

**2004**  
**Publications of Agricultural Research Center Scientists**  
**By Department and Project**  
**Agricultural Research Center Washington State University**

**Agricultural Research Center:**

**0394, 0434, 0558, and 0600 GRASS SEED  
CROPPING SYSTEMS FOR A  
SUSTAINABLE AGRICULTURE**

Fisher, M.J., D.W. Bohnert, C.J. Ackerman, C.S. Schauer, T. DelCurto, A.M. Craig, E.S. Vanzant, D.L. Harmon, and F.M. Schrick. 2004. Evaluation of Perennial Ryegrass Straw as a Forage Source for Ruminants. *Journal of Animal Science*. 82:2175-2184.

Kongruang, S., M.J. Han, C.I.G. Breton, and M.H. Penner. 2004. Quantitative Analysis of Cellulose Reducing Ends. *Applied Biochemistry and Biotechnology*. 113:213-231.

Akpinar, O., R.J. McGorin, and M.H. Penner. 2004. Cellulose-Based Chromatography for Celooligosaccharide Production. *Journal of Agricultural Food Chemistry*. 52:4144-4148.

**0433, 0557, and 0592 AQUACULTURE,  
IDAHO AND WASHINGTON**

Al-Holy, M., A. Quinde, D. Guan, J. Tang, and B. Rasco. 2004. Thermal Inactivation of *Listeria Innocua* in Salmon (*Oncorhynchus keta*) Caviar Using Conventional Glass and Novel Aluminum TDT Tubes. *Journal of Food Protection*. 67:383-386.

Lin, M., M. Al-Holy, H. Al-Qadiri, D.H. Kang, A.G. Cavinato, and B.A. Rasco. 2004. Discrimination of Intact and Injured Species of *Listeria spp.* by Fourier Transform Infrared Spectroscopy and Principal Component Analysis. *Journal of Agricultural Food Chemistry*. 52:5769-5772.

Lin, M., M. Al-Holy, M. Mousavi-Hesary, H. Al-Qidiri, A.G. Cavinato, and B.A. Rasco. 2004. Rapid and Quantitative Detection of the Microbial Spoilage in Chicken Breast Muscle by Short-Wavelength Near-Infrared (SW-NIR) Spectroscopy. *Journal of Applied and Environmental Microbiology*. 39:148-155.

LaFrentz, B.R., S.E. LaPatra, G.R. Jones, and K.D. Cain. 2004. Protective Immunity in Rainbow Trout *Oncorhynchus mykiss* Following Immunization with Distinct Molecular Mass Fractions Isolated from *Flavobacterium Psychrophilum*. *Diseases of Aquatic Organisms*. 59:17-26.

Ohta, Y., E. Landis, T. Boulay, R.B. Phillips, B. Collet, C.J. Secombes, M.F. Flajnik, and J.D. Hansen. 2004. Homologs of CD83 from Elasmobranch and Teleost Fish. *Journal of Immunology*. 173:4553-4560.

Zimmerman, A.M., J.P. Evenhuis, G.H. Thorgaard, and S.S. Ristow. 2004. A Single Major Chromosomal Region Controls Natural Killer Cell-Like Activity in Rainbow Trout. *Immunogenetics*. 55:825-835.

Chen, S. 2004. Reducing Phosphorous Discharge from Flow-Through Aquaculture: II: Hinged and Moving Baffles to Improve Waste Transport. *Aquaculture Engineering*. 32:145-160.

Gonzalez, S.F., M.J. Krug, M.E. Nielson, Y. Santos, and D.R. Call. 2004. Simultaneous Detection of Marine Fish Pathogens Using Multiplexed PCR and DNA Microarrays. *Journal of Clinical Microbiology*. 42:1414-1419.

Straub, T.M., M.D. Quinonez Diaz, C.O. Valdez, D.R. Call, and D.P. Chandler. 2004. Using DNA Microarrays to Detect Multiple Pathogen Threats in Water. *Water Science and Technology*. 4:107-114.

