



# Innovative Small Farmers' Outreach Program (ISFOP): WEST CENTRAL REGION

## Hydroponic Fodder Production (Part II): A Profile of "Be Whole Again" Farm *By Jim Pierce, Farm Outreach Worker*

Hydroponic fodder production and feeding is being used on small farms. More farmers now see it as one solution to deal with short-term drought. It also satisfies the consumer demand for grass-fed animals. Finally, farmers get more control over their feed bill and feed quality.

Fodder is the production of sprouts using seeds of grain and water. In general, the first step is soaking the seeds for a day or two. This is followed by spreading them out in a one-half to one-inch layer in a growing tray where they can be watered. Some commercial systems skip the soaking step and just sow in the trays. In a matter of only six to eight days, the grain grows into a mat of green grass and white roots about six to seven inches tall. Then it is fed to the animal, roots and all.



Myra Moser holding a fodder mat and tray.

The Moser farm, Be Whole Again, sits on a gently rolling hill in western Missouri. Rachel and Scott Moser decided to use only grass-fed cows in their direct-marketed raw milk dairy. The first step was to use management intensive rotational grazing (a system where animals are moved to various pastures). However, the pastures were full of fescue that was infected by endophytes (bacteria or fungus that live in a plant for at least some of its lifetime without *(continued on page 2)*

## In The Spotlight: The Adams' Osage Ridge Aronia Community Farm *By Katie Nixon, Small Farm Specialist*

Fruits, vegetables, herbs, goats, chickens, ducks, and bees. Who would have thought that so many farm projects could fit into six-and-a-quarter hilly acres on the edge of Independence, Missouri? The Adams' Osage Ridge Aronia Community Farm (AORACF) began in 2010. It has grown every year. Kathy and Joel Adams own and operate the farm. They started with a few fruit trees and began to grow vegetables and herbs. They now have a 48-foot x 30-foot high tunnel. They have almost two acres in aronia berries, blackberries and elderberries. In addition, they have seven ducks, eight dairy goats and 43 chickens.

of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) high-tunnel cost-share program, Kathy and Joel applied. Near the end of the 2010 growing season, their high tunnel was finished. They had just enough time to start winter production. Next, they looked for a market to sell their produce. The Adamses joined the Kansas City Food Circle and attended the Eat Local Expo in Kansas City, Missouri. There, they were approached by the coordinator of La Chalupa Farmers Market; Kathy and Joel decided to give it a try. For the last three years, they have been selling at this market. This year they expanded to the market in Independence, Missouri.

After hearing about the United States Department

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AORACF has benefited from other USDA programs, such as the cover crop (crops used to lure pests from cash crops) cost-share and wildlife cost-share. The wildlife cost-share program allowed them to plant two acres of berries. They chose aronia, blackberry and elderberry because of their healing benefits. From her on-farm office, Kathy operates her business, Reflexology and Herbs, doing holis- *(continued on page 3)*

Down to Earth: Reports from the Field

## Hydroponic Fodder Production...(continued from page 1)

causing harm). The pastures alone could not meet the nutritional needs of the cows. Summer dormancy (where the plant stops growing but does not die) of the fescue also posed problems; several cows struggled with fescue toxicity, but feeding fodder helped dilute the infected fescue and its effect. The Mosers needed to provide other feeds to dilute the toxin. Winter was an even bigger challenge. The Mosers used the concept of stockpiling (allowing pasture to grow until it is used at a later time) and the more traditional feeding of hay. Even so, the high nutritional needs of their dairy cows required an extra concentrate. This presented them with a problem; they wanted to avoid grains in general, especially grains with genetically modified organisms (GMOs) and still maintain good herd health.

