

Is It Possible? Can We Have Organic Sustainable Agriculture with Minimal Tillage while Soil Building and Producing High Quality Forage for Grass-Fed Beef

Final Report for FNC07-667

Project Type: Farmer/Rancher

Funds awarded in 2007: \$5,920.47

Projected End Date: 12/31/2010

Region: North Central

State: North Dakota

Project Coordinator:

[Anne Ongstad](#)

Whitman Ranch

Project Information

Summary:

PROJECT BACKGROUND

Whitman Ranch raises natural beef cattle and organic cash crops. It is a family operation that totals over 14,000 acres of cropland and pasture land. Our ranch is cow calf through finish. Each year we finish roughly 350-400 beef animals on a corn-based ration. These finished cattle are contracted with Laura's Lean Beef out of Lexington, KY. We run around 500 head of beef cows and calve in both spring and fall. A little over a year ago we purchased 125 Red Angus pairs and are currently in the process of finishing 72 steers from that calf crop, on grass. We are new to the grass-finishing industry and are learning as we go. This is our second group of calves we are trying to finish. All of our cattle we finish are natural; this means they receive no antibiotics or hormones and only a few vaccinations. We do rotational grazing with the help of Kidder County NRCS. The past couple of years we have put up several cross-fences and dug in many water lines in hopes to achieve optimum forage production.

We also raise organic crops. These include hard red spring and winter wheat, durum, flax, sunflowers, triticale, and some oats. We are on a rotational cropping system. The first three years we seed the ground to alfalfa and hay it. The fourth year it gets seeded into flax followed by sunflowers then spring wheat with alfalfa under seeded and back to alfalfa for three years. Now, keep in mind this rotation has recently changed a little on a few fields due to all of the cover cropping we have been experimenting with, but overall it is still our main rotation.

We have been rotating our small grains for several years now. We have also used rye in the past as a green manure and just recently, within the past few years, started cover cropping. We have been in an intense rotational grazing system with the help of our local NRCS for several years as well and we have also built several cross-fences.

PROJECT DESCRIPTION AND RESULTS

Goals: By raising organic crops we are challenged with weed control without the use of chemicals. Currently, our weed control consists of a lot of tillage. By talking with a local farmer, Gabe Brown, as well as the Burleigh and Kidder County NRCS District Conservationists, Jay Fuhrer and Mike Gerbig, we now realize that tillage is not healthy for the soil. So, our problems are too much tillage along with the dilemma of weed control and the diminishing amount of soil organic matter. We want to produce sustainable agriculture organically with minimal tillage while speeding up the nutrient cycle. Some specific goals are to increase the soil's water holding capacity, water availability, and soil infiltration. We hope to increase our soil organic matter by using cover crops and hopefully less tillage. We want to use green manure crops such as rye. We plan to use its allelopathic ability to our benefit to help with our weed control.

Another issue we face is not having enough high quality, nutritious forage in mid- to late fall and into winter. We are trying to finish cattle on grass and this means we need high quality, green forage that is high in energy and protein in late fall when most of our tame grasses have very little nutrient value. Our goal is to provide a nutritious source of feed for our livestock so they are still able to gain 1.5 to 2.8 plus pounds per day in the fall. We have been told that cover crops are an excellent source of good nutrition during this time of year.

Process: We have been farming organically for ten years and have always depended on tillage for weed control. About two years ago we attended some conferences that focused on cover cropping. We were very interested in this new concept. So, we continually would ask local farmers as well as NRCS employees and NDSU Research Extension employees for any information they could give us about cover cropping and its benefits. They were all so helpful and willing to share what they have learned so far. They would also suggest different cocktails or seed mixtures we should try for our specific operation. We found a lot of helpful information in the book *Managing Cover Crops Profitably*. [Editor's Note: See:

<http://www.sare.org/Learning-Center/Books> for a link to this SARE-published book.]

This book not only helped us come up with several of our own cocktails or seed mixtures, but also helped us to understand the reasoning behind them.

We got into the grass-fed business shortly thereafter. Corn prices were relatively high and this cover cropping idea sounded like it would work well for these grass-fed calves.

After visiting with so many different people we came up with four projects we wanted to try. The projects and results are as follows:

Project 1: We had three strips and they were all disked twice in mid- to late May of 2008. I should also add it was an alfalfa field that we broke up and this soil type is very sandy. Strip 1 was seeded to sunflowers on June 10th and cultivated once a few weeks after seeding, this was our control because this is what we would typically do in our rotation. This strip yielded the best. We found the extra cultivation helped kill more of the alfalfa that wanted to come back. Strip 2 was seeded to sunflowers on June 10th as well; then on June 20th we seeded red clover with a 30 foot John Deere press drill at about 10 pounds per acre. This strip didn't do well at all. A lot of the alfalfa came back and competed with the sunflowers. We didn't see much of the red clover that was seeded, either. Strip 3 was seeded to sunflowers on June 10th with no later cultivation. This strip yielded a little better than strip 2, but we feel that was because it was closer to the slough and a little more moisture in the soil.