Warsen, A.E., M.J. Krug, S. LaFrentz, D.R. Stanek, F.J. Loge, and D.R. Call. 2004. Simultaneous Discrimination between 15 Fish Pathogens Using 16S rDNA PCR and DNA Microarrays. *Applied and Environment Microbiology*. 70:4216-4221.

#### **0436 and 0556 JOINTED GOATGRASS: A THREAT TO U.S. WHEAT PRODUCTION**

Anderson, R.L., D. Hanavan, and A.G. Ogg, Jr. 2004. Developing National Research Teams: A Case Study with the Jointed Goatgrass Research Program. *Weed Technology*. 18:1143-1149.

Geier, P.W., P.W. Stahlman, A.D. White, S.D. Miller, C.M. Alford, and D. Lyon. 2004. Imazamox for Winter Annual Grass Control in Imidazolinone-Resistant Winter Wheat. *Weed Technology*. 18:924-930.

Kroiss, L.J., P. Tempalli, J.L. Hansen, M.I. Vales, O. Riera-Lizarazu, R.S. Zemetra, and C.A. Mallory-Smith. 2004. Marker Assisted Retention of Wheat Chromatin in Wheat (*Triticum aestivum*) by Jointed Goatgrass (*Aegilops cylindrica*) Backcross Derivatives. *Crop Science*. 44:1429-1433.

Rainbolt, C.R., D.C. Thill, J.P. Yenish, and D.A. Ball. 2004. Herbicide-Resistant Grass Weed Development in Imidazolinone-Resistant Wheat: Weed Biology and Herbicide Rotation. *Weed Technology*. 18:860-868.

Stone, A.E. and T.F. Peeper. 2004. Characterizing Jointed Goatgrass (*Aegilops cylindrica*) X Winter Wheat Hybrids in Oklahoma. *Weed Science*. 52:742-745.

White, A.D., P.W. Stahlman, and F.E. Northam. 2004. Impact of Integrated Management Systems on Jointed Goatgrass (*Aegilops cylindrica*) Populations. *Weed Science*. 52:1010-1017.

Yenish, J.P. and F.L. Young. 2004. Winter Wheat Competition Against Jointed Goatgrass (*Aegilops cylindrica*) as Influenced by Wheat Plant Height, Seeding Rate, and Seed Size. *Weed Science*. 52:996-1001.

#### **Animal Science:**

#### **0167 ENHANCEMENT OF DIETARY ENERGY USE FOR MAINTENANCE, GROWTH, AND LACTATION BY BEEF CATTLE**

Rumburg, M., M. Neger, G.H. Mount, D. Younge, J. Filipy, J. Swain, R. Kincaid, and K. Johnson. 2004. Liquid and Atmospheric Ammonia Concentrations from a Dairy Lagoon during an Aeration Experiment. *Atmospheric Environment*. 38:1523-1533.

#### **0181 GENETIC VARIATION IN GROWTH, CARCASS COMPOSITION, QUALITY AND FATTY ACID COMPOSITION OF WAGYU, ANGUS, AND WAGYU-ANGUS CROSS CATTLE**

Baker, D.A., C.R. Shumway, C.T. Gaskins, and A.C. Linton. 2004. Selecting AI Beef Sires for Maximum Profit. *Professional Animal Scientist*. 20:336-343.

Kuber, P.S., J.R. Busboom, S.K. Duckett, P.S. Mir, Z. Mir, R.G. McCormick, C.T. Gaskins, J.D. Cronrath, D.J. Marks, and J.J. Reeves. 2004. Effects of Biological Type and Dietary Fat Treatment on Factors Associated with Tenderness: II. Measurements on Beef Semitendinosus Muscle. *Journal of Animal Science*. 82:779-784.

Kuber, P.S., J.R. Busboom, E. Huff-Lonergan, S.K. Duckett, P.S. Mir, Z. Mir, R.G. McCormick, M.V. Dodson, C.T. Gaskins, J.D. Cronrath, D.J. Marks, and J.J. Reeves. 2004. Effects of Biological Type and Dietary Fat Treatment on Factors Associated with Tenderness: I. Measurements on Beef Longissimus Muscle. *Journal of Animal Science*. 82:770-778.

