

Professional development project in weed and forage identification and management

Final report for ENE14-130

Project Type: Professional Development Program

Funds awarded in 2014: \$98,303.00

Projected End Date: 12/31/2016

Region: Northeast

State: Vermont

Project Leader:

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University of Vermont

Project Information

Summary:

Because high quality perennial forages in pastures and hayland are critical to sustaining our livestock agriculture in New England, proper identification and management of both weed and forage species are needed. Weeds in these systems pose important management challenges for livestock farmers as they often compete for both above- and below-ground resources that may reduce forage yields and quality, seasonal pasture distribution, and stand life. The ability to identify weeds and understand their biology, and understand forage quality are key in helping farmers develop effective forage management strategies. However, results of a 2013 survey of 47 New England Extension educators conducted for this project found that these educators lacked the knowledge, skills, and confidence to identify weed and forage species and develop appropriate management strategies.

Through a program that focused on training, professional peer development, and active experiential learning, this project helped 21 agricultural service providers from Extension, USDA NRCS, businesses and non-profits throughout New England better identify weed and forage species and learn pasture and haycrop management strategies to optimize forage quality on livestock farms. Training included two 2-day in-person workshop (classroom and in-field components) and eight webinars (delivered live but also archived as online resources) during the first two years of the project. In the third year, participants could attend the Northeast Pasture Consortium annual meeting to network with and learn from other forage and pasture management professionals. The program also included a self-study assignment for participants to research a weed species and develop a management factsheet, and expectations to work with 5 farmers during the project and conduct a farmer educational activity to solidify their knowledge, skill, and confidence.

Results of a post-program survey of participants conducted in 2017 indicated the following about the program:

- 100% of respondents (n=17) said the information they learned about managing

forages helped them work better with farmers in their current job.

- 88% percent (n=15) said the information they learned about weed identification and management helped them work better with farmers in their current job.
- 94% (n=16) said they felt more confident working with farmers on pasture and hayland management.
- 94% (n=16) felt they built or strengthened networks (better connections with resources and fellow professionals).

The 2017 survey and an earlier 2015 survey also asked participants to report how they had applied their forage and weed ID and management knowledge and skills with farms. 76% of 20 total respondents (n=15) said they achieved their goals in working with at least 5 farmers to support their forage management. Reporting on all education and assistance actions, 20 participants reported serving a total of 468 farmers who manage at least 24,714 acres (primarily beef and dairy operations but also small ruminant and equine) with new information and skills gained through the project. Participants provided 270 one-on-one technical assistance consultations to farmer clients, offered 22 workshops/field days and 3 tours, and produced 1 factsheet.

On-farm outcomes participants reported as a result of their education and technical assistance included management changes like better grazing management, soil testing, better weed control, improved harvest schedules, successful field renovation, reduced overgrazing and improved pasture quality, greater use of alternative forages, and increased productivity from raised cutting height for faster re-growth. Participants also reported farmer clients signed up for technical and financial assistance through EQIP as a result of their assistance. Estimated financial impacts reported for the changes farmers made ranged from \$1000 to \$4000 per farm in money saved and/or generated.

An additional result of the project was that 82% of the participants said they gained a better understanding of Northeast SARE and 71% gained more confidence to seek out Northeast SARE funding/resources. 3 participants applied for and received SARE grants in 2017.

Performance Target:

20 agricultural service providers in New England who gain skills in weed and forage identification and biology, and integrated weed management techniques will provide educational programs and services to 200 experienced and beginning farmers who manage an average of 120 acres; 100 farmers will adopt integrated weed control and forage management practices that extend the grazing season, decrease herbicide usage, reduce purchased feed inputs, and improve animal performance on 100 acres each (10,000 acres total).

Introduction:

Because high quality perennial forages in pastures and hayland are critical to sustaining our livestock agriculture in New England, proper identification and management of both weed and forage species are needed. Weeds in these systems pose important management challenges for livestock farmers as they often compete for both above- and below-ground resources that may reduce forage yields, seasonal pasture distribution, and stand life. Most weeds mature very quickly, reducing the quality of the forages at times of optimum harvests. Some weed species can also serve as indicator plants, suggesting mismanagement of pasture

and haycrops such as soil compaction, low fertility, and overgrazing. Being able to identify weeds and understanding their biology, as well as understanding forage quality, are key in helping farmers develop effective forage management strategies. However, survey results indicate that New England agriculture service providers lack the proper knowledge, skills, and confidence to identify both weed and forage species, as well as developing appropriate strategies to manage them on our livestock farms.

