



**Agricultural Research Center
College of Agriculture and Home Economics
Washington State University**

Projects Approved by USDA/CSREES for FY 2000-2001

Agricultural Economics

- 0100 Issues in Economic Evaluation for the Management of Multiple Use Natural Resources, Wandschneider, P.R., Barron, J.C., Butcher, W.R., Whittlesey, N.K.
- 0160 Agricultural Water Management Technologies, Institutions and Policies Affecting Economic Viability and Environmental Quality, W-190, Huffaker, R.G.
- 0204 Public Policy and the Washington Economy: An Applied Welfare Analysis, Holland, D.W.
- 0218 New Economic Theories and Econometric Methods for Agricultural Economics Analysis, Mittelhammer, R.C., Wahl, T. I.
- 0227 Rural Communities and Public Lands in the West: Impacts and Alternatives, W 192, Holland, D.W.
- 0265 The Effects of Farmland Prices, Barkley, P.W.
- 0269 Dryland Grain Growers' Income Risk Management and Its Environmental Impacts, Wang, H.H.
- 0275 Agricultural Production, Processing, Trade, and Environmental Quality, Shumway, C.R., Duval, Y.
- 0278 The Prospects & Pitfalls of Financing Cooperatives Through Patron Demand Deposit Accounts, Duft, K.D.
- 0299 Fisheries Management and Marketing of Marine and Aquaculture Seafood, Matulich, S.C.
- 0301 Private Strategies, Public Policies, and Food System Performance, NE-165, McCluskey, J.J.
- 0303 Economic Aspects of Growing Vinifera Wine Grapes on Rootstocks and Marketing Washington Wine, Folwell, R.J.
- 0317 Wine Grape Economic Research, Folwell, R.J.
- 0343 Policy and Competitive Changes in Agricultural Transportation in Washington, Casavant, K.L.
- 0347 Assessing the Economic Viability of Soil Conserving Farming Systems in Eastern Washington, Young, D.L., Huggins, D.*, Kennedy, A.C.*, Saxton, K.*, Young, F.L.*, Roe, D., Stockle, C.O., Wu, Q.J., Bezdicek, D.F., Frazier, B.E., Veseth, R., Pan, W.L., Papendick, R.I.*, Schillinger, W.F.

- 0383 Public Policy and the Washington Economy: A General Equilibrium Approach to Economic Policy Analysis, Holland, D.W.
- 0691 Benefits and Costs of Resource Policies Affecting Public and Private Land, W-133, Wandschneider, P.R.
- 0806 Fruit and Vegetable Supply Chain Management, Innovations, and Competitiveness, S-222, Schotzko, R.T.
- 0998 Rural Economic Development: Alternatives in the New Competitive Environment, NE-162, Holland, D.W.
- 3269 The Possibility of Private Crop Insurance and Reinsurance Markets, Wang, H.H.
- 4301 Reputation and State Commodity Promotion, McCluskey, J.J.

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- 0229 Grass Seed Cropping Systems for a Sustainable Agriculture, McCracken, V.A., Johnston, W.J.
- 0233 Jointed Goatgrass: A Threat to U.S. Wheat Production, Cavalieri, R.P., Yenish, J.P., Young, F.L.*
- 0287 Grass Seed Cropping Systems for a Sustainable Agriculture, Cavalieri, R.P., Johnston, W.J., Pan, W.L., Hinman, H.R.
- 0318 Jointed Goatgrass: A Threat to U.S. Wheat Production, Cavalieri, R.P.
- 0325 Grass Seed Cropping Systems for a Sustainable Agriculture, Cavalieri, R.P., Johnston, W.J.
- 0354 Wine Grape Research, Cavalieri, R.P., Polzin, L., Martin, R.R.*, Eastwell, K.C.
- 0356 Jointed Goatgrass: A Threat to U.S. Wheat Production, Cavalieri, R.P.
- 0358 Grass Seed Cropping Systems for a Sustainable Agriculture, Cavalieri, R.P., Johnston, W.J.
- 0379 Aquaculture, Washington, Ristow, S.S.
- 7996 Multistate Research Coordination, Western Region, W-106, Cavalieri, R.P., Ristow, S.S.
- 9916 Administration of Agricultural Research Washington State, Cavalieri, R.P., Zuiches, J.J.



