

**Analysis of Research &  
Development Activities  
Funded by the  
State of Minnesota**

**Fiscal Year 2002**

# ***Analysis of research and development activities funded by the state during FY 2002 and reported to Minnesota Technology, Inc.***

## ***1. Overview of Minnesota Technology's Reporting Guidelines***

Under Minnesota Statutes, state agencies and other organizations are required to notify Minnesota Technology, Inc. of any state funds allocated for science and technology research and development.

This reporting requirement applies only to dollars for which the state of Minnesota is the source; funding allocations from private sector or federal sources are excluded.

To help organizations comply with reporting requirements, Minnesota Technology has adopted specific reporting guidelines. These guidelines are described in the manual entitled *Peer Review and Reporting of State Funded Science and Technology Research and Development*, first distributed in August 1989.

Funding organizations are asked to categorize each R&D project they report into one of nine major research areas. These areas are:

- Agriculture & Food Science
- Transportation & Energy Sciences
- Natural Resources
- Environmental Protection & Waste Management
- Computers, Communications & Microelectronics
- Social Science
- Manufacturing & Engineering
- Human Health
- Physical & Natural Science

Moreover, because economic development and job creation are particularly important public policy goals, reporting organizations are asked to identify those R&D projects having job creation or economic development as an explicit goal.

## ***2. Reporting Procedures***

- When reporting multi-year projects, Minnesota Technology asked funding organizations to list only the amounts they actually intended to disburse in fiscal year 2002. In past years, some organizations have reported the total allocation for a multi-year project in one fiscal year, usually the year in which the project was initiated. Identifying actual per-year allocations for multi-year projects yields a truer picture of state-origin R&D expenditures in Minnesota. However, this reporting method, introduced in 1994, makes comparisons between funding levels identified in this report and those contained in reports prior to 1994 invalid.

### ***3. Summary of R&D Expenditures in FY 2002<sup>1</sup>***

Reporting organizations allocated a total of \$30,881,663 in grants, loans and special appropriations for scientific and technological research and development during FY 2002. In all, 659 projects were funded by 15 organizations. A list of all projects funded in FY 2002 is presented at the end of this report.

- The dominant research category was Agriculture & Food Science which accounted for 54.6 percent of the total reported R&D expended (Table 1). Natural Resources was the next largest category with 17.6 percent of the funding. Transportation & Energy had 9.0 percent and each of the remaining categories had less than seven percent of the total.
- The largest funding organization by far was the University of Minnesota's Agricultural Experiment Station which supported 304 research projects in six research categories totaling \$20.8 million in funding during FY 2002. This comprised more than two-thirds of all reported funding. The Minnesota Department of Transportation was the second-largest organizational funder of R&D projects, disbursing over \$2.8 million for 61 transportation and energy projects. The greatest variety of research was funded by the University of Minnesota Graduate School which funded 106 projects for a total of \$2.1 million in eight different research categories.
- Only 40 research and development projects supported by state funds were oriented toward economic development or job creation as a primary goal. In general, projects tended to support research designed to advance the state of knowledge in a scientific discipline or topical area. Table 2 lists the projects having an economic development goal.
- There were 230 new projects launched in FY 2002 by reporting organizations. Disbursements for these projects totaled \$5.5 million.
- About 95% of all projects from reporting organizations underwent some type of peer review process prior to final selection.
- A complete list of all FY 2002 projects appears at the end of the report.

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<sup>1</sup> Please note that most of the research conducted at the University of Minnesota is not covered by this report. The University receives most of its funds from the federal government (primarily through the National Science Foundation and the National Institutes of Health) and from contracts with private firms. This report provides information solely on funds allocated by the State of Minnesota.

**Table 1.**  
**State-Supported Science and Technology Research and Development**  
**Amount of Funding by Research Category**  
**Fiscal Year 2001**

<b>Research Category</b>	<b>Major State-Funded Sources<sup>2</sup></b>	<b>Category Funding (All Sources)</b>	<b>Percent of Total R&amp;D Funding</b>
Agriculture & Food Sciences	Minnesota Agricultural Experiment Station	\$16,858,426	54.6
Natural Resources	Minnesota Agricultural Experiment Station, Minnesota Department of Natural Resources – Division of Lands and Minerals	\$5,440,699	17.6
Transportation & Energy Sciences	Minnesota Department of Transportation	\$2,782,288	9.0
Social Science	Minnesota Agricultural Experiment Station, University of Minnesota Graduate School	\$2,008,795	6.5
Environmental Protection & Waste Management	Minnesota Agricultural Experiment Station	\$1,627,175	5.3
Physical & Natural Sciences	University of Minnesota Graduate School, Minnesota Agricultural Experiment Station	\$1,024,986	3.3
Human Health	University of Minnesota Graduate School, Minnesota State University – Winona	\$761,159	2.5
Manufacturing & Engineering Sciences	University of Minnesota Graduate School, Minnesota State University – Winona	\$270,432	0.9
Computers, Communications & Microelectronics	University of Minnesota Graduate School, Anoka-Ramsey Community College, Minnesota State University – Moorhead	\$107,704	0.3
<b>TOTAL</b>		<b>\$30,881,663</b>	<b>100.0</b>

<sup>2</sup> A “major source” is considered a source contributing more than 20% of the funds disbursed in a particular research category. Therefore, a source may be listed for more than one category. For each category, sources are listed in order of reported funding level.

**Table 2.**  
**R&D Projects in FY 2002**  
**With an Economic Development or Job Creation Goal**

<b>Project Title</b>	<b>Recipient(s)</b>	<b>Funding Organization</b>	<b>Amount</b>
Dairy Profitability and Enhancement Team	Central MN Dairy Profit Team, Litchfield, MN	Minnesota Department of Agriculture	\$128,000
Dairy Profitability and Enhancement Team	DPEP, Waconia, MN	Minnesota Department of Agriculture	\$100,000
Dairy Profitability and Enhancement Team	Riverland Community College, Austin, MN	Minnesota Department of Agriculture	\$75,200
Dairy Profitability and Enhancement Team	NW MN Dairy Profit Team, Bemidji, MN	Minnesota Department of Agriculture	\$41,550
Dairy Profitability and Enhancement Team	University of Minnesota, Minneapolis, MN	Minnesota Department of Agriculture	\$38,500
MJSP Red Wing Shoe Co. (MJSP cash contribution)	Winona State University	Minnesota State University - Winona	\$31,755
IT & Internet Security Certificate	Anoka-Ramsey Community College, Coon Rapids, MN	Anoka-Ramsey Community College	\$31,300
Dairy Profitability and Enhancement Team	Sustainable Farming Assn., Aldrich, MN	Minnesota Department of Agriculture	\$30,000
MJSP Red Wing Shoe Co. (Red Wing Shoe Co. cash contribution)	Winona State University	Minnesota State University - Winona	\$26,744
Value Added Soybean Processing - Feasibility and Business Plan	Soymor	Agricultural Utilization Research Institute	\$26,177
MJSP Watlow Controls/MPI (MJSP cash contribution)	Winona State University	Minnesota State University - Winona	\$22,126
Strategic Leadership & Assessment	Anoka-Ramsey Community College, Coon Rapids, MN	Anoka-Ramsey Community College	\$20,200
Collaborative Rural Nurse Practitioner	Winona State University	Minnesota State University - Winona	\$19,267
Dairy Profitability and Enhancement Team	Minnesota Intensive Grazing Group, Gaylord, MN	Minnesota Department of Agriculture	\$17,750
Prairie Farmers Coop	Prairie Farmers	Agricultural Utilization Research Institute	\$9,338
Mississippi Topsoil	Mississippi Topsoil	Agricultural Utilization Research Institute	\$3,002

## Agricultural Utilization Research Institute

### Summary by Research Category

Agriculture & Food Science \$ 786,987

Recipient	Project Title	FY 2002
AgriChem, Inc.	Feed Moisture Control	\$ 1,775
American Crystal Sugar	Sugar Beet Waste-Stream Recovery	\$ 24,999
Anderson Commodities	Study of Oilseeds for End-use Quality	\$ 3,440
AURI Initiative	Ethanol Co-products	\$ 12,676
AURI Initiative	Hybrid Poplar	\$ 337,362
AURI Initiative	Minnesota Beef	\$ 21,961
AURI Initiative	MN Specialty Meats	\$ 6,433
Biorefining, Inc.	Value Added Processing of Sugar Beet Co-products	\$ 3,917
Denco, LLC	Distiller Grain Protein Block	\$ 3,440
Earthwise Foods	Earthwise Snack Foods	\$ 3,500
EnviroGro Solutions	Value Addition to Animal Waste	\$ 50
Glacial Grain Spirits	CVEC Feed Trials	\$ 22,499
Kay's Natural	Marketing and Product Line Expansion of High-Protein and fiber snacks, chips and cereals	\$ 7,500
Klein Foods, Inc.	Klein Foods (Walnut Grove Mercantile)	\$ 5,752
Lamb Shoppe	Lamb Shoppe Marketing Expansion	\$ 5,223
Minnesota Bison Mark	Bison Marketing Assistance	\$ 800
Minnesota Canola Council	Impact of Crop Rotation on Canola Diseases	\$ 24,136
Minnesota Canola Council	Reduce Pesticide Use for Flea Beetle on Canola	\$ 9,600
Minnesota Certified	Minnesota Certified Pork	\$ 512
Minnesota Corn Growers	Biodiesel-Ethanol Blend Optimization	\$ 6,250
Minnesota Cultivated Wild Rice Council	Fusarium Head Blight & Common Waterplantain in Cultivated Wild Rice	\$ 8,148
Minnesota Department of Agriculture	Reducing Pesticide Use in Sweet Corn Production Through an Integrated Pest Management Model	\$ 7,381
Mississippi Topsoil	Mississippi Topsoil	\$ 3,002
MN Barley Research	Effects of Barley Soluble Fiber on Blood Serum Chemistry	\$ 1,369
MN Turkey Research and Promotion Council	Strategies for Maximizing Breast Meat Yield of Heavy Toms While Minimizing Feed Grain Cost	\$ 7,290
National Sunflower	NuSun Diet Study	\$ 12,499
NewBio, Inc.	Treating High Strength Wastes & DAF Sludge	\$ 15,000
Northern Bait	Commercial Scale Technical and Economic Feasibility Assessment for Redtail Chub Culturing	\$ 2,151
Organic Herb Coop	Organic Herb Cooperative	\$ 7,500
Papa George	Lamb Products Marketing Campaign	\$ 1,000
Prairie Farmers	Prairie Farmers Coop	\$ 9,338
Prairie Lamb Coop	Prairie Lamb Co-op	\$ 5,950
Premium Bison Club	Packaging Design for Mainstream Bison Marketing	\$ 9,664
Pure Country Honey	Pure Country Honey	\$ 1,542
Soymor	Value Added Soybean Processing - Feasibility and Business Plan	\$ 26,177