Rogers, P.L., C.T. Gaskins, K.A. Johnson, and M.D. MacNeil. 2004. Evaluating Longevity of Composite Beef Females Using Survival Analysis Techniques. *Journal of Animal Science*. 82:860-866.

#### **0304 ALTERING RUMINAL FERMENTATION WITH A PLANT EXTRACT**

Marks, D.J., M. Nelson, J.R. Busboom, J.D. Cronrath, and L. Falen. 2004. Effects of Supplemental Fat on Growth Performance and Quality of Beef from Steers Fed Barley-Potato Product Finishing Diets: II. Fatty Acid Composition of Muscle and Subcutaneous Fat. *Journal of Animal Science*. 82:3611-3616.

Nelson, M.L., D.J. Marks, J.R. Busboom, J.D. Cronrath, and L. Falen. 2004. Effects of Supplemental Fat on Growth Performance and Quality of Beef from Steers Fed Barley-Potato Product Finishing Diets: I. Feedlot Performance, Carcass Traits, Appearance, Water Binding, Retail Storage, and Palatability Attributes. *Journal of Animal Science*. 82:3600-3610.

#### **0374 NUTRIENT MANAGEMENT: FEEDING FOR REDUCED EXCRETION OF NUTRIENTS BY RUMINANTS**

Hostetler, C.E. and R.L. Kincaid. 2004. Gestation Changes in Concentrations of Selenium and Zinc in the Porcine Fetus and the Effects of Maternal Intake of Selenium. *Biological Trace Element Research*. 97:57-70.

Hostetler, C.E. and R.L. Kincaid. 2004. Maternal Selenium Deficiency Increases Hydrogen Peroxide and Total Lipid Peroxides in Porcine Fetal Liver. *Biological Trace Element Research*. 97:43-56.

#### **0432 PRE- AND POST- HARVEST MANIPULATION OF PALATABILITY, APPEARANCE, AND LIPID COMPOSITION OF RED MEAT**

Kuber, P.S., J.R. Busboom, S.K. Duckett, P.S. Mir, Z. Mir, R.G. McCormick, C.T. Gaskins, J.D. Cronrath, D.J. Marks, and J.J. Reeves. 2004. Effects of Biological Type and Dietary Fat Treatment on Factors Associated with Tenderness: II. Measurements on Beef Semitendinosus Muscle. *Journal of Animal Science*. 82:779-784.

Kuber, P.S., J.R. Busboom, E. Huff-Lonergan, S.K. Duckett, P.S. Mir, Z. Mir, R.G. McCormick, M.V. Dodson, C.T. Gaskins, J.D. Cronrath, D.J. Marks, and J.J. Reeves. 2004. Effects of Biological Type and Dietary Fat Treatment on Factors Associated with Tenderness: I. Measurements on Beef Longissimus Muscle. *Journal of Animal Science*. 82:770-778.

Marks, D.J., M.L. Nelson, J.R. Busboom, J.D. Cronrath, and L. Falen. 2004. Effects of Supplemental Fat on Growth Performance and Quality of Beef from Steers Fed Barley-Potato Product Finishing Diets: II. Fatty Acid Composition of Muscle and Subcutaneous Fat. *Journal of Animal Science*. 82:3611-3616.

Nelson, M.L., D.J. Marks, J.R. Busboom, J.D. Cronrath, and L. Falen. 2004. Effects of Supplemental Fat on Growth Performance and Quality of Beef from Steers Fed Barley-Potato Product Finishing Diets: I. Feedlot Performance, Carcass Traits, Appearance, Water Binding, Retail Storage, and Palatability Attributes. *Journal of Animal Science*. 82:3600-3610.