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Animal Sciences

- 0167 Enhancement of Dietary Energy Use for Maintenance, Growth, and Lactation by Beef Cattle, Johnson, K.A.
- 0181 Genetic Variation in Growth, Carcass Composition, Quality and Fatty Acid Composition of Wagyu Cattle, Gaskins, C.T., Reeves, J.J., Johnson, K.A., Busboom, J.R.
- 0189 Improved Efficiency of Artificial Insemination in Large Dairy Herds, Senger, P.L.
- 0194 Synthesis of Growth Promoting Cytokines by Bovine Binucleate Cells, Leid, R.W., Senger, P.L.
- 0213 Dietary & Genetic Manipulation of the Lipid Composition & Palatability of Red Meat, Busboom, J.R.
- 0237 Equine Muscle Healing and Regeneration, Byrne, K.M., Dodson, M.V.
- 0249 Homeorhetic Regulation and Quantitative Modeling of Metabolism in Lactation and Growth, McNamara, J.P.
- 0289 Immunological Characterization of the T-Cell Compartment of Trout Clones for Fish Disease Research, Ristow, S.S., Thorgaard, G.H.
- 0304 Altering Fermentation of Plant Fiber, Nelson, M.L.
- 0328 Investigation of Direct Fed Microbial, DFM, Products Based on *Aspergillus* Fermentation Extract, Calza, R.E.
- 0331 Importance of Dietary Carotenoids on Immunity and Cancer in the Canine and Feline, Chew, B.P.
- 0374 Nutrient Management: Feeding for Reduced Excretion of Nitrogen, Phosphorus, Zinc, and Selenium by Ruminants, Kincaid, R.L.
- 0380 Detection of the Polymeric Immunoglobulin Receptor, PIGR, in Porcine Oviductal Epithelial Cells, Leid, R.W.
- 0408 Maternal Transfer of Copper, Selenium, and Zinc, Kincaid, R.L.
- 0702 Evaluation and Improvement of Barley for Food and Feed, W-166, Froseth, J.A., Ullrich, S.E.
- 0706 Germ Cell and Embryo Development and Manipulation for the Improvement of Livestock, W-171, Wright, R.W.
- 0709 Mastitis Resistance to Enhance Dairy Food Safety, NE-112, Fox, L.K., Davis, W.C.
- 0764 Enhancing the Global Competitiveness of U.S. Red Meat, W-177, Busboom, J.R., Wahl, T.I.
- 0769 Targeting Fat Deposition for Greater Production Efficiency in Ruminants, Dodson, M.V.
- 0862 Metabolic Relationships in Supply of Nutrients for Lactating Cows, NC-185, McNamara, J.P.
- 0913 Molecular Mechanisms Regulating Skeletal Muscle Growth and Differentiation, NC-131, Dodson, M.V., Byrne, K.M.
- 0928 Role of Oxytocin in Control of the Estrous Cycle of Swine, Wright, R.W.
- 0957 Reproductive Performance in Domestic Ruminants, W-112, Reeves, J.J.
- 6957 Sterilization Vaccine for Cattle, Reeves, J.J., Bertrand, K.P.

Biological Systems Engineering

- 0220 A Systems Approach for Farm-Wide Waste Management, Chen, S.
- 0223 Application of Microwave Heating in Food and Agriculture Processes, Tang, J., Cavalieri, R.P., Pitts, M.J., Swanson, B.G.
- 0271 Preservation of Foods by Oscillating Magnetic Fields, Barbosa-Canovas, G.V., Swanson, B.G.
- 0319 Field and Catchment Scale Hydrologic Modeling Using GIS and Simulation Models, Wu, Q.J.
- 0320 Coupled Heat and Moisture Transfer Finite Element Analysis in Food Products, Pitts, M.J.
- 0341 Mechanical Dynamics in Agricultural Production, Harvesting and Postharvest Systems, Hyde, G.M., Thornton, R.E., Fellman, J.K., Cavalieri, R.P.
- 0352 A Watershed Scale Study on No-Till Farming System for Reducing Sediment Delivery, Chen, S.
- 0357 Use of Simulation Modeling and Other Computer Based Tools for Decision Support in the Management of Agricultural Systems, Stockle, C.O.



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- 0371 Application of Electromagnetic Energy at Microwave and Radio Frequencies in Food and Agriculture Processes, Tang, J., Pitts, M.J., Swanson, B.G.
- 0467 Improvement of Thermal and Alternative Processes for Food, NC-136, Barbosa Canovas, G.V., Powers, J.R., Cavalieri, R.P., Swanson, B.G., Tang, J.
- 0990 Technology & Principles for Assessing & Retaining Postharvest Quality of Fruits & Vegetables, NE-179, Hyde, G.M., Cavalieri, R.P., Pitts, M.J., Tang, J., Fellman, J.K.
- 0992 Assessment of Farm Level Contribution to Nitrogen Pollution in the Central Columbia Plateau, Stockle, C.O.
- 3227 Non Chemical Pest Control in Fruits and Nuts Using Electromagnetic Energy, Tang, J., Hansen, J.D.*, Mitcham, E., Shellie, K.*
- 4222 Integrated Nutrient Management Modeling for Dairy Production Systems Featuring Dynamics and Optimization, Chen, S., Stockle, C.O., Harrison, J. H.
- 4225 Thermal Mortality of Insects and Postharvest Control of Insect Pests in Nuts, Tang, J., Cavalieri, R.P., Swanson, B.G.
- 7223 Physical and Micro Structural Properties of Gellan Gels in Food Applications, Tang, J., Swanson, B.G.
- 7990 Measurement and Control of Fruit and Vegetable Impact Sensitivity, Hyde, G.M.
- Center for Precision Agriculture**
- 0333 Precision Agricultural Systems, Pierce, F.J., Davis, D.C.
- Center for Sustaining Agriculture and Natural Resources**
- 0311 Alternative Cropping Systems, Miles, C.A. Cooperative Extension
- 0207 Wine Grape Research, Watson, J.W.
- Crop and Soil Sciences**
- 0152 Characterization of Flow and Transport Processes in Soils at Different Scales, W-188, Flury, M., Wu, Q.J.
- 0175 Adaptation Studies of Cereal Varieties and Selections, Lumpkin, T.A.
- 0182 Impact of No-Till on Soil Quality Physical, Chemical, and Microbial Properties, Bezdicek, D.F., Albrecht, S., Flury, M., Roe, D.
- 0193 STEEP III: Solutions to Environmental and Economic Problems, Bezdicek, D.F., Alldredge, J.R., Kennedy, A.C.*, Ullrich, S.E., Young, F.L.*, Pan, W.L., Kidwell, K.K., Young, D.L., Veseth, R., Burns, J., Schillinger, W.F., Clement, S.L.*
- 0196 Molecular Markers for Barley Disease Resistance Genes, Kleinhofs, A.
- 0203 Nutrient Cycling and Soil Building in Alternative Cropping Systems, Pan, W.L., Stevens, R.G., Thornton, R.E., McKean, W.T., Eberlein, C.
- 0228 Precision Weed Management in Dryland Agricultural Production in Eastern and Central Washington, Yenish, J.P., Young, F.L.*, Miller, T.W.
- 0232 Breeding and Genetics of Winter Wheat, Jones, S.S., Murray, T.D., Cook, R.J., Line, R.F., Morris, C.F.*
- 0242 Developing Sustainable Agricultural Systems with Conservation Tillage and Site-Specific Management, Fiez, T.E., Frazier, B.E., Yenish, J.P., Guy, S., Hammell, J.E., Thill, D.C.
- 0245 STEEP III, Bezdicek, D.F., Schillinger, W.F., Veseth, R.
- 0250 Cropping Systems Research for Low Precipitation Dryland in Eastern Washington, Schillinger, W.F., Cook, R.J., Papendick, R.I.*, Veseth, R., Yenish, J.P.
- 0251 Breeding of Value-Added Barley by Incorporation of Protein Engineered Beta Glucanases, von Wettstein, D.H., Ullrich, S.E.
- 0264 PM-10 Particulate Emission Prediction and Control in the Pacific Northwest, Schillinger, W.F.
- 0267 Sorption and Transport in Porous Media at Different Scales, Flury, M.



