An Assessment of Organic Farming Research, Teaching and Extension at Washington State University

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Cover Photograph

First WSU certified organic land. Certified by Carol Miles, Agricultural Systems Extension Specialist, at WSU Vancouver Research and Extension Unit, in 2001.

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EXECUTIVE SUMMARY

There is growing interest in organic farming in the United States, and some organizations are summarizing land grant university work on the topic. To characterize organic research, teaching and extension activities at Washington State University, Carol Miles and David Granatstein, with WSU Center for Sustaining Agriculture and Natural Resources (CSANR), conducted an email survey in April 2001. Through the survey, faculty in the WSU College of Agriculture and Home Economics were asked to describe their past or present organic farming research, teaching and education efforts.

Fifty-eight people responded to the organic farming survey and cited 90 projects or activities that focused on organic farming. The largest area of research is pest management with 38 responses, with insect pest management accounting for 21 of these. Soil-related activities (9) is the next major research category. There were 18 Extension-related activities reported. The *Organic Research and Extension Activities* section of this report includes those projects that were conducted within organic or transition to organic systems, were exclusively focused on organic practices, or included organic treatments. Projects were sorted into the following categories:

- Compost
- Cropping Systems
- Food and Nutrition
- Livestock
- Marketing and Economics
- Meetings and Surveys
- Nutrient Management
- Pest Management
- Production
- Soil
- Teaching

Significant impacts or recognition have resulted from several of the WSU activities. For example, expansion of organic apple acreage in the state is a direct result of WSU research and extension on the use of pheromone mating disruption for codling moth. Compost research is contributing to improved nutrient utilization and soil quality on organic farms. Two farming systems comparison studies by WSU researchers have been published in the journal *Nature*. Organic growers in western Washington benefit from the alternative crop and variety testing work at WSU.

Many faculty who responded to the survey cited projects and activities at WSU that have potential to benefit organic farmers but did not meet the criteria listed above. The *Survey Respondents* section of this report lists all faculty who responded to the survey and includes all projects and activities these faculty felt were relevant to organic farmers. This section of the report provides an expertise resource within WSU of faculty who are working towards an organic agriculture.

Respondents indicated that several new projects were planned, including breeding cereal varieties for organic production, a study of organic dryland farming, grass-fed livestock production, and direct marketing studies. In addition to WSU faculty, a number of USDA Agriculture Research Service scientists are located in the state, often at WSU facilities, and work on organic farming projects. A few are listed here, but many others are not.

Overall, Washington State appears to have a solid and expanding base in the public agricultural sector for supporting the research and education needs of the organic farming sector.

List of Acronyms

ARS – Agriculture Research Service
BC – British Columbia
BMP – Best Management Practice
CAHE – College of Agriculture and Home Economics
CLB – Cereal Leaf Beetle
CRP – Conservation Reserve Program
CSANR – Center for Sustaining Agriculture and Natural Resources
EB – Extension Bulletin
ESA – Endangered Species Act
ID – Idaho
IFAFS – Initiative for Future Agriculture and Food Systems
IPM – Integrated Pest Management
NRI – National Research Institute
PCN – Pea Cyst Nematode
PICOL – Pesticide Information Center On-line
PNN – Pesticide Notification Network
PNW – Pacific Northwest
REC – Research and Extension Center
REU – Research and Extension Unit
SARE – Sustainable Agriculture Research and Education
USDA – United States Department of Agriculture
WA – Washington
WSDA – Washington State Department of Agriculture
WVC – Wenatchee Valley College
WSU – Washington State University

INTRODUCTION

The emergence of the term 'organic farming' to describe a distinct system of agriculture began in the first half of the 20th century, with significant public visibility occurring in the 1970s and 1980s. In the 1990s, most land grant universities experienced a significant shift of focus towards environmentally sound and sustainable food systems, but few have focused on organic systems due to the very small acreage and number of farms involved. Organic farming expanded dramatically in the last decade, and this expansion continues today. In response, public agricultural institutions are beginning to dedicate resources to support the needs of the organic sector.

Washington State University has a history of support for organic farming, starting as early as the mid-1970's when a few research and extension faculty members engaged in organic farming projects. For instance, the first USDA report on organic farming (1980), was chaired by a USDA scientist who was based at WSU Pullman. Yet another WSU scientist chaired the first symposium on organic farming at the American Society of Agronomy national meetings. This led to a publication on Organic Farming by that society in 1984. Researchers and graduate students at WSU have published articles on their organic farming research in well-known peer-reviewed journals such as Nature, Science, and New Scientist. Extension faculty have also contributed by organizing numerous conferences and workshops, in addition to publishing several extension bulletins about organic production.

Organic growers can utilize information resulting from recent work on sustainable agriculture at WSU (e.g. biological control, soil quality), however due to the complexity of organic systems, growers have special needs that may not be adequately met by current programs. Organic farms are valuable living laboratories of agro-ecosystems that contain biological constraints and opportunities that are unique and challenging. Experience has shown that research in organic systems can often uncover fresh and innovative ideas that all farmers can use.

This report represents the first attempt to provide a comprehensive look at the organic farming research and extension activities at WSU, covering both past and present projects. It is intended to portray an accurate picture for policy and resource allocation discussions, and also improve networking among the many widespread individuals working on organic systems who might not otherwise know one another. Moreover, this report can also be utilized as an initial guide by the public to locate resources within WSU related to organic farming. Finally, and importantly, this report provides recognition to those WSU faculty who have supported and contributed to the organic production knowledge base over the past few decades.

ORGANIC RESEARCH AND EXTENSION ACTIVITIES

Research or extension activities listed in this section were conducted within organic or transition to organic systems, exclusively focused on organic practices, or included organic treatments. See page 4 for a list of acronymns.

