

Farmer Rancher Grant Program

Final Report Form

Please fill out the final report form and return it to the North Central Region-Sustainable Agriculture Research and Education (NCR-SARE) Missouri office. The report may be prepared on a computer or handwritten (please write or print clearly) but electronic reports are preferred. The final payment of your grant will be awarded when the final report and final budget report are received and approved.

Use as much space as needed to answer questions. You are not limited to the space on this form. The more details the better.

I. PROJECT IDENTIFICATION

- Name: Jerry and Jane Wohletz
- Address: 1831 N 1100 Rd
City, State, Zip Code: Lawrence, KS 66046
- Phone: 785-331-3468
- Website: www.wohletzfarmfresh.com
- Project Title: Advanced row cover management for annual, raised-bed strawberry production in Eastern Kansas
- Project Number: FNC12-895
- Project Duration: Proposed (Jan 2012 – Apr 2013)
- Date of Report: February 1, 2012

PROJECT BACKGROUND

Wohletz Farm Fresh is a family-owned and operated, diversified farm that is located on 80 acres near Lawrence, Kansas and is home to a U-pick strawberry operation. We purchased our farm in 1997 and it began as a small cow/calf operation. Due to our lack of acreage, profit potential was very limited. In 2002 we diversified by starting a produce operation under the name of Tomato Allie. Our operation has grown over the years in size and the number of crops being grown, including several varieties of peppers, sweet onions, sweet corn, zucchini, yellow squash, leaf lettuce, broccoli and others. In 2008, the lack of income and subsequent cashflow during the early spring drew our attention, and we began to research the best ways to grow strawberries commercially.

A producer in southern Missouri introduced us to plasticulture strawberry production. In 2009 we planted an acre of strawberries and started a U-pick operation to go along with our farmers market sales. Using a two year crop rotation, we are able to plant wheat or annual rye as a winter cover crop and Sudan grass between strawberry crop years. We believe that using cover crops like Sudan grass during the summer has been highly beneficial for our strawberries. As demand has grown, we have increased production acreage and this year have 1.7 acres, or 25,000 strawberry plants. We believe that the demand for fresh strawberries will continue to grow our operation over the years, and other producers could utilize this research to grow their operation with a crop that has been difficult to produce consistently in this area. Our experience with

strawberries has shown that the plasticulture system is highly profitable in our climate and has the potential to be even better if we can gain an understanding of how to reduce winter injury.

We have been growing annual strawberries since 2009. As part of the annual strawberry system, we have implemented a number of different sustainable agriculture practices, many of which cannot be used in a perennial system. In our area, water conservation is crucial to the sustainability of farming. Drip irrigation is used and we implement row covers rather than utilizing overhead irrigation for frost protection. Additionally, we carry out a crop rotation as opposed to soil fumigation, which is typical in the southeastern US and other regions where large-scale operations exist. We also utilize cover crops heavily, and incorporate sorghum-sudan grass between annual cropping cycles. We use Integrated Pest Management practices including the use of reduced-risk pesticides for insects. Because we operate a U-Pick operation, our goal is to reduce the risk of pesticide residues, etc. Locally-grown strawberries represent a crop that is very scarce in this region due to the difficulty of older production systems. We believe that adding strawberries to our farm added economic sustainability both to our operation and the local food system in the Kansas City/Lawrence region by developing a niche that provides early-season income.

PROJECT DESCRIPTION

GOALS

- 1) Perform a research study that compares the effect of row cover thickness and application timing on the yield and quality of strawberries.
- 2) Disseminate the results of our study to other growers by hosting a field day and presenting research at a grower conference.
- 3) To introduce growers in the region to the potential for annual strawberry production as an early-season crop that can significantly increase farm revenue

PROCESS

As part of preparing our proposal, we were able to team up with a group from K-State Research and Extension. Cary Rivard (KSU Extension Specialist) and Jennifer Smith (Douglas County Extension) helped to develop the project and proposal. We were also able to enlist the help of Mark Gawron, a research associate working at the Olathe Horticulture Center. As a group we met in the fall (2011) to determine the treatments, plot maps, etc., and also put together a plan for how we would deliver the results of the study to other growers. Once we heard that we received the grant, we had a meeting with all parties in order to establish who would do what and how things would progress throughout the season. Mr. Gawron was put in charge of yield data collection under the guidance of Dr. Rivard. Mrs. Smith was in charge of coordinating and promoting the “twilight tour” that we planned for spring. Dr. Rivard was also able to coordinate with Deb Pryor, a videographer at K-State, who was then assigned with the duty of putting together an informational video about the project. Since we were able to split up our duties, it made it easier for us to stay on top of the workload during a busy spring. Once the data was collected and analyzed (summer 2012), the group (myself, Rivard, Gawron, and Smith) all met at my house to look at the data and see what conclusions could be drawn. We also made plans at this point to prepare a second farmer/rancher grant for 2012. Since the growing season was very mild, we believe that it will be important to conduct this study again.

