

SUSTAINING THE PACIFIC NORTHWEST

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New eXtension Website Launched

An educational partnership of 74 US land-grant universities has launched [eXtension](http://eXtension.org), an interactive learning website delivering research knowledge to the public organized around resource areas including Community, Family, Farm, and Pest Management. The current farm resources offered relate to Beef Cattle, Dairy, Cotton, Horses, and Livestock and Poultry Environment. eXtension is also offering online learning opportunities.

Locate Local Farm Products

Farm Finder

<http://farmfinder.wsu.edu/>

Diversifying the Family Farm

Nash Huber, Nash's Organic Produce

AMERICAN FARMLAND TRUST'S 2008 STEWARD OF THE LAND AWARD WINNER

Introduction

We established our diversified certified organic vegetable farm on less than 10 acres in the Dungeness River Delta of the North Olympic Peninsula of Washington State 30 years ago. Today we produce over 30 different vegetable crops on 400 acres, pack and ship wholesale, and sell retail at farmers' markets and our farm store. Our main vegetable crops are winter brassicas (cabbage and Brussels sprouts), carrots and other root crops (parsnips and beets), and a wide variety of hardy greens. We also grow grains and cover crops and raise small numbers of livestock. Our production systems make the best use of our unique climate situation and our market environment.

Soils on our farm are a silty loam with some well-drained and some poorly-drained fields. We devote 10% of our farm land to wildlife habitat where we leave barley grain plantings in the field for bird feed and habitat. Many of our farming practices improve soil quality through better soil drainage, water retention capacity, nutrient availability, and pest management. Rotating small grains and cover crops with our vegetable crops serves all these purposes. Each year we harvest a few acres of our cover crops and grain crops for feed and for seed for the following year. Growing our own seed allows us to use plant-based soil building techniques which would otherwise be too expensive if we had to purchase seed each year.

Cover Crop and Grain Seed Production

We plant over 200 acres to cover crops each year and harvest about five acres for seed, plowing the remainder down as a green manure crop. Annual rye grain interplanted with vetch is our primary cover crop mix. We seed 100 lbs. per acre



Winter grown Red Bore kale with a chick weed 'cover crop'.

Continued on next page



WASHINGTON STATE UNIVERSITY EXTENSION

Small Farms Team

Sustaining the Pacific Northwest Food, Farm, & Natural Resource Systems

This quarterly newsletter provides a discussion forum for people working towards community-based sustainable food, farm, and natural resource systems using interdisciplinary oriented research and practitioner knowledge.

[WSU Small Farms Team](#)

[WSU Center for Sustaining Agriculture & Natural Resources](#)

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for rye which produces up to 10 tons of seed per year for use on our farm. It is doubtful we could find organic seed within a reasonable shipping distance and at a reasonable price.

The crops we include in our farming system provide the soil with nutrients. We interplant vetch with rye to provide nitrogen and biomass to the soil for the following season. Vetch does very well on our heavier wet soils and becomes the dominant crop in the interplanting. In our area, rye grain for seed is usually ready for harvest in mid-August. The remaining stubble is turned into the soil with a couple of passes with a heavy Kello cover crop disc. Any mature seed passing through the grain harvest combine will sprout and grow into a very nice green cover just in time for fall rains. The next spring, we incorporate the green cover crop at the boot stage (seed head is formed in the stalk, but not yet emerged). This gives us a field ready for a May vegetable crop planting. The field will have abundant fertility and a big boost in stable soil organic matter.

Several years ago we started raising laying hens to supply eggs for our farm store and we finished a few feeder pigs. At that time, we purchased barley from another farmer in our area for feed. Now we raise our own barley, using our own seed saved from the last year's harvest. In 2006, we harvested 25 acres of barley grain and seed. We plant our barley in April and harvest the grain in early September. Barley grain yields about two tons per acre on our farm. Barley fits well with our vegetable rotations since it

provides us with a way to move out of vegetables for a year and to build up durable organic matter with its straw. The increasing price of feed grains provides another good reason to produce our own grain and seed. Producing our own feed grain also permits us to supply eggs and pork to our community and would not be possible if we had to purchase feed grain. This year we will feed out about 60 feeder pigs.



Free range feeder pigs.

We have experimented with Triticale the last five to six years. A cross between rye and wheat, Triticale is a hull-less grain and looks similar to wheat. Chickens seem to prefer triticale to barley. We have not yet raised more than a few tons of triticale in any one year. Triticale can be planted in early spring as soon as a good seed bed can be prepared, but no later than early May since it takes a bit longer to mature than barley. Fall planting generally works best, but we encountered rust problems with fall-planted triticale.

Buckwheat is a good summer crop which provides cover cropping and bee forage, as well as another animal feed source. We find buckwheat grain/seed is relatively easy to grow and grows quickly enough to plant twice during the year: in May or early June and then no later than July 15 as a late season crop following an early spring vegetable crop. A July planting will still mature, but it is a little risky given our fall rains and cool temperatures. For both plantings, we seed about 80 lbs to the acre.

Marketing

Due to labor issues and shipping costs, we reevaluated our farm marketing
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Harvesting oat grain for seed and feed.



Transplanting vegetables.

plan. Shipping our produce box now costs over 10% of the f.o.b. (freight on board) cost we receive for our product. We are exploring how we can increase local and farmers market sales versus our wholesale markets. The high cost of nearby land limits our ability to expand our land base and thus increase production and sales volumes. In response to this situation, we opened a farm store 12 years ago. Our farm store is a natural extension of our farmers market and enables our customers to purchase our products every day. Sales at the farm store and farmers' markets continue to grow each year, as do our wholesale sales. Our latest project involves the purchase of an old creamery building on a piece of land adjacent to our farm and very near our farm store. We are in the process of moving our farm store to this larger location and evaluating the facility for other uses, such as a processing center for value added farm products.

Conclusions

We began farming mixed vegetables for wholesale and retail markets 30 years ago, and for the past 20 years we have expanded our farming operations to include production of our own cover crop and grain seed. In the past five years, we expanded into raising chickens and pigs while also expanding our grain production to produce all our own feed. While we continue to be known best for our vegetable crops, our farm's productivity is dependent on the soil fertility and tilth that comes from growing cover crop and grain crops. We believe our vegetable and grain-legume rotation systems result in reduced pest pressures and improved soil quality and fertility.

By expanding our production systems to include cover crops and grains, our vegetable farm has become more diversified and, therefore, more sustainable. Diversifying our farm has been the key to our survival in a rapidly urbanizing environment. Urban neighbors provide us with market opportunities we constantly try to capture.