University of Minnesota	BioDiesel Generators	\$	567
University of Minnesota	Evaluation of Mechanical Cultivation and Flame Weeding For Effect on Weed Control, Soil Quality, and Profitability in Corn Production	\$	5,209
University of Minnesota	Honey Bee Resistance to Disease and Parasitic Mite, <i>Varroa destructor</i>	\$	18,889
University of Minnesota	Implementation of Biological Control and Compatible Pesticides in Minnesota Interiorscapes	\$	7,480
University of Minnesota	Integrated Pest Management of Fungus Gnats <i>Bradysia</i> spp. In Commercial Greenhouses	\$	14,676
University of Minnesota	Management of Black Vine Weevil, <i>Otiorynchus sulcatus</i> (F.) With <i>Beauveria bassiana</i> (Balsamo) Vuillemin	\$	23,450
University of Minnesota	Medicinal Herbs	\$	2,927
University of Minnesota	New Organic Pest Management System for Cucumber Beetle in Pumpkins and Squash	\$	23,379
University of Minnesota	New Pest Management Strategies for Strawberry Growers	\$	17,179
University of Minnesota	Reducing Insecticide Use in Snap Beans	\$	5,951
University of Minnesota	Resistance of Barley Germplasm to Septoria Speckled Leaf Blotch	\$	9,341
University of Minnesota	Site-Specific Management of Green Peach Aphid in Potato	\$	15,336
University of Minnesota	Utilization of Food and Agricultural Fibrous Byproducts	\$	6,000
University of Minnesota	Weed Competitiveness in Sweet Corn	\$	10,007
Wildlife Sciences	Specialty Bird Feed Products	\$	6,762
	<b>Subtotal</b>	\$	<b>786,987</b>

## Minnesota Agricultural Experiment Station

### Summary by Research Category

	<b>FY 2002</b>
Agriculture & Food Science	\$ 15,485,062
Natural Resources	\$ 2,240,015
Environmental Protection & Waste Management	\$ 1,444,031
Social Science	\$ 1,246,549
Physical & Natural Science	\$ 318,963
Human Health	\$ 31,683

### Recipient

### Project Title

### FY 2002

A Saari Csallany, COAFES - Food Science And Nutrition, St. Paul, MN	Studies on the secondary oxidation of various lipids and edible fats in vitro and in vivo	\$	74,417
Alan G Smith, Horticultural Science, St. Paul, MN	Molecular analysis of floral gene expression	\$	71,551
Alan Ryan Ek, Forest Resources, St. Paul, MN	Modeling and estimating forest regeneration, growth, and change	\$	27,951
Alan Stephen Polasky, Applied Economics, St. Paul, MN	Benefits and costs of resource policies affecting public and private land	\$	174
Albert H Markhart, Horticultural Science, St. Paul, MN	Plant and root response to environmental stress	\$	37,665
Alfredo DiCostanzo, Animal Science, St. Paul, MN	Factors affecting biological and economic efficiency of the beef cattle enterprise	\$	720,187
Anath Das, Biochemistry, Molecular Biol, & Biophys, St. Paul, MN	Molecular analysis of the virulence genes of agrobacterium tumefaciens	\$	361
Andrew J David, Forest Resources, St. Paul, MN	Development and implementation of genetically improved aspen	\$	(64)
Andrew J David, Forest Resources, St. Paul, MN	Development of larch as an alternative conifer for reforestation	\$	295
Andrew J David, Forest Resources, St. Paul, MN	Optimization of forest genetic resources through integration of tree improvement and silvicultural processes	\$	239,064
Ann Carla Ziebarth, Design, Housing, & Apparel, St. Paul, MN	Housing and the rural workforce	\$	2
Ann Carla Ziebarth, Design, Housing, & Apparel, St. Paul, MN	Housing in Minnesota's small towns	\$	32,878

Ann M Fallon, Entomology, St. Paul, MN	Development of molecular approaches to predicting and monitoring insecticide resistance	\$	99,519
Anne Kapuscinski, Fisheries and Wildlife, St. Paul, MN	Influence of fisheries management practices on genetic resources of fish populations	\$	27,962
Anuradha Subramanian, Biosystems and Agricultural Engineering, St. Paul, MN	Biosynthesis of prrs viral glycoproteins in transgenic animals	\$	33,078
Benham E L Lockhart, Plant Pathology, St. Paul, MN	Identification, characterization and biology of plant pararetroviruses	\$	96,020
Benjamin H Senauer, Applied Economics, St. Paul, MN	Food demand, nutrition and consumer behavior	\$	62,194
Bert E Stromberg Jr, Veterinary Pathobiology, St. Paul, MN	Control of animal parasites in sustainable agricultural systems	\$	6,699
Beth W Honadle, Applied Economics, St. Paul, MN	The organization, delivery, and finance of local government services in Minnesota	\$	7
Beverly R Durgan, Agronomy and Plant Genetics, St. Paul, MN	Weed management strategies for small grain production systems	\$	35,776
Billie J Wahlstrom, Rhetoric, St. Paul, MN	Distance by design: developing and implementing an integrated plan for technology enhanced and distance learning in coafes	\$	27,440
Brian Alwyn Crooker, Animal Science, St. Paul, MN	Regulation of nutrient use in food producing animals	\$	420,732
Brian L Buhr, Applied Economics, St. Paul, MN	Economic analysis of livestock industry marketing, prices, production and policy	\$	62,071
Bruce Nord Wilson, Biosystems and Agricultural Engineering, St. Paul, MN	Development and application of comprehensive agricultural ecosystem models	\$	7,398
Bruce Nord Wilson, Biosystems and Agricultural Engineering, St. Paul, MN	Development and evaluation of tmdl planning and assessment tools and processes	\$	37,625
Burle G Gengenbach, Agronomy and Plant Genetics, St. Paul, MN	Biochemical and developmental genetics of higher plants	\$	103,273
Carl Jay Rosen, Soil, Water, & Climate, St. Paul, MN	Improving nutrient use efficiency in vegetable and fruit crops	\$	154
Carl Jay Rosen, Soil, Water, & Climate, St. Paul, MN	Improving plant nutrient use efficiency	\$	237,248
Carlisle Ford Runge, Applied Economics, St. Paul, MN	Environmental and trade competitiveness issues in agriculture	\$	95,311
Carol Elizabeth Windels, NWROC - Crookston, MN	Biocontrol of soil-and-residue-borne plant pathogens	\$	26,838
Carol Elizabeth Windels, NWROC - Crookston, MN	Sugarbeet disease control and fertility management	\$	331,376
Charles E Allen, Veterinary Pathobiology, St. Paul, MN	Avian research center	\$	31,845
Charles J Clanton, Biosystems and Agricultural Engineering, St. Paul, MN	Agricultural waste management-water quality beneath manure storages	\$	160,074
Charles Robert Blinn, Forest Resources, St. Paul, MN	Balancing harvesting practices and environmental protection needs	\$	19,765
Cheryl F Smith, CHE - Food Science and Nutrition, St. Paul, MN	Examination of nutritional status and dietary behavior for minority populations	\$	53,584
Christian A Thill, Horticultural Science, St. Paul, MN	Potato breeding and genetics	\$	91,711
Cindy Bow San Tong, Horticultural Science, St. Paul, MN	Changes in quality of horticultural crops during growth and storage	\$	33,457
Clive Frank Reece, Soil, Water, & Climate, St. Paul, MN	Water and solute transport in the vadose zone of Minnesota outwash soils: monitoring and mechanisms	\$	8
Connie Jane Gebhart, Veterinary Pathobiology, St. Paul, MN	Enteric diseases of swine and cattle: prevention, control and food safety	\$	-
Craig Alan Hassel, CHE - Food Science and Nutrition, St. Paul, MN	A multicultural investigation of food as medicine	\$	25,252
Craig C Sheaffer, Agronomy and Plant Genetics, St. Paul, MN	Forage protein characterization and utilization for cattle	\$	14,847
Craig C Sheaffer, Agronomy and Plant Genetics, St. Paul, MN	Legumes in cropping systems	\$	102,152
Daniel D Gallaher, CHE - Food Science and Nutrition, St. Paul, MN	Role of n-3/n-6 polyunsaturated fatty acids in health maintenance	\$	26,700
Daniel F Detzner, Family Social Science, St. Paul, MN	Intergenerational relationships in Southeast Asian refugee families	\$	20,623
Daniel J Philippon, Rhetoric, St. Paul, MN	Rhetoric, ethics, and the environment: case studies from Minnesota	\$	18,622
Daniel Josep Osullivan, COAFES - Food Science And Nutrition, St. Paul, MN	In vivo regulatory systems in lactic acid bacteria: bacteriophage resistance & bacteriocin production	\$	74,504
Daniel L Erkkila, Forest Resources, St. Paul, MN	Enhancing rural economies through sustainable systems of nature-based tourism in northern Minnesota	\$	77,262
Dario Menanteau, Social Work, St. Paul, MN	Patterns of adaptation and acceptance of hispanics in American communities	\$	16,288



Dario Menanteau, Social Work, St. Paul, MN	Professionalism among social workers: linkages among family, school, and community	\$	79,328
David Andow, Entomology, St. Paul, MN	Ecology and management of European corn borer and other stalk-boring lepidoptera	\$	72,090
David E Smith, COAFES - Food Science And Nutrition, St. Paul, MN	Physico chemical properties of dairy macromolecules in food systems	\$	94,791
David George Pitt, Landscape Architecture, St. Paul, MN	Developing decision support systems for sustainable land use planning in exurban and rural landscapes	\$	34,676
David H Macdonald, Plant Pathology, St. Paul, MN	Plant nematodes inhabiting the soils of a portion of Minnesota's central lakes region: their occurrence & potential significance	\$	22,483
David H Macdonald, Plant Pathology, St. Paul, MN	Soybean cyst nematode	\$	-
David K Wildung, NWROC - Crookston, MN	Developing cultural systems to improve horticultural crop production	\$	210,378
DAVID W DAVIS, Horticultural Science, St. Paul, MN	Genetics and improvement of vegetable crops	\$	207
David Willard Ragsdale, Entomology, St. Paul, MN	Management of insects and insect vectors of plant pathogens in potato	\$	90,119
Denise A Guerin, Design, Housing, & Apparel, St. Paul, MN	Development of an interior material rating system for environmental conservation	\$	44,110
Deon Dean Stuthman, Agronomy and Plant Genetics, St. Paul, MN	Oat breeding and genetics	\$	130,338
Dietmar Walter Rose, Forest Resources, St. Paul, MN	Minnesota's forested landscapes: balancing productivity and environmental quality	\$	11,432
Donald B White, Horticultural Science, St. Paul, MN	The biology and utilization of turfgrasses	\$	75,498
Donald Jiann-Tyng Liu, Applied Economics, St. Paul, MN	An economic analysis of U.S. livestock sector facing demand and supply structural changes	\$	63,951
Dorothy H Anderson, Forest Resources, St. Paul, MN	Benefits-based management: assessing and managing for public, private, and community benefits	\$	62,995
Dorothy H Anderson, Forest Resources, St. Paul, MN	Evaluation, planning, and managing for natural resource-based tourism	\$	21,730
Douglas N Foster, Animal Science, St. Paul, MN	Advanced technologies for the genetic improvement of poultry	\$	115,930
Earl E McDowell, Rhetoric, St. Paul, MN	Human communication practices related to teaching technical communication	\$	55,172
Edward A Nater, Soil, Water, & Climate, St. Paul, MN	Biogeochemistry and ecological risk management of trace chemical constituents	\$	270,876
Edward B Radcliffe, Entomology, St. Paul, MN	Potato insects: biological and cultural control	\$	106,552
Eileen V Carey, Forest Resources, St. Paul, MN	Net primary productivity and carbon sequestration potential of lake states forests	\$	55,258
Elizabeth Anne Dyck, Agronomy and Plant Genetics, St. Paul, MN	Research in organic farming systems in the northern corn belt	\$	25,366
Elizabeth Br Lightfoot, Social Work, St. Paul, MN	Accessibility to social service agencies in rural Minnesota	\$	23,910
Elizabeth E Davis, Applied Economics, St. Paul, MN	Rural labor market behavior and outcomes: the role of work support policies and economic changes	\$	23,630
Elizabeth Jane Parks, CHE - Food Science and Nutrition, St. Paul, MN	Quantification of fatty acid and triglyceride flux in fasted and fed humans	\$	70,269
Elmer Lyle Schmidt, Wood and Paper Science, St. Paul, MN	Investigations on moisture, preservatives, and fungi in reducing wood deterioration	\$	66,301
Emily Esther Hoover, Horticultural Science, St. Paul, MN	Sustainable production systems for fruit crops	\$	123,779
Eric K. Zenner, Forest Resources, St. Paul, MN	Examining the response of mixed species regeneration, composition, and productivity to partial timber cutting	\$	27,697
Ervin Albert Oelke, Agronomy and Plant Genetics, St. Paul, MN	Canola and wild rice production	\$	184
Ervin Albert Oelke, Horticultural Science, St. Paul, MN	Center for alternative plant and animal products	\$	25,923
Federico Ponce de leon, Animal Science, St. Paul, MN	Identification of a recipient genome for the generation of a chicken radiation hybrid cell panel	\$	25,879
Francesca J Cuthbert, Fisheries and Wildlife, St. Paul, MN	Geo-referenced conservation databases: integrating biodiversity conservation & sustainable development	\$	81,280
Francis L Pflieger, Plant Pathology, St. Paul, MN	Plant biodiversity: impact on and interactions with arbuscular mycorrhizal fungi	\$	18,065
Francisc Diez-Gonzalez, COAFES - Food Science And Nutrition, St. Paul, MN	The impact of cattle diet on the fecal shedding of food-borne pathogens	\$	56,458
Gary A Reineccius, COAFES - Food Science And Nutrition, St. Paul, MN	Improved stability of dry food flavorings	\$	68,514

