Wyoming Department of Agriculture

Specialty Crop Block Grant Program – Farm Bill

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Final Performance Report

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VARIETY TRIALS FOR WYOMING SPECIALTY CROPS

PROJECT SUMMERY

Wyoming specialty crop producers face unique challenges due to Wyoming's short growing season and the semi arid climate. The crop trials provided information about the performance of various specialty crops that are suitable to Wyoming's climate. WDA initially cooperated with UW to conduct variety trials for vigor, cold and drought tolerance. Trials of several varieties of tomatoes, peppers, beets, and carrots were grown to compare general performance, yield, and nutritional content under different fertilization schemes. It soon became evident that there were numerous other factors that need to be taken into account. These included fertilization rates, season-extension systems including high tunnels, manage weeds techniques, pest pressure and nutrient content.

PROJECT APPROACH

In 2008 the trails compared 4 tomato varieties 4 pepper varieties and 2 eggplant varieties and 3 different zucchini varieties for yield, vigor, flavor, and overall performance in high tunnel, under row cover and in the field. Additionally 2 beet and cabbage varieties were compared for performance and maturity date, 1 variety of carrots and 1 variety of radishes were compared yield at 4 different planting dates and 4 different lettuce varieties for flavor and overall performance. In 2008 due to the resigning of the director only organic vegetable were studies and the trials were not as varied as hoped. Trials of 5 different corn varieties for yield were so damaged by deer that the data is not usable.

In 2009 trials were taken over by Professor Karen Panter. Trials of several varieties of tomatoes, peppers, beets, and carrots were grown to compare general performance, yield, and nutritional content under different fertilization schemes. Vegetables were planted at the University of Wyoming (UW) Sheridan Research & Extension Center (SREC), seven miles east of Sheridan, Wyoming, in May 2009 and May 2010. Transplants of tomatoes and peppers were used and carrots and beets were direct-seeded into the plots.

In 2009, three replications of three plants of each cultivar of tomatoes and peppers and seeded rows of carrots and beets were treated with zero, ½ rate, or full rate of typical fertilizer available to homeowners (Miracle-Gro 24-8-16), corresponding to zero, ½ tablespoon per gallon, or 1 tablespoon per gallon of water, applied June 5 and July 17. Plants were irrigated as needed. Tomatoes and peppers were planted at 3 foot spacing's. Carrots and beets were initially seeded thickly. After emergence, carrots were thinned to 2 inches between plants and beets were thinned to 4 inches. All carrot and beet varieties were in 3 foot rows, corresponding to 18 carrots per variety row and 9 beets per variety row.

In 2010, tomatoes, peppers, beets, and carrots were treated with zero, ½ rate, or full rate of Miracle-Gro 24-8-16 or organic Kelp Plus fertilizer. Miracle-Gro was supplied as per 2009. The organic kelp fertilizer was applied at 1 tablespoon per gallon for ½ rate treatments and 2 tablespoons per gallon for full rate treatments. Fertilizers were applied on June 22 and July 20. Beets and carrots were fertilized additionally on July 12 and tomatoes and peppers were given an additional fertilization on August 20. Plants were irrigated as needed.

GOALS AND OUTCOMES ACHIEVED

The overall goal of this project was to develop and promote sustainable specialty crop horticultural practices for Wyoming to extend the season and quality of specialty crops. Specific objectives were to:

- Evaluate several vegetable crops for yield and nutritional content using different fertilization levels
- Evaluate three production methods, including two season-extension systems, for yield and nutritional content using several vegetable crops
- Manage weeds using different mulches and control strategies
- Evaluate insect orders on vegetables grown under different fertilization schemes.

Data collected for both years included yields and nutritional content of each cultivar. Analysis of produce for total phenols, total flavonoids, and oxygen radical absorbance capacity (ORAC, a measure of antioxidants) was completed in December 2009 and October 2010 at the University of Nebraska – Lincoln Small Molecule Analysis Lab.

Since the fertilization studies were conducted in two different ways in 2009 and 2010, comparisons cannot be made. Varieties of tomatoes and peppers grown in the two years were different due to greenhouse production problems in 2010. Plants sown from seed were heavily infested with aphids and other insects in the greenhouse and were not usable. Plants from a local garden center were subsequently purchased for use in the second-year fertilization trials. However, the basic yields as well as nutritional information gained from laboratory analyses of total phenols, total flavonoids, and antioxidant activity will be valuable to vegetable producers and consumers alike.

As far as production goes, we can recommend 'Paragon', 'Super Fantastic', and 'Yellow Perfection' tomatoes; 'Sweet Chocolate' and 'Better Belle' peppers; 'Cylindra' and 'Kestral' beets; and 'Little Finger' and 'Danvers' carrots as good producers under a variety of fertilization schemes. For producers wanting to grow under season extension conditions, either under row covers or in a high tunnel, varieties suggested would be 'King of the North' and 'California Wonder Orange' peppers; 'Rutgers' and 'Cosmonaut' tomatoes; and 'Black' eggplant (though eggplant as a rule did not produce well either year in Sheridan).

Nutritionally-speaking in 2009, 'Early Red Chief' tomato, 'California Wonder' pepper (although none stood out dramatically from the other varieties), 'Cylindra' beet, and 'Danvers' carrot (again, none stood out) showed moderate to high total phenols, total flavonoids, and antioxidant activity (2009). In 2010, 'Yellow Perfection' tomato, 'Better Belle' pepper, 'Lutz' beet, and 'Little Finger' carrot showed highest levels of nutritional qualities tested. From the 2009 season extension studies, those somewhat nutritionally superior that would be recommended are 'Purple Beauty' pepper, either 'Rutgers' or 'Cosmonaut' tomato (almost the same under row cover and high tunnel), and 'Black' eggplant. From 2010 data, 'California Orange' pepper, 'Cosmonaut' tomato, and 'Black' eggplant would be suggested.

The weed management segment of this project did not fare well either season due to huge numbers of grasshoppers. These insects ate everything, crops and weeds, making it difficult to gauge weed management due to treatments applied. We cannot recommend a weed manage strategy from this project as detrimental insects like grasshoppers would have to be controlled first.

Insect populations vary according to time of the growing season, as expected. From the information gathered in 2009 and 2010 from sticky trap counts, growers and consumers can be warned about what types of

insects to expect and can plan management strategies in advance. We can say thrips populations will be very high during July and August, the warmer months of the growing season. This is important because not only do thrips cause plant damage, but they are also vectors of viruses which have economic impacts on several hundred species of plants, rendering them unsalable. Interestingly, some of the most economically-damaging insects, like aphids and whiteflies, occurred at low levels on the sticky cards.

2009

Varieties of crops grown were:
Tomatoes: 'Paragon', 'Early Red Chief', 'Bush Ace'
Peppers: 'Orion', 'Lipstick', 'Chocolate', 'California Orange', 'California Wonder'
Beets: 'Kestral', 'Cylindra', 'Lutz'
Carrots: 'Little Finger', 'Danvers', 'Atomic Red'.
Tomatoes and peppers were started from seed in the greenhouse at Sheridan College. They were transplanted to the field on May 20. Carrots and beets were sown in the field the same day.

2009 Variety Trial Yields

Tomato yields:

'Paragon' showed the highest total yields and lowest zero-production plants. 'Bush Ace' had the highest number of plants yielding no fruit and the most overall yield was in the unfertilized controls. 'Early Red Chief' showed highest yields under the ½ rate of fertilization and 2/3 of the plants yielded no fruit.

Pepper yields:

The unfertilized controls of 'Lipstick', 'Orion', 'Sweet Chocolate', and 'Sweet California Wonder Orange' produced the highest yields, while the ½ rate 'Sweet California Wonder' was the highest yielding treatment. The latter was also the variety with the highest level of non-yielding plants.

Beet yields:

Each beet variety showed different responses to fertilization levels. 'Kestrel' and 'Cylindra' showed highest fresh weights with full rate of fertilization while unfertilized 'Lutz' had the most total fresh weight.

Carrot yields:

'Little Finger' and 'Atomic Red' showed highest fresh weights when fertilized at the full rate, while 'Danvers Half Long' showed highest fresh weights in the unfertilized controls.

2010

In 2010, seeds of the same varieties used in 2009 were again sown in the greenhouse at Sheridan College. However, a severe infestation of aphids the plants were not usable. Replacements of the same varieties were not available at the local garden center, so the varieties purchased and used were:
Tomatoes: 'Husky Red', 'Super Fantastic', 'Yellow Perfection'
Peppers: 'Better Belle', 'Mandarin', 'Golden Wonder', 'Red Beauty'.
Seeds of the same varieties of carrots and beets were also available in 2010:
Carrots: 'Danvers Half Long', 'Little Finger', 'Atomic Red'

Beets: ‘Kestral’, ‘Cylindra’, ‘Lutz’.
Tomatoes and peppers were planted in the field June 1 and 2. Carrots and beets were sown in the field April 20.

2010 Variety Trial Yields

Tomato yields:

Tomato yields were lowest in the variety ‘Husky Red’ with ½ rate traditional and full rates of both types of fertilizers showing slightly higher production than controls. Both ‘Super Fantastic’ and ‘Yellow Perfection’ showed highest yields in the full rate Kelp Plus fertilizer treatment.

Pepper yields:

Pepper yields were highest in the unfertilized controls of ‘Mandarin’, ‘Golden Wonder’, and ‘Red Beauty’. ‘Better Belle’ produced most fruit in both ½ rate treatments.

Beet yields:

Control, unfertilized plants of ‘Lutz’ showed the highest yield in that variety; full rate organically fertilized plants had the lowest yields. ‘Cylindra’ and ‘Kestral’ showed mixed results. ‘Cylindra’ fertilized with both rates of Miracle-Gro and ½ rate Kelp Plus yielded higher numbers than the control, but the full rate Kelp Plus was lowest in that variety. With ‘Kestral’, the only treatment with higher yields than the controls was full rate Kelp Plus; the other three treatments had lower yields than the controls.

Carrot yields:

‘Danvers’ and ‘Little Finger’ carrots in the unfertilized control treatments had higher yields than any of the fertilizer treatments. ‘Atomic Red’ showed higher yields than controls only in both full rate fertilization treatments.

2009 Variety Trial Nutritional Analyses

Tomato nutritional analyses:

Total phenols were highest in ½ rate plants of ‘Paragon’ and ‘Bush Ace’ and unfertilized ‘Early Chief’. Differences among varieties in total flavonoids were small but were slightly higher in ½ rate fertilized ‘Paragon’ and ‘Early Red Chief’ and full rate ‘Bush Ace’. Antioxidants varied widely depending on cultivar with the highest levels in unfertilized ‘Bush Ace’, ½ rate fertilized ‘Paragon’, and full rate fertilized ‘Early Red Chief’.