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0277	Ecologically Based Weed Management for Dryland Cropping Systems, Fuerst, E. P.		Harsh, J.B., Zamora, B.A., Kuo, S., Pan, W.L., Stevens, R.G., Flury, M.
0296	STEEP III, Bezdicek, D.F.	0598	Loess and Global Change, Busacca, A.J., Frazier, B.E., Kennedy, A.C.*
0306	PM-10 Particulate Emission Prediction & Control from Ag Land in the PNW Columbia Plateau, Schillinger, W.F., Busacca, A.J., Pan, W.L., Frazier, B.E., Young, F.L.*, Saxton, K.*, Veseth, R., Young, D.L.	0664	Seed Biology, Technology, and Ecology, W-168, Warner, R.L.
0316	STEEP: Solutions to Environmental and Economic Problems, Bezdicek, D.F.	0688	Developing Crops and Cropping Systems for Moisture Limiting Environments, Chevalier, M.M., Ullrich, S.E.
0323	Remote Sensing for Land Management, Frazier, B. E., Lamb, B. K., Busacca, A.J., Johnson, D.A., Pan, W.L.	0703	A Comparative Analysis of the Sustainability of Farming Systems, Reganold, J.P., Busacca, A.J., Papendick, R.I.*
0329	Perennial Ryegrass Seed Production in the Puget Sound Without Burning, Johnston, W.J., Miller, T.W.	0715	Integrated Weed Management in Dryland Cropping Systems in Washington, Young, F.L.*, Seefeldt, S.S.
0332	Evaluation and Management of Turfgrass Species and Cultivars, Johnston, W.J., Stahnke, G.K., Miltner, E.D., Johnson, R.C.*, Thill, D.C., Miller, T.W.	0900	Soil Survey and Classification, Busacca, A.J., Frazier, B.E., Gessler, P.
0334	Improving Spring Wheat Varieties for the Pacific Northwest, Kidwell, K.K., Jones, S.S., Morris, C.F.*, Ullrich, S.E.	1006	Breeding and Genetics of Barley, Kleinhofs, A., Ullrich, S.E.
0344	Diversity and Sustainability of Plant and Arthropod Communities within Agroecosystems, Quinn, M.A., Bezdicek, D.F., Zack, R.S., Pike, K.S., Gould, J.*	1134	Plant Genetic Resource Conservation & Utilization W-006, Lumpkin, T.A., Clement, S.L.*, Hannan, R.M.*, Johnson, R.C.*, Dugan, F.M.*, Cavalieri, R.P.
0351	STEEP: Solutions to Environmental and Economic Problems, Bezdicek, D.F.	1790	Breeding Dry Pea, Lentil, and Chickpea Germplasm for Stress Tolerance, Disease Resistance, and Quality, Muehlbauer, F.J.*, McPhee, K.E.*
0353	Soil Quality Changes with No-Till Management Adoption for Wind Erosion Control, Kennedy, A.C.*	1851	Enhancing Winter Wheat for Coldhardiness, Walker Simmons, M.K., Allan, R.E.*
0359	Early Generation and Market Specific Quality Evaluation of New Wheat Varieties, Carter, B.P.	3251	Fusarium Resistant Germplasm by Altered Gene Expression in the Barley Seedcoat, von Wettstein, D.H., Kleinhofs, A.
0363	Nutrient Management for Improved Crop Yield and Quality for Dryland Cropping Systems of Eastern WA, Schwab, G.J.	3776	Effect of Cropping Systems on Shrub Steppe Habitat, Quinn, M.A.
0373	Carbon and Nitrogen Cycling and Management in Alternative Cropping Systems, Pan, W.L., Frazier, B.E., Kidwell, K.K., Stevens, R.G., Young, F.L.*	4277	The Role of Microbially Mediated Decay in Mortality of Annual Grass Weed Seeds, Fuerst, E.P., Kennedy, A.C.*
0376	Integrated Management of Winter Annual Grass Weeds in Eastern Washington Dryland Crop Systems, Yenish, J.P., Huggins, D.*, Burns, J.W., Young, F.L.*	4703	Sustainability of Three Apple Production Systems: Conventional, Organic and Integrated, Reganold, J.P., Andrews, P.K.
0385	Physical Chemical State and Plant Availability of Uranium, Lead, Cadmium, Zinc, and Arsenic in Selected Washington Soils,	6106	Dissecting a Complex Barley Chromosome Region Containing Malting Quality QT, Ullrich, S.E., Kleinhofs, A.
		6197	Molecular Genetics of the Barley Stem Rust Resistance Gene Families, Kleinhofs, A.
		6703	Sustainability of Three Apple Production Systems, Reganold, J.P., Andrews, P.K.



