

# 2013 Farmer/Rancher Grant Proposal

**Project Title:** (This lets reviewers know what your project is about – be descriptive but not too wordy. Use words that are useful for finding your project in a website search.) Growing hydroponic fodder for dairy goats on a limited acreage farm.

**One Sentence Description of Project:** (This will be posted on the SARE website if your project is selected for funding.) This project investigates the practicalities of small scale dairy goat farmers with small acreages feeding dairy goats naturally with fresh hydroponically grown fodder year round.

**Project Leader:** Linda M. DuShane

**Address, City, State Zip Code:** 7360 Hwy 150, Lynn Center, IL 61262

**Phone:** (309) 781-3994

**E-Mail:** lindadushane@heartquestgoats.com

♦ **Is the applicant a Farmer/Rancher?** Yes X No \_\_\_\_\_

(You must be a farmer or rancher to apply. A farmer/rancher is someone who raises crops or livestock, especially as a business. Beginning farmers are eligible to apply.)

♦ **Is this an Individual** X, **Partner** \_\_\_\_\_, **or Group** \_\_\_\_\_ **Project?**

♦ **If funded, you have up to two years to complete your project. Do you expect your project to take one-year** 16 months **or two years** \_\_\_\_\_? **This information helps reviewers evaluate the feasibility of your project.**

♦ **Grant Funds Requested:** \$ 7,500 (Do not exceed \$7,500 for Individual grants, \$15,000 for Partner grants, or \$22,500 for Group grants.)

♦ **Have you previously received a SARE Farmer/Rancher Grant?** Yes \_\_\_\_\_ No X

o **If you received a SARE grant(s) in the past or have a current grant, list the project number(s) on a separate sheet along with a brief summary of your results or progress (for current projects). Use no more than ½ page for each grant summary.**

o **If the project was not completed, explain why not in the summary.**

♦ **Does this project involve livestock?** Yes X, No \_\_\_\_\_. **If yes, fill out the Livestock Care form on pages 18 - 20.**

**PROJECT CATEGORY. This helps us sort proposals by topic for the review process.**

Check only **one** category which best represents this project.

**X Integrated Crop & Livestock System**

Crop Production

Animal Production

Pest Management

Other \_\_\_\_\_

Energy Conservation & Renewable Energy

Economic/Marketing

Community Development

Quality of Life       Soil Management

Natural Resources/Environment

**1) Describe your farm/ranch and include the size of your operation, crops grown, etc. Briefly explain your background so reviewers know what qualifications you bring to the project.**

The farm is five acres and is located about 30 miles south of the Quad Cities, on IL Hwy 150. My main purpose with the farm is to raise and breed dairy goats. I currently have about 70 dairy goats, including alpine, lamancha, saanen and toggenburg breeds. I breed for milk and show, and have some extremely productive lines. I have been raising, showing, milking and judging dairy goats for over thirty years and am now a lifetime member of the American Dairy Goat Association (ADGA). I judge goats at 4-H and FFA events, and I am an active participant in the Heartland Dairy Club.

On the farm is a 130 year old farm house, a barn with milking parlor attached and some other out buildings, including the one designated for the hydroponic fodder system. I have limited land for pasturage, and rely on purchased feed and hay for feeding the goats. I purchased the five acre farm and farm house in 2002 and have spent a considerable amount of money to rescue it from the dilapidated condition it had been in for years. Over time I acquired the goat herd that I now have.

I have been a license practical nurse for over 40 years and continue to work as an LPN on a part time basis. My nursing experience began in the US military, where I was a chief ward master of multiple clinics and hospitals during a 30 year stint. My duties included teaching of pre-trauma hospital procedures to 90 students a year. I am trained in EMT and have a B.A. In Human Services.

Recently I have acquired training in hydroponic methods and I have a small scale hydroponic fodder system that provides a small portion of my feed needs.

