lunch from home or attend private schools.

Project Approach

As MDAC only works with farmers selling specialty crops with the statewide purchasing program, MDAC only promoted those crops sold throughout the year at farmers markets to promote their use in school lunches. Seasonality calendars, coloring books, and Farm to School Promotional materials featured specialty crops grown in Mississippi.

The Mississippi Back to School-Farm to School event was held on Saturday, September 6, 2014 at the Mississippi Farmers Market in Jackson, MS. Radio and Newspaper advertisements were created in order to publicize the event.

Farm to School Stickers were printed to hand out to parents and children that participated in the event and those that wished to show support of MS grown fruits and vegetables.

Farm to School lunchboxes were also handed out to participating kids once they visited and learned how they can pack a healthy lunch. The children had the opportunity to play "Pack This, Not That" to learn about the healthy offerings available at the farmers market year-round.

Eight 4" X 6" recipe cards were designed, printed, and distributed to promote MS fruits and vegetables and how they can be incorporated into everyday school lunches. The cards were given to parents and kids to help give ideas of what to pack in their lunch.

Mississippi seasonality calendars were designed, printed, and distributed at the event to promote the nearly year-long produce availability of fruits, vegetables, and nuts that Mississippi farmers offer. Many consumers often forget that items such as fresh local strawberries aren't offered year-round. Seasonality calendars educate shoppers on what is typically available at farmers markets throughout the year so they can plan their meals and lunches accordingly.

MS Farm to School Posters showing produce grown in Mississippi and found in schools were available for parents, teachers, and child nutrition directors to take for educational purposes. As child nutrition directors were also invited to the event, MDAC printed window decals for cafeterias and classrooms; indicating which MS grown produce is available in the cafeteria. Students will also be able to identify Mississippi produce by these signs. Decals were also given to teachers to put on their windows to show and educate parents on the farm to school program in Mississippi.

An A-Z coloring book featuring Mississippi specialty crops was be designed, created, and printed to hand out to participating children as a fun way to teach them about all the different produce grown in our state.

A Farm to School retractable banner was designed and printed to showcase all products in the MS Farm to School DoD purchasing program, as well as local produce offerings available directly from farmers that can be purchased and packed into their student lunch.

The Mississippi Department of Agriculture was fortunate to team up with BlueCross BlueShield of Mississippi and Rebecca Turner Nutrition to further educate parents and children on the importance of eating healthy fruits and vegetables. BlueCross BlueShield of Mississippi had games for the children, samples, and recipes using farmers market produce. Rebecca Turner, a local nutritionist, provided three workshops throughout the day for parents on planning menus, using the farmers market produce to plan meals, and information on packing healthy lunches for children.

MDAC also provided popular specialty crops grown in the state for samples and ideas for school lunches: raw sweet potato sticks, frozen blueberries, and pecans.

All MDAC marketing staff assisted in the event to help make this a success. Customers at the Mississippi Farmers Market were higher than usual for the time of year and the number of children present greatly exceeded expectations.

Funds allocated for this project were utilized as proposed in the approved project. MDAC split the advertising costs in order to account for the fact that shoppers find other products at the Mississippi Farmers Market besides specialty crops.

Goals and Outcomes Achieved

The goal of this project was to increase awareness and educate the public on the nutritional benefits of Mississippi grown specialty crops to Mississippi children and their parents. Surveys were conducted for parents and children that attended the MS Back to School-Farm to School event. They were asked three questions on their knowledge of farm to school and how likely they would use the information learned from the event in the future.

Of those surveyed, 52% of attendees had never heard of the Farm to School program. Many of those that reported they had heard of Farm to School before the day of the event noted it was due to the promotional efforts for the event. 92% of the surveyed participants actually explained what they learned about Farm to School as a result of the event and also said they would use the information to pack healthier lunches and meals in the future. The goal of 50% of participants learning more about Farm to School as a result of the Back to School-Farm to School event was greatly surpassed. The event proved to be a success for specialty crop producers, consumers, and Mississippi's children.

Beneficiaries

This project benefited all Mississippi Farmers Market customers (about 1,500) in attendance on September 6, 2014. All shoppers were able to learn about the seasonality of specialty crop produce in Mississippi, take recipes and ideas to incorporate specialty crop produce into everyday school lunches or snacks, sample easy to make and store specialty crop snacks, and learn from BlueCross BlueShield of Mississippi and Rebecca Turner Nutrition of the benefits of this program. The MDAC staff all reported attendance at the market was greater than usual for that time of year and marketing and promotions were all a success!

By having demonstrations and recipes at the farmers market, the customers were able to take advantage of the specialty crops offered in the recipes that same day. The ease and accessibility this offered impacts the specialty crop industry directly on the day of the event and in the future. The Mississippi Farmers Market has a total of 49 specialty crop producers. All of our efforts put forth in this event were targeted towards educating shoppers on the variety of produce that is available throughout the year and using those guidelines to plan lunches or snacks for all ages!

In addition, Farm to School posters were distributed to schools across the state on an as needed basis to help teachers and cafeteria staff educate students on Mississippi grown produce that is also served in the schools. These posters featured the produce that is utilized through the DoD Fresh Program, the picture of the farmer is shown on the poster as well as facts about the particular specialty crop. More than 3,900 posters were distributed this school year to schools all over the state. Schools either put them up in the school lunchroom,

hallways, or classrooms. Very few schools were able to put up a poster in each schoolroom, most were displayed where many students would see and read about Mississippi grown produce. We could conservatively guess that 20 kids saw, read, or learned from each poster, which would indicate a total of 78,000 children, parents, and teachers benefited from the Farm to School Posters.

Lessons Learned

The Back to School-Farm to School event at the Mississippi Farmers Market was extremely beneficial for Mississippi specialty crop producers, shoppers, and Mississippi school children. The Marketing Staff at MDAC will plan on making this a yearly event. They found it is a great way to entice shoppers to come back to the market and emphasize they can still shop for local produce throughout the year.

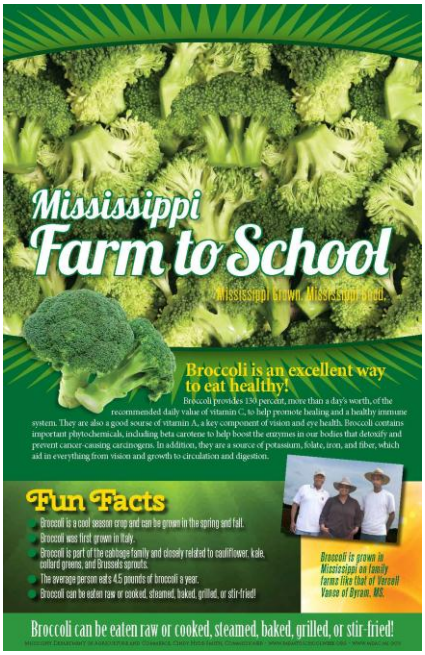
This project, though completed, would have been much better if more time was allotted. MDAC had a short timeline in order to complete the entire project. The bulk of the time was waiting for materials to be created and printed. The agency will also try to plan earlier in order to increase participation from other agencies and companies to increase the impact of healthy eating by purchasing local fresh fruits and vegetables.

