

# FRESH ROOTS

*Sustainable Food & Bioenergy Systems Degree Program*



**MONTANA  
STATE UNIVERSITY**

## Sustainable Food & Bioenergy Systems

### PROGRAM UPDATES

SFBS was recently named one of the best 10 best environmental programs in the U.S. by Mother Nature Network. (See <http://www.mnn.com/green-tech/research-innovations/stories/10-of-the-best-college-environmental-programs-in-the-us>). 2013 marks the beginning of the program's 5th year. We currently have 150 students in the major and 13 alumni. SFBS remains an inter-college collaboration with four curricular options in four different MSU departments. Sustainable Food Systems is led by Alison Harmon in HHD, Sustainable Crop Production by Bill Dyer in PSPP, Agroecology by Bruce Maxwell in LRES, and Sustainable Livestock Production by Pat Hatfield in ANRS. The faculty and students of SFBS would like to express deep

gratitude to Dean Williamson for coordinating the degree program this year. He is currently busy helping upcoming seniors identify internship opportunities that will move them in the direction of their of career goals.

Towne's Harvest staff are preparing for our 7th season at the MSU Hort Farm. Chaz Holt continues as production manager, with Alex Ettinger serving as assistant production manager. Tim Reusch will be the marketing and outreach manager, assisted this spring by Candace Moyer, as past manager Anna Diffenderfer begins her dietetic internship at MSU. THG will offer early season and summer CSA shares, a campus farm stand, a mobile farm stand via the Gallatin Valley Food Bank's Community Food Truck, and a

### Upcoming Events

#### February 26th

**John Ikerd**

Professor Emeritus of the University of Missouri, will speak at an SFBS seminar at 3pm in Reid 108.

#### March 27-31st

**Permaculture**

Sepp Holzer is teaching a workshop in Bozeman. "Farming with Nature: Regenerative Agroecology" For more information visit

[www.holzeragroecology.com](http://www.holzeragroecology.com) or contact Zach Weiss at [holzeragroecology@gmail.com](mailto:holzeragroecology@gmail.com)

#### April 8th

**Local Food Fair**

MSU's 7th Annual Local Food Fair & Symposium will be in the SUB Ballrooms beginning at 1:15 pm.

student CSA on Friday afternoons. Marcy Gatson is coordinating the Community Food Truck distribution.

This newsletter is a production of the SFBS Capstone class, which emphasizes professional development, systems thinking, teamwork, and outreach. All articles were written by graduating seniors. Editors include Alison Harmon who instructs the Capstone class, and Tim Reusch, SFBS 2011 Alum, Sustainable Food Systems Graduate Student and Capstone Teaching Assistant.

# 5 Steps to Sustainable Entrepreneurship

By Elizabeth Wise

## 1. Be Flexible

It is easy to develop rigidity with business ideas, but this can ultimately set the business up for failure. Given the set circumstances, an ideal business may or may not look like the image one projects mentally. In the realm of farming, one cannot rely solely on books about market gardening in Montana. Mother Nature hates a vacuum, and loves throwing curveballs even at the most experienced farmers. The same concept applies to a food service establishment. One may have a brilliant business plan, but may lack an adequate market. One may possess the conviction that only one adequate supplier or distributor exists, and this tunnel-vision in day to day operations leads to serious pitfalls in a business. Flexibility is key in entrepreneurship, especially among sustainable food and energy systems.

## 2. Embrace Failure

Unfortunately, failure is an option regarding entrepreneurship. "No risk, no reward." As an entrepreneur, one must realize that if a business venture goes belly-up, it is not the end of the world. One may decide to take up farming in Central Montana. But what if Central Montana has not caught up with the local foods movement yet? After one year in business, and in the hole quite a few figures, opportunity looks bleak. Fortunately, most successful entrepreneurs have vast networks of valuable relationships, and if failure occurs, those individuals who care most brush you off for round two.

## 3. Create a model or Borrow an Effective One

Unfortunately, failure *is* an option regarding entrepreneurship. "No risk,

## SWOT Analysis



milestones are met, move on to the next one. The vision is not created overnight, but with patience (it may take a few years), the vision can be reached.

## 5. Educate Yourself and Assess Your Risks

If fear of hopping on the entrepreneurial bandwagon exists and taking risks seems comparable to meeting St. Peter, here is the solution: educate

yourself! If a desire for involvement is evident in direct market farming, the food system, or any other business venture, the best thing one can do is research. Delving in to the books and databases, and performing case studies and asking questions are excellent tools to educate oneself about a business venture. Channeling the network built around the business venture provides many benefits and perspectives. These tools make opportunities feel more feasible and less daunting. A SWOT analysis never hurt anyone either! This helps one identify all of the areas in the business that need attention.

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## 4. Think Small

It is good to have a vision, but if the vision entails ten different projects from the get-go, well then the business's chances of failure are increased. Set one, maybe two specific goals for the first one to three years of the business, and when those



# Networking

By Nicolaus Acker

I have learned much at MSU: crop production skills, leadership skills, systems thinking, marketing, and the list goes on. Early in my studies, I realized that as much as I was learning I was also getting the chance to meet people, and often they were important people in the sustainable agriculture community. I first misunderstood this as a perk of going to college, but now I realize this was my first step in networking.

When I first moved to Bozeman three years ago, I had already decided that I wanted work in sustainable agriculture, specifically, I wanted to work on a farm or ranch. I decided to wait to start the SFBS program until I had established residency in Montana, and during that year, I tried to get a job on a local farm. It didn't work out. Looking back, if I could pick one thing I could have changed at that time, it would have been to have a network of people that could have led me to that interview. From what I have seen, the local food community in the valley is

largely built on a network of people who are connected to each other in a myriad of ways. Going into that first job interview, I was competing with other people who were applying from throughout the country. Most of us probably had a similar lack of experience, and I don't think any of us had a connection to the farm through a local network. I believe that if I had been connected to the local food community at that time, my chance of landing that important first farm job would have been greatly improved.

At some point I made my first contact, and through that I heard about farm-to-school, and volunteered for my first time at Field Day Farms. This single contact led to me becoming a Campus Corps volunteer for Gallatin Valley Farm to School. From there, my overall involvement and face recognition in the community began to rapidly increase. At the same time I was progressing through the SFBS program and interacting with more people. Somehow this all came together and led to my

first "real" farm job at Field Day Farms, and I continued to meet more people in the local food community. This whole time I was taking advantage of networking opportunities that were easily laid out in front of me and any smart person would have taken advantage of them. I took a leadership class by random chance, and was presented with an opportunity to network outside of the SFBS program and the local food community. Oddly enough, this new opportunity led me back to the local food community, and has led me to what can potentially be a very good job in sustainable agriculture.

It is smart and also common sense to network in the community of which you have chosen to be a part. Building and nurturing these relationships will help you to get further than your experience alone. Even more important is to network outside of your community and push your limits. These connections can be dynamic and lead to possibilities that might not know exist.

# Big Brew vs. Micro Brew

By Al Kaul

Large Breweries are breweries that produce more than 6,000,000 barrels of beer annually (Coors, Miller, Anheuser-Busch). A Craft or Microbrewery is a brewery that produces a limited amount of beer; in the USA the Brewers Association uses a fixed limit of 15,000 barrels of production per brewery annually, which is equivalent to 460,000 U.S. gallons. Craft beer is a term referring to brewing beers in the

traditional of method brewing using all grain for distinction and flavor. Large breweries use cheap adjuncts like rice and corn to brew their beer. The main physical distinction between the two types of brew is pasteurization. Once a beer has been pasteurized all of the living organisms, yeasts and bacteria have been eliminated or made dormant through the heating process. Almost all beers

produced by large breweries are pasteurized which ensures uniformity and a longer shelf life.