**2) PROBLEM/SOLUTION. Describe the problem you hope to solve with your project. Explain why solving this problem is important to your farm/ranch and to other farmers/ranchers in your area and the North Central Region. Provide a detailed description of the innovative research, demonstration, or education project you propose. Describe the sustainable agriculture solutions you will test to solve the problem.**

Small dairy goat farms – those with limited acreage – need to supply feed and hay from sources external to the farm. Less expensive feed and hay are not natural: they are created from pesticide impacted sources, and even from sources that are impacted by genetically modified organisms (GMO). Those sources are not suitable to a dairy farmer who wants to provide organic foodstuffs for dairy goats. But, providing organic (or pesticide/GMO free) food for a small acreage goat farm is very expensive and that puts the dairy goat farmer under severe financial pressures. The drought conditions of the summer of 2012 reduced the availability of grazing land, and increased prices of feed and hay, One of the goals of this project is to show that dairy goat farmers can be much more weather independent.

Growing foodstuffs hydroponically is a way of providing organic (or pesticide/GMO free) food for a small acreage goat farm. A hydroponic setup can produce the same amount of organic (or pesticide/GMO free) foodstuffs, in the form of sprouted grains, that would otherwise take many acres of land. And, the sprouts can be produced all year long. This has a number of

sustainability implications. Dairy goat farmers who can grade-A milk, fudge and cheese from non-GMO and non-pesticide fed goats. This would let the become part of organic and natural food markets.

My initial figures show that it costs \$94.00 per day for organic feed and hay suitable for 60 goats. 1.5 lbs of feed and 3 lbs of hay are needed per goat per day. These are based on the prices of November, 2012 obtained through researcher with suppliers of organic feed and hay. For those 60 goats, the cost of conventional feed and hay is \$47.00 / day, based on my current sources. There some daily labor costs involved with these methods, about \$5.00

For the hydroponic system fodder, the cost of organic wheat, soybean and sunflower seeds per day will be \$13 / day to grow enough sprouts for 60 goats. I estimate we will feed 2 lbs of sprouts per goat per day. Wheat sprouts will account for about 70% of the fodder. Labor costs for operating the system will be \$15/day, and additional organic hay, low quality, will be used for the goats to chew if they desire. That is expected to add \$6.00 to the cost per day, for a total fodder system cost of \$34/day compared with \$52/day for conventional foodstuffs and \$99/day for organic foodstuffs.

**3) TIMELINE. Provide a timeline for your project. List the activities you will complete and when. Be as detailed as you can.**

<b>Month</b>	<b>Activities</b>
1	Purchase, Install and Test Hydroponic System
2	Test Hydroponic System Veterinarian evaluation of goats
3	Utilize Hydroponic System for Fodder Production - daily harvesting of the sprouts and feeding to the goats (for all remaining months)
4	Website publication of progress of system, including metrics of costs, photos, videos (for all remaining months)
6	Hold first workshop about hydroponic system
8	Veterinarian evaluation of goats
9	Hold second workshop about hydroponic system
13	Hold third workshop about hydroponic system
15	Veterinarian evaluation of goats Hold Conference
16	Write up final report

**4) PREVIOUS RESEARCH. Describe the research that has been done by others on your topic, including previous SARE grant project research. How will you build on this work (rather than just repeat it)?**

**RainFresh Harvests Year-Round Food Production System for Central Ohio**  
<http://mysare.sare.org/mySARE/ProjectReport.aspx?do=viewRept&pn=FNC04-510&y=2004&t=1> SARE funded grant using hydroponics to produce food year round. Overall, the researchers found there was a very high interest of local farmers in year round food production.

**Growing hydroponic fodder for cattle consumption**  
[http://www.farmtek.com/farm/supplies/ExternalPageView?pageKey=EXTERNAL\\_PAGE\\_4028](http://www.farmtek.com/farm/supplies/ExternalPageView?pageKey=EXTERNAL_PAGE_4028) Farm-Tek fodder system testimonial The cow dairy farm was able to reduce their dry matter cost per cow and noticed improved milk production. They prefer the feed their cows with fresh greens for nutritional reasons.