Programs / Projects	Outcomes	Respondent
Cropping Systems		
Cover crop testing in orchards	Field trials, research reports; Orchard mulching systems	Granatstein
Apple production in Yakima Valley; organic, integrated and conventional treatments	Nutrient cycling, pest control, economic analysis, productivity, energy efficiency	Glover
Comparisons of organic and conventional grain farms in terms of yield, energy efficiency and profit per acre	Masters of Science (MS) thesis by Steve Kraten	Holland
10-acre study of transition rotations for certified organic dryland field crop production		Jones
Production		
Sustainable farming education and demonstration farm (Robin Hill Farm)		Beus
Ensiling bamboo		Fransen
Organic and integrated tree fruit production	Organic apple survey for Washington State (1994); *Trends in Organic Tree Fruit Production*, EB1898; Website http://organic.tfrec.wsu.edu/OrganicIFP/Home/Index.html	Granatstein
Wheat breeding under certified organic growing conditions		Jones
Organic on-farm pea vine variety trial	Report – http://agsyst.wsu.edu/peareport.htm	Miles
Organic on-farm and on-station edamame variety trials	Extension publication, *Edamame*, PNW0525	Miles
Organic on-farm asparagus variety trial		Miles
Organic on-farm bamboo variety trials for shoot/pole production in the Pacific Northwest	Report – http://agsyst.wsu.edu/bamboo.htm	Miles
Evaluation of cranberry genotypes for horticultural traits and reaction to disease and insects	Identification of germplasm that combines consistent high yields with minimal losses from pests	Patten and Bristow
Soil		
Soil quality research	10 journal articles – http://css.wsu.edu/Fac_Prof_Soils/Reganold.htm	Reganold

Programs / Projects	Outcomes	Respondent
Nutrient Management		
Evaluating nutrient and economic value of local organic waste materials	http://www.puyallup.wsu.edu/soilmgmt/	Cogger and Bary
Integrated organic amendment research: nutrients, disease suppression, economics	http://www.puyallup.wsu.edu/soilmgmt/	Cogger, Ostrom, Bary, Bristow and Miles
Compost and dairy manure nutrient management	Guidelines to manage nutrients from solid animal manures, http://www.puyallup.wsu.edu/soilmgmt/	Cogger and Bary
Manure management: on-farm composting and applications in organic pumpkin production	From End to Beginning: Manure Resource Guide, http://agsyst.wsu.edu/manure.html	Miles
Compost		
On-farm composting of offal in organic poultry production	Report – http://agsyst.wsu.edu/PoultryOffal.pdf	Bary and Miles
Develop on-farm composting systems in conjunction with urban materials for on-farm use and for sale to the public		Gaolach
Compost use in orchards	Field trials, research reports: http://csanr.wsu.edu/programs/compost/index.htm	Granatstein
Composting research program	2 journal articles articles – http://css.wsu.edu/Fac_Prof_Soils/Reganold.htm	Reganold
Pest Management – Diseases		
Evaluation of biopesticides for control of gray mold on strawberries and raspberries	Identify effective biopesticides and procedures for use in successful disease control	Bristow
Developing an integrated program for controling root rot in organic and IPM red raspberry production	Information on strategies for successful root rot suppression	Bristow and Miles
Research on alternatives to fumigation for apple replant disease	Field trials, research reports: http://organic.tfrec.wsu.edu/OrganicIFP/AppleReplantDisease/Index.html	Granatstein
Organic on-farm late blight control study in potatoes	Alternative methods for controlling plant disease	Hadwiger
Evaluate potato and tomato germplasm for late blight resistance		Inglis
Evaluate use of copper hydroxide in organic late blight control	Research reports and results: http://mtvernon.wsu.edu/plant_pathology/plant_path.htm and http://mtvernon.wsu.edu/path_team/vegpath_team.htm	Inglis
Evaluate use of tomato cages in late blight control	Research reports and results on the web (see above)	Inglis
Evaluate compost tea for control of late blight on potatoes	Research reports and results on the web (see above)	Inglis

Programs / Projects	Outcomes	Respondent
Pest Management – Insects		
SARE grant (1993-96) – reduce insecticides in orchards	Value of Carbidae (ground beetles) as general predators of codling moth in pheromone disruption orchards	Brown
Mating disruption of codling moth and leafroller for biological control	Use of mating disruption for codling moth and leafroller control in tree fruit	Brunner
Degree-day models for monitoring and timing of control applications	Time sampling activities and control tactics to coincide with the presence or life stage of the pest or natural enemy of interest	Brunner
Use of oils and particle films as pest control agents	Guidelines on use of oils and particle films for pest control	Brunner
Evaluate management of cover crops and natural habitats as means of enhancing biological control in orchards	Management of cover crops in and around orchards to conserve natural enemies of pests and to reduce pest impact	Brunner
Sampling thresholds and methods for codling moth, leafroller, lacanobia fruitworm and other pests	Identify densities of pests in orchards to make appropriate management decisions	Brunner
Evaluate pea germplasm for pea cyst nematode resistance		Inglis
Develop and evaluate attractants for monitoring and controling insect pests of agricultural crops including apple, pear, potato, and corn	Chemical attractants, lures and baits for traps and for bait stations	Landolt
Evaluate use of entomopathogenic nematodes to control cucumber beetle larvae (corn root worm) in green peas	*Using Beneficial Nematodes for Crop Insect Pest Control*, PNW 544	Miles
Intercropping medic (*Medicago litoralis*) for carrot rust fly control in organically grown carrots	Report – http://agsyst.wsu.edu/carrot.htm	Miles
Natural enemy banks for the control of aphids in organically grown potatoes	Natural enemy banks can produce early populations of aphidophagous insects to attack incoming flights of green peach aphid	Miller, Terry
Suppression of the Orange Tortrix Leafroller and other key leafrollers in organically grown caneberries: natural enemy evaluation and implementation		Miller, Terry
Biological control of the pea aphid (*Myzus persicae*) in organically grown peas and potatoes in the Pacific Northwest: introduction, environmental assessment, and release of promising new aphid parasitoids for augmentive biological control	Screened in quarantine, released, and established In WA and ID two new species of parasitoid wasp, *Aphidius picipes* and *Aphidius colemani* (established in WA only)	Miller, Terry, and Pike

