

SUSTAINING THE PACIFIC NORTHWEST

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Alternative Strategies to Transition to Organic Grain Production in the Palouse

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Introduction

Over the past decade, demand for organically grown products, such as wheat, other dryland grain, and forage crops, grew 20% annually. Although Washington State boasts some of the most productive soils in the world, only 10 certified organic producers produce organic grain and the demand for their products far exceeds their production capacity. The three-year transition period to certified organic production can be a difficult time for grain producers as they may experience declining yields due to weed infestations and inadequate soil fertility, and dockage penalties due to poor crop quality. Organic farmers rely on biologically robust soils capable of sustaining crop production during the certified organic period. Learning and mastering these unfamiliar management techniques, such as green manure fertility regimes and mechanical weed control, require time and experience.

A research project funded by USDA-CSREES, the Organic Transitions grant (2002-2006) focuses on developing transitions to organic crop rotation systems for grain in the Palouse. Such systems include management techniques to reduce weed populations and increase the quality of the soil while maintaining farm economic viability.

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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.

This is a joint newsletter of the WSU [Center for Sustaining Agriculture & Natural Resources](#), the [WSU Small Farms Team](#), the [WSU Small Farms Program](#) and the [Water Quality Management Team](#).



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Expectations. The learning curve associated with the transition from conventional to organic production will be steep even under the best of circumstances. The biggest challenge for most farmers will likely be replacing conventional pesticides with biological production practices such as cover crops. We expect that the interdisciplinary team of researchers and farmer cooperators involved in this project will enable all of us to gain a better understanding of the trade-off issues among weed management, soil quality and economics during the transition to organic crop production.

Materials and Methods

We are evaluating nine crop rotation systems to better understand the trade-offs among weed management, soil quality and economics (Table 1). The transition rotation systems we are studying vary from a conventional control containing only wheat and barley crops, to a three-year grain cropping scenario that includes leguminous pea crops, to the inclusion of one year of a green manure crop, two years of green manure crops, and a full three years of green manure crops. Finally, we are also evaluating a three-year perennial forage rotation system. We anticipate that the specific components of a successful transition to organic rotation system will depend on the goal of the farmer with respect to short-term profitability and long-term enhancement of soil quality.

We established our field study in spring 2003 on Lester Boyd's farm located west of Pullman, WA. Individual plots measure 30 by 50 feet and are arranged in a randomized complete block design with five replications. We worked closely with WSU and USDA plant breeders, and organic seed industry experts to choose grain and legume cultivars that are regionally suitable and a green manure crop that should provide adequate soil fertility (Figure 1). The wheat plots were sown with an approved organic granular fertilizer, and sprayed after emergence with a fish emulsion fertilizer.

Weed Control. Tillage will generally be conducted in the fall, however in spring 2003 we disked the entire study area due to high residue conditions, but retained enough surface residues to reduce wind or water erosion potential. Annual weeds are controlled throughout the study area with pre-plant rotary harrow and pre and post-plant rotary hoe operations. Perennial weeds tend to occur in discrete patches in the study area and are controlled by hand hoeing or flaming. Forage crops are mowed to minimize production of mature weed seeds. Spring soil samples collected prior to planting help track changes in soil quality and the weed seed bank within each rotation treatment. Soil samples are placed in pots in the greenhouse and watered regularly to promote weed seed germination. The weed species are destructively counted on a weekly

basis, and the soil is remixed each week followed by a cold treatment to promote further germination. In addition, just prior to grain harvest, weed biomass is estimated in three quadrants in each plot. During the certified or-

Table 1: Transition Cropping Systems
(est. spring 2003)

System	Transition			Certified Organic	
	Year 1	Year 2	Year 3	Year 4	Year 5
1	SW	WW	SB	SW	WW
2	SP	WW	SP	SW	WW
3	SP	SW	SP	SW	WW
4	SP	WW	L GM	SW	WW
5	SP	SW	L GM	SW	WW
6	L GM	WW	L GM	SW	WW
7	L GM	SW	L GM	SW	WW
8	L GM	L GM	L GM	SW	WW
9	Forage	Forage	Forage	SW	WW

GM= green manure; SW=Spring Wheat; WW= Winter Wheat; SP=Spring Pea; L=Legume; SB=Spring Barley

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ganic phase of the experiment (years 4 and 5) we will evaluate the crop competitiveness of wild oat, a primary weed in the region.

Soil Quality. Soil biological activity will be measured through an estimation of earthworm populations in each plot as well as an estimate of the soil's physical properties by using bulk density and aggregate stability tests. Active soil organic matter (SOM) will be assessed by measuring the Particulate Organic Matter (POM), which is highly correlated with SOM, but is more labile and responds to management before changes in total SOM appear. The POM fractions will also be analyzed for total C and N by automated dry combustion using a LECO carbon-nitrogen-sulfur analyzer. We will test Potentially Mineralizable Nitrogen (PMN), a measure of how much inorganic or plant available N is in the soil at the time of sampling, to predict how much N will become available or mineralized from the soil organic matter.

Crop Productivity. Annual measurements in the wheat and pea crops include stand counts, crop canopy development, yield and appropriate grain quality indices. Forage crops are measured for above ground dry matter production and nutrient content.



Pullman FFA students collect biomass samples

Green manures are measured for above ground biomass, and carbon and nitrogen content (Figure 2). In the first year of certified organic production (year 4 of this rotation study) spring wheat followed by a winter wheat crop will be planted to serve as a quality indicator. The wheat will be evalu-



Mary Fauci and Dave Bezdicsek check faba plant roots for nodules

ated for protein content, test weight, dockage due to contamination, and end-use indices associated with bread making.

Economic Viability. Economic analyses will focus on the impacts of the transition crop productivity and stable pest and nutrient cycles once a farm is certified organic. Thorough records from the beginning of transition into certified organic production will be used to develop enterprise budgets for each transition rotation system in the study. This will include all inputs, production practices applied, machinery complement, yield and prices received for like product at the time of harvest. This data will be extrapolated to represent a full scale farming operation, and sensitivity analyses will be performed using a linear programming land use model. These analyses will allow us to determine profitability in the face of changing conditions such as price, land size, or fertility regime.

Community Involvement. To help ensure this project's real world applicability and to help transfer our results to the public, an organic advisory board has been established for the project. The board is comprised of local organic producers with first hand organic crop production experience. We have also employed students from the Pullman High School Vocational Agriculture program to assist with the project. Various other field oriented outreach activities are planned and a website will be developed to convey our progress and results.

Email [Rob Gallagher](mailto:Rob.Gallagher) for further information.