Pepper nutritional analyses:

Total phenols were highest in ‘Orion’ fertilized at half rate and ‘Lipstick’ and ‘Chocolate’ at the full rate. Both ‘California Orange’ and ‘California Wonder’ showed highest phenols with either no fertilizer or ½ rate. Total flavonoids were highest in ½ rate fertilized ‘Orion’, ‘Lipstick’, ‘California Orange’, and ‘California Wonder’ but was highest in unfertilized ‘Chocolate’. Antioxidants were highest in the ½ rate fertilized treatment of all five varieties.

Beet nutritional analyses:

Total phenols and total flavonoids were highest in ‘Kestral’ at the full fertilizer rate and the ½ rate of both ‘Cylindra’ and ‘Lutz’. Antioxidants were highest in all three varieties at the ½ rate of fertilization.

Carrot nutritional analyses:

Total phenols were highest at the full rate of fertilization in all three varieties. Total flavonoids, however, were highest in unfertilized 'Danvers' and 'Atomic Red' and in 'Little Finger' fertilized at the full rate. Antioxidants were highest in the ½ rate fertilizer treatment for all varieties.

2010 Variety Trial Nutritional Analyses

Tomato nutritional analyses: Total phenols were highest in the 'Yellow Perfection' cultivar, no matter which fertilizer/rate was used. Total flavonoids were highest in 'Yellow Perfection' in all but the full rate organic fertilizer treated plants; 'Husky Red' had the highest flavonoids level in this treatment. Highest flavonoids overall were in the ½ rate organic and full rate traditional fertilizer treatments. Antioxidant levels were variable with no particular trends as far as varieties or treatments were concerned.

Pepper nutritional analyses:

In two treatments, ½ rate organic and full rate traditional fertilizer, 'Red Beauty' produced no fruit. Cultivars varied in total phenols and flavonoids with no clear trends, although 'Better Belle' was among the highest under all treatments for total phenols. Antioxidants also showed no particular patterns across cultivars or treatments.

Beet nutritional analyses:

Among the beet cultivars, 'Lutz' showed highest phenols under control, ½ rate traditional, and full rate organic fertilizers. 'Kestral' was highest under ½ rate organic and full rate traditional treatments. 'Lutz' also showed highest flavonoids under all treatments except full rate traditional fertilizer, where 'Kestral' had the highest total. In antioxidants, 'Kestral' showed the highest amounts under all treatments except full rate organic fertilizer, where 'Lutz' was highest.

Carrot nutritional analyses:

No 'Atomic Red' carrots were produced under the ½ rate traditional and ½ rate organic fertilizer treatments. Total phenols were again quite variable depending on variety. The highest levels overall were in 'Little Finger' ½ rate organic and 'Danvers' full rate traditional fertilizer. Total phenols were highest overall in those varieties and treatments as well. As for antioxidant levels, 'Danvers' full rate traditional fertilizer was far higher than any other variety or treatment.

Activities Performed and Outcomes: Season Extension Trials

2009 Season Extension Yields

Peppers, tomatoes, and eggplants were grown in a high tunnel, under row covers, or in the field during the summer of 2009. Five plants of each of these varieties were grown in each location:
Peppers: 'King of the North', 'Purple Beauty'
Tomatoes: 'Rutgers', 'Cosmonaut'
Eggplants: 'Black', 'Turkish Orange'.

Pepper yields:

Yields of both cultivars of peppers were highest under row covers. Lowest yields occurred in the high tunnel with 'King of the North' but in the field with 'Purple Beauty'.

Tomato yields:

Yields of tomatoes depended on location. Both varieties produced the most fruit in the field but 'Rutgers' produced the least in the high tunnel. 'Cosmonaut' produced the least amount of fruit under the row cover.

Eggplant yields:

Neither variety of eggplant produced much fruit with 'Turkish Orange' yielding zero under the row cover. Both yielded the most under the high tunnel.

2010 Season Extension Yields

As in 2009, five plants of varieties of peppers, tomatoes, and eggplants were grown either in the field, under row cover, or in a high tunnel. Varieties grown in 2010 were:
Peppers: 'King Crimson', 'California Wonder Orange'
Tomatoes: 'Rutgers', 'Cosmonaut'
Eggplant: 'Black', 'Turkish Orange'.

Pepper yields:

'California Wonder Orange' had the highest yields in the high tunnel and lowest in the field. Yields of 'King Crimson' were similar in the field and in the high tunnel but lowest under the row cover.

Tomato yields:

Both cultivars yielded most in the high tunnel, followed by the field. Plant under row covers produced far less than the other two locations.

Eggplant yields:

'Turkish Orange' did not yield much in any location. 'Black' grown under the row cover and in the high tunnel far out-produced those plants grown in the field.

2009 Season Extension Nutritional Analyses

Pepper nutritional analyses:

Total phenols were highest in both varieties under row covers while total flavonoids were highest when grown in the high tunnel. Antioxidant values were highest in the field for 'King North' and in the high tunnel for 'Purple Beauty'.

Tomato nutritional analyses:

Total phenols and total flavonoids were highest for both cultivars when grown in the field while highest antioxidant values were found when plants were grown under row covers.

Eggplant nutritional analyses:

'Turkish Orange' did not produce any fruit under the row covers so no nutritional data are available. Total phenols were highest for both varieties when grown in the field. Total flavonoids were highest in 'Black' when grown under the high tunnel and in 'Turkish Orange' in the field. ORAC was highest when 'Black' was grown under row cover and in 'Turkish Orange' in the high tunnel.

2010 Season Extension Nutritional Analyses

Pepper nutritional analyses:

'King Crimson' produced no pepper fruit under row covers but showed highest total phenols under the high tunnel. Field-grown 'California Wonder Orange' had the highest total phenols of the three growing locations. Total flavonoids were highest with 'King Crimson' in the field and 'California Wonder Orange' under the row cover.

Tomato nutritional analyses:

Highest total phenols appeared in row cover grown 'Rutgers' and high tunnel grown 'Cosmonaut'. Total flavonoids were highest in the field with both cultivars. Antioxidants were also highest in field grown plants of both cultivars.

Eggplant nutritional analyses:

Total phenols and flavonoids varied by cultivar. Highest total phenols were found in high tunnel grown 'Black Beauty' and field grown 'King Crimson'. Total flavonoids were found in high tunnel grown 'Black Beauty' and 'Turkish Orange' under row cover. Field grown plants of both varieties had the highest antioxidant levels.

Activities Performed and Outcomes: Weed Control Trials

2009 Weed Control Trials

In 2009, the weed control plots were set up on July 6 in an area planted to winter wheat. Seven treatments were set up, each replicated three times, in 4 ft x 4 ft square plots. The treatments were:

1. No weed control
2. Clear plastic solarization
3. Black plastic mulch
4. Polyethylene fabric mulch
5. Wood chip mulch
6. Hand weeding
7. Flame weeding

Field soil was used to hold edges of plastic and fabric mulches in place. Unfortunately, few data were recorded as the plots were almost totally eaten to the ground by grasshoppers. Hand weeded plot data are in the following table.

2010 Weed Control Trials

In 2010, weed control trials were set up in the same way they were in 2009. Treatments were placed July 7. No weeds were present as tillage had recently been done.

Data were recorded on types of weeds present once during the growing season, on September 14. Then, manual and flame weed controls were administered in those plots, and time needed for those treatments was recorded. Observations on the plots noted presence of field bindweed, green foxtail, prostrate pigweed, and kochia.

Data recorded on September 14 included:

Control with no weed management:	Rep 1: 30% bindweed, 1% pigweed
	Rep 2: 2% pigweed, 1% bindweed
	Rep 3: 1% foxtail.
Clear plastic mulch/solarization:	No weeds grew through the plastic but the plastic was cracked and disintegrating.
Black plastic mulch:	No weeds grew through, plastic intact.
Polyethylene fabric:	No weeds grew through, beginning to rip.
Wood chip mulch:	Bindweed grew through particularly around the edges.
Hand weeding:	Rep 1: 40% bindweed took 9 minutes 30 seconds to weed
	Rep 2: 2% pigweed, 1% bindweed took 51 seconds to weed
	Rep 3: 1% foxtail took 20 seconds to weed
Flame weeding:	Rep 1: 25% bindweed, 1% kochia took 6 minutes 33 seconds to weed
	Rep 2: 20% bindweed, 1% kochia took 11 minutes 30 seconds to weed
	Rep 3: 1% bindweed, 4% pigweed took 3 minutes 16 seconds to weed.

Activities Performed and Outcomes: Insect Activity Trials

2009 Insect Activity

Yellow sticky cards were set out in the variety trials fertilization plots, one sticky trap per plot. Cards were changed every two to three weeks during the growing season. Cards were read on each side in 3 cm square blocks and the numbers of insects in the orders Diptera (true flies), Hymenoptera (ants, bees, etc.), Thysanoptera (thrips), Orthoptera (crickets, grasshoppers, etc.), Coleoptera (beetles), Odonata (dragonflies, damselflies, etc.), Hemiptera (whiteflies, aphids, leafhoppers, etc.), Neuroptera (lacewings, etc.), and Lepidoptera (moths, butterflies, etc.) were recorded.

It seems that thrips (Thysanoptera) and flies (Diptera) comprised the largest insect populations in the plots. Grasshoppers (Orthoptera) were present but not in large numbers on the sticky cards. This is not surprising, however, due to the larger size of these types of insects; they don't get blown around as much as the smaller insects. There do not appear to be any discernible differences among the three fertilizer treatments in insect populations during the growing season, other than higher thrips (Thysanoptera) populations in the ½ rate fertilized plot.

2010 Insect Activity

Results are similar to 2009 in that it seems that thrips (Thysanoptera) and flies (Diptera) comprised the largest insect populations in the plots. The difference between the two years is the high number found; in 2009 it was less

than 100 per sticky card but in 2010 thrips numbers edged up to almost 200. Results were not consistent across treatments although trends were similar.

BENEFICIARIES

This study will be of use by commercial growers and consumers alike. The information on will be distributed at the Growers and Grounds Keepers and Farmers Market Conventions. The trial report was forwarded to 74 Wyoming producers and Agricultural professionals who attended the Small Farm Conference or Farmers Market Conference in 2010. It is also viewable at http://wyagric.state.wy.us/images/stories/news/specialtycrop/scg-vegetabletrials.pdf

LESSIONS LEARNED

Since the fertilization studies were conducted in two different ways in 2009 and 2010, comparisons cannot be made. Varieties of tomatoes and peppers grown in the two years were different due to greenhouse production problems in 2010. Plants sown from seed were heavily infested with aphids and other insects in the greenhouse and were not usable. Plants from a local garden center were subsequently purchased for use in the second-year fertilization trials. However, the basic yields as well as nutritional information gained from laboratory analyses of total phenols, total flavonoids, and antioxidant activity will be valuable to vegetable producers and consumers alike.

