

# RESEARCH PLAN OF WORK UPDATE

for the  
Pennsylvania Agricultural Experiment Station  
at  
The Pennsylvania State University

PENNSSTATE



**College of Agricultural Sciences**

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Federal Fiscal Years  
2005 to 2006

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**Introduction:** The Pennsylvania Agricultural Experiment Station is part of the College of Agricultural Sciences at The Pennsylvania State University, which is located in University Park, Pennsylvania. The Experiment Station has research activities in the areas of agriculture and food systems, natural resources and environment, and economic and social well being.

This Plan of Work Update is proposed for the 2005 and 2006 federal fiscal years, as required by the February 10, 2004 Federal Register (Vol 69, No. 27). Much of the present Plan of Work and this Update is based on the current College of Agricultural Sciences' Strategic Plan which was developed with the goal of assuring strong integration among the teaching, research, and cooperative extension functions of the College.

**Planned Programs:** We will continue to highlight individual projects in the Annual Report of Accomplishments and Results to represent Penn State's activities within the appropriate goals. It is intended that we would report not only scholarly output, but also linkages into the programmatic area; partnering across the college, region, and beyond; leveraging of additional resources; and impact on stakeholders.

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## Goal 1

### An agricultural system that is highly competitive in the global economy.

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**Statement of the Issue(s):** America's agriculture, food, and forestry sectors are increasingly challenged by international and national competitive forces that influence prices to producers and processors. Pennsylvania must have access to the latest technologies to manage their input costs, to market effectively, and ultimately to profit in the local, national, and international market places. This will require not only that Penn State produce research information for Pennsylvania's unique environments, but also that it makes state-of-the art research information available in a timely and user-friendly manner. Our stakeholder process was utilized for the identification of these issues.

**Performance Goal(s):** Enhance market share for Pennsylvania agriculture, food and forest products as well as for Pennsylvania processed products.

Output Indicators: Value of agricultural and forestry commodities; Value of processed agriculture and food products; Value of Pennsylvania-based agricultural exports

Outcome Indicators: Increased profitability for Pennsylvania agriculture and forestry products; Increased exports of Pennsylvania commodities and processed products

**Key Program Component(s):** Research projects will focus on: 1) Developing new technologies for enhanced profitability of Pennsylvania farm and forest operations; 2) Support of Pennsylvania's processing industry for enhanced utilization of Pennsylvania produced agricultural and forestry products; and 3) Support of developing niche market entrepreneurs.

**Internal and External Linkages:** Penn State will continue linkages with extension, other educational institutions, state and federal agencies, industries, foundations, and international centers and/or universities.

We will continue to work with the Penn State Intellectual Property Office to identify emerging technologies for licensing and/or patent development. As emerging relationships develop, they will be reported in the annual reporting process.

**Target Audiences:** Target audiences will include producers of agricultural and forest commodities, agriculture and forestry related industries, and underserved populations that include the small and part-time farmer and rural poor. Additionally, we will assist the niche marketer, such as the organic farmer.

**Program Duration:** All of the identified programs contain short-, intermediate-, and long-term components.

**Allocated Resources from ALL Appropriated Sources directed to Goal 1 (\$ in thousands):<sup>1</sup>**

FFY 00	FFY 01	FFY 02	FFY 03	FFY 04	FFY 05	FFY 06	Total
\$18,732	\$17,571	\$21,160	\$20,573	\$20,573	\$20,573	\$20,573	<b>\$139,756</b>

The dollars indicated in the above chart include federal appropriated funds (Hatch, Multi-State Hatch, McIntire-Stennis, and Animal Health) and state appropriated funds (General).

In addition to the appropriations indicated in the table above, funds are received from competitive sources (both state and federal) as well as foundations, trusts, and industry. These funds contribute materially to the conduct and impact of our research programs under this goal and are the result of leveraging our base appropriations.

**Allocated SYs to Goal 1 (in units):<sup>2</sup>**

FFY 00	FFY 01	FFY 02	FFY 03	FFY 04	FFY 05	FFY 06	Total
155.6	128.3	167.3	166.2	166.2	166.2	166.2	1116.0

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## Goal 2

### A safe and secure food and fiber system.

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**Statement of the Issue(s):** Consumers frequently voice concerns over the safety of their food supply, while producers and processors lack the techniques and procedures to rapidly, inexpensively and accurately determine the safety of the products they produce. Our stakeholder process was utilized for the identification of these issues.

