

2013 Farmer Rancher Grant Proposal

Please type or print legibly in dark ink. There are five pages to the proposal (one title page and four pages of questions not including the budget or reference letter), plus a three-page Livestock Care form for projects that involve livestock. Do not exceed the page limit. If your project requires assistance from a financial institution, please enclose a letter from them indicating their commitment. (This letter is only necessary if you must take out a loan to carry out your project.)

Project Title: Chickens and Trap Crops – An integration of sustainable approaches to insect pest control in vegetable production.

One Sentence Description of Project: The merger of IPM trap crops and the use of chickens in movable pens to control insects in lieu of pesticides in both organic and sustainable vegetable production.

Project Leader: Gary Wenig

Address, City, State Zip Code: 37009 W 156th St, Rayville, MO 64084

County: Ray

Phone: 816-853-0196

E-Mail: gary@RCVfarm.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 __X__ or two years _____?** (This information helps reviewers evaluate the feasibility of your project.)
- **Grant Funds Requested: \$__6462.00__** (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____**
 - **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.**
 - **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.

- | | |
|--|---|
| <input type="checkbox"/> Integrated Crop & Livestock System | <input type="checkbox"/> Energy Conservation & Renewable Energy |
| <input type="checkbox"/> Crop Production | <input type="checkbox"/> Economic/Marketing |
| <input type="checkbox"/> Animal Production (including aquaculture, apiary) | <input type="checkbox"/> Community Development |
| X Pest Management | <input type="checkbox"/> Quality of Life |
| <input type="checkbox"/> Soil Management | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Natural Resources/Environment | |

1) DESCRIPTION

Rocky Creek Valley Farm is a 40 acre farm owned and operated by Elizabeth and Gary Wenig. We, the Wenigs, produce and sell a large variety of heirloom vegetables, free range eggs and raw goats milk. We also grow a large variety of herbs and manufacture a variety of salves, tinctures and products.

Having both grown up Missouri farm kids from generations of Midwestern farmers we returned to the land in 2001. We have both learned and worked the traditional farm concepts of the 1950's and 60's of cattle, horses, feeder pigs, broiler chickens, deep plowing row crops and lots of pesticides. We purchased our current farm in 2009 specifically to break that mold and develop more environmentally friendly all-natural approaches to our vegetable produce, goat dairy and free-range egg business.

Elizabeth is a Certified Clinical Herbalist with a 4 year degree in clinical herbs. She previously worked for a group of medical doctors who specialized in alternative approaches to healing. We conduct herb classes at the farm on traditional remedies, cooking, holistic wellness, animal husbandry and sustainable gardening. Gary's background is in construction engineering as a consultant to dozens of major corporations. Both Gary and Elizabeth have taught numerous adult educational classes thru the local school district and corporate continuing educational classes. We run a large web presence that includes several blogs, videos, facebook, classes and how-to projects. We attend various farmers markets each week, a CSA program and setup booths at various farm events.

We have completed the GAP certification classes, restaurant owner's health classes, IPM seminars and continuing educational classes in the sustainable agriculture industry to include almost daily review of industry newsletters, webinars and publications. Although this is our first SARE grant application Gary has written and managed grants and multi-million dollar projects for industry and not-for-profits groups for years. We track our egg, milk and vegetable production daily.

In addition to being opposed to the overuse of chemicals our motivation for being chemical free is a result of Elizabeth's life threatening allergies to pharmaceuticals and chemicals. We believe that the gross overuse of chemicals is following the same path as the overuse of antibiotics in the medical industry and livestock industry. They will be rendered useless against drug/chemical resistant pest and crop diseases. We have five Lincoln University representatives and one University of Missouri representative who have agreed to assist us on a weekly basis to ensure our pest identification and pest counts are accurate.

2) PROBLEM/SOLUTION

Insect pests are a problem for all vegetable producers. For organic or all-natural vegetable producers like RCV Farm pest control without the use of synthetic chemicals can be a challenge at best. Trap crops have been proven to lure pests away from cash crops but then the issue is how to kill the insects once they are on the trap crop plants. More traditional IPM methods use chemicals to kill pests once they are on the trap crops. This reduces the use of chemicals and associated cost, but does not eliminate the use of chemicals. We propose to integrate a sustainable approach of insect pest control using a combination of trap crops, beneficial insect crops and chicken in moveable pens to kill the insect pests. We will be testing a new concept of placing the trap crop inside of movable chicken pens. The trap crops being used are a combination of Blue Hubbard squash and Red Kuri squash. These trap crop plants have been found by Lincoln University researchers to be effective at attracting the most important cucurbit insect pests. Our primary pest is the squash bug, one of the most challenging pests to control in the Midwest.

