

Agricultural Research Center
College of Agricultural, Human, and Natural Resource Sciences
Washington State University
Projects Approved by USDA/CSREES for FY 2007-2008
By Department and Research Center

Agricultural Research Center:

0587 Jointed Goatgrass: A Threat to U.S. Wheat Production, Cavalieri, R. P.

0655 Development of Alternative Controls for Burrowing Shrimp, Kahn, M. L., S. M. Bollens, and K. D Patten.

9916 Administration of Agricultural Research, Washington State, Cavalieri, R. P., and M. L. Kahn.

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, Angus, and Wagyu-Angus Cross Cattle, Gaskins, C. T., J. R. Busboom, and J. V. O'Fallon.

0374 Nutrient Management: Feeding for Reduced Excretion of Nutrients by Ruminants, Kincaid, R. L.

0432 Pre- and Post-Harvest Manipulation of Palatability, Appearance, and Lipid Composition of Red Meat, Busboom, J. R., and M. L. Nelson.

0536 Development of Ex Situ Bovine Spermatogenesis, McLean, D. J.

0567 Endocrine Control of Rainbow Trout Skeletal Muscle Growth and Development, Rodgers, B. D.

0568 National Animal Genome Research Program, Jiang, Z., and H. Neibergs.

0627 Associations of the Basal Mitochondrial Transcription Machinery Genes with Marbling in Beef Cattle, Jiang, Z.

0668 Process Validation for the Production of Microbiologically Safe Meat Products, Mann, J. E.

0672 Genetic and Functional Genomic Approaches to Improve Production and Quality of Pork, NC 1037, Jiang, Z.

0681 Integrating Transcriptome and Metabolic Pathways to Improve Precision Feeding Systems for Dairy Cattle and Swine, McNamara, J. P.

0706 Germ Cell and Embryo Development and Manipulation for the Improvement of Livestock, W 1171. Wright, R. W.

0709 Mastitis Resistance to Enhance Dairy Food Safety, NE 1028, Fox, L. K., and J. Wenz.

0764 Enhancing the Global Competitiveness of U.S. Meats, W 1177, Busboom, J. R.

0858 Investigation of Food Animal Disease Problems in the State of Washington, Fox, L. K., D. D. Hancock, and J. M. Gay.

0862 Metabolic Relationships in Supply of Nutrients for Lactating Cows, NC-1040, McNamara, J. P.

0913 Molecular Mechanisms Regulating Skeletal Muscle Growth and Differentiation, NC 1131, Dodson, M. V.

0957 Reproductive Performance in Domestic Ruminants, W1112, McLean, D. J.

- 4956 Sterilization Vaccine for Cattle, Reeves, J. J.
- 7862 Adrenergic Regulation of Adipose Tissue Lipolysis in Transition Dairy Cattle, McNamara, J. P.
- 8167 Emission Measurements of Ammonia, Methane, Nitrous Oxide, and Particulates from Beef Production, Johnson, K. A., H. H. Westberg, B. K. Lamb, R. L. Kincaid, J. H. Harrison, and G. H. Mount.

Apparel, Merchandising, Design, and Textiles:

- 0685 Textile Materials and Technologies Addressing Energy, Health, and Other National Security Issues, S-1026, Leonas, K.

Biological Systems Engineering:

- 0319 Snow Redistribution and Water Storage at a Watershed Scale: Field Investigation and WEPP Simulation, Wu, J. Q.
- 0371 Novel Processes and Technologies for Food and Agricultural Commodities, Tang, J., R. P. Cavalieri, M. J. Pitts, B. Rasco, S. Clark, and D. H. Kang.
- 0450 The Science and Engineering for a Biobased Industry and Economy, S-1007, Chen, S.
- 0467 Improvement of Thermal and Alternative Processes for Foods, NC-1023, Barbosa-Canovas, G. V., J. R. Powers, J. Tang, C. Clary, and S. S. Sablani.
- 0553 Development and Application of Models for the Analysis of Agricultural Systems in the State of Washington, Stockle, C. O.
- 0554 Optimize Anaerobic Digestion System for Dairy Manure Treatment, Chen, S.

- 0573 Flowability Characteristics of Selected Food Powders, Barbosa-Canovas, G. V., M. J. Pitts, and R. P. Cavalieri.

- 0630 Animal Waste Treatment, Management, and Utilization for Protection of Air and Water Qualities, Ndegwa, P. M., S. Chen, M. Beutel, J. Harrison, and R. Koenig.

- 0990 Assuring Fruit and Vegetable Product Quality and Safety through the Handling and Marketing Chain, NE-1008, Tang, J., and J. K. Fellman.

- 5378 Radio Frequency Energy as an Alternative to Methyl Bromide Fumigation for Controlling Pests in Stone Fruits and Nuts, Tang, J., S. Wang, E. J. Mitcham, J. W. Armstrong, and J. A. Johnson.