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during July and August, the warmer months of the growing season. This is important because not only do thrips cause plant damage, but they are also vectors of viruses which have economic impacts on several hundred species of plants, rendering them unsalable. Interestingly, some of the most economically-damaging insects, like aphids and whiteflies, occurred at low levels on the sticky cards.

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SMALL GRANT PROGRAM FOR SMALL FARM CROP IMPROVEMENTS

PROJECT SUMMERY

Because of Wyoming short season and high altitudes many growers have limited production cycle limiting their ability to market products during prime farmer market season. Small grants will be awarded to farmer growers to develop methods for season extension/increased crop productivity and native seed production.

PROJECT APPROACH

Small grants were awarded to farmer growers to develop methods for season extension/increased crop productivity and native seed production. The grant application process, rules and reimbursement process were developed in the fall of 2007. Grants were awarded on a competitive basis during 2008 and 2009. Because of Wyoming's short growing season and high altitude many growers have limited production cycles which results in not being able to supply farmer markets during peak market times. Grants were geared toward farmers utilizing high tunnel methods, water conversion and those developing alternative seed crops. Grants were awarded by the Wyoming Department of Agriculture and administered by the Wyoming Rural Development Council.

The application process included submitting an application, budget, and letter of support from a local entity which could vouch for an applicant's involvement in agriculture production. Applications were reviewed by a selection panel and successful applicants notified by the Wyoming Community Network. Marketing efforts included two high tunnel workshops, articles in local newspapers and two interviews on local TV. Brochures on the program were designed, produced and distributed at trade events. A high tunnel photo article was published in the January Barnyards and Backyards magazine.

GOALS AND OUTCOMES ACHEIVED

In 2008-9 16 grants were submitted and 15 selected to purchase and build high tunnels and drip irrigation systems. Application process included submitting an application, budget, and letter of support from a local entity that can vouch for an applicant's involvement in agriculture production. Applications were reviewed by a selection panel and successful applicants notified by the Wyoming Community Network. As a result, we saw season extensions in all of the applicants operations. We increased our marketing efforts with two high tunnel workshops, articles in

local newspapers, two interviews on local TV. Brochures were designed, produced and distributed at trade events and high tunnel photo article was published in the January Barnyards and Backyards magazine. The grants applications were received from various locations around the State for season extension projects. The following are examples of grants funded.

Project 1 Bedford WY Farm

Goals Replace the original high tunnel. Poor design and large amounts of heavy wet snow on the structure resulted in its destruction. Produce enough vegetable to meet the production needs of CSA/ Farmers Market and grocery client.

Outcome: High tunnel was constructed in time with help of CSA members and the needs of the farms customers were met.

Impact: Provided fresh local vegetables for 40 CSA members, the Jackson Hole Grocers Farm to Market program, and the Thayne and Jackson Famers Markets. (This area has an average of 54 frost free days) 10% of the gross sales from the Jackson Hole Farmers Market are donated to a non-profit organization. Vegetable were also supplied to the local school district to support their healthy snack program. The farm also participated in an agricultural education program, hosted six kindergarten classes on field trips, a youth group and a trails group for education/service experience.

Project 2 Yoder WY Farm

Goals: Construct a 30X72 hoop house to protect vegetable production from hail cold and wind. Harvest some crops year round, Increase CSA shares to 20 and lengthen CSA season.

Outcome: The high tunnel was constructed and vegetables were produced earlier in the season for 14 CSA members. It also produced vegetables later into the season providing produce for the first ever Cheyenne Winter Farmers Market.

Impact: A farm day was held for 25 friends and neighbors to highlight the farm and its new hoop house. The farm was visited by 50 Western SARE Council members as part of their annual meeting. Experience gained from the first year of high tunnel production was presented at the Torrington master gardeners training.

Project 3 Torrington WY Farm

Goals: Construct a cost effective moveable high tunnel to produce tomatoes for the farmers Market in Torrington.

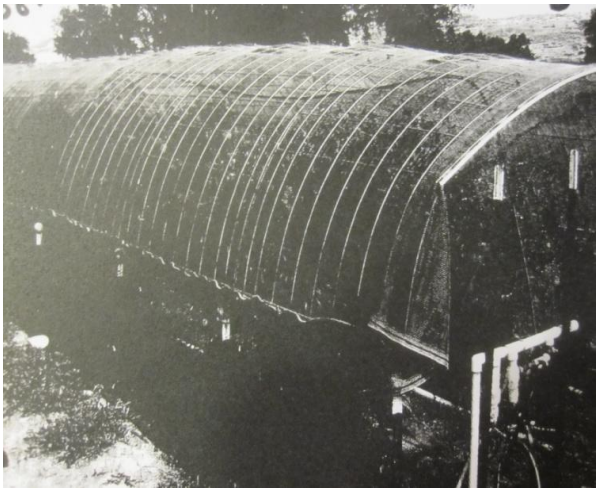
Outcomes: The high tunnel was constructed in such a way as to allow it to be moved by a tractor to rotate the ground being used. Tomatoes, cucumbers, and peppers were planted. Several early varieties of tomatoes began to produce ripe fruit the 1st week of July. Field tomatoes did not produce until August. Tomatoes also were producing well into October long after the first frost killed the field tomato plants.

Impact: The farm has become a main supplier for early tomatoes at the Torrington market. The Torrington market struggled to have enough produce when it first started. The addition of this hoop house provides much needed early local vegetables to the market. Local skepticism that these were actually locally grown tomatoes and not from Colorado necessitated an open invitation to Farmer Market customers to come to the farm and see for themselves. Several came out to see firsthand that they were indeed locally grown.

Project 4 Leiter WY Farm

Goals: Construct a 30X12X48 hoop house to grow four varieties of cantaloupe and protect them from hail, cold, wind and pests. Harvest some crops year round, Increase CSA shares to 20 and lengthen CSA season.

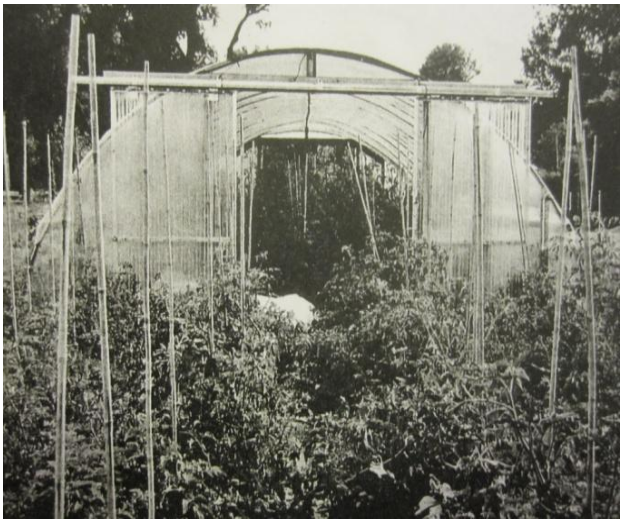
Outcome: The high tunnel was finished late and vegetables were planted late. Soil and grasshopper problems caused crop failure in 2008. In 2009 the only production that was not severely damaged by grasshoppers was that protected in the high tunnel.



Impact: A school tour was held to highlight the farm and production methods for 20 youths. The farm was visited by members of the CSA and a Buffalo Garden Club (12 teenagers). Experience gained from high tunnel production was presented at the Landan Garden Center to approximately 40 people and at the 2010 Farmers Market Conference in Sheridan. The CSA is expected to expand from 54 people this year to 90 next year.

Project 5 Clearmont, Wy Farm

Goals: Protect crops from hail and grasshoppers by use of hail netting and increase tomato production both inside and outside of a hoop house by use of red plastic mulch.



Outcome: Tomatoes from the high tunnel were picked and delivered to CSA members in July. Hail netting provided protection from infestation of grass hoppers otherwise they would have been totally destroyed.

Impact: Tours were held for the Sheridan Garden Club (10) the Buffalo Garden Club (8) and an open invitation for the CSA members. Experience gained from production was presented at the Landan Garden Center with topics on high tunnels, CSAs, and companion planting impacting over 40 people.

Project 6 Centennial WY Farm

Goals: Construct a high slow load 16X24X8 hoop house to extend the growing season for vegetables production at high altitude.

Outcome: The high tunnel constructed using hog fencing was able to withstand four feet of snow. It collapsed under the snow load but sprang back into shape once the snow was removed. Salad greens, tomatoes and edible flowers were grown in the hoop house for sale at the Laramie Farmers Market.

Impact: Twelve people have toured the farm to learn about this style of hoop house construction. Talks on hoop house production have been given to approximately 45 people from the Laramie Local Foods Group and 30 people from the Centennial Valley Garden Club.

BENEFICIARIES

Not only has this program benefited the recipient growers but provided vendors for the ever expanding local farmer markets. This year saw 32 farmer markets including 3 winter markets. In past years it was very difficult for market managers to find Wyoming vendors. This is finally turning around. Not only are there more vendors but they have more product earlier in the season due to high tunnel use. As other producers see the value of high tunnel production though farm days, workshops, news articles and word of mouth interest in hoop house production is growing rapidly. One market manager reported when they started their market three years ago there

was a mad rush at the opening as the available produce was bought up quickly. Now with the addition of more local vendors some who have built hoop houses there is more produce available and people no longer rush down to be the first in line before it is all gone.

Wyoming Farmers Markets 2007 verses 2010

The number of Farmers markets in 2007 was 26 with a total of 227 market days. Each market day is typically equivalent to one week of the farmers' marker summer season. In 2010 there were 33 summer markets and 3 winter markets for a total of 365 market days. This was an increase of 138 markets days or 61%.

The communities of Cheyenne, Laramie and Torrington developed winter markets as offshoots of the summer markets. Laramie and Torrington ran winter markets in November and December while Cheyenne's winter market will run from November through March. In both Cheyenne's and Laramie's case producers who had received hoop house grants were also instrumental in helping form the winter markets.

Local hoop house vendor Cheyenne Winter Market

Laramie Manager stated" We had a slow spring i.e. lots of snow in June. We definitely saw more Wyoming produce late in the season. Additionally I saw that high tunnel producers could have sold at more market in October, had we established some. The summer market dates are established by a group that is unaware of growing seasons. However we are planning on more winter markets that will rely on hoop house production".

Worland and Torrington markets increased their summer market days by three and Cheyenne by four. Seven other markets increased the number of market days by one or two market days. Eight markets kept their market days the same.

Four markets decreased their season by one market day and one by two market days. Some of the decrease in market days maybe attributable to scarcity of late season production. Below is a breakdown of the market changes.