Programs / Projects	Outcomes	Respondent
Pest Management – Insects (cont'd)		
Biological control of Russian wheat aphid: introduction, environmental assessment, and release of exotic grain aphid parasitoids for biological control	Screened in quarantine, released, and established multiple species of parasitoids; Russian wheat aphid is no longer a significant pest in the region	Miller, Terry
Conservation and classical biological control of Cherry Bark Tortrix in the PNW	Exotic natural enemies have been collected, imported, and screened for rearing and host testing in quarantine	Miller, Terry
Cereal Leaf Beetle biology, damage and control in Washington	The exotic larval parasitoid wasp, *Testrastichus julis*, has been released into areas of CLB infestation in Spokane County	Miller, Terry
Bio-rational insect and weed management in cranberries	Conducted mating disruption research for 5 years	Patten
Biocontrol of pea aphid	New parasitoid agents established against pea aphids	Pike
Model insect and disease development for pest management purposes	Better understanding of insect and disease cycles, better timing for monitoring and control	Smith
Basic ecology/behavior of aphid predators and parasitoids in greenhouse cut flowers and in potatoes	Effectiveness of various predatory insects and spiders, strategies to conserve and enhance predator populations; http://entomology.wsu.edu/personal/bill_snyder/index1.htm	Snyder
Evaluation of botanical insect control agents	Natural products fit well within an IPM context	Stark
Pest Management – Weeds		
Weed seed predation and weed seed longevity in organic fields	Propose to establish organic field at WSU Prosser for multi-disciplinary research (insects, weeds, disease and soils); http://www.usda.prosser.wsu.edu/	Boydston
Fall-planted cover crops (Brassicas, legumes, grasses) for weed suppression		Boydston
Alternative weed control in orchards	Mulch trials, research reports, field days, Web site: http://organic.tfrec.wsu.edu/OrganicIFP/OrchardFloorManagement/Index.html	Granatstein
Overseeded cover crops for weed control in organic vegetables	Certified organic research land at WSU Vancouver REU	Miles
Weed control in organic strawberries, including flaming, corn gluten, wheat gluten, and mustardseed meal	On-going 3-year study (began 2000)	Miller, Tim
Integrated weed management	Increasing winter wheat seeding rate and height reduces impact of jointed goatgrass	Yenish

Programs / Projects	Outcomes	Respondent
Pest Management – Integrated Pest Management		
Pesticide Information Center On-line (PICOL) web page link to WSDA Organics page	Information on pesticides and pest management, including organic, agrichemicals and the environment, http://picol.cahe.wsu.edu	Daniels
Pesticide Notification Network (PNN) notices sent out on organic materials	Information on pesticides, pest management, and the environment	Daniels
Web page with links to all WSU biocontrol and IPM programs	http://picol.cahe.wsu.edu	Daniels
Livestock		
On-farm composting of offal in organic poultry production	Report – http://agsyst.wsu.edu/PoultryOffal.pdf	Bary and Miles
Livestock health, focus on sheep and goats	http://www.klickitat.wsu.edu/	Kerr
Grassfed meats and milk	Developing PNW Livestock Graziers network	Nelson
Range and livestock management – integrating livestock and perennial forage into annual cropping systems		Platt
Food and Nutrition		
Apple food safety for direct market producers	Apple food safety; http://organic.tfrec.wsu.edu/FoodSafetyWeb/Home.htm	Granatstein
Potential for organic cocoa butter production	Commentary in Confection – publication; Development of organic confections	Swanson
Marketing and Economics		
Northwest Direct: Improving Markets for Small Farms - IFAFS grant (2001)	Analysis of role of WA agriculture in food consumption in WA	Carkner, Ostrom, and Holland
Impacts of agricultural policy on sustainable agriculture	Research papers on organic systems	Young
Meetings and Surveys		
Western Washington conferences – Small Farming in Western Washington (1998), Farm to Table: Coming into the Food Shed (2000)		Beus
Conducted Tilth survey (early 1980's)		Fiske
CSANR Organic Program formed	Formed WSU Organic team; Organized WSU organic meeting Oct 2001; Drafted WSU Biologically Intensive and Organic Agriculture Initiative, (BIOAg)	Granatstein, Miles, Ostrom and Feise
Convened organic certification meeting (1982)	Explored state certification for organic farmers	Feise and Moulton