- 8553 Measuring and Modeling Gaseous Losses of Nitrogen from Irrigated Crops in Central Washington, Stockle, C. O., B. K. Lamb, G. H. Mount, and A. R. Kemanian.

Center for Precision Agriculture Systems:

- 0551 Advancing Precision Agricultural Systems through Automation, Sensing, Control, and Information Systems, Pierce, F. J., E. M. Perry, J. Brunner, C. Clary, J. R. Davenport, and G. G. Grove.

Community and Rural Sociology:

- 0127 Local Agri-Food Systems in a Globalizing Context, Jussaume, R.
- 0403 Local Food Choices, Eating Patterns, and Population Health, NC-1033, Jussaume, R.
- 0445 Population Dynamics and Change: Aging, Ethnicity, and Land Use Change in Rural Communities, W-2001, Kirschner, A.

- 0656 The Consequences of Visual Layout of Questionnaires for the Conduct of Mixed-Mode Surveys, Dillman, D.
- 0671 Gender, Diversity, and Alternative Agri-Food Systems in the Pacific Northwest, Goldberger, J. R.
- 0981 Transitions of Natural Resource-Based Counties in the Pacific Northwest and Alaska: Implications for Community Development, Kirschner, A. R.

Crop and Soil Sciences:

- 0128 Management of Grain Quality and Security for World Markets, NC-213, Baik, B. K.
- 0152 Characterizing Mass and Energy Transport at Different Scales, W-1188, Flury, M., and Q. J. Wu.
- 0196 Genetic and Molecular Analysis of the Stem Rust Resistance Genes Rpg1 and Rpg5: Mechanisms of Resistance and Signaling Pathways, Kleinhofs, A., D. von Wettstein, B. Steffenson, and M. Neff.
- 0232 Breeding and Genetics of Winter Wheat, Jones, S. S., T. D. Murray, B. K. Baik, X. M. Chen, C. F. Morris, and K. G. Campbell.
- 0250 Cropping Systems Research for Low-Precipitation Dryland in Eastern Washington, Schillinger, W. F., D. L. Young, A. C. Kennedy, T. C. Paulitz, B. S. Sharratt, and S. B. Wuest.
- 0251 Breeding of Value-Added Barley by Incorporation of Protein-Engineered Beta-Glucanases and Beta-Xylanases, Von Wettstein, D., and P. Reisenauer.
- 0267 Colloid Mobilization and Transport through the Vadose Zone, Flury, M.
- 0277 Biochemical Basis of Wheat and Wild Oat Seed Quality, Investigators: Fuerst, E. P., R. S. Gallagher, and C. F. Morris.

- 0323 Remote Sensing and Geographic Information Systems for Land Management, Frazier, B. E., and R. E. Rossi.
- 0332 Evaluation and Management of Turfgrass Species and Cultivars for Turf and Seed Production, Johnston, W. J., G. K. Stahnke, E. D. Miltner, R. C. Johnson, W. L. Pan, and W. T. McKean.
- 0334 Improving Spring Wheat Varieties for the Pacific Northwest, Kidwell, K., J. Burns, X. M. Chen, , B. K. Baik.
- 0353 Soil Quality Changes with No-till Management Adoption for Wind Erosion Control. Kennedy, A. C.
- 0359 Improving Wheat Quality in the State of Washington, Baik, B. K.
- 0373 Carbon and Nitrogen Cycling and Management in Alternative Cropping Systems, Pan, W. L., B. E. Frazier, K. K. Kidwell, R. G. Stevens, F. L. Young, and W. J. Johnston.
- 0385 Sorption and Availability of Metals and Radionuclides in Soils, Harsh, J. B., and M. Flury.
- 0410 A Comparative Analysis of the Sustainability of Farming Systems, Reganold, J. P., P. K. Andrews, and H. R. Hinman.
- 0422 Ecologically-Based Management of Annual Weeds in Dryland Grain Production Systems of Eastern Washington, Burke, I.
- 0579 Nitrogen Management to Optimize Dryland Crop Yield and Quality, Koenig, R. T., I. Burke, C. Cogger, A. Esser, R. Gallagher, and D. Huggins.
- 0581 The Chemical and Physical Nature of Particulate Matter Affecting Air, Water, and Soil Quality, NC-1022, Harsh, J.