**Using Hydroponic Green Forage to Reduce Feed Costs in Natural Pork Production**  
<http://mysare.sare.org/mySARE/ProjectReport.aspx?do=viewRept&pn=FNC09-786&y=2011&t=1> SARE funded research using hydroponics for feeding hogs. These researchers found that "implementing a hydroponic forage production system has also allowed us to substantially reduce our feed outlay and has allowed us to remain competitive in a market with diminishing margins." Their hog raising operation had found that natural feed mixes were too expensive.

**FodderTech - The Future of Farming** <http://www.foddertech.com/>  
This website discusses the advantages of sprouts, and the importance of fresh feeding for livestock. Some advantages are: High digestibility, Vitamins & mineral saturation, Omega 3, amino acids, natural hormones

This growing hydroponic fodder for dairy goats on a limited acreage farm proposal looks to apply the lessons of prior research to dairy goat farming. Owners of these farms cannot be profitable, cannot utilize sustainable practices of natural, fresh feed and low environmental footprint, and cannot increase their herds without an economically viable alternative such as the one we propose to research.

**5) OUTREACH.** Each project must include outreach. How will you share information from your project with other farmers and ranchers? Who else will you share information with? Be specific. However you share information (articles, conferences, field days, social media, website, etc.) provide details about when and where you will provide outreach and the audience you hope to reach.

Richard and Dar Knipe, Visiting Extension Specialists, Northwest Regional Office, University of Illinois at Urbana-Champaign 309-428-4749 . They will be our chief ways of communicating the progress and results of the hydroponic project to the Extension offices of the state of IL and to other agriculture contacts they have. They have agreed to be participants in the Conference we hold during the last couple of months of the project.

Larry Tranel (Psy.D), Iowa State Univ Extension, Dairy Specialist, NE/SE Iowa 563-583-6496. He will be our chief ways of communicating the progress and results of the hydroponic project to the Extension offices of the state of Iowa and to other agriculture contacts he has. We will invite him to participate in the Conference we hold during the final months of the project.

FFA, Sherrard High School, Corey Terwilliger, adviser, and club members 309-337-6203. We will organize with him one or two FFA trips to Linda's farm, to see the hydroponic setup. Also, a couple of his students have already decided to make involvement Linda's hydroponic fodder system an FFA project to report on for state and national purposes.

4-H, Mercer County leader, Phyllis Nelson 309-667-2523  
We will organize with her one or two 4-H trips to Linda's farm, to see the hydroponic setup. And we will see if any 4-H students want to report on it at state and national 4-H meetings.

a) Website – will document the progress of the project, showing economics and practicalities of utilizing this system. b) Workshops – at least three during the course of the project, for local farmers, 4-H members, FFA members, and other interested individuals. c) Conference – in the final months of the project, to have Linda relay the findings of the project and to feature other speakers on the topic of sustainability for smaller scale farming.

**6) EVALUATION. How will you know if the solution you propose works and if it contributes to sustainable agriculture? Describe what you will measure to determine environmental, economic, and social (family/community) benefits.**

The chief evaluation of the value of the project will be in the comparison of hydroponically produced sprouts to equivalent organic foodstuffs and non-organic foodstuffs during course of project. We will calculate the costs of seeds used in the fodder system, their weight at time of harvest (after about one week), their sufficiency as food for the goats, and the need for any other type of food – such as hay – to satisfy the hunger needs of the animals once the hydroponically produced fodder is their main foodstuff.

We'll monthly check the prices of organic feed and hay, conventional feed and hay, and compare them with the costs of the hydroponic fodder, plus any other food Linda must use in addition to the fodder. This monthly comparison will be posted on the website for interested parties to monitor.