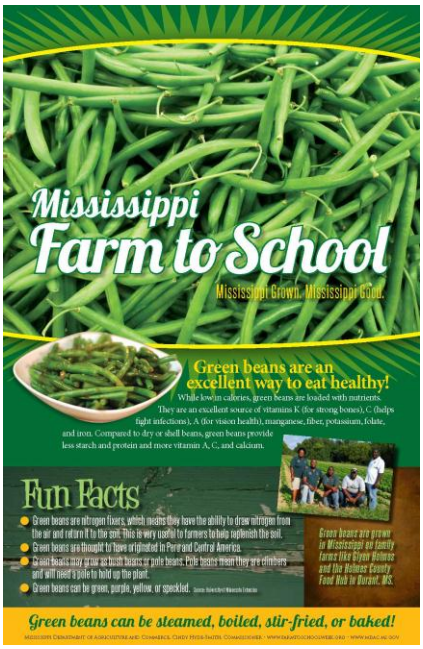
Contact Person

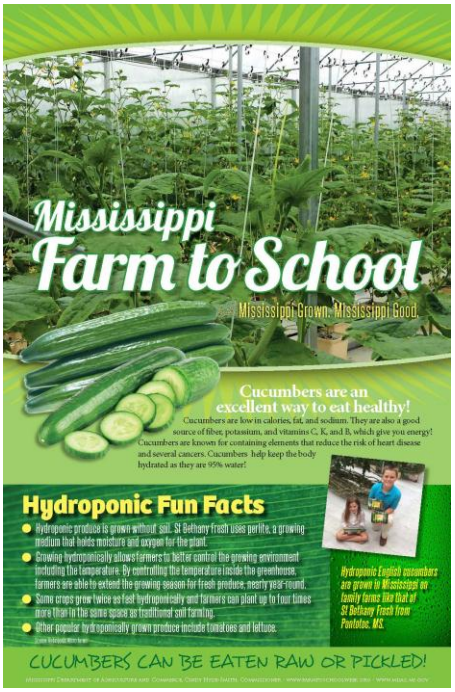
Susan Head
601-359-1196
susan@mdac.ms.gov

Additional Information

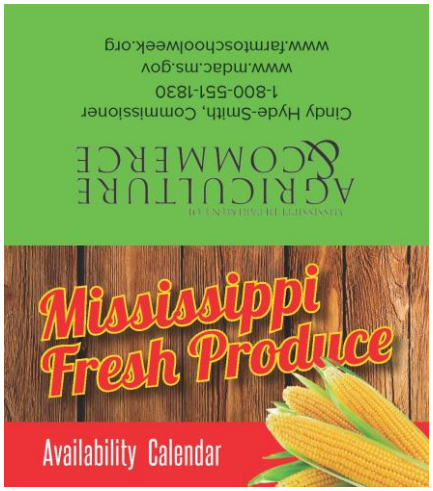
Posters





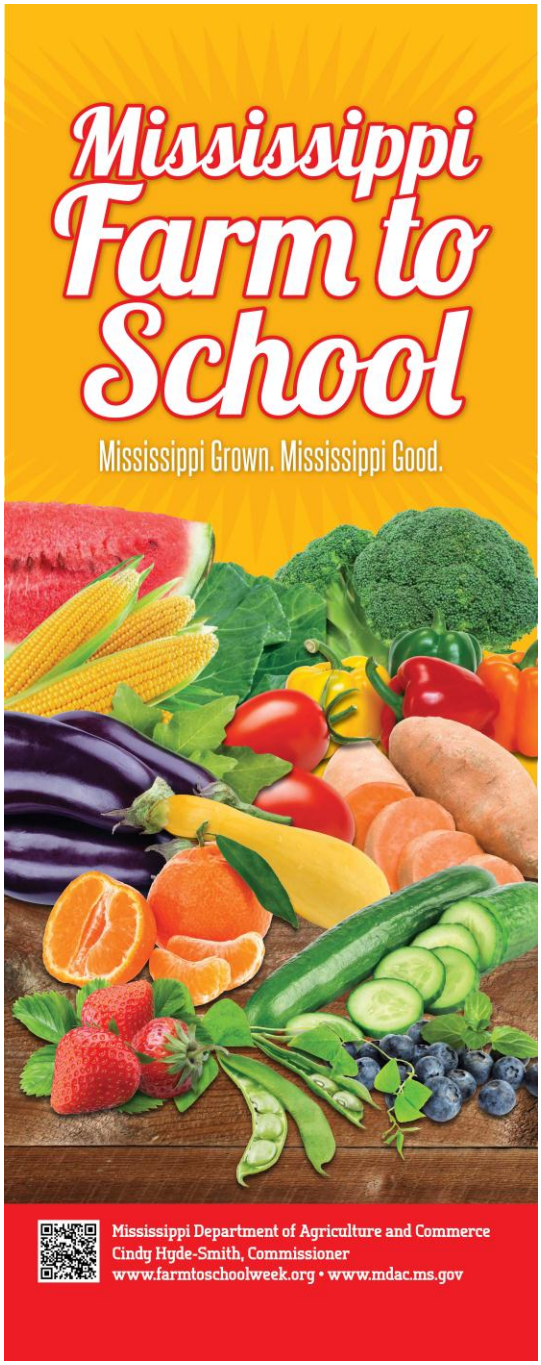


Seasonality Calendar



Sticker

Banner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Recipe Cards

Seasonality

- Fresh farmers market sweet potatoes are harvested August to October, and are available year-round.
- Farmers market beets are available April to June.
- Farmers market kohlrabi are available April to June.
- Farmers market turnips are available April to June.

Fun Facts

George Washington Carver, a famous scientist, developed 118 products from sweet potatoes including glue for postage stamps and starch for sizing cotton fabrics.

Farmers Market Chips

Ingredients

- 1 sweet potato, peeled and sliced thin
- 2 small beets, peeled and sliced thin
- 1 kohlrabi, peeled and sliced thin
- 2 turnips, peeled and sliced thin
- 2 tablespoons olive oil
- dash of salt to taste
- dash of pepper to taste (optional)

Preparation

- Preheat oven to 300 degrees.
- Put thinly sliced (1/8 inch or so) vegetables in a bowl and toss with olive oil until all veggies are coated.
- Place a non-stick pad on a baking sheet, and place raw chips on top without much overlapping.
- Sprinkle with salt and pepper (or try other seasonings!). Salting will help dry chips to make them crispier.
- Bake 30-40 minutes, watching at the 35 minute mark for crispiness and being cooked through.
- Let sit for 10 minutes and sprinkle more seasonings if desired. Enjoy!

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Recipe courtesy of Jenifer Bailes

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Seasonality

- Farmers market cherry tomatoes are available June to October.
- Farmers market green beans are available April to October.
- Spinach and/or greens are available March to June and October to December.

Fun Facts

Farmers grow 120 billion pounds of tomatoes worldwide making tomatoes the world's most popular fruit (tomatoes are technically a fruit because they grow from an ovary in the base of the flower and contain seeds of the plant).

Farmers Market Pasta Salad

Ingredients

- 1 cup cooked pasta of your choice
- 4-6 halved cherry tomatoes
- 5 steamed and chopped green beans
- A few baby spinach leaves (or chopped fresh collard or mustard greens)
- 1/4 cup chopped ham or turkey
- 1/4 cup grated cheese
- 1/2 teaspoon olive oil
- Salt and pepper to taste

Preparation

- Toss all ingredients together in a container, pop into a chilled lunch box and enjoy a healthy and filling lunch in the cafeteria!

Recipe courtesy of Sydney Markets

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Seasonality

- Farmers market broccoli and cauliflower are available from April to June and October to December.
- Farmers market bell peppers are available from June to August.
- Farmers market grape tomatoes are available from June to October.
- Farmers market carrots are available from March to June.

Fun Facts

Are you "cool as a cucumber"? Cucumbers actually cool the blood and ease facial swelling!