Our primary vegetable garden is approximately 2.5 acres encompassed by a 4 ft. wide strip of beneficial insect crops. There will be 6 trap crop plots equally spaced around the 2.5 acre vegetable garden. Each trap crop plot will be a mix of Blue Hubbard and Red Kuri squash. Two trap crop plots will be enclosed in movable 8 ft by 12 ft mobile pen (sometimes referred to as chicken tractors). Our mobile pens are

designed to roll over the rather large Blue Hubbard plants. The pens contain laying boxes, water, shelter and allow the trap crops to grow inside the pen. They are mobile to make pest counts easier and to easily move to the other plots each week. The pest counts on the six plots will provide us with quantifiable data to assess the pest count with chickens compared to without chickens. We can also do a comparison between the cash crop counts and the trap crops. We plan to place approximately 4 chickens in each mobile pen. This can be adjusted based upon pest counts. Chickens love bugs but, they can cause a large amount of damage to a garden especially soft tissue plants like tomatoes. There is also the issue of fecal matter contamination associated with produce for sale. By confining the chickens in pens with the trap crop plants and keeping them away from the cash crop we will avoid any damage and contamination issues.

We have estimated that 24 Blue Hubbards and 24 Red Kuris will be sufficient for the vegetable garden. They will be divided into six plots; 4 Blue Hubbards and 4 Red Kuri plants each. The sacrificial plants are not part of our cash crop. They will be continuously re-planted from greenhouse stock and the infected plants destroyed by burning in a continuous cycle throughout the growing season. The mobile pens will be rotated weekly using the six locations so that all plots get equal application of treatments. Similar potential damage by the chickens will be minimized. This will allow us to avoid using any types of insecticides to kill the insect pests; that will be done by the chickens (cultural control).

Our goal of placing the chickens in the trap crop is for the chickens to kill the bugs before they can lay eggs. However, if eggs do hatch the chickens should quickly consume the infant pests. If this process is successful it could potentially allow organic farmers to be completely pesticide free.

For an IPM program to be effective it must encompass several components. To make our trap crop program more effective we also incorporate the following beneficial cover crops to provide other soil and pest management related benefits. The more beneficial insects we have the fewer pest insects:

Sorghum Sudangrass hybrid: This cover crop plant provides multiple benefits, adding organic matter to worn-out soils. These tall, fast-growing, heat-loving summer annual grasses can smother weeds, suppress some nematode species and penetrate compacted subsoil. In addition, they may harbor beneficial insects such as seven-spotted lady beetles and lacewings.

Buckwheat: To attract beneficial insects; it can be cut once to stimulate growth and bloom again after the previous bloom is declining adding to the beneficial insect attraction.

Winter Rye: The cash crop area (approximately 2.5 acres) has already been planted in winter rye. In some areas, such as the cucurbits section, the rye will be crimped for mulch. In the remaining areas it will provide organic matter and nutrient replacement.

Other Beneficial crops: Within our regular production crops we already grow fennel, dill, yarrow, coriander, tansy, Queen Ann's lace and other cash crops. These crops along with the buckwheat attract beneficial insects such as lady bugs, lacewing, hoverflies, parasitic mini-wasps and tachinid flies.

Bees: We maintain bee hives to support our sustainable agriculture business.

3) TIMELINE.

We hope to implement this program into our 2013 production season. At our expense outside of the grant, we have already prepared a 4' wide trap and beneficial crop barrier around the 2.5 acre vegetable garden. The gardens have been planted with a winter rye cover crop which will be crimped for mulch in the spring. Two weeks prior to vegetable planting we will plant our trap crops around the perimeter. Weather dependent this will be around April 1, 2013. As soon as we are released to purchase materials we will purchase and start the construction of the chicken tractors. We already have about 80 free range chickens some of which will be used in the test. The night time housing for the chickens will not be charged to the grant.

At RCV Farm we start some planting around April 1. In 2012 we were still producing crops in late October. We will conduct and log pest counts two times per week, projected every Tuesday and Friday. Dr. Jaime C. Piñero and Mr. Jacob Wilson from Lincoln University Cooperative Research and Extension will agreed to help us by conducting weekly pest counts and provide professional pest identification and pest life cycle analysis. Susan Jaster, Jim Pierce, Lincoln University Extension Representatives and Marlin Bates, University of MO Extension have agreed to provide us with random visits and assist in the technical components of pest identification and life cycle tracking of pest.