Gary J Muehlbauer, Agronomy and Plant Genetics, St. Paul, MN	Molecular genetics of barley and wheat	\$	150,278
Gary Lee Malzer, Soil, Water, & Climate, St. Paul, MN	Improving crop nutrition and ground water quality through efficient fertilizer use	\$	9,067
Gary Lee Nelsestuen, Biochemistry, Molecular Biol, & Biophys, St. Paul, MN	Gas chromatography-mass spectrometer operation	\$	83,304
Gary Robert Sands, Biosystems and Agricultural Engineering, St. Paul, MN	Investigating drainage design and management alternatives for meeting both env. And agro. Objectives	\$	77,896
George Heimpel, Entomology, St. Paul, MN	Biological control of insect pests in Minnesota: principles and implementation	\$	69,981
George R Spangler, Fisheries and Wildlife, St. Paul, MN	Ecology and management of fishery resources of large lakes in the upper midwest	\$	79,988
George W Rehm, Soil, Water, & Climate, St. Paul, MN	Improving farm profitability through more precise fertilizer use	\$	-
George Wilson Morse, Applied Economics, St. Paul, MN	Rural economic development: alternatives in the new competitive environment	\$	73,424
Gerald C Shurson, Animal Science, St. Paul, MN	Evaluation of new nutritional technologies for situation dependent diet formulation in swine	\$	128,719
Glenn D Pederson, Applied Economics, St. Paul, MN	Financing agriculture and rural America: issues of policy, structure and technical change	\$	74,661
Glenn Olger Titrud, Biosystems and Agricultural Engineering, St. Paul, MN	Sand plain research farm-operations	\$	127,286
Glenn R Furnier, Forest Resources, St. Paul, MN	Assessing genetic variation using molecular markers	\$	9
Graham Clifford Lamb, NWROC - Crookston, MN	Methods to increase reproductive efficiency in cattle	\$	137,858
Gregg A Johnson, Agronomy and Plant Genetics, St. Paul, MN	Characterizing weed population variability for improved weed management decision support system to reduce herbicide use	\$	69,783
Gregg A Johnson, Agronomy and Plant Genetics, St. Paul, MN	Integrated weed management strategies	\$	81,852
Gyles Wade Randall, Soil, Water, & Climate, St. Paul, MN	Assessing nitrogen mineralization and other diagnostic criteria to refine nitrogen rates for crops and minimize losses	\$	51,510
Harold D Grotevant, Family Social Science, St. Paul, MN	Relationships in adoptive families	\$	66,802
Harold M Pellett, Horticultural Science, St. Paul, MN	Breeding, evaluation & selection of hardy landscape plants	\$	167,454
Helen Q Kivnick, Social Work, St. Paul, MN	Vital involvement practice: promoting life strengths among diverse elders	\$	23,831
Henry W Schafer III, COAFES - Food Science And Nutrition, St. Paul, MN	Antioxidant and antimicrobial properties of phenolic compounds from food plant cultivars	\$	587
Howard Hoganson, Forest Resources, St. Paul, MN	Economic modeling methods for forestwide planning and timber supply analysis	\$	175,593
Hugh Chesterjones, SROC - Waseca, MN	Management systems for improved decision making and profitability of dairy herds	\$	128,846
Ian Vance Macrae, Entomology, St. Paul, MN	Site specific management of insect pests	\$	101,379
Ian Vance Macrae, Entomology, St. Paul, MN	Site specific management of potato virus vectors	\$	19,264
Ira Robert Adelman, Fisheries and Wildlife, St. Paul, MN	Effect of biotic and abiotic environmental factors on fish growth, metabolism, and reproduction	\$	(1,349)
Ira Robert Adelman, Fisheries and Wildlife, St. Paul, MN	Effects of endocrine disrupting compounds on fish	\$	89,001
J Schottel, Biochemistry, Molecular Biol, & Biophys, St. Paul, MN	Biochemistry and genetics of potato infection by streptomyces scabies	\$	5,260
James A Perry II, Fisheries and Wildlife, St. Paul, MN	Water quality management in a landscape perspective	\$	3,694
James A Perry II, Forest Resources, St. Paul, MN	Management of forest water quality in a landscape perspective	\$	9,355
James Alfred Cooper, Fisheries and Wildlife, St. Paul, MN	Ecology, behavior, and management of nuisance canada goose populations	\$	(62)
James Allan Anderson, Agronomy and Plant Genetics, St. Paul, MN	Wheat breeding and genetics	\$	276,421
James Angelo Percich, Plant Pathology, St. Paul, MN	Etiology and management of soil borne pathogens of vegetable cropping systems	\$	147,669
James Crawford Bell, Soil, Water, & Climate, St. Paul, MN	Land resource assessment, interpretation, and delivery for Minnesota landscapes	\$	221,880
James Edward Kurle, Plant Pathology, St. Paul, MN	Management and control of diseases of soybeans	\$	26,693
James Gary Linn, Animal Science, St. Paul, MN	Applied nutrition and feeding management of dairy cattle	\$	311,925
James Harold Orf, Agronomy and Plant Genetics, St. Paul, MN	Soybean breeding and genetics	\$	266,988
James J Luby, Horticultural Science, St. Paul, MN	Breeding & genetics of fruit crops for cold climates	\$	367,356

James Louis Bowyer, Wood and Paper Science, St. Paul, MN	Assessment of changing raw material needs and life cycle environmental impacts of alternative raw materials	\$	81,766
James R Mickelson, Veterinary Pathobiology, St. Paul, MN	Molecular basis of overo coat color and lethal white syndrome in horses	\$	(871)
James R Mickelson, Veterinary Pathobiology, St. Paul, MN	National animal genome research program	\$	1,699
James Vernon Groth, Plant Pathology, St. Paul, MN	Genetics of diversity in obligately pathogenic fungi of agricultural and native plants	\$	97,811
James W Maddock, Family Social Science, St. Paul, MN	The ecology of domestic abuse and violence: antecedents and consequences linked to gender and sexuality	\$	14,084
Jane F Gilgun, Social Work, St. Paul, MN	Patterns in the development of violent behaviors	\$	29,303
Jay Steven Coggins, Applied Economics, St. Paul, MN	U.S. agricultural and environmental policy	\$	50,834
Jean Delores Kinsey, Applied Economics, St. Paul, MN	Economic relationship between the changing structure of the food industry and consumer's expenditure patterns on food	\$	96,217
Jean W Bauer, Family Social Science, St. Paul, MN	Family economic well-being: transitions for families	\$	31,534
Jeffrey Dean Apland, Applied Economics, St. Paul, MN	Decision making for agricultural firms considering risk and the environment	\$	37,443
Jeffrey H Gillman, Horticultural Science, St. Paul, MN	Increasing production efficiency and long term health of nursery grown crops	\$	42,223
Jeffrey L Edleson, Social Work, St. Paul, MN	Understanding the links between woman battering and child abuse: a study of child protection cases	\$	65,606
Jeffrey L Gunsolus, Agronomy and Plant Genetics, St. Paul, MN	Weed management strategies for corn and soybean production systems	\$	82,308
Jeffrey R Crump, Design, Housing, & Apparel, St. Paul, MN	Housing policy in Minnesota	\$	30,384
Jeffrey S Miller, Plant Pathology, St. Paul, MN	Epidemiology of potato pathogens	\$	26,611
Jeffrey Scott Strock, SROC - Waseca, MN	Nonpoint source pollution and tmdls in a geographically diverse watershed	\$	7,375
Jeremiah E Fruin, Applied Economics, St. Paul, MN	Competitiveness and value-added markets in the U.S. grain and oilseed industry	\$	60,940
Jerry Beker, Social Work, St. Paul, MN	Studies in residential youthwork	\$	26,990
Joann F Lamb, Agronomy and Plant Genetics, St. Paul, MN	Genetics and breeding of alfalfa for new uses and forage quality	\$	74,757
Joanne Bubolz Eicher, Design, Housing, & Apparel, St. Paul, MN	Dress, identity and cultural heritage among Minnesota immigrants	\$	35,618
Joanne L Slavin, CHE - Food Science and Nutrition, St. Paul, MN	Defining a desirable dietary fiber intake	\$	65,414
Jochum Jan Wiersma, Agronomy and Plant Genetics, St. Paul, MN	Small grains production and management	\$	76,335
Joellen Feirtag, COAFES - Food Science And Nutrition, St. Paul, MN	Application of chemiluminescent antibiotics as platform technology for development of rapid pathogen detection	\$	9,286
John Alexander Lamb, Soil, Water, & Climate, St. Paul, MN	Management of nutrient sources in Minnesota cropping systems	\$	423,785
John E Erwin, Horticultural Science, St. Paul, MN	Impact of temperature and light on flowering	\$	93,508
John F Moncrief, Soil, Water, & Climate, St. Paul, MN	Management of eroded soils for enhancement of productivity and environmental quality	\$	53,298
John F Moncrief, Soil, Water, & Climate, St. Paul, MN	Utilization of waste for sustainable agricultural production systems	\$	139,518
John Little Nieber, Biosystems and Agricultural Engineering, St. Paul, MN	Improved characterization and quantification of flow and transport processes in soils	\$	46,832
John Little Nieber, Biosystems and Agricultural Engineering, St. Paul, MN	Modeling preferential flow processes in variably-saturated porous media	\$	23,564
John M Shutske, Biosystems and Agricultural Engineering, St. Paul, MN	Injury prevention and health promotion research for production agriculture	\$	31,683
John V Carter, Horticultural Science, St. Paul, MN	Mechanisms of environmental stress resistance & injury in plants	\$	165,296
John W Osborn Jr, Animal Science, St. Paul, MN	Nutritional determinants of cardiovascular disease	\$	112,178
Jon F Powell, Plant Pathology, St. Paul, MN	Epidemiology of turfgrass diseases	\$	53,918
Jonathan Chaplin, Biosystems and Agricultural Engineering, St. Paul, MN	Development and testing of dry fertilizer sensors and machinery for precision agriculture	\$	53,208