PEOPLE

Jerry and Jane Wohletz, Farmers. Wohletz Farm Fresh. Plant and maintain four 100 foot strawberry rows for research trial. Monitor/document results using photos and daily survey, and oversee yield data collection. Prepare farm for twilight tour. Present research at GPGC.

Cary Rivard. Technical Advisor. K-State Fruit and Vegetable Extension Specialist. Olathe Horticulture Research and Extension Center. Oversee research trial and extension activities. Data analysis.

Jennifer Smith. Collaborator. Douglas County K-State Research and Extension. Horticulture Educator. Assist with extension program and help publicize research trial tour.

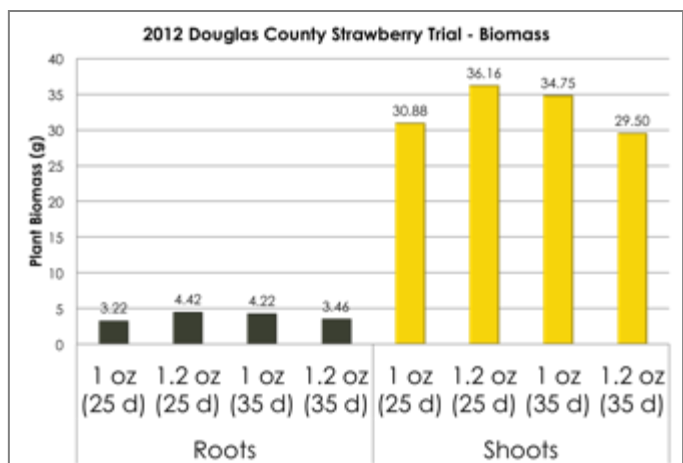
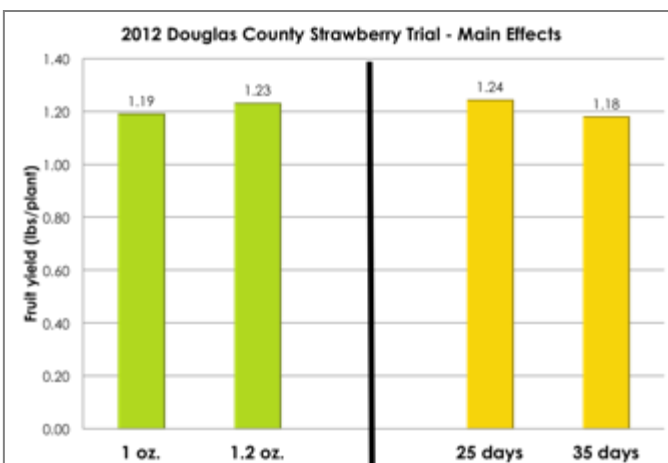
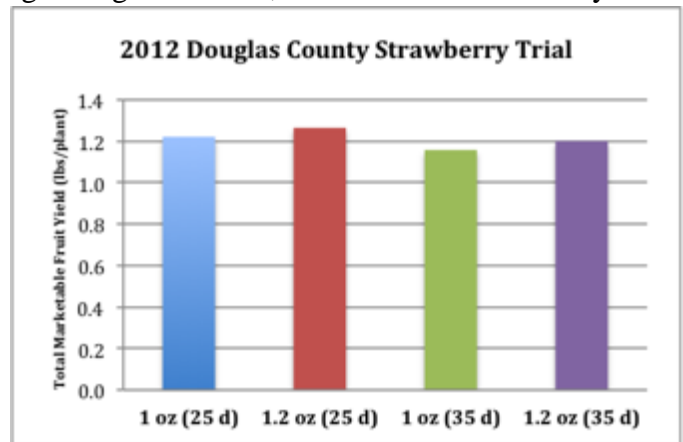
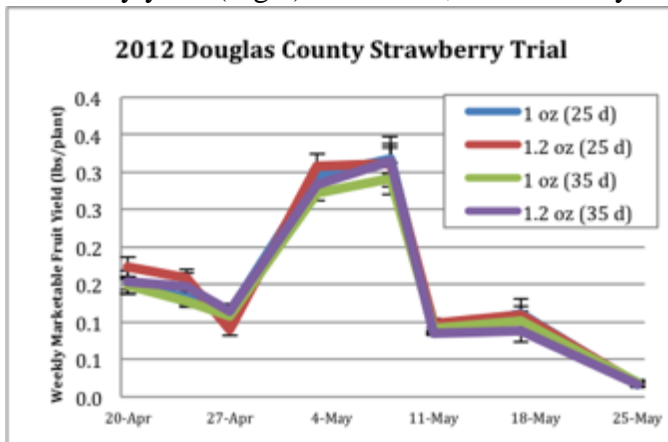
Mark Gawron. Collaborator. Research Assistant. Olathe Horticulture Research and Extension Center. Coordinate and carry out yield data collection and analysis.

