

HARVEST MEADOWS FARM FINAL PERFORMANCE REPORT

Project Title

Extending the Growing Season for Nebraska Specialty Crop Growers

Project Summary

Nebraska's fertile Typic Argiustolls soils that expand across Nebraska's 77,358 square miles play a large role in the state's agricultural success. It has enabled fruit and vegetable growers with the ability to respond to the rising consumer demand for locally grown produce in recent years. But, despite the state's agricultural success, its growing season has its limitations. Growing days range as long as 165 days in the southeast to 120 days in the northwest with killing frosts ranging from October to April and September to May, respectively. Since Nebraska's humid continental and semi-arid climates do not provide fruit and vegetable growers with the luxury of multiple growing seasons within a single calendar year, growers are constantly exploring new avenues with which to extend their seasons to increase crop productivity.

It's no secret that season extension practices, especially plastic mulches and high tunnels, are becoming extremely popular nationwide as more gardeners see them as essential, practical methods to extending the growing season and increasing crop productivity. These methods produce earlier crops in the spring and maintain consistent production well into the fall, thus, increasing the income and profitability of local gardeners.

In an effort to address this need, the U.S. Department of Agriculture (USDA) provided a grant to the Nebraska Department of Agriculture (NDA) to administer a project that was designed to provide small, competitive grants, in the amounts of up to \$4,600, to a limited number of Nebraska specialty crop growers for the sole purpose of extending the growing season for specialty crops.

Harvest Meadows Farm was one of the grant sub-recipient's in 2013 who received Specialty Crop Block Grant Program (SCBGP) funding to construct and implement a season extension practice. They decided to build two moveable high tunnels with low tunnels within each structure. The tunnels have been built using two different types of rail systems. The first tunnel is on a wood rail, and the other is on a metal rail. The rails extend two or more times the lengths of the high tunnels, making multiple sites available for each tunnel. Moveable high tunnels allow for multiple cropping sequences. This report is a description of Harvest Meadows Farm's project and how the tunnels will extend the season for Nebraska specialty crops. A primary goal of this project is to increase the season extension knowledge base among specialty crop producers and to encourage growers to consider adopting similar production methods to into their own operations.

Project Approach and Goals and Outcomes Achieved

Harvest Meadows Farm was established in 2011 and is located 14 miles north of Sidney, Nebraska. The 12-acre farm is privately owned and operated. Sustainable farming practices are followed through conservation of natural resources, crop rotation, animal and green manures, and biological pest controls. They currently participate in two farmers' markets and have a roadside stand offering a large assortment of naturally grown fruits and vegetables.

Topographically, Sidney is located in the south central panhandle of Nebraska, and in an area of the state identified as the "plains" region. The plains consist of flat-lying land that lies above a valley. The materials of the plains are sandstone or stream-deposited silt, clay, sand, and gravel overlain by wind-deposited silt (loess). This area is also very close to a unique portion of the nation called the "sand hills." The sand hills consist of hilly land composed of low to high dunes of sand stabilized by a grass cover. The sand dunes mantle stream-deposited silt, sand, gravel, and sandstone.

Harvest Meadows Farm applied to utilize funds to erect two moveable high tunnels built on a rail system. One of the primary reasons Harvest Meadows Farm scored so well on their application is because moveable tunnels in Nebraska are not easily found in Nebraska's produce industry landscape. The tunnels appear to be affordable units that are easily adaptable to Nebraska's landscape, soil conditions, climate, topography, and production needs. Late season harvest and overwintered crops would be planted in late summer and early fall followed by early season planting starting in February or March. Moveable tunnels would allow for an increase in the weeks available to CSA members and wholesale markets. Additionally, it would provide warm weather products much earlier in the year and protection when hardening off seedlings. It is believed moveable tunnels could be scaled to fit beginning, intermediate, or advanced growing operations.

Harvest Meadows Farm chose to build two moveable high tunnels with low tunnels within each structure. The tunnels have been built using two different types of rail systems. The first tunnel is on a wood rail, and the other is on a metal rail. The rails extend two or more times the lengths of the high tunnels, making multiple sites available for each tunnel. Moveable high tunnels allow for multiple cropping sequences.

A follow-up visit to Harvest Meadows Farm with the UNL professor was made on December 6, 2013, to see what progress had been made. The wood high tunnel is 14' x 48' on a 94' rail system. The tunnel is constructed of 1 $\frac{3}{8}$ " top rail, 12' wide and 7' high at the center creating comfortable access for planting and cultivation of beds. End walls are made of wood to aid in structural strength. Six millimeter film is used to cover the structures and the low tunnels are covered by a second layer of Agribon fabric as an added layer of insulation. The rail tunnel was built using these same specifications and dimensions. Two different kinds of rail systems proved to be especially beneficial during the farm tours to demonstrate the advantages and disadvantages of each system.

Late season harvest and overwintered crops are planted in late summer and early fall. The tunnels are moved over the newly planted crops no later than the end of October. The

tunnels allow for early season planting in February or March, allowing the grower the ability to transplant tomatoes 30 – 45 days earlier than currently allowed. When summer arrives and the tomatoes have been transplanted, the houses are moved down the rails to provide summer-loving crops with tropical-like conditions protecting them from extreme weather conditions, such as high winds, extreme heat, and low rainfall. At the end of the summer, the sequence is repeated. If so desired, the tunnels could also be used to protect summer crops from frost allowing for the plants to bear fruit longer.

Location often dictates when crops are to be planted. The number of days crops need to mature are closely related to their Growing Degree Day (GDD) requirements. For example, specialty crops planted on April 25 in east central Nebraska normally would take longer to mature than if planted on May 20 when the temperature is warmer. However, the disadvantage is that planting crops during warmer temperatures shortens the maturity dates and limits the number of cool season crops that can be grown. The season temperature of a region must be able to meet the GDD requirements of a crop or it will not be adapted. The GDD availability for a crop decreases as the time of planting is delayed; therefore, the adaptability of different crops changes from the beginning to the end of the season. Since the amount of GDD and the dates of killing frosts varies from year to year, planting dates have different freeze risks.

Beneficiaries

Longer seasons result in larger annual incomes, customer retention, higher yields, and premium prices. Additionally, it can provide extended employment for skilled workers on produce farms who might otherwise be lost to other jobs at the end of the growing season.

The farm tour was held near Gurley, Nebraska, on June 6th. NDA worked with the grower to publicize this event. NDA sent approximately 151 postcards to growers in the Panhandle encouraging them to attend. The postcards reached growers in 26 Nebraska counties. Additional postcards were sent to Harvest Meadows Farm for additional advertisement in an effort to better canvas this area. NDA sent individual announcements to non-profit organizations and University personnel who might have a potential interest in the tour. The announcement was also posted on the Nebraska Our Best to You website. Growers were asked to RSVP to NDA by May 31st. The postcard was also sent via e-mail to 411 Nebraska produce growers and 58 farmers' market managers on May 16th. A total of 30 RSVPs were received prior to the event, and 29 attended the farm tour.

Lessons Learned

The June 6th 2014, farm tour was tested by Nebraska's inclement weather. Thunderstorm and tornado warnings were issued literally one hour before the start of the tour. Thankfully, by the time the tour was to start, the storms had passed through and moved far enough north that enabled for the tour to commence. A total of 29 attended the June 6th tour. With the storms out of harm's way, the tour proved to be pleasant, informative, and successful. This tour, similar to the others, were surprisingly very well attended.

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Additional Information

For more details regarding this project and the tours, please visit the Nebraska Our Best to You YouTube Channel at http://www.youtube.com/channel/UCUfhUcNUldN4_hf6attsvww.

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