The goal of this project was to provide an education program designed to help Extension educators, USDA NRCS and non-profit personnel throughout New England better identify weed and forage species and study pasture and hay crop management strategies to optimize forage quality on livestock farms.

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Educational Approach

Educational approach:

This professional development program was developed to help Extension educators, USDA NRCS and non-profit personnel throughout New England better identify weed and forage species and learn pasture and hay crop management strategies to optimize forage quality on livestock farms. This was accomplished with four educational initiatives:

- 1) Training - Direct training to participants was accomplished in two approaches:
 - a. In-service training - Participants attended two in-person sessions (which included classroom and in-field components) in September of 2014 and June of 2015. These were two-day intensive workshops and focused on in-field identification of forage and weed species, weed scouting in crop fields and pasture, silage and hay quality and sampling, and pasture management.
 - b. Webinars - During the fall and winter periods from 2014 to 2016, eight one-hour webinars were presented to the participants to enhance their understanding of weed and forage management. Topics included the following:
 - i. Forage plant response to defoliation
 - ii. Pasture and field renovation
 - iii. Weed Management techniques for pasture and hay
 - iv. Gearing up for the field season - working with project farmers
 - v. Forage selection and mixtures for New England
 - vi. Chemical management of weeds in perennial forages
 - vii. Livestock nutrition and grazing management
 - viii. Forage-related animal problems
- 2) Educational Resources - At the first in-person training, participants were provided Forage ID literature, a manual on poisonous plants, and Weeds of the Northeast (if they didn't already have a copy). In addition, a dedicated website for the program was developed and maintained to provide shared resources, announcements and webinar presentations and handouts (URL: <http://pss.uvm.edu/pdpforage/>). Participants were encouraged to submit resources that could be shared amongst the group.
- 3) Professional Peer Development - Participants were given the opportunity to attend the 2016 Northeast Pasture Consortium annual meeting held in Freeport, Maine March 16 - 18, 2016. This gave the participants an opportunity to interact with leading farmers and other pasture/forage experts in the region. Topics included orchardgrass die-off, riparian grazing management, plant-breeding initiatives for pasture and forage species, risk management tools for forage and pasture, and transitioning dairy cows to a "no-grain" diet. A post conference tour of Wolfe's Neck Farms was also offered. Thirteen pdp participants were able to attend.
- 4) Active and Experiential Learning - Participants developed knowledge and skills through two active and experiential learning opportunities:
 - a. Self-Study and Publication Assignment - During the first in-service training, participants signed up for a grassland or forage weed of choice to research and produce a factsheet. Their assignment was to search the literature on their weed of choice and write a two-page factsheet regarding the weed's biology and management considerations. A template was provided and posted on the project website. Two copies of each draft were then reviewed by a respective participant as well as the coordination team with feedback and comments sent back to the original authors.
 - b. Program Development - In 2016, PDP participants were offered the opportunity to

write mini-grant applications to help provide resources for their own farmer outreach programs in forage and weed management. Ten participants submitted applications to conduct projects and/or workshops.

Milestones

Milestone #1

What beneficiaries do and learn:

1) 20 Ag Service Providers Learn about the project and commit to participate by completing an online survey which includes information about the project, participant expectations, and a pretest in weed and forage (as a benchmark from which to measure change in knowledge, attitudes, skills, and behavior).

Proposed number of agriculture service provider beneficiaries who will participate:

20

Actual number of agriculture service provider beneficiaries who participated:

20

Proposed Completion Date:

August 31, 2014

Status:

Completed

Date Completed:

June 30, 2014

Accomplishments:

- [Cumulative Milestone Accomplishment Table](#)

Initially, 21 participants were selected for the project. However, in the spring of 2015, one of them moved out of the region and could no longer participate leaving us with our original goal of 20 participants.

Milestone #2

What beneficiaries do and learn:

2) 20 Participants attend first annual in-person training. Learn forage and weed species identification and management.

