NCR-SARE 2022 Call for Proposals

Graduate Student Grant Program

We use an online submission system.

Go to projects.sare.org

Proposals with authorized signatures must be submitted online by 4:00 p.m. CDT, April 7, 2022.

You must upload a copy of the application signoff page with required institutional signatures (authorized organization representative and your advisor) with your submitted application. Allow sufficient time to print the draft of your application with the application signoff sheet, and submit it to your grants office for review and signatures; then upload the signed page as the final attachment and submit electronically, prior to the deadline.

Copies of these instructions can be downloaded from the North Central SARE website at www.northcentralsare.org as a PDF or Word file. If you prefer a printed application, call 612.626.3113.

Graduate Student grant program proposals must be submitted online at projects.sare.org. The online application interface has strict word limits.

North Central Region SARE 2022 Call for Graduate Student Proposals¹

NCR-SARE and the 2022 Call for Proposals

SARE is the Sustainable Agriculture Research and Education program, a competitive USDA NIFA grants program funded by Congress. The North Central region (NCR) includes: Indiana, Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, Ohio, Nebraska, North Dakota, South Dakota, and Wisconsin. NCR-SARE strengthens communities, increases farmer/rancher profitability, and improves the environment by supporting research and education. Learn more about SARE at www.sare.org.

The Graduate Student Grant Program is one of six NCR-SARE grant programs. The Graduate Student Grant Program provides funds to students enrolled in graduate programs or in veterinary medicine residence programs at accredited colleges or universities who are exploring some aspect of sustainable agriculture as part of their educational program. **Proposals must be written by the student** who will coordinate and conduct the project, with input from their major adviser. The project must primarily benefit the North Central Region.

In 2022, \$300,000 will be available to fund about 20 grant projects. Individual grants are for \$15,000 total, and can fund projects lasting up to 36 months. We received 57 applications in 2021 and funded 24 projects averaging \$14,500, with durations ranging from 12 to 36 months.

Qualifications

The student must be officially registered as a graduate student or resident (according to their institution's requirements) at the time the project begins.

A student is allowed to receive only one NCR-SARE Graduate Student grant during their student career.

Proposals must be submitted online by 4:00 p.m. CDT Thursday, April 7, 2022. Proposals will be reviewed by the NCR-SARE Graduate Student Review Committee, which will provide recommendations to the NCR-SARE Administrative Council. The Review Committee's selection criteria are listed toward the end of this Call for Proposals. Funding decisions will be made by the NCR-SARE Administrative Council in July. All applicants will be notified about the status of their proposals in August 2022. Project funds will be available September 1, 2022.

¹ This Call for Proposals is available in electronic (word processing) format on the web (http://www.northcentralsare.org/) or from the NCR-SARE office. E-mail ncrsare@umn.edu or call 612-626-3113 to ask for an electronic copy.

Desired Outcomes for 2022 Graduate Student Projects

Proposals need to address sustainable agriculture issues of importance to the North Central region.

SARE funds applied projects that engage farmers/ranchers. NCR-SARE strongly encourages having farmers, ranchers, local organizations, or others who will use or benefit from the project involved in its planning, design, and implementation. This participation enhances the relevance and impact of a sustainable agriculture research or education project.

Successful projects should contribute to all three of the following NCR-SARE broad-based outcomes:

- Improving the profitability of farmers/ranchers and associated agricultural businesses.
- Sustaining and improving the environmental quality and natural resource base on which agriculture depends.
- Enhancing the quality of life for farmers/ranchers, rural and urban communities, and society as a whole. (See the resource Understanding and Measuring Social Sustainability on the SARE website.)

Proposals should clearly explain:

- Expected outcomes for the project and how they will assist NCR-SARE in working toward the broad-based outcomes listed above.
- How progress toward project outcomes will be evaluated.
- Expected impact on farmers/ranchers, communities, and society as a whole.

We have a strong commitment to diversity. We encourage projects that either involve minority-serving institutions and non-profits (including 1890 colleges, 1994 colleges, and Hispanic-serving institutions) or in other ways include work with historically-underserved audiences. We also encourage projects that, where feasible, include activities addressing the social dimensions of sustainability.

Use of Funds

NCR-SARE funds **MAY** be used for the following purposes:

- Supplies, including software.
- Labor (this includes wages or salary and benefits, other than tuition, for the student or other individuals working on the project).
- Special reference books not readily available.
- Farm equipment rental or operating charges.
- Travel and per diem necessary for the project (use your university rules for travel expenses).
- Payments for project participants (especially farmers and ranchers) who aren't drawing salaries or wages from an employer while they're working on your project.