- 0584 Integrated Management of Winter Annual Grass Weeds in Eastern Washington Dryland Crop Systems, Yenish, J. P., D. R. Huggins, J. W. Burns, and F. L. Young.
- 0591 STEEP: Water Quality in the Pacific Northwest, Koenig, R. T.
- 0617 International Cooperation for Agricultural Research in Central Asia and the Caucasus, Pan, W. L., and K. A. Garland Campbell.
- 0618 PM10 Particulate Emission Prediction and Control from Agricultural Lands in the Pacific Northwest, Schillinger, W. F.
- 0629 Life and Death in Plants: Studies on Perennial Wheat as a Sustainable Alternative Cropping System, Jones, S. S., and T. D. Murray.
- 0645 Developing Wheat Varieties for Organic Agricultural Systems, Jones, S. S., B. K. Baik, L. Carpenter-Boggs, and B. J. Goates.
- 0649 STEEP, Water Quality in the Pacific Northwest, Koenig, R. T.
- 0653 Life and Death in Plants: Studies on Perennial Wheat as a Sustainable Alternative Cropping System, Jones, S. S., and T. D. Murray.
- 0665 Agricultural Literacy, W-1006, Swan, M. K.
- 0686 Biofuel/Bioproduct Feedstock Cropping Systems, Pan, W. L., C. E. Kruger, S. Hulbert, R. T. Koenig, R. G. Stevens, and S. C. Fransen.
- 0715 Integrated Weed Management in Dryland Cropping Systems in Washington, Young, F. L.
- 0900 Soil Survey and Classification, Frazier, B. E., and R. E. Rossi.
- 1006 Breeding and Genetics of Barley, Ullrich, S. E., A. Kleinhofs, D. von Wettstein, J. W. Burns, B. K. Baik, and X. Chen.
- 1134 Plant Genetic Resource Conservation and Utilization, W-6, Jones, S. S., J. Hu, R. C. Johnson, S. L. Clement, F. M. Dugan, and M. Welsh.
- 1851 Enhancing Winter Wheat for Coldhardness; Studies to Increase Winter Hardness, Skinner, D., and R. E. Allan.
- 5422 Environmental Regulation of Seed Phenolics and Their Implication for Seed Bank Persistence and Plant Fitness in *Avena Fatua*, Fuerst, E. P., A. Kennedy, and J. R. Alldredge.
- 6297 Functional Analysis of the Barley Stem Rust Resistance Genes Rpg1, Rpg4, and RpgQ, Kleinhofs, A., and B. Steffenson.
- 7333 Mapping and Cloning High Temperature Adult Plant Stripe Rust Resistant Genes in Wheat, Kidwell, K. K., K. Campbell, D. K. Santra, X. Chen, and J. Dubcovsky.

Center for Sustaining Agriculture and Natural Resources:

- 0660 Research and Education Support for the Renewal of an Agriculture of the Middle, NC-1036, Painter, K.
- 0680 Biologically Intensive Agriculture and Organic Farming (BIOAg), Carpenter-Boggs, L., C. Kruger, C. Miles, and K. Painter.
- 0684 Developing and Assessing Value-Added Agricultural Uses of *Brassicaceae* Byproducts of Biodiesel Production, Carpenter-Boggs, L., C. Kruger, and A. Fortuna

Entomology:

- 0121 Biological Control in Pest Management Systems of Plants, W-2185, Piper, G. L.
- 0405 Potential of Insect Growth Regulators in the Pacific Northwest, Brown, J. J.

- 0415 Utilizing Complex Communities of Natural Enemies in Biocontrol, Snyder, W. E.
- 0430 Biological Control of Invasive Toadflaxes in Washington, Piper, G. L.
- 0455 Biological Diversity Studies of Arthropod Taxa, Zack, R. S.
- 0458 From Genotype to Phenotype: Investigations of the Role of Gene Pathways in the Evolution of Phenotypic, Lavine, L. S.
- 0604 Molecular Genetics of Honey Bee Subspecies and Selection and Breeding of New World Populations, Sheppard, W. S.
- 0631 The Genetic Basis for Phenotypic Plasticity in Insects, Lavine, L. S.
- 0662 Reduction of Pesticide Use in Orchards through Management of Spray Application Technology, Felsot, A. S.
- 0683 Sustainable Solutions to Problems Affecting Honey Bee Health, NC-508, Sheppard, W. S.
- 3417 Natural Enemy Biodiversity and the Biological Control of Aphids, Snyder, W. E.
- 0286 Effect of Calcium-Containing Dairy and Nondairy Foods on Fat Accretion in Menopausal Women, Beerman, K. A.
- 0288 Microbial and Chemical Factors Affecting Calcium Lactate Crystal Formation in Cheddar Cheese, Clark, S., J. R. Powers, B. G. Swanson, and G. Yuksel.
- 0305 Improving the Safety and Quality of Food, Rasco, B. A.
- 0369 Development of a New Rapid Method for the Estimation of *Escherichia coli* in Foods, Kang, D. H.
- 0522 Microbiology and Chemistry of Washington Wines, Edwards, C. G.
- 0607 *Lactobacillus helveticus* Enzyme Activity on Casein, Powers, J., and Clark, S.
- 0608 Sensory Evaluation and Chemical Analysis of Selected Wines and Foods, Ross, C. F.
- 0634 Effect of c9,t11-18:2 (Conjugated Linoleic Acid (CLA) and Consumption of High Fat Dairy Products on Gene Expression in the Human Mammary, McGuire, M. K.
- 0666 An Integrated Approach to Prevention of Obesity in High Risk Families, W-1005, Armstrong-Shultz, J. A.