Nash's Organic Produce, 1865 East Anderson Rd., Sequim, WA 98382



Soybeans Successfully Produced in the Treasure Valley

Clinton C. Shock, Erik B.G. Feibert, & Lamont D. Saunders, Oregon State University, Malheur Experiment Station (Ontario, OR)

Introduction

Soybean is a potentially valuable new crop for the Pacific Northwest. Soybean could provide raw materials for biodiesel, high quality protein for animal nutrition, and oil for human consumption, all of which are in short supply in the Pacific Northwest. In addition, edible or vegetable soybean production could provide a raw material for specialized food products. Soybean as a rotation crop improves soil qualities through its residues and its nitrogen (N_2)-fixing capability. Because of the high-value irrigated crops typically grown in the

Snake River Valley, soybeans may be economically feasible only at high yields. Through breeding, selection, and the development of appropriate cultural practices, we have succeeded at achieving high soybean yields.

Soybean varieties developed for mid-western and southern states are not necessarily well adapted to Oregon's lower night temperatures, lower relative humidity, and other climatic differences. Previous research at Ontario, Oregon, demonstrated that plants for eastern Oregon need to have high tolerance to seed shatter and lodging, reduced plant height, increased seed set, and higher harvest index (ratio of seed to the whole plant) compared to the commercial cultivars bred for the Midwest. We have developed new soybean lines with these attributes. In addition, starting in 2005, we began a new planting configuration (Figure 1) to provide a more uniform distribution of the plants over the soil surface. The more uniform plant distribution should result in improved access to light, nutrients, and water for individual plants.

This report summarizes work done in 2005 and 2006 as part of our continuing breeding and selection program to adapt soybeans to Eastern Oregon and includes yield enhancements achieved by changing the planting configuration. Our [soybean reports](#) from the last decade are available at our [station web site](#). Alternatively, type "soybean" in the search function on the home page to find all reports covering soybeans.

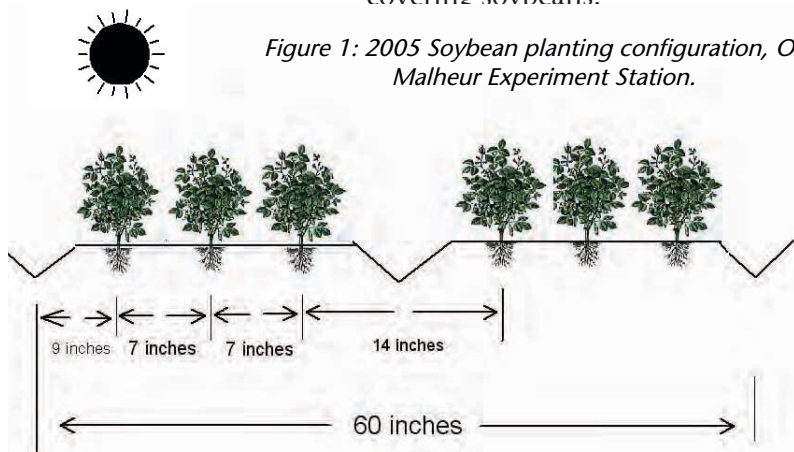


Figure 1: 2005 Soybean planting configuration, OSU Malheur Experiment Station.

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Materials and Methods in 2005

Please see the full details of our methods in our [annual reports](#) for [2005](#) and [2006](#).

We inoculated seed with soybean-specific bacteria, *Bradyrhizobium japonicum*, that will not be present in the soil. The inoculant was applied to the seed or in the seed furrow at planting. High seeding rates (200,000 seeds/acre), narrow rows (three rows, seven inches apart



Figure 2: Erik Feibert in a seed increase of high yielding soybean lines at the OSU Malheur Experiment Station.

on each 30-inch bed), and mid-May planting dates are key factors to obtain high yields in the Treasure Valley. The canopy completely closes over the row using this high planting density (Figure 2). Weeds and insect pests, including lygus bugs and spider mites, were

controlled as needed. Soybeans were ready for harvest when plants were completely brown and dry, but before pods began to shatter (Figure 3).



Figure 3: Chocolate Labrador looks for pheasants in soybeans ready for harvest outside of Weiser, ID.

The field was furrow irrigated on alternate furrows when the soil water tension at an eight-inch depth reached 50-60 centibars (cb). Soil water tension was monitored by six granular matrix sensors (GMS, Watermark Soil Moisture Sensors

Model 200SS, Irrrometer Co., Riverside, CA) installed in the bed center at an eight-inch depth. Sensors were automatically read three times a day with an AM-400 meter (Mike Hansen Co., East Wenatchee, WA). For an explanation on using soil water tension as an irrigation criteria, see [extension brochure EM 8900](#).

Results and Discussion

Yields in 2005 ranged from 56.2 bu/acre for 'Sibley' to 76.6 bu/acre for '107' while yields in 2006 ranged from 64.4 to 81.9 bu/acre (Table 1). All of the lines developed at the Malheur Experiment Station have clear hilum and light seed color. Several lines had seed counts sufficient for the manufacturing of tofu (<2,270 seeds/lb). Several lines combined high yields, little lodging, and early maturity. Crude fat ranged from 20.49% for 'M92-220' to 21.77% for 'M92-085' in 2005 (Table 1).

Table 1: Performance of Soybean Varieties (2005 and 2006)