Their research showed that farm-grown fodder could be used as a substitute for feeding grains directly. The Mosers thought that this would be better for their cows' digestive systems. Barley is one of the few grains that has not been affected by GMOs. Barley is easy to sprout; it seems to produce the most nutritious fodder, with higher levels of protein than other grains. After much reading, the Mosers designed a production system made with components that they found at local big-box stores. They chose to house the system in an insulated tractor-trailer with an aluminum floor; this type of truck is also known as a retired "reefer" (refrigerator) trailer, with the refrigeration unit removed. It was a good choice to house their system. The trailer lets them control the temperature, humidity and light. They later found that this was very helpful in preventing molds. The controlled environment also allows them to provide conditions that promote fodder growth.

The Be Whole Again herd is fed fodder at about 15 pounds per day per head when the pasture is growing. In the winter, they are fed about 30 pounds of fodder per head per day; they also have access to unlimited grass and legume hays.

Rachel and Scott have observed the following benefits of feeding fodder:

- Happy customers, who are important for any enterprise that wants to make

a profit. Their customers are happy because they do not want to consume GMO products directly or indirectly. They want to support a grass-based dairy farm.

- Sweeter milk, with a rich golden color (probably from higher beta-carotene levels) and with more cream, which is able to make better kefir (fermented milk drink), according to customer feedback
- An increase in production per cow
- Less hay consumed in winter
- Fewer opportunities for *E. coli* to enter their animals' guts, which is very important for a raw milk producer
- Overall better general health of their cows and better breed-back (artificial selection of certain traits)

Rachel says, "On our property, I don't believe we could produce 100 percent grass-fed milk and make a profit without fodder." She explains that it was hard to find high quality, non-GMO alfalfa at a good price during the drought last summer. That taught her that there had to be another source of supplemental feed. The Mosers are gradually changing the fescue pastures to grow grasses and legumes, which will make the fields more suitable for milk production. Due to their renovation, a part of the pasture is out of production every year. Rachel is glad that their homemade fodder system takes up just 56 x 8 feet. This allows them to produce much more high quality "forage" than they would be able to grow on their limited acreage; it increases their stocking capacity. Rachel says, "We can also carry fodder to other properties nearby to help us grass-finish steers or supplement dry cows grazing on less than ideal leased pastures that I can't afford to renovate. Lastly, I don't have to pray for rain nearly as hard as if we were completely reliant on our pastures for green grass."

The Mosers point to some other key factors that they believe will make or break a fodder operation on small farms:

- Start with an affordable fodder system. Many of the commercial systems available are priced too high to make the economics work.
- The system must be extremely labor efficient.

- Find a local supplier of reasonably priced grain seed. This might require buying bin run seed (seed that farmers hold onto for the next growing season) directly from a farmer at harvest time and storing a year's supply of grain on your farm. This has the added benefit of cushioning you against feed price hikes in times of drought.

Fodder has given the Mosers more control over their production system. It allows them to convert grains into a feedstuff that is better suited to their animals. It also satisfies the niche market that they have developed for their farm. Instead of relying on the cycles of nature with pasture or grain feeding and conventional haymaking, they can produce fodder from grain every day of the year. ■



*Pigs eating fodder produced on "Be Whole Again" farm.*

Contact [Scott@BeWholeAgain.com](mailto:Scott@BeWholeAgain.com) for additional hints on low-priced, labor efficient, do-it-yourself fodder system construction.

### Did you know. . .?

- Ninety percent of agricultural lenders require a WRITTEN business plan to make a loan.
- Farmers who write down their goals earn 30 percent more profit.
- Farmers who write down their goals and a mission statement earn 45 percent more profit.
- Farmers who write down their goals, mission statement and have a business plan earn 60 percent more profit.
- You can contact your Farm Outreach Worker today for assistance in writing your business plan.

*(From Karisha Devlin's talk at the 2013 AgriMissouri Conference, "Building a Business Plan," July 22, 2013, Jefferson City, Missouri. Karisha Devlin is an Agribusiness Specialist and County Program Director for Knox County, a part of the Northeast Region, University of Missouri Extension.)*

## In the Spotlight...

*(continued from page 1)*

tic bodywork (any alternative form of healing). The farm's produce fits with the health benefits of eating nutritious food that she teaches to her clients.