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Entomology

- 0121 Biological Control in Pest Management Systems of Plants, W 185, Piper, G.L.
- 0243 Biological Diversity Studies of Arthropod Taxa, Zack, R.S.
- 0244 Molecular Genetics of Honey Bee Subspecies & Assessment of Populations in Northern America, Sheppard, W.S.
- 0272 Biological Management of Yellow Starthistle in Washington, Piper, G.L.
- 0302 Dynamics and Management of Pest and Natural Resource Populations, Berryman, A.A.
- 0342 Investigation of Neural-like Properties of a Colorado Potato Beetle Cell Line, Sheppard, C.A., Cohen, R.W.
- 0355 Developing IPM Systems to Enhance Effects of Biological Control Agents on Arthropod Pests of Plants, Long, G.E.
- 0405 Potential of Insect Growth Regulators for Controlling Insect Pests of the Pacific Northwest, Brown, J.J.
- 4362 The Impact of Generalist Predators in Agriculture and Refuge Habitat, Snyder, W. E.

Field Disease Investigation Unit

- 0136 Control of Animal Parasites in Sustainable Agricultural Systems, W-102, Jasmer, D. P.
- 0261 Enteric Diseases of Swine and Cattle: Prevention, Control and Food Safety, N.C. Besser, T.E., Gay, C.C., Hancock, D.D., Gay, J.M.
- 0858 Investigation of Food Animal Disease Problems in the State of Washington, Gay, C.C., Fox, L.K., Hancock, D.D., Gay, J.M.

Food and Environmental Quality Laboratory

- 0335 Pesticide Information Coordination, Daniels, C.H.
- 0349 Managing Agrochemical Behavior under Drip Irrigation Systems, Felsot, A.S., James, D.G.

- 0372 Mechanisms and Mitigation of Agrochemical Impacts on Human and Environmental Health, W-45, Felsot, A.S.
- 0470 Reducing the Potential for Environmental Contamination by Pesticides and Other Organic Chemicals, W-082, Felsot, A.S., Gamberdinger, A.P.
- 3122 Benefit Assessment of Pesticides in Washington, Daniels, C.H.
- 3206 Biological and Economic Assessment of Apple Pest Management, Daniels, C.H., Brunner, J.F., Derr, J., Hennessy, D.A., McCracken, V.A., Rosenberger, D.
- 3335 Commodity and Pest Management Profiles in Washington State, Daniels, C.H., Foss, C.R.
- 3537 Biological and Economic Assessment of Apple Pest Management Supplement 3, Daniels, C.H., Brunner, J.F., Hennessy, D.A., McCracken, V.A., Rosenberger, D.
- 8131 Managing Drip Irrigation to Reduce Chemical Movement in Soil, Felsot, A.S.

Food Science and Human Nutrition

- 0103 Dietary and Psychosocial Factors Affecting Self-Management of Type 2 Diabetes Mellitus, Armstrong Shultz, J., Massey, L.K., Evans, M.A., Hicks, B., Crogan, N., Branen, L.J., Weisham, C.
- 0118 Conjugated Linoleic Acid: Dairy Enrichment, Dietary Intakes, Cell Culture, and Cancer Prevention, Shultz, T.D., McGuire, M.K., McGuire, M.A.
- 0128 Marketing and Delivery of Quality Cereals and Oilseeds, NC-213, Baik, B.K.
- 0208 Enological and Viticultural Practices on Fermentation Microbiology, Chemistry, and Quality of Wines, Edwards, C.G., Spayd, S.E., Tarara, J.M. *, Fellman, J.K., Collins, M.D., Milles, D.A.
- 0246 Nutrition in Prevention and Treatment of Chronic Diseases of Aging, Massey, L.K.
- 0276 Factors Influencing the Intake of Calcium-Rich Food Among Adolescents, W-191, Peck, L.W.
- 0286 Effect of Under or Overconsumption on Serum Leptin and Food Regulation in Lean and Obese Subjects, Beerman, K.A.



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- 0288 Microbiological and Chemical Factors Affecting the Flavor and Textural Quality of Cheddar Cheese, Clark, S., Edwards, C.G.
- 0305 Develop a Noninvasive Spectroscopic Method to Predict Safety/Quality of Cured/Smoked Food Product, Rasco, B.A.
- 0310 Effect of Processing & Fermentation on Concentration of Conjugated Linoleic Acid in Yogurt & Ghee, Luedecke, L.O., Clark, S., Shultz, T.D.
- 0370 Nutrition in the Treatment of Calcium Kidney Stones, Massey, L.K.
- 0560 Genetic Improvement of Beans (*Phaseolus vulgaris* L.) for Yield, Disease Resistance, and Food Value, W-150, Swanson, B.G.
- 0719 Milling and Flour Quality Characteristics of Wheat Selections, Morris, C.F. *, McCurdy, A.
- 0846 Enological & Viticultural Practices on Fermentation Microbiology, Chemistry, and Quality of Wines, Edwards, C.G., Spayd, S.E., Paznokas, J.L., Fellman, J.K., Reynolds, A.G., Mills, D. A., Collins, M.D., Tarara, J.M. *
- 0905 Nutrient Bioavailability: A Key to Human Nutrition, W-143, Shultz, T.D.
- 3468 Surface Hydrophobicity and Functionality of Proteins in the Molten Globule State, Powers, J.R., Dunkar, A.K., Swanson, B.G.
- 4108 Dietary Salt and Bone Turnover in Postmenopausal Women, Massey, L.K.
- 4118 Effect of Isomeric Conjugated Linoleic Acid Intake on Milk Fat Content and Growth during Early Postnatal Period, McGuire, M.K., McGuire, M.A.
- 5905 Vitamin B₆ Requirements of Women in Relation to Immune Competence, Shultz, T.D., Leklem, J.E.
- 6305 Noninvasive Method for Predicting Safety and Quality of Foods, Rasco, B.A., Cavinato, A.G., Bledsoe, G.E.