Cultivar	Yield (bu/acre)			Average 2002-2006			
	2005	2006	Average	Days to maturity	Lodging (0-10)	Height (cm)	Seed Count (seeds/lb)
107	76.6	74.2	75.4	82	3.5	86	2,187
M12	70.4	70.0	70.2	82	4.3	86	2,125
M9	73.9	68.2	71.1	80	5.0	87	2,217
106	72.0	70.4	71.2	81	3.6	83	2,117
103	73.7	72.4	73.1	82	3.7	91	2,140
M15	73.9	68.4	71.2	82	3.6	92	2,204
Lambert	73.3	81.9	77.6	93	8.1	86	2,343
M1	73.0	70.6	71.8	82	3.8	85	2,239
104	70.9	66.6	68.8	80	4.1	93	2,228
M3	69.6	72.2	70.9	84	3.6	93	2,254
108	70.5	65.8	68.2	79	3.2	86	2,180
M4	73.0	72.6	72.8	84	3.1	84	2,236
M92-185	71.9	64.4	68.2	81	3.7	88	2,155
312	68.4	71.8	70.1	87	2.3	91	2,428
101	74.4	70.2	72.3	82	4.1	91	2,094
M16	69.1	69.6	69.4	81	2.8	93	2,183
M13	67.9	66.6	67.3	80	3.5	92	2,251
Korada	67.8	70.6	69.2	87	4.4	86	2,384
601	65.6	66.4	66.0	84	2.7	91	2,379
303	67.7	67.0	67.4	84	3.8	94	2,469
M2	62.0	70.0	66.0	85	4.3	84	2,144
511	65.0	70.2	67.6	86	3.2	89	2,519
307	64.3	70.0	67.2	85	2.9	90	2,497
608	70.2	68.0	69.1	80	3.8	87	2,161
305	64.2	66.6	65.4	85	2.7	84	2,450
309	67.5	66.2	66.9	84	3.1	91	2,501
514	68.6	66.6	67.6	80	2.5	90	2,284
M92-220	63.4	68.8	66.1	86	4.4	97	2,515
313	62.5	68.4	65.5	86	4.5	91	2,460
311	68.1	67.4	67.8	85	2.1	87	2,404
308	64.6	65.2	64.9	85	1.8	88	2,503
Gnome 85	65.4	75.3	70.4	89	8.0	96	2,220
M92-225	68.0	66.0	67.0	78	3.7	90	2,292
909	70.8	66.2	68.5	79	7.4	87	2,301
905	71.1	66.2	68.7	79	7.5	86	2,378
OR-6	65.1	72.2	68.7	84	7.9	85	2,328
Evans	69.3	71.0	70.2	88	8.8	88	2,232
Sibley	56.2	66.8	61.5	88	9.0	87	2,111
OR-8	57.8	69.6	63.7	88	8.8	85	2,102
Average	68.4	69.2	68.8				
LSD (0.05)	8.0	6.1					

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Crude protein ranged from 34.27% for '106' to 36.54% for 'M92-220' in 2005.

On average, 2005 and 2006 yields were higher than previous years, possibly due to the modified planting configuration. The previous configuration included seeds planted in single rows on 22-inch beds instead of three rows on a 30-inch bed used later.

Summary

We have found over the years that high soybean yields can be achieved in the Treasure Valley by employing MES varieties selected for the environment. In addition, high planting rates, narrow row widths, modest fertilization, use of *Bradyrhizobium japonicum* inoculation, appropriate May planting date for the location, appropriate irrigation, and timely control of lygus bugs and spider mites and other pests all contribute to successful soybean production in the region.

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Food Safety Starts on the Farm: Introduction to Foodborne Illness and Foodborne Pathogens

Karen M. Killinger, Assistant Professor, WSU Department of Food Science

This article is the first in a series dedicated to discussing farm-related food safety issues and will focus primarily on vegetables and fruits, although other foods will also be addressed. Everyone involved in food production from growing, packing, processing, preparation to consumption share a common enemy: foodborne pathogens and foodborne illness. This article introduces foodborne illnesses and foodborne pathogens by addressing some common food safety myths. Warning: this article might not make for polite dinner conversation!

Myth #1. The “stomach flu”. In many cases, the “stomach flu” is actually a foodborne illness. Initial foodborne illness symptoms are often flu-like in nature – aches, weakness, fever, and headache – followed by the more classical foodborne illness symptoms – nausea, abdominal cramps, vomiting and diarrhea. The term “stomach flu” is used to describe the illness due to the similarity of initial symptoms and politely describe the unpleasant, classical symptoms; however, this is a misnomer and has led many people to believe foodborne illness is a rare event when in fact 76 million people in the United States experience a foodborne illness annually (Mead, 1999). Most people can relate to the symptoms described above and know from personal experience, symptoms usually subside in 24-72 hours. Therefore, most cases of foodborne illness do not require medical attention, and many people do not realize they have experienced a foodborne illness.

Myth #2. The most publicized pathogens cause the most illnesses in the United States. *E. coli* O157:H7 receives media attention because it causes severe illness and is among the most deadly foodborne pathogens. In 2007, *E. coli* O157:H7 caused 545 reported illnesses in 10 states (CDC, 2008). The most frequent causes of foodborne illness in the United States are (in approximate order): Norovirus, *Campylobacter*, *Salmonella*, *Clostridium perfringens* and *Giardia lamblia*. Norovirus causes the most illnesses, around 9.2 million cases each year. However, most Norovirus infections are not life-



Salmonella is among the top three most frequent foodborne illnesses in the United States.

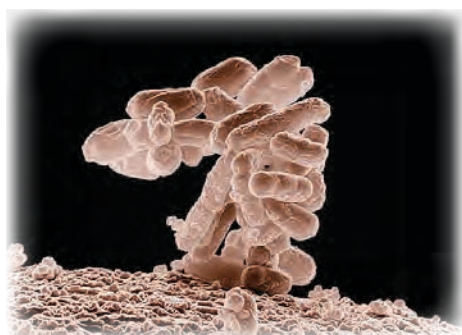
threatening and subside without the need for medical attention. *Campylobacter* and *Salmonella* each cause approximately 1.5 million illnesses each year (Mead, 1999) and range from fairly mild to severe infections.

Myth #3. The food consumed immediately prior to experiencing foodborne illness symptoms is the food that caused the illness. The incubation period (the time between consumption of the causative agent and the onset of symptoms) for many foodborne illnesses averages 24-72 hours. There are three types of foodborne illness: intoxications, toxin-mediated infections, and infections. Intoxications involve the consumption of a toxin or poison produced by a foodborne pathogen prior to ingestion. *Clostridium botulinum* and *Staphylococcus aureus* cause foodborne intoxications. *Staphylococcus aureus* typically has a rapid onset of 3-6 hours. Although intoxications may involve the food consumed most recently, none of the five most frequent foodborne illnesses are intoxications. Toxin-mediated infections involve the production of a toxin after consumption. *Clostridium perfringens*, a classic toxin-mediated infection, ranks among the five most frequent foodborne illnesses and has an incubation period of 12-24

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hours. It is likely that other foods will be consumed prior to the onset of symptoms. Finally, foodborne infections, such as Salmonella and Campylobacter, commonly have incubation periods of 24-72 hours. Most people cannot remember exactly what they ate three days prior to the onset of symptoms and this poses a challenge when investigating outbreaks.

E. coli O157:H7, a strain of enterohemorrhagic E. coli, most closely resembles a toxin-mediated infection, but some may classify it as an infection. E. coli O157:H7 intimately attaches to intestinal



Low-temperature electron micrograph of a cluster of E. coli bacteria. Each individual bacterium is oblong shaped. Photo by Eric Erbe, digital colorization by Christopher Pooley (USDA ARS).

cells which can result in mild to moderate diarrhea. E. coli O157:H7 then releases Shiga toxin which can be disseminated throughout the bloodstream, reach the kidneys and can result in the severe complication, hemolytic uremic syndrome (HUS) which can result in kidney failure and death, especially among high-risk populations.