Homemade Ranch Dip & Farmers Market Veggies

Ingredients

- 1/2 cup milk
- 3 teaspoons lemon juice
- 1/3 cup light mayonnaise
- 1 teaspoon Dijon mustard
- 1 teaspoon farmers market honey
- 1/2 teaspoon garlic powder
- 1/8 teaspoon salt
- 2 tablespoons minced fresh dill or 2 teaspoons dried (optional)
- About 6 cups farmers market veggies such as cucumber slices, snap peas, sweet potato sticks, sliced bell peppers, broccoli and cauliflower, and grape tomatoes

Preparation

- Mix milk and 1 teaspoon of lemon juice together making soured milk (or just use buttermilk if you have it).
- In a bowl, whisk together the soured milk with all other ingredients except the veggies.
- Try spooning 2 teaspoons of homemade ranch into the bottom of a plastic cup and filling the cup up with sliced veggies for a snack to go!

NUTRITION

- 1 serving of store bought ranch (about 2 tablespoons) has 15 grams of fat or 23% of your daily value.*
- 1 serving of homemade ranch (about 2 tablespoons) only has 4 grams of fat or 6% of your daily value.*

*Based on a 2000 calorie diet, source: USDA

Recipe courtesy of Eating Well

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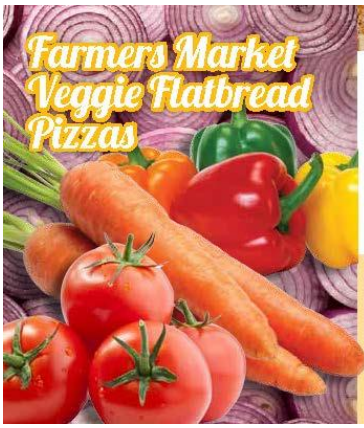

Seasonality

- Farmers market broccoli is available from April to June and October to December.
- Farmers market bell peppers are available from June to August.
- Farmers market grape tomatoes are available from June to October.
- Farmers market carrots are available from March to June.

Fun Facts

Green and red bell peppers come from the same plant, as bell peppers mature, their color changes from green to red. That's why red bell peppers are sweeter than green bell peppers - they are riper!

Farmers Market Veggie Flatbread Pizzas

Ingredients

- 3-4 flatbreads or pitas or 1 roll of refrigerated crescent rolls
- 1 - 8 oz package cream cheese
- 1/2 cup homemade ranch dressing from "Homemade Ranch Dip and Farmers Market Veggies" recipe card
- 1/2 cup diced farmers market broccoli
- 1/2 cup diced farmers market bell peppers
- 1/4 cup diced red onion
- 1/2 cup any other farmers market veggie such as chopped grape tomatoes or shredded carrots

Preparation

- If using refrigerated crescent rolls, preheat oven to 375 degrees.
- Roll out the crescent roll dough onto a 9x13 inch baking sheet and pinch together edges to form the pizza crust.
- Bake crust for 12 minutes in the preheated oven. Once finished cooking, remove crust from oven and let cool 15 minutes without removing it from the baking sheet.
- In a small bowl, whip together cream cheese and ranch dip (if you do not have any homemade ranch dip you can use 1/2 cup of mayonnaise and 1/2 packet or 1/2 ounce of dry ranch mix).
- Spread cream cheese mix onto pitas, flatbreads, or cool crescent roll crust.
- Arrange veggies over pizzas, slice, and enjoy!

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Recipe courtesy of All Recipes

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Seasonality

- Farmers market strawberries are available March to May.
- Farmers market honey is available year-round.

Fun Facts

Strawberry flowers have a strong sweet scent because they are in the same family as roses!

Farmers Market Strawberry Sandwich

Ingredients

- 1 tablespoon reduced-fat cream cheese
- 1/2 teaspoon honey (from your local beekeeper!)
- 1/8 teaspoon freshly grated orange zest
- 2 slices of bread
- 2-3 medium farmers market strawberries, sliced

Preparation

- Mix cream cheese, honey, and orange zest in a bowl.
- Spread bread with the cheese mixture.
- Place sliced strawberries on the bread and fold into a sandwich.
- Enjoy!

Recipe courtesy of Eating Well

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TELL IT LIKE IT IS-SPEAKERS FOR THE MFVGA CONFERENCE

Project Summary

The Mississippi Fruit and Vegetable Growers Association (MFVGA), implementing this project is a group of commercial growers with vested interest of promoting the specialty crop industry in Mississippi. The annual conferences offer growers a wide variety of topics to help boost their output for farmers and other direct markets.

The MFVGA held a two-day conference in January 2011 in conjunction with the Gulf South Blueberry Growers Association and the Mississippi Agritourism Association. The conference was a success and attracted more than 200 specialty crop growers. This was the first time that these organizations have joined together to host a conference such as this in the state. Due to the success of the conference and the positive feedback from the attendees, the MFVGA decided to make this an annual event with the next two conferences being held in November 2011 and November 2012.

This project will allow the MFVGA to incorporate keynote speakers and grower panels into the program agenda. In order to provide growers with the latest growing techniques and relevant information to growing specialty crops in Mississippi, the MFVGA needed to provide quality speakers. Based on surveys from a previous conference, growers overwhelmingly stated that they want to hear from actual growers of specialty crops. Growers love to hear from other growers to compare growing techniques and pest/disease issues.

Growers have also indicated that they would also like to hear from keynote speakers that have an expertise in certain areas of specialty crop production and marketing. Many of the growers attending this particular conference do not have the opportunity to attend regional or national conferences that do tend to have keynote speakers. This will allow growers to hear from expert speakers from outside of the state of Mississippi.

Project Approach

The Mississippi Fruit and Vegetable Growers Conference and Trade Show was held November 14-16, 2011 in Vicksburg, Mississippi at the Vicksburg Convention Center. The 2011 Conference welcomed 172 attendees from across Mississippi and surrounding states. The attendees were offered a wide variety of topics to help them boost their specialty crop output availability for farmers markets and other direct markets. Two out-of state speakers discussed using biological controls, organic pest management tactics, and cover crops. Eleven growers spoke about fruit and vegetable production. These topics included: peach, blackberry, and muscadine production under the fruit sessions. Organic growers spoke about backyard farming, pollination and pollinators, a twist on CSA's, and cover crops. Grower speakers discussed melon production, traditional greens, field tomatoes, and greenhouse tomatoes during the vegetable sessions. Attendee feedback (through surveys) was very positive for the grower speakers. Growers feel that they can connect more with fellow growers and to get real answers to their problems.

The conference committee met to plan and discuss topics and possible speakers for the 2012 Mississippi Fruit and Vegetable Growers Conference and Trade Show for November 28-29, 2012 in Jackson,

Mississippi at the Hilton Hotel on County Line Road. The conference committee was made up of growers, MSU Extension, and MDAC.

The conference welcomed 160 attendees from across Mississippi and some surrounding states. The attendees were offered a wide variety of topics to help them boost their specialty crop output availability for farmers markets and other direct markets. A variety of speakers at the 2012 MFVGA Conference discussed production issues, techniques, food safety, and other topics related to everyday production of specialty crops in Mississippi. Two out-of-state speakers discussed using biological controls, organic pest management tactics, and cover crops. A larger grower from North Carolina was brought in as part of a discussion on "Selling to the Big Boys." That session also included representatives from Kroger, Whole Foods, and other area grocers. Other topics included organic production and fruit production. A workshop was held on tomato grafting as well; this workshop featured a hands-on experience as well as instruction on how and why grafting can improve crop performance.