Food Science and Human Nutrition:

- 0103 Goal Setting for Dietary Self-Management and Related Psychosocial Factors Among Patients with Type 2 Diabetes Mellitus, Armstrong Shultz, J., L. K. Massey, M. Evans, S. Butkus, and C. Corbett.
- 0118 Vitamin B-6 Supplementation and Immune Function, Shultz, T. D.
- 0276 Parent and Household Influences on Calcium Intake among Preadolescents, W-1003, Edlefsen, M. S.
- 0667 Role of Dietary Lutein in Enhancing Immune Response and Decreasing Oxidative Damage in Elderly Women, Chew, B. P., and J. S. Park.
- 0675 Impact of Fining on the Sensory and Chemical Properties of White Wine, Ross, C. F.
- 0719 Supplemental Support for Assessing the End-Use Quality of Washington Wheat Breeding Samples, Morris, C. F., and A. R. McCurdy.

- 0846 Enological and Viticultural Practices on Fermentation Microbiology, Chemistry, and Quality of Wines, Edwards, C. G., J. K. Fellman, and C. F. Ross.
- 0905 Nutrient Bioavailability--Phytonutrients and Beyond, W-1002, Shultz, T. D.

Food and Environmental Quality Lab:

- 0372 Agrochemical Impacts on Human and Environmental Health: Mechanisms and Mitigation, W-1045, Hebert, V., and A. S. Felsot.
- 0457 Understanding Transport and Fate of Pesticide Management Chemicals in Air, Hebert, V. R.

Horticulture & Landscape Architecture:

- 0321 Calcium/Calmodulin-Mediated Signaling in Plants, Poovaiah, B. W.
- 0412 Development and Application of Harvesting and Processing Technologies for Production of Value Added Fruit and Vegetable Products, Clary, C., R. P. Cavalieri, J. E. Durfey, J. Fellman, C. Edwards, and F. Pierce.
- 0461 Optimizing Tuber Set and Size Distribution for Seed, Fresh, and Processing Markets, Knowles, N. R.
- 0593 Mechanical Harvesting of Asparagus, Clary, C. D., J. E. Durfey, and R. P. Cavalieri.
- 0611 Improving the International Competitiveness of Washington/Oregon and Michigan Asparagus Industries, Clary, C. D., and J. K. Fellman.
- 0624 Potato Cultivar Evaluation and Commercial Potato Seed Lot Trial, Pavek, M. J., L. K. Hiller, and M. A. Trent.

- 0636 Physical and Chemical Characteristics of Grape Berry as Influenced by Berry Shriveling, Bondada, B.

- 0638 Asparagus Technology and Production, WA, Clary, C. D., and J. K. Fellman.

- 0659 Development of Data Mining Tools and Resources for *Rosaceae* Genomics Research, Main, D. S.

- 0677 Integrated Genomics for Horticultural Crop Improvement, Dhingra, A.

- 0679 Discovery and Application of Functional Genetic Markers for Enhanced Tree Fruit Breeding in Washington, Peace, C. P.

- 0695 The Impacts of Plants on People, Lohr, V. I.

- 0797 Postharvest Biology of Fruit, NE-1018, Fellman, J. K., and E. M. Kupferman.

- 0937 Role of Farm Management Systems and Environmental Stresses on the Physiology, Quality, and Sustainability of Temperate-Zone Fruit Crops, Andrews, P. K.

- 1984 Production and Environmental Impacts on Yield and Quality of Vegetable Crops and Potatoes, Hiller, L. K.

Human Development:

- 0566 Stress, Appraisal, and Coping, Power, T. G.

IMPACT Center:

- 0171 International Marketing Program for Agricultural Commodities and Trade, Mittelhammer, R. C.

- 0541 International Marketing Program for Agricultural Commodities and Trade (IMPACT) Center, Mittelhammer, R. C.

0555 Quantitative Analyses of International Food and Commodity Markets, Johnson, H. C.

0620 Enhancing Competitiveness of Agricultural Products, Wahl, T. I.

0641 Enhancing Competitiveness of Agricultural Products, Mittelhammer, R. C.

0682 Impacts of Trade and Domestic Policies on the Competitiveness and Performance of Southern Agriculture, S-1016, Mittelhammer, R. C.

0974 Quantitative Analyses of International Food and Commodity Markets, Johnson, H. C.

7901 Enhancing Competitiveness of Agricultural Products, Wahl, T. I.

Institute of Biological Chemistry:

0119 Regulation of Photosynthetic Processes, NC-1168, Okita, T. W., and G. E. Edwards.

0197 The Co-regulation of the Light and Dark Reactions of Photosynthesis *in vivo*, Kramer, D. M.

0202 Determination of Native Lignin Macromolecular Configuration, Lewis, N. G.

0253 Lipid Biosynthesis in Leaves and Seeds, Browse, J. A.

0268 Biochemistry of Plant Terpenoids, Croteau, R. B.

0590 RNA Targeting in Plants, Okita, T. W.

0594 Metabolic Engineering of Folate-Enriched Plants, Roje, S.

0606 Regulation of Isoprenoid Biosynthesis in Plants, Lange, B. M.

0773 Nutrient Exchange and Metabolism in the Rhizobium-Legume Symbiosis, Kahn, M. L.

0967 Diterpene Biosynthesis in Taxol Production and Conifer Defense, Croteau, R.

1791 Polypeptide Signaling for Plant Defense, Growth, and Development, Browse, J.

2134 Biochemistry of Oilseeds: New Strategies for Improving Oils, Browse, J.

5122 The Crystal Structures and Optimal Biotechnological Potential of Hub Enzymes in Phenylpropanoid Metabolism, Lewis, N. G., and C. Kang.