Proposed number of agriculture service provider beneficiaries who will participate:

20

Actual number of agriculture service provider beneficiaries who participated:

21

Proposed Completion Date:

September 30, 2014

Status:

Completed

Date Completed:

September 11, 2014

Accomplishments:

The initial project training was offered in-person on September 10-11, 2014 in Portsmouth, NH. All 21 trainees plus the four organizers attended. The training blended classroom and field instruction. Field instruction included small group activity work to help participants solidify their knowledge of plant identification. As a result of the training, a post-event evaluation revealed that 90% of the trainees increase their knowledge about forage and weed species and storage forage quality, especially forage plant species. Evaluation results showed that 80% increased the confidence in their abilities to identify weeds and forages on farm. All respondents said they would likely or definitely integrate what they learned at the training into their work with farmers. For example, one participant said, "I already have integrated some of my training in a course that I am teaching." Another said, "[I'm] working with another participant to set up a forage series next month."

- [SARE PDP Forage and Weed ID and Mgt Participants and Instructors](#)
- [NESARE PDP Forage and Weed ID and Mgt Training Inservice](#)

Milestone #3

What beneficiaries do and learn:

3) 40 professionals begin monthly webinar training series. Learn forage management and weed control strategies—biological, chemical, cultural, and mechanical.

Proposed number of agriculture service provider beneficiaries who will participate:

40

Proposed Completion Date:

November 30, 2014

Status:

Completed

Date Completed:

February 9, 2016

Accomplishments:

The project team offered a series of eight one-hour webinar trainings per year for

2014 through 2016. Topics were selected based on feedback from participants on subjects for which they identified as knowledge gaps. Two webinar trainings were offered and reported in 2014. In 2015, four webinars were conducted and two in the winter of 2016.

Not all 20 participants could "attend" each monthly webinar; however, most all materials for the webinars as well as a You Tube link of post-webinar recordings are posted on the dedicated PDP website (<http://pss.uvm.edu/pdpforage/>). The You Tube recordings are most likely viewed by PDP participants that missed the initial webinar. Below are a list of the webinars offered (with specific post webinar evaluations for selected ones):

November 13, 2014: Forage Physiology and Management - As a result of the webinar, 92% of survey respondents said they learned new information, particularly regarding plant growing points, species maturity, and plant response to defoliation (n=12).

December 11, 2014: Pasture and Field Renovation - As a result of the webinar, 100% of survey respondents said they learned new information, particularly regarding reseeding, and no-till options (n=11).

February 3, 2015: Weed Management Techniques for Pasture and Hay - Attended by all 21 participants and viewed 11 times by the You Tube production.

March 10, 2015: Gearing Up For the Field Season - Working With Your Project Farmers - Attended by 14 participants and viewed 5 times by the You Tube production.

April 7, 2015: Forage Selection and Mixtures for New England - Attended by 13 participants. Unfortunately, a technical problem caused this webinar to not be recorded.

December 8, 2015: Chemical Management of Weeds in Perennial Forages - Attended by 13 participants and viewed 5 times by the You Tube production.

January 5, 2016: Livestock Nutrition & Grazing Management - Attended by 20 participants. 100% of those who responded to follow-up survey (n=5) said they learned new information at the webinar. One participant said, "One of the best webinars I have attended. Gave good level of information and at level for both novice and more experienced to understand." Another said, "I learned a great deal about the nutritional differences between grazing forage and TMR feeding and some of the benefits and disadvantages of each." 60% (n=5) said they intended to implement what they learned in their work with farmers, including information on management and supplemental feed to address energy deficits in grazing systems, as well as ration balancing, and enterprise budgeting.

Feb. 9, 2016: Forage Related Animal Problems - Attended by 16 participants. 100% of those who responded to follow-up survey (n=4) said they learned new information at the webinar. One participant said, "Not as familiar with animal nutrition or effects of nutrient deficiencies, so this was a very educational seminar." Another said, "I have no experience with livestock health problems stemming from forage, so this was all new material for me!" 100% (n=4) said they intended to implement what they learned in their work with farmers. One participant said, "I used the presentation materials/notes that same night in the SARE farmer group meeting. I wasn't nearly as informative as Sid, but I passed along the info and gave some notes. There was interest, but when asked if they would use the info - they pretty much said they depend 100% on their animal nutritionist." Another said, "It will definitely be helpful to have some understanding of how certain forage species may be at greater risk of potentially causing health problems. It will also be good to be able to talk about the pro's

and con's of growing certain species with producers.”

Milestone #4

What beneficiaries do and learn:

4) 20 participants identify weed of focus. Each participant will assemble, evaluate and use effective web-based and hard copy references for weed and forage identification and adaptation. They will use a management strategy template to develop a “helps” factsheet which outlines forage and weed identification and management recommendations.