SARE limits indirect costs to 10 percent of the total direct costs provided under each award.

Note that this a change from previous years. When preparing budgets, you should limit your request of the recovery of indirect costs to the lesser of your institution's official negotiated indirect cost rate or the equivalent of 10 percent of total direct costs awarded.

NCR-SARE has determined that NCR-SARE funds **MAY NOT** be used for the following purposes:

- Payment of tuition.
- Purchase of books used in the student's courses.
- Printing or copying of a thesis or final project paper.
- Permanent capital improvements (e.g., land, buildings, etc.).
- Purchase of motorized vehicles.
- Equipment (see note in budget section)

How to Prepare Your Proposal

On the following pages are the questions you will be asked on the online submission website at projects.sare.org. If you would like additional information about preparing a proposal, you can <u>view a presentation here</u>. We suggest you complete a draft proposal in a word processing document and edit to meet word limits, then cut and paste into the online system. If your information for a given section exceeds the word limit for that section, you will receive an error message and be required to shorten that section before successfully saving. Tables and images can be embedded in certain sections but limit to crucial information.

Project Coordinator Information:

The first time you register in the SARE projects system you will be required to provide individual and organizational contact information. You will also be asked to provide demographic information. The SARE program is committed to an ethic of openness, inclusiveness, and diversity in all of its programs, policies, and procedures. To monitor our performance in these areas, we collect demographic information from grant applicants the first time they register in the SARE application system. Demographic information is not linked to your individual proposal and is compiled in a separate database. Submission of the requested information is voluntary.

You must respond to each question, but each question has a "prefer not to answer" option.

Cover:

Complete general information. Your project cannot start before September 1, 2022.

- **Faculty Adviser Information.** A faculty member (often the student's major professor) should be available to advise the student on research, education, and project budget issues. Also, since many universities only allow faculty members to submit external grant proposals, we require the signature and contact information for the student's adviser on the project.
- Work Location. Provide an address for the principal location where the work proposed will take place. Include city, state, and 5+ postal code. (Please enter one location, even if work will take place at multiple locations.)
- **Resubmission?** Did you submit this project as a proposal in a previous year?
- Will your proposed research/outreach primarily focus on historically-underserved² farmers/ranchers? If so, please indicate target audience and how they will be engaged in the project.
- Systems Category. Select the ONE Systems category that best represents the project from the following: Animal Production—including aquaculture and apiary; Crop Production; Education & Training; Energy; Farm Business Management; Natural Resources/Environment; Pest Management; Production Systems; Soil Management; Sustainable Communities
- Commodity Category. Indicate the ONE commodity category that best represents the project from the following: Agronomic; Fruits; Nuts; Vegetables; Other plants (herbs, natives, etc.); Animals; Animal Products; Misc. (mushrooms, syrup, other), This project is not commodity specific or doesn't apply to commodities.

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² USDA defines historically-underserved audiences to include socially-disadvantaged producers, limited-resource producers, beginning farmers/ranchers, and veterans. They further define socially-disadvantaged farmers and ranchers as belonging to the following groups: American Indians or Alaskan Natives, Asians, Blacks or African Americans, Native Hawaiians or other Pacific Islanders, Hispanics, and women.

Body of Proposal

Word limits are meant to be generous, knowing that different proposals will require more detail in different areas. Be concise.

Summary (400 word limit)

The Summary should concisely convey information about your project. The Summary should include the project title, an abbreviated version of the project outcomes, and very brief summaries of the context, approach/methods, and evaluation plan. State how the outcomes are expected to have relevance to farmers/ranchers.

Impact on sustainable agriculture in the North Central Region: (Note to AC—this section moved to beginning of body of proposal as suggested by Grad Student Review committee Even if your project focuses mostly on one aspect of sustainability, consider and explain how it contributes to the other two aspects of sustainability. In other words, how will the work affect the whole system, economically, environmentally and socially? If your project does not address the specific aspect, note that in the space provided.

Explain how your project will improve the profitability of farms and/or associated agricultural businesses. (75 word limit)

Explain how your project will sustain and improve the environmental quality and natural resource base on which agriculture depends. (75 word limit)

• Explain how your project will enhance the quality of life for farmers/ranchers, communities, and society as a whole. (75 word limit) (See the resource <u>Understanding and Measuring</u> Social Sustainability on the SARE website.)