5134 Biochemistry of Oilseeds: New Strategies for Improving Oils, Browse, J.

5773 Respiration, Polymer Synthesis, and Effectiveness in Symbiotic Nitrogen Fixation, Kahn, M.

6589 mRNA Targeting to the Cortical Region in Plants: The Role of the RNA Binding Protein Rp120, Okita, T. W.

7589 mRNA Targeting to the Cortical Region in Plants: The Role of the RNA Binding Protein SN-Tudor (Rp120), Okita, T. W.

9594 Biosynthesis and Hydrolysis of FMN and FAD in Plants, Roje, S.

Natural Resource Sciences:

0226 Assessing the Value of Cutthroat Trout (A Species at Risk) to Grizzly Bears in Yellowstone National Park, Robbins, C. T.

0396 Natural Resource/Forest Based Communities in a Time of Global Change: Adaptation to Exogenous Forces, Carroll, M. S., and K. A. Blatner.

0411 Effects of Irrigation Agriculture and White-Tailed Deer on Cougar Predation of Mule Deer: A Test of the Apparent Competition Hypothesis, Wielgus, R.

- 0417 The Effects of Nutrition and Habitat Quality on Declining Wildlife Populations, Shipley, L.
- 0441 *In-situ* Oxygenation for Control of Mercury Release from Aquatic Sediments, Moore, B. C.
- 0603 The Origin and Genetic Diversity of Invasive Reedcanary Grass (*Phalaris arundinacea*) in the Pacific Northwest, Hardesty, L. H.
- 0635 Conserving Biological Diversity in the Pacific Northwest, Sayler, R. D.

Plant Pathology:

- 0300 Population Biology of Plant Pathogenic Fungi, Peever, T. L.
- 0313 Systematics and Biology of Economically Important Fungi in the Pacific Northwest, Glawe, D. A., G. G. Grove, and J. D. Rogers.
- 0545 Molecular and Biological Approaches to Studying Emerging Virus Threats, Pappu, H. R.
- 0565 Fungi of the Pacific Northwest, Rogers, J. D.
- 0652 Identification and Characterization of New and Emerging Bacterial Diseases of Vegetables and Fruits in Washington State, with a Special Emphasis, Schroeder, B. K.
- 0663 Wheat Puccinia Interactions and the Characterization of Durable Resistance, Hulbert, S. H.
- 0669 Controlling Eyespot in Winter Wheat with Disease Resistance, Murray, T. D., and S. S. Jones.
- 0670 Biology and Control of Diseases of Early Sown Winter Wheat Prevalent in the U.S. Pacific Northwest, Murray, T. D., and S. S. Jones.

- 0678 Disease Warning and Management Systems for Potato and Mint, Johnson, D. A., and J. R. Alldredge.
- 0823 Control of Rusts of Wheat and Barley, Chen, X. M.
- 0837 Systematics, Biology, and Identification of Smut Fungi Associated with Cool Season Grasses and Grains in North America, Carris, L. M.
- 0947 Metabolites and Genes of Biocontrol Agents Involved in Suppression of Root Pathogens of Wheat and Barley, Weller, D. W., L. S. Thomashow, T. C. Paulitz, and P. A. Okubara.
- 1844 Regulation of Disease Resistance Genes in Plants, Hadwiger, L. A.
- 6544 Epidemiology and Management of Thrips-Borne Iris Yellow Spot Virus in Onion Seed and Bulb Crops: A Rapidly Emerging and Economically Important Virus, Pappu, H. R.
- 7544 Developing a Monitoring Program for Thrips-Iris Yellow Spot Virus Complex: Adding a Novel Management Component to the IPM Program in Bulb and Seed Onion Crops, Pappu, H. R.

School of Economic Sciences:

- 0160 Interfacing Technological, Economic, and Institutional Principles for Managing Inter-Sector Mobilization of Water, W-1190, Huffaker, R. G., J. Yoder, and H. Chouinard.
- 0218 Empirical Likelihood, Entropy, Estimating Equations, and Other Computer Intensive Methods for Agricultural Economics Research: Extension, Mittelhammer, R. C., and Wahl, T.
- 0269 Risks and Risk Management of Agricultural Producers and Rural Residents, LaFrance, J. T.