Myth #3. Pathogens must grow in a food to cause an illness. It is not necessary for a pathogen to multiply and grow on a food in order to cause illness. Some pathogens such as E. coli O157:H7 and some Salmonella strains have a low infectious dose and the mere presence of these organisms is a food safety concern. It does not take many cells of O157:H7 to make a person sick or cause a fatality, as few as 1-10 cells is sufficient to cause an illness!

Myth #4. Everyone is equally susceptible to foodborne illness. Four groups have developing or weak immune systems that makes them more susceptible to foodborne illness: 1) infants and young children, 2) the elderly, 3) immunocompromised individuals and 4) pregnant women. Immunocompromised individuals include those with chronic conditions, such as diabetes, HIV/AIDS, and cancer, or are organ transplant recipients. However, acute conditions can also compromise the immune system for shorter periods. For example, stress or taking antibiotics for an infection, can temporarily weaken a healthy individual's immune system. Everyone must make their own decisions about the level of risk they are willing to accept when it comes to food consumption. Understanding who is at greater risk allows for more informed decisions about eating high-risk foods.

Myth #5. You can visually evaluate the safety of a food product. Spoilage microorganisms cause deterioration of food product quality over time and often cause off-odors and off-flavors in foods, but spoiled foods do not necessarily contain pathogens. Spoilage microorganisms have likely out-competed the pathogens in the food. We do not consume spoiled foods because they taste and smell bad. Spoilage organisms do not cause illness, pathogens do. In most cases, foods containing pathogens look and taste fine. There are no visual indications that the food could make you sick!

Foodborne pathogens are naturally found in the environment. For example, Clostridium botulinum, Clostridium perfringens and Listeria monocytogenes are all naturally occurring in soil. However, pathogens occur at low levels in the environment and are not typically a common occurrence. However, there is always a risk that pathogens could be present and contaminate food.

In summary, foodborne pathogens survive in the soil and the environment and can be present in raw foods. Some pathogens pose a health risk

even when present in low numbers and can cause severe illness or death. Therefore, it is vital to address food safety from farm-to-table to reduce the risk of foodborne pathogens in food products.

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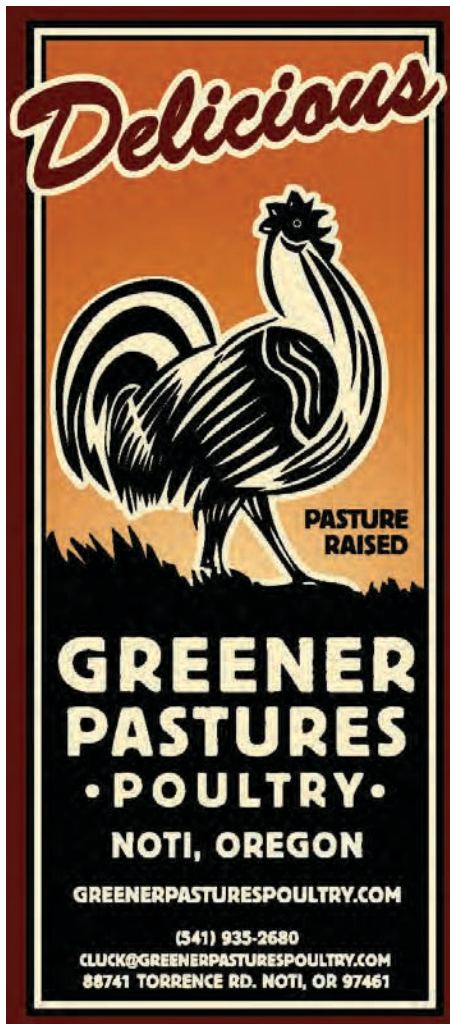
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Grains Website for Western Washington

WSU Mount Vernon Northwestern Washington Research and Extension Center has posted a [Grain web page](#) that contains information regarding grain production specifically for Western Washington. Information includes general production, fertilizer recommendations, pest management, and marketing.



Labels that differentiate farm products in the marketplace, such as pasture-raised poultry and organic produce or meats, can add significant value to a product.



Organic and Beyond - Consumer Demand Growing for Differentiated Farm Products

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Editor's note: Reprinted with permission from USDA's [Rural Cooperatives magazine](#). This article is based on the author's research report, [An Analysis of Food-Chain Demand for Differentiated Farm Commodities: Implications for the Farm Sector](#), published under a cooperative research agreement with the Cooperative Programs of USDA Rural Development.

Around the country, a growing number of consumers are choosing fresh local produce, pasture-raised meats and artisan breads and cheeses. Like organic foods, the attributes of these products are not necessarily apparent, labels may be needed to differentiate them. Consumer demand for quality food appears to be experiencing a paradigm shift. Consumers want to know where their food comes from and how it is produced.

A survey mailed to more than 1,000 randomly selected consumers in five coastal California counties revealed that 59 percent wanted to know more about their food. Specifically, they wanted to know about food safety, nutritional content, how food animals are treated, environmental impacts, working conditions, wages, and how far the food travels (Curlee, 2006).

Consumers are increasingly saying they choose foods for social, environmental, and long-term health reasons. An underlying dissatisfaction with conventional fare may explain the strong growth rate of the organic sector over the past 15 years. Recent studies have shown a greater interest in locally produced foods than in organic products (Ostrom, 2006). In one study, consumers preferred food grown locally using some pesticides to foods grown organically (Pirog, 2004).

Responding to consumer demand, the Whole Foods grocery store chain announced in 2006 that it would greatly expand its local organic offerings. A *Time* magazine article suggests that "the new activist slogan on campus is 'Eat Local' (Roosevelt, 2005), and reported that 200 universities around the country were purchasing food from regional farmers, according to the Community Food Security Coalition.

Price Still a Barrier

Price remains the most prominent barrier to increased consumption of organic products (Hartman Group, 2004). For most consumers, the relative price differential between a conventional and an organic item determines their purchasing behavior (Yiridoe et al., 2006). For die-hard organic customers, price is relatively less important, as they will purchase organic products without much regard for price. However, as large discount retailers like Wal-Mart begin carrying inexpensive organic items, a new, larger group of organic consumers can be expected.

Industry leaders believe that expanding market preferences and concerns can support multiple certification options (Exo, 2006). If consumers are mainly looking for fresh produce grown without pesticides, a certification system could be developed for this attribute. If the overriding concern for milk consumers is hormone usage, another certification could be developed to address this issue.

Pressure from consumers and other groups for rBST-free milk has encouraged several large dairy cooperatives to ban the usage of this chemical and label their milk accordingly.