The down side of pasteurizing beer is that it destroys all the natural yeasts and enzymes in the beer, and their potential health benefits. Some may think drinking unpasteurized beer is not safe, similar to concerns about drinking unpasteurized milk. This is not true; the alcohol in the beer will

kill any harmful bacteria present. Unpasteurized beer has health benefits; it contains live yeasts, which are one of the most effective ways of obtaining vitamin B complexes. Certain unpasteurized beers contain lactobacillus, the same beneficial bacteria found in yogurt. Big Beer companies filter their beer, which removes the yeast preventing the beer from clouding at lower temperatures. Filtering the yeast removes most of vitamin B and other nutrients acquired during the brewing process. Through filtering and pasteurization you lose the beneficial bacteria and many of the vitamins, resulting in a less nutritious end product. According to a report from the Brewers of Europe Report moderate consumption of unpasteurized beer has been proven to increase HDL cholesterol levels (good cholesterol), reduce chances of blood clots, be protective against cardiovascular diseases and have an anti-inflammatory effect which can help reduce the risk of heart attack. Therefore, when consumed moderately, beer is not a health risk and may provide a net benefit.

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## Mountains, Minds, and Montana Made

By Laura Cameron

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During the 2010-2011 academic year, Montana State University Food Services spent roughly 1 million dollars on Montana Made or Montana processed foods. That is a total of 23% of the annual food budget. Last year, during the 2011-2012 academic year, MSU was on track to budget 1.1 million dollars, and this year that budget

has grown even more. Montana Made food items are offered throughout campus at all food service venues. Students can find products featuring Montana's ranchers, farmers, processors, and distributors.

According to farm-to-college coordinator Anna Diffenderfer, The Montana Made program is a local food buying initiative created by Montana State University Food Services to optimize and promote the use of Montana grown, processed, and/or manufactured products. This program serves as a catalyst for education and outreach with the purpose of encouraging and building a healthy local food system on campus and throughout the community.

So what does it take to get a Montana Made product into the University Food Service system?

### **Produce Supplier**

- Yearly water test samples, testing for e. coli and coli form counts with information on location taken.
- Completed copy of the USDA Good Agriculture Practices (GAP) and Good Handling Practices (GHP) checklist.
- A copy of your on-farm food safety practices

### **Meat**

- Information on the meat processing facility used (name, location)
- Upon delivery all meat must be market with the USDA or department stamp of approval.

### **Value Added Products**

- Copy of current year's State of Montana issued food manufacturing license.

Diffenderfer states that MSU considers 'local' to include the entire state of Montana, and the goal is to procure as much local food as possible. Over the next few years, MSU's dining services is planning on renovating the Union Market to offer concept food

(similar to what you would find in a food court) and a Montana Made concept station will be a big part of that. University Food Services is currently looking to partner with local farmers to create an all local soup concept to be featured in the Market. To help support and encourage the movement to buy local, MSU's dining services offers events that showcase Montana Made products. Montana Mondays, which occurs throughout the months of April and November, give the chefs at MSU an opportunity to create dishes featuring local foods that are served in the Union Market during the lunch hours. In the month of October, MSU hosts a MontanaFest Dinner, a special dinner that features local Montana products and also provides a great opportunity to show residential students the bounty that Montana has to offer.

MSU has strict procurement standards and vendor requirements. However, if more Montana producers or manufacturers agree to comply with and maintain these standards, many more Montana Made products could make their way onto campus.

For more information on selling to Montana State University's Food Services, please visit:

- <http://www.montana.edu/ufs/mtmade/selling.php>.
- [http://www.foodsecurity.org/farm\\_to\\_college.html](http://www.foodsecurity.org/farm_to_college.html)



# The Bokashi Revolution

By Nicholas Alba

This summer at Cloud 9 Farms I learned much about composting. Composting has been practiced for hundreds of years and is a very environmentally friendly way to convert waste into a reusable and valuable product. Cloud 9 is a small family farm in the Gallatin Valley that produces lots of vegetables, and lots of compost.

The way Cloud 9 composts their plant waste is similar to that of any farm. First you need your plant material or your carbon source, and then you need to mix that with a proper amount of manure, or a nitrogen source, roughly a 30 parts carbon to 1 part nitrogen ratio will be sufficient. After layering or mixing the pile of carbon and nitrogen, one needs to turn the pile every few weeks to rejuvenate the aerobic bacteria which composts the material. This act of turning a compost pile can be very time consuming, especially with numerous large piles. The compost also needs to be kept at a consistent temperature to ensure efficient decomposition; a compost pile should have temperatures around 90 to 140 degrees Fahrenheit. At Cloud 9, a tractor was used to turn the compost piles, but since there was only one tractor, and the tractor was used for various other projects, the

attention they needed in order to compost efficiently. For a small farm to compost efficiently the process needs lots of attention, and can sometimes be neglected throughout the growing season.

There is a new revolutionary art of composting being practiced in Montana. Bokashi is a composting style created in Japan about 30 years ago. It starts with a microbial culture of wheat bran, molasses, water, and EM. EM stands for Effective Microorganisms, created by a Japanese scientist; basically EM is a microbial mixture of lactic acid bacteria, yeasts, photosynthetic bacteria and actinomycetes. When this mixture is added to plant waste, the plant waste feeds the bacteria and begins the composting process. The great thing about Bokashi composting that separates it from conventional composting is the bacteria are anaerobic, meaning they do not need air or oxygen to thrive, in fact once you add your Bokashi to a bucket of plant matter, you simply cover the bucket tightly and wait for 4-6 weeks and your have fresh finished compost that you can add to your garden. Also, with Bokashi composting there is no odor released, so you can have small composting bins in your house. This new style of composting is a less time consuming, faster, and less smelly way to compost plant and even animal waste, and is beginning to gain in popularity.

Mike Dalton of Great Falls Montana operates a non-profit Bokashi composting business called Gardens from Garbage (<http://www.gardensfromgarbage.org/>). His company makes the Bokashi mixture and sells it by the quart or

gallon. The goals of the organization are to promote this easy way of composting to communities to reduce the amount of solid organic waste going to landfills, to create community gardens to feed locals with fresh produce, to have a local food processing plant, and to build year round greenhouses.

Currently, Dalton is working with the Department of Environmental Quality to receive permission to start composting at the community level. As it stands, food waste must be composted on site, meaning in order to have all the plant material composted at MSU, there would need to be an on-site composting center on campus, and the finished product could not be sold, and could only be used on campus; the same rules apply to grocery stores and restaurants. Dalton built a bokashi composting system at the local food bank in Great Falls. Turns out that the system works great, the food bank has cut their waste sent to the land fill in half, reducing trucking costs, and is able to produce more than enough fresh compost to be added to the Food Bank's gardens. The MT Department of Environmental Quality has been looking into this operation and so far things appear good, there are no greenhouse gasses from the Bokashi composting, nor are there smells carrying over to the neighbors, and there has been no sign of ground water contamination. If this system passes through the state, then commercial composting systems can be created using bokashi composting methods. According to Dalton, the MSU solid waste manager E.J. Hook was



Bokashi starter kit

compost piles were not given the

considering implementing a Bokashi composting system on campus to cut out the 300 tons of plant matter being trucked to the Logan landfill each year. Unfortunately, university and state regulations were obstacles to carrying out this vision. If Dalton receives permission from the state to create an off-site composting facility, then more commercial sized composting facilities can be created across the state using Bokashi. This will ultimately reduce the amount of organic waste being added to landfills, which typically constitutes 25-40% of total landfill waste. An effective commercial composting business can significantly reduce the tonnage of landfilled waste. Bokashi is a revolutionary form of composting that should be taught to every young and old farmer, as it has the potential to have very positive impact on the local and global environment.