University data reports the first squash bugs show up in our zone around May 24. Our past experience shows we still had active squash bugs in late September. In 2012 the peak of the population was recorded by Lincoln Univ. at around 20-24 June. Spotted cucumber beetles were already in high numbers by mid-May. Japanese beetles have previously not been a problem at our farm however; we will also watch their numbers closely.

4) PREVIOUS RESEARCH

We were unable to find any other test using our method of pest control: using chickens to clean trap crops. There are a number of test confirming the viability of trap crops. Dr. Piñero has been a leading force in the development of trap crops to manage pests using organic approaches as the State IPM Specialist at Lincoln University. The use of chickens in pest control has also been proven effective. We view this test as the merger of two effective cutting edge methods of green gardening and elevating them to the next level in sustainable pesticide free agriculture.

5) OUTREACH

We plan two outreach field days at the farm. Susan Jaster, Farm Outreach Worker of Lincoln University will assist us in planning and carrying out our field days for outreach of our project.

The first field day: tentatively scheduled for May or early June 2013, will overview the benefits of IPM programs, how trap crops work, how to build this moveable pen and a brief analysis of pests and their life cycle presented by Dr. Piñero. Participants will also receive a thumb drive with extensive pest identification and IPM research data. This work shop is early enough in the season that other interested farmers could start their own IPM program in 2013 after attending the field day.

The second field day: tentatively scheduled for September, will summarize the program's successes, bug counts, profit impact, project cost analysis and will also include a summary by Dr. Piñero.

We will chronicle the entire project on video including the construction of the mobile pens. These will be available on our website and YouTube as well as our blogs. Our interim and final SARE assessments will be posted on line along with the grant proposal. We will post our weekly summary on the blog sites and keep a running assessment on the RCV Farm's web site. We have a number of How-to Projects and videos on YouTube and our web site that have accumulated thousands of views and followers. Our followers further support and educate other people as to the benefits of sustainable agriculture.

6) EVALUATION.

For organic or all-natural farmers cost is not always the most important factor, no pesticides or herbicides is the bottom line for RCV Farm. For people like Elizabeth it is a life or death issue. A comparison of the base line trap crops compared to the two enclosed plots housing the chickens will provide definitive and immediate data on the success of the program. We would also expect to show that the cost of a mobile pen and chickens will be far less than the cost of pesticides to achieve the same result, plus the green benefits to the environment.

X _____, Signature of Applicant (**must** be a Farmer/Rancher)

If you are submitting your proposal by e-mail, scan or type in your signature.

BUDGET, page A

PERSONNEL COSTS	<i>Grant Funds Request</i>
<u>Labor for tilling & planting both beneficial and trap crops, labor for replacement of trap crop plants throughout the summer: 26 hrs @ \$15.00 fuel cost included.</u>	<u>390.00</u>
<u>Labor for propagating trap crops: Includes daily greenhouse care of replacement plants, estimate 10 to 15 min. per day, plus transplanting and watering. 15 hrs @ \$15.00</u>	<u>225.00</u>
<u>Construction of 2 chicken tractors 8'x12' on wheels: 10 hrs @ \$15.00 for each of 2 units</u>	<u>300.00</u>
<u>Daily care of chickens in the test. Transport to the test plots, cleaning and watering: Estimate 15 min per day during the test phase of 5 months. 37 hrs @ \$10.00</u>	<u>370.00</u>
<u>Bi-weekly pest count, including logging data and photo work: 15 to 20 min per day twice per week for 5 months. 37 hrs @ \$15.00</u>	<u>555.00</u>
<u>Bi-weekly pest count, including logging data and photo work: 15 to 20 min per day twice per week for 5 months. 37 hrs @ \$15.00</u>	<u>555.00</u>
<u>Video production, editing, web site design & posting: 24 hrs @ \$15.00</u>	<u>360.00</u>
<u>Field day instruction, preparation of handouts: 8 hrs @ \$15.00 times two field days.</u>	<u>240.00</u>
<u>Field day instruction, preparation of handouts: 8 hrs @ \$15.00 times two field days.</u>	<u>240.00</u>
<u>Dr. Jaime Pinero, Lincoln Univ. Extension State Specialist - Integrated Pest Management, 212 Allen Hall Jefferson City, Missouri 65101. 573-681-5522 pineroj@lincolnu.edu Assist in insect identification, assist in developing IPM strategy and assist with identifying appropriate tools for monitoring insects.</u>	<u>0</u>
<u>Susan Jaster, Lincoln Univ. Outreach Worker, Ray Co Representative, PO Box 826 Concordia, MO 64020 816-589-4725 jasters@lincolnu.edu Assist in field days coordination and instruction, collaborate in writing the study overview and final assessment.</u>	<u>0</u>
SUBTOTAL	<u>3235.00</u>