Can Changing Consumer Preferences Help Family Farmers?

Can demand for higher quality foods help family farmers stay in business? Since institutional food service operations can use fairly large quantities, supplying high quality food to this channel holds some hope for mid-scale producers. Focused

Continued on next page

efforts to bring buyers and sellers together will be needed to coordinate these types of transactions.

Alternative certification programs such as Food Alliance certified or Family Farmed, both of which have web-based background information and third-party certification, help guide businesses and consumers to producers who are catering to this market.

Demand Exceeding Supply

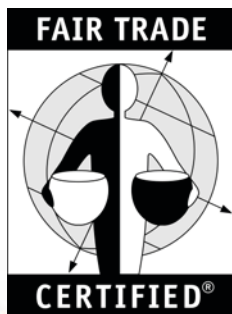
Demand for high-quality, differentiated farm products appears to be outpacing supply (Kirchenmann, 2006; Yee, 2006). While there is currently a window of opportunity, the timeframe may be limited. Large companies such as Wal-Mart, Costco, and Whole Foods already contract directly with farmers, using their house brands to market these products.

Farmers need their own branding and marketing systems if they want to maintain more control and profit for themselves, but they may need extensive marketing assistance plus processing and distribution facilities in order to do this.

Organic Valley provides an excellent example of a market-savvy grower cooperative, with sales of more than \$330 million and participation by more than 1,000 dairy, vegetable, poultry, beef, citrus and beef farms in 2006.

Dairy has been one of the most rapidly growing segments of the organic market. Purchases of organic dairy products comprised 13 percent of the organic food market in 2003 and is predicted to grow by over 15 percent per year through 2008. Substantial conversions to organic production are needed to supply

this growing market. Clearly, there is consumer demand for hormone-free, antibiotic-free, pastured dairy products. But large organic dairy producers are now dominating the market for these types of products.



With a 78% growth rate, meat represented the fastest growing category of organic food in 2003 (NBJ, 2004). Demand for organic meat, fish, and poultry are expected to grow at a rate of 43% through 2008. Currently, there is a shortage of organic meat due to the recent rapid rise in demand, the time and cost of becoming

organically certified, shortages of organic feed, and a relatively long production cycle, particularly in the case of beef.

Demand for "natural" brands is also very strong in the meat and poultry categories. Restaurants and food services are using natural offerings, including several restaurant chains.

Organic and natural meats are perceived as safer and "cleaner" than

conventionally raised meats that can use antibiotics, steroids, or growth hormones, according to the results of a phone survey in 2001 of 500 randomly selected respondents from Nebraska, Iowa, Wisconsin, and Missouri (Food Processing Center, 2001). Other important consumer concerns include the environment, animal safety, sourcing, and traceability. Consumers also state that natural and organically raised meat tastes better (CDS, 2006).

Strong consumer demand is evident in the organic poultry and egg categories as well. Wholesale prices for organic poultry averaged more than 350 percent of conventional poultry for January 2006 through June 2006, while USDA says wholesale prices for organic eggs were more than four times higher than prices for conventional eggs for the same period.

From Organic to Otherwise Differentiation

Will consumers who buy organic food be interested in buying farm products that are differentiated in other ways?

If products can cater specifically to consumers' main concerns, such as free of genetically modified organisms (GMO) or grown without broad-spectrum pesticides, then consumer demand should be higher. This is especially true if these characteristics can be provided at a lower cost than the organic product.

If farmers can provide fresh, locally grown, sustainably produced products, they should be able to interest the growing segment of consumers who are purchasing organic. About two-thirds of the consumers in a recent study purchased organic foods for health and nutrition reasons (Hartman, 2004). Other reasons included taste

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"Farmers need their own branding and marketing systems if they want to maintain more control and profit for themselves, but they may need extensive marketing assistance..."



(38%), food safety (30%) and the environment (26%).

Consumers are willing to pay more for multiple attributes, such as organic grass-fed beef. Multiple attributes together may provide the necessary impetus to sell the product.

Consumers are increasing their consumption of fresh foods, which they believe provide better taste, health, and nutrition (Reynolds-Zayak, 2004). In a Fresh Trends 2004 report, consumer panelists reported on their current use of fresh produce compared to five years earlier (Barton, 2004). Overall, consumers reported purchasing an average of 18 percent more fresh produce compared to five years earlier. Increasingly, fresh fruit is consumed as a snack, in order to increase fresh produce intake.

If non-organic farmers can grow foods without the use of pesticides, then they may be addressing one of the consumer's most serious concerns.

A successful example of this type of approach is the certified pesticide-free tomatoes produced by Eurofresh, a U.S. corporation which operates the single largest glass greenhouse system in the world in Arizona. Eurofresh claims its varieties have more cancer-fighting lycopene than any others. Its products are certified by the Nutriclean program of Scientific Certification Systems, which performs random checks and requires stringent recordkeeping.

Another example is the pasture-raised poultry label Greener Pastures Poultry. This company successfully developed a devoted clientele for its premium, pasture-raised poultry. After weighing the costs and benefits of various certification schemes, it decided against the use of third-party certification. Sadly, it ceased operation after five years, due to the inability to develop a processing facility that would allow it to operate at a sustainable level.

Broad Appeal of 'Locally Grown'

Differentiated farm products may fill a specific niche without having to incur the costs of adhering to organic

guidelines. A recent poll suggests that the appeal of "grown locally by family farmers" is very broad, as 75% of the consumers and 55% of food business respondents chose these terms as their first choice for produce or meat products (Pirog, 2003).

"Buying local" is one way for consumers to support local agriculture while eating fresher, less-processed foods and reducing energy spent on transporting food. A Roper poll conducted for Organic Valley, a growers' cooperative headquartered in Wisconsin, revealed that the majority of Americans trust smaller scale farms to produce safe, nutritious food in ways that won't harm the environment.

For a detailed list of the references used for this article, please send an [e-mail to the author](#).



Tidbits

New SARE Projects for the Pacific Northwest

The Western Sustainable Agriculture Research and Education (SARE) program approved \$2.48 million funding in the 2008 grant cycle. Thirteen out of 46 grants funded went to recipients in Washington, Oregon, and Idaho.

Washington grants (\$471,268):

"Integration of microbial pesticides in pome fruit production in the Pacific Northwest," a research and education grant (\$120,418) by Lawrence Lacey, WSU Entomology Dept., Pullman.

"Assessing habitat and dietary switching by predators in a cover crop system," a research and education grant (\$121,430) by David Horton, WSU Entomology Dept., USDA-Wapato.