Jonathan E Wheaton, Animal Science, St. Paul, MN	Regulation of ovarian follicular development with application to beef and dairy cattle reproductive management	\$	93,861
Joseph R Sowokinos, Horticultural Science, St. Paul, MN	Biochemical/molecular factors controlling potato processing quality during growth & storage	\$	158,204
Karen Anne Mesce, Entomology, St. Paul, MN	Regulation of ecdysis-producing neurons in insects and other invertebrates	\$	78,074
Kathryn Kay Rettig, Family Social Science, St. Paul, MN	Decision-making integral to relationship transitions in families	\$	38,077
Kenneth Norman Brooks, Forest Resources, St. Paul, MN	Hydrologic response of watersheds to changes in forest cover, agroforestry, wetlands, and riparian systems	\$	63,560
Kenneth R Ostlie, Entomology, St. Paul, MN	Corn rootworms, resistant transgenic corn and weedy grasses: a recipe for resistance evolution?	\$	24
Kenneth R Ostlie, Entomology, St. Paul, MN	Management strategies for european corn borer, corn rootworms, and stand-reducing insects in corn	\$	37,902
Kenneth William Easter, Applied Economics, St. Paul, MN	Examining policies and institutions for land and water resource protection in Minnesota	\$	109,333
Kent D Olson, Applied Economics, St. Paul, MN	Enhancing the financial viability of Minnesota family farms	\$	42,626
Keum Hwa Choi, Clinical and Population Sciences, St. Paul, MN	Development of rapid detection method to screen generic species of foodborne pathogens in the vertical food chain	\$	5,870
Kevin A Janni, Biosystems and Agricultural Engineering, St. Paul, MN	Environmental and air quality assessment and control of livestock facilities	\$	67,690
Kevin Paul Smith, Agronomy and Plant Genetics, St. Paul, MN	Barley breeding and genetics	\$	186,373
Kewen Yin, Wood and Paper Science, St. Paul, MN	Applications of stochastic systems theory in the paper industry	\$	72,392
Kim Kp Johnson, Design, Housing, & Apparel, St. Paul, MN	Impact of technology on rural consumer access to food and fiber products	\$	32,495
Kristen C Nelson, Forest Resources, St. Paul, MN	Understanding the social context of communities and natural resources: guidelines for management	\$	30,954
Larry Dean Jacobson, Biosystems and Agricultural Engineering, St. Paul, MN	Animal manure and waste utilization, treatment and nuisance avoidance for a sustainable agriculture	\$	46,983
Larry Dean Jacobson, Biosystems and Agricultural Engineering, St. Paul, MN	Animal manure and waste utilization, treatment, and nuisance avoidance for a sustainable agriculture	\$	11,140
Larry L McKay, COAFES - Food Science And Nutrition, St. Paul, MN	Application of genetic engineering techniques for dairy starter culture improvement	\$	112,695
Laura S Abrams, Social Work, St. Paul, MN	Juvenile corrections and adolescent masculinities	\$	24,700
Lawrence Phil Wackett, Biochemistry, Molecular Biol, & Biophys, St. Paul, MN	Use of NMR spectroscopy in agricultural research	\$	8,843
Leeson James Alexander, Veterinary Medicine Administration, St. Paul, MN	Swine, equine and turkey genomics	\$	1,742
Leonard C Ferrington, Entomology, St. Paul, MN	Chironomidae as indicators of reference conditions of aquatic habitats in north central hardwood forest region	\$	4,575
Leslie B Hansen, Animal Science, St. Paul, MN	Genetic enhancement of health and survival for dairy cattle	\$	353,672
Linda J Brady, CHE - Food Science and Nutrition, St. Paul, MN	Bifidobacteria, fermentable carbohydrate, and colon health	\$	-
Linda J Brady, CHE - Food Science and Nutrition, St. Paul, MN	Cultural understanding and nutrition education in the latino community	\$	62,368
Linda Lee Kinkel, Plant Pathology, St. Paul, MN	Ecology of microbes in relation to plant disease, biological control, and competitive interactions	\$	72,188
Lloyd E Metzger, COAFES - Food Science And Nutrition, St. Paul, MN	The impact of natural cheese characteristics on process cheese functional properties	\$	46,344
Lori Karyn Falkner, Agronomy and Plant Genetics, St. Paul, MN	Soybean breeding for iron-deficiency chlorosis responses	\$	27,131
M E Elhalawani, Animal Science, St. Paul, MN	Reproductive performance of turkeys	\$	178,046
M.L. Carson, Plant Pathology, St. Paul, MN	Rust diseases of cereals	\$	3,872

Marcia Hathaway, Animal Science, St. Paul, MN	The effect of growth factors on the processes of skeletal muscle growth in meat-producing animals	\$	91,264
Margaretha Ve Rudstrom, Applied Economics, St. Paul, MN	Impacts of structural change in the dairy industry	\$	45,137
Marilyn J Bruin, Design, Housing, & Apparel, St. Paul, MN	Housing, neighborhood, and community environments of low-resource families with young children	\$	34,212
Marilyn R Delong, Design, Housing, & Apparel, St. Paul, MN	Apparel products in the 21st century	\$	72,449
Mark S Umbreit, Social Work, St. Paul, MN	Impact of restorative justice	\$	31,227
Mark W Seeley, Soil, Water, & Climate, St. Paul, MN	Impact climate and soils on crop selection and management	\$	99,858
Marla M Reicks, CHE - Food Science and Nutrition, St. Paul, MN	Identification of factors predicting consumption of selected dietary constituents	\$	24,578
Marla S Spivak, Entomology, St. Paul, MN	Behavior, stock improvement, and conservation of bee pollinators in northern climates	\$	96,691
Marlene Sue Stum, Family Social Science, St. Paul, MN	Financing long term care and later life financial security: a family decision making perspective	\$	39,327
Marshall D Stern, Animal Science, St. Paul, MN	Metabolic relationships in supply of nutrients for lactating cows	\$	36,359
Marshall D Stern, Animal Science, St. Paul, MN	Methods for achieving optimal protein utilization in ruminants	\$	143,884
Marvin E Bauer, Forest Resources, St. Paul, MN	Remote sensing of land, vegetation, and water resources	\$	85,122
Mary H Meyer, Horticultural Science, St. Paul, MN	Using native and ornamental grasses in the landscape	\$	15,239
Melvin Jay Baughman, Forest Resources, St. Paul, MN	Financial incentives & approaches for management of nonindustrial private forest lands	\$	547
Michael A Schmitt, Soil, Water, & Climate, St. Paul, MN	Nitrogen fertilizer management using soil nitrogen tests and improved manure and legume management	\$	-
Michael Alan Kilgore, Forest Resources, St. Paul, MN	Evaluating policy and associated economic strategies for sustainable forest management	\$	36,809
Michael E White, Animal Science, St. Paul, MN	Regulation of factors affecting muscle growth in meat animals	\$	123,834
Michael L Baizerman, Social Work, St. Paul, MN	Youth civic engagement through civic youthwork	\$	65,892
Michael Murtaugh, Veterinary Medicine Administration, St. Paul, MN	Porcine reproductive and respiratory syndrome (prrs): mechanisms of disease and methods for the detection, protection and elimination	\$	5,727
Michael Murtaugh, Veterinary Pathobiology, St. Paul, MN	Gene discovery in avian pathogens	\$	1,640
Mindy Susan Kurzer, CHE - Food Science and Nutrition, St. Paul, MN	Dietary regulation of sex hormone synthesis and metabolism	\$	74,372
Mrinal Bhattacharya, Biosystems and Agricultural Engineering, St. Paul, MN	Improvement of thermal and alternative processes for foods	\$	79,243
Nancy Jo Ehlke, Agronomy and Plant Genetics, St. Paul, MN	Alternative forage and turf grass breeding, genetics and seed production	\$	140,327
Nancy Jo Ehlke, Agronomy and Plant Genetics, St. Paul, MN	Forage crop genetics and breeding to improve yield and quality	\$	32,132
Neil Owen Anderson, Horticultural Science, St. Paul, MN	Breeding and genetics of floricultural crops: old, new crop development, germplasm enhancement, invasiveness potential	\$	128,232
Nevin Dale Young, Genetics, Cell Biology and Development, St. Paul, MN	Plant molecular genetics institute	\$	300
Nevin Dale Young, Plant Pathology, St. Paul, MN	Genomics of cyst nematode resistance in soybean	\$	79,783
Nevin Dale Young, Plant Pathology, St. Paul, MN	High resolution mapping and positional cloning tools to study soybean cyst nematode resistance	\$	-
Nicholas R Jordan, Agronomy and Plant Genetics, St. Paul, MN	Crop/weed ecology of agricultural diversification	\$	110,122
Pamela Jane Smith, Applied Economics, St. Paul, MN	International aspects of intellectual property rights in agriculture	\$	51,797
Paul B Addis, COAFES - Food Science And Nutrition, St. Paul, MN	Functional foods: fiber-and antioxidant-enriched foods	\$	38,319
Paul C Rosenblatt, Family Social Science, St. Paul, MN	Family systems and family realities	\$	38,815
Paul Max Porter, Agronomy and Plant Genetics, St. Paul, MN	Cropping systems, cover crops, and alternative crops research in northern Minnesota	\$	91,863
Paul Richard Peterson, Agronomy and Plant Genetics, St. Paul, MN	Improving forage production and utilization in Minnesota	\$	18,301

Paul Ronald Bloom, Soil, Water, & Climate, St. Paul, MN	Chemistry, biology and morphology of wet soils	\$	151,851
Paul V Bolstad, Forest Resources, St. Paul, MN	Measuring & modeling component & whole-system productivity & co2 flux at local to regional scales	\$	31,327
Paul Vernon Ellefson, Forest Resources, St. Paul, MN	State forest resource programs: analysis of policy options & program administration	\$	44,296
Paul W Glewwe, Applied Economics, St. Paul, MN	Determinants of education and nutrition outcomes in developing countries	\$	64,935
Pauline Elsbeth Boss, Family Social Science, St. Paul, MN	Family boundary ambiguity in alzheimer's disease and other situations of unclear loss and change	\$	22,816
Pen Hsiang Li, Horticultural Science, St. Paul, MN	Plant cold hardiness: improvement of maize chilling tolerance	\$	125,291
Peter Albion Jordan, Fisheries and Wildlife, St. Paul, MN	Relationships between wild ungulates & natural vegetation: ecological & management aspects	\$	11,391
Peter B Reich, Forest Resources, St. Paul, MN	Forest response to environmental change: an approach to multiple interactions	\$	2,434
Peter David Ascher, Horticultural Science, St. Paul, MN	Gene action in angiosperms	\$	2,236
Peter David Ascher, Horticultural Science, St. Paul, MN	Genetics and improvement of garden flowers	\$	10,909
Peter H Graham, Soil, Water, & Climate, St. Paul, MN	Improving the capacity for nodulation and nitrogen fixation of crop, pasture and prairie legumes	\$	90,403
Peter W Sorensen, Fisheries and Wildlife, St. Paul, MN	Identification and functional characterizations of sex pheromones in cyprinid fish	\$	73,732
Priscilla A Gibson, Social Work, St. Paul, MN	Raising a vulnerable generation: African American grandmother caregivers preparing their grandchildren to succeed in the 21st century	\$	27,737
Ralph John Gutierrez, Fisheries and Wildlife, St. Paul, MN	Forest wildlife relationships	\$	28,563
Ralph W Holzenthal, Entomology, St. Paul, MN	Entomological systematics and museum maintenance program	\$	155,688
Raymond M Newman, Fisheries and Wildlife, St. Paul, MN	Trophic relations in freshwater systems	\$	45,279
Rex Eugene Lovrien, Biochemistry, Molecular Biol. & Biophys, St. Paul, MN	Enzymology of forage processing	\$	32,684
Rex N Bernardo, Agronomy and Plant Genetics, St. Paul, MN	Heterosis and genetic variation in corn	\$	75,016
Richard Isaacson, Veterinary Pathobiology, St. Paul, MN	Development of methods to study the transmission of antibiotic resistance	\$	19,125
Richard J Zeyen, Plant Pathology, St. Paul, MN	Cooperative electron optics facility	\$	-
Richard J Zeyen, Plant Pathology, St. Paul, MN	Genetic engineering cereal crops for fungal disease resistance	\$	61,601
Robert A Blanchette, Plant Pathology, St. Paul, MN	Biology, control, and biotechnological uses of forest microbes	\$	87,538
Robert Allen Stine, Natural Resources Administration, St. Paul, MN	Dynamics, management, and sustainable use of northern forest ecosystems	\$	68,343
Robert J Jones, Agronomy and Plant Genetics, St. Paul, MN	Physiology of corn kernel development	\$	135,809
Robert M Brambl, Plant Biology, St. Paul, MN	Biochemistry of fungi: the heat shock response	\$	4,912
Robert Philip King, Applied Economics, St. Paul, MN	Management information systems for firms in the food system	\$	71,508
Roger D Eliason, Soil, Water, & Climate, St. Paul, MN	Elemental analysis of biological materials, soil, water and waste materials	\$	37,056
Roger D Moon, Entomology, St. Paul, MN	Biology and management of muscid flies associated with livestock and poultry in Minnesota	\$	66,105
Roger Kent Jones, Plant Pathology, St. Paul, MN	Pathology of small grains, sugarbeets, and potatoes	\$	31,373
Roger Lee Becker, Agronomy and Plant Genetics, St. Paul, MN	Weed management in disturbed and undisturbed systems	\$	215,849
ROLAND L PETERSON, Center for Education In Ag. & Extension, St. Paul, MN	The adoption of sustainable farming systems: implications to agricultural education	\$	30
Ronald L Phillips, Agronomy and Plant Genetics, St. Paul, MN	Molecular cytogenetics in plant improvement	\$	193,408
Rongsheng Ruan, Biosystems and Agricultural Engineering, St. Paul, MN	Advanced sensing, processing and control technology for biological, agricultural and food engineering	\$	54,987
Royce Gary Fulcher, COAFES - Food Science And Nutrition, St. Paul, MN	Structure/function relationships in cereal grains and their influence on processing and quality	\$	23,486
Ruth Dillmacky, Plant Pathology, St. Paul, MN	Management and control of diseases in small grains	\$	217,618