Since the farm is small, they have to make the most of their space; they use permaculture (using natural ecosystems so that they will be self-sustaining) principles to integrate their operations. For example, using mesh electric fencing, their goats rotationally graze the pathways between the berries, requiring less mowing while the goats are being fed. The Adamses have also done a lot of multispecies planting in the fruit orchard and around the buildings; this makes the most of their space.

Being close to a large urban area is important to Kathy and Joel's mission of teach-

ing people about healthy food and healthy living. They believe they are in an ideal location for educating the public and their customer base. This year, AORACF was one of the farms on the Urban Grown Farms & Gardens Tour. They received dozens of visitors; some had never heard of an aronia berry, let alone see one growing. "For us, teaching is as big as the farming," Kathy says.

In addition to the two farmers' markets, AORACF products are sold straight from the farm. This is the only way they are able to sell their raw goat milk. At first this was a problem, and they had too much milk. Other than an on-farm sign saying "Raw Milk for Sale," they were not allowed to advertise their milk publicly, based on state law. However, news of their milk spread by word of mouth. They now have more customers than milk. For their other farm products, they are exploring niche opportunities in the health food market.



**The dairy goats at AORACF rotationally grazing between aronia bushes.**

Through conferences and books, the Adamses have learned a lot and continue to improve their farming practices. The mission of teaching the public is still strong at AORACF. Kathy and Joel want to create more learning opportunities for the public and keep producing healthy medicinal food for their customers. ■

## IPM Corner: Act Now to Lower Disease Pressure on Your Next Crop

*By Dr. Zelalem Mersha, State Extension Specialist—Plant Pathology*

As we plan for the next growing season, here are some housekeeping reminders to help growers have fewer pest and disease problems. This article highlights sanitation, which includes disinfecting tools, high tunnels, greenhouses and farms. These practices should be done year-round for growers who extend the seasons with high tunnels and greenhouses.

**Recordkeeping:** Often, growers can repeat the success of a production cycle by keeping good records. Lessons can be learned from pitfalls or successes to craft a better plan for the future. ***If you already keep good records, please continue. If***

***not, start this year!***

**Calendar-based integrated disease management strategies:** Managing the diseases of vegetables and small fruits must be done all year. It doesn't matter if those plants are in a backyard garden, low or high tunnels or on a small or large farm. Below is a set of to-do lists and best management practices; they are detailed in an outline based on the time of year for their use.

**You reap what you sow: First, get your seedling transplants from a reliable source!** Start with a resistant variety or



**Get your transplants from a reliable source. Seedlings grown on raised benches in a well-sanitized and ventilated greenhouse are highly desired.**

### Postharvest and preseason

- ◆ Clean fields, greenhouses and equipment
- ◆ Plant cover crops (legumes, crucifers [such as cabbage or broccoli], etc.)
- ◆ Apply quality compost or chemical fertilizers
- ◆ Select a site without diseases
- ◆ Create a rotation plan: a 3- to 7-year plan works best for disease management
- ◆ Plan your planting material: where and what will you buy?

### Preplanting and planting

- ◆ Prepare soil and field
- ◆ Prepare potting mix and containers
- ◆ Monitor weather and seedling diseases at planting and transplanting
- ◆ Use best management practices to achieve fast growing, vigorous and healthy seedlings
- ◆ Plan to use disease-resistant planting materials (seeds or transplants)

transplant. Then, nurture your seedlings for fast and vigorous growth. Most seed companies supply information about disease resistance. For example, let's say that you buy Big Beef tomatoes from Johnny's Selected Seeds. On the packet where it talks about disease resistance, you will find detailed

#### Disease Resistance:

- AS** Alternaria Stem Canker
- F2** Fusarium Wilt (Races 1 & 2)
- L** Gray Leaf Spot
- N** Nematodes
- TMV** Tobacco Mosaic Virus
- V** Verticillium Wilt

**Figure 1.**

*(continued on page 4)*

About our Program...