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## Organic Tree Fruit Production Continues to Expand

[David Granatstein](#) & Elizabeth Kirby, WSU CSANR

Organic production experienced dramatic expansion in all crops during the 1990s, including tree fruit. Growers accessed new biological pest control techniques, more choices of organically approved inputs, and an expanding information base. While there are limitations for certain crops in some climates, there is no fundamental biological obstacle to organic farming systems. In some cases, organic farming improves pest management and soil quality, and often organic foods bring a premium price that makes organic production a sound economic choice for growers.

### Global Trends

Organic production of temperate tree fruits continues to expand around the world (Table 1). Growers have become more interested in organic

**Table 1: Certified Organic Apple and Pear Acreage** (est. 2001)

| Region        | Apple (ac)    | Pear (ac)    |
|---------------|---------------|--------------|
| U.S.          | 17,272        | 2,798        |
| Europe*       | 8,675         | 3,665        |
| New Zealand   | 2,873         | 163          |
| South America | 1,385         | 932          |
| Canada        | 800           | 60           |
| <b>Total</b>  | <b>31,005</b> | <b>7,618</b> |

\*Europe data is from 2000.

orcharding due to chronically low prices in conventional fruit markets and increased interest in alternative production systems that reduce regulatory risk. And in the semi-arid fruit regions of western North America, certified organic production has proven very feasible.

The United States leads the world in organic apple acreage. Italy, Germany, France, Switzerland, and Austria are the leading European producers of organic tree fruit, grown for both the fresh and juice markets.

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Canada has a modest sized but well-established organic tree fruit sector primarily based in the Okanogan Valley of British Columbia, a semi-arid climate. Turkey's commercial organic tree fruit production data were not provided by the identified certifiers. The expanding organic acreage in New Zealand, Chile, and Argentina primarily targets the export market for counter-season fresh markets in North America and Europe. New Zealand has an active research program focused on developing organic production. No data were available for organic production in China, the world's largest apple producer.

Organic tree fruit acreage is increasing rapidly in some countries (Table 2). New Zealand started in 1998 with virtually no organic production, but now accounts for over 10% of the tree fruit acreage. Chile doubled its organic apple production between 1998 and 2001 and is projected to almost quadruple its acreage in apples by 2005, as illustrated in Table 2 (Ceroni Gaete, 2002)

**Table 2: Organic Apple Acreage**

| Year  | Acres    |       |             |
|-------|----------|-------|-------------|
|       | WA State | Chile | New Zealand |
| 1998  | 1801     | 235   |             |
| 1999  | 2334     |       |             |
| 2000  | 4228     | 356   | 1200        |
| 2001  | 6540     | 580   | 2873        |
| 2002* | 8240     | 1124  |             |
| 2003* | 9951     | 1519  |             |
| 2004* |          | 1815  |             |
| 2005* |          | 2112  |             |

\*Projected figures.

Organic production of other tree fruits is also expected to continue to grow, with Chilean organic cherry production currently estimated at 186 acres. Chile exports about 70% of its organic commodities, with 57% exported to the United States, 35% to Europe, 8% to Japan, and <1% to Canada.

**National Trends**

In the first study of trends in U.S. organic tree fruit production

(Granatstein, 2000), Washington, California, and Arizona dominated production and represented 80% of the organic apples grown in the country. Recent data indicate that Colorado's tree fruit industry shifted to significantly more organic production to remain competitive and utilize its climatic advantage. Apple scab comprises the main impediment to organic production in more humid regions although some insect pests also limit production.

U.S. organic apple acreage increased from 12,770 acres in 2000 to 17,272 acres in 2001 as transitional trees became eligible for certification (Table 3). Washington State leads organic apple production with 38% of the U.S acreage and has another 3400 acres in transition. California, Arizona and Colorado also continue as major producers with 26%, 16%, and 9% of the apple acreage, respectively. Currently there is no means to separate out the volume of organic fruit going to fresh market or to processing. However, personal contacts in California and Arizona suggest that significant amounts of their organic apple production go to processing, whereas the Washington crop is primarily aimed at the fresh market. However, even in Washington State, a significant portion of organic apples

**Table 3: Certified Organic Tree Fruit\* Acreage (est. 200)**

|                                 | Apples | Pears | Cherries | Stone | All Fruit |
|---------------------------------|--------|-------|----------|-------|-----------|
| <b>Total U.S.</b>               | 17,272 | 2,798 | 727      | 3,589 | 24,735    |
| <b>Washington</b>               | 6540   | 1308  | 303      | 285   | 8436      |
| <b>California</b>               | 4529   | 842   | 179      | 3112  | 8662      |
| <b>Arizona</b>                  | 2800   |       | 30       |       | 2830      |
| <b>Colorado</b>                 | 1535   | 100   | 133      | 155   | 1923      |
| <b>Idaho</b>                    | 503    |       |          | 3     | 506       |
| <b>Oregon<sup>1</sup></b>       | 350    | 500   | 25       |       | 1180      |
| <b>Wisconsin</b>                | 163    | 16    | 1        |       | 188       |
| <b>Michigan</b>                 | 163    |       | 50       | 2     | 215       |
| <b>Vermont</b>                  | 225    |       |          |       | 237       |
| <b>Pennsylvania<sup>2</sup></b> | 150    |       |          |       | 150       |
| <b>New York</b>                 | 130    | 20    | 4        |       | 154       |
| <b>Nevada</b>                   | 55     |       |          |       | 55        |
| <b>Virginia</b>                 | 50     |       |          |       | 50        |
| <b>Ohio</b>                     | 30     |       |          |       | 34        |
| <b>Iowa<sup>3</sup></b>         | 30     |       |          |       | 50        |
| <b>Arkansas</b>                 | 18     |       | 2        |       | 20        |
| <b>Texas</b>                    | 1      | 12    |          | 32    | 45        |

\* Only includes pome fruits and stone fruits.

<sup>1,2</sup> Figures are from 2000.

<sup>3</sup> Estimated by M. Wills (Iowa Dept. of Agriculture and Land

and pears appear to be sold into conventional markets, based on a comparison of production versus organic fruit sales data collected by the Washington Growers Clearinghouse (D. Granatstein, unpublished data).

**Washington State Trends**

Washington State continues to expand organic tree fruit acreage, but at a slower pace (Table 4). Reduced price

**Table 4: WA Organic & Transitional Tree Fruit Acreage**

|                       |              | 1998 | 1999 | 2000 | 2001 | 2002 |
|-----------------------|--------------|------|------|------|------|------|
| <b>Apple Acreage</b>  | Certified    | 1809 | 2334 | 4228 | 6540 | 8075 |
|                       | Transitional | 2308 | 3590 | 3997 | 3415 | 1786 |
|                       | <i>Total</i> | 4117 | 5924 | 8225 | 9955 | 9861 |
| <b>Pear Acreage</b>   | Certified    | 449  | 456  | 619  | 1308 | 1771 |
|                       | Transitional | 169  | 624  | 1040 | 642  | 192  |
|                       | <i>Total</i> | 618  | 1080 | 1659 | 1950 | 1963 |
| <b>Cherry Acreage</b> | Certified    | 95   | 107  | 193  | 303  | 501  |
|                       | Transitional | 90   | 107  | 165  | 280  | 184  |
|                       | <i>Total</i> | 185  | 214  | 358  | 583  | 685  |

*Continued on next page*

premiums for organic apples and pears during the past few years reduced the economic incentive for bringing in new acreage. Organic cherry acreage is expected to increase with the more effective cherry fruit fly control offered by the organic formulation of spinosad.