S Goyal, Veterinary Medicine Administration, St. Paul, MN	Enhance the health and well-being of animals	\$	1,549
S K Maheswaran, Clinical and Population Sciences, St. Paul, MN	Evolving pathogens, targeted sequences, and strategies for control of bovine respiratory disease	\$	4,025
S K Maheswaran, Veterinary Pathobiology, St. Paul, MN	Evolving pathogens, targeted sequences, and strategies for control of bovine respiratory disease	\$	2,681
Sagar V Krupa, Plant Pathology, St. Paul, MN	Atmospheric deposition: air pollutants and their effects on crops	\$	71,946
Sagar V Krupa, Plant Pathology, St. Paul, MN	Characterization and mechanisms of plant responses to ozone in the northeastern U.S.	\$	2,845
Sally Noll, Animal Science, St. Paul, MN	Improving turkey production performance through nutrition and management	\$	46,756
Sandra K Beeman, Social Work, St. Paul, MN	Social support, social networks, and family violence	\$	(565)
Sandra Michele Godden, Clinical and Population Sciences, St. Paul, MN	Effect of pasteurizing waste milk on health and performance in dairy calves with emphasis on johnes's disease and salmonellosis	\$	11,527
Satish Chander Gupta, Soil, Water, & Climate, St. Paul, MN	Tillage and nutrient source interactions on non-point source pollution from surface and subsurface drainage systems	\$	92,491
Scott Joseph Wells, Clinical and Population Sciences, St. Paul, MN	Use of molecular epidemiology to describe the clonal diversity of mycobacterium avium subsp. Paratuberculosis	\$	7,706
Scott M Ogrady, Animal Science, St. Paul, MN	Mechanisms of ion transport across porcine endometrium	\$	175,413
Senyu Chen, SROC - Waseca, MN	Managing plant-parasitic nematodes in sustainable agriculture with emphasis on crop resistance	\$	193,007
Sharon M Danes, Family Social Science, St. Paul, MN	Family business: work and family integration	\$	21,274
Simo Sarkanen, Wood and Paper Science, St. Paul, MN	Lignin biosynthesis, biodegradation and derivative plastics	\$	66,491
Sita R Tatini, COAFES - Food Science And Nutrition, St. Paul, MN	Elimination of escherichia coli and salmonellae from ready to consume acid foods	\$	68,481
Sridharan Ramaswamy, Wood and Paper Science, St. Paul, MN	Papermaking processes: investigations on optimizing current water removal processes and developing new and improved processes	\$	59,674
Stan C Hokanson, Horticultural Science, St. Paul, MN	Plant germplasm and information management and utilization	\$	25,944
Stanley C Stevens, Applied Economics, St. Paul, MN	Rural Minnesota grain and oilseed price collection and analysis	\$	(1,245)
Steve Robert Simmons, Agronomy and Plant Genetics, St. Paul, MN	Decision making for diversified cropping systems	\$	29,644
Steven J Seybold, Entomology, St. Paul, MN	Management and chemical ecology of forest and wood-products insect pests in Minnesota	\$	38,836
Steven James Taff, Applied Economics, St. Paul, MN	Economic analysis of limited property rights transfer	\$	25,014
Steven John Severtson, Wood and Paper Science, St. Paul, MN	Development of chemicals and materials for paper applications	\$	81,856
Susan J Weller, Entomology, St. Paul, MN	Molecular and morphological studies of insects and other arthropods in a phylogenetic context	\$	33,049
Susan Mar Galatowitsch, Horticultural Science, St. Paul, MN	Restoration of wetland vegetation	\$	63,786
Susan Mary Wick, Plant Biology, St. Paul, MN	Plant molecular genetics institute	\$	165,066
Terrance Michae Hurley, Applied Economics, St. Paul, MN	Profitability and adoption of new technology and implications for agricultural policy	\$	40,621
Terry Lee Roe, Applied Economics, St. Paul, MN	Private strategies, public policies, and food system performance	\$	124,113
Theodore P Labuza, COAFES - Food Science And Nutrition, St. Paul, MN	Physical chemistry of foods: relationships of water activity, temperature and oxygen to quality	\$	97,262
Thomas E Burk, Forest Resources, St. Paul, MN	Growth modeling and information delivery tools for ecosystem management	\$	59,699
Thomas F Stinson, Applied Economics, St. Paul, MN	Public sector impacts on state economic growth	\$	39,178
Timothy J Kurtti, Entomology, St. Paul, MN	Virulence and host specificity mechanisms of tick and insect pathogenic microorganisms	\$	91,107
Timothy John Griffis, Soil, Water, & Climate, St. Paul, MN	The monitoring and analysis of climate	\$	49,052
Timothy M Smith, Wood and Paper Science, St. Paul, MN	Industrial marketing communications in the forest products industry	\$	63,657
Ulrike W Tschirner, Wood and Paper Science, St. Paul, MN	Environmentally friendly pulping and bleaching processes	\$	76,058
Vera Krischik, Entomology, St. Paul, MN	Resistance traits in woody landscape plants against abiotic and biotic stress	\$	40,461

Vernon R Eidman, Applied Economics, St. Paul, MN	Strategic management of agribusiness firms	\$	35,437
Vincent A Fritz, SROC - Waseca, MN	Genetic manipulation of sweet corn quality and stress resistance	\$	21,411
Virginia S Zuiker, Family Social Science, St. Paul, MN	Self employment among the United States hispanic householders population	\$	34,021
Vivek Kapur, Veterinary Pathobiology, St. Paul, MN	Center for molecular epidemiology	\$	44,477
Vivek Kapur, Veterinary Pathobiology, St. Paul, MN	Molecular genetic frameworks of pasteurilla multocida recovered from avian infections	\$	(769)
Walter D Svedarsky, NWROC - Crookston, MN	Management and landscape composition effects on vegetation and birds in northern tallgrass prairie	\$	159,401
Willard L Koukkari, Plant Biology, St. Paul, MN	Oscillations in the response of plants to stress agents	\$	39,376
William Dale Hutchison, Entomology, St. Paul, MN	Development of pest management strategies for forage alfalfa persistence	\$	1,960
William Dale Hutchison, Entomology, St. Paul, MN	Ipm and bt sweet corn: efficacy and benefits to resistance management	\$	81,008
William F Wilcke, Biosystems and Agricultural Engineering, St. Paul, MN	Marketing and delivery of quality cereals and oilseeds	\$	77,657
William H Bradshaw, Social Work, St. Paul, MN	Bridging the gap between science and practitioner: the mental health research dissemination project	\$	28,923
William J Doherty, Family Social Science, St. Paul, MN	Fathers and mothers parenting together	\$	29,816
William R Dayton, Animal Science, St. Paul, MN	Molecular mechanisms regulating skeletal muscle growth and differentiation	\$	111,089
Yang Da, Animal Science, St. Paul, MN	Genetic improvement of cattle using molecular genetic information	\$	21,557
Yosef Cohen, Fisheries and Wildlife, St. Paul, MN	Evolutionary games and modeling conservation: consequences of space and breeding systems	\$	70,950
Zata M Vickers, CHE - Food Science and Nutrition, St. Paul, MN	Factors affecting food acceptability and methods of assessment	\$	49,335
	<b>Subtotal</b>	\$	<u>20,766,303</u>

### **Anoka-Ramsey Community College**

#### **Summary by Research Category**

Computers, Communications & Microelectronics	<b>FY 2002</b>
Social Science	\$ 20,200

<b>Recipient</b>	<b>Project Title</b>		<b>FY 2002</b>
Anoka-Ramsey Community College, Coon Rapids, MN	IT & Internet Security Certificate	\$	31,300
Anoka-Ramsey Community College, Coon Rapids, MN	Strategic Leadership & Assessment	\$	20,200
	<b>Subtotal</b>	\$	<u>51,500</u>

### **Minnesota Department of Agriculture**

#### **Summary by Research Category**

Agriculture & Food Science	<b>FY 2002</b>
	\$ 431,000

<b>Recipient</b>	<b>Project Title</b>		<b>FY 2002</b>
Central MN Dairy Profit Team, Litchfield, MN	Dairy Profitability and Enhancement Team 1	\$	128,000
DPEP, Waconia, MN	Dairy Profitability and Enhancement Team 2	\$	100,000
Minnesota Intensive Grazing Group, Gaylord, MN	Dairy Profitability and Enhancement Team 3	\$	17,750
NW MN Dairy Profit Team, Bemidji, MN	Dairy Profitability and Enhancement Team 4	\$	41,550
Riverland Community College, Austin, MN	Dairy Profitability and Enhancement Team 6	\$	75,200
Sustainable Farming Assn., Aldrich, MN	Dairy Profitability and Enhancement Team 7	\$	30,000
University of Minnesota, Minneapolis, MN	Dairy Profitability and Enhancement Team 5	\$	<u>38,500</u>