Programs / Projects	Outcomes	Respondent
Meetings and Surveys (cont'd)		
Organic tree fruit production	3 workshops, over 20 presentations, Washington Horticulture Association 2000 session and proceedings	Granatstein
Twelve presentations on trends in organic tree fruit production	*Trends in Organic Tree Fruit Production*, EB1898	Granatstein
Organic apple survey in Washington State	Organic apple survey (1994)	Granatstein
Website extension presentations	Organic and integrated tree fruit website, http://organic.tfrec.wsu.edu/OrganicIFP/Home/Index.html	Granatstein
Organic Options tour	Tour of sustainable orchard systems in WA and BC, with a major focus on organic systems	Granatstein
Training of farmers and extension agents on organic certification	Statewide workshops	Granatstein
Farming for Profit and Stewardship conferences (1989-1996) – co-chair and organizer		Granatstein
Organic dairy production	Presentation at PNW Dairy Short Course, Jan. 1999	Granatstein
Annual Farm to Table Food Safety Conference: organic food processor speaker has been included in the past		McCurdy
Organic certification education for extension agents and new farmers	*Organic Food Production and Certification in Washington State*, PNW 1888	Miles
Survey (1996) of small and organic farms in the Pacific Northwest to identify research and extension needs	Presentation at 1996 National Small Farm Conference	Miles
Alternative agriculture workshop series, Centralia Community College (1996-1999)	Workshops on organic certification, organic pest management, and CSAs	Miles
Seminar on organic grain production		Roberts
Work with Spokane Tilth		Roberts
Teaching		
Teaching Crops/Soils 360 and World Agricultural Systems courses		Busacca
Organic gardening in one or two lectures	Would like to develop Organic Gardening course	Hiller
Four-acre organic block at Wenatchee Valley College (WVC)	Teaching & Demonstration Orchard for WSU/WVC Tree Fruit Management & Tree Fruit IPM students	Mullinix
Developing text book for college-level sustainable agriculture ecucation	Co-authored text book Natural Resource Conservation – Management for a Sustainable Future (2002)	Reganold

ORGANIC FARMING SURVEY RESPONDENTS

All individuals listed in this section responded to the Organic Farming Survey, and their information is self-reported. Some individuals are Agricultural Research Service faculty with adjunct appointments at Washington State University or are co-located at a WSU facility. This section of the report is a resource list of faculty and staff who are currently involved with or have indicated an interest in organic agriculture research, teaching and extension. See page 4 for a list of acronyms.

NAME	SPECIALTIES	PROJECTS
Bary, Andy WSU Puyallup REC 7612 Pioneer Way E. Puyallup, WA 98371-4998 253-445-4588 bary@wsu.edu	Dept. Crop and Soil Sciences – Soils, organic nutrient management, compost, manure management	➢ Organic nutrient management ➢ Composting and utilization ➢ http://www.puyallup.wsu.edu/soilmgmt/ ➢ On-farm composting of poultry offal ➢ Proposed organic nutrient management
Beus, Curtis Cooperative Extension PO Box 863 Port Angeles, WA 98362 360-417-2280 beusc@wsu.edu	Agriculture, community food systems	➢ Western Washington conferences – Small Farming in Western Washington (1998), Farm to Table: Coming into the Food Shed (2000) ➢ Sustainable farming education and demonstrations
Bezdicek, David Dept. Crop and Soil Sciences Pullman, WA 99164-6420 509-335-3644 bezdicek@wsu.edu	Soil biology, cropping systems, green manure crops, recycling and composting.	➢ Earthworm ecology ➢ Soil microbiology ecology ➢ Carbon dynamics and changes in soil under different management systems ➢ Crop rotations and soil ecology ➢ Yellow mustard as a green manure crop for disease control ➢ Composting process and utilization
Boydston, Rick WSU Prosser Irrig. Ag. REC 24106 N Bunn Road Prosser, WA 99350-9687 509-786-9267 boydston@tricity.wsu.edu	USDA ARS – Weed control	➢ Weed seed predation and weed seed longevity in organic fields ➢ Fall planted cover crops (Brassicas, legumes, grasses) for weed suppression ➢ Propose to establish organic field at WSU Prosser for multidisciplinary research ➢ http://www.usda.prosser.wsu.edu/

NAME	SPECIALTIES	PROJECTS
Bristow, Pete WSU Puyallup REC 7612 Pioneer Way E. Puyallup, WA 98371-4998 253-445-4529 bristowp@wsu.edu	Dept. Plant Pathology –Diseases of small fruit crops	➢ Studies on the biology and epidemiology of fungal pathogens of small fruit crops ➢ Developing an integrated program for controlling root rot of red raspberry ➢ Evaluating advanced red raspberry breeding selections for root rot resistance ➢ Evaluating biopesticides for control of gray mold fruit rot on strawberries and raspberries ➢ Evaluating blueberries for virus resistance or tolerance ➢ Propose to investigate compost for naturally occurring biological control
Brown, John Dept. Entomology Pullman, WA 99164-6382 509-335-5505 brownjj@mail.wsu.edu	Entomology research and teaching	➢ SARE grant (1993-96): reduce insecticides in orchards ➢ Adjuvants for use in apple orchards and IPM for hybrid poplar plantings
Brunner, Jay WSU Tree Fruit REC 1100 N Western Ave Wenatchee, WA 98801 509-663-8181 jfb@wsu.edu	Dept. Entomology – Insect pest management	➢ Degree-day models for scheduling monitoring activities and pesticide applications ➢ Establish sampling methods for natural enemies of fruit pests ➢ Mating disruption of codling moth, and leafroller biological control ➢ Sampling thresholds and methods for fruit insect pests ➢ Use of oils and of particle films as pest control agents ➢ Propose a unified and integrated approach to organic farming research conducted at WSU, with a location at Royal Slope and intergrated with tree, vine, and forage cropping systems ➢ http://entomology.tfrec.wsu.edu/entohome.html
Budd, William Dept. Environmental Science Pullman, WA 99164-4430 509-335-8538 budd@wsu.edu	Land use planning, environmental planning	➢ Farmland protection ➢ National conservation district survey
Busacca, Alan Dept. Crop and Soil Sciences Pullman, WA 99164-6420 509-335-1859 busacca@wsu.edu	Pedology, geology, wind and water erosion	➢ Teaching Crops/Soils 360 and World Agricultural Systems courses

