

EXHIBIT A

Jerry and Nancy Ackermann

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Soil Health Research in Southwest Minnesota

Sustainable Agriculture Demonstration Grant

Jerry and Nancy Ackermann

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Application Form

Report Fields

Project Name*

Name of Project

Soil Health Research in Southwest Minnesota

Amount Requested*

Amount Requested

~~\$14,214.40~~

\$16,814.40 ~

CP

Suspension and Debarment

Is the applicant debarred?

{Unanswered}

Introductory Information

Project Duration (Yrs)*

3

Start Date*

08/01/2015

5/18/15 ~

CP

End Date*

12/30/2017

Note: An annual project report is due in December of each year that the project is active. **If awarded funding, a State of Minnesota contract must be completely signed (Grantee and State of Minnesota) before funds can be spent.**

Agricultural Enterprises*

What agricultural enterprise(s) are involved in this project (crops, livestock, etc.)

Corn, soybeans, and cover crops

Abstract (short summary of proposed project)*

The farmers involved in this grant effort are currently implementing cover crops on their farms. They are aware that cover crops reduce erosion, decrease soil compaction, increase water infiltration to prevent runoff, bring leached nitrogen back to the root zone for the following year's crop, increase organic matter, and provide habitat cover. However, project partners are unaware of any first-hand data about cover crop effects on soil fertility and soil health for southwest Minnesota. This project would provide the opportunity to measure changes in soil fertility and soil health through the use of the Haney Soil Health Test and the Nitrate Soil Test. These tests would be used to provide a dataset with which to analyze the impact of management (cover crops) and provide sufficient data points to statistically analyze the impact of that management. In addition, project partners would work together to host a field day at the end of the grant period. This field day would provide an opportunity to have a model of managed cover crops and measured impacts on known indicators of soil health and fertility. This grant effort provides the opportunity for first-hand, measurable results in southwest Minnesota. Having this data will provide southwest Minnesota farmers with data that will assist them in determining how cover crops can be implemented in their farming operation and how cover crops can help improve water quality in local streams.

Project Objectives, Background, and Description of Project

Project objectives (what are you trying/testing/demonstrating?)

Project Objective 1*

Determine cover crop effects on soil health in southwest Minnesota farm land

Project Objective 2

Verify cover crop effects on soil nutrients in southwest Minnesota farm land

Project Objective 3

Provide educational opportunity for southwest Minnesota farmers

How many years have you farmed?*

38

Short description of the current farming operation*

1,050 acre crop rotation of corn, soybeans, and alfalfa. For the past eleven years, the landowners have incorporated 350 acres of no-till soybeans and 350 acres of strip-till corn in the crop rotation. The alfalfa crop is a cash crop and is used in nutrient management for alfalfa-corn rotations.

Jerry and Nancy have partnered with Jerry and Terry Perkins, Dave Christoffer, and Tim Hansberger; Jan Voit, Heron Lake Watershed District (HLWD) Administrator and Catherine Sereg, HLWD Technician, Andy Nesseth, Extended Ag Services, Inc. Stephanie McLain, Nobles Natural Resources Conservation Service (NRCS) on cover crop efforts, including field days in 2012, 2013, and 2014. Project partners would continue to work together on this grant effort.

Are you a farmer?*

Yes

If Yes:

(If you answered No, skip down to the "If No" section.)

What % of labor do you contribute on your own farm?

100

Do you file a Schedule F with your tax return?

Yes

Name(s) of Technical Advisor(s)

You are required to have at least one Technical Advisor involved in your project. A Technical Advisor is a person who has expertise in your project area and can help design the project, carry it out, and/or review and interpret the results. You can include a portion of the grant funds, if necessary, to compensate the Technical Advisor. This person CANNOT be a family member.

Extended Ag Services, Inc. was founded in 2004 and combines over 24 years of experience in production agriculture, including conservation planning and livestock production. They contribute a unique blend of research knowledge, firsthand experience, and practicality to each project. Their employees have backgrounds ranging from University of Minnesota Extension, crop and livestock livestock farming, Geographic Information Systems (GIS), geography, and landscape design.