Red Delicious remains as the largest organic apple acreage, followed by Granny Smith, Gala, and Fuji. Newer varieties continue to appear in organic orchards as well. D'Anjou is the dominant organic pear, followed by Bartlett and Bosc (Granatstein and Kirby, 2002).

Most growers have experienced increased problems with codling moth in apples in the past few years and organic growers have limited tools with which to respond. Organic growers are developing research priorities for the public research entities to ensure their unique needs are being met. These ensuing research projects will support the viability of existing organic orchards as well as encourage other growers to try organic production in the future.

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Farm Visit to S & S Center for Sustainable Agriculture and Homestead Farm

Steven M. Garrett,
WSU Extension Pierce County

"It is productivity that rights the balance, and brings us home."
- Wendell Berry

Steven Garrett's visit to S&S Homestead was supported by WSU CSANR through a WSU SARE Farm Visit Professional Development Program mini-grant.

Henning Sehmsdorf and Elizabeth Simpson own the 15-acre S & S Center for Sustainable Agriculture and Homestead Farm on Lopez Island where they produce seedlings, fruits, hay, barley, vegetables, wool, milk, custom-cut beef, eggs, flowers, and herbs. They also educate future farmers and academics interested in understanding sustainable agriculture through hands-on experiences. Over two dozen interns have worked at the S & S over the years and each conducted research projects during their five-month stay. Some interns received WSU credit through Henning's partnership with the WSU Center for Sustaining Agriculture and Natural Resources (CSANR) where he holds a position as Adjunct Professor.

In the summer of 2002, I spent two days at the S & S working with Henning and four interns, including two visiting scholars from Sweden and India.

Many features set this farm apart from most other farms including its dedication to ecological sustainability, its focus on feeding only its island community, and educating a new "crop" of farmers. This farm is not about making money although it makes enough to accomplish these primary goals. Henning and Elizabeth seek ecological sustainability in several ways. First, they utilize pasture rotation for their chickens, sheep and cattle to fertilize the pasture and lower disease levels in their animals. Indeed, they have had no veterinary bills in 10 years! The S & S also composts some manure for use on the farm garden.

While this farm is not certified organic, Henning and Elizabeth use no synthetic herbicides, fertilizers, or pes-

ticides. They rely on the soil health, crop diversity, and other agronomic practices to prevent diseases and pests. They raise much of their own food, all their animal feed, and in some cases even their own building materials such as straw that was used to construct a straw-bale house in 2002. These practices keep their overhead extremely low. Any attempt to measure the *economics* (Greek for "household management") of this farm will require a different type of balance sheet than the one commonly used to determine the success or failure of enterprises.

The S & S Farm provides a good example of a successful small farm operating amidst significant changes in the agricultural landscape since the 1950's: consolidation of agribusinesses, poor health from processed food, waning land stewardship, dependency upon other areas of the world for food, and food illiteracy. The farmer is meeting his goals based on his deep-seated values. Visit the CSANR site for a copy of this [report](#).

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## What the Farmer Gains from a Farm Stay

Henning Sehmsdorf, S&S Center for Sustainable Agriculture and Homestead Farm

Steve Garrett, WSU Extension Agent, visited my farm for two days in the summer of 2002. Alongside the farm interns and me, Steve installed fences around the pastures and we walked the farm together and discussed farm operations and objectives. Steve provided me with information regarding community food systems including CSAs, school food programs and food banks. Through our time together I was able to gain networking information for others involved in similar work as myself. Steve produced a report on his Farm Stay, this report was circulated to faculty at WSU, and through this I have gained new working relationships with other WSU faculty. In 2003 I began working with Dr. Carol Miles, Agricultural Systems Specialist, to conduct vegetable variety trials. In 2004 I hope to begin working with Dr. Steve Fransen, Forage and Pasture Specialist, to investigate ways to improve our soil

fertility and fodder nutrition through farm-produced inputs. I have a very strong interest in finding ways to use farm-produced resources to feed my pastures and to improve soil quality.

Future work with others could include investigating the science-based use of biodynamic applications such as compost prep solutions. Also of high interest to me is evaluating the health of a closed farming system, as I believe both plants and animals develop site-specific immunities because they live in a symbiotic relationship with their ecosystem. For example in 10 years I have had no herd/animal health problems and have used no immunizations, worming or medications of any kind and my animals are in perfect health. I would also like to investigate the optimum pasture-based life span of my beef cattle, as I believe they may be more productive if I retain them for 36 months instead of 18-24 months.

Having WSU Extension agents and specialists visit and stay on a farm broadens our understanding of each other and our respective systems. I strongly encourage other WSU faculty to take advantage of this opportunity as you will gain enormously from participating in a farm workday and the farmer will gain enormously through your knowledge and information.

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Western Region Training on Organic Farming

[David Granatstein](#), WSU CSANR

With the growth of organic farming in the Western states over the past decade, agricultural professionals are experiencing increased demand for information and assistance from growers and others regarding organic farming practices. A recently funded Western Regional SARE Professional Development Program (PDP) project will provide training and information resources on organic farming to agricultural extensionists, Natural Resource Conser-

vation Service personnel, and agricultural consultants in the western region. The leadership for this collaborative regional project comes from the University of California, the Organic Materials Review Institute (OMRI), Washington State University, New Mexico State University, and Oregon State University.

The Organic Farming Training project will produce: a resource manual containing basic information on organic certification, allowed materials, basic practices, and sources of further information, training events in California, Oregon, and New Mexico, and satellite broadcasts to make the information regionally accessible. A 2002 survey of agricultural extension faculty in Washington, Oregon, and Idaho listed weeds, insect and disease control, and soil management as the top issues the project topics might address for the Pacific Northwest.

An initial 2-hour [satellite broadcast](#) produced by WSU on the National Organic Standards aired in March 2003. In the Pacific Northwest, the project will offer two educational events near Wilsonville, OR (south of Portland), starting with a February 24, 2004 workshop covering the principles of organic farming, the organic standards and certification process, allowed materials, and information resources. Case studies on solving problems in organic systems will be featured in the afternoon. A second stand-alone session will be held the following day focusing on ecological and organic approaches to weed management. Researchers, growers, and consultants will share their insights, and a poster session and equipment show will be held in the afternoon. A call for posters will be issued in this fall.