NAME	SPECIALTIES	PROJECTS
Calkins, Carrol USDA ARS Yakima Ag. Resource Lab 5230 Konnowac Pass Rd. Wapato WA. 98591 509-454-6550 ccalkins@yarl.ars.usda.gov	Insect ecology and behavior, insect autocidal control	➢ Area-wide program for suppression of codling moth
Carkner, Richard WSU Puyallup REC 7612 Pioneer Way E. Puyallup, WA 98371-4998 253-445-4549 carknerr@wsu.edu	Dept. Agricultural Economics – Emeritus professor agricultural aconomics	➢ IFAFS grant (2001) for direct marketing
Cogger, Craig WSU Puyallup REC 7612 Pioneer Way E. Puyallup, WA 98371-4998 253-445-4512 cogger@wsu.edu	Dept. Crop and Soil Sciences – Organic nutrient management, land application of organic wastes	➢ Evaluating nutrient and economic value of local organic waste materials ➢ Integrated organic amendment research – nutrients, disease suppression, economics ➢ Agricultural use of yard trimmings ➢ Compost and dairy manure nutrient management ➢ Integrated organic amendment research: nutrients, disease suppression, economics ➢ http://www.puyallup.wsu.edu/soilmgmt/
Daniels, Catherine WSU Tri-Cities 2710 University Drive Richland, WA 99352-1671 509-372-7492 cdaniels@tricity.wsu.edu	Cooperative Extension – Pesticides	➢ PICOL web page link to WSDA Organics page, http://picol.cahe.wsu.edu ➢ PNN notices sent out on organic materials ➢ New Web page with links to all WSU biocontrol and IPM programs
Dougherty, Richard Dept. Food Science and Human Nutrition Pullman, WA 99164-6376 509-335-0972 dougherty@wsu.edu	Food safety, processing, quality, product and business development, and regulatory compliance	➢ Assist food processors to assure safe quality products ➢ Food processor problem-solving ➢ Improve food processor competitiveness
Feise, Chris WSU Puyallup REC 7612 Pioneer Way Puyallup, WA 98371-4998 feise@wsu.edu	CSANR Director – Sustainable agriculture research and education	➢ Supported formation of WSU organic team, WSU organic meeting, and BioIntensive and Organic Agriculture Initiative ➢ Meetings in 1982 with organic representatives to explore state certification
Fiske, Emmett Dept. Rural Sociology Pullman, WA 99164-4006 509-335-6660 fiske@wsu.edu	Environmental conflict resolution, group effectiveness, international development	➢ Kettle River watershed planning (Ferry County) ➢ Conducted Tilth survey (early 1980's)

NAME	SPECIALTIES	PROJECTS
Fransen, Steve WSU Prosser Irrig. Ag REC 24106 N Bunn Road Prosser, WA 99350-9687 509-786-9266 fransen@wsu.edu	Dept. Crop and Soil Sciences – Forages and crops quality and production	➢ Cool-season grass evaluations ➢ Ensiling corn and bamboo ➢ Sudangrass production and quality
Gallagher, Robert Dept. Crop and Soil Sciences Pullman, WA 99164-6420 509-335-2858 gallagh@wsu.edu	Organic nutrient management, land application of organic wastes	➢ Poposed collaborative involvement with WSU organic systems farm ➢ Proposed development of cultural weed and crop management strategies to reduce soil weed seed bank and promote crop competitiveness
Gaolach, Brad Cooperative Extension 500 SW 7th Street, Suite A200 Renton, WA 98055-2983 206-205-3135 gaolach@wsu.edu	Entomology: plant/insect interactions	➢ Insect ecology ➢ http://www.metrokc.gov/dchs/csd/wsu-ce/agriculture/ ➢ Grower education program for farm apprenticeships and immigrant farmers ➢ On-farm research of buffers and ESA, cover crops, and pest control
Glover, Jerry Dept. Crop and Soil Sciences Pullman, WA 99164-6420 509-335-5893 jerryg@wsu.edu	Apple orchards and grain crops	➢ Apple production in Yakima Valley – organic, integrated and conventional treatments ➢ Proposed grain cropping system study – organic, no-till, and perennial grain
Granatstein, David WSU Tree Fruit REC 1100 N Western Ave Wenatchee, WA 98801 509-663-8181 granats@wsu.edu	Sustainable agriculture, soil quality, ecolabeling, organic tree fruit	➢ Alternative weed control research ➢ Cover crop and compost testing in orchards ➢ Organic and integrated tree fruit production ➢ Research on alternatives to fumigation for apple replant disease ➢ Agricultural use of compost ➢ Apple food safety for direct market ➢ Training of growers and extension agents on new national organic standards ➢ Organic apple survey in Washington State ➢ Three organic tree fruit production workshops in central Washington ➢ Twelve presentations on trends in organic tree fruit production ➢ Web site extension presentations
Lee Hadwiger Dept. Plant Pathology Pullman, WA 99164-6430 509-335-3751 chitosan@wsu.edu	Plant disease control with a focus on alternative methods	➢ Alternative methods for controlling plant disease including chitosan and copper ➢ Late blight control on an organic potato farm