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## Casting Call

By Olin Erickson

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So you've started a garden, congratulations! Now, what do you do with all your corn stalks and plant residue at the end of the season? Should you toss it in the garbage, compost it, or burn it? One of the big goals of sustainable agriculture is to close loops in the food system. Where traditional composting may not be appealing for kitchen or garden waste, the traditional garden redworm, *Eisenia fetida*, can play an important role in helping you in your documentary worthy effort to save the world with your amazing garden. Composting is an important process that can help reduce

outside inputs of fertilizer. There are many scales of composting from small bins to big windrows. Composting can be a daunting venture to commit to as a backyard endeavor because of the space and work required; depending on the system the compost may require turning for proper aeration. To ease the workload for home gardeners black plastic tumbler bins are commonly employed to assist in overcoming the two hurdles of composting: temperature and aeration. But tumblers have their limitations; in our northern climate they need to get adequate light or they won't heat up enough and breakdown won't happen very well. They also need to be maintained with adequate water. Without constant attention that compost barrel could easily be forgotten and turn into just another aardvark lawn ornament. However, if you set the stage right, *ENTER THE WORMS!* You can be fertilizing with worm castings (excrement) in a jiffy. Vermicomposting, employing force multiplying worms to do your composting, can reduce your trash output while providing numerous other benefits to include improved nutrient and water cycling. Worms can help you add some resiliency to your little food system. They thrive in low light places and if they aren't getting the water they need they'll lay eggs and their prodigy will be back in action shortly after you come back from that nice vacation. With a little thoughtful system design a vermicomposting system can be fairly compact and out of the way. Bringing worms indoors can allow for a fully complete composting season extension. There are numerous do-it-yourself plans on YouTube for how to modify and use

things such as a Rubbermaid tote for a worm bin. There are several 'wormery' systems (made of plastic) that are commercially available. Some, like the "Can-O-Worms", are designed as a trash-can replacement so you can attack the heart of your food system, the kitchen. Keep in mind that the good units address ventilation and drainage as well as critter captivity. Remember that worms don't like meat, dairy, or fatty foods. If worms aren't taken care of properly they will try to find a home elsewhere and your dwelling could look like a sidewalk after a rainstorm. As far as outside applications for making your environment more conducive to worms and the greater system redesign that they could be involved in it would be well worth your time to look at several quality resources that expound on these subjects. I hope you enjoy nurturing the life of your soil.

### Resources:

- Beetz, Alice. "Worms for bait or waste processing (vermicomposting)." NCAT ATTRA publication, 2010.
- Jenkins, Joseph. *The Humanure Handbook: a guide to composting human manure*. Grove City: Jenkins Publishing, 1994. Print.
- "Vermicompost a living soil amendment", available at <<http://cwmi.css.cornell.edu/vermicompost.htm>>
- [vermicompost.org](http://vermicompost.org)

# Earth Powered Greenhouses

By Ben Clark

When thinking of agriculture in Montana, a few crops come to mind; wheat, sugar beets and maybe the occasional corn or lentil. Few people would envision nectarines, peaches, or cherries (outside of the Flathead Lake region). If you thought of lemons or guavas, you might be called a dreamer or even a little crazy. However, all these fruit trees can be and in fact are grown in Montana, right here Gallatin County. With a very short growing season, Montana's climate has limited the number and variety of crops able to grow here.

Greenhouses of all shapes and sizes are a common sight on many farms and residences, extending the growing season and creating a plant-loving micro-climate.

However, it takes more than a simple hoop house composed of PVC and painters' plastic to create an environment in which a peach or guava will grow. The greenhouse must be able to capture and store enough heat, while still being transparent enough to let sufficient light penetrate. This can be tricky in Montana, but not impossible.

John Hemighaus, a resident of Three Forks, MT, has been operating his personal greenhouse for over thirty years, and this alone is impressive. Remarkably, John has done this without the use of a single pesticide or synthetic fertilizer. In addition he is able to cultivate peaches, pears, cherries, nectarines, grapes, lemons,

blueberries, guavas, vegetables and flowers. All of the plants are watered with rain that is captured off the greenhouse roof and stored below ground. A vast variety of plant species and families are grown, breaking the typical monoculture and creating a bio-diverse environment. This bio-diversity attempts to replicate a natural ecosystem; complete with producers, consumers, predators and decomposers. All available niches, are occupied, creating an environment in which very few pathogens are able to take hold and multiply. Hemighaus uses Pacific Tree Frogs as a top predator, keeping insect populations down and relying on a freezing dormant period to thin out weak frogs. As with a natural ecosystem, the greenhouse in Three Forks is fertilized with leaf litter, fallen fruit and other plant detritus.

Hemighaus' greenhouse is passively heated using both solar and geothermal heat. The north wall of John's greenhouse is attached to his residence, which acts as an insulating barrier from the winter cold. The greenhouse itself is buried about six feet below ground level, which serves as additional insulation and draws from the earth's natural geothermal heat. Once below the frost line, about five to six feet below soil surface, the earth remains a constant 55 degrees Fahrenheit year round. This geo-thermal heat not only heats the greenhouse in the winter, but will also cool the greenhouse in the spring, summer and early fall, when temperatures are well above 55. To capture solar heat, various thermal masses can be used. A thermal mass is any object that will capture and store heat throughout the day and in turn slowly release it when ambient air temperatures cool at night. Good examples of thermal mass are rocks and any body of water. Water can be used

to shelter fish, amphibians and a variety of invertebrates in addition to storing solar heat. Rocks are an Good examples of thermal mass are rocks and any body of water. Water can be used to shelter fish, amphibians and a variety of invertebrates in addition to storing solar heat. Rocks are an inexpensive and efficient source of thermal mass and can often be collected from a property, being especially abundant after the greenhouse site is excavated. Solar heat can even passively open a greenhouse's venting windows with the use of a solar venting arm. A solar venting arm is basically a hydraulic hinge, mounted to a vent that operates when a greenhouse gets too hot causing the fluid in the arm to expand, thus opening the vent. When the greenhouse is cool enough, the arm's fluid condenses, causing it to collapse and closing the vent.

For more information please contact Zachary Weiss of Perpetual Green Gardens. PGG is a company specializing in the construction of such greenhouses and sustainable gardens. In addition to the construction of passively powered greenhouses, Zachary guides tours of John Hemighaus's greenhouse in the spring and early summer. Tours are free and open to the public. Zachary can be reached by email at [perpetualgreengardens@gmail.com](mailto:perpetualgreengardens@gmail.com) or by phone at 406-219-1445.



# Getting Back to the Basics in Ecuador

By Claire Slosson

We can all learn from Eleanor Roosevelt's quote, "Do one thing every day that scares you." Living in another country gives one the opportunity to do that and to grow in a way you never could by staying within your comfort zone. The new program Huayra Causay allows students interested in agriculture a chance to live and study in the beautiful South American country of Ecuador. The program was started by Ecuadorian students who had completed an agricultural exchange program in the United States. Upon returning to their country, they wanted to give people from other countries a similar opportunity to learn in Ecuador while strengthening rural communities.