Interested WSU faculty can [apply](#) for travel support through the CSANR PDP mini-grants program which will give priority to requests for attending this meeting, up to a maximum of \$400 per person (a 25% match is required). Applicants' carpooling and sharing motel rooms will be given priority consideration. Oregon and Idaho Faculty should contact their sustainable agriculture coordinators for possible support to attend these trainings. For more information, con-

tact [David Granatstein](#), 509-663-8181 ext. 222

Western Regional SARE is a USDA-CSREES competitive grants program dedicated to expand the knowledge and adoption of sustainable agriculture practices. SARE provides a research and educational base for the future economic viability of U.S. Agriculture.

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### A Partnership for Fish & Farms

[John Sayre](#), Executive Director, NW Chinook Recovery

Condensed with permission from April 2003 Dairy shortcourse [article](#).

Salmon recovery, particularly habitat preservation, is not just about salmon, it is also about people. There is plenty of science about what salmon need, but little understanding of how to get people of different interests and backgrounds to work together. Northwest Chinook Recovery (NCR) is actively working with farmers, the Tulalip Tribe, state, local, and federal agencies to develop a working partnership to save the Skykomish River Valley for salmon, farmers, and the future.

The Skykomish is a beautiful, remarkable patchwork of farms, open space, and wildlife habitat amidst towns and highways. As the second most important wild salmon river in Puget Sound, the Skykomish boasts 15-20 percent of the threatened wild chinook and one-half of the remaining wild coho. It is also, as a local dairyman says, "one of the best places to raise cows in the world."

The future of the Skykomish Valley is fast reaching a crisis point. Monroe is the second fastest growing area in Washington State. The valley will likely be the next to disappear as a flood of urbanization washes over it, similar to the Kent or Sammamish valleys. Farms, fish and wildlife habitat, and open space go together and will disappear together. Protecting the total landscape and all its working parts remains the challenge.

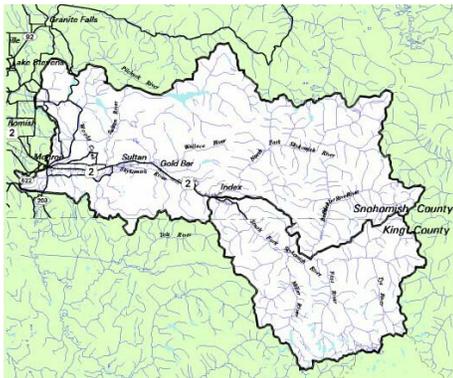
If we succeed in creating a vision to save the Skykomish Valley, the most important players will be the private landowners who own the land where

*Continued on next page*



salmon recovery and habitat restoration are possible. Without them, plans become meaningless. For the last three years, the 18 major landowners with 200 to 500 acres of land, were not invited to sit at the planning table. How can planning for salmon recovery ignore the critical role of riverfront landowners?

Had these riverfront farmers been included from the beginning, there could be miles of riverfront, back channels, and ponds reopened to juvenile fish rearing. The farmers in the Sky Valley want to do the right thing for fish and farms. Farmers on the Skykomish want four things: channel migration and avulsion; a return on their investment; the right to just compensation for lands lost to conservation; and buffers (an issue on



every river and waterway). Farmers are best at managing their own lands, as Bob Lohn of National Oceanic and Atmospheric Administration (NOAA) Fisheries says: "when land is in agriculture, we have an active steward of the land on the land." The partnerships developed between NCR and farmers illustrate this point.

Cattleman Dale Reiner, started the process in 1998 by asking NCR to do a salmon restoration project on his land. For 60 years, the 3 ½ mile Haskell Slough was a series of ponds cut off from the river. Juvenile salmon trapped in these ponds perished by the score. NCR and the landowners connected 11 ponds in the old river channel, built new ponds, dug 7000 feet of channel, and reconnected the system to the river. Salmon entered the area less than 24 hours after it was completed. President Bush, Senator Patty Murray, and Governor Locke, and sev-

eral state legislators and numerous other dignitaries came to the site to see what cooperative landowners can achieve in salmon restoration.

NCR produced a Habitat Conservation Plan (HCP) for Skykomish agricultural land that entailed doing a farm-by-farm inventory of agricultural activities that might negatively impact fish and wildlife. Farm inventories were done, draft mitigation plans for each farm developed, and negotiations with the Federal Services begun. During the process, these success have been achieved:

Six farmers, controlling 1,500 acres of land and nine miles of river frontage, formed a non-profit organization, the Skykomish Habitat Conservation Group, and hired NCR as their executive manager. The group is considering organizing all lowland valley farmers with riverfront and riparian habitat in Western Washington.

Farmers now sit on the WRIA 7 Salmon Forum.

Landowners and NCR actively work with other organizations, such as the Farm Bureau, Trout Unlimited, Dairy Federation, and Cattleman's Association, to include farmers in salmon recovery. A partnership with Pacific Salmon Federation of Canada will produce a fundraiser in Seattle in the fall of 2003, with one-half of the proceeds going towards the work in the Sky Valley. The Senate Agricultural Committee is proposing that the Skykomish Valley become the example of how to resolve conflicts among landowners, agencies, tribes, and environmentalists.

Landowners, NCR, and several other partners are forming an alliance to protect the landscape of the Sky Valley, saving the rural character of this and other valleys so our grandchildren can see farms, open spaces, as well as fish.

A working agreement has been formed with the Cascade Land Conservancy for NCR to be the Land-use Specialist for conservation acquisition as in working with landowners.

One landowner put in a 180-foot buffer on two miles of riverfront under the USDA Conservation Resources Enhancement Program (CREP). In the coming year, the landowner will put another 2 miles of slough and 43 acres in CREP.

NCR, the farmers, and the Tulalip Tribe met bimonthly for 2 ½ years to discuss preservation of agriculture and Tribal land conservation acquisitions. The Tribe and farmers traveled to Washington, DC in September 2002 to meet with Congressional leaders on developing a joint biogas project in Snohomish County. This project continues.

The list of people who work together in the Skykomish Valley is long and still growing. We are a long way from solving salmon problems and an even longer way from figuring out how to save our Puget Sound landscape. If we want to preserve the character of the Skykomish Valley, failure is not an option.