**Horticulture and Landscape
Architecture**

- 0044 Potato Cultivar Evaluation and Commercial Potato Seed Lot Trial, Thornton, R.E., Pelter, G.Q., Haven, D.M., Hiller, L.K., Sorensen, E.J., MacConnell, C.B.
- 0222 Landscape Ecology in Horticultural, Coastal and Forest Ecosystems: Spatial/Vertical Plant Dynamics, Hendrix, W.G.
- 0283 Study Use of Gamma and Electron Beam Irradiation of TCK Controversa to Control Dwarf Bunt of Wheat, Sitton, J.W.
- 0321 Calcium Mediated Signaling in Plants: Calmodulin and Ca²⁺/Calmodulin Dependent Protein Kinase, Poovaiah, B.W.
- 0346 Physiological and Biochemical Markers of Potato Seed Tuber Age and Their Relevance to Production, Knowles, N.R.
- 0695 The Impacts of Plants on People, Lohr, V.I.
- 0797 Postharvest Physiology of Fruits, NE-103, Fellman, J.K., Kupferman, E.M.
- 0910 Regulating Plant Fertility by Manipulation of Flavonol Levels in Pollen, Taylor, L.P.
- 0937 Effects of Environmental Factors on Reproductive Growth and Development of Apple (*Malus domestica*), Andrews, P.K.
- 1639 Orchard and Physiological Investigation on Asian Pear, Larsen, F.E., Drake, S.R.*
- 1984 Production and Environmental Inputs Affecting Yield and Quality of Vegetable Crops, Hiller, L.K.
- 6046 Potato Development and Improvement in the Northwest, Thornton, R.E.

Human Development

- 0295 Assessing Leadership for Building Collaborative Partnership and Institutional Change, Jimmerson, R.M.
- 0647 Family and Work Linkages W-167, Price, D.Z., Bailey, S.J., Hendrickson, C.M.
- 0794 Food Demand, Nutrition and Consumption Behavior, S-278, Price, D.Z., Mittelhammer, R.C., Armstrong Shultz, J.



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IMPACT Center

- 0171 International Marketing Program for Agricultural Commodities and Trade, Wahl, T.I.
0971 Management System for Sustaining Productivity & Developing Markets for Walla Walla Sweet Onions, Dean, B.B.
0972 Development of Nutritional Value-Added Exportable Snack Foods From Pacific NW, Baik, B.K.
0974 Economic Effects of the North American Free Trade Agreement on the PNW, Wahl, T.I.
0976 International Marketing Education, McCullough, J.
3171 Enhancing Competitiveness of Agricultural and Forest Products, Wahl, T.I.
3801 Enhancing Competitiveness of Agricultural and Forest Products, Wahl, T.I.
3901 Enhancing Competitiveness of Agricultural and Forest Products, Wahl, T.I.
4901 Enhancing Competitiveness of Agricultural Products, Wahl, T.I.

Information Department

- 0800 Publication of Research Bulletins, Fedale, S.V.

Institute for Biological Chemistry

- 0119 Regulation of Photosynthetic Processes, NC-142, Okita, T.W., Edwards, G.E.
0197 Control of Photosynthetic Electron Flow in the Steady State, Kramer, D.M.
0202 Metabolic Compartmentation During (Heart)Wood and Seed Coat Development, Lewis, N.G.
0235 Genetic Analysis of Plant Virus Infection, Carrington, J.C.
0253 Lipid Biosynthesis in Leaves and Seeds, Browse, J.A.
0262 Sorting of Proteins to Vacuoles in Plant Cells, Rogers, J.C.
0268 Biochemistry of Plant Terpenoids, Croteau, R.B.

- 0590 RNA Sorting in Plants, Okita, T.W.
0773 Nutrient Exchange and Metabolism in the Rhizobium Legume Symbiosis, Kahn, M.L.
0967 Diterpene Biosynthesis in Taxol Production and Conifer Defense, Croteau, R.B.
1791 Structure, Evolution, and Function of Plant Proteinase Inhibitors, Ryan, C.A.
3153 Role of Wound Inducible Polygalacturonase of Plant Leaves, Ryan, C.A.
3252 Biochemistry of Oilseeds: New Strategies for Improving Oils, Browse, J.A.
3589 mRNA Targeting to Subdomains of the Endoplasmic Reticulum: The Role of RNA Binding Proteins, Okita, T.W.
3775 Genetics of Symbiotic Effectiveness in Legumes, Kahn, M.L.
3967 Defense Reactions in Conifers: Oleoresinosis, Croteau, R.B.
4119 Metabolic Engineering of Plants for Enhanced Productivity, Okita, T.W., Edwards, G.E.
4589 Metabolic Engineering of Plants for Enhanced Productivity, Okita, T.W., Edwards, G.E.
6204 The Molecular Basis of Heartwood Formation: A New Frontier to Exploit Wood Properties, Lewis, N.G., Davin, L.B.
6236 Host Responses to Potyviruses, Carrington, J.C.
6773 Bacterial Dicarboxylate Transport in Symbiotic Nitrogen Fixation, Kahn, M.L.
6795 Genetic Mechanisms of Chilling Tolerance, Tokuhisa, J.G.
7795 Genetic and Molecular Approaches to Modifying the Composition of Seed Oils, Browse, J.A.
8892 Regulation of Avocado Resistance to Postharvest Pathogens by Modulation of Antifungal Compounds, Browse, J.A.