Volunteers through Huayra Causay typically participate in a seven month program in Ecuador. When first arriving in the country, volunteers stay in a nice community living style hostel overlooking the capital of Quito for the first two weeks. During this time, students get to know other volunteers and staff of Huayra Causay, as well as practice basic Spanish and agricultural practices of the area. After training, students are placed in a community where they are able to learn and teach agricultural practices and help in community development projects. The participating communities are spread throughout the country and

offer a wide range of opportunities from coffee farms in the heart of the rainforest to dairy cooperatives by the beach to urban gardens in the bustling city of Quito. Students live and learn in their chosen town for three months then return to Quito to reunite for one week with other volunteers and share their experiences. They are then placed in a second community for another three months. This system allows volunteers to experience the vast variety Ecuador has to offer.

What sets this program apart from other exchange programs is that it is a true grassroots movement. The founders of the program are young, motivated individuals that truly want to make a difference in their home country. Students are placed in the rural communities that will benefit most from volunteer involvement. These communities are so far off the beaten path they are often overlooked by larger exchange programs.

I spent about a month interning with a dairy cooperative in Convento, Ecuador this past summer. I was not participating directly in a Huayra Causay program; however, Convento is one of the communities volunteers may be placed in. I learned and grew so much and left feeling like I had made an impact on this community. Convento is extremely isolated and many people I met had never met a person from another country before. Having a foreigner in the community opened minds to new possibilities both in agriculture and other areas of life. I found the biggest benefits to be:

- Experiencing how a real closed food system works
- Learning to do everything from milking cows to washing clothes by hand
- Living in an extremely close knit community surrounded by friendly hospitable people
- Developing conversational Spanish skills
- Broadening cultural knowledge
- Fostering appreciation and understanding for our food system in the United States
- Connecting and making a difference in the lives of many people

For more information about this exchange program visit:

[www.hcausay.org](http://www.hcausay.org) (the website is only available in Spanish) or e-mail [hcausay@yahoo.com](mailto:hcausay@yahoo.com) (employees can e-mail you information in English)



# That Green Scum

By Forrest Lintner

Algae is often an underrated and overlooked source of energy. The beauty of algae is that it is a renewable source of energy and one of the greenest biofuels currently being examined. In relation to the energy it produces, algae actually sequesters carbon dioxide rather than producing more of it. Algae also stands above other biofuel sources in the amount of space it requires, which is minuscule compared to its neighbors, corn and soybean. In addition using algae as a biofuel does not impact or remove food from the food system like other biofuel sources.

There are many different types of systems that harness the energy of algae. Some involve crushing algae into oils, or digesting the algae to produce methane and hydrogen gas. The system at Algae Aqua-Culture Technologies, Inc. (AACT) of Whitefish, Montana is one example of how algae are being used to produce renewable energy. Instead of crushing algae into oils, AACT digests algae in a cyclical system that produces ample amounts of energy and creates no waste. This system begins with algae grown in raceways, which are shallow pools of water fed with carbon dioxide and sunlight. From the raceways the algae is channeled to the digester system. The digester system uses benign digestive bacteria to break down the alga, which produces carbon dioxide, methane gas, hydrogen gas, and digested algae manure. The third

part of the system consists of the pyrolysis system where waste products, such as woody biomass from lumber mills, are burned without oxygen to produce six different products: heat, carbon dioxide, water vapor, syngas, biofuel (No. 2), and pyrolyzed organic carbon. The last step of the system returns these products to the algae raceways. The heat, water vapor, carbon dioxide, and syngas are all reused to support algae growth and powering the facility. The whole system continually repeats itself, providing a constant renewable source of energy with no waste. The biofuel that is produced from pyrolysis can be refined into number 2 fuel oil, which can power diesel generators and engines. The organic carbon (from pyrolysis), in conjunction with the digested algae manure (from the digester system), can be used as a soil regenerative in agricultural systems (the AACT system produces two tons per day). The methane and hydrogen gas produced from the digester system in conjunction with the syngas produced by the pyrolysis system can also be converted into enough electricity (continuous 250kWh) to power the facility and approximately one hundred homes. In addition to the energy produced at the facility, there is enough space to house and grow vegetables vertically within the structure.

The paradigm of algal energy is only just beginning to see

the light of day, as private companies delve deeper into this phenomenal source of energy. The public may begin to see more and more projects such as AACT's popping up over the landscape. As technology develops and becomes more efficient the cost of facilities like this will decrease and the possibilities of harnessing algal energy will have the opportunity to become more widespread and utilized as a source of renewable energy.

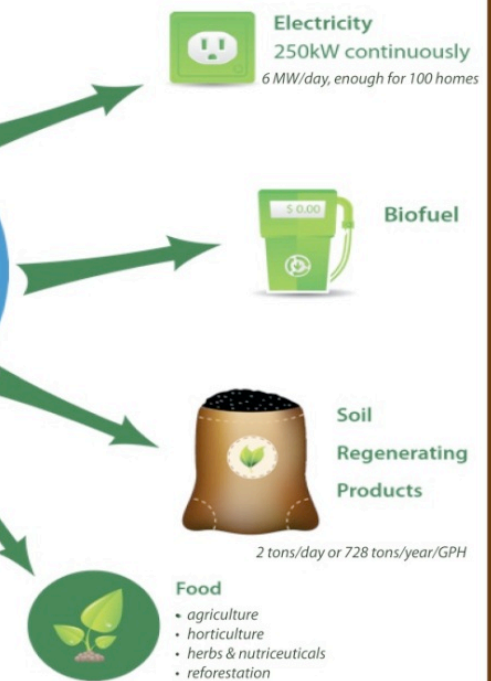
## References

- Clayton. (2008, May 8). How green are biofuels? comparison chart. Retrieved from <http://gas2.org/2008/05/08/how-green-are-biofuels-comparison-chart-pic/>
- Kelson, Robin. (2012, October 12). AACT Diagram.jpg.
- Kelson, Robin. (2012, Oct 12). InputOutput.jpg.

## Our inputs:



## Our Outputs:



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## HOW GREEN ARE BIOFUELS?

Biofuels are getting a bad rap as stories of rising food prices and shortages fill the news. But the environmental, energy and land use impacts of the crops used to make the fuels vary dramatically. Current fuel sources – corn, soybeans and canola – are more harmful than alternatives that are under development.

### FUEL SOURCES

CROP	USED TO PRODUCE	GREENHOUSE GAS EMISSIONS* Kilograms of carbon dioxide created per mega joule of energy produced	USE OF RESOURCES DURING GROWING, HARVESTING AND REFINING OF FUEL				PERCENT OF EXISTING U.S. CROP LAND NEEDED TO PRODUCE ENOUGH FUEL TO MEET HALF OF U.S. DEMAND	PROS AND CONS
			WATER	FERTILIZER	PESTICIDE	ENERGY		
Corn	Ethanol	81-85	high	high	high	high	157%-262%	Technology ready and relatively cheap, reduces food supply
Sugar cane	Ethanol	4-12	high	high	med	med	46-57	Technology ready, limited as to where will grow
Switch grass	Ethanol	-24	med-low	low	low	low	60-108	Won't compete with food crops, technology not ready
Wood residue	Ethanol, biodiesel	N/A	med	low	low	low	150-250	Uses timber waste and other debris, technology not fully ready
Soybeans	Biodiesel	49	high	low-med	med	med-low	180-240	Technology ready, reduces food supply
Rapeseed, canola	Biodiesel	37	high	med	med	med-low	30	Technology ready, reduces food supply
Algae	Biodiesel	-183	med	low	low	high	1-2	Potential for huge production levels, technology not ready

\* Emissions produced during the growing, harvesting, refining and burning of fuel. Gasoline is 94, diesel is 83.