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Measuring Soil Quality – Initial Considerations

[David Granatstein](#), Sustainable Agriculture Specialist, WSU CSANR

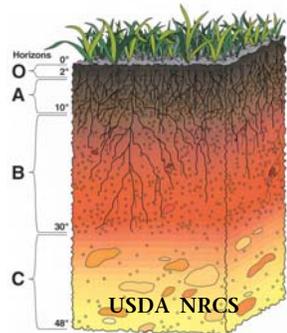
Soil health or quality is a cornerstone concern for sustainable agriculture and organic farming. Understanding of the importance of soil health has lagged behind that of air and water, perhaps due to the more immediate impacts or dirty air and water on humans. The negative impacts on air and water quality appear far more urgent than soil and are easier to measure and understand. We all can tell clean air from dirty air, but find it harder to distinguish a healthy soil from a degraded soil. Since soil degradation seldom leads to an immediate system failure, it has been easy for cultures and civilizations to ignore its gradual decline. However, civilizations disappeared over the course of human history due to continual degradation of the soil resource. We have the advantage of that historical knowledge to prevent such a repeat, but we must act on it as well.

Continued on next page

Without question, the agricultural community's interest in soil quality increased in recent years, as reflected by the 350 people who attended the WSU sponsored Soil Biology Forum in February 2002. The meeting explored the diversity of facts and viewpoints on soil biology and the implications for soil management. Ninety percent of the participants indicated that they increased their knowledge of soil biology, but commented that the information was too technical and lacked practical take-home messages. In order to address this need, I am writing a series of articles on soil quality to help translate soils information into more practical terms.

Defining Soil Quality

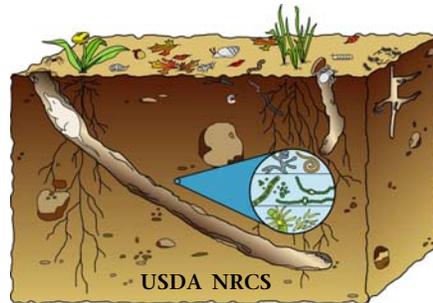
Soil quality as a defined concept began to gel in the late 1980s and then accelerated under more conservation-oriented farm policy and the establishment of the USDA Sustainable Agriculture Research and Education (SARE) program, which provides funding for study of the topic. I recommend that those with some background knowledge look at volume seven (numbers one and two) of the *American Journal of Alternative Agriculture* to gain insight into the ideas espoused on caring for



the soil by J.I. Rodale in 1942. Rodale was one of the founders of organic farming, and soil health was at its core.

A widely used definition of soil quality by agricultural scientists comes from Doug Karlen at the Soil Tilth Lab in Iowa who defines soil quality as "the capacity of a soil to function within ecosystem boundaries to: sustain biological productivity; maintain environmental quality; and promote plant and animal health." Soil quality can be judged by any or all of these functions. It is clearly not a soil property (like pH) but a value judgment based on human needs. And soil health and quality are used interchangeably.

Soil quality is considered to consist of three interrelated aspects: physical, chemical, and biological. For example, soil biology influences the chemical properties (e.g. nutrient cycling) and the physical properties (e.g.



soil aggregation and structure), and in turn the biological is influenced by the chemical (e.g. pH) and physical (e.g. structure and aeration). Some soil properties change quickly and are highly variable (e.g. soil respiration), while others can take decades to change (e.g. soil carbon). The soil properties are influenced by the natural environment (e.g. climate, geology, vegetation) as well as by human activity (e.g. erosion, fertilization, irrigation, plants).

However, the utilitarian view is still at the root of defining soil quality. Is the soil fit for the use we desire? Let's take soil pH as an example. pH is a chemical attribute. We can accurately measure it and place it on a scale from 1-14, knowing that for most plants, a pH of 6.5 is ideal from a nutritional and microbiological standpoint. However, if a soil has a pH of 4.5, we cannot immediately say it has poor soil quality, because we may be growing blueberries there, and that plant does fine at that pH. Thus, for many soil attributes or properties (pH, organic matter, structure, etc.), it is often not possible to take a quantitative measure and directly infer the consequences for soil quality.

While pure water is an obvious reference point for water quality, soils present a problem. Much of the soil quality discussion is focused around agricultural use. However, many agricultural soils had quite different properties in their native ecosystems. So in many cases, the natural state does

not provide a useful reference point for our soil quality assessment. The grass prairie soil is the exception. These soils worldwide are some of the best for our major field crops. Thus, the native prairie is a reasonable reference point for soil quality in a wheat field in Kansas. But what should be the reference point for a cornfield in Wisconsin that was originally a hardwood forest? Or an irrigated potato field in Washington that was once shrub-steppe? Perhaps pasture becomes the most universal reference point for most temperate agricultural soils, as it exhibits many favorable soil properties for crop production.

In summary, soil quality is a human value judgment about fitness for a particular use, based on measurement of certain soil indicators. It can be crop specific, but for most temperate zone agriculture, the prairie or well-managed pasture provides the best reference point for good soil quality.

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### Highlights

#### WSU CSANR Study Tour of Cuban Sustainable Agriculture

In May, 17 Washington State University faculty and staff, Washington farmers, and private sector representatives toured sustainable agriculture in Cuba, which provides the world's best example of a large-scale transition from conventional to sustainable agricultural practices. The collapse of the Soviet Union ended supplies of pesticides, fertilizers, and petroleum for industrial agriculture in Cuba and forced Cuba to fundamentally shift its agriculture policy. From the tour, it is evident that there is significant cooperation among government and citizen groups in Cuba to raise and grow healthy food in ecologically sound ways.

The WSU Center for Sustaining Agriculture & Natural Resources ([CSANR](#)) sponsored the *Cuba Sustainable Agriculture Study Tour* where participants visited farms, research centers, urban farmers' markets, and gardens. Tour

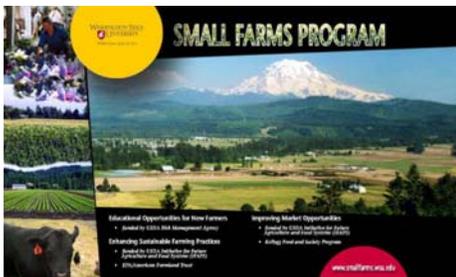
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highlights included learning about recent innovations in ecologically-based and energy-efficient farming systems; observing infrastructure for on-farm production of biological control organisms; and hearing directly from Cuban farmers and consumers about changes in their food and farming systems over the past decade. As a result of the visit, WSU formed new partnerships with the Agricultural University of Havana and the Ministry of Agriculture to jointly advance sustainable agriculture research and extension.

**Capitol Hill Exhibit: The Land-Grant System: Science & Education Working and Serving the Needs of America**

[Marcy Ostrom](#) & David Muehliesen, WSU Small Farms Program

The WSU Small Farms Program (SFP) gained recognition when it was featured as one of 32 programs at the *National Association of State Universities and Land-Grant Colleges (NASULG)* exhibition on Capitol Hill. The SFP exhibit, *Partnering to Support Family Farms, Land Stewardship, Quality Food, and Healthy Communities*, illustrated how this program targets the small scale and urban farming sectors and educates consumers about the importance of local agriculture. The program includes ongoing university courses and training programs in agricultural entrepreneurship, marketing techniques, and sustainable farming practices designed and implemented at WSU. The SFP also sponsors professional development in direct marketing strategies, bio-intensive farming approaches, environmentally based farming practices, and community food systems.