The conference also featured the Magnolia Fresh Reception, where growers were invited to bring produce from their farms for service during the meal. This, along with lunches and breaks, gave growers several opportunities to interact one on one with speakers at the conference.

Vendors from across the country attended the 2012 trade show and/or sponsored events. Johnny's Selected Seeds from Maine, J and M Industries from Louisiana, and Monte Packaging from Michigan were among the sponsors.

The Annual Meeting of the Mississippi Fruit and Vegetable Growers Association was also held during the 2012 Conference. During the conference, new members were recruited and elected to the Board of Directors during the Association's meeting.

The 2013 Mississippi Fruit and Vegetable Growers Conference and Trade Show was scheduled for November 14-16, 2013 in Choctaw, Mississippi at the Silver Star Convention Center in Choctaw, Mississippi (Neshoba Co.). The conference committee met several times in Choctaw and Jackson to finalize the conference site and to discuss topics and possible speakers. Growers were surveyed for topic ideas and speakers at the 2012 conference.

A conference coordinator was hired in the spring of 2013 to manage the conference. The coordinator recruited speakers, vendors, and attendees. She also supported the redevelopment of the web site for the conference. Website information was developed and updated during the months leading up to the conference (http://www.msfruitandveg.com/). The impact of the conference coordinator has been huge; this person has unified the look of all the materials for the conference and served as a single, knowledgeable point person for board members, attendees, trade show vendors. This has created a smooth and unified system of conference development and execution that has leveraged the time and effort of the volunteer grower-board members very well. An electronic payment system was set up by the coordinator to improve registration experience for attendees. Social media was set up as part of communications for the conference. These include development of a Facebook page and redevelopment of the association's web page.

Income has been gained as a result the project's activities. A total of $13,742.50 was gained from registration fees of attendees and $8,783.00 from vendors. The fees collected for the 2012 Conference were used to support many of the expenses of the 2012 conference. These included conference food functions ($16,703.62), and meeting hall rental and services changes ($9,308.60). This conference provided a central

location to serve many farmers and was able to include experts from many difference fields. These expenditures provide a complete and professional experience for the attendees, using the registration fees allowed us to use the grant funding to enhance the conference with national speakers for which the grant was intended. This will enhance the completeness of Mississippi Fruit and Vegetables Industries by exposing our growers to the best and most current information available.

Goals and Outcomes Achieved

The 2011 and 2012 Annual Conferences were both very successful. The original proposal aimed to increase conference attendees from 200 up 10% in 2011 and up to 20% in 2012. These proved to be lofty goals, as there were 172 in attendance at the 2011 conference and 160 in attendance at the 2012 conference. Any number of factors could have attributed to the subtle drop in participation including location of the conference and also changing the time of year that the conference was held. The MFVGA will continue to host conferences in the future and are seeking ways to increase membership and participation.

Beneficiaries

Mississippi specialty crop growers benefited as a result of the 2011 and 2012 conference, specifically, 332 growers directly benefited. This grant allowed MS growers to hear from experts to provide them with the latest growing techniques and relevant information to growing specialty crops in Mississippi. Many of the growers attending this particular conference do not have the opportunity to attend regional or national conferences that do tend to have keynote speakers. This allowed growers to hear from expert speakers from both inside and outside of the state of Mississippi.

Lessons Learned

This conference has proved to be very important to specialty crop growers in Mississippi, and this conference will continue on once after the grant period has ended.

In 2012, at least one important out-of-state speaker cancelled at the last minute for the conference. That speaker was to give a long workshop on vermicomposting, a topic requested by the growers in 2011. The association was able to find a replacement to fill the time allotted, but it was unfortunate that this speaker was unable to attend. The association also took note that the conference hotel in Jackson proved more costly for attendees than anticipate; this is extremely important in recruiting future attendees for the conference. This led to a change in venue for 2013 to the Silver Star in Choctaw.

Many speakers would also not accept the speaker fees or honorariums, therefore a significant amount of funds were remaining after the 2012 conference. Funds have been relinquished to MDAC.

Contact

Cindy Ayers
601-668-5583
Cayers2010@att.net

EAT HEALTHY MISSISSIPPI

Project Summary

Eat Healthy Mississippi is a collaborative public awareness/educational/marketing campaign of the Mississippi Hospitality & Restaurant Association and other partner organizations. This project was designed to encourage restaurants to create healthy dining options utilizing approved specialty crops as a recipe item.

Restaurant industry trend analysis indicated a growing consumer demand for restaurant operators to incorporate the utilization of locally grown crops into menus. In a survey from Unilever Food Solutions, 70% of U.S. diners say they want to know more about the sourcing and nutrition of food in restaurants, and 83% said the information is not available. As Mississippi specialty crop production is on the rise, connecting local growers with interested restaurant operators is essential to meeting the expectations of consumers as well as providing retail outlets for specialty crop producers. The initial purpose of EHM was to provide educational information to restaurant owners explaining what crops are available and when those crops are available, while also providing a venue for the creation of cost/distribution models to be established between growers and the restaurant community.

As Mississippi's obesity epidemic continues, it is important for restaurants to play a proactive role in providing healthy dining options. By incorporating locally grown specialty crops into menu development, locally sustainable menu items can be marketed to consumers. This project's goal was to accomplish three objectives: 1) to address consumer demand for locally grown product, 2) to provide a venue for grower/retail relationships, and 3) to encourage healthy dining options for existing restaurant patrons.

This project did not build on previously funded SCBGP or SCBGP-FB funded projects.

This project did not complete all objectives in the proposal, rather funds were relinquished to MDAC and the MHRA requested to create a new project, "Buy Local, Eat Local," which is included after this final report.

Project Approach

The first phase of the project focused on recruitment and identification of local farmers that were interested in supplying specialty crops to local restaurants. After obtaining an email roster from the Mississippi Department of Agriculture and Commerce, the Mississippi Hospitality and Restaurant Association (MHRA) sent out seven emails to over 1,400 recipients introducing the program and encouraging participation in the Mississippi MarketMaker Program that operates under the auspices of the MSU Extension Service. Additionally, the MHRA created a dedicated website, www.eathealthyms.com, of which there was a page for growers to officially register to participate. As of October 1, 2011, Mississippi MarketMaker website had 126 individual farms listed. As of December 1, 2011, the number of registered farms increased to 175. This dramatic increase resulted as a direct influence of the Eat Healthy Mississippi program instituted by the MHRA. Since the inception of the Eat

Healthy Mississippi program, MarketMaker has added 49 new farm entities, a 38% increase in the number of farms participating in MarketMaker.

Phase two of the project was to recruit the restaurants, with the goal to get 115 restaurants to participate. Each restaurant was to "buy in" at the cost of $110 per location. For that fee, they were eligible to have four recipes analyzed, obtain a listing on the HealthyDiningFinder website, and participate in all of the collateral marketing initiatives. Through June 2012, only 50 restaurants actually paid to participate; of the 50, 23 carried the program to its full conclusion.

Phase three of the project was the comprehensive statewide marketing initiative. With the reduced number of participating restaurants, MHRA had to re-think their advertising strategies. There were enough restaurants participating in the metro Jackson area to run four, 63 inch ads in the Jackson newspaper, *The Clarion Ledger*. Of the restaurants listed in the ad, none reported a positive traceable impact from the newspaper ad. Advertisements also ran in *Mississippi Magazine*, generating zero customer response.

Funds were solely used to enhance the competitiveness of specialty crops; the website, advertisements, and brochures only featured specialty crops on them. The MHRA ensured that restaurants submitted recipes that included specialty crops to be eligible for a mini grant and to be listed on the Healthy Dining Finder website.