Source: Martha Groom, University of Washington; Elizabeth Gray, The Nature Conservancy; Patricia Townsend, University of Washington; as published in Conservation Biology

SEATTLE P-1

# Fresh Roots in Weathered Soil

By Max Smith

You have probably heard whispers of the challenge facing the next generation of farmers. You may even know a representative of the cohort; a farming hopeful who was not reared on a tractor, did not routinely absorb a field crop or rangeland vista in their youth, and never quite developed the practical skills that seem to accompany rural existence.

By itself, the climb out of an urban or suburban upbringing into a new world of small business and land management is a steep summit. Unfortunately once a Montanan dreams big and aspires to forge a farming or ranching career, they are still years away from ‘working like dogs and eating like kings.’ Because even after gaining a more complete picture of ag business through apprenticeships, new farming training programs or university coursework, an even larger challenge awaits. That is, how a person saddled with debt or unproven credit or a lack of connections in rural areas finds a place all his or her own.

Two of the three largest obstacles identified by the National Youth Farmers’ Coalition in their report “Building A Future With Farmers” deal with this issue. The obstacles are access to affordable land and land that’s available through long-term leases.<sup>1</sup> Ironically counties in Montana so revered for their big skies and open



“The master’s eye is the best fertilizer.”

-Pliny the Elder

landscapes have not escaped these challenges. Instead, the state has become a more formidable place to find land to grow, due to the knock of new doors and the unfurling of new carpets. Thirty-two percent of Gallatin County (544,640 acres) is prime ranchland classified as being under threat of conversion to residential development. As a result, in 2000 the American Farmland Trust (AMF) ranked Gallatin number one out of 263 counties in a seven-state area studied in terms of the total acres threatened.<sup>2</sup> This finding does not just affect beginning farmers who must compete with the endless sea of deeper-pocketed infrastructuralists who will pave the way for new home owners.

When demand for new homes and office parks causes commercial home builders and real estate agencies to elevate the price of bare land to \$25,000-35,000 per acre, as it was in Gallatin County in the mid-2000’s, it affects other planned land uses Montanans desire, from recreation areas to wildlife habitats.<sup>3</sup> These days, the many constituents of wild and open and productive lands can only hope the median age of food producers in Montana is nowhere near the national average (59 years).<sup>4</sup> Because if it *is* representative, and AMF’s predictions for development in the run up to 2020 are accurate, the once scenic county roads will take a turn down “For Sale” sign lane. That’s the

amount of time that about half of America's land-rich agrarians will retire, seek end of life care, and use land assets in a manner that helps them purchase it.<sup>1</sup>

This is the road we find ourselves on – with minor hiccups like the upsurge of young farmers in the past census, the countryside's graying and land prices near urban centers are hard to afford for your average Greenhorn. But incredulous Westerners, the optimists working for a better future food system, see another path. Grassroots community project by project, they're pacing toward it.

In addition to working on food and land policy issues at the county level, the Community Food and Agriculture Coalition (CFAC) runs a farm dating service called Land Link Montana in seven counties in the Western part of the state. The way it works today is simple. New landless farmers pay \$30 and fill out a seeker application detailing their farming interests, receive a list of farms (their locations, acre total, water rights, descriptions of land and infrastructure, and any desired arrangements) in Land Link's database, request contact information for landowners with intriguing farms, the program coordinator relays the information, and the dating begins.

The former Land Link coordinator, Paul Hubbard, guessed what land types might find their way into the database in the early days of the program. And a close look at the list today shows that he was right. "Some might involve outright sales from a retiring

rancher to a beginning farmer, others might be leases involving an owner of a 20-acre ranchette with no ag experience wanting to lease his ground to a neighboring hay farmer looking to expand."<sup>5</sup>

The goal of the program is "to see agricultural land remain under the stewardship of farmers and ranchers, as generations come and go. We do that simply by working with interested landowners, farmers and ranchers."<sup>6</sup> Although Land Link has existed since 2009 and the database swelled this September to 19 available parcels, the process of supporting farm transfers has proven exceedingly difficult – no successful matches have occurred.

Several challenges to matchmaking were identified through an effort to survey seven of the most recent farm seekers.

These included:

- The lack of "ground-truthing" or checking descriptions of landowners with what land and infrastructure exists on the ground.
- Conservation easements drafted to prohibit permanent structures that might be useful to new farmers and ranches, such as milking barns.
- Landowners who have inaccurately described their preferred arrangement or means of compensation, whether it's forming a land contract, long or short-term lease agreement, outright sales, sharecrop, etc.
- The lack of financial or entrepreneurial training provided by Land Link and local financial institutions for farmers. One new farmer cited this need, and even came up with an appropriate title -- "So You Think You Can Farm."

The farm seekers surveyed had only positive things to say about the support they were receiving from current program coordinator, Annie Heuscher, and other staff members at CFAC. This organization has not prevented the conversion of prime agricultural soils to development since creating Land Link, but they've laid the groundwork with a model database that is overflowing with available properties. And after fully assessing the surveys, they may be able to adapt the program so that it is one potent tool in the toolbox geared to stop the bleeding of residential land development and the land-strapped heartache of emerging food entrepreneurs in Western Montana.

## References

- Shute, Lindsey Lusher. "Building A Future With Farmers: Challenges Faced by Young, American Farmers and a National Strategy to Help Them Succeed." The National Young Farmers' Coalition website. November 2011. Available at: [http://www.youngfarmers.org/reports/Building\\_A\\_Future\\_With\\_Farmers.pdf](http://www.youngfarmers.org/reports/Building_A_Future_With_Farmers.pdf)
- American Farmland Trust. "Strategic Ranchland in the Rocky Mountain West." The American Farmland Trust website. 2000. Available at: [http://www.farmland.org/programs/states/documents/AFT\\_Strategic\\_Ranchland\\_in\\_the\\_Rocky\\_Mountain\\_West.pdf](http://www.farmland.org/programs/states/documents/AFT_Strategic_Ranchland_in_the_Rocky_Mountain_West.pdf)
- Peter Brown. Personal communication. October 2012.
- Associated Press. "Average U.S. Farmer's Age Rising, Younger

People Needed In Agriculture.” April 2012. Available at: [http://www.huffingtonpost.com/2012/04/04/average-farmer-age-rising\\_n\\_1403542.html](http://www.huffingtonpost.com/2012/04/04/average-farmer-age-rising_n_1403542.html)

•Courtney Lowery. “Land Link Montana Launches To Match Farmers With Ground.” NewWest.net. February 2009. Available at: <http://www.newwest.net/city/article/land-link-montana-launches-to-match-farmers-with-ground/C8/L8/>

•Land Link Montana. “About Land Link Montana.” 2011. Available at: <http://www.missoulacfac.org/aboutlandlinkmontana.html>

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## Startup Headaches

By Andrew Stickle

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There is little debate that starting farmers and ranchers have tremendous hurdles to overcome. Initial capital acquisition and operating funds can be a significant obstacle to young producers. “The state of new farmers and the challenges and opportunities they face is such a multifaceted issue. The challenge in addressing [startup challenges] is that it doesn’t come down to any one obstacle,” said Beth Gibson of the Rooted Montana Project. However, realizing these obstacles, many public and private organizations have developed resources to support these startup operations.

Mary Ahearn and Doris Newton examine the characteristics of beginning farmers in their analysis *Beginning Farmers and Ranchers*<sup>1</sup>. They found that beginning farmers most

often reported that they purchased land from a non-relative. They also reported that they were less likely to rent land and subsequently farm less acreage and carry higher debt loads.