**0446 A CANDIDATE GENE APPROACH FOR MAPPING OF QUANTITATIVE TRAIT LOCI FOR MARBLING IN WAGYU X LIMOUSIN CROSSES**

De, S., M.D. MacNeil, X.L. Wu, J.J. Michal, Q.J. Xiao, M.D. Garcia, K.B. Griffin, C.T. Gaskins, J.J. Reeves, J.R. Busboom, R.W. Wright Jr., and Z. Jiang. 2004. Detection of Quantitative Trait Loci for Marbling and Backfat in Wagyu x Limousin F2 Crosses Using a Candidate Gene Approach. *Journal of Animal Science*. 82:111.

**0536 AND 0583 DEVELOPMENT OF EX SITU BOVINE SPERMATOGENESIS**

Oatley, J.M., D.M. de Avila, J.J. Reeves, and D.J. McLean. 2004. Testis Tissue Explant Culture Supports Survival and Proliferation of Bovine Spermatogonial Stem Cells. *Biology of Reproduction*. 70:625-631.

Oatley, J.M., D.M. de Avila, J.J. Reeves, and D.J. McLean. 2004. Spermatogenesis and Germ Cell Transgene Expression in Xenografted Bovine Testicular Tissue. *Biology of Reproduction*. 71:494-501.

Oatley, J.M., J.J. Reeves, and D.J. McLean. 2004. Biological Activity of Cryopreserved Bovine Spermatogonial Stem Cells during In Vitro Culture. *Biology of Reproduction*. 71:942-947.

Shima, J.E., D.J. McLean, J.R. McCarrey, and M.D. Griswold. 2004. The Murine Testicular Transcriptome: Characterizing Gene Expression in the Testis during the Progression of Spermatogenesis. *Biology of Reproduction*. 71:319-330.

**0568 NATIONAL ANIMAL GENOME RESEARCH PROGRAM**

Cao, H., J.A. Robinson, Z. Jiang, J.S. Melville, S.P. Golovan, M.W. Jones, and A.M. Verrinder-Gibbins. 2004. A High-Resolution Radiation Hybrid Map of Porcine Chromosome 6. *Animal Genetics*. 35:367-378.

Wu, X-L., K.B. Griffin, M.D. Garcia, J.J. Michal, Q-J. Xiao, R.W. Wright Jr., and Z. Jiang. 2004. Census of Orthologous Genes and Self-Organizing Maps (SOM) of Biologically Relevant Transcriptional Patterns in Chickens (*Gallus Gallus*). *Gene*. 240:213-225.

Jiang, Z., X-L. Wu, M.D. Garcia, K.B. Griffin, J.J. Michal, T.L. Ott, C.T. Gaskins, and R.W. Wright Jr. 2004. Comparative Gene-Based In Silico Analysis of Transcriptomes in Different Bovine Tissues/Organs. *Genome*. 47:1164-1172.

**0706 GERM CELL AND EMBRYO DEVELOPMENT AND MANIPULATION FOR THE IMPROVEMENT OF LIVESTOCK**

Jiang, Z., X.L. Wu, M.D. Garcia, K.B. Griffin, J.J. Michal, M. Zhang, V.D. Wasem, T.L. Ott, C.T. Gaskins, and R.W. Wright, Jr. 2004. Comparative Gene-Based In Silico Transcriptome Analysis of Different Tissues/Organs in Cattle. *Genome*. 47:1164-1176.

**0764 ENHANCING THE GLOBAL COMPETITIVENESS OF U.S. MEATS**

Kuber, P.S., J.R. Busboom, S.K. Duckett, P.S. Mir, Z. Mir, R.G. McCormick, C.T. Gaskins, J.D. Cronrath, D.J. Marks, and J.J. Reeves. 2004. Effects of Biological Type and Dietary Fat Treatment on Factors Associated with Tenderness: II. Measurements on Beef Semitendinosus Muscle. *Journal of Animal Science*. 82:779-784.

Kuber, P.S., J.R. Busboom, E. Huff-Lonergan, S.K. Duckett, P.S. Mir, Z. Mir, R.G. McCormick, M.V. Dodson, C.T. Gaskins, J.D. Cronrath, D.J. Marks, and J.J. Reeves. 2004. Effects of Biological Type and Dietary Fat Treatment on Factors Associated with Tenderness: I. Measurements on Beef Longissimus Muscle. *Journal of Animal Science*. 82:770-778.