Letter(s) of Support*

You must attach a letter of support from each Technical Advisor. If there is no letter from your Technical Advisor, then your project proposal will be disqualified.

LOS.pdf

If No:

then are you one of the following who has a Farmer Cooperator(s)?

You must have one or more Farmer Cooperators involved in your project.

Name(s) of Farmer Cooperator(s) and how he/she is involved in the work of the project:

Dave Christoffer has been farming for 43 years. He farms 220 acres. When he began farming, he used conventional tillage. In 1992 he converted to ridge till. Since 2007, he has been implementing strip-till. He rents 300 acres to two different individuals and works with them to use more conservation tillage and cover crops. Soil tests will be conducted on his farm. He will assist with the field day.

Jerry and Terry Perkins have been farming for 40 years. Jerry and Terry own 627 acres of farmland. They cash rent 415 acres to a young farmer who is engaged in a no-till soybeans and strip-till corn rotation. They farm 112 acres in a no-till soybean and strip-till corn rotation. Soil tests will be conducted on their farm. They will assist with the field day.

Tim Hansberger has been farming for 10 years. He graduated from the University of Minnesota (UM) with an agronomy production degree. He farms 645 acres in a no-till soybean and strip-till corn rotation. Soil tests will be conducted on his farm. He will assist with the field day.

Letter(s) of Support

You must attach a letter of support from each Farmer involved in your project.

Where did you hear about this grant opportunity?*

Jerry Ackermann read about the opportunity in a farm magazine.

Project Description*

Describe the project and how it could conserve energy, protect resources, and/or increase farm profitability. What research have you done so far? Have others tried this before and, if so, where? What benefits could the information you discover have beyond your own farm? (In other words, why is it a project that taxpayer dollars should fund?)

Maps - Soil Health Research in Southwest Minnesota.pdf

Cover crops reduce erosion, decrease soil compaction, increase water infiltration to prevent runoff, bring leached nitrogen back to the root zone for the following year's crop, increase organic matter, and provide habitat cover. However, project partners are unaware of any first-hand data or any tests being conducted about cover crop effects on soil fertility and soil health for southwest Minnesota.

The traditional approach to soil sample analysis is mostly focused on fertility and plant requirements. This approach does not reflect the natural complexity of soil which is driven by organic carbon in the presence of water. The project will use the Haney Soil Test and Soil Nitrate Test over several years to provide the best opportunity to measure changes in soil fertility and soil health, along with measuring nitrate uptake. The data will help determine whether or not the results are statistically significant or within the range expected within normal variation in soil data. The Haney Test and Nitrate Test will provide data to help us better understand how cover crops effect southwest Minnesota farming operations and how they might benefit water quality due to a nitrate decrease in water systems.

The farmers identified above are currently working in partnership with the HLWD and Extended Ag Services, Inc. on an Environmental Protection Agency (EPA) 319 grant. Through the EPA 319 project, each farmer established 50 acres of cover crops. Tillage transects, infiltration measurements, and soil samples are taken to gauge cover crop success. Along with the partners listed, local Natural Resource Conservation Service (NRCS) offices are also partners in efforts to determine how cover crops are benefiting soil health and water quality, as well as how they can be economically feasible.

The partnership would be continued through this grant effort through further research by conducting the Haney Soil Test and Soil Nitrate Test on the cover crop fields which have been established through the EPA 319 grant. In addition, project partners would work together to host a field day at the end of the grant period. This field day would provide an opportunity to have a model of managed cover crops and measured impacts on known indicators of soil health and fertility, and measured water quality benefits. Statistics will help

project partners to confidently determine the impact of management on soil characteristics. Adoption of cover crops is dependent upon presenting measurable results.

This grant effort provides the opportunity for first-hand, measurable results in southwest Minnesota. Having this data will provide southwest Minnesota farmers with data that will assist them in determining how cover crops can be implemented in their farming operation and how it can benefit water quality. This information is a key factor in advancing cover crop adoption for southwest Minnesota.