NAME	SPECIALTIES	PROJECTS
Harrison, Joe WSU Puyallup REC 7612 Pioneer Way E. Puyallup, WA 98371-4998 253-445-4638 jhharrison@wsu.edu	Dept. Animal Science – Dairy nutrition, forages, and whole farm nutrient management	➢ Whole farm nutrient management
Havens, Dyvon Cooperative Extension 306 South 1st Street MT Vernon, WA 98273-3805 360-428-4270 havensdy@wsu.edu	Educating the public about agriculture	➢ No explicit programs at this time
Hiller, Larry Dept. Horticulture & Landscape Architecture Pullman, WA 99164-6414 509-335-3446 hillerl@wsu.edu	General horticulture, vegetable crops, potatoes, mineral nutrition, crop physiology	➢ Organic gardening in one or two lectures ➢ Testing calcium as a natural barrier in potatoes against disease
Hillers, Val Dept. Food Science and Human Nutrition Pullman, WA 99164-6376 509-335-2970 hillersv@wsu.edu	Food safety and preservation, consumer education	➢ Fact sheet on manure use in vegetable gardens (1996)
Holland, David Dept. Agricultural Economics Pullman, WA 99164-6210 509-335-2570 holland@wsu.edu	Regional economic models and economic analysis: social, environmental and economic accounting	➢ Comparisons of organic and conventional grain farms' yield, energy, efficiency and profit ➢ The role of agriculture and food production in the Washington economy ➢ Developed 2001 IFAFS proposal for direct marketing
Huggins, David Dept. Crop and Soil Sciences Pullman, WA 99164-6420 509-335-3379 dhuggins@wsu.edu	Soil carbon and nitrogen cycling and management, water quality, conservation tillage and cropping systems, precision farming, alternative crops, soil fertility and crop nutrition, agroecology	➢ Cropping systems research with relevance to organic systems ➢ Proposed cooperator on USDA NRI proposal with WSU and The Land Institute to compare different cropping systems including organic, perennial, no-tillage, CRP
Inglis, Debra Ann WSU MT Vernon REC 16650 State Route 536 MT Vernon, WA 98273-9761 360-848-6134 dainglis@wsu.edu	Dept. Plant Pathology – Diseases of fresh market and processing vegetable crops	➢ Evaluate copper hydroxide and compost tea for late blight control ➢ Evaluate use of tomato cages in late blight control ➢ Evaluate pea germplasm for PCN resistance, and potato and tomato germplasm for late blight resistance ➢ http://mtvernon.wsu.edu/plant_pathology/plant_path.htm ➢ http://mtvernon.wsu.edu/path_team/vegpath_team.htm

NAME	SPECIALTIES	PROJECTS
James, David WSU Prosser REC 24106 N Bunn Road Prosser, WA 99350-9687 509-786-2226 djames@wsu.edu	Dept. Entomology – Pest management, biological control	➢ Biological control of arthropods in horticulture, specifically hops, grapes and currants
Jones, Stephen Dept. Crop and Soil Sciences Pullman, WA 99164-6420 509-335-6198 joness@wsu.edu	Breeding and genetics	➢ Wheat breeding under certified organic growing conditions ➢ 10-acre study of transition rotations towards certified organic dryland field crop production
Jussaume, Raymond Dept. Rural Sociology Pullman, WA 99164-4006 509-335-7626 rajussaume@wsu.edu	Community sociology, sociology of agriculture, sociology of international marketing, development sociology	➢ Enhancing the sustainable development of agri-food systems
Kerr, Susan Cooperative Extension 228 W Main, MS-CH-12 Goldendale, WA 98620-9597 kerrs@wsu.edu	Livestock health, 4-H	➢ Livestock health, with a focus on sheep and goats ➢ http://www.klicitat.wsu.edu/
Kropf, Jim WSU Puyallup REC 7612 Pioneer Way E. Puyallup, WA 98371-4998 253-445-4526 jakropf@wsu.edu	General agronomy and horticulture (dryland and irrigated), composting, agricultural marketing, integrated weed management, pesticide education, biosolids	➢ On-farm composting, minimally composted yard debris ➢ Pest management and IPM strategies for horticultural crops
Kuo, Shiou WSU Puyallup REC 7612 Pioneer Way E. Puyallup, WA 98371-4998 253-445-4573 skuo@wsu.edu	Dept. Crop and Soil Sciences – Soil fertility and soil chemistry	➢ Winter cover cropping and soil and water quality ➢ Proposed winter cover crop species effect on N and pest management ➢ Metal availability in phosphate rock ➢ Bioavailability of waste constituents in soils
Landolt, Peter USDA ARS Yakima Ag Resource Lab 5230 Konnowac Pass Rd. Wapato WA. 98591 509-454-6550 landolt@yarl.ars.usda.gov	Chemical ecology, insect attractants, traps and lures, sampling and monitoring of pest insects	➢ Develop attractants for monitoring and controling insect pests of agricultural crops including apple, pear, potato, and corn
McCurdy, Alan Dept. Food Science and Human Nutrition Pullman, WA 99164-6376 509-335-9103 mccurdy@wsu.edu	Food processing and human nutrition	➢ Annual Farm to Table Food Safety Conference: organic food processor speaker has been included in the past

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McGuire, Andrew Cooperative Extension PO BOX 37, Courthouse Ephrata, WA 98823 509-754-2011 amcguire@wsu.edu	Crop production and soil quality, local direct marketing	➢ Networking livestock producers to improve grazing practices ➢ Cover cropping systems for potatoes, including biofumigation using green manures ➢ Business training for agricultural entrepreneurs for alternative production and marketing
Miles, Carol WSU Vancouver REC 1919 NE 78TH Street Vancouver, WA 98665-9752 360-576-6030 milesc@wsu.edu	Alternative crops, vegetable production, manure and compost applications, and alternative pest control	➢ Organic on-farm trials of alternative crops and alternative pest control: edamame, pea vines, bamboo, asparagus, carrot rust fly, raspberry root rot control ➢ Use of entomopathogenic nematodes to control cucumber beetle larvae in green peas ➢ Overseeded cover crops for weed control in organic vegetable systems ➢ Manure management: on-farm composting and applications in organic pumpkin production ➢ On-farm composting of poultry offal ➢ Organic certification education for extension agents and new farmers ➢ Survey of small farms in the Pacific Northwest to identify research and extension needs (1996) ➢ http://agyst.wsu.edu
Miller, Terry Dept. Entomology Pullman, WA 99164-6382 509-335-5815 tdmiller@wsu.edu	Biological control, IPM, natural enemy production and conservation	➢ Aphid natural enemy banks in floricultural glasshouses ➢ Biological control of pea aphid in organic pea cropping systems and organic sweet pea production in the Pacific Northwest ➢ Field evaluation of a new strain of *Aphidius colemani* against *Myzus persicae* in potatoes ➢ Integrated biological control in glasshouse rose production ➢ Natural enemy evaluation and implementation ➢ Natural enemy banks for the control of aphids in organically grown potatoes ➢ Suppression of the Orange Tortrix leafroller and other key leafrollers in organically grown caneberries ➢ Integrated biological control of Russian wheat aphid ➢ Conservation and biological control of Cherry Bark Tortrix in the PNW ➢ Cereal Leaf Beetle biology, damage and control in Washington