Marks, D.J., M.L. Nelson, J.R. Busboom, J.D. Cronrath, and L.Falen. 2004. Effects of Supplemental Fat on Growth Performance and Quality of Beef from Steers Fed Barley-Potato Product Finishing Diets: II. Fatty Acid Composition of Muscle and Subcutaneous Fat. *Journal of Animal Science*. 82:3611-3616.

Nelson, M.L., D.J. Marks, J.R. Busboom, J.D. Cronrath, and L. Falen. 2004. Effects of Supplemental Fat on Growth Performance and Quality of Beef from Steers Fed Barley-Potato Product Finishing Diets: I. Feedlot Performance, Carcass Traits, Appearance, Water Binding, Retail Storage, and Palatability Attributes. *Journal of Animal Science*. 82:3600-3610.

#### **0858 INVESTIGATION OF FOOD ANIMAL DISEASE PROBLEMS IN THE STATE OF WASHINGTON**

Borucki, M.K., J. Reynolds, C.C. Gay, K.L. McElwain, S.H. Kim, D.P. Knowles, and J. Hu. 2004. Dairy Farm Reservoir of *Listeria Monocytogenes* Sporadic and Epidemic Strains. *Journal of Food Protection*. 67:2496-9.

Gay, C.C., K.E. Panter, K.L. Mealey, J.M. Gay, S.W. Hjartarson, A. Tibary, E.S. Motteram, T. Wierenga, and L.F. James. 2004. Comparison of Plasma Disposition of Alkaloids After Lupine Challenge in Cattle that had Given Birth to Calves with Lupine-Induced Arthrogryposis or Clinically Normal Calves. *American Journal of Veterinary Research*. 65:1580-1583.

#### **0862 METABOLIC RELATIONSHIPS IN SUPPLY OF NUTRIENTS FOR LACTATING COWS**

McNamara, J.P. 2004. Research, Improvement and Application of Mechanistic, Biochemical, Dynamic Models of Metabolism in Lactating Dairy Cattle. *American Feed Science and Technology*. 112:155-176.

#### **0913 MOLECULAR MECHANISMS REGULATING SKELETAL MUSCLE GROWTH AND DIFFERENTIATION**

Fernyhough, M.E., D. Helterline, J.L. Vierck, R.A. Hill, and M.V. Dodson. 2004. Coulter Counter Use in Enumeration of Muscle Stem Cells. *Methods in Cell Science*. 25:221-225.

Fernyhough, M.E., L.R. Bucci, J. Feliciano, J.L. Vierck, D. Helterline, and M.V. Dodson. 2004. Commonly Consumed Oral Herbal Supplements Do Not Alter Satellite Cell Activity. *Research in Sports Medicine*. 12:71-93.

Fernyhough, M.E., L.R. Bucci, J. Feliciano, J.L. Vierck, D. Helterline, and M.V. Dodson. 2004. Ergogenic Supplement Components and Satellite Cell Proliferation and Differentiation. *Research in Sports Medicine*. 12:161-190.

Hill, R.A., A.L. Strat, N.J. Hughes, T.J. Kokta, M.V. Dodson, and A. Gertler. 2004. Early Insulin Signaling Cascade in a Model of Oxidative Muscle: Mouse Sol8 Cell Line. *Biochemica et Biophysica Acta*. 1693:205-211.

Kokta, T., M.V. Dodson, A. Gertler, and R.A. Hill. 2004. Intercellular Signaling Between Adipose Tissue and Muscle Tissue. *Domestic Animal Endocrinology*. 27:303-331.

#### **0957 REPRODUCTIVE PERFORMANCE IN DOMESTIC RUMINANTS**

Oatley, J.M., D.M. de Avila, J.J. Reeves, and D.J. McLean. 2004. Testis Tissue Explant Culture Supports Survival and Proliferation of Bovine Spermatogonial Stem Cells. *Biology of Reproduction*. 70:625-631.