"Combining trap cropping and natural chemical lures to attract and kill cruciferous flea beetles," a research and education grant (\$191,316) by William Snyder, WSU Entomology Dept., Pullman.

"Integrated nutrient management for small farm swine and sheep

production," a farmer/rancher grant (\$8,505) by Bruce Dunlop, Island Grown Farmers' Co-op, Lopez Island.

"Training and connecting agricultural professionals through an immersion field course and the Cultivating Success instructor training program in Washington," an agricultural professional and producer grant (\$29,599) by Catherine Perillo, WSU Crop and Soil Sciences, Pullman.

Oregon grants (\$472,760):

"Enhancement of pollination by native bees in blueberries and cranberries," a research and education grant (\$178,377) by Sujaya Rao, OSU Crop and Soil Science, Corvallis.

"Sustainable solutions to IYSV on onion via grower-research partnerships," a research and education grant (\$177,527) by Clinton Shock, Malheur Experiment Station, OSU Ontario.

"Improve dry land farming: high desert basin," a farmer/rancher grant (\$13,834) by Charles Gregg.

"Butcher waste as bio-fuel," a farmer/rancher grant (\$14,885) by Ross and Kelly McGarva, Lakeview Lockers, Lakeview.

"Tri-state organic certification and conservation planning cross training," an agricultural professional and producer grant (\$88,137) by Chris Schreiner, Quality Control Director, Oregon Tilth, Salem.

Idaho grants, totaling (\$59,939):

"What good are pasture-raised ducks to whole farm systems?" a farmer/rancher grant (\$14,942) by Mary Rohlfing, Morning Owl Farm CSA, Boise.

"IBC technical services to farmers and ranchers for online markets in south central Idaho," an agricultural professional and producer grant (\$29,997) by Judy Hall, Idaho's Bounty Cooperative, Ketchum.

"A multifaceted approach to managing powdery mildew on organic table grapes in southwest Idaho," an agricultural professional and producer grant (\$15,000) by Ariel Agenbroad, Canyon County Extension, U. of Idaho, Caldwell.

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News FROM CSANR - Feise Retires

Feise Retires - Positions CSANR with Great Momentum



When the WSU Center for Sustaining Agriculture and Natural Resources (CSANR) was launched in 1992, there weren't too many supporters. Only a few people like Anne Schwartz, a farmer from Rockport, Washington, understood the vision and the opportunity. The Legislature established the Center, but provided no funding, and only a half-time director was supported out of WSU funds for the first seven years.

The Washington Sustainable Food and Farming Network (WSFFN) played a key role in encouraging WSU to support a full-time CSANR director in light of the growing interest in sustainable agriculture and the public demand for information and research. An internal search at WSU occurred during early 2000 and led to the selection of Dr. Chris Feise as the first full-time director.

"I had been trained as an economist and understood the importance of farming profitably as far as having continuity of the farming operation and maintaining a healthy rural economy," said Feise. "I have always believed the people should come before profits and that is why I was so excited about finally working in a program through CSANR where community acceptability and social justice rounded out the variables that defined sustainability," he added.

Feise guided CSANR through a period of tremendous growth. Recognition

of sustainability as a key societal issue grew in the state and nation, as well as at WSU during this time, and brought more appreciation for the work CSANR had done and could do. His energy, creativity, and personality were ideally suited to taking advantage of this changed awareness to enable the Center to really do what it was established for. He strengthened the faculty leadership team that makes up CSANR, reinvigorated the citizen advisory committee, built new relationships within the University and with many other partners, and tirelessly advocated for sustainability anywhere he could.

With his leadership, he and the team launched a number of new programs: small farms, Organic Cropping Research, Climate Friendly Farming, and BIOAg to name a few. These have expanded the resource base at WSU to work on sustainability issues, induced more faculty involvement, provided assistance to new constituencies, and delivered solid results (e.g., anaerobic digester, Cultivating Success training,

state climate change policy, rangeland training, and immigrant farmer programs).

"Chris had the vision, the fortitude and a way of working with people to try new things that helped create new partnerships," said Anne Schwartz who sits on the CSANR advisory board as well as serving as president of Tilth Producers of Washington. "He helped design new standards for research as well as new, practical applications for all growers interested in biological crop management," added Schwartz.

Feise and the CSANR team brought in over \$10 million in grants and gifts to support the Center projects. Major sources included the Paul G. Allen Family Foundation, USDA programs, the Kellogg Foundation, the Environmental Protection Agency, Washington Department of Ecology, King County, commodity research commissions, and legislative allocations. In addition, new positions were created to expand the capacity of CSANR – small farms program director; BIOAg coordinator, educator, and value-added specialist; bi-lingual farming specialists; and an economic analyst.

On March 31, 2008, Feise retired from this position with 28 years of service to WSU and the people of the state. A service trip to

Haiti was first on his retirement agenda. His dedication to creating a better future through promoting stewardship, justice, and compassion were guideposts for his years at WSU and an inspiration to those who worked with him. The CSANR team and WSU family all thank him for his innumerable

contributions, his passion for his work, and the pleasure of his company. We will miss him as a part of our daily lives.





An Interview with Chris

What do you think were CSANR's greatest accomplishments while you were Director?

The first order of business was to convince people that sustainable agriculture was relevant to all of agriculture and not just to a small group of operators. We made a point of communicating CSANR's commitment to serving all of Washington agriculture. While we have made considerable progress along these lines, we are not anywhere near completion.

Shortly after my arrival at CSANR, it became clear to me that given our sparse funding for essential operations from WSU Extension and the CAHNRS' Agricultural Research Center (ARS), we needed to acquire greater funding to meaningfully leverage change. It was also clear that progress would require enlisting more faculty and grass roots support for CSANR's mission. Fortunately, some of the most talented faculty around provided leadership for defining our programs and writing proposals. These new programs appealed to the public and brought in the funding necessary to leverage WSU toward change. At the same time, we collaborated closely with the Washington Sustainable Food and Farming Network that supported us in many ways, including meeting with and promoting sustainability to WSU administration and also lobbying for federal and state funding for organic and BIOAg programs at CSANR. We now have one of the leading organic programs in the country, and I am confident that BIOAg will make its mark in time.

Our Climate Friendly Farming program perhaps brought the most visibility to CSANR within WSU. The initial

\$3.75 million grant from the Paul G. Allen Family Foundation to address greenhouse gases in agriculture not only brought significant funding, but it also positioned WSU as a leader in the global warming and agriculture field. Our faculty and ARS partners brought in over \$10 million which engaged 30 faculty, graduate students, and post-docs in the research and Extension efforts.