- 0275 Economics of Technology in Agricultural Production, Shumway, C. R.
- 0278 Corporate Profit Tax Credits as a Partial Supplement to Cooperative Capital Requirements, Duft, K. D.
- 0299 Designing Efficient and Equitable Fishery Rationalization Policy Using Only Individual Fishing Quota-The Gulf of Alaska Context, Matulich, S. C.
- 0343 Security, Scoping and Data Concerns and Needs to Support Institutional Action, Casavant, K. L.
- 0347 Assessing Economic Incentives for Farming Systems which Conserve Soil, Water, and Air Quality under Changing Market and Policy Conditions in the Pacific Northwest, Young, D. L.
- 0383 Agricultural and Natural Resource Public Policy Analysis Using a General Equilibrium Approach, Holland, D. W., and J. Steele.
- 0448 Benefits and Costs of Natural Resources Policies Affecting Public and Private Lands, W-2133, McCluskey, J. J., P. R. Wandschneider, and J. Yoder.
- 0539 Economics, Information, and Institutional Design for Natural Resources and the Environment, Yoder, J.
- 0540 Collective Reputation: Firm Incentives and Empirical Analysis, McCluskey, J. J.
- 0544 The Impacts of Policies Affecting Resources, Chouinard, H. H.
- 0570 Marketing, Trade, and Management of Fisheries and Aquaculture Resources, W-1004, Matulich, S. C.
- 0575 Improving the International Competitiveness of the Washington/Oregon and Michigan Asparagus Industries, Folwell, R. J.
- 0605 Impact Analyses and Decision Strategies for Agricultural Research, NC-1034, Shumway, C. R.
- 0609 Commodity Markets: Food Safety, Invasive Species, and Econometrics, Marsh, T. L., and S. Neibergs.
- 0610 The Economics of Obesity and Nutrition, Smith, T. G., H. H. Chouinard, L. Hill, B. Mandal, J. McCluskey, and V. A. McCracken.
- 0621 Rural Healthcare Access and Farm Production Efficiency, Rosenman, R. E.
- 0646 Marketing Washington Wines, McCluskey, J. J.
- 0998 Rural Communities, Rural Labor Markets, and Public Policy, NE-1011, Holland, D. W.
- 3540 Grocery Store Shelf Labels, Nutrition and Pricing Information, and Consumer Choice, McCluskey, J. J.

Statistics:

- 0254 Evaluation of Methods Used to Analyze Resource Selection Data, Alldredge, J. R.
- 0340 The Further Development of Tools for Analysis of Binary Response Data, Evans, M. A.

Veterinary Science:

- 0261 Enteric Diseases of Swine and Cattle: Prevention, Control, and Food Safety, NC-1041, Besser, T. E., J. M. Gay, D. D. Hancock, D. R. Call, and R. Cobbold.

Wood Materials and Engineering Lab:

- 0453 Nanotechnology of Lignocellulosics, Laborie, M. G.
- 0582 Development of Cost Effective and High Performance Biopolyester Products, Zhang, J.

8453 Physico-Chemical Aspects of Hybrid Poplar Hot-Pressing, Laborie, M. P., and A. G. McDonald.

8582 Development of Cost Effective and Performance Enhanced Soy Protein Based Plastics Through a Ternary Polymer Blend System, Zhang, J., and X. Sun.

Research and Extension Centers:

Long Beach Research and Extension Unit:

0424 Strategies for Ecological Pest Management in Cranberries, Patten, K. D.

0586 Developing Integrated Pest Controls for the Oyster Industry to Replace Carbaryl for Burrowing Shrimp Control, Patten, K. D.

Mt. Vernon Northwestern Washington Research and Extension Center:

0297 Effects of Herbicide Application Timing and Technique on Bohemian Knotweed (*Polygonum bohemicum*) Shoot Growth and Rhizome Viability, Miller, T. W.

0336 Biology and Control of Soilborne Fungal and Oomycete Pathogens Affecting Washington's Specialty Potato Industry, Inglis, D. A., C. R. Brown, D. A. Johnson, D. McMoran, C. A. Miles, and M. Pavek.

0375 Vegetable Cropping Systems, Miles, C. A., D. Inglis, L. DuToit, R. Koenig, D. Granatstein, and J. Myers.

0427 Evaluation of Apple Cultivars for Hard Cider Production, Moulton, G. A.

0543 Integrated Management of Arthropod Pests of Small Fruit Crops, Tanigoshi, L. K.

0595 Integrated Disease Management of Small-Seeded Vegetable Seed Crops in the Pacific Northwest, du Toit, L. J.

0633 Berry Crop Water and Nutrient Management for Optimal Yield, and to Avoid Soil-borne Disease and Nitrate Leaching, Walters, T. W.