Outcomes (250 word limit)

Provide a brief narrative that lists learning and action outcomes expected from your project activities. Learning outcomes include changes in the knowledge, awareness, skills, and attitudes of the audience that you are trying to reach. Action outcomes include changes in the behavior or practices of this audience. Discussion of expected outcomes should specify the audience that is likely to experience change as a result of the project. Outcomes should be specific, clear, and measurable. Include your expected outcomes in the Summary Table of Outcomes, Inputs and Activities, Outputs and Evaluation.

For more information about defining outcomes for your proposal, see the presentation on preparing a graduate student grant on the North Central SARE website.

Statement of Problem, Background, Justification (1000 word limit)

Explain the issue being addressed. Provide background information justifying the need for the proposed project. Address how this project builds on past work and research, or how it is new and different from what's been done. If farmers have provided input or identified the problem, please describe how. Indicate why your project outcomes will be important and timely. Do not expect reviewers to look up information on websites—include critical supporting information in your proposal. NCR-SARE project proposals are evaluated on their relevance to sustainable agriculture in the North Central region, the potential for impact in our region and the suitability of the approach to the problem. If your project will use genetically engineered varieties or organisms, state how their use will contribute to your project and make agriculture more sustainable. Incorporate in this section a brief review of pertinent literature and of relevant SARE

projects. Search the SARE database of project reports for projects that are relevant to your proposal (see http://mysare.sare.org). You may list literature cited at end. Literature cited is included in word limit, so use simple, consistent formatting.

Approach and Methods (1000 word limit)

List the general approach, activities, methods, and inputs you will use to achieve the proposed outcomes. Describe your research objectives, what you will measure and how. Explain how the methods used will address the problem and meet your objectives. **It is important that you describe how you will involve farmers/ranchers or other end-users**, any multi-disciplinary or multi-institutional partnerships, and your systems approach. NCR-SARE strongly encourages having farmers, ranchers, local organizations, or others who will use or benefit from the project involved in its planning, design, and implementation. If you indicated that you would be targeting historically underserved farmers/ranchers, please describe how they will be engaged in the project.

You may briefly cite critical references at the end of this section. Literature cited is included in the word count.

Outputs (250 word limit)

Describe the products (e.g. refereed papers, extension publications or other educational materials, completed workshops or field days with expected number of participants, etc.) of your project that will help achieve the expected outcomes. Include phrases describing the outputs in the Summary Table.

Outreach (250 word limit)

Explain how you plan to inform others about the results of your project. Make the case for your project's outreach and publications, describing who will benefit from your project results and why. Describe any anticipated publications that will describe the results of the project other than your thesis.

Evaluation Plan (250 word limit)

Provide your plans for evaluating the project or progress toward expected outcomes. Note that this is not referring to evaluating research objectives, but to evaluating the impact of your outreach efforts. Will your target audience increase their knowledge, awareness, skills or attitudes, or will they change what they do as a result of your outreach? How do you know? See the Logic Model appended to this Call for Proposals. Include a brief summary of evaluation plans in the Summary Table.

Evaluation and Reporting Requirements: Please review the documents in Appendix A to strengthen your proposal and to understand what will be expected of you and your project team if you are awarded a grant:

* The SARE R&E Logic Model outlines what SARE hopes its project investments will achieve in terms of who is participating, what are the outputs, what outreach is done and what participants learn, do, or improve—at least in part—due to the project.

*The *Grantee Reporting Expectations Matrix* shows what results you report on during the project and what SARE may assess two to four years after the project's completion.

Summary Table of Outcomes, Outputs, Activities, Inputs, and Evaluation

Summarize key information from your project in a table with the following column headings: Expected Outcomes, Outputs, Activities, Inputs and Evaluation/Monitoring Plan. Please limit the table to one page (the front side of one sheet of paper). Attach as a pdf, Word file or Excel spreadsheet (.pdf, .doc, .docx, .xls, or .xlsx)

Sample:

Expected Outcomes	Inputs and Activities (What you're investing)	Outputs (What's produced—information products)	Evaluation/Monitoring Plan; Measurement Methods
Learning Outcomes: Action Outcomes:			

Experience and roles (1000 word limit)

Briefly describe the role of your advising professor in the project, their background and expertise, and then describe your experience relative to the project, your role in the project, and how the project relates to your thesis or dissertation. If the work proposed here is part of a larger project, be clear about what aspects this funding is supporting. Describe your access to the required resources such as labs, equipment, greenhouses, field plots, etc., to carry out this work. List other individuals or organizations involved in your project, and their roles.