In 2009, we seeded all three strips into brown flax because none of the sweet clover came back. Prior to seeding this with a plow pacer-pony drill, we worked it up with a 34 foot John Deere disk. A lot of the alfalfa still came back from the previous year,

but no sweet clover. We made one pass with the disk then seeded it. We felt the flax yielded very well. However, we had lots of moisture early in the year and we are certain this helped contribute to the better yields.

Project 2: We started seeding wheat with red clover, sweet clover and hairy vetch at the same time with a plow packer-pony drill on May 8-10th of 2008. However, the hairy vetch seed was just a little too big for the grass seeders on the drill and the seed was cracking as it was being seeded. So, we stopped seeding it with the drill and just seeded straight wheat. We later broadcast that cocktail with a spreader and no tillage. We found where the cocktail was seeded with the drill, despite the cracking of the hairy vetch there was a much better stand, especially in the low spots. We think that the lack of moisture and excess of wind contributed a lot to the poor stand where the cocktail was just broadcast. Just next to this mixture we seeded wheat with alfalfa under seeded, this served as our control. We wanted to compare the yields and see if the cocktail took more moisture away from the wheat. Here the alfalfa came quite nicely. We did not detect a difference in yields between the two wheat fields.

We did graze this field in the fall and the cows seemed to like it a lot, what little was there. We are hoping to hay it this year if it comes back.

In 2009, the sweet clover came back quite nicely and some of the hairy vetch and red clover came back as well. We ended up chopping the first cutting and using it for haylage and we baled up the second cutting. We then grazed it in the fall with our grass-fed calves. They seemed to do alright on it; it was a little high in protein for them at that time of year since they just came off of a brown pasture. However, we accomplished one goal, which was to have greener, more nutritious feed late into the fall. We also grazed our fall cows and calves on it once the grass-fed steers were moved off. It lasted us well into November for grazing.

We are hoping the sweet clover dies after this year because we are trying to minimize tillage on our operation. We know we would have had to work under alfalfa so we wanted to see if sweet clover would die after two years and leave a nice clean seed bed for us. We will not know this until all this wonderful snow leaves us.

Project 3: The SCD county no-till drill came and seeded a cocktail for us after we harvested some strips of flax. They began seeding this cocktail on September 5th of 2008 and finished it on September 9th. We tried to choose the flax fields that had the least amount of weeds. We said we were going to till a strip and leave dormant until next spring and this would be our control.

We did not till a whole strip for fear of it blowing. We did till the heavier soil around the sloughs because we figured less chance of blowing and this will be our control. The SCD drill seeded two cocktails. It started out with rye, red clover, sweet clover, hairy vetch, Austrian winter pea and turnips. They seeded about 50 acres of this then substituted winter triticale for rye and seeded that cocktail to about 80 acres. We originally planned to seed only 100 acres but because the county drill was available and we had the seed, we seeded an extra 30 acres. Again, this is very sandy soil. But, because we were blessed and received some moisture in the fall, this cover crop came up very nicely.

In 2009, the triticale, hairy vetch and sweet clover came back beautifully. We made hay out of this. We were a little disappointed with the hay. There was not as much tonnage as we had hoped and it was very difficult to put up because it would not dry down very easily. We did get two cuttings out of it but it wasn't our best quality hay. We also grazed the residue in the fall. We had our spring pairs out on it until December 7th. This was great forage for them. They were in such great shape when we brought them in. Now, we are excited to see how this year's crop does on that

soil. We did not soil test this past year so we are just going to rely on this year's yields to tell us if the soil benefited from the cover crops or not.

Project 4: Here we had three strips as well. This was a weedy sunflower field last year so there were some stalks left there from the past harvest. Strip 1 was our control. We seeded wheat with a plow packer-pony drill and after harvest, spread rye and turnips with a spreader and chiseled the ground. We are hoping that this will act as a green manure and also utilizes the allopathic ability in rye to help hinder some of the weed growth this coming spring. Strip 2 was seeded by the SCD county no-till drill. They seeded an Austrian winter pea and oat mixture. This did not do much. We hayed it but there was certainly more weeds, especially quack grass, than there were peas and oats. Strip 3 was seeded to Austrian winter pea and oats with a plow packer-pony drill. We did not seed it heavy enough, we think. It came up but it did not amount to very much. We also hayed this strip but did not follow that up with a warm season grass mix.