“It’s very difficult to purchase land at current prices without financial resources of your own [equity],” says Professor George Haynes of the Montana State University Department of Agriculture Economics. “Younger farmers and ranchers are typically utilizing traditional sources of financing, such as Farm Service Agency [USDA], Farm Credit Services [Northwest Farm Credit Services], and local lenders.”

The first step in capitalizing a startup agriculture business is normally to friends and family. The next step is usually to a local branch of Farm Credit Services. In Montana that branch is Northwest Farm Credit Services, which is a cooperative lender owned by producers. There is the potential beginning farmer or rancher will be steered towards the AgVision program through Northwest. This is a nationally recognized program designed to assist starting farmers and ranchers with business preparations and eventually financial assistance through Northwest.

Should a private lender decline the borrower, the next step is into the offices of a public lender such as the Farm Services Agency (USDA) or the Montana Department of Agriculture. These organizations provide financing to potentially more risky borrowers who have been denied financing. FSA will provide two types of services to lenders; loan origination (they lend the money) or guaranteed loans, which means that FSA will provide a guarantee to a public lender up to 95% of the value of the loan. The later option is designed to compensate for limited collateral of the borrower.

Regardless of the inherent challenges of any startup business George Haynes feels hopeful about the future of agribusiness. His advice to those starting out, “Save money! Without personal savings you’re much less likely to start a business and more importantly, you’re much less likely to grow a business.” He notes that most successful agriculture operations started when no one else had cash, as in, with their own money and not through debt equity.

### Further Resources

1. USDA Economic Research Service Document EIB-53, found at [www.ers.usda.gov/publications/eib53](http://www.ers.usda.gov/publications/eib53)

Rooted in Montana, available at: <http://www.rootedmontana.com/index.html>

MSU Extension, available at: <http://msuextension.org/beginningfarmer/>

Beginning Farmers, available at: <http://www.beginningfarmers.org>

# Hot Trend: Farm to Restaurant

By Sam Kerivan

The local food movement is one of the fastest growing segments of the U.S. food system today, yet it still only accounts for about 1.6% of the U.S. market for agricultural products<sup>1</sup>. The food service industry is one of the largest industries in the country, with 41% of the food dollar spent on food eaten away from home in 2010, with those numbers on the rise.<sup>2</sup> And recently, integration of local foods into restaurants has been ranked as the hottest trend by professional chefs.<sup>3</sup> So if this is the case, why aren't more local producers taking advantage of these figures and breaking into the restaurant industry?

There are a few barriers that need to be broken, in order for local producers to contract with restaurants. Having a consistent supply, in the appropriate quantity and quality, is crucial to this market. Chefs are dependent on products in order to run their businesses successfully, so proving you have a reliable supply is key. Also, producers will need to establish distribution of their products, to the restaurant. This may involve hiring an outside distributor, or forming an arrangement with the chef for product pick-up at the farm, or delivery to the restaurant by the producer. Lastly, there state and federal rules and regulations that must be met when selling products to restaurants, in regards to safety and sanitation, and proper packaging of the product.

Once these barriers are overcome, benefits to both the producer and chefs are countless, and partnerships and symbiotic relationships are created between the two. From the chef's stance, they are receiving high-quality, fresh ingredients, that contribute to a better tasting final product. This also gives them an opportunity to market themselves as 'local', and become part of this fast-growing trend. They can provide their producer with some input, as far as what is planted in the upcoming season, and can request certain specialty crops.

From the producer's side, they have a guaranteed buyer all season, as long as they prove they are reliable and supply a consistently high-quality product. This means time does not need to be wasted at other sales outlets, where income is not guaranteed. Also, if the farm name is placed on the restaurant's menu, this gives them free advertising. People will become familiar with their name and may be interested in a CSA share, or purchasing directly from the farm.

There are a few strategies producers can use to break into this market. One way, is to directly approach chefs in a professional manner, and go in alone. This includes setting up a meeting time when the chef is not busy, bringing samples of possible products for the chef to taste, and proving over time that they are a reliable supplier and deliver on time and in proper quantity. This will also give the chef and producer a chance to talk pricing, volume, delivery frequency, and other expectations from each side. This approach establishes a more personal relationship between chef and producer. Producers could also use a more indirect form of establishing these relationships, in using online wholesale food

distributors that are becoming popular and increasing in number. These websites are typically categorized by region, and assist in coordinating selling and purchasing between appropriate producers and chefs. Some are formatted, in essence, like an online farmers' market, where a producer creates a list of available products, and chefs can peruse and place orders with various vendors. Others are set up as matching making sites, where both producer and chef create profiles, and the site links them based on food item needs and availability. This approach, though not as personal, is convenient and less time-consuming. Listed below are a few online wholesalers from different regions of the country.

Buying local helps to boost the local economy, provides fresher ingredients, and contributes to environmental stewardship, so be sure to support local businesses! For information regarding these businesses in your area, visit: [eatwellguide.org](http://eatwellguide.org).

## Top 5 trends

- 1 Locally sourced meats and seafood
- 2 Locally grown produce
- 3 Healthful kids' meals
- 4 Hyper-local sourcing (e.g. restaurant gardens)
- 5 Sustainability

Additional Resources available at:

- [food-hub.org](http://food-hub.org)
- [FarmsReach.com](http://FarmsReach.com)
- [LocallyGrown.net](http://LocallyGrown.net)

Source: National Restaurant Association

# Camelina

By Mike Arnold

Camelina sativa may be the new crop of the future for Montana farmers. With a very storied past, originating in Northern Europe, this crop has proved to be extremely valuable. Camelina can be used for oil for food, medical use, and oil for lamps and as a fuel source. Camelina is a very low maintenance crop that it thrives throughout many parts of Europe, even to the point where it could be considered a weed. If implemented in Montana correctly this plant could be a very viable crop to introduce into Montana's developing agriculture scene.

The climate of Montana suits this crop very well due to its short-season (80-100 days) growing length and its adaptability in most temperate climate zones. Camelina also has a high tolerance to freezing temperature conditions, which would help it survive the sometimes sudden weather shifts of Montana. Also, its drought tolerance makes it a great plant for Montana. These characteristics allow Camelina to thrive in low moisture conditions, low temperatures and marginal soils.

The planting requirements of this crop are easily adapted to Montana farming techniques. The germination of this crop begins when the soil reaches 38°F. The seed is usually planted by way of a broadcast seeder or air drill.

This can even be done onto other crop stubble and even frozen ground. Camelina should be planted earlier than other spring crops due to its high tolerance to frost. The later the crop goes in the smaller the end yield result is.



There is very little work that needs to be done in order to prepare the seedbed for Camelina, making it easy for farmers to integrate into practice.

In order to become a healthy crop, Camelina requires little assistance when it comes to management. Few insects, weeds or diseases really affect this crop. The use of herbicides is not promoted while growing Camelina, due to its high sensitivity to them. Although it may seem too good to be true, Camelina has such amazing qualities that the management aspect of the plant is very low-input for the farmer to undertake.

Harvest can take place anywhere from late June through July. The ideal seed moisture is around 8% for harvesting. Maturity is determined when the pods have become dark tan or brown. By using a combine with fine alfalfa settings you should be able to collect the seeds properly. When collected the seeds should be stored in less than an 8% moisture, so they do not clump. In storing the seed there have been no reported cases of damage being done by insects.

The uses for Camelina are vast. It can be used as an oilseed for oil production, to make cooking

oil, for animal feed, and also for bio lubricants and cosmetics. There are numerous things that this crop can be used for which would allow the average Montana farmer to receive a healthy second source of income. Like with any new crop, there are many new issues that need to be addressed by farmers; but in viewing all of the potential benefits of Camelina it may be very worthwhile for many Montana Farmers.