Budget and Budget Justification (no word limit)

Provide a concise budget with proper justification that is appropriate to the proposed project. Use these major categories, (personnel, supplies and materials, travel, printing and publications, other direct costs, and indirect costs). Note that you can enter multiple items for each budget category. Your budget line items should be for the total project period, rather than broken down by year. Only include funds requested from SARE in this budget.

For each item in your budget, provide justification and show how you computed the expense by giving a unit cost times some quantity. The budget justification entries must add up to be the budget line request. For example if, under materials, you are proposing to buy landscape cloth, your justification budget line should specify how much and cost per unit ("Landscape cloth, 3' X 250' @ \$92 each, four rolls, \$368"). Show personnel costs—your time, or the time of any collaborators—either as an hourly rate times anticipated time needed to complete the project or as a percentage of FTE times the relevant salary. Provide narrative explanations for labor needed and for purchases. For travel, specify the purpose of the trip. Foreign travel is generally not allowed in this grant program. Tuition reimbursement is NOT allowed in the SARE Program. SARE limits indirect costs to 10 percent of the total direct costs funds provided under each award. When preparing budgets, you should limit your request of the recovery of indirect costs to the lesser of your institution's official negotiated indirect cost rate or the equivalent of 10 percent of total direct costs funds awarded.

NCR-SARE does NOT require matching funds. Equipment that will outlast the project is generally not allowed in this grant program. Equipment rental is allowed.

Past, Current, and Pending SARE Projects

Attach a table that lists the principal investigators, titles, project dates, amount, and project number (for past and current SARE projects) for any grants that the student and/or faculty adviser have received from SARE and other agencies for similar work. (Remember that a student is only allowed to receive one Graduate Student Grant in their student career.) Also, please list any SARE proposals that are pending (submitted, but you have not been notified about funding), including other proposals that are being submitted in response to this year's NCR-SARE Calls for Proposals. The purpose of this requirement is to let reviewers know what experience the student and/or faculty adviser have with SARE and whether they have time to commit to this project. If the student and/or faculty adviser have a current and pending support form that has been used with other proposals and includes non-SARE projects, then you may submit that form as an attachment.

Response to Reviewer Comments (for previously submitted proposals only)

(400 word limit)

Indicate whether this idea has been submitted to NCR-SARE before and if so, when. Respond to reviewer comments from previous preproposal or proposal reviews. Indicate how you changed, or decided not to change, your project in response to reviewer suggestions

Letters Verifying Participation

Include letters from collaborating organizations and from individuals who will be participating in the project that indicate the nature of their participation and their agreement to participate. Letters from participating farmers/ranchers are helpful, but not necessary as long as you have some documentation of their commitment. Letters of support from parties not directly involved in the project are not required. Letters that are not provided as attachments here and are received separately will not be seen by reviewers. You can attach multiple letters to this section.

Animal Care and/or Human Subjects Documentation

If your project involves animals or human subjects and if you needed to have your proposal reviewed by an institutional animal care and use committee (IACUC) or institutional review board (IRB) before you submitted the proposal to NCR-SARE, please attach copies (pdf, image file). Most projects that will need these documents before starting will wait to obtain them until they are awarded the grant.

NCR-SARE needs to document to NIFA that all projects that we fund meet USDA animal care and human subject standards, and copies of your institution's approval forms will help us do that. If your proposal is selected for funding and your project would involve animals or human subjects, but your institution doesn't have some type of approval committee, the University of Minnesota's committee may examine your proposed protocol before the University of Minnesota issues a subcontract. Final approval by an IRB or IACUC is needed before a subcontract can be issued.

Obtaining Required Signature:

Once you have completed all required information and uploaded all necessary attachments, print a draft copy of your proposal and print the Application Signoff Sheet (download from link in the instructions for that question in the Body section of the application.) You and your faculty advisor must sign the Application signoff sheet and submit it to your grants office for an authorized organization representative's signature. You will need to obtain a pdf of the signed Application signoff sheet to upload with your proposal as the final step prior to submitting your proposal.

Once your submission is complete, you will be directed to a web page that states your proposal was submitted to NCR SARE and specifies the date and time of submission. You may "unsubmit" your proposal to make changes, but MUST resubmit prior to the deadline!

Post Submission Survey:

After the application is closed, registrants will be directed to a survey seeking feedback about the application process. Since the online application process is new, we are especially appreciative of your time to let us know what works and what needs to be improved. Your comments are compiled separately from your proposal and not connected to your contact information.