Irrigated Agriculture Research and Extension Center

- 0110 Alfalfa Growth and Quality: Environmental and Plant Factors, Stevens, R.G., Hoffman, T.R., Fransen, S.C.



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| 0122 | A National Agricultural Program to Clear Pest Control Agents for Minor Uses, NRSP-4, Walsh, D.B. | 0292 | Fungal and Viral Diseases of Hop and Their Control, Eastwell, K.C., James, D.G., Kenny, S.T., Grove, G.G., Walsh, D.B., Crosslin, J.M. |
| 0149 | Control of Aphanomyces Root Rot of Peas through Breeding, Cultural Practices, and Seed Treatments, Kraft, J.M.*, Wilkins, D.*, Darnell, T., Scott, R., Muehlbauer, F.J.* | 0309 | Spectral Reflectance and Spatial Analysis of Plant Stress Indicators in <i>Vitis</i> , Davenport, J.R., Perry, E. |
| 0168 | Gene Transfer for Potato Variety Development, Brown, C.R.*, Mojtahedi, H., Thomas, P.E.*, Corsini, D.L.*, Pavek, J.J.*, Slack, S.A., Smith, O.P.*, Williamson, V., Wrolstad, R. | 0315 | Biology and Integrated Management of Insect and Mite Pests of Wine Grapes, James, D.G., Walsh, D.B. |
| 0185 | Genetic Variability in the Cyst and Root Knot Nematodes, W-186, Santo, G.S. | 0337 | Biological Control of Aphid Pests, Pike, K.S., Miller, T.D., Tanigoshi, L.K., Thomas, P.E.*, Turner, W.J., Stary, P. |
| 0198 | Microirrigation Technologies for Protection of Natural Resources and Optimum Production W-128, Evans, R.G. | 0339 | Development of Integrated Arthropod Management Systems for Irrigated Crops in Central Washington, James, D.G., Kenny, S.T., Parker, R., Felsot, A.S. |
| 0201 | Sweet Cherry and Other Prunus Tree Fruit Germplasm, Production, and Physiology, Linton, A.C., Andrews, P.K., Howell, W.E. | 0350 | Weed Control Research in Irrigated Vegetable and Specialty Crops, Boydston, R.A.*, Parker, R. |
| 0205 | Biochemical Composition of Grapes and Wine as Influenced by Viticultural and Enological Factors, Spayd, S.E., Edwards, C.G., Folwell, R.J. | 0377 | Production Horticultural and Integrated Management Systems of Grapes, Tarara, J.M.*, Spayd, S.E., Smithyman, R.P. |
| 0206 | Development of Crop Protection Chemicals, Walsh, D.B., Eastwell, K.C., James, D.G. | 0480 | Concord Grape Production for Optimum Yield with Minimum Cost of Production, Linton, A.C., Spayd, S.E. |
| 0210 | Wine Grape Viticultural Research, Linton, A.C., Spayd, S.E. | 0519 | Environmental Factors and Management Practices Influencing Wine Grape Crop Physiology & Cold Hardiness, Linton, A.C., Spayd, S.E., Stevens, R.G. |
| 0212 | Epidemiology and Control of Powdery Mildew of Grape, Grove, G.G., Gubler, W.D., Watson, J.W. | 0537 | Factors Affecting the Quality of Washington Wine and Wine Grapes (<i>Vitis vinifera</i>), Spayd, S.E., Edwards, C.G., Folwell, R.J. |
| 0239 | Vegetable Crops Research for the Export Market, Williams, M.M., Hiller, L.K., Corsini, D.L.*, Hyde, G.M. | 0650 | Management of the Columbia Root Knot Nematode on Potato, Santo, G.S., Brown, C.R.* |
| 0248 | Controlling Bacterial Pathogens of Grapevines, Eastwell, K.C., Sholberg, P., Crosslin, J.M., Gritsenko, M. | 0689 | Environmental Improvement of Western Washington Agricultural Lands Utilizing Forage Grasses & Silage Corn, Fransen, S.C., Cogger, C.G. |
| 0257 | Developing Site-Specific Approaches for Crop Nutrient Management in Irrigated Ag Systems, Davenport, J.R., Stevens, R.G., Peryea, F.J. | 0742 | Integrated Arthropod Pest and Pollinator Management, Mayer, D.F. |
| 0281 | Alternate Crops and Cropping Systems for Irrigated Central Washington, Hang, A.N., Lumpkin, T.A., Schillinger, W.F. | 0795 | Etiology, Epidemiology & Control of Fungal Diseases of Tree Fruit, Grove, G.G., Mazzola, M.* |
| 0282 | Germplasm and Cultivar Development of Hop, Kenny, S.T., Grove, G.G., James, D.G. | 0805 | Weed Research in Irrigated Agronomic, Horticultural, & Specialty Crops in Washington, Parker, R. |
| 0290 | Characterization and Control: Plant Viruses and Virus-Like Agents that Infect Perennial Fruit Crops, Eastwell, K.C., Howell, W.E., Crosslin, J.M., Gritsenko, M. | | |