# The Myth of Botanical Pesticides

By Richelle O'Leary

There is a common misconception in the agriculture community that botanical pesticides are safe alternatives to synthetic pesticides merely because they are considered natural. However, natural does not always imply harmless. Many of the most commonly used botanical pesticides are actually just as toxic and harmful as their synthetic counterparts. Furthermore, many of these botanical pesticides may harm the environment just as much as synthetic pesticides.

The U.S. Department of Agriculture has approved several naturally occurring pesticides for use in organic gardening. Nicotine, derived from tobacco plants, is the most toxic botanical pesticide, even more toxic than many synthetic pesticides. It is exceptionally harmful to humans. High doses of nicotine can cause cardiac arrest, nausea, and respiratory problems. It works as a contact poison and bonds to receptors at the nerve synapses of insects<sup>1</sup>. Rotenone, derived from certain legumes, is also more toxic than several synthetic pesticides. It can be toxic to humans if inhaled. Symptoms include conjunctivitis, vomiting, sore throat, and congestion. It is specifically deadly to fish and other aquatic life. This pesticide works as a stomachBY and

contact poison and inhibits respiration in many insects<sup>2</sup>. Pyrethrum, extracted from chrysanthemum flowers, is the most common home and garden pesticide in the United States. It has low toxicity to mammals but mild symptoms of poisoning do occur. These symptoms include headaches, dizziness, skin rashes, hives, and asthma. This pesticide is also harmful towards bees and other non-targeted insects<sup>1</sup>. Neem, derived from a tree grown in India and Africa, is the least toxic botanical pesticide. However, humans can be exposed during application through skin or eye contact and inhalation. Symptoms include irritation to eyes, skin, and stomach. The pesticide works by reducing insect feeding, acts as a repellent, and interferes with the insect hormone systems, making it harder for them to grow and lay eggs<sup>2</sup>. Rhubarb, though not on the USDA approved list, is worth mentioning. The leaves of rhubarb contain high concentrations of oxalic acid. Ingestion of high quantities of oxalic acid has been associated with the death of humans, swine, and goats. Oxalic acid poisoning is very similar to heavy metal poisoning. When ingested in small amounts, rhubarb leaves can cause symptoms such as vomiting, nausea, respiratory problems, suffocation, and esophageal swelling<sup>1</sup>. It's important to note that if pesticides must be used, care should be taken during application and there are some options with very low toxicity. Sprays made from extracts of citrus, onion, garlic, and red

pepper are a few that have a low toxicity level.

Pesticides should be used as a last resort. Not only are many of them highly toxic but they require frequent application, are generally expensive, may be just as harmful to the environment as synthetic pesticides, and there is a lack of data in terms of chronic toxicity and effectiveness.<sup>2</sup> There are alternative options to using pesticides that are safe, have no additional cost, and help build a healthy soil. Some of the most simple pest management options include intercropping, crop rotation, beneficial insects, selecting pest-resistant varieties, and planting pest-free rootstock.

## References

<sup>1</sup> Tharp, Cecil. *Safety for Homemade Remedies for Pest Control*. Montana Pesticide Bulletin (May 2009): Web.

<sup>2</sup> Cloyd, Raymond A. *Natural Indeed: Are Natural Insecticides Safer and Better than Conventional Insecticides?* Illinois Pest Review. 17 (May 2004): 1-3. Web



# F2S 101: An Introduction to Farm to School in Montana

By Jill McIntyre

The Farm to School program in Montana cities and towns works to build the capacity of existing and new farm to school programs, in addition to implementing direct farm to school educational opportunities in the cafeteria, the classroom, and the community. Further, Farm to School programs foster positive changes in both healthy eating behavior and physical activity in school-age children; help to support the local economy by purchasing food from local farmers or businesses; and instill a sense of community in students.

It is not really known exactly how many schools participate in Farm to School programs, even though multiple organizations have tried surveys to better quantify the number. Research becomes complicated when all the various activities are included. There are many schools participating in farm to school activities or have a farm to school "program" within their school. Many fewer schools have a designated organization that assists them.

Just like the variety of programs around the country, each program/activity has its own challenges. Common challenges

here in Montana include the following: overcoming change (i.e. paradigm shift); finding producers with adequate supply of wanted products; receiving foods in the form that the school needs; meeting the price; cafeteria staff time, availability, and training, and more. By their very nature, Farm to School programs need to be tailored to each school, district, and community.

Since Montana is such a rural and agricultural state, the concept of "Farm to School" is not a new one. Some of the state's schools might have been purchasing local foods, tending to school gardens, or engaging their students in nutrition or agriculture education using local food systems. Programs that formally calling themselves a Farm to School program got started as early as 2005. Missoula Public Schools started their Farm to School pilot in 2005. The National Farm to School website shows that Montana currently has 7 Farm to School Programs profiled on the site, 17 schools reporting involvement, and 2 school districts involved.

Currently, there are a variety of farm to school activities happening across the state. In Hinsdale, the Future Farmers of America (FFA) students are growing and raising food for their community and their cafeteria. In Kalispell, students are eating local foods at school in snacks and lunches. In Bozeman, students journey to farms for the annual Gallatin Farm Fair and farm field trips as well as participating in

their school's garden. The Gallatin Valley Farm to School program also spends 3 weeks every summer providing fun farm-based activities for the children participating in the Summer Lunch Program which provides free lunch for school-age children during the summer months. Schools all over the Montana celebrate National Farm to School Month every October by featuring Montana foods in the cafeterias and activities such as poster contests in the classroom. Finally, there are ten Food Corps members presently located throughout the state organizing school gardens and farm to school initiatives.

Volunteers are a very important component of farm to school efforts in Montana. If you would like to join the movement contact: Aubree Roth, Program Manager, Gallatin Valley Farm to School, Montana State Lead, National to School Network at at (406)-219-1010 or email [aubree@gvfarmtoschool.org](mailto:aubree@gvfarmtoschool.org) Or visit [www.farmtoschool.org](http://www.farmtoschool.org) and [www.gvfarmtoschool.org](http://www.gvfarmtoschool.org) for more information.



# Scaling Up Local Food Systems: Cooperative Marketing a Possible Solution in the Gallatin Valley

By Dylan Strike

**F**or all farmers an effective marketing strategy is key to running a profitable business, but for small-scale producers it becomes even more important. A diversified vegetable operation for example, must spend much more time and effort marketing than large-scale producers growing commodity crops who do not have control over the price, as large national and international markets determine it.

Where these commodity growers can rely on crop price subsidies, expanding production to more acres, mechanization, and subsidized crop insurance programs; small-scale producers must utilize different marketing strategies.<sup>1</sup> There are several different routes that small scale diversified vegetable producers have taken to market their crops including recruiting members into a CSA (Community Supported Agriculture) program, selling directly to consumers at farmer's markets, and selling directly to restaurants. These options are good ways for a farmer to market their crops but it requires a very large time commitment and does not provide avenues for selling large quantities of produce to one account. The problem is that none of the small producers alone are capable of providing wholesale quantities to the larger accounts that are demanding them. One way that small-scale producers can sell their crops without spending all of their time marketing is by joining a Growers' Marketing Cooperative. A Growers' Co-op is an aggregator, meaning that they consolidate and distribute agricultural products, generally from local and regional

farms of varying size to local or regional markets. Because they consolidate a large amount of products Growers' Co-ops can meet the demand of wholesale customers without requiring large-scale production.<sup>2</sup> There are many benefits to producers who join a Growers' Co-op.