Proposed number of agriculture service provider beneficiaries who will participate:

20

Actual number of agriculture service provider beneficiaries who participated:

20

Proposed Completion Date:

February 28, 2015

Status:

Completed

Date Completed:

July 31, 2017

Accomplishments:

During the first in-service training (Milestone 2), participants signed up for a weed of choice to research and produce a factsheet. A template was provided and posted on the project website. Twenty of the 21 participants completed their first draft by June 2015. Two additional factsheets were written by two project coordinators as well. Two copies of each draft were then reviewed by a respective participant as well as the coordination team with feedback and comments sent back to the original authors.

Approximately 10 of the factsheets were in near complete shape but all the factsheets still need further review by the project PI's before public access.

Milestone #5

What beneficiaries do and learn:

5) 20 participate in second in-person training. Participants will present the factsheet they prepared about their weed/forage of focus. They will also learn about best management adult education and IT techniques to use with farmer clients during field season.

Proposed number of agriculture service provider beneficiaries who will participate:

20

Actual number of agriculture service provider beneficiaries who participated:

19

Proposed Completion Date:

May 31, 2015

Status:

Completed

Date Completed:

June 4, 2015

Accomplishments:

The second in-service training was conducted June 3-4, 2015 near Keene, NH. All participants but one were able to attend. All four project coordinators also attended. Due to a strong request by the participants, we chose to focus much of the training to pasture systems. We worked with three farms in the area (medium sized dairy, small dairy, and a sheep farm). Participants were able to learn from the farmers how they made decisions regarding their pasture and forage programs. They also discussed some of their most problematic weeds. We also included specific on-farm training in forage and weed identification, determining pasture composition, pasture mass assessments and pasture intake calculations, and pasture condition scoring. There was an evening program to discuss the weed factsheet development and farm case studies.

A post evaluation of the in-service training (n=15) showed that 53 percent found the training to be "helpful" and 47% "extremely helpful". When asked what aspects of the training they found most useful to them, 67% indicated farmer interaction and ability to compare different forage/pasture systems, 47% indicated learning pasture measurement skills, 40% indicated continued pasture identification skills, and 33% indicated connecting and interacting with fellow participants.

Milestone #6

What beneficiaries do and learn:

6) 20 participants use collection of factsheets to adapt to local conditions in their work with farm clients. They will develop video and/or conduct farmer education event.

Proposed number of agriculture service provider beneficiaries who will participate:

20

Actual number of agriculture service provider beneficiaries who participated:

17

Proposed Completion Date:

September 30, 2015

Status:

Completed

Date Completed:

November 10, 2017

Accomplishments:

Although the factsheets were not completed during the timeframe of the project, participants have used their newly gained knowledge while conducting farmer education activities. From an evaluation conducted at the end of the project, one hundred percent of respondents (n=17) said the information they learned about managing forages during the training better helped them work with farmers in their current jobs. Eighty-eight percent of these respondents said the information they learned about weed identification and management during the training better helped them work with farmers in their current job.

1. Selected comments:

- Yes, I know more about forage quality and cultural practices that farmers can implement to manage for quality.
- I have more confidence in some of the subtler concepts within the scope of forages management.
- I pay more attention to species composition when completing needs and feasibility assessment for pasture resource concerns.
- Yes, I was better equipped to provide management suggestions to farmers.
- It strengthened my understanding of how to identify forages.
- I have a better sense of how to balance the differing needs of legumes vs. grasses and how to keep both healthy and productive in mixed pasture situations over the course of the grazing season.
- It was helpful to see farmers' different perspectives and practices, a good reminder that there's no one way to manage forages effectively.
- As a result of the training, I have a much better understanding of how to work with farmers on managing and improving the forages they grow.
- Yes, I know a lot more about weeds including their habits, growth patterns, and why it's important to manage weeds.
- I'm better at weed ID and knowing something about their individual biology.
- It strengthened my understanding of how to identify weeds.
- I have a little better understanding of how and when to push animal pressure on weeds - particularly the annuals vs. the perennials.
- It certainly helped me to improve the "pasture management" course that I am currently teaching.
- Participating in the training definitely improved my ability to identify weeds and better communicate how to manage them with farmers.