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- 1262 Develop & Distribute Deciduous Fruit Tree Clones That Are Free of Known Graft Transmissible Pathogens, NRSP-5, Eastwell, K.C., Howell, W.E., Cavalieri, R.P.
- 5263 Cherry Leafroll Virus Control and Management in Sweet Cherry Orchards, Eastwell, K.C., Howell, W.E.
- Mt. Vernon Research and Extension Unit**
- 0217 Cultural and Cultivar Studies for Fruit Production in a Maritime Climate, Moulton, G.A.
- 0297 Weed Interference in and Herbicide Effects on Western Washington Crops, Miller, T.W.
- 0314 Wine Grape Research in a Cool Maritime Climate, Moulton, G.A.
- 0336 Integrated Disease Control Programs for Economically Important Vegetable Crops in Western Washington, Inglis, D.A., Brown, C.R.*, Coyne, C.J.*, Havens, D., Corsini, D., Powelson, M.J., Johnson, D.A., Miles, C.A.
- 0661 Vegetable Culture in a Maritime Climate, Anderson, W.C.
- Natural Resource Sciences**
- 0113 Effects of Enhanced UV B Radiation and CO₂ Levels on Ecophysiology of Tree Species, Bassman, J.H.
- 0221 Biological Impacts and Efficacy of Microfloc Alum Injection for Lake Restoration, Moore, B.C.
- 0226 Nutritional Ecology of Large Mammals, Robbins, C.T.
- 0238 Evaluation of Selected Pacific Northwest Eriogonum Species for Revegetation of Mine Spoils, Zamora, B.A.
- 0247 Palouse Prairie Restoration, Sayler, R.D., Hardesty, L.H., Lambert, S.M.*
- 0291 Grazing Influences on Seral Forest Ecosystem Processes, Hardesty, L.H., Buckhouse, J.C., Kennedy, A.C.*
- 0312 Contribution of an Expanded Special Forest Products Industry to Community and Economic Development, Blatner, K.A.
- 0324 Development of User Software for Natural Resource Instrumentation, Methodology and Analysis, Chapman, R.C.
- 0345 Design of Concepts and Application Protocols for Range Management Science, Scarnecchia, D.L.
- 0982 Natural Resource Based Communities in the Era of Globalization, Carroll, M.S.
- 4113 Effect of Enhanced UV B Radiation on Carbon Dynamics in Selected Tree Species, Bassman, J.H., Edwards, G.E., Robberecht, R.
- Plant Growth Facilities**
- 9954 Growth Chamber Facility, Dreesmann, D.
- Plant Pathology**
- 0231 The Molecular Genetics of Bean Common Mosaic and Related Potyviruses Infecting *Phaseolus vulgaris* L., Wyatt, S.D.
- 0274 Development & Implementation of Direct Seed Cereal Based Cropping Systems for the Inland Northwest, Cook, R.J.
- 0300 Population Biology of Plant Pathogenic Fungi, Peever, T.L.
- 0565 Fungi of the Pacific Northwest, Rogers, J.D.
- 0572 Teleomorph Anamorph Connections in Lignicolous Pyrenomycetes, Rogers, J.D.
- 0669 Improving Resistance to Eyespot in Winter Wheat, Murray, T.D., Jones, S.S.
- 0670 Disease Resistance & Cultural Practices for Control of Cephalosporium Stripe in Wheat, Murray, T.D., Jones, S.S.
- 0678 Disease Warning Systems for Potato and Mint, Johnson, D.A., Alldredge, J.R.
- 0823 Control of Cereal Rusts, Chen, X.M.*
- 0837 Systematics and Biology of Phytopathogenic Fungi with Emphasis on Tilletiales, Carris, L.M.
- 0876 Molecular Biology of Plant Pathogenic Bacteria and New Approaches in Disease Control, Gross, D.C.



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| 0947 | Metabolites of Biocontrol Agents that Suppress Root Pathogens of Wheat and Barley, Weller, D.M.*, Gross, D.C. | 0322 | Control of Ornamental Plant Diseases through Sanitary, Cultural, Biological, and Chemical Methods, Copes, W.E., Chastagner, G.A., Hummel, R.L., Hannah, M., Svenson, S. |
| 1767 | Mycobiotic, Revisionary, and Monographic Studies in Xylariaceae, Rogers, J.D. | 0327 | Ecological and Toxicological Approaches to Estimate Effects of Pesticides to Nontarget Organisms, Stark, J.D., Banks, J.E., Wennergren, U. |
| 1844 | Regulation of Disease Resistance Genes in Transgenic Potatoes & Other Plants, Hadwiger, L.A. | 0496 | Basal Rot Control During Hot Water Treatment of Daffodil Bulbs, Chastagner, G.A. |
| 3669 | Development and Feasibility of Perennial Wheat for Highly Erodable Lands, Jones, S.S., Murray, T.D. | 0639 | Weed Control in Cranberries, Patten, K.D. |
| 5876 | Genetic and Functional Analysis of the Syringomycin/Syringopeptin Synthetase System, Gross, D.C. | 0640 | Breeding Superior Raspberry Cultivars for the Pacific Northwest, Moore, P.P., Bristow, P.R., Finn, C.E., Kempler, C., Strik, B.C., Tanigoshi, L.K. |
| Puyallup Research and Extension Center | | 0690 | Chemistry and Bioavailability of Waste Constituents in Soils, W-170, Kuo, S. |
| 0038 | Breeding Superior Strawberry Cultivars for the Pacific Northwest, Moore, P.P., Bristow, P.R., Klauer, S.K., Kempler, C., Finn, C.E., Tanigoshi, L.K. | 0722 | Beneficial Use of Organic Amendments in Agricultural and Urban Soils, Cogger, C.G., Bary, A.I., Hummel, R.L., Miltner, E.D. |
| 0154 | Environmental and Economic Impacts of Nutrient Management on Dairy Forage Systems, NE-132, Harrison, J.H. | 4179 | Understanding, Evaluating, and Improving Direct Marketing Systems for Small Farms, Carkner, R.W., Holland, D.W., Foltz, J.C., Lev, L.C., DePhelps, C.R., Zenz, L.K. |
| 0177 | Economic Dimensions of the Washington Horticultural Landscape and Maintenance Industry, Carkner, R.W., Moore, P.P. | 4741 | Low Risk Tactics for Cranberry Insect and Disease Management in the Pacific Northwest, Patten, K.D., Booth, S.R., Bristow, P.R. |
| 0215 | Freeze Damage and Protection of Horticultural Species, W-130, Hummel, R.L. | 5188 | Selective Pesticides and Natural Enemies: Renewed Hope for IPM of Cole Crop Pests, Stark, J.D., Banks, J.E. |
| 0252 | Diseases of Blueberry and Cranberry: Their Etiology, Epidemiology, and Control, Bristow, P.R., Patten, K.D., Martin, R.R. *, Oudemans, P.V. | Rural Sociology | |
| 0256 | Soil Conditions, Crop Productivity and Groundwater Quality in Some Western Washington Soils, Kuo, S., Harsh, J.B., Bezdicek, D.F. | 0127 | Local Dimensions of the Globalization of Food and Agricultural Marketing Systems, Jussaume, R.A. |
| 0285 | Environmental/Cultural Factors on Water Stress Resistance/Growth/Cold Hardiness of Landscape Plants, Hummel, R.L. | 0141 | Public Concern for the Environment: International Comparisons, Dunlap, R.E. |
| 0307 | Physiological and Genetic Control of Hybrid Poplar Nutrition, Johnson, J.D. | 0230 | Commodities, Consumers, and Communities: Local Food Systems in a Globalizing Environment, NE-185, Jussaume, R.A., Ostrom, M. |
| 0308 | Characteristics of Calcareous Sands Used for Turfgrass Root Zones, Miltner, E.D., Stahnke, G.K., Johnston, W.J. | 0280 | Green Buildings, Technology Markets and Environmental Sustainability, Lutzenhiser, L.A. |