A secondary evaluation of the project will be milk production. Linda Dushane has quite a lot of experience with the milk production of the goats using conventional feed. She will use that baseline to determine the effect of the hydroponically produced sprouts on how much milk the goats produce.

There will also be an evaluation of goat health prior to the commencement of the project and twice during the project – the middle and the end. A veterinarian will do this evaluation.

We will also track the count of farmers / others who attend workshops or the conference or who visit the farm to learn about fodder system. Statistics about visits to the website will also be tracked.

X Linda M. DuShane, Signature of Applicant (must be a Farmer/Rancher)

**BUDGET, page A** - Please read the BUDGET TIPS and EXAMPLE BUDGET on pages 6-8 before you complete this two-page budget. Be sure to include a brief explanation of how each item relates to the project either by listing the role a person plays in the project or how travel, supplies, etc. will be used to support the project. You may use one extra page for budget justification, if needed.

Under PERSONNEL COSTS, list everyone who is participating or helping you with your project. List each person's, name, address, phone number, email, and role in the project. Include a realistic estimate of the amount of labor and the cost for each participant being paid with grant funds. If participants are not being paid with grant funds, include them but leave the grant funds request blank. **Do not show matching funds**

PERSONNEL COSTS	<i>Grant Funds Request</i>
Laborer to work with setup and use of hydroponic fodder system – 10 hrs/week @\$10 hr = \$6,933 for 16 month project There are several candidates for this work, including one who already does some projects on the farm.	\$3,500.00
To consultant, William Kirby – (309) 428-4749 - to create and maintain website documenting and showing progress of hydroponic fodder system project.	\$1,000.00

BUDGET, page B - Under OTHER COSTS, list all project costs except personnel. Include travel (use \$.555/mile for travel reimbursement), operating costs, supplies, lease of land and equipment, outreach expenses. Grant funds can be used to pay only 50% of equipment, permanent fencing, and perennials (see page 6, The 50% Rule). List these items at the bottom of the page.

OTHER COSTS		Grant Funds Request
Conference costs – refreshments and room rental		\$100.00
Workshop handouts and refreshments (four workshops during project)		\$100.00
Equipment, permanent fencing, perennial seeds and plants. These items are subject to the 50% rule on page 6. Grant funds can be used to pay only 50% of these items.	Total Cost of Item	Grant Funds Request (Must be 50% or less of total cost of each item.)
Fodder-Pro 2.0 Hydroponic Feed System for growing fodder (includes installation)	\$5,000.00	\$2,500.00
Environment control unit for maintaining temperature year round in hydroponic building	\$600.00	\$300.00
(Grant request total cannot exceed \$7,500 for Individuals, \$15,000 for Partners, or \$22,500 for Groups.)	Subtotal from above	\$3,000.00
	Subtotal from pg A	\$4,500.00
	<b>TOTAL Grant Fund Request</b>	<b>\$7,500.00</b>

X Linda M. DuShane , Signature of Applicant (must be a Farmer/Rancher)  
 If you are submitting your proposal by e-mail, scan or type in your signature.

**If your proposal involves livestock (vertebrate animals such as cows, sheep, poultry, fish, etc), fill out this form and return it with your grant proposal. (Use as much space as needed.)**

Please note these questions are written relative to the most common animals used in these projects. If you will use a less common species (fish for example), answer the question relative to your species. For example, for question #3, stocking density for fish would be number of fish per tank, pond, etc.). It is possible that some of the questions in this section might not apply to your particular project. If that is the case, simply record "not applicable" or "NA" as your response. However, we expect to see specific responses to all of these questions for most, if not all, of the projects submitted to NCR-SARE.

1) Please indicate what kind of animals will be involved in your project.

Dairy goats - five breeds

2) Please indicate how many of each animal will be involved in your project.

50 adults and 20 kids

3) Please indicate the source (name and location) from which you plan to obtain animals for your project. If you already own the animals and they are already at the project site, where did you obtain them and how long have you had them?