Milestone #7

What beneficiaries do and learn:

7) 20 participants will work with no fewer than five farmers per year. They will document, via a case study example participating farm(s). Conduct evaluation among farmer clients.

Proposed number of agriculture service provider beneficiaries who will participate:

20

Actual number of agriculture service provider beneficiaries who participated:

17

Proposed Completion Date:

October 31, 2015

Status:

Completed

Date Completed:

November 10, 2017

Accomplishments:

Based on the 2015 and 2017 survey of participants, 15 of the 20 participants said they achieved their goals in working with at least 5 farms. However, all the participants reported working with some farms as a result of this project. Complete results about service provider assistance to farmers from the surveys are summarized in the performance target sections.

Milestone #8

What beneficiaries do and learn:

20 participants share knowledge learned, practices implemented, and attitudes changed with project team.

Proposed number of agriculture service provider beneficiaries who will participate:

20

Actual number of agriculture service provider beneficiaries who participated:

16

Proposed Completion Date:

June 30, 2016

Status:

Completed

Date Completed:

November 10, 2017

Accomplishments:

Based on an evaluation taken at the end of the project, 94% of respondents said they felt more confident in working with farmers on pasture and hayland management (n=16). Selected comments:

- There's lots to know to be a competent natural resources professional that can advise farmers and it takes years to develop the knowledge, skills, and confidence. This project helped me to be more confident.
- This is a big part of my job and I have more confidence in my approach to

these topics.

- I was already pretty confident working with farmers in this area, but I learned new things about specific species, management practices that I can use.
- Sid is a great resource for answering questions that I am cautious about answering.
- The focused time to learn (overnight stays), away from distractions was a very helpful tool and increased the learning curve. More info to bring back to farmers.
- I think I am more comfortable answering farmers' questions in regard to weed management and identification.
- The concepts covered in the training have given me many tools to help farmers solve problems they may encounter on pasture and hay land. I feel more comfortable brainstorming and strategizing with them.

Milestone #9

What beneficiaries do and learn:

20 participants build stronger networks with other professionals in New England and the Northeast and become better aware of Northeast SARE program opportunities.

Proposed number of agriculture service provider beneficiaries who will participate:

20

Actual number of agriculture service provider beneficiaries who participated:

17

Proposed Completion Date:

November 10, 2017

Status:

Completed

Date Completed:

November 10, 2017

Accomplishments:

Based on an evaluation conducted at the end of the project, 94% of respondents said they felt they had built or strengthened networks and better connections with resources and fellow professionals (n=16). In addition, as a result of the project, 82% of the participants said they gained a better understanding of Northeast SARE and 71% gained more confidence to seek out Northeast SARE funding/resources.

Selected comments:

- Definitely. I have some NE expertise to draw upon for various needs.
- Yes, I have gotten to know the people I should ask for help when I have questions I am having trouble answering.
- I have a better feel for who's involved with forage-related programming among new England ag service providers

- Always good to know that I am not alone in the Northeast!
- The opportunity to work with such respected professionals and like-minded individuals was an incredible opportunity and has been used several times already.
- Absolutely. Because of the project I have identified several individuals that I have been corresponding with and at least two of them attended and collaborated with dairy events in Massachusetts.
- It was really great to meet ag professionals from other parts of New England and get to hear about their experiences.

Milestone Activities and Participation Summary

EDUCATIONAL ACTIVITIES AND EVENTS CONDUCTED BY THE PROJECT TEAM:

30 Consultations

3 Curricula, factsheets or educational tools

1 Online trainings

8 Webinars / talks / presentations

2 Workshop field days

2 Other educational activities: 1. Participation in the 2016 Northeast Pasture Consortium annual meeting

2. Write and implement a project mini-grant to support service provider programs pertaining to weed and/or forage identification or management.

PARTICIPANTS IN THE PROJECT'S EDUCATIONAL ACTIVITIES:

11 Extension

6 NRCS

2 Nonprofit

1 Agency

1 Ag service providers (other or unspecified)

21 Number of agricultural educator or service providers reached through education and outreach activities

Learning Outcomes

21 Agricultural service providers reported changes in knowledge, skills and/or attitudes as a result of their participation.

21 Ag service providers intend to use knowledge, attitudes, skills and/or awareness learned through this project in their educational activities and services for farmers

Key areas in which the service providers (and farmers if indicated above) reported a change in knowledge, attitudes, skills and/or awareness::

An on-line survey of the 20 pdp final participants (2 left in 2015 and one was added in 2016) was conducted in Nov. 2017 as a final evaluation of the program. 17 responded to the survey.