Small farms still form a critical segment of most agricultural sectors around the world. Small farms comprise over 90% of all Washington farms. It is a



great tribute to WSU and interest groups in Washington that we have one of the stronger, more active, and effective small farm programs in the country. The interactive dynamic of the WSU Small Farms program (part of CSANR) with an overall emphasis on sustainability, has greatly contributed to the growth and development of the program and CSANR itself. Both the Small Farms program and CSANR have been recognized through the Congressional Showcase and Big Cat awards.

Greatest challenges?

We face increasing competition for resources due to peak oil and global climate disruption. Maintaining a holistic and worldwide view requires a

much higher level of commitment to interdisciplinary approaches than normally practiced in universities. Most universities, including WSU, have long been entrenched in the disciplinary reductionist approach to science, often leading developing technologies and practices that are more harmful than beneficial in the long run. Cultural change must occur if we are going to be successful in addressing the large complex problems we face.

Redesigning our living systems offers great promise. Finding truly sustainable local and regional solutions would appear to offer promise as well. Much more work on policy analysis and

policy change around the Farm Bill needs to be done before the US will become sustainable. At a minimum, Farm Bill subsidies that contribute to driving farmers off the land around the world and contributing to global hunger and dependency will need to be eliminated.

Where do you see CSANR heading? What are your hopes for the future?

CSANR is well positioned to provide educational leadership to address

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priority needs in organic farming, biologically intensive agriculture, small farms, and Climate Friendly Farming. CSANR can help WSU integrate the production area with human and animal health while linking new approaches and practices with practical on-the-ground economics. Can we capture value-added in the food and agricultural systems while becoming more environmentally responsible and producing more healthy foods? I see potential to build on the Food Alliance model of sustainability and help farmers create new value chains that build community through long term relationships that are profitable and provide marketing systems for family sized farms.

with each other and with the outside world as they struggle to survive. We installed computers in a school, a small community cyber café, a trade union, a women's group, and in Cite Soliel, one of the largest slums in the Western hemisphere. The timing of our trip happened to coincide with the food demonstrations and riots that have been in the news. It all brought



Tidbits continued....

California County Seeks to Link Farmers with Inner Cities

ATTRA. The Contra Costa County Board of Supervisors is taking action to address food deserts in inner city areas, says the [Contra Costa Times](#). The Boards directed departments to work with the existing Buy Fresh, Buy Local campaign and county farmers to improve fresh food distribution and access within the county. The effort will include food supplies and curriculum for area schools, as well as CSAs and nutrition education for other community residents.

Organic Wheat Trial Yields Over 100 Bushels per Acre

A multi-year [organic cropping systems trial](#) conducted by Montana State University in Bozeman yielded 101 bushels of winter wheat per acre in 2007. The Bozeman wheat also yielded better than 12.5 percent protein in 2007, though protein content has been a challenge in other organic wheat crop trials in the state. Perry Miller, Montana State University researcher, characterized the heavy yield as a mixed blessing: it proves that it is possible to grow very high-yielding wheat organically, but also shows organic production can be less predictable than conventional, with risk increasing over time. The trial plot is experiencing loss of some nutrients after nine years of crop rotation.

Pasture-Raised Meats Gain Converts

bohemian.com A proliferation of pasture-raised meat sources is inducing even some vegetarians to opt for grass-fed and humanely raised meats, according to the [North Bay Bohemian](#). Producers are also offering sustainably raised meats that find a ready market among chefs and shoppers. A sidebar article describes a new twist on the CSA: a meat-buying club that provides members with a supply of beef, pork, and lamb each month. The service includes meat sauces and recipes prepared by regional chefs, to help buyers learn to cook unusual cuts.

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How about your personal future? What's on the horizon?

I want to reconnect better with what is happening around the globe pertaining to social change for ordinary people. It disturbs me that a large percentage of the world's population lives in poverty and fear. I feel the urge to connect more directly and to find meaningful ways to use whatever experience I have that may be of value to others in their struggles for a more sustainable future. In this regard, I went to Haiti within a few days after my retirement with one of my sons and a few friends who had been there before. The main purpose was to deliver and set up refurbished computers and monitors for poor people so they could communicate

home the reality that people around the world are facing starvation as their incomes are miniscule and they can not pay the rapidly inflating prices of food staples like rice. Little covered by the media and little understood by the US public is the causal linkage in the case of Haiti between the lack of rice production today and the US policies of the last decades that opened the door to flooding Haiti with heavily

subsidized American rice thus driving the Haitian rice sector out of business. I plan to follow up with subsequent trips.

Final Thoughts

I valued every day of my work with CSANR. WSU provided support for my work and that of the CSANR leadership team. I am grateful for the opportunity I had to grow and develop. I will always treasure the teamwork and collaboration and the friendships at WSU and with the many extraordinary people I had the privilege to meet over the years. I wish you all the greatest success in whatever you undertake. Thank you.



Visit to the Farm: Agricultural Energy Efficiency

WSU Extension Energy Program. Bonneville Power Administration (BPA) tries to bring energy savings to farmers' pumping and irrigation equipment in the January issue of the [BPA's Energy Efficiency Customer Newsletter](#) (p. 2).

Biofuels: Two Studies Add Fuel to the Controversy

Worldwatch Institute. Two studies in the journal *Science* have reinforced the urgency of moving quickly to a second generation of biofuels. Clearing land for biofuel crops, especially when it involves the loss of forests, peatlands, and grasslands (nature's premier method of carbon capture), is a bad idea.

Announcements

Study Correlates Local Food Environment with Disease Risk

ATTRA. A [landmark study](#) by PolicyLink, the UCLA Center for Health Policy Research, and the California Center for Public Health Advocacy shows direct correlation between where people live in California and their risk for obesity or diabetes. The groundbreaking study, *Designed for Disease: the Link Between Local Food Environments and Obesity and Diabetes*, examines the correlation between the health of nearly 40,000 Californians and the mix of retail food outlets near their homes. The key finding: people living in neighborhoods crowded with fast-food and convenience stores but relatively few grocery or produce outlets are at significantly higher risk of suffering from obesity and diabetes.

USDA Releases Business Plan for NAIS

USDA's Agricultural Marketing Service (AMS) released a [draft Business Plan](#) (PDF/793 KB) to further the implementation of the [National Animal Identification System \(NAIS\)](#). AMS encourages participants in voluntary marketing programs such as the USDA Process Verified, the Quality Systems Assessment and the Non-Hormone Treated Cattle

Programs to meet the inherent animal identification requirements by using NAIS. Currently, all AMS partners that have approved marketing programs are actively encouraging the use of premise registration and NAIS compliant Animal Identification Numbers for these marketing program participants. Using NAIS, producers would at the same time meet the requirements for animal identification and traceability for these AMS marketing programs.