Proposal Development Tips

Involve farmers/ranchers or end-users! Farmers/ranchers and/or other end-users of information should be involved in ways that are appropriate for the project. For some types of projects, farmers/ranchers might be involved in all phases of development of the idea through planning, conducting, and/or evaluating the project. For other types of projects, farmers/ranchers might be heavily involved in identification of the problem and possible solutions, but they might be only minimally involved in conducting the project. Farmers/ranchers and/or other end-users should be appropriately compensated for their involvement in the project.

Follow budget guidelines. Make sure that you and/or your university accounting personnel follow NCR-SARE budget guidelines. **NCR-SARE funds cannot be used for tuition** and using funding for equipment that lasts beyond the project requires special approval.

Submit your proposal online by the deadline, 4:00 CDT, April 7, 2022.

Final Report and Publications Requirements

Grants are awarded to the student applicant's university or other organization specified on the Cover Page (Primary Grantee), with the funds to be dedicated to the student's project.

If you submit your grant proposal to another funder and are funded for the same work as in your Graduate Student proposal, you must notify NCR-SARE.

Funds are transferred from the host institution for the NCR-SARE program to the Primary Grantee on a reimbursement basis. The Primary Grantee sends invoices to the host institution after the project has incurred expenses. The host institution is authorized to withhold payment of invoices for your project until you have submitted all reports and other required documents. Instructions for completing annual and final reports will be sent to the student listed on the proposal cover page.

Proposal Review

The Graduate Student Review Committee will evaluate proposals for technical merit and relevancy of the project to sustainable agriculture and NCR-SARE criteria. This Committee will make recommendations to the NCR-SARE Administrative Council, which will select projects for funding at their July 2022 meeting. The AC is responsible for ensuring that the selected projects reflect not only scientific merit, but include projects from as many priority areas as possible, from across states, institutions, stakeholder groups and NGOs. In short, the AC looks to approve a diverse and inclusive set of funded projects each year. Applicants will be notified about the status of their proposal in August, 2022. Projects selected for funding will have their budgets reviewed for compliance with federal and host institution guidelines prior to subcontracts being executed.

Criteria for Proposal Review

Reviewers and the Administrative Council will consider the following factors in evaluating proposals:

- **Statement of Problem, Background, Justification.** Does the proposal address a clearly identified and compelling problem or need? Is substantiating data provided (references and statistics included where appropriate)? Do they explain how this project builds on past projects and research, or how it is new and different from what's been done? Does the project propose a solution that is likely to yield outcomes that will positively impact the sustainability of agriculture in the North Central Region? Specifically, does it address NCR-SARE's broad-based outcomes?
- **Approach and Methods.** Are objectives/outcomes clearly defined, with methods and experimental design suited to achieving the research objectives and project outcomes? Is the budget appropriate for what is to be done?
- **Outreach.** Is the outreach approach developed for the project clearly described and well thought out? Are learning experiences and activities planned so as to engage the target audience?
- **Project Team.** Does the proposal describe the key people in the project and their relevant experience, including their commitment, expertise, and ability to see the work through to its conclusion? Are farmers functional participants? Were farmers involved in inception of the initial idea, or through implementation of the project, and into any outreach plans? Is there a plan for working together? Does the plan fit the project?
- **Evaluation.** Is the evaluation plan for the project outcomes clearly described and well thought out? Measurable and realistic?

Resources for Background Information for Proposals

The **NCR-SARE** office can share information and resources from SARE Outreach, plus contact information for state SARE Coordinators. Contact info for State Coordinators can also be found on the NCR-SARE website at: https://northcentral.sare.org/state-programs/state-coordinators/

Contact: North Central Region SARE, 120 BioAgEng, UMN, 1390 Eckles Ave, Saint Paul MN 55108, phone: 612-626-3113, e-mail: ncrsare@umn.edu, web: www.northcentralsare.org.

Appropriate Technology Transfer for Rural Areas (ATTRA) will provide information packets on various agricultural issues. If you are contacting ATTRA via e-mail, please provide your role in sustainable agriculture. By mail or fax, please include "ATTRA Information Request" near the top of the correspondence. (Preferred method of contact is telephone.) Contact: ATTRA, P.O. Box 3657, Fayetteville AR 72702, phone: 800-346-9140 (7 am to 7 pm, Central Time), fax: 501-442-9842, web: http://www.attra.ncat.org.

