Idaho Qualitative Soil Health Initiative and Training

Final report for EW18-028

Project Type: Professional Development Program
Funds awarded in 2018: $15,724.00
Projected End Date: 12/31/2019
Grant Recipient: Ada Soil & Water Conservation District
Region: Western
State: Idaho
Principal Investigator:

Jessica Harrold
Ada Soil & Water Conservation District

Co-Investigators:

Josie Erskine
Ada Soil & Water Conservation District

Project Information

Abstract:

The Ada Soil and Water Conservation District is seeking SARE Grant funding to further educate
Shawn Nield, State Soil Scientist of NRCS, and Josie Erskine, District Manager of Ada Soil & Water Conservation District, on qualitative food web analysis. The Idaho NRCS recently purchased six microscopes to be used in the field offices by district conservationists. At this point, the Idaho NRCS staff lacks the knowledge of how these microscopes are used to analyze the food web in the soil. Our goal is to seek training and education for these two individuals with the intent they train NRCS employees, Conservation District employees and producers all around the state. We have come to believe that the only true way to measure soil health is to be able to look inside of it and see what organisms are present, their quantities, and how they are functioning. We are requesting funding to have both Shawn and Josie receive training from Dr. Elaine Ingham and become certified soil life consultants through her online course and on-site workshops. After Sean and Josie receive the certification, they will hold qualitative soil analysis training sessions in the six regions of Idaho. The goal of the project is that each of the six regions of Idaho will have several conservationists that are trained on the microscopes, and can use these tools to promote soil health and address resource and conservation concerns.

Project Objectives:

The objective of the project is to build the understanding of soil and how it is functioning through
training and education. The advancement of soil science is incredible and NRCS employees need

to build their knowledge and have the necessary tools and training to help producers build soil and
understand how it functions.
1. Shawn Nield and Josie Erskine will receive training from Dr. Ingham. They will attend 45
online courses, a 2 day training workshop, and complete certification. This will take approximately 6 months.
2. Shawn and Josie will set up multi-day initial workshops across the state of Idaho to train
NRCS employees, Conservation District employees and farmers and ranchers on how to
use the microscopes and how the knowledge can be applied in the field. This will begin
after certification. Idaho NRCS has six regional offices and all district conservationists will
be trained on the microscopes.
3. Shawn and Josie will have follow up training and workshops for employees but will also
hold workshops for producers and educators within the state. The knowledge learned will
be shared for years to come.

Cooperators

- Brad McIntyer

  Farmers

  Mcyntyer Pasture (Commercial (farm/ranch/business))

- Nate Jones (Researcher)

  farmer

  farmer (Commercial (farm/ranch/business))

- Amie Miller (Educator)

  NRCS staff

  NRCS (Government agency)

Education

Educational approach:

Josie Erskine and Shawn Nield registered for Elaine Ingham's Life in the Soil Class. They have completed the online courses. Each section of this program has multiple educational videos, along with tests on each subject.

Shawn Nield began working with every NRCS district Concervation team lead to

begin using the micro scopes in their area offices in June of 2018. These workshops were set up in three divisions in Idaho with USDA-NRCS, Conservation District, and Extension employees to review how to use the microscopes to identify basic soil life, and review the soil health principles. The Ada Soil and Water Conservation district hosted a Soil Health symposium February 14, 2019. Shawn Nield presented to over 120 attendees mainly farmers and ranchers about using a microscope on a farm and the benefits. h The Ada Soil & Water Conservation District and NRCS hosted a "Get to know your microbial community with a microscope " workshop at the Idaho Soil and Water Conservation Associations Annual Conference in Boise Idaho, Tuesday November 12. We had 7 microscope set up for all of the conference attendees to use and a workshop on how to get started using a microscope on a farm. February 13, 2019, The Ada Soil and Water Conservation district hosted a Soil Health Symposium. Josie Erskine presented on how you can use a microscope to identify your microbial community in your compost. The Ada Soil and Water Conservation District have begun hosting Soil Health workshops were participants can bring soil from their own fields and look under the micro scope with Josie Erskine. Josie will teach them how to begin understanding their own microbial communities through the tool of a micro scope. The Ada SWCD has also branched out and began many different project that inoculate the soil with compost extracts that have large numbers of biological and use the micro scopes to study if the microbial community stay or grow in these field trials. The microscope are a wonderful tool and our approach is helping conservation employees and farmers not be afraid of them and also how to use them to understand the biology that they have in their oil and help them monitor the biology health and growth. It has been a very out of the box idea for many farmers but once they see their soil for the first time they understand very quickly how the microscope could benefit them.

Education & Outreach Initiatives

Recognizing healthy soil using microscopes

Objective:

Teach outreach providers how to recognize bacteria/ fungus and biological healthy soils. Educate and teach farmers and ranchers how to use the microscope and us it as a tool to monitor their soil and their soil health.