Goals and Outcomes Achieved

The first phase of the program focused primarily on the recruitment of farmers and growers to the Mississippi MarketMaker website. The MHRA sent out emails to growers as per this schedule:

Date	Number of Recipients	Open rate
October 6, 2011	503	27.8%
November 1, 2011	1407	16.2%
November 7, 2011	1404	21.5%
November 14, 2011	1414	12.5%
November 17, 2011	1409	12.4%
November 29, 2011	1409	18.6%
December 6, 2011	481	30.3%

As seen in the above table, emails were sent to 1400+ recipients including area growers and restaurants. Depending on sources, average email open rates were from 11-17%. The open rates generated in this campaign by and large exceeded the norm.

During the last week of October 2011, the MHRA created the dedicated website, www.eathealthyms.com. The website has dedicated pages for growers, restaurants, and consumers.

In early November 2011, the MHRA sent out a direct mail postcard to all growers encouraging their participation. On November 15, 2011, MHRA Training Director, Grady Griffin presented the EHM

program and a webinar to the Mississippi Fruit and Vegetable Growers Association at their annual conference; about 80 people were in attendance.

During the first week of December 2011, the MHRA distributed a direct mail piece to over 2,000 restaurants and growers providing additional education and exposure of the EHM initiative. The results of the first quarter initiative were positive. As of October 1, 2011, the Mississippi MarketMaker web site had 126 individual farms listed. Over the next sixty days the number of registered farms increased to 175. This dramatic increase resulted as the direct influence of the Eat Healthy Mississippi program instituted by the Mississippi Hospitality and Restaurant Association. Since the inception of the Eat Healthy Mississippi program, MarketMaker has added 49 new farm entities, a 38% increase in the number of farms participating in MarketMaker.

While 115 restaurants proved to be too lofty of a goal, the MHRA did have 50 restaurants that did sign up. Out of those 50, 23 carried the program to fruition. Review of input from stakeholders indicated the program was too complex for both growers and restaurants. Those that did complete the program indicated minimal response from consumers. The amount of money dedicated to marketing was insufficient to build consumer awareness. A handful of grower/restaurant relationships were forged or reinforced. We found that of those restaurants participating, most had already established relationships with targeted farmers.

The MHRA identified 40 growers that wanted to formally become a part of the program. Unfortunately, only a small group was positioned to provide delivery/order fulfillment. Most were Farmers Market participants.

Beneficiaries

Expanded participation in the MarketMaker benefitted both the farmers and Mississippi State University Extension. Other than reinforcing established relationships, there was no reported financial benefit to restaurants participating in this program.

The 23 restaurants that followed through did receive the benefit of recipe/nutrition analysis but did not report a gain in revenue. All participants in attendance of the MS Fruit and Vegetable Growers Annual Conference, 80, benefited from learning about the program and hopefully triggered their interest. These may have been some of the 40 growers that sought to become a part of the program to get their produce into local restaurants.

Lessons Learned

While the goal of 115 restaurants participating proved to be a lofty one, 50 restaurants that did participate, is still an accomplishment. However, once the restaurants realized the amount of time required to create and write recipes, identify and establish buying relationships with vendors and train staff, over half quit the program. Participants in the administrative review process realized that the program was too cumbersome for both restaurants and growers. There were too many “moving parts” that were overwhelming to restaurant operators.

Recipe analysis was hindered by the fact that the vast majority of restaurants did not operate off the recipes. There was a steep learning curve to teach the restaurants the difference between a menu listing and an actual recipe. The nutritionists at HealthyDiningFinder did a good job in walking operators through the process, however because it was so cumbersome in time and effort, many of the recipes were finalized after the growing season.

In addition to the recipe challenges, there proved to be gaps in the distribution process. Only a small percentage of growers were capable of delivering consistent product on a timely basis. Attempts to get food broadliners to pick up specialty crops were unsuccessful due to the economy of small scales and the inherent product liability issues.

For those that did qualify for the marketing campaign, there was wide spread disappointment in the fact that it did not drive measurable business to their locations. While there is wide spread support for the utilization of local produce, there are other issues that need to be addressed before it can be addressed on an industry-wide basis.

Observations for moving farm to restaurant initiatives forward:

1. A locally grown distribution system must be established. Not all restaurants have the capabilities to travel to a farmers market or a local farm to access produce. Overall restaurants are looking for cost effective and easily accessible products. Any barriers that make it more difficult or less cost effective will detract from the viability of the concept. Future distribution discussions should include broadliners and other distributors that already have an established distribution system. We must address the food safety aspect and the liability issues associated with farm to restaurant programs.
2. Requiring “healthy utilization” to a standardized level is a huge barrier, especially in light of the lack of customer support. It is easier to incorporate product standards and cost factors must be considered in order to minimize the obstacles involved with menu incorporation.
3. Future initiatives should be broader in base and should include a massive, multi-stakeholder public outreach program. It was recognized from day one that The Eat Healthy Mississippi Campaign would only be successful if the consumers were engaging. Clearly, within the parameters of this program, we were not effective in getting the consumers engaged. Participation requirements for such a statewide initiative should be clearly articulated. There is a disconnect between growers who want their products served in restaurants and growers who want the same and are capable of getting the products to the back door of a restaurant.

Due to the mentioned challenges, an elaborated revised plan and budget was submitted to USDA in May 2013. This resulted in the dissolve of the project, “Eat Healthy Mississippi,” to create a new project titled, “Buy Local, Eat Local” to help address some of these challenges.

Contact

Mike Cashion
601-608-0223
mikecashion@msra.org

Other Information

Press Release:

FIRST-EVER STATEWIDE RESTAURANT NUTRITION PROGRAM – "EAT HEALTHY MISSISSIPPI" –
EMPHASIZES LOCAL SOURCING, HEALTHYDININGFINDER.COM APPROVAL

Mississippi Hospitality & Restaurant Association launches initiative with online nutrition resource partner to promote restaurant industry's commitment to healthy lifestyles

(Jackson, Miss.) – The Mississippi Hospitality & Restaurant Association (MHRA) today unveiled a groundbreaking statewide initiative called "Eat Healthy Mississippi" that aims to make great strides in helping Mississippi remove its status as the "fattest state in the nation." In a press conference at the State Capitol, Governor Phil Bryant, along with Department of Agriculture and Commerce Commissioner Cindy Hyde-Smith and Healthy Dining President Anita Jones-Mueller, joined the MHRA in launching this major healthy lifestyle program to encourage Mississippi citizens to eat more healthfully when dining out.

"Eat Healthy Mississippi" is designed to promote locally grown produce in the preparation of dietitian-approved, Healthy Dining menu options at restaurants throughout Mississippi. All approved menu choices will be featured on HealthyDiningFinder.com, along with resources to educate restaurants and consumers about nutrition and eating and living well. Additionally, the healthy eating initiative establishes a mutually beneficial relationship between local growers and restaurants that not only will promote healthy lifestyles but also stimulate the local economy.

"We are thrilled and honored to have Governor Bryant and Commissioner Hyde-Smith join us today in supporting our efforts to promote a healthier Mississippi, where we can enjoy farm-fresh ingredients in healthier options at participating restaurants," said Mike Cashion, MHRA Executive Director. "It is our hope that this innovative approach to linking local producers to local restaurants will provide consumers with even more healthy dining options at their favorite restaurants throughout the state."

In his comments, Governor Phil Bryant urged Mississippians and visitors to understand the benefits of smart lifestyle choices.