NAME	SPECIALTIES	PROJECTS
Miller, Tim WSU MT Vernon REC 16650 State Route 536 MT Vernon, WA 98273-9761 360-848-6138 twmiller@wsu.edu	Dept. Crop and Soil Sciences – Weed science	➢ Weed control in organic strawberries, including flaming, corn gluten, wheat gluten, and mustardseed meal ➢ Proposed production of organic vegetable seed
Mullinix, Kent Wenatchee Valley College 1300 Fifth St. Wenatchee, WA 98801 509-662-2660 mullinix@wsu.edu	Dept. Horticulture & Landscape Architecture – Agriculture teaching program	➢ Four-acre organic block at Wenatchee Valley College (WVC) Teaching & Demonstration Orchard for WSU/WVC Tree Fruit Management & Tree Fruit IPM students ➢ Configuring teaching/research programs to directly support family-based agriculture ➢ Propose to teach direct and alternative marketing and sales
Miltner, Eric WSU Puyallup REC 7612 Pioneer Way E. Puyallup, WA 98371-4998 253-445-4573 miltner@puyallup.wsu.edu	Dept. Crop and Soil Sciences – Turfgrass production and soil management	➢ Compost soil amendment for turfgrass systems ➢ Pesticide degredation in turfgrass clippings used for compost
Nelson, Donald Dept. Animal Sciences Pullman, WA 99164-6310 509-335-2922 nelsond@wsu.edu	Beef cattle, holistic management	➢ Grassfed meats and milk ➢ Developing PNW Livestock Graziers network
Parker, Bob WSU Prosser Irrig. Ag. REC 24106 N Bunn Road Prosser, WA 99350-9687 509-786-9234 rparker@wsu.edu	Weed science	➢ Integrated Weed Management System including cultivation, adapted variety selection, timing of seeding
Patten, Kim WSU Long Beach REU 2907 Pioneer Road Long Beach, WA 98631 360-642-2031 pccrf@wsu.edu	Dept. Horticulture & Landscape Architecture – Cranberries	➢ Organic cranberry production ➢ Bio-rational pest management ➢ Water quality BMPs ➢ Alternative export crops for coastal marine climates
Pike, Keith WSU Prosser Irrig. Ag. REC 24106 N Bunn Road Prosser, WA 99350-9687 509-786-9269 kpike@tricity.wsu.edu	Agricultural entomology (aphid parasitoids), integrated pest management of small grains	➢ Biocontrol of pea aphids ➢ Potato insect research – small portion on organically grown potatoes
Platt, Tom Cooperative Extension PO Box 399 Davenport, WA 99122-0399 509-725-4171 plattom@wsu.edu	Livestock production, range management, ranch business management	➢ Nitrates in ground water ➢ Range and livestock management ➢ Integrating lievestock and perennial forage into annual cropping systems

NAME	SPECIALTIES	PROJECTS
Reganold, John Dept. Crop and Soil Sciences Pullman, WA 99164-6420 509-335-8856 reganold@wsu.edu	Soil quality and agricultural systems	➢ Sustainability of organic, conventional, and integrated apple systems ➢ Soil quality and horticultural performance of organic and biodynamic wine grape production systems ➢ Sustainability of perennial grain, direct-seed grain, organic grain, and CRP systems
Roberts, Diana Cooperative Extension 222 N Havana Spokane, WA 99202-4799 509-477-2167 robertsd@wsu.edu	Direct seeding, grain production	➢ Network grain producers ➢ Seminars on grain production ➢ Work with Spokane Tilth
Schwab, Gregory Dept. Crop and Soil Sciences Pullman, WA 99164-6420 509-335-3385 gschwab@wsu.edu	Soil fertility, nutrient management	➢ Crop nutrient requirements in dryland cereal production systems
Smith, Timothy J. Cooperative Extension 303 Palouse Street Wenatchee, WA 98801-2670 509-664-5540 smithtj@wsu.edu	Tree Fruit Production and IPM	➢ Develop, run and validate disease and pest insect development models ➢ http://www.ncw.wsu.edu/tftindx.htm
Snyder, William Dept. Entomology Pullman, WA 99164-6382 509-335-3724 wesnyder@wsu.edu	Insect ecology	➢ Basic ecology/behavior of aphid predators and parasitoids in greenhouse cut flowers, potatoes, and cole crops ➢ http://entomology.wsu.edu/personal/bill_snyder/index1.htm
Stahnke, Gwen WSU Puyallup REC 7612 Pioneer Way E. Puyallup, WA 98371-4998 253-445-4513 stahnke@wsu.edu	Dept. Crop and Soil Sciences – Turfgrass production and pest management	➢ Turfgrass integrated pest management ➢ Developing guidelines for compost soil amendments in turfgrass systems ➢ Evaluating pesticide use in turfgrass clippings used in compost
Stark, John WSU Puyallup REC 7612 Pioneer Way E. Puyallup, WA 98371-4998 253-445-4519 starkj@wsu.edu	Dept. Entomology – Ecotoxicology, integrated pest management	➢ Development of IPM program for aphid control in crucifers ➢ Evaluation of insecticides from the neem tree as controls of vegetable pests ➢ Proposed impact of riparian buffers on horticultural operations and river health for salmonid species in the Pacific Northwest