**WSU Lauded for Gains in Organic Research and Education  
National foundation names Washington leader among Land Grant Institutions**

[Richard Hines](#)

The [July 2003 report](#) by the Organic Farming Research Foundation (OFRF) recognizes Washington State University faculty for their efforts to meet the needs of Washington's organic growers. OFRF places WSU among seven land-grant institutions across the country that have been most responsive to the increased demand for interdisciplinary research and extension on organic farming systems.

OFRF's report highlights 14 production research projects, 11 Extension initiatives, and several other consumer/economic research projects at WSU that advance the state of knowledge on organic issues. In addition, WSU was recognized for significant progress in providing education with its plan to offer the nation's first full-fledged bachelor's degree in organic agriculture in the fall of 2004.

WSU's new *Biologically Intensive and Organic Agriculture (BIOAg)* program also received special notice in the report. Housed within the university's Center for Sustaining Agriculture and Natural Resources (CSANR), BIOAg encompasses research, teaching, outreach, and establishing a base of organically certified and managed research land.

Nationally, the total number of organic research acres in the U.S. land grant system doubled between 2001 and 2003, but still has not kept pace with the growth of commercial certified organic acreage. Organic research still occupies only 0.13% of available research acreage in the land grant system (up from 0.07% in 2001), while 0.3 to 2% of U.S. farmland is certified organic (depending on crop type).

**WSU Small Farms Field Days**

[Carol Miles](#), WSU Vancouver REU  
[Marcy Ostrom](#), WSU Small Farms Program

The [Small Farms Team](#) at Washington State University held its first field days

for small-scale and urban farmers at Western Washington Research and Extension Centers in Puyallup and Vancouver. In July, 80 farmers and agricultural professionals examined six acres of field trials at WSU Puyallup designed to address farmer identified problems such as the effectiveness of inexpensive organic soil amendments, measuring the impact of inter-plant-



ing cover crops on weed suppression and soil quality, and nontoxic, alternative controls for the carrot rust fly. Participants also watched demonstrations of basket and flame weeding equipment.

The August 15 field day at WSU Vancouver included discussions and demonstrations on insect management in strawberries, raspberries, and container nursery plants; using gypsum to control raspberry root rot; vegetable variety trials; irrigation efficiency (drip vs. overhead); carrot rust fly control; greenhouse coverings; and marketing techniques. Both field days offered participants the opportunity to observe the results of research firsthand, share their experiences, pose questions to university scientists, and suggest ideas for additional research that could benefit small-scale growers.



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## Food For Thought

### Sustainable Farming: Reconnecting with Consumers

John Ikerd's presentation at, "Farm Direct Marketing in Oregon: Enhancing Small Farms & Building Communities" in Eugene, Oregon. <http://www.oregonfarmersmarkets.org/farm/Sustainable%20Farming.PDF>

### Coming Home to Eat

Gary Paul Nabhan, of the Chef's Collaborative in Portland. <http://www.portlandcc.org/cominghome.htm>

## Positions

### Evergreen State College Seeks Organic Farm Manager

The Evergreen State College is looking for a new manager for its Organic Farm. Watch the Evergreen web site, <http://www.evergreen.edu> for formal posting anticipated by Oct. 1. It is a 3/4 time position managing the farm site and the students who study in The Practice of Sustainable Agriculture program. This is not a faculty position. Experienced farmers are encouraged to apply. Help inspire the next generation of farmers! Hiring should take place in Oct./Nov. and work will start in late January or early February.

## Announcing...

### Washington State University's New On-Line MS in Ag

Washington State University now offers a [Master of Science in Agriculture on-line](#), a distance education program perfect for the new generation of working farmers. The program emphasizes the agricultural professional, practitioner, and educator; its applications reflect the increased need for prepared individuals to apply new and emerging technologies and scientific findings. This degree offers the practitioner the opportunity to continue their education while they continue employment anywhere.

## WSU Communications & Development Specialist

WSU CSANR and the WSU Small Farms Program recently hired [Richard Hines](#) as a communications and development specialist based at the Puyallup Research and Extension Center. Rich has a background in non-profit marketing and fundraising and has worked for the American Farmland Trust and the University of Washington (in its Major Gifts Program). CSANR director Chris Feise says, "I'm pleased Rich is onboard to help us do strategic outreach that attracts new public and private support for WSU's exciting programs in research, teaching, and extension that advances sustainable agriculture." Rich can be reached at 253-445-4549.

### Oregon Cuts Funding for Pesticide Reporting

The Oregon Senate passed a budget omitting funding for the state's pesticide reporting program started in 1999. Environmental groups criticized the move as a closed-door deal. See the full article in the [Salem Statesman Journal \(08/08/03\)](#)

### Oregon Farmers Markets

<http://www.oregonfarmersmarkets.org/>

### Washington Farmers Market Association

<http://www.wafarmersmarkets.com/>

## Funding

### CSANR Requests Proposals for Professional Development Mini-grants

Andy McGuire

The WSU Center for Sustaining Agriculture and Natural Resources (CSANR) is releasing a Request for Proposals (RFP) for its Professional Development Program. The mini-grants awarded through this program will provide financial assistance on a competitive basis to WSU Extension faculty and staff who would like to increase or share their understanding and knowledge of sustainable agriculture in Washington State. WSU Extension faculty and staff are encour-

aged to apply for funding to host or attend an activity related to sustainable agriculture, or participate in a farm visit. Funds may be used for facilities, publicity and promotion, speaker fees, travel, or other related event expenses. The RFPs may be accessed from the CSANR [website](#). Due date for proposals is October 17, 2003. These funds are made available through the [Western Regional Sustainable Agriculture Research and Education](#) (SARE) Professional Development Program.

The WSU SARE PDP Farm Visit mini-grant enables Extension agents and specialists to travel to a farm and spend 1-3 days on the farm working and interacting with the farmer. WSU CSANR created this grant opportunity three years ago and it is unique to WSU. All Extension faculty are strongly encouraged to take advantage of this opportunity to cover your travel expenses to a farm of your choice in Washington. A list of potential farm hosts is on the CSANR web site, however you may visit any farm of your choosing.

### Funding Watershed Projects in the Pacific NW

The Pacific Northwest Regional Water Quality Program, in collaboration with the Environmental Finance Center at Boise State University, announce a November 18, 2003 satellite conference on *Funding Watershed Projects*. This program will be useful for watershed councils, planning groups, tribes, local and county government planning staff, Extension staff, and Conservation District staff.