Basin Farmers Market
Location: Basin - Wyoming Ave. & 4th St.
Dates: Wednesdays, July 14 - Sept. 29
Times: 4:30 p.m. to 6 p.m.
Increased the number of market days by 1 to 12

Bondurant Farmers Market
Location: Church of St. Hubert the Hunter, Highway 191
Dates: Bi-Weekly on Saturdays, July 17 - Sept. 25
Times: 4 to 7 p.m.
New Market increased the number of market days by 11

Buffalo Farmers Market
Location: Crazy Woman Square; 55 N. Main Street
Dates: Thursdays, June 24 - Sept. 2
Times: 4-7 p.m.
No change 11 market days

Casper Farmers Market
Location: Casper -Agriculture Resource & Learning Center; 2011 Fairgrounds Road
Dates: Saturdays, July 31 - Sept. 25
Times: 7:30 a.m. to 12 p.m.
No Change 9 market days
Downtown Casper Community Farmers Market
Location: Casper - 400 E. Collins Drive – Nicolaysen Art Museum
Dates: Tuesdays, July 27 - Sept. 1
Times: 5-7:30 p.m.
New Market increased the number of market days by 9
Centennial Market
Location: Centennial - Between Mountain View Hotel and Trading Post - Hwy 130
Dates: Sundays, June 26 - Sept. 5
Times: 11 a.m. to 3 p.m.
Decreased the number of market days by 1 to 11
Cheyenne Farmers Market
Location: Cheyenne - Cheyenne Depot Plaza, Downtown
Dates: Saturdays, Approx. 10 weeks from 1st weekend in August
Times: 7:30 a.m. to 12:30 p.m.
Increased the number of market days by 4 to 10
Cheyenne - Wyoming Fresh Market
Location: Cheyenne - North Yellowstone Road near Sutherland's Hardware.
Dates: Tuesdays, June 8 - Oct. 12
Times: 3 p.m. to 7 p.m.
Increased the number of market days by 1 to 19
Winter Market
Location: Depot
Dates: November 6, December 4, January 8, February 5, March 5
Times: 10:00 a.m. to 2:00 p.m.
New Market increased the number of market days by 4
Cody Farmers Market
Location: Cody - Albertson's Parking Lot
Dates: Thursdays, July 8 - Oct.
Times: 4:30 p.m. to 6:30 p.m.
No Change 13 market days
Jackalope Square Farmers Market
Location: Douglas - Jackalope Square, Downtown Corner of Center & 3rd
Dates: Aug. 28- Oct. 2
Times: 9 a.m. to 12 p.m.
Decreased by the number of market days by 1 to 6 from 7
Dubois Community Food Market
Location: Dubois - #9 South 1st St. Thomas Episcopal Church
Dates: Sundays, July 11 - Sept/Oct.
Times: 12 p.m. to 3 p.m
Increased the number of market days by 2 to 12

Gillette Farmers Market
Location: 300 W. Sinclair, Gillette College
Dates: Saturdays, July 17 - mid-Sept.
Times: 8 a.m. until 12 p.m.
Increased the number of market days by 2 to 10

Green River Farmers Market
Location: Downtown on Railroad Ave.
Dates: Wednesdays, July 7 - Aug. 25
Times: 4 p.m. to 7 p.m.
New Market increased the number of market days by 8

Greybull Farmers Market
Location: Pamida on North 6th
Dates: Fridays, July 16- Sept. 24
Times: 5 p.m. - 7 p.m.
No change 11 market days

Jackson - Farmers Market on the Town Square
Location: Jackson - Downtown Square
Dates: Saturdays, July 10 - Sept. 18
Times: 8 a.m. - 11 a.m.
No Change 11 market days

Jackson Hole Peoples Market
Location: Redeemer Lutheran Church near Town Square
Dates: Wednesdays, June 23 - Sept. 22
Times: 4 p.m. - 7 p.m.
New Market increased the number of market days by 14

Lander Farmers Market
Location: Lander - Museum of the American West, 1445 Main Street
Dates: Tuesdays, Aug. 3 - Late Sept.
Times: 5 p.m. to 7 p.m.
No Change 9 market days

Laramie Farmers Market
Location: Laramie - Downtown on Grand Ave. between First and Third Streets.
Dates: Fridays, July 2 - Sept. 24
Times: 3 p.m. to 7 p.m.
Decreased by 1 market day from 14 to 13

Laramie Winter Market
Location: Laramie - Downtown on Grand Ave. between First and Third Streets.
Dates: November 20th & December 18th
Times: 12:00 p.m. to 4:00 p.m.
New Winter Market increased the number of market days by 2

Lovell Farmers Market
Location: Queen Bee Gardens Parking Lot, 262 E. Main Street
Dates: Fridays, July 9 - mid-Oct.
Times: 4:30 p.m. to 6 p.m.
New Market increased the number of market days by 14

Lusk Farmers Market
Location: Hometown County Park at 327 South Main St.
Dates: Sundays, Aug. 15, 29 & Sept. 5
Times: 10 a.m. - Sold Out
New Market increased the number of market days by 3
Pine Bluffs Farmers Markets
Location: South end of City Park at 6th & Main Streets.
Dates: Saturdays, July 31 - Oct. 2
Times: 7:30 - 11 a.m.
New Market increased the number of market days by 10
Pinedale Farmers Market
Location: Corner of Tyler and Main Street
Dates: Sundays, June 6 - Sept. 26
Times: 11 to 2 p.m.
New Market increased number of market days by 16 weeks
Powell Farmers Market
Location: Pamida parking lot, Road 14A on the west side of town
Dates: Mondays, July 12 - mid-Oct.
Times: 4:30 p.m. to 6:30 p.m.
Deceased by 2 market days from 16 to 14
Ranchester Farmers Market
Location: Ranchester - Community Center
Dates: Fridays, Aug. 12 - Sept. 22
Times: 3 to 6 p.m.
Increased number of market days by 1 to 7
Rawlins Downtown Farmers Market
Location: The Depot, 400 W. Front Street
Dates: Tuesdays, June 22- July 27
Times: 5 p.m. to 8 p.m.
New Market increase number of market days by 6
Riverton Farmers Market
Location: Fremont County Fairgrounds at 1010 Fairgrounds Road
Dates: Saturdays, Aug. 14 - 1st killing frost
Times: 8 a.m. to 10 a.m.
No Change 7 market days
Rock Springs Farmers Market
Location: Depot Park on North Front St.
Dates: Thursdays, July 9 - Aug. 27
Times: 4 p.m. to 7 p.m.
No change 8 market days
Sheridan Farmers Market
Location: Sheridan - Whitney Commons, 320 W. Alger St.
Dates: Thursdays, July 22- Sept. 23
Times: 5 p.m. 7 p.m.
Increased the number of markets by 1 to 10

Star Valley Farmers Market
Location: Haderlie Farms, 981 N. Main
Dates: Thursday, July 8 - Sept. 23
Times: 5:30 - 7:30 p.m.
Increased the number of market days by 2 to 11
Torrington Goshen County Farmers Market
Location: Downtown, Between 20th and 21st Streets
Dates: Saturdays, July 17 - Oct. 30
Times: 7:30 a.m. to 11 a.m.
Increased the number of market days by 3 to 16
Torrington Thursday Afternoon Farmers Market
Location: Goshen Co. Extension Parking Lot, 4516 US Hwy 26/85
Dates: Thursdays, July 15 - Oct 28
Times: 3:30 p.m. – 6:30 p.m.
New Market increased the number of market days by 16
Torrington Goshen County Winter Market
Location: Goshen Co. Fair Grounds
Dates: November 13th & 20th, December 11th & 18th
Times: 9:00a.m. – 12:00 p.m.
New Markets increased the number of market days by 4
Wheatland Farmers Market
Location: Pocket Park, 711 9th St.
Dates: Saturdays, Aug. 7 - Sept. 11
Times: 8:30 a.m. to 12 p.m.
New Market increased the number of market days by 6
Worland Farmers Market
Worland/Ten Sleep Community Market
Location: 9th and Bighorn
Dates: Saturdays, July 10 - first frost
Times: 8:30 a.m. to 11 a.m.
Increased the number of market days by 3 to 10

LESSIONS LEARNED

Wyoming with its short growing season has embraced high tunnel methods for season extension. This is by far one of the most popular and successful projects we have undertaken. As more and more high tunnels are being built of various designs we are able to see what works best for Wyoming's weather. Given the high winds experienced in Wyoming, it has become obvious designs which may work in other parts of the country may not be suitable for Wyoming.

Several grant recipients have reported that zippered ends supplied by some hoop house kit manufacturers will not withstand the Wyoming winds and break very quickly. Others have reported that they lost their plastic covering in high winds. This has usually been the fault of poor design or construction. In one instance the ropes securing the roll up sides had weathered and needed replacing. Before the producer managed to replace them they experienced an 80 plus mile hour wind which snapped the ropes and took the cover off. Had the grower replaced the ropes this may not have happened? A neighbor several miles away experienced the same winds but had no problems. As with all things preventative maintenance is necessary.

Snow loads are also a concern in some areas of Wyoming. Again the design of the hoop house is critical in how well they perform. A cathedral style high tunnel constructed of PVC experienced a two foot snow and had several of the joints snap. The tunnel did not collapse but did require the addition of a center beam down the center for added support. As more and more high tunnels are being built in Wyoming the amount of information on what works and what doesn't continues to grow.

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FERTILITY AND MICRO NUTRIENT EDUCATION

PROJECT SUMMERY

Wyoming soils are often deficient or overloaded with certain minerals. Growers often lack access to the latest practices on soil nutrition. WDA partnered with Master Gardeners, Cooperative Extension and Wyoming business Council provided education for soil fertility and micro nutrient balancing to broaden the vision of traditional agriculture producers in Wyoming and the surrounding States.

PROJECT APPROACH

During 2008, a regional soil nutrient conference will be held in Torrington Wyoming (Kinsey Soil Conference) sponsored by numerous partners in the state including the Wyoming Business Council, Agribusiness Division, Wyoming Department of Agriculture, University of Wyoming, Wyoming Farmers Market Association and producers. The conference will target farmers in the states of Wyoming, Nebraska, South Dakota and Colorado. It is anticipated over 200 will participate in the conference. Specialty Crop funds will be used for speaker fees.

GOALS AND OUTCOMMES ACHIEVED

Objective of grant: In order for growers to access the latest practices on soil nutrition, WDA will partner with Master Gardeners, Cooperative Extension and Wyoming Business Council to provide education for soil fertility and micro nutrient balancing to broaden the vision of traditional agriculture producers.
In March 2008, a soil conference was held in Torrington, Wyoming with approximately 110 people attending. Sessions included soil fertility and micro nutrient balancing. The seminar was a condensed version of a five-day introductory course based on the Albrecht model of soil fertility balancing. The objectives of the conference were to introduce participants to soil testing and soil fertility using the Albrecht model.