**Subtotal**     \$     431,000

**Minnesota Department of Natural Resources, Division of Lands and Minerals**

**Summary by Research Category**

**FY 2002**

Natural Resources \$     662,026

<b>Recipient</b>	<b>Project Title</b>	<b>FY 2002</b>
Cliffs Mining Services, Duluth, MN	Borehole Geophysics	\$     9,639
Cliffs Mining Services, Duluth, MN	Shovel Tooth Study	\$     57,357
Cliffs Mining Services, Duluth, MN	Utilization of Wood Chips	\$     20,000
David Hopstock, Roseville, MN	Liberation Analysis of Taconite	\$     21,106
Department of Natural Resources, St. Paul, MN	Aggregate Mapping at the County Level	\$     42,412
Department of Natural Resources, St. Paul, MN	Biosolids Study	\$         799
Department of Natural Resources, St. Paul, MN	Individual Minerals	\$     2,743
Department of Natural Resources, St. Paul, MN	Mercury and Mining	\$     27,484
Department of Natural Resources, St. Paul, MN	Microencapsulation	\$     4,095
Department of Natural Resources, St. Paul, MN	Mine Waste Database	\$     20,984
Department of Natural Resources, St. Paul, MN	Mine Waste Mitigation	\$     14,638
Department of Natural Resources, St. Paul, MN	Non-ferrous Data Analysis	\$     26,959
Department of Natural Resources, St. Paul, MN	Range Hydrology	\$    115,430
Department of Natural Resources, St. Paul, MN	Waste Mitigation	\$     4,304
Northshore Mining Company, Silver Bay, MN	Fundamentals of Taconite Agglomeration	\$     2,007
University of Minnesota, Minneapolis, MN	Adaptive Process Controls	\$     11,852
University of Minnesota, Minneapolis, MN	Aggregate Mapping at the County Level	\$     40,903
University of Minnesota, Minneapolis, MN	BWCA Land Valuation Study	\$     29,439
University of Minnesota, Minneapolis, MN	Economic Evaluation of Taxation and Royalties	\$     6,463
University of Minnesota, Minneapolis, MN	Fen Restoration Study	\$     1,645
University of Minnesota, Minneapolis, MN	Mercury Removal Using Wet Scrubbers	\$     17,551
University of Minnesota, Minneapolis, MN	Performance Testing of Fine Screens	\$         624
University of Minnesota, Minneapolis, MN	PGE Potential of the Greenwood Lake Area	\$    100,000
University of Minnesota, Minneapolis, MN	PGE Potential Outside the Duluth Complex	\$     20,000
University of Minnesota, Minneapolis, MN	PGEs and PGMs in the Duluth Complex	\$     2,233
University of Minnesota, Minneapolis, MN	Preparation of Certified Mercury Standards	\$     6,358
University of Minnesota, Minneapolis, MN	Simulation Center	\$     55,000
	<b>Subtotal</b>	<b>\$    662,026</b>

**Minnesota Department of Natural Resources, Fisheries Division**

**Summary by Research Category**

**FY 2002**

Natural Resources \$     198,450

<b>Recipient</b>	<b>Project Title</b>	<b>FY 2002</b>
Dr. Anne Kupuscinski, University of Minnesota, St. Paul, MN	Diagnostic Genetic Markers at the Species and Subspecies Level	\$     30,000
Dr. David Fulton and Dr. Bruce Vondracek, University of Minnesota, St. Paul, MN	Constraints and Opportunities for Quality Trout Angling Experiences in Southeastern Minnesota	\$     9,600

Dr. David Fulton and Dr. William Gartner, University of Minnesota, St. Paul, MN	The Economic Impact and Social Benefits of Cold Water Angling in Minnesota	\$	16,000
Dr. David Fulton, University of Minnesota, St. Paul, MN	Evaluating Decision-Processes: Case Studies of Fisheries Issues	\$	6,250
Dr. David Fulton, University of Minnesota, St. Paul, MN	Trends on Fisheries Issues in Minnesota	\$	25,000
Dr. David Willis, South Dakota State University, Brookings, SD	Food Habits of Young-of-the-year Walleye	\$	23,000
Dr. George Spangler, University of Minnesota, St. Paul, MN	A Proposal to Evaluate the Restoration of Fishery Productivity to Red Lakes, Minnesota	\$	12,500
Dr. George Spangler, University of Minnesota, St. Paul, MN	Index of Biotic Integrity	\$	2,500
Dr. James Bence, Michigan State University, Lansing, MI and Dr. Terrance Quinn, University of Alaska/Fairbanks, Juneau, AK	Mille Lacs Consulting on Best Management Practices	\$	22,600
Dr. Malcom Butler, North Dakota State University, Fargo, ND	Population Studies of Aquatic Macroinvertebrates and Aquatic Macrophytes	\$	24,500
Dr. Ray Newman, University of Minnesota, St. Paul, MN	Effects of Forest Harvest Practices on Fish Communities and Population in Logged and	\$	19,000
Dr. S. Weisburg, University of Minnesota, St. Paul, MN	Statistical Consulting	\$	7,500
	<b>Subtotal</b>	\$	198,450

### Minnesota Department of Natural Resources, Forestry Division

<b>Summary by Research Category</b>	<b>FY 2002</b>
Natural Resources	\$ 317,000

<b>Recipient</b>	<b>Project Title</b>		<b>FY 2002</b>
Alan Ek, University of Minnesota, St. Paul	Urban and Community Forestry Program	\$	49,500
Andrew David, North Central Research and Outreach Center	Forest Tree Improvement	\$	7,500
Department of Natural Resources, St. Paul, MN	Harvest of Riparian Forests in Minnesota	\$	76,000
Department of Natural Resources, St. Paul, MN	Monitoring the Implementation of the Timber Harvesting and Forest Management Guidelines	\$	125,000
Lee E. Frelich, University of Minnesota, St. Paul	Natural Disturbance Dynamics and Regeneration of White Pine	\$	40,000
Paul D.Anderson, University of Minnesota, St. Paul	White Pine Seed Zones in Minnesota	\$	5,000
Steven Seybold, University of Minnesota, St. Paul	Spruce Budworm Populations and Damage	\$	14,000
	<b>Subtotal</b>	\$	317,000

### Minnesota Department of Transportation

<b>Summary by Research Category</b>	<b>FY 2002</b>
Transportation & Energy	\$ 2,782,288

<b>Recipient</b>	<b>Project Title</b>		<b>FY 2002</b>
Castle Rock Consultants, Inc.	Assistance for Publishing and Database Operations	\$	4,718
Castle Rock Consultants, Inc.	Best Practices for Maintaining and Upgrading Aggregate Roads in Australia	\$	1,666
Charles Jahren	INV 775: Accident Analysis for Low Volume (Very Low) Township and County Roads	\$	15,204
Dan Krivit and Associates	Sites/Environmental Correlations in Northeastern Minnesota	\$	11,435
Darlene Gorrill	Capacity Analysis for Dynamic Bottlenecks and Alternative Concepts for Coordinated Ramp	\$	50,000
Ed Ward	ORS Web Site Maintenance	\$	2,453
Iowa State University	INV 757: Designing Pavement Drainage Systems	\$	38,000
Michael Max	Fatigue Evaluation of Bridge 69832	\$	88,500
Sandra G. Cournoyer	Publishing Assistance	\$	1,000
SRF Consulting Group, Inc	Transportation and Regional Growth - Education/Public Involvement	\$	50,000
University of Iowa	Telecommunications and Sustainable Transportation	\$	53,125

University of Minnesota	APA Rut Testing Evaluation	\$	22,077
University of Minnesota	Attributes and Amenities of Highway Systems that are Important to Tourists	\$	29,986
University of Minnesota	Building Our Way Out of Congestion? Highway Network Design for the Twin Cities	\$	4,000
University of Minnesota	Characteristics of Erosion Control Measures and Their Impact on Erosion	\$	45,000
University of Minnesota	Climatological Characterization of Snowfall and Snowdrift in Minnesota	\$	5,000
University of Minnesota	Dynamic and Resilient Modulus of Mn/DOT Asphalt Mixtures	\$	59,046
University of Minnesota	Earth Pressure Behind Retaining Walls	\$	103,240
University of Minnesota	Editing/Writing Services	\$	36,400
University of Minnesota	Element Unit and Failure Costs and Functional Improvement Costs for Use in the Mn/DOT Pontis Bridge Management System	\$	61,828
University of Minnesota	Experimental Investigation of the Effect of Vertical Pre-Release Cracks in Prestressed Bridge Girders, Phase II	\$	10,000
University of Minnesota	If They Come, Will You Build It?	\$	36,167
University of Minnesota	Implementation of Climatological Summaries for Snow Fence Design Training and Web Site Development	\$	17,200
University of Minnesota	Interactive Multimedia Roadside Plant Selection Program - Phase IV	\$	25,000
University of Minnesota	INV 721 (Phase II): Investigating the Effectiveness of Traffic Calming Strat. on Driver Behavior, Traffic Flow & Speed	\$	25,000
University of Minnesota	INV 739: Low Temperature Cracking of Asphalt Concrete Pavements	\$	195,000
University of Minnesota	INV 744: Local Road Research Board Web Site Maintenance	\$	4,486
University of Minnesota	INV 750: Algorithms for Vehicle Classification - Phase II	\$	26,000
University of Minnesota	INV 756: Methods to Reduce Traffic Speeds in High Pedestrian Areas	\$	42,876
University of Minnesota	INV 758: Properties and Aggregate Potential of Coarse Taconite Tailings	\$	69,000
University of Minnesota	INV 760: Reducing Crashes at Controlled Rural Intersections	\$	29,762
University of Minnesota	INV 761: Eliminating Driver Forward Blindspots at Rural Intersections	\$	36,750
University of Minnesota	INV 762: Transportation and Reg. Growth - Part I, Highways & Land Development Near Minnesota Regional Ctrs (Phase IV)	\$	39,921
University of Minnesota	INV 764: Investigation of Factors Related to Surface-Initiated Cracks in Flexible Pavements	\$	70,000
University of Minnesota	INV 772: Design and Construction of Pavement Embankments in Minnesota	\$	26,406
University of Minnesota	INV 774: Driver Assistive Systems for Rural Applications: A Path to Deployment	\$	22,500
University of Minnesota	INV 777: Transportation Finance Reform	\$	30,770
University of Minnesota	INV 778: How to More Safely Accommodate Pedestrians through an Intersection with Free Flow Legs	\$	11,070
University of Minnesota	INV 779: Evaluation of Asphalt Binders Used for Emulsions	\$	13,500
University of Minnesota	INV 780: Transportation and Regional Growth Study - Systems Thinking Perspective	\$	40,000
University of Minnesota	Investigating the Effect of Roadway Design on Driver Behavior - Phase II	\$	30,000
University of Minnesota	ITS Institute Match Funding	\$	250,000
University of Minnesota	Laboratory Measurements of Storm-Water Quality Improvement in Detention Ponds	\$	65,041
University of Minnesota	Measuring the Equity and Efficiency of Ramp Meters	\$	95,082
University of Minnesota	Measuring the Impact of Transportation System Decisions	\$	22,500
University of Minnesota	Minnesota Value Pricing	\$	268,500
University of Minnesota	Mn/DOT Consultant Services Training	\$	150,000

University of Minnesota	Phase 2 - Analysis Tools and Rapid Screening Data for Distortional Fatigue in Steel Bridge Girders	\$	11,300
University of Minnesota	Phase 3 - Rapid Assessment of and Decision-Making Strategies for Distortional Fatigue in Mult-Girder Steel Bridges	\$	47,000
University of Minnesota	Project Delivery Organizational Alternatives	\$	100,000
University of Minnesota	Sensor Based Ramp Monitoring	\$	9,375
University of Minnesota	Testing of PCC Pavement Design and Rehabilitation Features	\$	41,430
University of Minnesota	The Effects of Fire Versus Mowing on Prairie Plant Communities	\$	50,000
University of Minnesota	Traffic Flow Modeling, Simulation, and Signal Timing Plans Evaluation of the Miller Hill Corridor	\$	4,312
University of Minnesota	Transportation and Regional Growth - Part IV, Transportation Financing Alternatives	\$	18,065
University of Minnesota	Transportation and Regional Growth - Part V, Urban Design: Transportation & Urban Growth - Connectivity	\$	995
University of Minnesota	Transportation Related Costs of Different Regional Land Use Scenarios	\$	11,000
University of Minnesota	Transportation Technologies for Sustainable Communities	\$	37,500
University of Minnesota	Use of Adhesives to Repair Out of Plane Bending at Stiffener to Web Connection	\$	95,500
University of Minnesota	Using Scrap Shingles as a Road Construction Material - Implementation and Expansion	\$	16,332
University of Wisconsin-Madison	Feasibility of a Shipper Panel to Measure Transportation Services	\$	4,271
	<b>Subtotal</b>	\$	2,782,288