Oatley, J.M., D.M. de Avila, J.J. Reeves, and D.J. McLean. 2004. Spermatogenesis and Germ Cell Transgene Expression in Xenografted Bovine Testicular Tissue. *Biology of Reproduction*. 71:494-501.

Oatley, J.M., J.J. Reeves, and D.J. McLean. 2004. Biological Activity of Cryopreserved Bovine Spermatogonial Stem Cells during In Vitro Culture. *Bioggy of Reproduction*. 71:942-947.

#### **4956 STERILIZATION VACCINE FOR CATTLE**

Ribeiro, E.L. de A., J.A. Hernandez, E.L. Zanella, M. Shimokomaki, S.H. Prudencio-Ferreira, E. Youssef, H.J.S.S. Ribeiro, R. Bogden, and J.J. Reeves. 2004. Growth and Carcass Characteristics of Pasture Fed LHRH Immunocastrated, and Intact Bos Indicus Bulls. *Meat Science*. 68:285-290.

#### **Biological Systems Engineering:**

#### **0371 STUDIES OF USING MICROWAVE AND RADIO FREQUENCY ENERGY IN FOOD SAFETY, PHYROSANITARY, AND QUARANTINE APPLICATIONS**

Al-Holy, M., A. Quinde, D. Guan, J. Tang, and B. Rasco. 2004. Thermal Inactivation of *Listeria Innocua* in Salmon (*Oncorhynchus keta*) Caviar Using Conventional Glass and Novel Aluminum TDT Tubes. *Journal of Food Protection*. 67:383-386.

Guan, D., M. Cheng, Y. Wang, and J. Tang. 2004. Dielectric Properties of Mashed Potatoes Relevant to Microwave and Radio-Frequency Pasteurization and Sterilization Processes. *Journal of Food Science*. 69: 30-37.

Komarov, V. and J. Tang. 2004. Dielectric Permittivity and Loss Factor of Tap Water at 915 MHz. *Microwave and Optical Technology Letters*. 42:419-420.

Luechapattanaporn, K., Y. Wang, J. Wang, J. Tang, and L.M. Hallberg. 2004. Microbial Safety in Radio Frequency Processing of Packaged Foods. *Journal of Food Science*. 67:201-206.

Wang, Y., M.H. Lau, J. Tang, and R. Mao. 2004. Kinetics of Chemical Marker M-1 Formation in Whey Protein Gels for Developing Sterilization Processes Based on Dielectric Heating. *Journal of Food Engineering*. 64:111-118.

#### **0450 THE SCIENCE AND ENGINEERING FOR A BIOBASED INDUSTRY AND ECONOMY**

Demirer, G.N. and S. Chen. 2004. Effect of Retention Time and Organic Loading Rate on Anaerobic Acidification and Biogasification of Dairy Manure. *Journal of Chemical Technology and Biotechnology*. 79:1381-1387.

Liao, W., Z. Wen, C. Liu, Y. Liu, and S. Chen. 2004. Optimizing Dilute Acid Hydrolysis of Hemicellulose in a Nitrogen-Rich Cellulosic Material - Dairy Manure. *Bioresource Technology*. 94:33-41.

Liu, C., Z. Wen, and S. Chen. 2004. Nisin and Lactic Acid Simultaneous Production from Cheese Whey: Optimization of Fermentation Conditions Through Statistically Based Experimental Designs. *Applied Biochemistry and Biotechnology*. 113-116:627-638.

Wen, Z., W. Liao, and S. Chen. 2004. Hydrolysis of Animal Manure Lingocellulosics for Reducing Sugar Production. *Bioresource Technology*. 91:31-39.

#### **0467 IMPROVEMENT OF THERMAL AND ALTERNATIVE PROCESSES FOR FOODS**

Gongora-Nieto, M.M., P. Pedrow, G.V Barbosa-Canovas, and B.G. Swanson. 2004. Use of Circuit Analysis Simulation in Pulsed Electric Fields Food Processing. *Journal of Food Engineering*. 61:413-420.