Deb Pryor. Collaborator. Media and Communications Specialist. Kansas State University. Develop informational video.

High School Student Workers. Wohletz Farm Fresh. Assist with trial maintenance and harvesting.

RESULTS

The data showed that we had significant increases in fruit yield by utilizing 1.2 oz row cover (Fig 1). Typically, 1.0 oz row cover is recommended for plasticulture production, and our findings suggest that even with the mild winter conditions experienced in 2012, the heavier row covering is more appropriate for the Midwest. Our data showed that row cover timing had little effect on berry yield (Fig 1). However, with the very mild growing conditions, it is difficult to make any



direct conclusions as to how this practice affects the level of winter injury on the plants. This is why another year of data will be important for making grower recommendations. We did find, however, that even in a very mild/warm winter, that 1.2 oz row cover is probably equal or better than 1 oz cover, which was an unexpected finding. Most would assume that you would want a thinner cover during warm winters in order to allow more light to the plants and warm them faster in the spring. However, this may not be the case. We look forward to future work where we can get a better understanding for the mechanisms of winter injury and dormancy in strawberries.

DISCUSSION

During harsh winters, winter injury can be a significant barrier to strawberry production in our region. We learned that even in a mild winter, using the heavier row cover and applying row cover early does not penalize crop yield. It's difficult to tell if cover timing should be earlier or later as this practice relates directly to crop dormancy and therefore susceptibility to winter injury. Since we had such a mild winter, there was probably little winter injury on any of the plants in the experiment. Therefore, it will be important to continue this work. However, it does look like moving to a heavier fabric will probably be beneficial in most years, since it does not seem to penalize crop yield in a warm winter. During future studies like this, we believe it will be important to collect temperature data in order to determine what is happening underneath the fabric. We have included temperature probes in our budget for our upcoming 2012 study and believe that this data will be very helpful for making decisions related to row covers.

The disadvantage to conducting a project like this is that it takes a lot of work and coordination to successfully complete. In particular, strawberry yield data collection over 16 plots (twice weekly) takes a significant amount of additional labor. However, I believe it has benefited our farm in a number of ways. The work that we are conducting is helping my farm and hopefully other farms be successful, which helps to develop a productive local food system. By teaming up with K-State Research and Extension, we were able to develop a strong professional relationship with those working in extension, which will benefit many aspects of my operation (not just strawberries). Finally, since we are a U-Pick Operation, the research study helped to make people aware of our operation and hopefully bring in additional customers. Several of our customers asked about the "sectioned-off" part of the field, and we explained to them the research study and our involvement with KSU and SARE. Many of our customers were interested in the project and I believe that it helped to grow our relationship with our clientele.



OUTREACH

Our extension efforts during the 2012 project were very successful. We held a Twilight tour at our farm on May 10 (approximately 20 attendees-handout attached), and participants were able to learn about strawberry plasticulture production, the on-going research trial, and opportunities for growers available from SARE. Two of the attending growers, Frank and Melanie Gieringer, of Gieringer's Orchard are now growing plasticulture strawberries and are also participating in the ongoing research. They had a lot of interest in strawberry production as a way to add to their operation particularly since their son, Brice, has re-joined the farm after graduating from college. This fall they planted an acre of strawberries using identical methods to ours (we have helped them with equipment, crop consulting, and plant purchasing). We have also partnered together on a 2012 Farmer/Rancher Partnership Grant proposal as we see great value in having more (combined) data and working together to better our operations.

We also presented the results of our study in a number of grower conferences, etc. I (Jerry Wohletz) gave a presentation at a *Growing Growers* workshop, held at Powell Gardens in June 2012 (about 50 attendees). I also spoke about strawberries and our research study at the *Great Plains Growers Conference* held in St. Joseph, Missouri in January 2013, which is an annual regional fruit and vegetable conference held near Kansas City (about 80 attendees). Cary Rivard is also speaking about our work at the Annual Central Kansas Farmers Market Conference in Wichita in February 2013 (about 45 attendees) and expects that he will present this data/project at future extension events. Furthermore, Dr. Rivard is very interested in collecting more data over 2-3 years in order to publish this work through scientific publications and expects to present a poster at the 2012 *ASHS* conference. With the help of Deb Pryor, we were able to produce a short informational video about the project that was posted on YouTube: (http://www.youtube.com/watch?feature=player_detailpage&v=T-Qvzv1GLWg). The video was just recently posted, but has over 50 views.

PROGRAM EVALUATION

There was more than one reporting form available to us and we had to send an email to the coordinator to find out which format to use for our report. The coordinator was very prompt and got us the right forms, which was a big help. However, the situation caused some frustration as we had already started the report in the wrong format (whoops). Otherwise, things went great!