### Minnesota Forest Resources Council

<b>Summary by Research Category</b>			<b>FY 2002</b>
Natural Resources			\$ 62,000
<b>Recipient</b>	<b>Project Title</b>		<b>FY 2002</b>
University of Minnesota, St. Paul, MN	Empirical Analysis of Timber Harvesting and Forest Management Guideline Financial Impacts	\$	30,000
University of Minnesota, St. Paul, MN	Evaluating the Sustainability of Timber Harvesting and Forest Management Practices in Riparian Areas	\$	32,000
	<b>Subtotal</b>	\$	62,000

### Minnesota Geological Survey

<b>Summary by Research Category</b>			<b>FY 2002</b>
Natural Resources			\$ 1,860,402
Environmental Protection & Waste Management			\$ 130,492
<b>Recipient</b>	<b>Project Title</b>		<b>FY 2002</b>
Minnesota Geological Survey	Aggregate Mapping from DNR	\$	40,927
Minnesota Geological Survey	County Geologic Atlas Program	\$	356,841
Minnesota Geological Survey	Groundwater Database	\$	130,492
Minnesota Geological Survey	Mineral Potential Greenwood Lake	\$	98,009
Minnesota Geological Survey	State Special Appropriation to MGS- many projects	\$	1,208,544

Minnesota Geological Survey

USGS Statemap cost share

	\$ 156,081
<b>Subtotal</b>	<b>\$ 1,990,894</b>

**Minnesota Racing Commission**

**Summary by Research Category**

**FY 2002**

Agriculture & Food Science	\$ 25,252
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<b>Recipient</b>	<b>Project Title</b>	<b>FY 2002</b>
University of Minnesota, Clinical & Population Sciences, College of Veterinary Medicine, St. Paul, MN	Equine Neonatal Educational Program and National Colostrum Network	\$ 915
University of Minnesota, Clinical & Population Sciences, College of Veterinary Medicine, St. Paul, MN	Nine Minnesota Equine Research Center Projects	\$ 24,337
<b>Subtotal</b>		<b>\$ 25,252</b>

**Minnesota State University - Mankato**

**Summary by Research Category**

**FY 2002**

Social Science	\$ 31,856
Manufacturing Engineering	\$ 11,092
Physical & Natural Science	\$ 10,777
Human Health	\$ 9,522
Agriculture & Food Science	\$ 2,302
Computers, Communications & Microelectronics	\$ 2,000

<b>Recipient</b>	<b>Project Title</b>	<b>FY 2002</b>
Anderson	Participation in "Democracy and Community Development in South Africa" course	\$ 718
Anderson	Tuition for dissertation credits	\$ 700
Bevacqua	Attend "The Ph.D. in women's studies: Implications and Articulations..." institute	\$ 432
Black	Above & Below	\$ 3,842
Bond	Sensory Evaluation of Pork Breakfast Sausage Containing Soy Protein	\$ 1,487
Brigman	Attend National Institute on Teaching of Psychology	\$ 815
Brown	Tuition for dissertation credits	\$ 2,000
Case	Tuition for dissertation credits	\$ 2,000
Cherrington-Cucore	Part of League of Minnesota Cities" delegation	\$ 2,000
Empie	Attend certification program entitled "Nonviolent Crisis Intervention"	\$ 2,000
Fiszdon	Attend STAR-CD software courses	\$ 1,202
Geistfeld	Attend Dental Hygiene Clinical Teaching workshop	\$ 763
Goebel	Tuition for dissertation credits	\$ 2,000
Grabowska	Research in FLES Methods	\$ 2,910
Hardwick	Spatial and temporal variations in populations of denitrifying bacteria in natural and constructed wetlands	\$ 692
Herickhoff	Attend "Archaeoastronomy in the Maya Ruins of Palenque" course	\$ 681
Hoppie	Quantifying the Heterogeneity of Lake Trophic States using Thematic Mapper	\$ 2,400
Jones	Attend "Engine Emissions Instrumentation and Measurement" course	\$ 1,466

Kogoutiok	Attend "Nanotechnology and Nanostructured Materials and Devices" course	\$	1,403
Markowski	Learn to use Parametric Technology Company web courses	\$	600
Mitchell	Attend C.S. Lewis summer institute at Oxford and Cambridge University	\$	1,500
Nikolic	Investigation of Wing Wake Vortex Attenuation Methods	\$	4,000
Parham	Attend 3 classes during International summer term at University of Cambridge	\$	2,000
Perdomo	Role of Early Environmental Factors in the Development of Adult Physiological Function	\$	4,000
Ready	Attend shock absorber seminar	\$	1,124
Richert	Participation in educational trip to Africa	\$	2,000
Robbins	Attend "Blood Stain Pattern Analysis and Violent Crimes" seminar	\$	1,415
Ruhland	The effects of solar ultraviolet-B radiation on non-enzymatic antioxidants in Phaseolus vulgaris and Sorghum	\$	4,000
Schmid	Residency with Richmond Senior Central	\$	2,000
Singh	Attend "Critical Race Scholarship and the University" symposium	\$	1,361
Wicker	Scandinavian type Gold Bracteates found in England and France: Exchange during the Migration Period (5th - 6th Centuries)	\$	3,746
Widner	Using the Rapid Serial Visual Presentation Paradigm as a Non-Intrusive Means of Assessing the Early Onset of Dementia of the Alzheimer Type	\$	3,965
Wilkins	Tuition for dissertation credits	\$	166
Wilkins	Tuition for dissertation credits	\$	166
Witherell	The Development of the "Morality Lobby" and "Culture Wars" in 20th Century Britain: The Case of the Public Morality Council	\$	1,600
Wrigley	Nisin Activity during Bacillus Endospore Germination	\$	1,601
Young	Sudents Mentoring Faculty: Perspectives on Being a New Teacher	\$	2,794
	<b>Subtotal</b>	\$	<b>67,549</b>

**Minnesota State University - Moorhead**

**Summary by Research Category**

	<b>FY 2002</b>
Physical & Natural Science	\$ 180,980
Social Science	\$ 75,991
Computers, Communications & Microelectronics	\$ 21,926
Human Health	\$ 12,560

<b>Recipient</b>	<b>Project Title</b>		<b>FY 2002</b>
Minnesota State University Moorhead	Academic Fitness	\$	3,150
Minnesota State University Moorhead	Academic Technology	\$	467
Minnesota State University Moorhead	Biology Research	\$	2,413
Minnesota State University Moorhead	Center for Teachers and Learning	\$	1,000
Minnesota State University Moorhead	Computer Technology Research Grant	\$	7,405
Minnesota State University Moorhead	Delivery Using Internet-based Video	\$	15,339
Minnesota State University Moorhead	Developing Service Learning Pedagogical	\$	8,310
Minnesota State University Moorhead	Fun Stats- Learn by Doing	\$	4,148
Minnesota State University Moorhead	Instructional Improvement	\$	7,500
Minnesota State University Moorhead	Language Laboratory	\$	5,573
Minnesota State University Moorhead	Lead Faculty Group Tech Center	\$	14,054

Minnesota State University Moorhead	Learn By Doing First Link	\$	1,099
Minnesota State University Moorhead	Magnetic Logger	\$	4,349
Minnesota State University Moorhead	Math Learning Center	\$	479
Minnesota State University Moorhead	Mathematics Outreach and Recruiting	\$	36,185
Minnesota State University Moorhead	MPS Internships	\$	53,619
Minnesota State University Moorhead	NASA Planetary Materials	\$	10,761
Minnesota State University Moorhead	NIH Grant on Electron Migration	\$	1,678
Minnesota State University Moorhead	NSF PPDK in Plants	\$	34,208
Minnesota State University Moorhead	Teacher Research Network of Sci Math	\$	13,198
Minnesota State University Moorhead	Tufts	\$	1,250
Minnesota State University Moorhead	Writing Center	\$	65,270
	<b>Subtotal</b>	\$	291,456

### Minnesota State University - Winona

<b>Summary by Research Category</b>			<b>FY 2002</b>
Human Health		\$	231,807
Manufacturing Engineering		\$	82,094

<b>Recipient</b>	<b>Project Title</b>		<b>FY 2002</b>
Winona State University	Collaborative Rural Nurse Practitioner	\$	19,267
Winona State University	MERC Grant	\$	212,540
Winona State University	MJSP Red Wing Shoe Co. (MJSP cash contribution)	\$	31,755
Winona State University	MJSP Red Wing Shoe Co. (Red Wing Shoe Co. cash contribution)	\$	26,744
Winona State University	MJSP Watlow Controls/MPI (MJSP cash contribution)	\$	22,126
Winona State University	MJSP Watlow Controls/MPI (Watlow Controls cash contribution)	\$	1,469
	<b>Subtotal</b>	\$	313,901

### University of Minnesota, Graduate School

<b>Summary by Research Category</b>			<b>FY 2002</b>
Social Science		\$	634,200
Physical & Natural Science		\$	514,266
Human Health		\$	475,587
Manufacturing Engineering		\$	177,246
Agriculture & Food Science		\$	127,822
Natural Resources		\$	100,806
Environmental Protection & Waste Management		\$	52,652
Computers, Communications & Microelectronics		\$	52,478

<b>Recipient</b>	<b>Project Title</b>		<b>FY 2002</b>
Alex J. Lange, Twin Cities, MN	Hormonal control of hepatic gluconeogenesis/glycolysis	\$	29,346
Amy E. Meredith, Duluth, MN	Identifying subtypes of developmental apraxia of speech	\$	11,852
Anand Gopinath, Twin Cities, MN	High frequency measurements of magnetic films	\$	27,675
Annette L. Boman, Duluth, MN	Identification of Functional Residues in the VHS Domain of Gga1p	\$	23,041