I have owned the dairy goats for a number of years, and 99% of my current stock is from my breeding efforts.

4) Will you be using money from NCR-SARE to purchase animals?

No.

5) What is stocking density (space per animal)? Please provide a response for all forms of housing (pens, feedlots, pastures, etc.) that will be used in this project.

There is one large barn , 75 feet by 150 ft. I have a large steel building (21' by 70') for birthing and housing. I have 8 pens equipped with huts for breeding and isolation, and 50' by 100' Quonset hut. I also have six pastures which total about four acres.

6) Describe the housing or shelter available for the animals in normal and inclement weather.

In normal weather, I have pasturage, barn and sheds.

For inclement weather, I enclose the barn and other steel buildings and utilize bedding.

7) How is the housing/shelter cleaned? How often?

I clean as needed with a skid loader and tractor, using hired hands at least twice a year.

8) Describe how feed and water is provided, how often it is provided, and how often the feed and water containers are checked and cleaned.

In most pens I have self waterers and the large tanks have fish in them to maintain health of the tank and prevent mosquitoes. The small pens have 20 gallon tanks that are filled daily and scrubbed once a week.

The goats have free choice hay at all times, and have access to dry feed daily. I have some free range pasture, too. The feeders are checked after each use.

There are pre biotic and probiotic licks in most pens.

9) Describe how the nutritional needs of the animals in this project will be met.

The proposed hydroponic feed system will be the source of complete feed for the goats, with high nutritional value. I will also provide inexpensive hay as well

10) Describe the vaccination program and the routine procedures used to minimize disease and manage parasites. Include what the animals are vaccinated against and provide common names of the products that are used. Include a description of routine worming or parasite management.

I give bovac gold vaccination for pneumonia, C-D&T for overeating for tetanus.

Worming is done every change of fodder I use valbasine and ivomec plus, levasole,

11) What procedures will the animals undergo during course of this project? Will these procedures induce or potentially induce distress or pain in the animal and if so, how will you manage or minimize the potential for pain and distress?

The introduction of hydroponically grown fodder to the diet of the animals is the purpose of the project. Since free choice hay will also be available, any goats not liking the sprouted grains will have other choices for food.

12) Please indicate if other individuals will participate in handling and or caring for the animals in this project. If other individuals will be involved, please describe their expertise with animal care. If individuals need to be trained to perform the procedures described in this project, please indicate how they will be trained to do the procedures properly.

Other individuals who will be involved with handling the animals?

Farm workers who are experienced with animal care and observation. The farm owner will supervise most interactions with the farm animals.

13) At the end of the project--what happens to animals? Please indicate if they will remain at the project site, be sold, or be slaughtered.

At the end of the project, the goats will continue to be treated as they were before and during the project – as dairy goats.

14) If animals are transported off-site, please describe how they will be transported.

This is an on-site project

15) If animals are slaughtered, please indicate if this will occur at a commercial licensed slaughter facility. If it is not done at a commercial licensed slaughter facility, describe where and how slaughter will be conducted.

I sell some of my goats for meat, and I have done that for a number of years. The buyer is responsible for the goat once I sell it. Any extra kids not sold are taken to the Shannon kosher slaughter facility in Shannon, IL.

16) Please indicate if the animals or products from these animals will be used as food for humans and if so, confirm that withdrawal times for medications will be followed before allowing the animals or products from the animals to enter the food chain.

I use the recommended withdrawal times from any wormers or anti-biotics plus extra days before I sell any goats.

17) Identify the veterinarian (name, address, and contact information) who will provide routine and emergency care of the animals used in this project

I have two veterinarians that I utilize:

- a) Dr. Pat Fairbrother  
502 S 1st St, Alpha, IL 61413  
309-629-4851
- b) Dr. Mulch,  
Whitehaven Veterinary Center  
5320 Belle Ave, Davenport, IA 52807  
563-386-9680  
for emergencies and surgery