**Performance Goal(s):** Increase availability of food products that are locally grown, transported, and processed with best management practices to reduce pests, residues, and pathogens while enhancing safety and food availability to the consuming public.

Output Indicators: Rapid and assured detection methods for potential pathogens both on-farm and during processing; Research enhancements of production, processing, and storage techniques to assure retention of inherent food value and suppression or elimination of pathogen, pesticide, and other risk factors

Outcome Indicators: Increased access to fresh or high quality food to the citizens of Pennsylvania; Reduced consumer fears relating to pathogens or residues in food; Awareness of appropriate food safety procedures from production to consumption; Reduced malnutrition and food poisonings in the state of Pennsylvania

**Key Program Component(s):** Research programs will focus on: 1) Detection and remediation of food safety problems; 2) Improved pest management with safe biorational products to enhance safety; and 3) Developing improved transport, processing and marketing procedures to assure farm fresh quality.

**Internal and External Linkages:** Penn State will continue linkages with extension, other educational institutions, state and federal agencies, industries, foundations, and international centers and/or universities. We will continue to work with the Penn State Intellectual Property Office to identify emerging technologies

for licensing and/or patent development. As emerging relationships develop, they will be reported in the annual reporting process.

**Target Audiences:** Research efforts will focus on the consumers of the state of Pennsylvania, while working with producers and processors to assure a safe and universally available food supply. Special attention will be paid to underserved or at-risk citizens when appropriate.

**Program Duration:** All of the identified programs contain short-, intermediate-, and long-term components.

**Allocated Resources from ALL Appropriated Sources directed to Goal 2 (\$ in thousands):<sup>1</sup>**

FFY 00	FFY 01	FFY 02	FFY 03	FFY 04	FFY 05	FFY 06	Total
\$3,098	\$3,573	\$1,134	\$1,341	\$1,341	\$1,341	\$1,341	<b>\$13,170</b>

The dollars indicated in the above chart include federal appropriated funds (Hatch, Multi-State Hatch, McIntire-Stennis, and Animal Health) and state appropriated funds (General).

In addition to the appropriations indicated in the table above, funds are received from competitive sources (both state and federal) as well as foundations, trusts, and industry. These funds contribute materially to the conduct and impact of our research programs under this goal and are the result of leveraging our base appropriations.

**Allocated SYs to Goal 2 (in units):<sup>2</sup>**

FFY 00	FFY 01	FFY 02	FFY 03	FFY 04	FFY 05	FFY 06	Total
26.8	34.8	12.6	16.8	16.8	16.8	16.8	141.4

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## Goal 3

### A healthy, well-nourished population.

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**Statement of the Issue(s):** Even in this time of ample food, residents of Pennsylvania and the Nation make choices on food and/or exercise that do not support healthy or well-nourished lifestyles. Our stakeholder process was utilized for the identification of these issues.

**Performance Goal(s):** Develop more nutritious foods based upon supplements, biotechnology, or improved processing techniques. Determine sociological and educational barriers to acceptance of healthy choices.

Output Indicators: Availability of nutrient enhanced foods to the general public; Understanding of rejection-acceptance criteria of healthy choices; Development of industry partnerships to assure marketing of superior food products

Outcome Indicators: Increased access and acceptance of nutrient enhanced foods; Reduced incidence of malnutrition in Pennsylvania; Increase in people making positive decisions to improve diet or lifestyle

**Key Program Component(s):** Research projects will focus on: 1) Enhancing nutritional status of Pennsylvania produced agricultural crops, meats and dairy products; 2) Improved understanding of healthy foods and lifestyle choices for Pennsylvania citizens; and 3) Reduction of nutrient losses in foods by developing better techniques for storage, preservation, and transportation.

**Internal and External Linkages:** Penn State will continue linkages with extension, other educational institutions, state and federal agencies, industries, foundations, and international centers and/or universities. We will continue to work with the Penn State Intellectual Property Office to identify emerging technologies for licensing and/or patent development. As emerging relationships develop, they will be reported in the annual reporting process.

**Target Audiences:** Research teams will focus on the consumers of the state of Pennsylvania, while working with producers and processors to assure availability and utilization of a nutritious food supply. Special attention will be paid to underserved or at-risk citizens when appropriate.