"We all must take seriously the impact lifestyle choices make on health," Bryant said. "Poor choices can lead to obesity, disease and other health complications, but smart choices such as healthful diets and regular exercise can lead to a longer life. I encourage everyone to adopt a healthy lifestyle and choose wholesome foods at home and when dining out."

Healthy Dining president and founder Anita Jones-Mueller, MPH, also underscored the long range benefits of the program.

"This landmark effort can greatly enhance the health and well-being of Mississippi residents and tourists. It serves as a model that other states can emulate in contributing both to better health and a vibrant economy," said Jones-Mueller. "With HealthyDiningFinder.com, it is easy for those eating away from home to find restaurants offering menu items with health and taste in mind. Our dietitians look forward to working with Mississippi restaurants to help them offer a growing selection of Healthy Dining menu choices that their guests will love."

Through MHRA's strategic partnership with HealthyDiningFinder.com, participating "Eat Healthy Mississippi" restaurants will have access to Healthy Dining's expert nutrition services, including consultation on finding menu items that meet Healthy Dining's nutrition criteria. The online, nutrition resource's team of registered dietitians has analyzed thousands of menu items from restaurants nationwide – fast food to fine dining – to ensure consumers are armed with accurate nutrition information to make more informed dietary choices when dining out. Restaurants that join the "Eat Healthy Mississippi" program will have the benefit of having several menu items analyzed and approved by Healthy Dining's dietitians, and their restaurant and healthier choices will be featured on HealthyDiningFinder.com – also accessible via its mobile site and iPhone app ("yumPower") for on-the-go consumers.

"Eat Healthy Mississippi" restaurant participants may also qualify to participate in the *Kids LiveWell* program, a National Restaurant Association initiative, developed in collaboration with Healthy Dining, that provides parents and children with a growing selection of restaurants providing healthful children's menu options that focus on fruit and vegetables, lean protein, whole grains and low-fat dairy, with limited amounts of unhealthy fats, sugars and sodium.

The "Eat Healthy Mississippi" campaign has been made possible by a grant of more than $83,000 from the U.S. Department of Agriculture, as well as partnerships with the Mississippi Department of Agriculture & Commerce, Mississippi Division of Tourism, the Mississippi Department of Health, local farmers and growers, and other local and national support. The multi-phase initiative will include various programs to educate and bring awareness to local growers and farmers, restaurants and consumers to expand their knowledge of the benefits of "Eat Healthy Mississippi" and living a balanced and healthy lifestyle.

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Mississippi Hospitality & Restaurant Association: The Mississippi Hospitality & Restaurant Association is a non-profit association composed of food service operators, lodging properties, attractions, convenience stores,

casinos, suppliers, manufacturers, and other professionals who realize the importance of working together for the good of our industry. The mission of the association is to promote the hospitality and foodservice industries, protect our industry and patrons from unnecessary laws and regulations, and provide education and training programs for all hospitality industry employees.

HealthyDiningFinder.com: Since 1990, HEALTHY DINING'S culinary nutrition experts have been guiding and inspiring chefs and restaurateurs to create and serve a selection of HEALTHY DINING menu options. A leader in restaurant nutrition, the company works with hundreds of restaurants and has analyzed thousands of menu items for nutrient content. In collaboration with the National Restaurant Association, HEALTHY DINING leads the largest-ever restaurant industry nutrition initiative. Through HealthyDiningFinder.com, the only resource of its kind, Americans can find dietitian-approved, HEALTHY DINING menu options and view corresponding nutrient information (calories, fat, etc.) for restaurants that span fast food to fine dining, coast to coast. The site is promoted to the growing segment of health- and weight-conscious consumers through employers, health organizations, health insurance companies, weight control programs, fitness centers, the media, and much more. The Centers for Disease Control and Prevention (CDC) provided partial funding for the development of the initiative. For more information, visit www.HealthyDiningFinder.com.

MEDIA CONTACTS:

Mississippi/Regional press:
Mike Cashion, 601-573-5927
mikecashion@msra.org

National press:
Katharine Kim, 619-453-0547
Katharine@healthydiningfinder.com

Direct Mail Postcards sent to growers:

Attention Farmers and Growers

Register Now for the **EAT HEALTHY MISSISSIPPI**

Restaurants will take locally grown products, incorporate them into nutritious recipes and the Mississippi Hospitality & Restaurant Association will coordinate a large, statewide PR campaign to drive customers to those restaurants and YOUR PRODUCTS!

No charge to participate but you MUST register your product and location at,

http://ms.marketmaker.uiuc.edu/

Questions? Call 601.608.0221

EXHIBIT

Eat Healthy Mississippi Brochure:

Sample List of Qualified Products

Fruits & Nuts
Almond
Grape (including raisin)
Apple
Guava
Apricot
Kiwi
Avocado
Litchi
Banana
Macadamia
Blackberry
Mango
Blueberry
Nectarine
Breadfruit
Olive
Cacao
Papaya
Cashew
Passion fruit
Citrus
Peach
Cherimoya
Pear
Cherry
Pecan
Chestnut (for nuts)
Persimmon
Coconut
Pineapple
Coffee
Pistachio
Cranberry
Plum (including prune)
Currant
Pomegranate
Date
Quince
Feijou
Raspberry
Fig
Strawberry
Filbert (hagelnut)
Suriname cherry
Gooseberry
Walnut

Vegetables
Artichoke
Mustard (and other greens)
Asparagus
Okra
Bean
Snap or green
Lima (Dry, edible)
Pea (Garden, English or edible pod)
Beet (table)
Onion
Broccoli (including broccoli raab)
Opuntia
Brussels sprouts
Parsley
Cabbage (including Chinese)
Parsnip
Carrot
Pepper
Cauliflower
Potato
Celeriac
Pumpkin
Celery
Radish (all types)
Chive
Rhubarb
Collards (including kale)
Rutabaga
Cucumber
Salsify
Edamame
Spinach
Eggplant
Squash (summer and winter)
Endive
Sweet corn
Garlic
Sweet potato
Horseradish
Swiss chard
Kohlrabi
Taro
Leek
Tomato (including tomatillo)
Lettuce
Turnip
Melon (all types)
Watermelon
Mushroom (cultivated)

FOR A COMPLETE LIST OF PRODUCTS GO TO
www.eathealthyms.com

Funds for this project were provided through the Mississippi Department of Agriculture and Commerce, USDA Specialty Crop Grant Program

U.S. POSTAGE
PAID
JACKSON, MS
PERMIT NO. 109

130 Riverview Drive - Suite C
Flowood, MS 39232
Return Service Requested

Exhibit 2

Eat Healthy MISSISSIPPI

Mississippi Hospitality & Restaurant Association

Growers

Connecting with restaurants is now easier than ever.

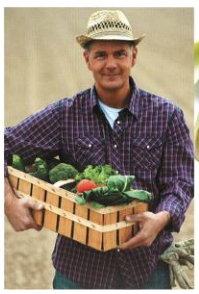
By participating in Eat Healthy Mississippi, you can expand your markets to some of the leading restaurants in the state. Restaurants will incorporate your products into healthy recipes.

After a careful nutritional analysis, those restaurants and their qualifying menu items will be listed on HealthyDiningFinder.com and will benefit from a massive consumer oriented marketing campaign in the Spring of 2012.

Your first step is to register your farm and product at the Mississippi Market Maker website at ms.marketmaker.uiuc.edu/

Next, call the Mississippi Hospitality & Restaurant Association at 601.608.0221 and let them register you as a participating producer.