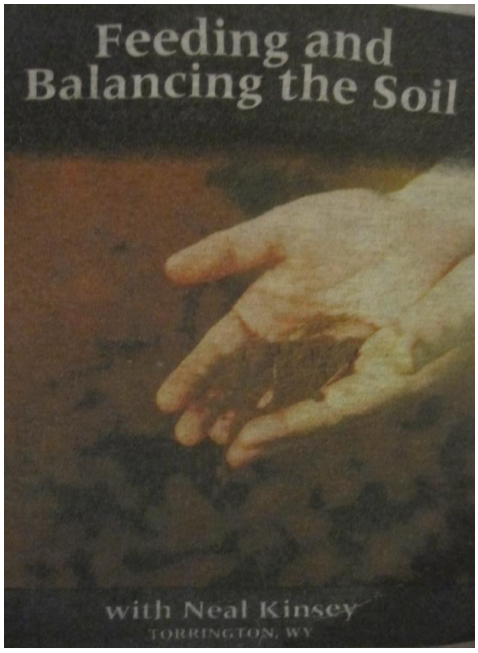
Testing and Balancing the Soil Presented by Neil Kinsey

Based on many years of practical experience working with growers, the workshop provided soil-fertility knowledge for crops, considering the essential properties of the soil; how they interact to affect the condition and health of the soil; how the laws of chemistry affect the physics of the soil; about nutrient balancing; how to use field-tested

and proven programs to increase yields and profitability; how to identify the effects of depleted or excessive nutrients in your soil.

Day 1 - Working with Soil Tests, pH, and Liming.

The Soil Test - Key Information.
Introduction to Soil Testing and Soil Fertility using the Albrecht Model.
Soil pH and Liming.
Evaluating Liming Materials.
How Calcium and Magnesium Affect Soils and Crop Production.
Soil Compaction and Solutions



Day 2 - Working With Major Nutrients.

Nitrogen and Sulfur.
Phosphate and Potassium.
Sodium.
Composts and Manures.

Day 3 - Working With Micronutrients

Soil and Crop Micronutrient Needs.
Boron Use for Top Production.
Low Iron or Not?
Manganese - More Important Than Ever.
Copper Utilization for Crops.
Zinc Requirements.

Evaluation and discussion of applicable soil tests, from farms utilizing the program of both organic and conventional inputs were considered.

BENEFICIARIES

A hundred and ten people benefited directly from the workshop. Each person was also given a copy of Hands on Agronomy by Neil Kinsey and Charles Walters. They in turn will bring back the knowledge gained to their respective areas and shared the information with their neighbors.

LESSIONS LEARNED.

Wyoming has some challenges when it comes to soil management. The Albrecht method is a soil management program designed for the grower. It measures the nutrients available to the plant from the soil by performing specific nutrient tests, which provide a consistent measurement of changes in the nutrient levels as they occur. The program was an excellent opportunity to provide information that would not otherwise be available to local

producers on this method of soil management. We did not reach our projected goal of 200 attendees but we did get producers from Wyoming, Nebraska and Colorado. The evaluations of the course were very high and rated the speaker as the best in this field.

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CERTIFICATION COURSE FOR FARMERS MARKET MANAGERS

PROJECT SUMMERY

The management of Farmer Markets poses many challenges to the volunteers who are usually involved in supervising farmer markets. The myriad of rules, regulations and food safety issues will be addressed through the development of a certification program through distance learning and development of a Wyoming Farmer's Market manual.

PROJECT APPROACH

The Farmers Market Association in response to the ever growing need for market manager training began by developing a training manual. The manual was completed after review from existing market managers, food safety, and conflict resolution professionals. During the 2009 Farmers Market Conference additional feedback from existing market managers was solicited.

GOALS AND OUTCOMES ACHIEVED

Goal: Develop a training manual and offer a certification course for Wyoming Farmers Market Managers

A contract was awarded by the Farmers Market Association after the RFP process in September 2008 to Thea True. The contract required her to develop a manual and offer the course to market mangers. The manual was completed after review from numerous entities. During the 2009 Farmers Market Conference feedback from existing market managers was solicited. The course was offered to all 26 market managers. A daylong seminar took place September 19, 2009 in Casper, WY. There were 10 market managers in attendance, all took the exam and passed. This was approximately 30% of the Wyoming market

managers in Wyoming. At the March, 2010 Farmers Market Conference an additional 24 managers were trained. The manual and seminars have been put online for other people who are interested in learning how to start or run a farmers market.

BENEFICIARIES

Although this training was developed for market managers its benefits go far beyond them. The training covered areas such as market planning, marketing, vendor management, rules, and conflict resolution. This training has been extremely beneficial in terms of market development. The number of Farmers Markets in Wyoming has increased to 32 from 12 six years ago. Most of the markets are run by unpaid volunteers who are spread out around the State. This training also allows for interaction between new and existing managers which has added to the value of the certification program. The ultimate beneficiaries have been the Farmer Market consumers whose experience at the markets has been improved. The manual and seminars can be found on the Wyoming Farmers Marketing Association website http://www.wyomingfarmersmarkets.org/ under Market Manager Certification Course.

LESSONS LEARNED

Due to changes in leadership with the Farmers Marketing Association, the project was delayed in starting. With volunteer organizations this is not unusual. The Department helped get the process back on track. The passage of a cottage law in Wyoming allowing value added non hazardous foods prepared in a home kitchen also necessitated changes to the manual and training as there was much confusion as to what was allowed and what wasn't under this law. We are receiving feedback on the value of onsite verses distance learning. The interaction between experienced managers and new ones is felt to be an extremely valuable part of the training process. For this reason the certification course will again be offered at the 2011 Farmers Market Conference.

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YOUTH FARMERS MARKET

PROJECT SUMMERY

Very often young people have no knowledge of their food sources. In order to provide them with skills to increase their awareness a youth farmers' market garden was established.

Their awareness of the practices of growing and marketing agricultural crops Sheridan College in conjunction with the local school district, and senior gardeners will develop a program for students to learn about the nutritional value of fresh produce, market gardening and basic business skills by developing a community garden. They will develop plans for growing, harvesting and marketing the crops.

PROJECT APPROACH

In the spring of 2008 a pilot project was developed to provide youths from the local school system an opportunity to develop skills in food production and marketing. Sheridan College in cooperation with the Business Council Agribusiness Division, Wyoming Department of Agriculture, and the Wyoming Farmers Market Association developed and implemented this project during the 2008 and 2009 growing season. A community garden was created in time for the 2008 growing season. Production methods and results were monitored and the products were to be sold at farmer's markets in Sheridan and Buffalo. The intention is to replicate the program in other Wyoming communities. The final report included recommendations on the program's success and possible improvements by involving youth in gardening and farmers markets. It taught youth to appreciate where their food comes from, encouraged them to participate in agriculture, and demonstrated the importance of farmers markets to communities.

GOALS AND OUTCOMES ACHIEVED

Goals for 2008
1. Established garden plots, develop program and recruit youth.
An additional goal of the project was to teach children healthy eating habits, particularly the role fruits and vegetables play in a healthy lifestyle.

In 2008 30 youth participants ranged in age from 2-14 signed up for the project. A 50'x30' garden plot, located north of Watt Center parking lot on the Sheridan College campus was developed. The project began on 24 June 2008; met every Tuesday and Thursday from 9-11 a.m. and ended 19 August 2008 because school was starting the following week. Various crops were planted included: sunflowers, bachelor's buttons, dill, thyme, Swiss chard, pumpkins, lemon cucumbers, strawberries, tomatoes, peppers, sweet corn, acorn squash, pole beans, snap peas. There was excellent community response to the project and the 30 spaces filled quickly with a waiting list. Educational, hands-on activities were well-received and children enthusiastically participated. Gardening activities included planting, harvesting, sampling, and weeding. Learning activities included "Fun with Food, Looking for Life, Iron Chef Pizza Challenge, Fruit and Vegetable Mobiles, Painting Pots, Pet Garden Rock hand prints, Greenhouse Planting, Plant ID, Water Conservation, and Flower Bouquets". The project was be presented at the University of Oxford (Oxford, UK) in March 2009 at the "Poverty and Food Oxford Round Table Sessions"; it was entitled "Combating Obesity in Youth through Gardening and Farmers Markets".

Goal for 2009: Expand upon established garden plots and incorporate two high tunnels at the Sheridan College Watt Ag Center for youth participants to raise produce. The resulting garden harvest will be sold by the youth participants at the local farmers' market in Sheridan.

In 2009 we had 60 youth participants ranging in age from 2-14 years. The garden plot (located north of the Watt Ag Center parking lot) was increased to measured ¼ acre and

included two 36'x10'x7' high tunnels from Hoop House, Inc. The project began on 29 June 2009; and two groups met twice weekly from 9:00-11:00 am (Group 1: Mondays and Wednesdays. Group 2: Tuesdays and Thursdays). Educational activities were planned for each day, in addition to tending the garden (watering, weeding, and harvesting). Educational activities included the following:

1) 4th of July fruit parfaits
2) Painting pots
3) Water cycle wheel
4) Kale chips and avocado chocolate pudding
5) Weed bingo
6) Looking for life
7) Plant identification scavenger hunt
8) Plant nutrient team coloring book
9) Pet garden rocks/stepping stones
10) Basil pesto recipe
11) Good bugs vs. bad bugs
12) Insect refrigerator magnets
13) Tissue paper bouquet of flowers
14) Plant nutrients and circulatory system game
15) Plant circulatory system
16) Flower vases
17) Tie-dyed garden flats
18) Sock sprouts
19) Tie-dyed tote bags
20) Starting seeds in the greenhouse and container gardening
21) Fruit pizza garden party
22) "Iron Chef" pizza challenge garden party

Crops planted included the following:

1. Greens: Swiss chard, Black Seeded Simpson Lettuce, Red Romaine Lettuce, arugula, Rouge d'hiver Lettuce
2. Brassicas: Graffiti Cauliflower, Cheddar Cauliflower, Early Devon Cabbage
3. Cucurbits: Straight Eight Cucumbers, Burpless Supreme Cucumbers
4. Tomatoes: Beefsteak, Yellow Pear, yellow, tomatillos, Sweet Cherry 100
5. Herbs: Korean Licorice Mint, cilantro, German Thyme, basil, cinnamon basil, purple basil
6. Peppers: green bell peppers, early jalapeños, cherry peppers, Anaheim
7. Summer squash: patty pan squash, golden bush zucchini, zucchini, winter squash: buttercup, acorn, spaghetti, sugar pumpkins, super scoop cantaloupe
8. Valentine Mix Radishes, French Breakfast Radishes, carrots sugar snap peas, green beans, Japanese Eggplant
9. Decorative plants: assorted sunflowers, petunia, pansies, daisies, astilebe, dusty miller, marigolds, Thai hot chiles

Project Successes:

a. Excellent community response to participate (60 spaces filled quickly with a waiting list again, as in 2008).
b. Regular attendance by most families; great parental participation with their children throughout the project.
c. Educational garden-related activities were well-received and children enthusiastically participated. The activities were hands-on and sustained the participants' interest through the entire summer (see activities above). Some sort of additional age-appropriate activities are necessary to engage the children each day. Activities involved both individual and group projects.
d. The addition of the high tunnels enhanced the production capacity of the garden and provided an additional production method for the participants to observe.
e. Several families participated regularly in selling produce at the Small Potatoes farmers' market stall. Income earned over the 2009 season was $1,331.65.