NAME	SPECIALTIES	PROJECTS
Swanson, Barry Dept. Food Science and Human Nutrition Pullman, WA 99164-6376 509-335-3793 swansonb@wsu.edu	Food preservation, processing, safety and quality	➢ Master Food Preserver training ➢ Consumer awareness ➢ Potential for organic cocoa butter production
Yenish, Joe Dept. Crop and Soil Sciences Pullman, WA 99164-6420 509-335-2961 yenish@wsu.edu	Integrated weed management	➢ Integrated weed management
Young, Doug Dept. Agricultural Economics Pullman, WA 99164-6210 509-335-1400 dlyoung@wsu.edu	Agricultural economics	➢ Impacts of agricultural policy on sustainable agriculture

Survey of Organic Farming Research, Teaching and Extension Activities In Washington State

April 2001

Dear WSU Colleague:

The WSU Center for Sustaining Agriculture and Natural Resources (CSANR) is exploring the development of a more coordinated and comprehensive effort on organic farming research and education within our state. Organic farming is one of the fastest growing sectors in agriculture today, with a number of opportunities and unmet needs that WSU can help address. We are conducting a quick survey of organic farming activity by WSU CAHE faculty to better characterize our current activity and involvement with organic farming and related topics.

Please take a moment to fill out the short survey included below, and email it back by April 9. Your information will enable WSU CSANR to promote your activities as well as target you for future funding opportunities.

In addition, we are proposing to convene a one-day statewide meeting for WSU faculty and staff interested in further developing an organic farming program. Please indicate your interest, and preferable times and locations for such a meeting. Thank you in advance for your response.

Carol Miles <milesc@wsu.edu>
David Granatstein <granats@wsu.edu>
WSU CSANR

Name:

Unit/location:

Subject matter specialties:

For the following, please indicate R if predominantly Research, E if predominantly extension, or R/E if a combination

Please list research and education programs with explicit organic farming focus.
Past programs:
Current programs:
Proposed programs:

Please list research and education programs with direct relevance to organic farming, but not with explicit organic focus.
Past programs:
Current programs:
Proposed programs:

Specific outcomes or products from your programs available to organic growers (e.g. pheromone mating disruption in apples; compost use guidelines; organic crop budget, etc.):

Washington State University
Center for Sustaining Agriculture and Natural Resources

Mission

The Center for Sustaining Agriculture and Natural Resources (CSANR) works to create sustainable agriculture and natural resource systems that provide a high quality of life for the people of Washington. The CSANR leads in developing and implementing interdisciplinary systems-oriented research and education programs at WSU.

CSANR Program Priorities and Direction

Sustainable Farming Systems: Organic farming systems, alternative crops and niche marketing, and alternative farming systems such as direct seeding and grass-fed livestock.

Agriculture and Community Food Systems: Research and education to enhance the viability of small and family scale farms, expand direct and local marketing strategies and infrastructure, link marketing and pricing with production practices through eco-labeling and consumer education, and build community capacity to address food security and land use issues.

Building Capacity in People and Communities: Consensus building, conflict resolution, collaborative decision-making, leadership, and rural economic development.

Assessment of Trends in Sustainable Agriculture: Clarify the roles of technology, economics, and justice in the development of a more sustainable agriculture, assess the university community and the people of the state on public policy concerns such as the sustainability of Washington's agriculture, biotechnology in agriculture, assessment of technology and the impact of genetic engineering on organic farming.

Agriculture and Energy: Renewable energy and economic development in the agricultural sector, including wind, bio-gas from animal and food processing wastes, bio-fuels (i.e., ethanol and bio-diesel) and solar.

Internship Program in Sustainable Agriculture

Internships provide a positive learning environment where students can carry out a planned, hands-on program emphasizing the principles of sustainable agriculture in a fully integrated farming system. The Center initiated the program with S&S Homestead farm on Lopez Island, with the long-term goal of providing internship opportunities on farms throughout Washington.

Advisory Committee

An advisory committee assists the Center with representation from a broad spectrum of interests including: traditional and alternative agricultural producers, state and federal agencies, agri-supply industry, processors, consumer groups, marketing groups, and natural resource, agricultural and environmental organizations. The committee advises about program needs and visions.

Director, Staff and Leadership Team

Chris Feise is the Director of the CSANR and he is assisted by Cindy Murray. Eight WSU extension and research faculty form the Leadership Team who carries out the mission of the Center: Ed Adams, David Granatstein, Sandra Halstead (EPA liaison), Andy McGuire, Carol Miles, Donald Nelson, Marcia Ostrom, and Dennis Tonks.

Washington State University subscribes to the principles and laws of the state of Washington and the federal government, including applicable Executive Orders, pertaining to civil rights, equal opportunity, and affirmative action. Washington State University policy prohibits discrimination on the basis of race, sex, religion, age, color creed, national or ethnic origin, physical, mental, sensory disability or use of a trained guide dog or service animal, marital status, sexual orientation, and status as a Vietnam-era veteran in the recruitment and admission of students, the recruitment, employment, and retention of faculty and staff, and the operation of all University programs, activities, and services. Evidence of practices that are inconsistent with this policy should be reported to the Director of the Center for Human Rights, 225 French Administrative Building, 509-335 8288, to the Washington State Human Rights Commission, 206-753-6770, or to the United States Office of Civil Rights, 202-245-6403.

Alternative formats (for example, large print, Braille, cassette tapes) of this and any other Center for Sustaining Agriculture and Natural Resources publication will be made available upon request for persons with disabilities. Please contact the Center for Sustaining Agriculture and Natural Resources.

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