**Program Duration:** All of the identified programs contain short-, intermediate-, and long-term components.

**Allocated Resources from ALL Appropriated Sources directed to Goal 3 (\$ in thousands):<sup>1</sup>**

FFY 00	FFY 01	FFY 02	FFY 03	FFY 04	FFY 05	FFY 06	Total
\$1,198	\$1,208	\$599	\$633	\$633	\$633	\$633	\$5,537

The dollars indicated in the above chart include federal appropriated funds (Hatch, Multi-State Hatch, McIntire-Stennis, and Animal Health) and state appropriated funds (General).

In addition to the appropriations indicated in the table above, funds are received from competitive sources (both state and federal) as well as foundations, trusts, and industry. These funds contribute materially to the conduct and impact of our research programs under this goal and are the result of leveraging our base appropriations.

**Allocated SYs to Goal 3 (in units):<sup>2</sup>**

FFY 00	FFY 01	FFY 02	FFY 03	FFY 04	FFY 05	FFY 06	Total
14.6	14.9	11.1	7.2	7.2	7.2	7.2	69.4

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## Goal 4

### An agricultural system which protects natural resources and the environment.

**Statement of the Issue(s):** In a time of farm consolidations, vertical integration, mining, clear-cut logging, etc. the complex relationships between soil, water, air, and biotic resources need to be better understood to assure that our agricultural, forest, and aquatic environments are sustained for future generations. Management options that preserve our environment must be developed in a context of sustained family incomes and sustainable communities. Our stakeholder process was utilized for the identification of these issues.

**Performance Goal(s):** Develop new technologies that reduce negative impact on the environment while sustaining agricultural communities and reducing problems at the urban/rural interface

Output Indicators: Methods for production and harvest of agricultural and forest products that minimize environmental impact while preserving or enhancing diversity; Techniques and strategies for managing and utilizing waste while reducing odors and pollution; Impacting the world by exporting new environmentally friendly agricultural and forestry technologies

Outcome Indicators: Improved water quality in rivers and streams in the state of Pennsylvania; New fertilizer formulations and delivery systems that minimize runoff and subsurface water contamination; Adoption of agricultural practices that preserve soil quality and minimize erosion; Waste management techniques reducing local and long distance impact; Adoption of crop production and forest management practices that enhance biodiversity while assuring productivity and economic viability

**Key Program Component(s):** Research projects will focus on: 1) Reducing water pollution attributable to farm animals, fertilizer application and forestry practices; 2) Developing agricultural and forestry practices that conserve our soils and their productivity; and 3) Developing pest control practices that reduce nontarget exposure while treating with environmentally safe products.

**Internal and External Linkages:** Penn State will continue linkages with extension, other educational institutions, state and federal agencies, industries, foundations, and international centers and/or universities. We will continue to work with the Penn State Intellectual Property Office to identify emerging technologies

for licensing and/or patent development. As emerging relationships develop, they will be reported in the annual reporting process.

**Target Audiences:** Environmental problems identified by stakeholder listening sessions conducted throughout the Commonwealth will identify priorities and target audiences. Benefits should accrue to all citizens of the state of Pennsylvania, and should contribute to local, regional, and national needs.

**Program Duration:** All of the identified programs contain short-, intermediate-, and long-term components.

**Allocated Resources from ALL Appropriated Sources directed to Goal 4 (\$ in thousands):<sup>1</sup>**

FFY 00	FFY 01	FFY 02	FFY 03	FFY 04	FFY 05	FFY 06	Total
\$5,931	\$6,828	\$6,697	\$5,814	\$5,814	\$5,814	\$5,814	<b>\$42,714</b>

The dollars indicated in the above chart include federal appropriated funds (Hatch, Multi-State Hatch, McIntire-Stennis, and Animal Health) and state appropriated funds (General).

In addition to the appropriations indicated in the table above, funds are received from competitive sources (both state and federal) as well as foundations, trusts, and industry. These funds contribute materially to the conduct and impact of our research programs under this goal and are the result of leveraging our base appropriations.

**Allocated SYs to Goal 4 (in units):<sup>2</sup>**

FFY 00	FFY 01	FFY 02	FFY 03	FFY 04	FFY 05	FFY 06	Total
45.5	46.8	41.2	43.6	43.6	43.6	43.6	307.9

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## Goal 5

### Enhanced economic opportunity and quality of life for Americans.

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**Statement of the Issue(s):** Rural communities are facing many challenges as a result of structural changes in Pennsylvania’s agricultural industry and its economy as a whole. Youth in both urban and rural environments are at risk due to social and economic pressures. At the urban rural interface, conflicts are emerging between rural and urban expectations. Our stakeholder process was utilized for the identification of these issues.