# ISFOP

If you are a small farmer and need information, please contact an ISFOP Farm Outreach Worker (FOW). FOWs live and work in your community. They can provide information on ways to better manage your resources, reduce expense and increase income. They can also provide information on other programs and resources that may increase your income and the overall quality of life for you and your family.

**You are eligible to participate if you meet the following requirements:**

- ☑ Your family lives on a farm, rural or urban.
- ☑ Farm products or income from the farm are necessary for you to live where you do.
- ☑ Your family provides the management and most of the labor for your farm.
- ☑ Your total annual family income is less than \$50,000.

## How to Contact West Central Regional ISFOP Farm Outreach Workers:

- **Katie Nixon**, West Central Regional Coordinator and Jackson County

[NixonK@LincolnU.edu](mailto:NixonK@LincolnU.edu)

(816) 809-5074

- **VACANT**, Cass & Johnson Counties

[https://bluetigerportal.lincolnu.edu/web/human-resource-services/job-postings/-/message\\_boards/category/158558](https://bluetigerportal.lincolnu.edu/web/human-resource-services/job-postings/-/message_boards/category/158558)

- **Susan Jaster**, Lafayette & Ray Counties

[JasterS@LincolnU.edu](mailto:JasterS@LincolnU.edu)

(816) 589-4725

- **Jim Pierce**, Clay & Platte Counties

[PierceJ@LincolnU.edu](mailto:PierceJ@LincolnU.edu)

(660) 232-1096

**For general information,  
call the LUCE ISFOP office at (573) 681-5312.**



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## IPM Corner...(continued from page 3)

information (Figure 1). Based on your field history, choose a variety that best suits your situation. Be careful when buying seeds for organic production; some seeds are sold pretreated with chemicals.

**Sanitation:** This is a very simple but often overlooked process. It is needed to avoid or control pathogens (anything that produces a disease). At the end of the season, a cleanup is needed. This will help to ensure that the next year's crop is a success. If neglected, this cleanup could be one reason why many pests and diseases infect gardens or farms. Sanitize properly. Disinfect and sterilize tools and surfaces; this is a good way to remove and/or prevent the spread of insect and spider pests, algae and pathogens in growing areas. Disinfecting and sterilizing is no guarantee against a plant disease; however, regular sanitation will greatly reduce the risk of a disease outbreak. Sanitation works by reducing the amount of the initial disease present. It also provides a better chance to manage diseases.

Many products are available to disinfect tools. However, each has its pros and cons, so you need to decide what will work best for you. Products such as chlorine bleach, Green-shield®, Physan 20® and Oxidate® are approved by the Organic Materials Review Institute (OMRI); they can be used to sweep floors and wipe down nursery and greenhouse benches. Here is a link from Purdue University to a list of products for greenhouse use: <http://www.extension.purdue.edu/extmedia/HO/HO-250-W.pdf>.

Disinfect anything that you reuse. This includes containers, staking materials (wire trellis or wood sticks) and more. It is essential to rinse with pressurized water to remove plant debris and soil particles. A 10 percent solution of household chlorine bleach could be used to soak containers or trellises. A minimum of 30 minutes to one hour is needed. Don't forget to rinse the containers with water afterwards; this keeps the toxic material away from the plants. No matter which type of disinfectant is used, you must be careful. Read the labels. Be sure to wear proper personal protective gear.



**Rinse the dirt off using pressurized water and disinfect greenhouse surfaces, your tools, etc. right before and after using them. Trellis and wood staking should be soaked (e.g., at least 30 min. in 10 percent bleach) right before each use.**

**If you have any further questions please contact your local extension educator or email your queries directly to the author at [MerashaZ@LincolnU.edu](mailto:MerashaZ@LincolnU.edu).**