Reyes De Corcuera, J., R.P. Cavalieri, and J.R. Powers. 2004. Simultaneous Determination of Film Permeability and Substrate Surface Area Coverage of Over Oxidized Polypyrrole. *Synthetic Metals*. 142:71-79.

#### **0553 DEVELOPMENT AND APPLICATION OF WATER AND NUTRIENT MODELS FOR THE ANALYSIS OF AGRICULTURAL SYSTEMS**

Kemanian, A.R., C.O. Stockle, and D.R. Huggins. 2004. Variability of Barley Radiation-Use Efficiency. *Crop Science*. 44:1162-1173.

Stockle, C.O., J. Kjelgaard, and G. Bellocchi. 2004. Evaluation of Estimated Weather Data for Calculating Penman-Monteith Reference Crop Evapotranspiration. *Irrigation Science*. 23:39-46.

#### **0554 ENHANCED ANAEROBIC DIGESTION OF ANIMAL MANURE WITH NUTRIENT RECOVERY**

Demirer, G.N. and S. Chen. 2004. Effect of Retention Time and Organic Loading Rate on Anaerobic Acidification and Biogasification of Dairy Manure. *Journal of Chemical Technology and Biotechnology*. 79:1381-1387.

#### **0562 RESEARCH AND DEVELOPMENT FOR BIOMASS PROCESSING AND BIOPRODUCTS PRODUCTION**

Demirer, G.N. and S. Chen. 2004. Effect of Retention Time and Organic Loading Rate on Anaerobic Acidification and Biogasification of Dairy Manure. *Journal of Chemical Technology and Biotechnology*. 79:1381-1387.

Liao, W., Z. Wen, C. Liu, Y. Liu, and S. Chen. 2004. Optimizing Dilute Acid Hydrolysis of Hemicellulose in a Nitrogen-Rich Cellulosic Material--Dairy Manure. *Bioresource Technology*. 94:33-41.

Liu, C., Z. Wen, and S. Chen. 2004. Nisin and Lactic Acid Simultaneous Production from Cheese Whey: Optimization of Fermentation Conditions Through Statistically Based Experimental Designs. *Applied Biochemistry and Biotechnology*. 113-116:627-638.

Wen, Z., W. Liao, and S. Chen. 2004. Hydrolysis of Animal Manure Lignocellulosics for Reducing Sugar Production. *Bioresource Technology*. 91:31-39.

#### **0990 ASSURING FRUIT AND VEGETABLE PRODUCT QUALITY AND SAFETY THROUGH THE HANDLING AND MARKETING CHAIN**

Nindo, C.I., J. Tang, J.R. Powers, and K. Bolland. 2004. Energy Consumption During Refractance Window Evaporation of Selected Derry Juices. *International Journal of Energy Research*. 28:1089-1100.

Wang, S. and J. Tang. 2004. Radio Frequency Heating: A Potential Method for Post-Harvest Control of Pests in Nuts and Dry Products. *Journal of Zhejiang University Science*. 5:1169-1174.

#### **3227 NON-CHEMICAL PEST CONTROL IN FRUITS AND NUTS USING ELECTROMAGNETIC ENERGY**

Birla, S.L., S. Wang, J. Tang, and G. Hallman. 2004. Improving Heating Uniformity of Fresh Fruits in Radio Frequency Treatments for Pest Control. *Postharvest Biology and Technology*. 33:205-217.

Feng, X., J.D. Hansen, B. Biasi, J. Tang, and E.J. Mitcham. 2004. Use of Hot Water Treatment to Control Codling Moths in Harvested California 'Bing' Sweet Cherries. *Postharvest Biology and Technology*. 31:41-49.

Hansen, J., S. Wang, and J. Tang. 2004. A Cumulated Lethal Time Model to Evaluate Efficacy of Heat Treatments for Codling Moth *Cydia Pomonella* (L.) (*Lepidoptera: Tortricidae*) in Cherries. *Postharvest Biology and Technology*. 33:309-317.