Ashok K. Singh, Twin Cities, MN	Antibiotic losses in runoff and drainage from manure-applied fields	\$	25,000
Baiyin Yang, Twin Cities, MN	An Investigation of the Impacts of Perceived Organizational Justice on Power and Influence Behavior in Project Planning Process	\$	21,196
Baoquan Chen, Twin Cities, MN	Research and Development for the Next Generation Digital Design Tools for Architecture	\$	18,041
Bernadette C. Longo, Twin Cities, MN	Robots and Giant Brains: A Cultural History of Humans/Computer Relations	\$	14,437
Bethanie J. Stadler, Twin Cities, MN	Prototype integrated isolators	\$	29,041
Carston R. Wagner, Twin Cities, MN	Fluorescence spectrophotometer	\$	18,000
Cesare Casarino, Twin Cities, MN	Starting from AIDS	\$	5,289
Cheryl L. Robertson, Twin Cities, MN	Measuring Resilience Among East African Refugee War Trauma Survivors	\$	18,960
Christian P. Teyssier, Twin Cities, MN	Yo-yo tectonics: the ups and downs of wrench systems	\$	10,740
Christopher M. Federico, Twin Cities, MN	Improving public political understanding: the complex effects of sophistication	\$	20,517
Claudiu Lungu, Twin Cities, MN	Experimental study of aerosol deposition in the human lower respiratory tract	\$	19,981
Colleen A. Cannon, Twin Cities, MN	Effect of temperature manipulation and ice-nucleating bacteria on survival of cold hardy Indian meal moth larvae	\$	19,995
Daniel J. Kersten, Twin Cities, MN	4-axis, CNC router	\$	25,000
Daniel P. Forbes, Twin Cities, MN	An empirical study of corporate governance processes	\$	14,921
Daniel W. Gilmore, Twin Cities, MN	Development of guidelines for the restoration of mixed-species red and white pine stands in north central Minnesota	\$	23,002
David J. Lilja, Twin Cities, MN	Designing computers using molecular nanotechnology	\$	18,041
David L. Fox, Twin Cities, MN	AMS dating and stable isotope ecology of woolly mammoths from Siberia	\$	26,702
Deborah A. Ferrington, Twin Cities, MN	Proteome Analysis of Retinal Proteins	\$	25,000
Dennis M. Livingston, Twin Cities, MN	Molecular genetics of the yeast RAD52 gene	\$	23,393
Donald P. Snustad, Twin Cities, MN	Functions of the $\alpha 1$ , $\gamma 1$ , and $\gamma 2$ tubulin genes of Arabidopsis	\$	16,257
Donald R. Dengel, Twin Cities, MN	Effects of High Carbohydrate Drinks on Vascular Function in Adolescents	\$	24,191
Eileen V. Carey, Twin Cities, MN	Evaluating the efficacy of hybrid poplar versus native trees to mitigate seasonal flooding in MN farmlands.	\$	32,671
Elaine E. Tarone, Twin Cities, MN	Measuring Native Language Literacy Levels of Adult Immigrants	\$	15,787
Elizabeth A. Wieling, Twin Cities, MN	Factors influencing Latinos/as' access to and utilization of mental health services	\$	23,285
Elizabeth K. Bye, Twin Cities, MN	Charting Mass Customization for the Minnesota Textile and Apparel Industry	\$	18,666
Eric K. Zenner, Twin Cities, MN	Characterizing the Structural Diversity of Red Pine Forests in Northern Minnesota	\$	20,654
Francisco Diez-Gonzalez, Twin Cities, MN	Development of a competitive exclusion system against Escherichia coli O157:H7	\$	12,700
George L. Wilcox, Twin Cities, MN	A Self-Sustaining Research Center: The MN Project to Cure Pain	\$	20,000
Gilbert B. Tostevin, Twin Cities, MN	Archaeological Excavation at Brno-Bohunice, Czech Republic	\$	15,593
Gloria R. Leon, Twin Cities, MN	Educational Center for Large-Scale Disaster Policy and Management	\$	20,000
Hassan N. Ibrahim, Twin Cities, MN	Predictors of renal disease progression in a large Twin Cities cohort	\$	13,741
J.W. Halley, Twin Cities, MN	Studies of Bose-Einstein condensation in liquid helium four using pulsed atomic beams	\$	14,028
Jaijeet Roychowdhury, Twin Cities, MN	Algorithmic Macromodelling for RF Design	\$	18,041
James R. Mickelson, Twin Cities, MN	Acquisition of an automated genotyping system	\$	25,000
Jeffrey R. Miller, Twin Cities, MN	Localization of the B-catenin destruction complex and its regulation by Wnt signaling	\$	21,041
Jennifer A. Windsor, Twin Cities, MN	Center on Language Processing	\$	20,000
Jennifer J. Westendorf, Twin Cities, MN	Regulation of Runx2-mediated activation of the osteocalcin promoter	\$	21,541
Jennifer Y. King, Twin Cities, MN	Mechanisms of UV-B Radiation Effects on Decomposition and Soil Carbon Cycling Rates	\$	22,091
Joan E. Hughes, Twin Cities, MN	Examining teacher learning in subject-specific, technology inquiry groups	\$	26,040



Joel W. Slaton, Twin Cities, MN	Selective inhibition of matrix metalloproteases in prostate cancer	\$	24,962
John H. Broadhurst, Twin Cities, MN	A high efficiency detector for use with an astronomical velocity spectrometer	\$	6,988
Jonathan E. Wheaton, Twin Cities, MN	Microplate reader	\$	7,500
Josef P. Werne, Duluth, MN	Environmental controls on the timing and mechanism(s) of organic matter sulfurization	\$	26,605
Joyce E. Bono, Twin Cities, MN	Personality and Emotional Labor: Labor for Everyone?	\$	22,731
Karen E. Till, Twin Cities, MN	Remembering Cosmopolitan Futures: Confronting national pasts through places of memory	\$	26,302
Karen-Sue Taussig, Twin Cities, MN	Genetics and Its Publics: Crafting Scientific and Medical Literacies in the New Age of Biotechnology	\$	27,224
Kathryn J. Kohnert, Twin Cities, MN	Cognitive-linguistic processing in L1 and L2 learners	\$	18,041
Kathryn Riley, Duluth, MN	Center for the Study of Information Design and Processing	\$	20,000
Kent M. Reed, Twin Cities, MN	Gene sequencing for SNP discovery in turkey	\$	8,010
Kiarash Bazargan, Twin Cities, MN	Integrated and Incremental partitioning and Placement	\$	18,041
Kim-Sue R.S. Tudor, Twin Cities, MN	The Effect of TSLP on B-lymphopoiesis: The Regulation of Cell fate	\$	23,406
Laura T. Kalambokidis, Twin Cities, MN	The Compliance Costs of Maintaining Tax Exempt Status	\$	24,000
Lawrence P. Wackett, Twin Cities, MN	Minnesota Center for Environmental Molecular Sciences	\$	20,000
Lihsia Chen, Twin Cities, MN	A Molecular and Genetic Dissection of LICAM Function in C. elegans	\$	24,041
Linda Jean Kensicki, Twin Cities, MN	The great democratizer? Exploring the internet as a tool for social change	\$	26,451
Linda K. McLoon, Twin Cities, MN	Morphometric and 3-D analysis system, high resolution video camera and microscope	\$	35,000
Linda L. Chlan, Twin Cities, MN	Acute Effects of Music on Stress in Ventilated Patients	\$	16,831
Mani R. Subramani, Twin Cities, MN	Developing a typology of IT outsourcing relationships	\$	25,341
Marika D. Ginsburg-Block, Twin Cities, MN	Do peer assisted learning strategies promote continuity between home and school?	\$	21,391
Marilyn J. Bruin, Twin Cities, MN	Housing and Neighborhood Environment of Low-Resource Families with Young Children	\$	12,971
Matt L. Simcik, Twin Cities, MN	Occurrence of fluorochemicals in human breast milk	\$	16,521
Matthew T. Andrews, Duluth, MN	High-throughput screening of gene expression during mammalian hibernation	\$	28,041
Michael A. DuVernois, Twin Cities, MN	Radio detection of high-energy cosmic-ray airshowers in coincidence with the Pierre Auger Observatory	\$	5,000
Min Ni, Twin Cities, MN	Genetic screens to study phytochrome signaling	\$	23,748
Morris Levy, Duluth, MN	Kinematics Markers of Performance in High-School Cross-Country Skiers	\$	19,925
Nicola A. Alexander, Twin Cities, MN	Charter school efficacy in California	\$	9,562
Pamala A. Jacobson, Twin Cities, MN	Thermostated Floor Centrifuge Purchase	\$	6,323
Pamela K. Elf, Crookston, MN	Dynamics of yolk steroid hormones in eggs of the leopard gecko, Eublepharis macularius	\$	28,560
Peter H. Wykoff, Morris, MN	Scope and impact of buckthorn invasion in forest stands in west central Minnesota	\$	15,059
Peter N. Steinmetz, Twin Cities, MN	Computation Capacities of Mechanically Engineered Neural Networks	\$	18,147
Polly E. Szatrowski, Twin Cities, MN	Syntactic, prosodic, pragmatic and nonverbal resources for turn-taking in Japanese	\$	30,758
Priscilla A. Gibson, Twin Cities, MN	Health outcomes, family relations and psychosocial correlates of middle-class African American youth and families	\$	15,689
R.L. Penn, Twin Cities, MN	Towards a force-based understanding of epitaxial assembly in nanoparticle systems	\$	24,033
Rashmi Kaul, Twin Cities, MN	The Pathogenesis of E. coli Induced Cholangitis	\$	28,233
Rebecca J. Krinke, Twin Cities, MN	Contemporary landscapes of contemplation	\$	3,700
Rhonda F. Drayton, Twin Cities, MN	Feasibility study of Low Resistivity Silicon for RF Integrated Antenna Design	\$	24,041
Robert A. Fecik, Twin Cities, MN	High-throughput synthesis and screening of novel FtsZ polymerization inhibitors	\$	26,254
Robert E. McCaa, Twin Cities, MN	Integrated samples of Latin American Censuses, 1960-2003	\$	13,599
Robert J. Straka, Twin Cities, MN	Correlating phenotypic and genotypic expression of NAT-2 in the Hmong	\$	21,468

Robert P. Elde, Twin Cities, MN	Targeting of Presynaptic Receptors and Ion Channels	\$	20,000
Saifallah Benjaafar, Twin Cities, MN	Center for Supply Chain Research	\$	20,000
Samantha C. Luks, Twin Cities, MN	African-American Partisanship and Participation after the Republican Revolution	\$	31,021
Scott C. Fahrenkrug, Twin Cities, MN	Calcineurin signalling in zebrafish muscle-cell specification and differentiation	\$	27,266
Scott C. McLeod, Twin Cities, MN	State Policy Initiative for School Administrators' Technology Preparation	\$	19,362
Shigehiro Oishi, Twin Cities, MN	Experiencing and Remembering of Emotions	\$	26,741
Stuart S. Yeh, Twin Cities, MN	State Mandated Testing in Minnesota	\$	19,461
Susan M. Wick, Twin Cities, MN	Mass spectrometry of maize tubulins	\$	24,441
Terry J. Jones, Twin Cities, MN	A laboratory infrared spectrometer for astronomy	\$	10,000
Thomas A. Stoffregen, Twin Cities, MN	Postural instability and motion sickness in head-mounted virtual environments	\$	23,441
Thomas A. Taton, Twin Cities, MN	Combinatorial Selection of Extremozymes with DNA-Protein Fusions	\$	20,581
Thomas C. Johnson, Duluth, MN	Varved sediments in Lake Superior	\$	26,047
Timna J.O. Wykoff, Morris, MN	Lipid A biosynthesis in Pseudomonas aeruginosa	\$	16,136
Timothy J. Griffis, Twin Cities, MN	Eddy Covariance Measurements of New Ecosystem 13CO2 Exchange	\$	20,000
Timothy M. LaPara, Twin Cities, MN	Complete biological nitrogen removal from shipboard wastewater	\$	18,041
Timothy W. Van Wave, Duluth, MN	A Network-based Center for Rural Clinical Research	\$	10,000
Varanasi R. Murthy, Twin Cities, MN	Experimental investigation of 40K as a potential heat source in the earth's core	\$	10,570
William C. Engeland, Twin Cities, MN	Neural encoding of stress responses in the hypothalamic paraventricular nucleus	\$	23,161
William L. Turner, Twin Cities, MN	Understanding end-of-life care decisions in African American families	\$	22,309
William Shawlot, Twin Cities, MN	Regulation of mammalian axis formation	\$	20,706
Wufan Tao, Twin Cities, MN	Negative regulation of cell proliferation by the Lats2 tumor suppressor	\$	25,041
Yat-Sang Lum, Twin Cities, MN	Nongovernmental organizations and the development of social welfare in China	\$	17,097
Yoav Segal, Twin Cities, MN	Mouse model of x-linked alport syndrome	\$	18,641
		<b>Subtotal</b>	<u>\$ 2,135,057</u>
		<b>Grand Total</b>	<u><u>\$ 30,881,663</u></u>