BUDGET, page B

OTHER COSTS		<u>Grant Funds Request</u>
<u>Sacrificial crops (annuals) include blue hubbard & red kuri will be prorogated in the greenhouse thought the summer and transplanted to the test plots as the pest kill the plants in the test plots.</u>		<u>90.00</u>
<u>Beneficial crops (annuals) include sorghum sudan grass, millet, buckwheat & barley. Planted in a perimeter IPM method.</u>		<u>300.00</u>
<u>Lincoln Univ. – gasoline for one trip per week for Dr Jaime Piñero & Jacob Wilson to do weekly pest analysis at the farm. 10 trips @ 12.2 gallons / trip (assuming 25 miles/gallon) @ \$ 3.50 per gallon</u>		<u>427.00</u>
<u>Lumber, wheels, chicken wire & hardware for two 8’x12’ IPM chicken tractors: \$750 each materials only no labor.</u>		<u>1500.00</u>
<u>Field day refreshments: RCV Farm is 12 mi from the nearest facilities. The field day will last several hours. We will provide water and ice for the participants. \$40.00 each day.</u>		<u>80.00</u>
<u>Hotel rooms for Lincoln Univ. representatives: two rooms for each of the two field days. 4 nights at Richmond Mo Super 8 @ \$65.00 per night.</u>		<u>260.00</u>
<u>Educational materials (including a flash drive with information on organic and sustainable approaches to organic vegetable production) that will be handed out during the field days and displays showcasing our project including promotion of NCR SARE</u>		<u>450.00</u>
<u>Supplemental feed for 8 chickens for 5 months of the test project: 10 cents per day per chicken x 8 chickens x 5 months</u>		<u>120.00</u>
<u>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.</u>	<u>Total Cost of Item</u>	<u>Grant Funds Request</u> <u>(Must be 50% or less of total cost of each item.)</u>
N/A		
	<u>Subtotal from above</u>	<u>3227.00</u>
	<u>Subtotal from pg A</u>	<u>3235.00</u>
<u>(Grant request total cannot exceed \$7,500 for Individuals, \$15,000 for Partners, or \$22,500 for Groups.)</u>	<u>TOTAL Grant Fund Request</u>	<u>6462.00</u>

X _____, Signature of Applicant (**must** be a Farmer/Rancher)

If you are submitting your proposal by e-mail, scan or type in your signature.

Animal Care

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

We will be using an existing flock of free range chickens. The daily care and maintenance of the chickens for use in the project the time needed for managing the poultry or other related expenses will not be charged to the project.

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

We will place approximately 4 chickens in each of the two chicken tractors every morning and remove them at night to be returned to the flock in the main chicken house.

- 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?

They are chickens from our existing flock. We raised the chickens from chicks; they will be 3 yr old in 2013.

- 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.

In the moveable chicken pen (chicken tractor) 24 sf per bird. (96 sf occupied by 4 chickens)

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

The chicken tractor has laying boxes and a 4' x 8' sheltered section plus two 4' x 8' feeding sections. Water dispensers are in the shelter area.

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

The chicken tractor is moved weekly. The chicken coop that houses the chickens at night has straw on the floor. It is raked daily and the straw is changed as needed.

- 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.

Feed twice per day. Chicken waters cleaned and filled daily and checked periodically throughout the day. Chickens are allowed to free range during daylight hours.

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

Free range chickens (feed opportunistically) and will be provided with supplemental feed of oats, barley, corn and laying mash plus a vitamin and mineral regimen.

- 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.

We use holistic systems approach to parasite control. We have our own lab and a farm vet when needed. A holistic systems approach uses natural products in lieu of synthetic pharmaceuticals.

- 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 chickens will undergo no procedures during this test. They are pets and will undergo no pain or stress from the test.

- 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.

Only my wife and I will be handling the chickens.

- 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.

The will be returned to the flock.

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

No transportation required.

- 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.

N/A

- 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.

N/A

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

Cathy Harris DVM
1214 East Main Street
Richmond, MO 64085
(816) 470-2510