And the best part is there is no cost to participate!



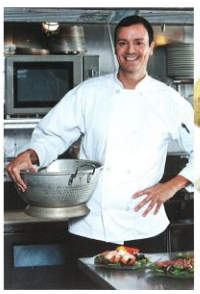
Restaurants

The consumer demand for HEALTHY DINING options is on the rise.

But historically, recipe analysis has been an expensive process. Eat Healthy Mississippi is an initiative that connects local farmers to local restaurants, then, using those locally grown products in recipes, allows restaurants to have four recipes analyzed by HEALTHY DINING FINDER. Thanks to a grant from the USDA and Mississippi Department of Agriculture and Commerce and Mississippi Diuision of Tourism, you get everything for a fraction of the cost you would normally pay!

But it gets even better. Participating restaurants will have their logo and menu items posted on HealthyDiningFinder.com and benefit directly from a massive consumer targeted marketing campaign that will drive health conscious consumers to YOUR RESTAURANT. For no additional cost, you can also participate in the Kids LiveWell campaign sponsored by the National Restaurant Association.

Contact the MHRA for more details and sign up today!



Consumers

The Mississippi Hospitality & Restaurant Association wants to make it easier than ever for you to find HEALTHY DINING options in our local restaurants.

Eat Healthy Mississippi is an initiative that connects local farmers with local restaurants and uses locally grown products in healthy recipes.

Simply by going to HealthyDiningFinder.com, you can find restaurants near you that serve not only healthy recipes, but incorporate locally grown products into the recipes. Eating healthy has never tasted so good or been easier!

Your favorite restaurant not listed? Encourage them to sign up by calling the MHRA at 601.608.0221.

Newspaper Advertisement in the Jackson paper: *The Clarion Ledger*:

BUY LOCAL, EAT LOCAL

Project Summary

The purpose of the Buy Local, Eat Local initiative had two main components, one was to strengthen and/or establish ties between restaurants and local growers. The second is to provide a special event forum to invite the consuming public to a large scale local marketplace. The purpose of the project is to continue to create relationships between restaurants and growers, with the added purpose of enhancing grower exposure with the general public consumers.

In discussions with potential distributors, challenges identified included a need to enhance the distribution network of growers as potential distributors require a recognizable level of certification such as good agricultural practices and good handling practices (GAP/GHP). Mississippi Department of Agriculture and Commerce (MDAC) received Specialty Crop Block Grant funding for a cost-share program to aid in the financial aspect of the GAP/GHP costs for funding year 2012. MHRA had requested to collaborate with MDAC to cover the remaining costs to growers, in hopes to greater assist the growers, by enabling their produce to seek retail and restaurant markets.

The theme of the expo was titled, “Buy Local, Eat Local Market and Expo.” An afternoon plenary session was planned to encourage restaurants to incorporate locally grown produce, fruits, and Gulf Seafood in their menus. Half of the cost of this session was paid for out of proceeds of a BP Grant. While this is not “duplicative funding” it is shared funding for an event that had broader appeal to restaurants and consumers alike. MDAC ensured that Specialty Crop funds were only used to benefit eligible specialty crops by only reimbursing expenses for activities pertaining to MS grown fruits and vegetables and those expenses for the tomato sandwich competition only. The project staff allocated Specialty Crop Block Grant funds to only cover costs pertaining to MS fruits and vegetables through the advertising, Expo, and produce needed for the tomato sandwich competition only. Many reimbursed expenses were percentage based on the percent of specialty crops benefited through the activities (i.e. many expenses were split in half or one-third).

While this project has not been funded by another State or Federal program, it does seek to enhance a grant submitted by the Mississippi Department of Agriculture and Commerce with the GAP/GHP cost share program. Some participants of this 2012 MDAC Specialty Crop Block Grant will have the opportunity to further acquire additional reimbursement if they work with local area restaurants to increase the use of fresh, local ingredients in their menu. These will not be duplicative funds.

The GAP/GHP cost share reimbursement program by MHRA, unfortunately never came to fruition, as they decided to relinquish remaining funds after the “Buy Local, Eat Local,” expo had concluded.

Project Approach

Once MHRA received approval from USDA, planning for the Expo immediately began. Mass mail outs and emails were sent to growers and restaurants to encourage participation on both sides.

On July 15, 2013, the MHRA hosted the "Buy Local Eat Local Market and Expo." A morning educational breakout session focused on how to maximize the relationships between local growers and local restaurants. Presenters included Andy Prosser from MDAC, and Mike Cashion from the MHRA. Much discussion centered on the challenges of getting farmers and restaurants on the same page. Product distribution, standard specifications, and stable pricing were the most popular discussed issues.

After the meetings, a marketplace was set up for farmers and restaurants to exhibit. Twenty-eight farmers exhibited at the event, showcasing their produce to restaurants and the public. Nearly 100 restaurant managers and owners attended the Expo, in addition to the nearly 300 members of the general public. Farmers were encouraged to show/sell their fruits and vegetables. Exit surveys indicated the average vendor made 50 new contacts as a result of the Expo. A dozen restaurants were in attendance to vie for the Best Tomato Sandwich in the state. All restaurants had to use Mississippi grown tomatoes in the competition. Awards were given for the People's Choice and Judges Choice categories. Specialty Crop Block Grant funds were not used to pay for the awards; the MS Hospitality and Restaurant Association incurred this cost, as they were not reimbursed through the SCBGP.

Throughout the EXPO, interviews and contests were conducted focusing on the local growers. Many provided door prizes and free product giveaways to the consumers.

Goals and Outcomes Achieved

MHRA was unable to provide direct consumer incentives, and because not all of the farmers were prepared to sell, it is impossible to determine what, if any, revenue was made by the farmers.
We did receive significant television and radio coverage of the event. The consumers enjoyed the Tomato Sandwich competition and were very impressed with the products put forth.

The MHRA spent hundreds of hours and thousands of dollars trying to recruit farmers to attend. A repeated email campaign coupled with direct mail invitation letters and personal recruitment from existing farmers markets generated only 28 participants. Many said they didn't have the time or the products to invest in the event.

Many of the restaurants in attendance already had existing relationships with farmers and they worked together to showcase their mutual products.

Public perception and vendor perception was positive. Unfortunately, due to the reduced reimbursement schedule, the MHRA lost money on the event and it is highly unlikely that the event will be replicated.

Beneficiaries

Because MHRA was unable to provide direct consumer incentives, and, because not all of the farmers were prepared to sell, it is impossible to determine if any revenue was made by the farmers.

Nearly 100 restaurant managers and owners attended and benefitted from the Expo, in addition to the nearly 300 members of the general public. Farmers were encouraged to show/sell their fruits and vegetables. Exit surveys indicated these vendors made 50 new contacts.

Lessons Learned

The Mississippi Hospitality and Restaurant Association reported many lessons learned from this project:

1. Broadening the relationships between restaurants and growers has several barriers:
    a. Too many small growers can't meet restaurant product specifications on a consistent basis;
    b. Too many small growers can't meet the quantity and pricing needs of restaurants;
    c. Distribution challenges abound, without GAP certification and liability insurance coverage, broadline distributors are unlikely to accept the risk of distributing "at risk" product;
    d. By and large, restaurants desiring local grower relationships already have them established;
    e. There is a lack of communication between growers and restaurants;
    f. Comments from farmers indicate that demand exceeds supply of most specialty crops.
2. In general, consumers support locally grown products. However, price differentials reduce the size of the consumer market. Not all consumers are willing to pay premium prices for locally grown products.
3. Farmers are great at growing, but some lack the knowledge to effectively expand their market. Those that have the knowledge have likely already done so.
4. Farmers Markets are a great way to gather growers, but for many restaurants it is difficult to break loose to attend and purchase.
5. Most Restaurants require a stable source and stable pricing. Some that have tried using local produce have been disappointed by the inconsistencies in pricing, quality, and general availability.