- One hundred percent of respondents said the information they learned about managing forages during the training better helped them work with farmers in their current jobs (n=17).

- Eighty-eight percent of respondents said the information they learned about identification and management during the training better helped them work with farmers in their current job. (n=17)

- Ninety-four percent of respondents said they felt more confident in working with farmers on pasture and hay land management (n=16).

- As a result of the project, 94% of respondents said they felt they built or strengthened their professional networks (better connections with resources and fellow professionals), n=17.

From the survey of participants at the end of 2015 after the project had covered most of it's initial training, the data from four participants who did not respond to the 2017 survey was reviewed. All four indicated they had gained new skills in weed and forage identification and new knowledge in weed and forage management that they were applying these skills when working with their five farms.

Performance Target Outcomes

PERFORMANCE TARGET OUTCOMES - SERVICE PROVIDERS

TARGET #1

Target: number of service providers who will take action to educate/advise farmers:

20

Target: actions the service providers will take:

20 agricultural service providers in New England who gain skills in weed and forage identification and biology, and integrated weed management techniques will provide educational programs and services to 200 experienced and beginning farmers who manage an average of 120 acres (24,000 total acres).

Target: number of farmers the service providers will educate/advise:

200

Target: amount of production these farmers manage:

24,000 acres

Verified: number of service providers who reported taking actions to educate/advice farmers:

20

Verified: number of farmers the service providers reported educating/advising through their actions:

468

Verified: amount of production these farmers manage:

24714 acres

Activities for farmers conducted by service providers:

- 1 Curricula, factsheets and other educational tools
- 270 Consultations
- 3 Tours
- 22 Workshops/field days

20 Total number of 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

468 Farmers reached through participant's programs

Performance target outcome for service providers narrative:

Data about the activities conducted by service providers who participated in the program came from the 2015 and 2017 survey results which asked similar questions about farmer activities and outputs. Between the two surveys, 20 of the 21 participants responded at least to one of the two surveys. The consultations (one-on-one) with farmers is a conservative estimate based on individual participant estimates. Participants also reported using information learned through the project in 22 workshop, 3 tours and 1 factsheet.

A total of 468 farmers representing at least 24,714 acres (primarily beef and dairy operations but also small ruminant and equine operations) were served by the participants using new information and skills they gained during the project.

As a result of their efforts, participants said the on-farm outcomes of their education and technical assistance included farmers making management changes like better grazing management, soil testing, better weed control, improved harvest schedules, successful field renovation, reduced overgrazing and improved pasture quality, greater use of alternative forages, and increased productivity from raised cutting height for faster re-growth. Participants also said farmer clients signed up for technical and financial assistance through EQIP as a result of their educational assistance. Participants estimated financial impacts of the changes farmers made ranged from \$1000 to \$4000 per farm in money farmers saved

and/or generated because of these efforts.

PERFORMANCE TARGET OUTCOMES - FARMERS

TARGET #1

Target: number of farmers who will make a change/adopt of practice:
100

Target: the change or adoption the farmers will make:
100 farmers will adopt integrated weed control and forage management practices that extend the grazing season, decrease herbicide usage, reduce purchased feed inputs, and improve animal performance on 100 acres each (10,000 acres total).

Target: total size/scale of farmers these farmers manage:
10,000

Performance target outcome for farmers narrative:

It was not feasible to formally verify the accomplishment of this performance target. Participants reported more anecdotally rather than quantitatively about changes made by farmers and the estimated benefits of those changes (see above).

Additional Project Outcomes

Additional Outcomes Narrative:

Based on our final evaluation survey with the PDP participants, 82% of the participants said they gained a better understanding of Northeast SARE and 71% gained more confidence to seek out Northeast SARE funding/resources as a result of this project . Three participants applied for and received Northeast SARE grants in 2017 (ONE17-304, ENE17-146, LNE17-355). Below are from additional feedback participants shared about the project:

- Hands-On Professional Development is really important and we should encourage more projects like this.
- Thank you for such great resources that we can use with producers.
- Was *extremely* grateful for the opportunity to learn from all the PI's involved with this project before time/energy and retirement take away more knowledge from the ag community.
- Thanks very much to Sid, Deb, and Rick and all the other participants. It was a very positive experience and one that has helped me a great deal in my career.
- I am now in a management role and will look for these opportunities for my team.