The Environmental Finance Center developed *Plan2Fund™* software to assist the design of long-term projects in order to make it easier to find funding for discrete project segments that better fit the normally short-term funding available. The two-hour satellite conference first introduces the

*Continued on next page*

software's effectiveness in planning project portions that facilitate leveraging funding to accomplish a long-term project. In the second part of the broadcast, a grant writer and an evaluator will use the scenario built in the previous hour to guide the participants in creating a document that articulates needs and project plans that satisfy the requirements of Request for Proposals. Remote audiences can use phone, e-mail, and fax access to the studio to ask questions.

For further information on how and where to find remote sites, please call Jan Seago at 360-786-5445 x 7911 or e-mail [seagoj@wsu.edu](mailto:seagoj@wsu.edu). Check out the Center's funder [database](#).

### Forest, Range, Wildlife, & Aquatic Resource Learning Module RFP

The National Web-Based Learning Center for Private Forest and Range Landowners is requesting proposals for the development of forest, range, wildlife, and aquatic resource learning modules that address regional, multi-state, or national topics and/or issues. Awards will be based on relevance,



merit, and quality as well as the equitable distribution of funds across the applicable natural resources, 1862 and 1890 institutions, and geographic considerations. This grant program will focus on developing scientific and/or issue based interactive, online learning modules dealing with natural resource management. The total amount available in this program for FY 2003 is approximately \$120,000. A maximum of \$15,000 per module will be awarded. Proposals are due November 5<sup>th</sup>. Complete instructions at <http://www.forestandrange.org/>.

## Events

### Sound Farming: Listening to the Environment

The Tilth Producers Annual Conference occurs November 7-9, 2003 at the

Lakeway Inn and Conference Center in Bellingham, Washington. Situated on a bay in Puget Sound and surrounded by the fertile agricultural land of the Nooksack and Skagit Valleys, this year's conference will address ways to farm in harmony with the environment. An all day Friday workshop, *Organic Farming Principles and Practices*, with Amigo Cantisano of Organic Agriculture Advisors and Aeolia Organics of North San Juan, California, will offer a lecture, slides, Q&A, and conversation on organic farming practices that work for a broad range of scales. Amigo will cover soil management, cover crops, compost, microbial activity, foliar fertilization, pest and weed management, tools, innovative equipment and more.

Paul Stamets of Fungi Perfecti in Olympia, Washington will offer the keynote address *Mushrooms as Allies: Potentiating Planetary Host Defenses through Fungi* in which he will describe how harnessing the power of mycelium integrates many other sustainable practices, reducing the need for artificial inputs such as the introduction of fertilizers and insecticides.

Anne Schwartz of Blue Heron Farm in Rockport will speak Saturday evening about redesigning our food system and reassessing the organic farmer's place in local, regional, and global agriculture.

After a buffet dinner, Friday night offerings include an opportunity to hear about organic agriculture in Cuba or attend informal topical discussions on issues of interest to those attending.

Tilth Producers' Saturday and Sunday workshop tracks include conservation (salmon, soil conservation, creek restoration), pest management (flea beetle, lettuce worm, cabbage worm, late blight), organic controls and mitigation techniques (bio-fumigation, bio-remediation), business management (farm efficiency, organic certification, farmworker partnerships), direct marketing and community relations (with chefs, institutions, retailers and consumers), and sessions on tools, cheese-making, organic seed saving, GMOs, special events on the farm, and more.

Fresh grown organic food will be prepared by Andreas Kern, Swiss chef at the Conference Center. Saturday's organic wine tasting, silent auction, and dance will be a great way to celebrate the harvest with friends and colleagues. Please join us for a fun-filled, educational weekend. For more information contact Nancy Allen at Tilth Producers (206) 442-7620 or <http://www.tilthproducers.org/>

### The Commons in an Age of Global Transition: Challenges, Risks and Opportunities

The [International Association for the Study of Common Property](#) (IASCP) will hold its 2004 meeting on August 9 - 13 in Oaxaca, Mexico. IASCP is an interdisciplinary society instrumental in furthering research on common property issues, research which very clearly refutes Hardin's Tragedy of the Commons thesis that seems to (despite much evidence to the contrary) dominate so much of resource economics and environmental management thinking.

### Eating as a Moral Act: Ethics and Power from Agrarianism to Consumerism

The University of New Hampshire Office of Sustainability Programs is organizing this interdisciplinary symposium to examine the underlying questions of justice and morality within the food and farming system. The symposium will be held on the UNH campus in Durham, NH from April 25-27, 2004. Keynote speakers will be Sidney Mintz, Marion Nestle, Brother David Andrews, Dana and Laura Jackson, and Sandy Oliver.

They seek proposals for 20-minute presentations to be delivered at four or five plenary sessions related to the symposium's main theme. Send abstracts by October 15 to the Office of Sustainability Programs, 107 Nesmith Hall, Durham, NH 03824. For information, call 603-862-4088 or visit <http://www.sustainableunh.unh.edu>.



## Animal Residuals 2003 Conference

November 2-4, 2003 at the Sheraton National in Arlington, Virginia, USA. See <http://www.wef.org/conferences/>

## Washington State Family Farm Summit

October 13 - 14 in Wenatchee, WA. See [www.wvc.edu/IRIS/](http://www.wvc.edu/IRIS/)

## Inland Northwest Small Acreage Farming Conference & Trade Show

November 7 - 9 at Coeur d'Alene, ID. See [www.ruralroots.org](http://www.ruralroots.org)

## International Symposia on Society & Resource Management

This June 2 - 6, 2004 [conference](#) will be held at the Keystone Resort in Colorado.

## First World Congress of AgroForestry - July 2004

<http://conference.ifas.ufl.edu/wca/>



## Human Dimensions of Family & Farm Forestry

In collaboration with the IUFRO Research Group, WSU will host the March 29 - April 1, 2004, [Human Dimensions of Family and Farm Forestry International Symposium](#) in Pullman, Washington. The objective of this symposium is to bring together scientists and practitioners from all corners of the world to discuss research problems, results, and practical applications related to human dimensions of family, farm, small-scale, non-industrial private, and community forestry. Email [familyforestry@wsu.edu](mailto:familyforestry@wsu.edu) contact:



## Request for Information

### National Farm to School Program Seeks Information

The [National Farm to School program](#) is compiling a database of every school and district in the United States that currently purchases (or has purchased in the last 12 months) directly from farmers. The Center for Food & Justice wants to identify and connect those food service departments that buy produce, milk, meat, or other farm products directly from producers. They seek the name of the school or university, city, and state. They also need whatever contact information (phone, email, etc.) that you may have. Please send any information to: Mark Wall, National Farm to School Coordinator, Center for Food & Justice, [mwall@oxy.edu](mailto:mwall@oxy.edu).