Benefits:

- In contrast to other wholesale markets, you have the ability to sell different quantities, large or small, allowing you to maintain the sustainability of your farm
- Products can be marketed locally and regionally
- The Co-op works with the growers before the season to help them with pre-production planning
- The Co-op often serves as the marketer and distributor, allowing the farmer to focus on production and may reduce marketing and distribution cost

There are some considerations a grower should take before joining a Co-op, including the fact that although you can sell more product you will receive a lower price per pound, the co-op may have certain safety, packaging, production practices requirements that you will be expected to meet, and some Co-ops have an annual membership fee.<sup>2</sup>

The Gallatin Valley has several small-scale diversified vegetable producers marketing their products through CSA programs, farmers' markets, and restaurant sales. While all of the farms grow fairly intensively none of them alone have the capacity to supply the demand of larger wholesale markets, like regional distributors and institutions. Forming a Grower Cooperative is

one option that farmers in this region have available to tackle the issue of not being able to supply larger wholesale markets.

A good model for growers in the Gallatin Valley to look to is the Western Montana Growers Cooperative based out of Arlee, MT. According to general manager Dave Prather the Co-op is beneficial in that it allows farmers to focus on farming while the Co-op worries about selling and distributing the product. The Co-op has about 30 member farms and sells to about 100 clients throughout the state. Recently WMGC also developed a CSA program that provides shares with products from several different farms to community members in several different Montana towns. What makes WMGC unique, why hasn't this model been used in other parts of the state? Prather says the following: "We were perhaps only partially unique in MT because there was already a healthy community of small, organic producers in this area, and the Missoula market was already ripe for expansion and was slightly ahead of the rest of Montana in its interest in localized food systems. At this point there are more and more growers in and around the other populated areas of MT and more main stream-type customers interested in sourcing food closer to home." Considering WMGC's success and the growing number of small-scale farmers serving the Gallatin Valley it seems that a Growers Co-op has a lot of potential in this area.

# Recommended Reading List

These books are recommended reading for SFBS students by the program's 2013 graduating seniors.

Robert E. Gough and Cheryl Moore Gough. *The Complete Guide to Saving Seeds*. Storey Publishings. 2011.

Robert E. Gough and Cheryl Moore Gough. *The Montana Gardener's Companion*. Globe Pequot. 2007.

Robert E. Gough and Cheryl Moore Gough. *A Guide to Rocky Mountain Vegetable Gardening*. Cool Springs Press. 2010.

Sally Fallon. *Nourishing Traditions: The Cookbook That Challenges Politically Correct Nutrition and the Diet Dictocrats*. Newtrends Publishing Inc. 1999.

Fukuoka, Masanobu. *The one-straw revolution: an introduction to natural farming*. The New York Review of Books. 1978.

Julie Guthman. *Weighing In*. University of California Press. 2011.

Marion Nestle. *Pet Food Politics*. University of California Press, 2010.

Marion Nestle. *Safe Food*. University of California Press. 2010.

Marion Nestle. *Food Politics*. University of California Press. 2007.

Jonathan Bloom. *America Wasteland*. De Capo Lifelong Books. 2011.

Michael Pollan. *The Omnivore's Dilemma*. Penguin. 2007.

Jane Ziegelman. *97 Orchard*. Harper Paperbacks. 2011.

Psyche A. Williams-Forsion. *Houses out of Chicken Legs: Black Women, Food, and Power*. University of North Carolina Press. 2006.

Upton Sinclair. *The Jungle*. Bantan Dell, a Division of Random House, Inc. 1906.

John Ikerd. *A Return to Common Sense*. R.T. Edwards. 2007.

Marty Strange. *Family Farming: A New Economic Vision*. University of Nebraska Press. 1988.

Garret Hardin. *Living Within Limits*. Oxford University Press. 1993.

Andre Voisin. *Grass Productivity*. Philosophical Library Publishing. 1988.

Joe Truett. *Grass: In Search of Human Habitat*. University of California Press. 2009.

Jim Gerrish. *Management-Intensive Grazing: The*

*Grassroots of Grass Farming*. University of Missouri. 2004.

Raj Patel. *Stuffed and Starved: Markets, Power and the Hidden Battle for the World's Food System*. Melville House Publishing. 2008.

Richard Wiswall. *The Organic Farmer's Business Handbook: A Complete Guide to Managing Finances, Crops, and Staff- and Making a Profit*. Chelsea Green Publishing. 2009.

Mark Winne. *Closing the Food Gap: Resetting the Table in the Land of Plenty*. Beacon Press. 2008.

Michael Pollan. *Second Nature*. Grove Press. 2003.

Jeff Lowenfels. Wayne Lewis. *Teaming With Microbes*. Wayne Lewis. Timber Press. 2006.

Elliot Coleman. *The New Organic Grower's Handbook*. Chelsea Green Publishing. 1995.

Paul Samets. *Mycelium Running*. Ten Speed Press. 2005.

Jody Butterfield. Alan Savory. *Holistic Management: A New Framework for Decision Making*. Island Press. 1998.

# Alumni Updates

## **John Thiebes, 2012:**

Since graduating, I have worked as a full time landscaper for Valley of the Flowers and I have expanded my chicken feed business to include swine and sell across the SW part of the Montana. In January, I moved to the town of Valencia, where the California Arts Institute is located, to begin illustrating and storyboarding a graphic novel that I have been working on for the last few years.



## **Hamilton Lynn, 2012:**

Since my graduation from the SFBS program I have been mixing it up with a few exciting opportunities. I worked for my second growing season at Field Day Farm and Market Day Foods growing and marketing our produce to local families and vendors. Due to the brief of our growing season in the Gallatin Valley, I have phased out of work on the farm as the snow has fallen. For the winter season I am working for a local blacksmith, Tuli Fischer; hand forging custom gardening tools. I am also helping Danielle Fisher with beef sales for Eagle Ridge Ranch at the winter farmers market. Eagle Ridge Ranch is a grass fed cattle operation out of Wilsall, which markets locally to Livingston and Bozeman to various restaurants, caterers, and retail locations. My plans for the near future include working ever industriously and spending free time snowboarding, studying for the GRE so I can get the wheels spinning on my goal of attending

graduate school in the future.

Down the road, I hope to have some land of my own on which to farm and build a geothermal heated greenhouse.



## **Jonathan Hockett, 2012:**

Post graduation has been a whirlwind of activity and excitement. I decided to stick around Bozeman for the time being, so I did my best to find gainful employment. I succeeded in obtaining a couple of jobs. The first is a casual part time position working for Youth Dynamics. I hang out with youngsters who are struggling with various issues and we address their issues by having fun! (Planting seeds with an adolescent can be extremely messy, frustrating, and sometimes rewarding). I also work as a soup chef and salad bar ranger at Clark's Fork. I chop a myriad of vegetables, cook oodles of soup, and make sure that a stray has not ended up in the carrots. For fun and leisure I have done my best to have plenty of both. The summer in Bozeman is always full as I attempt to cram as much as I can into my days. I managed to spend a fair amount of time in the mountains, grow a little food, and catch a few fish. This fall I completed my first ultra-marathon and harvested some big game animals. Now I anxiously await the coming of winter and finding a big kid job someday.



## **Kelsey (Carter) Moore, 2012:**

I graduated last December, and bought a house in Michigan, and we are all moved in!!

Jeff, Kelsey, Warren & Myla Moore

888 Evergreen Ct.

Kingsford, MI 49802

**Have an Update?  
Send it to Alison Harmon at  
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