Design and Methods*

What will you do? Describe in detail how you will do your project from beginning to end. Be as specific as you can. Use drawings or diagrams to help describe it. (For example: crop rotation plan, building or paddock design, layout of test/demonstration plots, etc.) As you complete this question, fill in the Timetable/Activities chart.

This grant will include four farm sites, two in Jackson County and two in Nobles County. Each site has been evaluated by Extended Ag Services Inc. to have 6 -10 soil sampling zones. (See attached maps.) Each zone will follow the sampling procedures below to ensure an accurate representation of each field site. Control sample tests will also be taken. They include: 1) A non-ag site with grass cover. This will give us an idea of where we want to be. 2) An ag site with a history of no cover crops. This will give us an idea of where we started. 3) Samples from four fields with three to five years cover crops history. This sample will give us an idea of long term results of cover crop management.

Haney Test Sampling Information: 1) Use a standard soil core sampler, drill corer, or spade to obtain a furrow slice soil sample. 2) Take 10-15 cores either 0-6 or 0-8 inches deep if wanting fertility recommendations. 3) Combine all the cores, preferably in a plastic-lined paper soil bag, to make one composite sample. 4) Add all sample identification information you need to the sample bag and ship the samples in a regular box. 5) Mark each sample and the shipping container Haney Test or Soil Health Test to ensure proper handling on the lab end. 6) Include any paperwork and soil submittal forms that allow the lab to identify the customer/grower and the tests desired.

Soil Nitrate Test Sampling Procedure: 1) Use a standard drill corer. 2) Take 12-15 cores 0-6 inches deep. 3) Take 3-4 cores 6-24 inches deep. 4) Combine all the 0-6 inch deep cores into a plastic zip lock bag to make one composite sample and combine all the 6-24 inch deep cores into a plastic bag to make one composite sample. 5) Add all sample identification information to each sample bag and ship samples in a regular box. 6) Mark each sample and shipping container Deep Soil Nitrate Test to ensure proper handling. 7) Include any paperwork for lab to identify test desired.

Andy Nesseth, Extended Ag Services, Inc. will collect 68 soil samples in the fall of 2015. The 40 soil samples for the Haney Soil Health Test will be sent to Ward Laboratories, Inc. for analysis. The 28 soil samples for the Soil Nitrate Test will be sent to Minnesota Valley Testing Laboratories for analysis.

Project partners will meet by the spring of 2016 to review test results. A database will be started to compile information.

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Project partners will meet by the spring of 2017 to review test results. Information will be added to the database.

Andy Nesseth, Extended Ag Services, Inc. will collect 68 soil samples in the fall of 2017. The 40 soil samples for the Haney Soil Health Test will be sent to Ward Laboratories, Inc. for analysis. The 28 soil samples for the Soil Nitrate Test will be sent to Minnesota Valley Testing Laboratories for analysis.

Project partners will meet in November 2017 to review test results. The database will be completed. Plans will be made for the field day, with the hope of 50 attendees.

Advertising for the field day will be completed in November 2017 and submitted to the Worthington Daily Globe and KWOA radio. In addition, project partners will work together to draft a newsletter that will be sent to approximately 3,300 watershed residents, agency personnel, and legislators through the use of the HLWD mailing list.

Information about the field day will be posted on the Extended Ag Services, Inc. and HLWD websites.

The field day will be held in December 2017 at the Ackermann farm. Supplies and refreshments will be purchased. Set-up will be done. Jan Voit, HLWD Administrator, will give an overview of the grant. Stephanie McLain, Nobles NRCS will present information about soil health. Jerry Ackermann, Jerry Perkins, Dave Christoffer, and Tim Hansberger will answer questions regarding the use of cover crops. Andy Nesselth, Extended Ag Services, Inc., will present project results.

A news release will be sent to local news media following the event. The news release will contain project results. Project results will be posted on the Extended Ag Services, Inc. and HLWD websites.