## Resources

### Reseeding Guide Available

More than 100 different kinds of plants well suited to rangelands, pastures, streambanks, road cuts or other sites that need to be reseeded in the intermountain states (Utah, Idaho, Nevada, Colorado, Arizona, Montana, Wyoming and Oregon) are profiled in a unique handbook, "Intermountain Planting Guide." The full-color, 104-page publication includes tables, charts and brief summaries, with author recommendations based on soil type, annual precipitation, elevation and other key environmental factors that influence a plant's success. It was issued in 2001 and has since become a contemporary classic, capturing the attention of readers seeking the right seeds or seed mixes.

The book is appropriate for anyone interested in using native or introduced plants to revitalize rangelands, nourish livestock and wildlife, stabilize erosion-prone slopes, revegetate mining spoils, or simply landscape a few acres around a summer cabin or on a farm. Copies are available from Utah State University Extension Publications, (435) 797-2251; request bulletin number AG 510.

## UW /WSU Rural Technology Initiative

<http://www.ruraltech.org/>

### NewFarm.org

[NewFarm.org](#) announces new, free features to help farmers succeed. In order to increase U.S. certified organic farming by more than 800% in the next ten years, *The Rodale Institute* has expanded their portal website, providing farmers with free, A-Z news, research and market data on organic and sustainable agriculture.



### Using Strip Tillage in Vegetable Production Systems

This 12 page Oregon State University [publication](#) discusses equipment, benefits and research related to strip tillage in vegetable production systems

### Sprouting Up: New Farmers are Finding Success

Steve Wilhelm, Staff Writer

The July 14<sup>th</sup> edition of the *Puget Sound Business Journal* looks at farming in the Seattle metro area and says: "Despite the well-publicized problems with the state's traditional apple, dairy and wheat farming sectors, a crop of enthusiastic new-breed farmers is sprouting up in Western Washington. These young new farmers, savvy and market-driven, mostly cater to the growing demand among city dwellers for fresh, organic produce and exotic greens." To look at the full article, see <http://seattle.bizjournals.com/seattle/stories/2003/07/14/story3.html>

### Sharing the Cost: Creating a Working Land Conservation Trust Fund Through a Tax on Agricultural Inputs

The Soil and Water Conservation Society released a [report](#) that explores the feasibility of a tax on agricultural products to fund a trust fund for conservation programs. SWCS took on this project funded by The Joyce Foundation because of three concerns: How do we create a sustainable source of

conservation funding given the U.S. federal budget? How do we focus enough assistance to working farms and ranches to meet agriculture's environmental agenda and ensure agriculture's commercial viability? How do we put producers in the lead in directing collaborative conservation activities on their operations, with their neighbors and their communities.

### **Bibliography on Agricultural Hydrology**

The Water Quality Information Center at the National Agricultural Library has compiled a [bibliography](#) on agricultural hydrology. Subtopics covered are best management practices, concentrated animal feeding operations and TMDLs.

### **Organic Decision Workbook**

A new publication by Cornell's Small Farms Program. To order a copy, call Faye Butts at 607-254-7412 or email [fsb1@cornell.edu](mailto:fsb1@cornell.edu). The cost is \$12.

### **Farm Finder Databases On-Line**

<http://www.localharvest.org/> or <http://www.newfarm.org/farmlocator/index.php>

### **Chestnut Market Opportunities**

The Practical Farmers of Iowa's Tom Wahl, PFI board member and farmer, just released a market research report on chestnuts available at [http://csf.colorado.edu/archive/2003/food\\_security/doc00036.doc](http://csf.colorado.edu/archive/2003/food_security/doc00036.doc)

### **Labor Management in Agriculture**

Gregory Billikopf, a labor management farm advisor for the University of California, covers the use of practical tests in hiring, the fine-tuning of incentive pay (including piece rates), the advantages and disadvantages of different pay structures, performance evaluations, interpersonal conflicts and employee discipline. The book focuses on management and supervision techniques rather than on legal requirements, and includes examples from the experiences of farm employers. The publication is available in English and Spanish. A free personal

use copy may be downloaded from <http://www.cnr.berkeley.edu/ucce50/ag-labor/7labor/003.htm>.

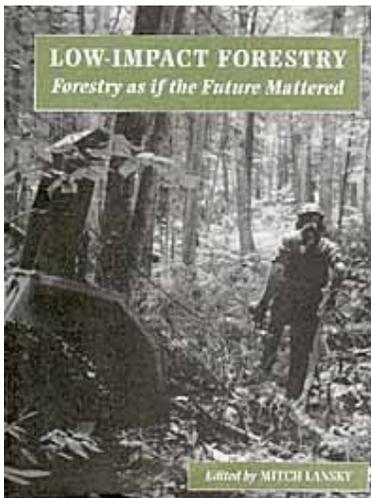
## **Forestry**

### **Truffles no Trifle for Oregon Tree Farmer**

"When Paul Bishop planted his first stand of Douglas fir Christmas tree seedlings in 1977, little did he know that some valuable little presents would start showing up under the trees." See the Capitol Press at <http://www.capitolpress.com/specpages/truffles.htm> for the complete article.

### **Low Impact Forestry**

*Low-Impact Forestry: Forestry as if the Future Mattered* uses Maine as a case study to offer forestry goals and guidelines that emphasize quality and value while conserving biodiversity and supporting communities for the long term. [http://www.chelseagreen.com/item\\_detail.asp?id=12](http://www.chelseagreen.com/item_detail.asp?id=12)



### **Forested Riparian Buffers**

"University of Georgia forestry researchers show streamside management zones, a swath of trees left alongside streams to filter runoff from adjacent clearcuts, are more than 70 percent effective at filtering sediment and phosphorous, but not herbicides. Funded by a \$475,000 grant from the U.S. Environmental Protection Agency, the UGA scientists are now in the fourth of a five-year study to assess the effectiveness of current best

management guidelines." See the complete article at <http://www.uga.edu/news/artman/publish/030918streamzones.shtml>

### **Cooperative Delivers Good Wood**

A new approach to forestry allows rural communities to choose a new path that gives them greater voice in managing their forests according to local values. This community-oriented forestry still harvests timber off the land, but does it in a way that seeks to maintain the integrity of the forest while providing sustainable community and economic benefits. What's more, regional and national markets for such value-added lumber are opening up, providing niches where small, private forestland owners can realize a greater return on the value of their lumber. See [http://www.tidepool.org/original\\_content.cfm?articleid=81776](http://www.tidepool.org/original_content.cfm?articleid=81776)

### **Thinning Young Douglas Fir West of Cascades for Timber & Wildlife**

<http://cru84.cahe.wsu.edu/cgi-bin/pubs/EB1927.html>



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