Description:

Provide microscope training and soil health education to NRCS, Extension, Conservation District staff, farmers, ranchers and students . Many farmers and ranchers are using soil health practices on the farms and ranches. Microscope are a tool they can use to see if the practices they are doing are having effects on their soil microbial communities. They can monitor and watch the growth. The micro scope is an amazing tool to use when learning how to manage soil health.

Outcomes and impacts:

The projects with the microscopes has grown beyond just NRCS staff, we have taken the microscopes into class rooms and onto farms. We have held trainings like our regional Soil Health Conference Febuary 2019 and 2020. In 2019 Shawn was a speaker and talked all about the microscope and how he uses it in the field and in 2020 Josie talked about the micro scope and how it can be used to help grow

microbial community in compost. In November of 2012 Josie and Shawn presented at the Idaho soil and Water Conservation Association Convention. The presentation was called a "Using a microscope to get to know your microbial community, a hands on workshop". We have also started working with producers who have been using soil health practices and are ready for the next level. Training them in how to use the microscope and how to start applying biological inoculations to their fields. The microscopes have proved a great source of knowledge and understanding. Ada Soil & Water Conservation District manager Josie Erskine started traveling with the microscope and she has visited farms, classrooms and different forums and workshops. We are using the microscope and the Ward labs PLFA test to help producers understand the life in their soil. The project has also grown in other ways. The Ada SWCD now owns 2 commercial worm bins and we are helping to grow health soil biology that we can share with students and farmers under the microscope but also apply to agricultural land. We will be inoculating over 200 acres this growing season and tracking its biological growth. This is a really out of the box approach to measurement to soil health. It is a challenge to get producers on board. The response is microscopes are too hard to use. We understand that it may take a producer being introduced to the idea of a microscope many time before they are ready to use one. We have begun offering weekend courses were producers can bring in their soils or composts for us to look at in the microscope with them and help them jump over these initial hurdles. This is a great way to make these microscopes approachable and relevant.

Educational & Outreach Activities

7 Consultations

1 Curricula, factsheets or educational tools

5 On-farm demonstrations

5 Tours

10 Webinars / talks / presentations

3 Workshop field days

2 Other educational activities: We have taken the microscopes and the table top rain simulators into student class rooms. We have also had them at 5th grade field days.

PARTICIPATION SUMMARY:

3 Extension

20 NRCS

3 Researchers

10 Nonprofit

25 Agency

1 Ag service providers (other or unspecified)

78 Farmers/ranchers

1018 Others

Learning Outcomes

210 Participants gained or increased knowledge, skills and/or attitudes about sustainable agriculture topics, practices, strategies, approaches

55 Ag professionals intend to use knowledge, attitudes, skills and/or awareness learned

Project Outcomes

3 Grants received that built upon this project

20 New working collaborations

Project outcomes:

The grant we received from SARE was intended to help educate my self and Shawn about soil health and how to use microscope to identify soil biology. The grant has move way beyond that and has inspired the Ada SWCD to start an innovation farm based all on Soil Health. We have used the microscopes as they were intended to help educate NRCS staff and farmers but we had no idea how many lives we would be touching with this technology. I am personal taking the microscope from field to field weekly and helping farmers see their soil under a micro scope for the first time. Seeing your biology is so helpful in understanding soil health

5 Agricultural service provider participants who used knowledge and skills learned through this project (or incorporated project materials) in their educational activities, services, information products and/or tools for farmers

174 Farmers reached through participant's programs

Additional Outcomes:

These are all the projects that have grown out of the SARE grant. The micro scopes helped us understand how there was so much knowledge that we could give to farmers. It is amazing how seeing the biology can help you manage it. Management is key to soil health.

We are creating a Innovation Farm, the "Growing Together" lecture, classes and tours and the Harvest nad Hearth all day workshops and farm to farmer exchange.

We are teaching

- Practices that build the health of the soil
- Composting and the microbial functions of soil
- No till farming or reduced till systems

- Introduce cover crops into crop rotations
- Drought and extreme weather resilient crop rotations
- Integrate livestock grazing on ag land
- Increase pollinator and beneficial insect habitat. Using conservation cover practices such as filter strips, herbaceous wind strips, double cropping within rows.
- Conservation irrigation practices that address efficiency and uniformity
- High value crops and direct marketing
- Give tours and field days that demonstrate all of these techniques

Success stories:

We are working closely with two different producers. One producer is certified organic and does about 1500 acers in onions, potatoes and beans. He is excited to inoculate his soil after seeing his biology.

Recommendations:

I would love to see some studies done on Dr. Johnston BEAM compost and see if it is the worms that are added that help create the biology.