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| 0932 | Self-Conceptions and Marital Interaction: Process of Commitment and Estrangement in New Marriages, Gecas, V. | 0452 | Rootstock and Interstem Effects on Pome and Stone Fruit Trees, NC-140, Barritt, B.H. |
| 0942 | Improvement of Rural and Agricultural Sample Survey Methods, W-183, Dillman, D.A., McCracken, V.A. | 0747 | Nutrient Management in Washington Tree Fruit Orchards, Peryea, F.J. |
| 0981 | Social and Economic Change in Nonmetro Washington, Cook, A.K. | 0801 | Secondary Pests of Deciduous Pome Fruits, Beers, E.H. |
| 3230 | Enhancing the Viability of Local Agri Food Systems, Jussaume, R.A., Schotzko, R.T. | 0954 | Biogeochemistry and Management of Salts and Potentially Toxic Trace Elements in Arid Zone Soils, Sediments and Waters, W-184, Peryea, F.J. |

Statistics

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| 0254 | Analysis of Categorical Resource Selection, Alldredge, J.R. | 1090 | Pest Management of Direct Pests of Apple in Washington Tree Fruit Orchards, Brunner, J.F., Beers, E.H., Dunley, J.E., Landolt, P.J.* |
| 0340 | Interactive Computer Programs for Statistics Education, Evans, M.A. | 3279 | Integrated Control of Apple Replant Disease and Impact on Microbial Communities, Elfving, D.C., Mazzola, M.*, Granatstein, D.M. |
| | | 4089 | Building a Multi Tactic Pheromone Based Pest Management System in Western Orchards, Brunner, J.F., Beers, E.H., Riedl, H., Welter, S.C. |

Tree Fruit Research and Extension Center

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| 0156 | Multidisciplinary Evaluation of New Apple Cultivars, NE-183, Barritt, B.H. |
| 0225 | Management of Arthropod Pests of Pear, Dunley, J.E., Brunner, J.F., Beers, E.H. |
| 0260 | Developing New Apple Cultivars for Washington State, Barritt, B.H., Pusey, L.*, Grove, G.G. |
| 0298 | Bioregulation of Vegetative Growth and Fruit Development in Apple and Pear, Elfving, D.C., Curry, E.*, Drake, S.R.*, Faubion, D., Granatstein, D.M., Mazzola, M.*, McFerson, J., Smith, T.J.*, Willemsen, K.M. |
| 0326 | Sunburn of Apple (<i>Malus domestica</i>), Schrader, L.E., Edwards, G.E., Ku, K.S. |
| 0338 | The Effects of Exogenous Bioregulators on Regular Cropping of Apples, Fallahi, E., Elfving, D.C., Drake, S.R.*, Van Ee, G., Willemsen, K. M. |
| 0366 | Developing an IPM Infrastructure for Apple Orchards Under Mating Disruption, Jones, V.P., Brunner, J.F., Dunley, J.E., Unruh, T.* |
| 0367 | Epidemiology and Management of Fungal and Bacterial Diseases of Tree Fruits, Xiao, C.L., Grove, G.G. |

Vancouver Research and Extension Unit

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| 0258 | Effect of Cultural Practices on Plant Root Health and Establishment of Landscape Plants, Johnson, C.R., Hummel, R.L., Carkner, R.W. |
| 0270 | Biology and Control of Arthropod Pests of Berry Crops, Tanigoshi, L.K., Moore, P.P., Antonelli, A.L. |
| 0375 | Alternative Cropping Systems, Miles, C.A., Nchimbi Msolla, S., Temu, A., Chen, C., Klauer, S.F., Bristow, P.R., Lumpkin, T.A., Myers, J., Hemphill, D., Ferguson, A., Mabagala, R. |
| 0783 | Growth, Development and Physiology of Small Fruit Crops, Cameron, J.S., Chen, C., Klauer, S.F. |

Wood Materials Engineering Laboratory

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| 0284 | Nondestructive Evaluation of Wood Based Composites, Bender, D.A., Pollock, D.G., Wolcott, M.P. |
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