Prosser Irrigated Agriculture Research & Extension Center:

0122 High Value Specialty Crop Pest Management, NRSP-4, Walsh, D. B.

0168 Gene Transfer for Potato Variety Development, Brown, C. R., P. Hamm, D. Johnson, S. Love, D. Navarre, and N. Novy.

0185 Genetic Variability in the Cyst and Root-Knot Nematodes, W-1186, Riga, E.

0257 Understanding and Managing Variability of Soil and Plant Nutrients in Irrigated Perennial Crop Systems, Davenport, J. R., R. G. Stevens, M. Keller, M. Olmstead, F. J. Peryea, and F. J. Pierce.

0281 Alternate Crops for Irrigated Central Washington, Hang, A. N., S. C. Fransen, and B. K. Baik.

0290 Managing Plant Viruses of Perennial Vegetatively-Propagated Plants to Reduce Their Economic Impact, Eastwell, K. C., S. T. Kenny, H. Pappu, N. Rayapati, and M. D. Whiting.

0337 Aphids: Ecology, Systematics, Biocontrol, Pike, K. S., E. H. Beers, R. G. Footitt, L. Tanigoshi, R. Miller, and H. Pappu.

0350 Weed Control Research in Irrigated Vegetable and Specialty Crops, Boydston, R. A., and R. Parker.

- 0377 Production Horticultural and Integrated Management Systems of Grapes, Tarara, J. M., M. Keller, M. Olmstead, and J. Harbertson.
- 0381 Development of Integrated Management Systems for High Value Specialty Crops in Central Washington, James, D. G., V. Hebert, D. B. Walsh, G. G. Grove, and P. J. Landolt.
- 0420 Integrating Whole-Tree Physiological, Horticultural, and Genetic Research in Prunus Tree Fruits, Whiting, M. D., D. C. Elfving, G. G. Grove, W. E. Howell, J. Mcferson, and R. Nunez-Elisea.
- 0428 Grape Yield Components and Quality, Keller, M., B. R. Bondada, M. A. Olmstead, and J. M. Tarara.
- 0460 Improving Disease Management of Soilborne Diseases of Peas, Porter, L. D.
- 0519 Wine and Juice Grape Physiology and Production Systems, Keller, M., J. M. Tarara, B. Bondada, and S. Rogiers.
- 0520 Developing Tissue Nutrient Standards for Irrigated Wine Grapes in Central Washington, Davenport, J. R.
- 0523 Improved Detection, Forecasting, and Management of Powdery Mildew of Wine Grapes, Grove, G. G.
- 0524 Biology and Integrated Management of Insect and Mite Pests of Wine Grapes, James, D. G.
- 0530 Management of Plant-Parasitic Nematodes in Winegrapes, Riga, E.
- 0531 Factors Influencing Wine and Wine Grape Quality in Washington, Harbertson, J. F.
- 0534 Innovative Management of Cutworms in Washington Vineyards, Walsh, D. B.
- 0537 Factors Affecting the Quality of Washington Wine and Wine Grapes (*Vitis Vinifera*), Harbertson, J. F., K. Ringer, C. G. Edwards, W. G. Hendrix, J. Fellman, and M. Keller.
- 0542 Management of Plant Parasitic Nematodes and Development of Rapid Diagnostic Tests for Nematode Identification in Washington State, Riga, E., K. C. Eastwell, H. P. Collins, L. Lacy, D. P. Muehleisen, and F. J. Pierce.
- 0560 Exotic Germplasm Conversion and Breeding Common Bean for Resistance to Abiotic and Biotic Stresses and to Enhance Nutritional Value, W-1150, Hang, A. N., and B. G. Swanson.
- 0564 Managing Plant Microbe Interactions in Soil to Promote Sustainable Agriculture, W-1147, Riga, E., D. Weller, T. Paulitz, and P. Okubara.
- 0583 Breeding and Genetics of Hop, Kenny, S. T., K. C. Eastwell, G. G. Grove, and D. G. James.
- 0596 Multi-state Evaluation of Winegrape Cultivars and Clones, NE-1020, Keller, M., and J. R. Davenport.
- 0599 Development of Sustainable Viticulture Practices in the Pacific Northwest, Olmstead, M. A.
- 0612 Viticultural and Winemaking Practices that Shape the Color Stability, Astringency and Total Phenolic Content of Washington Wines, Harbertson, J. F., C. F. Ross, J. Fellman, and M. Keller.
- 0613 Determination of Tannin, Total Phenolics, Anthocyanins, and Polymeric Pigment Levels in Wines Produced in Washington, Harbertson, J. F.
- 0615 Assessment of Astringency in Washington State Wines Using Sensory and Chemical Methods, Harbertson, J. F., and C. F. Ross.