Contact

Mike Cashion
601-608-0223
mikecashion@msra.org

PUBLIC RELATIONS CAMPAIGN TO PROMOTE BUYING LOCAL SPECIALTY CROPS

Project Summary

Less than two percent of the public is actively engaged in production agriculture today. Many people are three or four generations removed from the farm and consequently have less of an appreciation for the benefits of a locally-produced food source. A well-designed, professional campaign is needed to educate the public about the benefits of agriculture in general. The Farm Families of Mississippi (FFM) campaign addresses many of the issues that have been identified through surveys that the public is misinformed about or needs further information. The Specialty Crops Grant Program was identified as a way to educate the public about the benefits of buying locally produced foods which was one of the identified messages of the overall campaign.

This specialty crop promotion project was designed to run in concert with another public relations effort being run by the Farm Families of Mississippi. The larger project is the Ag Image Campaign for all agriculture. The specialty crop promotional effort was specifically directed to promote buying locally produced specialty crops. Many of these small specialty crop growers cannot afford the high cost of a media campaign. With this campaign, however, the specialty crops had their own TV spots, radio spots, and billboards that had the same look and feel of the larger campaign but targeted specialty crops. This specialty crop promotion was the only portion of the overall campaign promoting specialty crops.

This project was previously funded by the 2011 Specialty Crop Block Grant Program. The 2012 program built on the name recognition that was achieved in 2011. The push to feature specialty crops in the cooking segment that ran on several TV stations highlighted the use of locally grown products and gave interesting facts about the commodities while the dish was being prepared.

Project Approach

Both of the TV spots promoting the availability of specialty crops ran in equal rotation with the rest of the spots in the Farm Families of Mississippi campaign. They ran on WLBT and WJTV in Jackson, WLOX in Biloxi, WABG in Greenwood/Greenville, and WATV in Tupelo. WABG and WTVA were new additions this year and gave us virtually statewide coverage. These spots generally ran during morning, noon, and evening news programming but we also picked a few TV shows that fit our demographics and ran some spots in them. We ran approximately 500 TV spots featuring specialty crops. In addition to the paid TV ads, specialty crops were featured on several cooking segments at no charge.

The radio spots ran on the SuperTalk radio network statewide. This network of nine stations multiplied the coverage tremendously. For every spot ran, it was played on nine stations for a fraction of the cost of doing that individually. The specialty crop ads were run over 750 times.

There were 14 billboards that featured a specialty crops that were displayed in Jackson, on the Gulf Coast, and in the Greenwood/Greenville, MS area.

The FFM contracted with Market Research Insight to do the scientific survey to measure the impact of the campaign. They surveyed the public just prior to the campaign to obtain a baseline number and then again immediately following the campaign. The survey results showed that the ads had the desired effect on consumers. The number of respondents that 'frequently' tried to find and purchase locally grown specialty crops increased from 46% in February to 69% in May. A number of those that are now 'frequently' purchasing specialty crops would have previously stated 'occasionally,' if they were interviewed in February. The results for the 2012 survey were somewhat better than the results for the 2011 survey.

When asked to name benefits of buying and consuming locally grown crops, it is clearly evident that the advertising program influenced two major category responses. Especially the increase from 36% in February to 43% in May for the response of buying locally grown specialty crops helps the local economy and keeps money local is a very significant change.

When asked to name specialty crops, the top four responses were sweet corn, sweet potatoes, pecans, and honey. These were the exact four crops that we featured in our ads.

Farm Families of Mississippi is a group of approximately 145 agricultural organizations, companies, and individuals committed to educate and improve the image of agriculture among the state's consumers and the list is still growing. This is not just a short-term project. The partners in this organization, spearheaded by the Mississippi Farm Bureau, have committed to an ongoing, multi-year campaign. To influence public perception, a consistent, sustained communication program is required and should keep focus of the long-term goal of creating positive public perception of agriculture in Mississippi.

Goals and Outcomes Achieved

The goal of the project was to raise the level of awareness among the public about the benefits of buying locally produced specialty crops. By raising awareness, the demand for these specialty crops will potentially enhance the viability and profits for the farmers producing them. TV spots and billboards were used in the Jackson, Gulf Coast, and Greenwood/Greenville media markets; radio spots were aired statewide. The goal was to raise the awareness of the benefits of specialty crops by at least four percent. When asked to name benefits of buying and consuming locally grown crops, it is clearly evident that the advertising program was successful. Especially the increase from 46% in February to 69% in May, for the response that they frequently try to find and purchase locally grown specialty crops shows that advertising had the desired effect; this is an increase of 23%.

Beneficiaries

The groups that will benefit from this public relations effort are the local farmers that raise these specialty crops to market them locally. Mississippi is the number two sweet potato producer in the nation with over 100 farmers growing sweet potatoes on approximately 20,000 acres. There are more than 2,000 acres of sweet corn produced in Mississippi by approximately 40 growers with most of the crop being consumed locally. Mississippi ranks between 23rd and 25th in the nation in honey production and produces about from 1.1 to 1.5 million pounds of honey each year. Mississippi contains between

14,000 and 16,000 acres of pecan orchards and thousands of yard trees. Orchards range in size from 25 to 500 acres. Pecans are sold directly to consumers, accumulators, or by mail-order.

While sales figures from all of the local farmers are not available, the increase in the awareness of the benefits of buying locally produced foods should increase local sales, especially when you combine the responses from the survey showing the public realizes buying locally helps the local economy. The benefits of an advertising campaign fade with time, if it is not continued. Long term economic impact of a project such as this will be continued as long as the advertising campaign continues. For both 2011 and 2012, advertising significantly increased the number of people who say they usually try to find and buy fresh produce including specialty crops locally grown rather than a brand they are familiar with and accustomed to buying. As seen in the results of the May survey in 2012, 76% say they now find and buy locally grown produce as opposed to buying a familiar brand.

Lessons Learned

An interesting insight came in the second month of the campaign. The project coordinator received a phone call from the TV station in Biloxi. They had been contacted by a local restaurant owner who told them that he had watched the cooking segment on their station that featured Mississippi sweet potatoes and wanted to know how to get in touch with a grower so he could serve them in his restaurant. The project coordinator then called the head of the Mississippi Sweet Potato Growers Association and he contacted a grower who got in touch with the restaurant owner. They worked out a delivery schedule and now Mississippi sweet potatoes are available at this restaurant on the Gulf Coast.

The Mississippi Farm Bureau and the Farm Families of Mississippi feel like this was a very worthwhile campaign because it showed that the public really does want to buy locally produced food and understands the benefits of doing that. The challenge is reminding them of it enough so that they are motivated to take the extra step to find and purchase the locally produced food. The Mississippi Farm Bureau and the Farm Families of Mississippi will continue this program with funds provided through the FY 2012 Specialty Crop Block Grant Program.

Contact

Greg Gibson, Mississippi Farm Bureau Federation
Phone: (601) 977-4154
Email: ggibson@msfb.org

Additional Information

To see the TV spots, go to the URLs listed below.

http://www.youtube.com/user/FarmBureauMS#p/u/3/k6Bd-z90xrY

http://www.youtube.com/user/FarmBureauMS#p/u/4/KD6P4-t9z2I