Sheridan College's Department of Agriculture continued sponsoring a youth garden during the summer 2010 season. Enrollment in the youth garden program was open to youth ages 2 -15 at no charge to the families. The

youth garden and the related farmer's market activities were coordinate by two Sheridan College Agricultural student interns. Youth garden activities included growing vegetables and flowers in traditional garden plots as well as in high tunnels, learning about horticulture, trying weed and pest control strategies, investigating biological relationships and learning about nutrition, as well as the marketing of garden products and art items at the Sheridan Farmer's Market. The youth garden was active from June through July and the activities were funded by the funds from the prior year ($1331.65) as well as supplemental funds from Sheridan College.

BENEFICIARIES

Ninety children were taught about where their food comes from and participated in the growing of food. The community of Sheridan benefited by having produce grown in the program and sold at the local farmers market. Approximately, 40 children participated in the 2010 youth garden and the sale of their produce earned about $500, which will be used towards next year's youth garden activities. The community and the College embraced the program and are committed to continuing it in 2011. The curriculum developed is available to other communities wanting to work on similar programs.

LESSONS LEARNED

In 2008, a cold and wet spring weather delayed planting by about 1 month, and thus youth participation was delayed. The garden production peaked about 3-4 weeks after the project end date (19 August 2008) so most youth didn't get to see the results of their efforts. Little production led to little participation at the 2008 farmers market. In response to this, several high tunnels were purchased and constructed to insure that we would have some protected garden space if the weather did not cooperate in 2009.
2009 was another cold, wet spring and delayed planting by about 1 month, and thus youth participation was slightly delayed. However, the rest of the summer was hot and the garden produced a wide variety of items for the children to harvest and enjoy, even before the farmers' market season began on 23 July 2009. Additional age-appropriate activities are necessary to engage the children each day.
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SEED GENETICS WORKSHOP

PROJECT SUMMERY

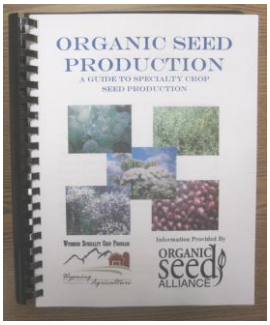
To increase the variety of specialty crops in Wyoming, knowledge of seed genetics is an important tool for growers. WDA will facilitate an educational workshop focusing on seed genetics and the various attributes for proper seed selection. This will help develop better knowledge of seed saving and crop selection.

PROJECT APPROACH

In 2008, regional seed genetics training was proposed to be held in the fall of that year. It was sponsored by numerous partners in the state including the Wyoming Business Council Agribusiness Division, Wyoming Department of Agriculture, University of Wyoming, Wyoming Farmers Market Association and producers. The Powell Seed Lab was contracted to develop a seed workshop in Casper, Wyoming. The intent was to bring together experts on seed genetics and the various attributes for proper seed selection and saving. The workshop was coordinated with the April 2009 Farmers Market Conference in order to target specialty crop producers. The training targeted farmers in Wyoming wanting to increase their knowledge of seed production and selection. The goal was to train Wyoming Specialty crop producers on the techniques and the pros and cons of seed production.

GOALS AND OUTCOMES ACHIEVED

Goal: Train 100 Wyoming Specialty Crop producers on seed Genetics and seed production.
The day of the workshop we experienced a winter snow storm that closed the roads on the 17th for half the state. Including the speakers there were 20 people who were able to attend. An additional 65 people who could not make the workshop were given binders of the presentations the next day at the Farmers Market Conference and the following day at the High Tunnel workshop. The handouts included in the binder are included below.
Some of the comments we received included "Great information about benefits and drawbacks of seed saving, good info for trials, gave excellent incite, useful information and excellent insight into the certification process". One speaker did touch on GMO and its relevance to crop production and we got several negative comments "Roundup is absurd and wrong to sustainable farming, I am against GM it is destroying our genetic diversity. I didn't pay to hear Monsanto info". In response to the negative comments the WDA approached the Organic Seed Alliance for information on seed saving and compiled an Organic Seed Production manual for Wyoming Producer with their permission. Information on organic seed saving, farm variety trails, the principles and practices of bean seed, beet seed, carrot seed, radish seed, lettuce seed and spinach seed production, seed harvesting and handling, seed crop records, trail evaluations, variety trail planning and weather risks as well as ethical development and stewardship of seed.



BENEFICIARIES

Beneficiaries of the project are 85 individuals who received the binder from the Seed Workshop. The workshop material can be found on the Wyoming Department of Ag website at http://agriculture.state.wy.us The Organic Seed Production and Saving Guides were provided to all 23 county extension offices for reference material and for master gardeners wanting to learn more about organic seed production and saving. There are presently over 400 active Master Gardeners in the State. Information contained in the Organic Seed Production and Saving Guide provided by the Organic Seed Alliance can be found at http://www.seedalliance.org/Publications

LESSONS LEARNED

In Wyoming the producers of specialty crops for local consumption are more inclined to practice organic or natural farming methods. This is not always the case but when offering trainings it is necessary to provide information which appeals to a diverse audience.

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FARMERS MARKET ING ASSOCIATION CONFERENCE

PROJECT SUMMERY

Wyoming Farmer Markets have increased drastically over the past several years from 12 markets in 2004 to 26 markets in 2007 and 32 markets by 2010. An annual farmer's market conference will help to increase the number of markets for Wyoming, raise the level of expertise of market managers and vendors through educational sessions, provide food safety education and information, and continue to support and encourage the support network of markets, managers and vendors within the state.

PROJECT APPROACH

Farmer Markets in Wyoming have increased dramatically and continue to grow. In 2006, a Wyoming Farmer's Marketing Association was formed to promote Wyoming's farmer's markets and local food producers through education, advocacy and networking. The Association in partnership with the Wyoming Department of Agriculture and Wyoming Business Council, Agri-business division, will host annual farmer market conferences in 2008 with a goal to inform and educate market managers and vendors in all aspects of markets (advertising, how to establish markets, food safety, how to find vendors, etc.) Specialty Crop funds will be used for speaker fees, site related costs, and promotional materials related to the conference.

GOALS AND OUTCOMES

The annual Farmer's marketing conference will impact 50-75 participants and the knowledge gained will enhance the 26 state markets.

2008 conference held in Douglas, Wyoming with 75 participants. Wyoming saw an increase of 2 Farmer Markets as a result of the conference. A 2009 Conference was held April 18 in Casper Wyoming. The schedule included opening remarks & award presentation by Director of Agriculture, and managers and vendor track with the following topics: Keeping Your Market Safe, Home Processing & Selling at Farmers Markets Crops to Cuisine: The

Secret Ingredient, Everything You Ever Wanted to Know About Season Extension, The Do's and Don'ts of Companion Planting, New Farmers Market Manager Certification Manual, How To Tell Your Story to Increase Sales, New Grant Opportunities for Market Producers and Managers, Wyoming Farmers Marketing Association Annual Meeting. Although 80 people were registered for the conference only 50 were in attendance. On the day preceding the conference a one day seminar on seed genetics was held. The following the conference a hands on how to build a high tunnel workshop was held for 35 participants. The speakers and topics were well received and each year the conference offers specialty crop producers an opportunity to network with other producers and farmer market managers and share ideas.

There are presently 33 summer markets: Basin, Bondurant Buffalo, Casper (2), Centennial, Cheyenne (2), Cody Douglas, Dubois, Gillette, Green River, Greybull Jackson (2), Lander, Laramie, Lovell, Lusk, Pine Bluffs, Pinedale, Powell, Ranchester , Rawlins, Riverton, Rock Springs, Saratoga, Sheridan, Thayne, Torrington (2), Wheatland, Worland

To add to this success there are now 3 winter markets: Cheyenne, Laramie and Torrington

BENEFICIARIES

Aside from the 75 attendees to the conference the most dramatic outcome of supporting the WFMA and its efforts to provide support and information to the market managers and vendors is that we have seen a dramatic rise in the number of farmers markets in Wyoming. This in turn benefits all of the consumers who are looking to these markets to buy fresh local specialty crops.

LESSONS LEARNED

The promotion of specialty crop related topics at Wyoming Farmers Markets Conference provided education and training which will increase the sales of specialty crops at the markets. The increase in the number of markets, vendors and product diversity around Wyoming demonstrates that support for the Association's conference with a small specialty crop grant has benefits for all of Wyoming. Investments like this will continue to pay off in future years as the Farmers Markets capture an even greater share of the consumers' dollar.

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CHEF DEMONSTRATIONS

PROJECT SUMMERY

In our world of fast foods, we are losing the knowledge of how to prepare meals from scratch using fresh produce. In order to enhance the knowledge of food preparation to a younger generation, Crops to Cuisine program will offer demonstrations on how to use market produce and recipe cards for home preparation.

PROJECT APPROACH

Working with local restaurants and hotels, chef cooking demonstrations will be developed and coordinated at selected farmers' markets for the 2008 and 2009 seasons. Food dishes will be created using the local products and recipe cards will be produced and distributed at farmer's markets around the state. The Wyoming Farmers Market association will recommend four markets to develop and implement the program in the 2008 market season. The Wyoming Business Council Agribusiness Division, Wyoming Department of Agriculture and the Wyoming Rural Development Council will provide support for the project. Specialty Crop funds will be used to hire chefs and procure the necessary cooking equipment ensures safe nutritious food.

GOALS AND OUTCOMES ACHIEVED

In 2008-9 working with local restaurants and hotels chef cooking demonstrations were coordinated at farmers' markets around Wyoming.

By providing Chef to Cuisine program we facilitated Chef Demonstrations at selected farmers' markets across the state to expose people to new ideas for preparing produce found at the farmers markets. These demonstrations were conducted in Casper, WY on July 22, August 12, August 26, September 2, September 9, September 16 and September 23 as well as at Sheridan on July 31 and August 7, 14, and 21. Response to the demonstrations was very favorable by the public. In 2009 there were youth chef demonstrations conducted in Gillette on September 12; Cody on August 27 and September 3, Saratoga on August 27, and in Douglas on September 12. The youth chefs also printed additional recipes for distribution at their respective markets. The various chef demonstrations highlighted a variety of recipes from the professional chefs to the youth chefs learning the trade as future professionals. The demonstrations educated the public on food preparation and new ideas. The public was able to interact and ask questions of the chefs. Interested visitors were able to take home recipes to prepare at home.