In 2009, Strip 1 was worked under and peas and oats were seeded with a 30 foot John Deere press drill. We had a beautiful yield with that, but again remember we had plenty of moisture early in 2009 which benefited all the crops. However, there were not nearly as many weeds. We don't know if this was from the rye and turnips the fall before or if they couldn't compete with the peas and oats or a combination of the two.

We seeded spring wheat on strips 2 and 3. We found there were still some weeds but significantly less and the yields were quite impressive. We think the peas and oats had a lot to do with that and their ability to fix nitrogen. We have seen that on several of our fields that were seeded to peas and oats the year before. The yields on the crops following peas and oats are considerably higher.

PEOPLE

We had several highly recommended speakers present at our first field day here at Whitman Ranch on October 21, 2008. Among them was Steve Zwinger of the Carrington Research Station; Ted Alme, a State Agronomist from NRCS; and Steve Kassian, Kidder County's new District Conservationist. Todd Churchill, the owner/cattle buyer of Thousand Hills Cattle Company was unable to make the tour. After the tour, Richard Webb, an Area Conservationist, from Jamestown, presented a PowerPoint on Organic Farming with Cover Crops. Many local producers participated in a very interesting discussion following the presentation. Many questions were asked and I feel we all learned a lot.

Also, AGVISE, a soil and plant analysis laboratory did all of our soil testing for us. Jay Fuhrer, Burleigh County District Conservationist as well as the Kidder County District Conservationist, Mike Gerbig, gave us many ideas and helped us come up with this project.

For our second tour in October of 2009 many of the featured speakers were the same with the addition of Yvonne Lawley, Research Agronomist at the Carrington Research Extension Center.

DISCUSSION

Upon receiving this grant we got the courage to try several different things that we normally wouldn't do. We again thank you for giving us that opportunity. We discovered a few things from all these experiments. We feel these cover crops certainly can benefit your soil. However, you need to be careful what you seed, how you seed it, and also when you seed it. These three factors can be quite crucial to the profit/loss they give you. We are going to continue cover cropping to try to control weeds and minimize our tillage. They have done a good job for us up to this point. Cover crops have been especially beneficial to our cattle, their nutrition, and

our grazing dates.

OUTREACH

We hosted a tour or field day here at Whitman Ranch on October 21, 2008. We tried to get the word out about the tour by hanging up fliers and putting ads in the local papers. The NRCS also put an ad in their quarterly newsletter. There were 33 farmers, ranchers, employees ,and speakers present. It was a very cold, rainy, and, of course, windy day. We began the tour by looking at our new herd of Red Angus cattle. We plan to finish their male offspring as 100 percent grass fed beef. This will be our first year trying this. We explained a little bit about the program. Then we drove around to each different project and tried to explain what we have done and what we are hoping for.

After the tour we all gathered at the local cafe where we partook in a wonderful meal. After dinner, Richard Webb, an Area Conservationist from Jamestown, presented a PowerPoint on Organic Farming with Cover Crops. Many people participated in a very interesting discussion following the presentation. Many questions were asked and I feel we all learned a lot. We continually run into some local producers and they overwhelm us with questions, which is great.

Some of them are even brave enough to try a little cover cropping. However, it will take time to fully convince them as I'm sure you know, many farmers are stuck in their ways.

On October 8, 2009 we were part of an NRCS tour. We traveled to a couple other farms as well to look at their current cropping systems. The featured speakers were much the same with the addition of Yvonne Lawley, a Research Agronomist at the Carrington Research Extension Center. This tour was sponsored by the NRCS and there was a very good turnout considering the weather was cold and windy. We mainly discussed cover crops and the different cocktails neighboring farmers used. They told us what they did and didn't like about them and the different ways they mixed and seeded them. We then gathered at the community center in Tappen for a meal and more discussion. We all came away with a lot of good information and contacts.

PROGRAM EVALUATION

We feel this is a great program. We are very thankful we had the opportunity to be awarded this money. The only thing we didn't like was all the paperwork. We understand it has to be done otherwise how would we tell others about what we have discovered. So, we know it has to be done, but it's just not our favorite part of the whole process.

BUDGET SUMMARY

We certainly want to acknowledge and thank the USDA Sustainable Agriculture Research and Education Program for helping to provide funding for this project. We very much appreciate your generosity. We only used the grant money for the county drill and cover crop seed. All extra seed costs and fuel and such was not included in grant money.

Research

Participation Summary



Sustainable Agriculture
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