Assessment of Project Approach and Areas of Further Study:

Challenges and Recommendations for Future PDP Programs

Based on mid-program and final survey evaluations, most of the PDP participants seemed to be quite satisfied with the program and were able to achieve their own personal goals in the project. However, one of our biggest challenges (and is probably true for many PDP programs) was the diversity of knowledge and experience amongst the participant group. One of the participants reflected on our post-program survey, "While I was very pleased with all the key people in the program, this did not serve MY needs. I had understood that this would be for people with little experience in the field. As it turned out, those who applied to the program were all quite experienced already. I needed to start from square one, and because of the other participants, it was clear to the educators that it would not make sense to do that, which is understandable."

Based on both the participant feedback and our own reflection of the project, the following recommendations we would make for future similar programs:

- In-person field training - This was the most critical aspect of the project. Our trainings were a two-day, overnight intensive utilizing inside training in the evening and on-farm training during the daylight. We thought it was important to get everyone together quickly, so our first training was within a couple months of identifying our participants. First, participants and instructors were able to get to know each other in a working and social environment. Second, since plant identification was a key part of our training, this was an excellent way to get initial "hands on" training. It also gave us a chance as a group to discuss future trainings and needs for the group. Our second training was the next year and the time was targeted for June in order to catch grasses while in seedhead stage for easier identification. Most of the second in-service focused on pasture evaluation and management since the majority of participants had requested this topic. We visited three diverse grazing farms (a large organic dairy, a small grass-fed organic dairy, and a sheep operation) and got the farmers perspective on managing these types of systems. *As a recommendation*, we would definitely continue the in-person training model for this type of PDP program in order to incorporate group activities, farm visits, meeting other professionals, and hands-on activities. We would make two improvements to the in-service experience: 1) offer a pre-training webinar to go over what the participants can expect to see and learn, and 2) offer "required" reading and/or on-line lectures to prepare the participants for specific training. This may help the most novice participants to "catch up" with the more experienced ones.
- Monthly webinars - We offered monthly webinars during the fall and winter months. This was a way to keep in touch with the participants and focus topics that they had requested with more depth. Most of the webinars were presented by the co-PI instructors as well as a couple guest speakers. The webinars provided flexibility for the participants since they were posted on

uTube for later viewing by those that could not make the “live” session. As a *recommendation*, we would definitely continue the webinar training model for this type of PDP program.

- Required interaction with farmers - as part of the initial agreement to take part in this program, participants agreed to work with at least five farmers per year utilizing the knowledge and experience they gained from the program training. We initially suggested that the participants conduct case studies for each farm; however, it became obvious to us that the approaches needed varied depending on the specific duties and organizations of each participant. So, we modified the “case study” concept to farmer “interactions” which could include one-on-one visits, workshops, farm demonstrations, or farm tours. The key was that participants were using their new knowledge and experience to work with farmers in making changes and improvements for the farm. As a *recommendation*, we would definitely continue this activity in any future PDP program. However, we would develop a better tracking tool that participants would be required to use (who, what, when, where). We could then do an annual summary to report to the participants (for inspiration and guidance) and as a reporting mechanism for annual SARE reports.
- Professional Meeting - Although not in the original plan, we also think giving the participants an opportunity in 2016 (after much of our training was complete) to attend the Northeast Pasture Consortium to broaden their network of professionals who work in the area of pasture and forage management. Of the 13 that attended, they all felt it was a good opportunity for their training. As a *recommendation*, we would definitely continue the professional program aspect. However, to enhance the outcome of this activity, we would discuss this at the onset of the program and perhaps suggest a selection of programs that participants could choose from to attend (provide a stipend to attend one). We would want these to be “professional meetings” and not just normal conferences or CCA trainings per se.
- Minigrants - This was an activity in the last year of the project that was not in the original plan. The idea was to provide a small amount of funding so participants could have some resources to run their own program such as a workshop, field day, farm demonstration or farm tour. They were required to write and submit a minigrant providing details and a budget of their proposed program. Since this was not part of our initial plan and was only introduced to the participants via email later in the project, we only had 10 applicants and only four followed through for funding requests. As a *recommendation*, we would definitely continue the mini-grant program. However, to enhance the outcome of this activity, we would inform participants at the onset of the program so they would have more time to formulate a plan for implementation.

Information Products

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