10,000 recipe cards were distributed at farmer's markets around the State impacting an additional 1% of the population.

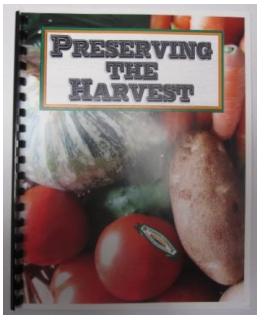
Grilled Zucchini Pizza

1 large zucchini
1/2 cup butter, melted
3 cloves crushed garlic
1/2 cup mozzarella cheese
1/2 (14 ounce) can pizza sauce

Slice the Zucchini into thick rounds. Combine the melted butter and crushed garlic in a small bowl, set aside. When the coals on your barbeque are almost burned down, lay your zucchini slices on the grill. Let cook for three minutes then turn over and brush the butter/garlic mixture on each slice. Cook for three more minutes and turn over again and brush the other side with the garlic and butter. Cover the slices with pizza sauce and cheese and let cook until the cheese begins to melt.

Six different recipes were selected and 10,000 cards were produced and sent to Farmers Markets around the State. These recipe cards were very popular with vendors and consumers.

Additionally the program paid for 2000 sets of Canners Corner were printed and distributed to the 23 County Extension offices for distribution. The Canners Corner publications were also bound and distributed at the Preserving the Harvest workshop 2010 Farmers Market Conference. This education series, done by the University of Wyoming, features the proper preparation of fruits and vegetables for preserving the harvest. Additional bound copies of the Preserving the Harvest are scheduled to be included in the 2011 Farmers Market Conference binder.



http://wyagric.state.wy.us/images/stories/news/specialtycrop/preservingtheharvest.pdf

In order to identify local Wyoming vendors the program purchased 300 aprons promoting Crops to Cuisine and Wyoming Buy Fresh Buy Local program. These aprons were given to local Wyoming vendors at the Winter Farmer markets. They are also scheduled to be given to Market managers for distribution at summer markets to local specialty crop vendors.

BENEFICIARIES

The beneficiaries of this project include the markets in Casper, Sheridan, Cody, Douglas, Gillette, and Saratoga. We estimate that a total of 2500 people were impacted by the chef demos. The total impact of the project between the chef demos, 10,000 recipe cards, 2000 Canners Corner publication sets, the preserving the harvest booklets and 300 Crops to Cuisine aprons exceeded our goal of impacting 5000 consumers.

LESSONS LEARNED

When young chefs are not in school it is difficult to organize them. A chef demo at State Fair was canceled because the instructor could not get enough participation. There were some coordination problems between the teachers and some market managers as well. Overall the project was a success with a majority of the impact coming from the chef demos at Casper and Sheridan, the recipe cards, Canners Corner publications and now the aprons. The need for consumer education especially the younger generation on how to properly make and preserve foods and their desire to learn has become very apparent.

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PROMOTION AND EXPANSION OF THE GRAP/WINE INDUSTRY IN WYOMING

PROJECT SUMMERY

In order for Wyoming to develop its wine industry it needs an adequate supply of grape production. Over the last five years the number of producers has increased from 1 producer to 20 and has the potential to grow and develop more markets. To accomplish the continued growth, marketing and educational materials regarding grape production are needed.

PROJECT APPROACH

The Wyoming Grape and Wine Association (WGWA) began in 2001 and have been dedicated to education and development of Wyoming's Grape, Wine and Alternative Crop industry. Since that time WGWA has increased its membership to over 75 members and has conducted yearly meetings, hands-on workshops, and the Annual Grape and Wine Tour. WGWA received funding through the USDA Specialty Crop Block Grant Program in 2009 and has utilized those funds for increasing its membership base, industry marketing and promotion.

GOALS AND OUTCOMES ACHIEVED

In order for Wyoming to develop its wine industry it needs an adequate supply of grape production. Over the last five years the number of producers has increased from 1 producer to 20 and has the potential to grow and develop more markets. To accomplish the continued growth, marketing and educational materials regarding grape production are needed.

The WGWA Association was able to update the website which has been a great tool to direct interested growers and serves as a source of information for new members and growers alike. The site is www.WyoGrape.Com. Wyoming Grape W Association held two meetings for its members and the public in 2008. The first meeting was held in March of 2008. WGWA's annual spring pruning clinic offered introductory resources, a diverse and talented array of speakers and a "hands on" pruning clinic. There were 48 people in attendance for the meeting. WGWA's Summer/Fall Grower Tour was held in August 2008. Members visited two local vineyards and met to discuss the upcoming harvest. Topics included: bird control, harvest parameters, and quality determination. The members met at LaGrange Vineyards in LaGrange, WY. Participants toured LaGrange Vineyards and enjoyed a lunch and wine tasting. Participants then visited Sage Hill Vineyards near Chugwater, WY. Members offered advice, growing tips and learned from the hosting vineyards. The last stop on the tour ended in Chugwater, WY. Members attended a book signing hosted by local author and WGWA member, Starley Talbot. Talbot's book, "Along the Grapevine Trail," details and writes of vineyards in Wyoming, Nebraska and South Dakota. Many members were featured in the book and it was a great way to promote the association to those attending the book signing. Over 30 people in addition to the members attended the book signing. Those interested in grape growing had a chance to visit with and meet with some of the growers featured in the book. WGWA hosted its 7th Annual Grape and Wine Tour on August 23, 2008. The tour was promoted through many state publications, press releases and advertising in regional newspapers. Additional ads were run on local radio stations, Wyoming Public

Radio and the Wyoming Livestock Roundup. An ad was also purchased in the Wyoming Tribune Eagle in Cheyenne, WY. Over 40 people attended the event along with various WGWA members.

2009 Activities

The website has been a great tool for participants in both events to sign-up, register, and pay for their attendance online. As WGWA creates and distributes more literature in 2010, it expects the website traffic to increase significantly. WGWA held two meetings for its members and the public in 2009. The first meeting was held in March of 2009. WGWA's annual spring pruning clinic offered introductory resources, a diverse and talented array of speakers and a "hands on" pruning clinic. The meeting was concluded with a wine tasting and pruning clinic at Table Mt. Vineyards. The meeting is a great resource for any interested grower, horticulturalist or gardener to learn and apply pruning techniques in the field. WGWA hosted its seventh Annual Grape and Wine Tour in August 2009. The tour was promoted through many state publications, press releases and advertising in regional newspapers. Additional ads were run on local radio stations, Wyoming Public Radio and the Wyoming Livestock Roundup. WGWA also utilized the Wyoming Travel and Tourism publication "2009 Wyoming Travel Journal" with and ad that promoted the tour and the Grape and Wine Industry in Wyoming. The ad was well received and a great way to promote our industry. The tour began with participants visiting local vineyards and with local producers during the afternoon. Six vineyards participated in the tour in the areas of Lingle, Fort Laramie, Torrington, LaGrange and Huntley, WY. There is no set format or order to visiting the vineyards. Each participant can choose and visit the vineyards that interest them during the afternoon. Then to conclude the tour, participants visit Table Mt. Winery for a wine and food reception. The reception featured many new events including: a book signing, live music, and increased publicity of the event. Over 65 people attended the event along with various WGWA members. The crowd did not meet initial goals or expectations for attendance, however. During the prior years, the tour has seen attendance anywhere from 25 to 110 participants. Initially many people inquired about the tour (50+ calls and emails requesting more information). Despite the initial interest, tickets and RSVP's were not made as the tour neared. Those attending the event enjoyed all aspects of the tour due to the informal atmosphere and small crowd most. Once again participants indicated there was too much driving involved in the tour. However attendance was well received and there was an increase from 2008. The wine reception held at Table Mt. Winery was also well received. Positive comments were received by the staff at the winery for their hospitality, food, and value for the event. Participants were treated to an array of specialty foods along with educational advice on wine tasting and food pairings. They were able to enjoy the evening with a local bluegrass band to entertain them during the evening and given an engraved wine glass that promoted the tour and Wyoming Wine. The glasses were a great way for those in attendance to remember the event and to promote it in the future. WGWA had a great and successful year to date in 2009. Increased promotional activities, website development, and various meetings were able to increase in their success through the USDA Specialty Crop Block Grant Programs.

Our 2010 goals remain the same as 2009. WGWA goals include: increase publicity and marketing of the tour; alter or revise the "self guided aspect" of the tour; and to make the tour become an event that people in the area recognize as an annual event and festival. WGWA is still working hard to develop a format or way to allow growers to showcase their vineyards as well as focus on the wines produced from them. Ideally, WGWA would like to expand the tour to become a Festival to increase attendance. Table Mountain Winery's new expansion and winery facility will be able to accommodate these goals for the 2010 tour. WGWA hopes the tour will become a larger draw and be able to attract new attendees from Wyoming to promote the industry. As a result of the project there has been an increase of eight new or expanded grape growing operations in the State since 2007.

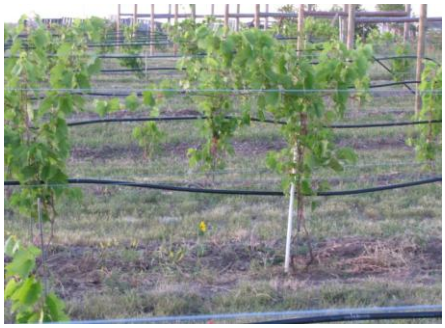
There are presently two wineries in Wyoming and early stage plans for a third one. The wineries have also spurred interest in other berry production specifically raspberries as an alternative crop that make excellent country wines while providing fresh berries for u pick its and Farmers Markets

BENEFICIARIES

The prime beneficiary of this project was Wyoming grape and wine industry. They have benefited from the additional advertising and training. The people of the Wyoming have benefited by becoming more aware of the industry and availability to purchase wines, jams and jellies made from local grapes as well as country wines produced from other specialty crops. This has resulted in an increased ability to market locally grown grapes and berries.

LESSONS LEARNED

Grape growing continues to be a challenge in Wyoming. Even though the grape and wine industry is small in comparison to other states the tours provided the opportunity to showcase their efforts. The desire for a diverse mix of locally produced and value added specialty crops in Wyoming continues to grow and the grape industry is a prime example of this.



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DEVELOP AND SUPPORT THE NURSERY STOCK INDUSTRY IN WYOMING

PRJECT SUMMERY

The nursery stock industry in Wyoming has been a neglected industry however they are an essential component of specialty crop production due to our short growing seasons. In order to develop a unified voice for Wyoming growers, the formation of an association was proposed to assist in education, promotion and plant husbandry. An inventory and database of nursery stock producers was created to facilitate the formation of an association.