Contact Beth Nelson, NCR-SARE Coordinator, with questions (e-mail: bethnelson@umn.edu or phone: 612-626-4436).

Special Notes

The U.S. Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, and marital or familial status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audio tape, etc.) should contact the USDA North Central Region SARE program at 612-626-3113 or ncrsare@umn.edu.

The North Central Region SARE program considers all funded proposals and subsequent reports and related information to be in the public domain. Names, addresses, and telephone numbers of project coordinators (from funded projects) may be provided to interested news entities, farmers, ranchers, or others for subsequent inquiries. Proposals are used in the peer review process and submission to the program establishes consent by the author for appropriate distribution to fulfill review requirements.

SARE Graduate Student Grantee Reporting and Evaluation Expectations

		Time of Collection/Measurement and Reporter/Collector	
Logic Model Category	Performance Indicators	During and End of Project (Grantee Reports)	Post Project (SARE Collects from <u>S</u> tudent and/or <u>A</u> dvisor)
Participants	Number of farmers/ranchers participating in research Number of farmers/ranchers reached through	✓ ✓	
	presentations or educational events	(optional)	
Activities	Number and type of outreach activities conducted to share project results	*	
Products	Research results of the project	√	
	Number journal articles, in press or published	√	√S, A
	Number and types of other, non-refereed outreach publications	✓	√S, A
Action	New collaborations as a result of project (by graduate	✓	√S, A
Outcomes	student and/or advisor)		
	SARE grant leveraged another grant (by graduate student and/or advisor)	√	√S, A
	Number of citations of project results		√S, A
	Sustainable agriculture career choices made as a result of the project?		√S

SARE Logic Model – Research and Education (R&E) program

Process

1.Inputs & Activities

2. Participants

3. Outputs 4. Learning

5. Actions 6. Conditions

SARE's R&E program provides these Inputs:

- 1.1 Funds for Grants
- 1.2 Administration
- 1.3 Applicant Guidance
- 1.4 Proposal Review

to support the following Activities:

- 1.5 Integrated Research and Extension projects
- 1.6 Extension education about R&E research project findings
- 1.7 Extension education about other research-based sustainable agriculture practices, strategies, approaches
- 1.8 On-farm problemsolving, testing and demonstrations
- 1.9 Graduate Student research

Who's involved as target audience and partners:

- 2.1 Primary:
- Farmers & Ranchers
- 2.2 Secondary:
- Scientists, University faculty
- Extension educators
- NGOs
- Technical Service Providers, NRCS, ARS, EPA and others involved in sustainable agriculture
- Grad students
- Other stakeholders in the food system, including consumers
- Policy and decision makers, advocates

What's produced:

- 3.1 Information on sustainable ag systems, practices, and principles
- 3.2 Information about new, innovative principles, methods, technology
- 3.3 Educational programs including farm tours, field days, workshops, webinars
- 3.4 Extension curricula
- 3.5 Decision-making tools
- 3.6 Extension publications
- 3.7 Scientific journal articles
- 3.8 Dissertations, theses, presentations
- 3.9 Reports, bulletins, white papers

What participants learn; how many learn:

- 4.1 Increased knowledge of sustainable ag principles, systems and practices, technologies and approaches
- 4.2 Increased skills in applying new sustainable ag knowledge
- 4.3 Increased understanding of health, safety and environmental impacts of food choices
- 4.4 Increased knowledge of barriers to, or opportunities for, sustainable ag adoption
- 4.5 New knowledge, skills and leadership capacity among farmers and future ag professionals
- 4.6 Awareness of new alternative ag practices

What participants do; how many act:

- 5.1 Farmers and Ranchers adopt new sus ag principles, systems, practices, technologies.
- 5.2 All ag professionals incorporate sustainability principles into future work.
- 5.3 New research that builds on previous SAREfunded R&E projects.
- 5.4 Research results are incorporated in future extension publications and NRCS Field guides
- 5.5 Non-farm stakeholders in the food system support sus.ag through purchases, policy change or food chain improvements.

What benefits result:

- 6.1 Increased market and employment opportunities in agriculture
- 6.2 Improved economic well-being for farmers and ranchers
- 6.3 Better quality of life for farmers, ranchers and rural communities
- 6.4 Improved environmental stewardship and quality
- 6.5 More efficient use of nonrenewable resources and onfarm resources
- 6.6 Increased access to healthy, affordable foods.
- 6.7 Increased institutional and professional inquiry into issues of long-term sustainability