Evaluation*

How will you document what happens? For each of the objectives you listed, **what will you measure to be able to determine whether your grant project "works"?** Be specific. (NOTE: Projects do not have to work out the way you think or want them to in order to be successful. Often, it's equally important to know what **doesn't** work or what **not to do**, so don't be afraid to try something others might consider risky.)

From each 50-acre field, Andy Nesselth, Extended Ag Services, Inc. will collect six to ten total soil samples. In addition to the six to ten samples, three "control" samples will be collected for comparison purposes. The three control samples will include: 1) A non-ag site with grass cover. This will give us an idea of where we want to be. 2) An ag site with a history of no cover crops. This will give us an idea of where we started. 3) Samples from four fields with three to five years cover crops history. This sample will give us an idea of long term results of cover crop management.

The Nitrate Soil Test is being collected to help better understand the relationship between Nitrate inputs and cover crop management. With increasing nitrate and cover crop seed cost, local farmers want to know if cover crop roots will assist with pulling applied nitrate from deep within the soil profile. By pulling fall applied nitrate back to the surface, the corn plant can use this nutrient instead of losing nitrates to tile and draining into our local streams. If results show this kind of relationship, this is a positive for farmers and can also result in improving water quality within southwest Minnesota.

This grant funding would provide an opportunity to have a model of managed cover crops and measured impacts on known indicators of soil health and fertility. Statistics will help project partners to confidently determine the impact of management on soil characteristics. Promotion of cover crops is dependent upon presenting measurable results. This grant effort provides the opportunity for first-hand, measurable results in southwest Minnesota.

Statistics will help project partners to confidently determine the impact of management on soil characteristics. Adoption of cover crops is dependent upon presenting measurable results. This grant effort provides the opportunity for first-hand, measurable results in southwest Minnesota. Having this data will provide southwest Minnesota farmers with data that will assist them in determining how cover crops can be implemented in their farming operation.

A field day will be held at the end of the grant period. At the event, a spreadsheet will be used to track the number of people to determine attendance rates.

Project results will be available through a news release and the Extended Ag Services, Inc. and HLWD websites. Project partners may also present results at speaking engagements.

Outreach*

How will you share what you learn so farmers and other people can benefit from your work? (For example: will there be newspaper or newsletter articles? Will you speak at meetings or conferences? Will you post something on your (or your cooperator/advisor's) web site?) **NOTE: All projects are REQUIRED to have a field day in the final year of the project. You can include funds in the budget for one field day.**

Advertising for the field day will be completed in December 2017 and submitted to the Worthington Daily Globe and KWOA radio. In addition, project partners will work together to draft a newsletter that will be sent to approximately 3,300 watershed residents, agency personnel, and legislators through the use of the HLWD mailing list. This advertising will promote the field day.

Information about the field day will be posted on the Extended Ag Services, Inc. and HLWD websites.

A news release will be sent to local news media following the event. The news release will contain project results.

Project results will be posted on the Extended Ag Services, Inc. and HLWD websites. Project partners may also present project results at speaking engagements.

Project Time Line and Budget

Timetable and Activities*

Please complete [Timetable and Activities](#) and upload.

If you are unable to access the file, please email [Julie LaClair](#).

Timetable.pdf

Budget Worksheets*

Please complete [Budget tables A-H](#) and upload. If you are unable to access the link, please email [Julie LaClair](#).

- Use realistic estimates. Only include amounts you are requesting. Total budget must not exceed \$25,000.00. Do not include in-kind amounts.
- Grant may be used for project related costs only, not day-to-day farming expenses.
- Provide detail for each item - what, why, how many, etc.
- For travel, use a mileage rate of \$.50/mile.

Correct Budget.pdf

Comment: Budget corrected-error on Budget Totals page, 2017 column, Grand Total. JL 1/27/15

Other Sources of Funding*

Have you recieved, applied for, or do you plan to apply for other sources of funding to support this project?

No

If Yes, Explain