PROJECT APRROACH

A Wyoming Nursery Stock Association established in 2008 assists in education, promotion and plant husbandry. An inventory and database of nursery stock producers facilitate the formation of an association. The Wyoming Business Council Agribusiness Division, Wyoming Department of Agriculture and the Wyoming Rural Development Council provide support for the project in the first year, Specialty Crop funds helped develop the database and form the association. Specialty Crop funds helped sponsor speaker fees and associated cost in hosting a Nursery Association conference.

GOALS AND OUTCOMES ACHIEVED

A compiled list of two-hundred and sixty-four names included nursery plant producers , greenhouse operations, fruit and vegetable growers, vineyards, orchards, farms, and fields. They were sent an initial letter detailing the efforts by the Wyoming Department of Agriculture, the University of Wyoming's and the Wyoming Growers and Groundskeepers Association to work with producers of Specialty horticultural crops in Wyoming. Included in the letter was the opportunity comment on the formation of an Independent Wyoming Nursery and Greenhouse Association or one under the umbrella of the Wyoming Growers and Groundskeepers (WGGA). Concurrently the Colorado Nursery and Greenhouse Association (CNGA) were also exploring the idea of expanding its association into Wyoming. Exploratory meetings of Wyoming Greenhouse and nursery owners were held at the 2008 and 2009 Progreen Expo in Denver. A meeting in Thermopolis, Wyoming attended by 20 individuals from eight companies voted to pursue a Wyoming Chapter of the CNGA. The CNGA and the WGGA have agreed to partner and support on another's programs. In response the WGGA expanded its 2009 conference program to include topics that were relevant to Specialty Crop producers. These included "Greenhouse Crop Production", "High Tunnels from Construction to Production", "Growing Potatoes Using Plasticulture", "Improving Plant Health While Saving Water", "Sustainable Development", and "Abiotic Plant Diseases". The conference was attended by 210 individuals that included vegetable, fruit and ornamental growers, nursery stock producers, grounds keepers, and greenhouse operators.

In addition at the conference, in conjunction with the American Society of Horticultural Sciences, under the standards set forth by the National Organization for Competency Assurance individuals were given the opportunity to test to become Certified Arborist. This test was offered February 18, 2009 and was geared toward working, professional who may or may not have any formal horticultural education. Twenty eight individuals signed up for the course and 27 for the test. Because of incumbent weather only 23 were able to take the test. Of those 13 passed.

The 2010 conference again included an opportunity to become a Certified Arborist by the American Society of Horticultural Sciences, under the standards set forth by the National Organization for Competency Assurance. There will also be sessions pertaining to specialty crop producers on "Plant Pathology", "Greenhouse Tomato Production", "Grasshopper Updates", "Native Grass Sod Production" and Aquaponics Project' combining fish and vegetable crop production in one system.

Our original goal was to form a Greenhouse Growers Associaton that would attract up to 50 nursery stock growers and provide educational opportunities. After exploratory meetings of Wyoming greenhouse and nursery owners were held at the 2008 and 2009 Progreen Expo in Denver and the meeting in Thermopolis, Wyoming which was attended by 20 individuals from eight companies they voted to pursue a Wyoming Chapter of the CNGA. The CNGA and the WGGA then agreed to partner and support on another's programs. In response the WGGA expanded its 2009 conference program to include topics that were relevant to Specialty Crop producers. Because of WGGA's efforts a separate association was not formed. The Colorado Nursery and Greenhouse Association (CNGA) presently lists 7 members from Wyoming and the WGGA lists 19 members as nursery/tree/sod. The WGGA total membership increased by 9 in 2008 to 237 but had fallen to 186 by 2010. They indicated that their membership has been affected by the recession. Although we have been able to provide the educational opportunities to some of the 100 plus nurseries and greenhouse companies we have not reached our intended goal. The Wyoming Department of Agriculture is continuing to reach out to nurseries, sod farms, arborists and cold frame greenhouse growers through existing organizations like the WGGA, and the Wyoming Farmers Market Association are to provide educational opportunities. We are also working with the University of Wyoming Cooperative Extension offices in providing local level support through research and County Extension workshops and conferences.

BENEFICIARIES

The Wyoming nursery stock industry supplies locally grown specialty crop starts to producers and consumers is the key beneficiary of this project. Nursery stock growers in Wyoming tend to be smaller and are less likely to have employees understand the problems faced in the nursery stock industry. The seminars at the WGGA Conference provided much needed information benefit nursery stock growers by providing information relevant to Wyoming needs. The second group of beneficiaries is Wyoming producers of specialty crops. They trend to seek out locally grown specialty crop starts that are more suited to Wyoming climate. The desire to Buy Local is growing in Wyoming and the ability of the specialty crop producers to convey a seed to table story has a marketing advantage. The third group is the Wyoming consumer and their ability to purchase local specialty crop plants from nurseries and fresh produce from specialty crop growers.

LESSONS LEARNED

A Wyoming Nursery and Greenhouse Association wasn't formed at this time due to other options. It was felt the Wyoming Growers and Groundskeepers Association have expanded its outreach to the industry to the point that a separate association maybe be duplicative and counterproductive. The Farmers Market Association is also providing educational seminars for the expanding number of cold frame greenhouse producers. As the number of specialty crop producers in Wyoming who utilize hothouse or cold frame greenhouse technology increases an association that is under the umbrella of the CNGA or totally separate would be of benefit..

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STATE-WIDE SEMINARS IN FARMERS MARKET FOOD SAFETY

PROJECTY SUMMERY

There is a need by the WDA Consumer Health Services to ensure the food safety of Wyoming Farmer's markets. This need is heightened by outbreaks of food borne illnesses in Wyoming and other states. There is a need to train market managers and vendors on how to develop and implement proper food safety hazard analysis and critical control point (HACCP) program. WDA Consumer Health Services facilitated 11 Farmers Market Food Safety Seminars to provide information to farmer market managers and vendors on food safety issues and policy. Materials will be developed and distributed through these seminars.

PROJECT APPROACH

The Specialty Crop Grant on Food Safety Education provided materials and information to attendees at the annual Farmers' Market Conference held in Casper, WY on April 18, 2009. Jamie George and Ben Metcalf represented the Wyoming Department of Agriculture and presented the Farmers' Market Food Safety Training booklet to the conference attendees and responded to questions from the audience on food safety issues among other items.

During the summer of 2009, a summer intern was hired to create a training program on food safety for cottage food business processors. A change in the Wyoming Food, Drug and Cosmetic Safety Act allowed not potentially hazardous food to be prepared in home kitchens and sold at farmers' markets, roadside stands, and private homes and at functions. The training program was completed by the summer intern and was placed on a compact disk and on the Consumer Health Services website. This training information was distributed to the Consumer Health Services (CHS) staff for their use in providing assistance to the cottage food business processors. The Farmers' Market Food Safety Training booklet was updated by the summer intern, printed and distributed to Farmers Market Managers in 2010.

GOALS AND OUTCOMES ACHIEVED

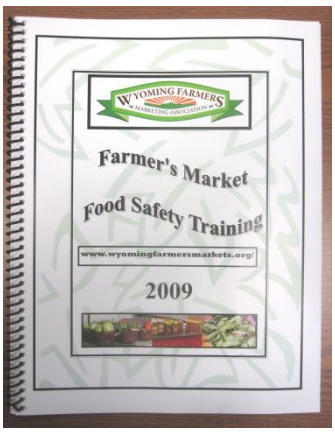
Goals: WDA Consumer Health Services will facilitate 4 seminars to provide information to farmer market managers and vendors on food safety issues and policy. Materials will be developed and distributed through these seminars.

Consumer Health Services staff provided training and distributed the Farmers' Market Food Safety Training booklets to 85 farmers' market managers and vendors. The staff also provided an additional 163 booklets to vendors or people interested in selling food at farmers' markets.

Summary of Activity Performance

- Seminar presented on Farmers' Market Food Safety Training to Farmer Market managers and vendors in 2008. (Direct impact 25 people)
- Farmers market vendor training Cheyenne May 26, 2009 Direct Impact 9)
- Farmers Market Manager Certification - Sept 19, 2009 (Direct impact 15)
- Seminar presented on Farmers' Market Food Safety Training and materials provided to Farmer Market managers and vendors on April 18, 2009. (Direct impact 60)
- Summer intern hired to prepare food safety education training for home based food processors.
- Summer intern updated the Farmers' Market Food Safety Training booklet
- Summer intern completed the food safety training program for home based food processors.
- CHS staff training (Direct impact 26)
- Mailed to all managers (Direct impact 30)
- Home based food safety training program transferred to CD's and distributed to CHS staff and distributed home based food processors upon request.
- Farmer Market Manager Certification Training and Food Preservation Food Safety Training for Market Managers was provided on March 19-, 2010 (Direct impact 27)
- Farmers Market Conference March 20, 2010 (Direct impact 15)
- Farmer Market vendor training was provided in Campbell County on June 22, 2010. (Direct impact 10)
- Farmer Market vendor training presented to the 2010 Farmers Market Conference (Direct impact 15)
- Cheyenne Fresh market training (Direct impact 4)
- Farmers Market Rawlins (Direct impact 25)
- Sheridan - Sue Mickelson (Direct impact 12)
- Fremont County - Stephanie Styvar (Direct impact 15)
- Worland - Lea Zeitlin (Direct impact 20)
- Afton - Wayne Cook (Direct impact 6)
- Albany County Farmers Market (Direct impact 15)
- Casper, Buffalo and Cody (Direct impact 14)

Unusual development was the changing of the Wyoming Food, Drug and Cosmetic Safety Act to allow home based food processors to utilize their home kitchen in preparing not potentially hazardous food for sale at farmers' markets, roadside stands, and private homes and at functions. This delayed printing of information as there was uncertainty in final rule. The project revised and printed Farmers' Market Food Safety Training booklet, a new CD containing the updated information and print booklets of the Cottage Food Business Training and additional CD's. Intern will help accomplish these activities. The project material was revised and the Farmers' Market Food Safety Training booklet, a new CD's containing the updated information and p the Cottage Food Business Training and additional CD's were printed. The intern was able to accomplish these activities.



http://wyagric.state.wy.us/images/stories/news/farmersmarket/farmersmarketfoodsafetytraining.pdf

BENEFICIARIES

Beneficiaries of the project included the Farmer Market Managers, vendors and consumers of the State of Wyoming

LESSONS LEARNED

With changing regulations there is a constant need to provide training and food safety information to all the parties involved in farmer market sales. The managers, vendors and consumers continue to need up to date information in order to ensure that foods bought and sold at Farmers Markets are safe and healthy.

http://wyagric.state.wy.us/images/stories/pdf/chs/farmersmarketguidelines.pdf
http://wyagric.state.wy.us/images/stories/pdf/chs/cottagefoodreq.pdf
http://wyagric.state.wy.us/images/stories/pdf/chs/foodsafetytraining2.ppt

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