- 0616 Integrated Disease Management Strategies for Mitigating Virus Diseases of Grapevine in Washington State, Rayapati, N., K. C. Eastwell, and G. G. Grove.
- 0664 Development of Useful and User Friendly Irrigation Management Tools for Improved Profitability and Water Quality, Peters, R. T., M. J. English, H. Neibling, R. Snyder, and R. W. Hill.
- 0673 Rootstock, Cultivar, and Environmental Effects on Grape Yield Components and Quality, Keller, M., and B. R. Bondada.
- 0674 Epidemiology of Grapevine Leafroll Disease in Washington State, Rayapati, N. A., K. Eastwell, and D. G. James.
- 0689 Forage Management and Quality of Perennial Grasses as Stored Forage or Biofuel, Fransen, S. C., H. P. Collins, T. Hudson, and G. Vandemark.
- 0694 Northwest Grape Foundation Service, Keller, M., N. Rayapati, and K. Eastwell.
- 0795 Etiology, Epidemiology, and Sustainable Management of Powdery Mildew of Cherries and Grapes, Grove, G. G.
- 0805 Weed Research in Irrigated Agronomic, Horticultural, and Specialty Crops in Washington, Parker, R.
- 1262 National Program for Controlling Virus Diseases of Temperate Fruit Tree Crops, NRSP-5, Eastwell, K. C., W. E. Howell, R. P. Cavalieri, and T. Murray.
- 6689 Water Requirements and Economics for Growing Perennial Warm-Season Grasses for Ethanol under Irrigation in the Arid-West, Fransen, S. C., M. J. Ottman, and R. T. Peters.
- 7126 Innovative Fly Management Strategies on Pastured and Rangeland Beef Cattle in the Western Region, Walsh, D. B.

Puyallup Research and Extension Center:

- 0038 Breeding Superior Strawberry Cultivars for the Pacific Northwest, Moore, P. P., T. W. Walters, C. Kempler, C. E. Finn.
- 0154 Whole Farm Dairy and Beef Systems for Environmental Quality, NE-1024, Harrison, J. H.
- 0256 Soil Conditions, Crop Productivity, and Groundwater Quality in Some Western Washington Soils, Kuo, S., F. J. Peryea, and E. D. Miltner.
- 0285 Environmental/Cultural Factors on Water Stress Resistance/Growth/Cold Hardiness of Landscape Plants, Hummel, R. L.
- 0307 Forested Riparian Buffers: Species, Function, and Management for Agriculture, Johnson, J. D., and J. P. Dobrowolski.
- 0308 Turfgrass Fertilizer and Pesticide Impacts on Surface Water Quality, Miltner, E. D., G. K. Stahnke, C. Cogger, and W. J. Johnston.
- 0327 The Delay in Population Growth: A New Approach for Estimating Toxicity of Pesticides to Populations of Pest and Beneficial Organisms, Stark, J. D.
- 0387 Management of Diseases on Ornamental Bulbs and Cut Flowers, Chastagner, G. A.
- 0388 Management of Phytophthora Diseases on Christmas Trees and Identification of Trees with Superior Needle Retention, Chastagner, G. A.
- 0640 Breeding Superior Raspberry Cultivars for the Pacific Northwest, Moore, P. P., C. E. Finn, C. Kempler, R. R. Martin, and T. W. Walters.
- 0690 Chemistry, Bioavailability, and Toxicity of Constituents in Residuals and Residual-Treated Soils, W-1170, Kuo, S., J. Harsh, and E. Miltner.

- 0722 Organic Amendments and Cover Crops in Sustainable Agricultural Systems and Urban Landscapes, Cogger, C. G., A. I. Bary, R. T. Koenig, D. M. Granatstein, and R. L. Hummel.
- 7328 The Grand Fir Twig Borer, *Argyresthia* sp., A New Pest of Christmas Trees in the Pacific Northwest, Stark, J. D.

Wenatchee Tree Fruit Research and Extension Center:

- 0230 Sustaining Local Food Systems in a Globalizing Environment: Forces, Responses, Impacts, NE-1012, Ostrom, M. R., and R. Jussaume.
- 0260 Developing New Apple Cultivars for Washington State, Barritt, B. H., and L. Pusey.
- 0298 Bioregulation of Vegetative Growth and Fruit Development in Apple, Pear, and Sweet Cherry for Maximum Production Efficiency and Fruit Quality, Elfving, D. C., J. McFerson, M. Whiting, C. Seavert, E. Fallahi, and E. Curry.

- 0326 Enhance Market Quality by Improving Fruit Finish in Apple, Schrader, L. E.
- 0366 Improving IPM through Application of Applied Insect Ecology, Jones, V. P., J. F. Brunner, T. Unruh, and D. Horton.
- 0367 Management of Postharvest Diseases and Fungicide Resistance in Postharvest Pathogens of Apples, Xiao, C. L.
- 0431 Biologically Intensive Management of Arthropod Pests of Pear, Dunley, J. E., J. F. Brunner, V. P. Jones, and E. H. Beers.
- 0676 Integrated Management of Arthropod Pests of Washington Pome Fruits, Brunner, J. F., E. H. Beers, and J. E. Dunley.
- 0747 Soil and Mineral Element Problems in Washington Tree Fruit Orchards, Peryea, F. J.
- 1090 Management of Direct Insect Pests of Apple in Washington Tree Fruit Orchards, Brunner, J. F., E. H. Beers, J. E. Dunley, V. P. Jones, P. J. Landolt, L. J. Gut.

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