Hansen, J.D., S.R. Drake, M.L. Heidt, M.A. Watkins, J. Tang, and S. Wang. 2004. Radio Frequency Treatments for Postharvest Codling Moth Control in Fresh Apples. *HortTechnology*. 14:533-537.

Wang, S. and J. Deltour. 2004. Leaf Temperature Modeling of Greenhouse Grown Tomato. *International Agricultural Engineering Journal*. 13:64-70.

Wang, S. and J. Tang. 2004. Radio Frequency Heating: A Potential Method of Postharvest Pest Control in Nuts and Dry Products. *Journal of Zhejiang University Science*. 5:1169-1174.

Wang, S., X. Yin, J. Tang, and J. Hansen. 2004. Thermal Resistance of Different Life Stages of Codling Moth (*Lepidoptera: Tortricidae*). *Journal of Stored Products Research*. 40:565-574.

### **3352 IMPROVING WATER QUALITY FOR SALMON RESTORATION THROUGH INTEGRATED RESEARCH, EDUCATION, AND EXTENSION EFFORTS**

Fu, G., C. Liu, S. Chen, and J. Hong. 2004. Investigating the Conversion Coefficient for Free Water Surface Evaporation of Different Evaporation Pans. *Hydrological Processes*. 18:2247-2262.

Wang, G.T., S. Chen, M.E. Barber, and D. Yonge. 2004. Modeling Wet Detention Pond for Highway Runoff Nutrient Removal. *Journal of Environmental Engineering*. 130:1315-1321.

### **4378 MICROSTRUCTURES AND PROPERTIES OF HIGH/LOW ACYL MIXED GELLAN GELS**

Huang, Y., P.P. Singh, J. Tang, and B. Swanson. 2004. Gelling Temperatures of High Acyl Gellan as Affected by Monovalent and Divalent Cations with Dynamic Rheological Analyses. *Carbohydrate Polymers*. 56:27-33.

### **Center for Precision Agriculture:**

#### **0551 ADVANCING PRECISION AGRICULTURE SYSTEMS THROUGH AUTOMATION, SENSING, CONTROL, AND INFORMATION SYSTEMS**

Tarara, J.M., J.C. Ferguson, P.E. Blom, M.J. Pitts, and F.J. Pierce. 2004. Automated Estimation of Grapevine Yields via Trellis Tension. *American Society of Agricultural Engineers*. 47:647-657.

Avendano, F., F.J. Pierce, and H. Melakeberhan. 2004. The Relationship Between Soybean Cyst Nematode Seasonal Population Dynamics and Soil Texture. *Journal of Nematology*. 6:511-525.

Avendano, F., F.J. Pierce, O. Schabenberger, and H. Melakeberhan. 2004. The Spatial Distribution of Soybean Cyst Nematode in Relation to Soil Texture and Soil Map Unit. *Agronomy Journal*. 96:181-194.

### **Community and Rural Sociology:**

#### **0942 HOW VISUAL DESIGN AND LAYOUT INFLUENCES ANSWERS TO SELF-ADMINISTERED PAPER AND INTERNET QUESTIONNAIRES**

Christian, L.M. and D.A. Dillman. 2004. The Influence of Symbolic and Graphical Language Manipulations on Answers to Paper Self-Administered Questionnaires. *Public Opinion Quarterly*. 68:57-80.

## Crop and Soil Sciences:

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#### **Northwestern Washington Research and Extension Center:**

*Associated with the Dept. of Plant Pathology:*

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#### **Puyallup Research and Extension Center:**

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*Associated with the Dept. of Crop and Soil Sciences:*

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*Associated with the Dept. of Entomology:*

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*Associated with the Dept. of Horticulture and Landscape Architecture:*

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### **Tree Fruit Research and Extension Center:**

*Associated with the Dept. of Entomology:*

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*Associated with the Dept. of Horticulture and Landscape Architecture:*

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*Associated with the Dept. of Plant Pathology:*

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[WSU Vancouver Research and  
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*Associated with the Dept. of Horticulture and  
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