Northwest Ag Business Center

Check out the web site for this new non-profit in Mt. Vernon, Wa.



Resources

Farm Energy Search Tool

ATTRA. National Sustainable Agriculture Information Service (SARE) features a [Farm Energy Search Tool](#) on their website. The tool allows users to find energy-related equipment, funding, and technical assistance in their state. Energy-related businesses, agencies, and non-profit organizations serving agriculture are welcome to submit or update listings. Check out SARE's new publication, [Clean Energy Farming: Cutting Costs, Improving Efficiencies, Harnessing Renewables](#).

IPM Quick Tips for Common Pests

ATTRA. The University of California IPM Statewide Integrated Pest Management Program released several new titles in its "Quick Tips" series of references in April. The new fact sheets, which are available online, address a variety of insect and disease pests. Titles include "Mosquitoes," "Peach Leaf Curl," "Powdery Mildew," "Spider Mites" and "Thrips."

Internet Strategies to Improve Farm Business Management

Southern Rural Development Center. Expanding awareness and adoption of Internet-based technologies by farm managers is the focus of a newly released curriculum by the SRDC. [Internet Strategies to Improve Farm Business Management](#) focuses on six

major topics including The Internet as a Communications Tool, Business Planning and Market Research on the Internet, and Developing and Maintaining Your Web Site.

Industrial Farm Animal Production Report Released

ATTRA. In 2006, The Pew Commission on Industrial Farm Animal Production (PCIFAP) began an examination on the impacts to humans, animals and the environment of intensive food animal production. Areas studied included the spread of zoonotic diseases and other public health threats, environmental degradation, animal welfare concerns, and socioeconomic effects on rural communities. The final report, [Putting Meat on The Table: Industrial Farm Animal Production in America](#) (PDF/6.2MB), offers practical recommendations designed to address public health, environmental, and animal welfare concerns; ensure a safe, abundant food supply; and foster sustainable and economically viable models of animal agriculture.

Food Facts Resource Available

Leopold Center. [Food Facts: Results from Marketing and Food Systems Research](#) summarizes the findings of the Leopold Center's research, demonstrations, studies and surveys in this rapidly growing area where food culture, economics and environmental issues intersect. Since 2001, the Leopold Center has invested \$1.6 million in 80 projects as part of its *Marketing and Food Systems Research Initiative*. Results are categorized by type of project, from food miles and place-based research to research on niche meat markets, transaction costs and various aspects of the grape and wine industry. The resource is designed for use by farmers, food entrepreneurs, local food system practitioners, and other researchers.

Local Food Cooperative Software Available Online

ATTRA. Oklahoma Food Cooperative announces a new website for its [Local Food Cooperative Management System software version 1.4.2](#). This software

Continued on next page

operates on an order cycle. Producers and farmers log in and add products for sale to their product catalog at any time. During a designated time, cooperative members place orders for available products, and producers coordinate order fulfillment. This online system is available free under the general public license system. It can be downloaded online, but is not a “plug-and-play” system.

Publication on Organic Farming and Climate Change Released



ATTRA. The International Trade Centre has published a new report entitled [Organic Farming and Climate Change](#) (PDF/1.3MB). This publication concludes organic agriculture has much to offer in both mitigation of climate change through its emphasis on closed nutrient cycles and is a particularly resilient and productive system for adaptation strategies. It also raises the issue of whether organic agriculture should be eligible for carbon credits under voluntary carbon offsetting markets and the Clean Development Mechanism.

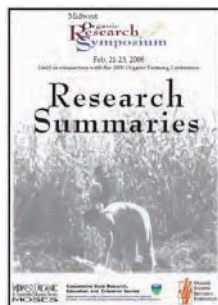
Global Organic Statistics

ATTRA. The International Federation of Organic Agriculture Movements (IFOAM), the Research Institute of Organic Agriculture (FiBL) and the Foundation Ecology and Agriculture (SÖL) have compiled the latest statistics about worldwide organic in The [World of Organic Agriculture: Statistics and Emerging Trends 2008](#). The study shows 30.4 million hectares are currently certified according to organic standards (data as at the end of 2006). Australia has the largest certified organic surface area, with 12.3 million hectares, followed by China (2.3 million hectares), Argentina (2.2 million hectares) and the USA (1.6 million hectares). In terms of certified land under organic management as a proportion of national agricultural area, Austria (13%) and Switzerland

(12%) top the statistics. The global organic market reached a value of US \$38.6 billion in 2006, with the vast majority of products being consumed in North America and Europe.

Organic Research Symposium Summaries Posted Online

ATTRA. The 1st Organic Research Symposium was co-hosted by the Organic Farming Research Foundation and MOSES February 21-23, in conjunction with The Upper Midwest Organic Farming Conference. The full set of [research summaries](#) from the symposium is now available online from OFRF. Topics include weed management in organic systems, organic livestock, vegetable and fruit production, soils, pest management, and economics of organic systems.



Hoophouses & High Tunnels

View [videostreams](#) about Introduction to Hoophouses and High Tunnels, *Types of Hoophouses*, *Considerations before Purchasing*, *Installation*, *Maximizing Production to Meet Market Needs*, and *Using High Tunnels to Meet Market Needs*.

Resources Available to Help Small Meat Processors

University of Wisconsin-Madison faculty developed Web-based resources to assist small meat and poultry processors with Hazard Analysis and Critical Control Point (HACCP) implementation. The resources cover three areas: validation of critical limits, development of HACCP plans and evaluation of raw-product temperature deviations. The Meat Process Validation [web site](#) also includes Model HACCP Plans, Documentation for Validating Critical Limits, Monitoring Guidance, and Corrective Action Guidance.

Crop Profitability Calculator

ATTRA. Leopold Center funding led to the development of an on-line calculator that will help farmers

determine the profitability of various food crops. Recently completed work studied the costs and decision-making processes of independent restaurateurs, local food producers, and restaurant patrons. The free Produce Profitability Calculator helps producers create scenarios to help make decisions about what and how much to plant as well as sales decisions such as how, where, when, and setting a price. The tool was developed as part of a Leopold Center competitive grant to the Hotel, Restaurant, and Institution Management (HRIM) program at ISU. A user's manual (PDF/515 KB) for the calculator is also available.

NAL Agricultural Thesaurus & Glossary of Agricultural Terms

The USDA National Agricultural Library has published 2008 editions in both Spanish and English. USAgNet reports the Thesaurus and Glossary website features a new format presenting parallel English and Spanish language interfaces, enabling users to search and read all background materials in either language.



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