**Performance Goal(s):** Improve the quality of life for families and sustainable development of rural communities by enhancing economic and social opportunities

Output Indicators: Development of techniques for use by communities in identifying opportunities for expanding the income base of families; Greater understanding of fiscal policy and economic development policy, including workforce needs and limitations in the provision of community services; Improved awareness of the factors that result in poor or destructive decisions by family members

Outcome Indicators: Improved income, employment opportunities, and community policy-making; Quality of life improvements for families in communities; Reduced number of youths-at-risk

**Key Program Component(s):** Research projects will focus on: 1) Developing strategies for increasing and stabilizing family income through community development; 2) Developing lifelong education strategies to maintain and enhance employability; 3) Developing tools for assessing impacts of social, environmental, and technological change; and 4) Utilizing retirement, tourism, and alternative enterprises (particularly those based on emerging technologies) to stabilize communities.

**Internal and External Linkages:** Penn State will continue linkages with extension, other educational institutions, state and federal agencies, industries, foundations, and international centers and/or universities. We will continue to work with the Penn State Intellectual Property Office to identify emerging technologies

for licensing and/or patent development. As emerging relationships develop, they will be reported in the annual reporting process.

**Target Audiences:** We will focus on major community groups and local government and community decision makers and pay particular attention to disadvantaged and underserved citizens.

**Program Duration:** All of the identified programs contain short-, intermediate-, and long-term components.

**Allocated Resources from ALL Appropriated Sources directed to Goal 5 (\$ in thousands):<sup>1</sup>**

FFY 00	FFY 01	FFY 02	FFY 03	FFY 04	FFY 05	FFY 06	Total
\$2,266	\$2,144	\$2,210	\$2,136	\$2,136	\$2,136	\$2,136	<b>\$15,164</b>

The dollars indicated in the above chart include federal appropriated funds (Hatch, Multi-State Hatch, McIntire-Stennis, and Animal Health) and state appropriated funds (General).

In addition to the appropriations indicated in the table above, funds are received from competitive sources (both state and federal) as well as foundations, trusts, and industry. These funds contribute materially to the conduct and impact of our research programs under this goal and are the result of leveraging our base appropriations.

**Allocated SYs to Goal 5 (in units):<sup>2</sup>**

FFY 00	FFY 01	FFY 02	FFY 03	FFY 04	FFY 05	FFY 06	Total
23.9	17.3	19.1	19.2	19.2	19.2	19.2	137.1

**Stakeholder Input Process:** The core of our stakeholder input is received through the Cooperative Extension Partnership. Details of the statewide needs assessment process and county, regional, and statewide meetings are detailed in the Penn State Cooperative Extension Plan of Work. In addition, we participate in meetings with stakeholders in which we receive information on their needs and aspirations as well as communications on the quality and value of our present programs and where emphasis should be made or changed. These stakeholder meetings provide feedback on research programming for Hatch, McIntire-Stennis and Animal Health funds.

**Merit and Peer Reviews:** Review Process for NON-Multi-State Research Projects: A one-page summary of proposed research is created and reviewed by two or three individuals. A review form that indicates nine criteria must be completed, signed by each reviewer and unit leader, and forwarded to the Director of the Agricultural Experiment Station. The Director reviews the prospectus for clarity of the objectives and approach, potentially identifies or discusses other relevant research and scientist(s) for the project, and explores funding sources for the project. Once the Director completes the review, he signs the review form and returns it to the investigator for development of a project outline (taking into consideration any comments made by the reviewers, unit leader, and/or Director). Once the outline is completed, reviewed by the same reviewers, and approved at the unit level, it is forwarded to the Director for final review and submission.

Review Process for Multi-State Research Projects: As required by USDA, every Multi-State Hatch project must have project proposals peer reviewed by qualified and knowledgeable scientists. The reviewers' critique and comments provide the Northeast Regional Research Committee with a mechanism for enrichment and improving the research proposals. Similar processes are followed by the Southern, North Central and Western regions.

**Multi-State/Institution:** Penn State University continues to participate in formal multi-state projects. These projects are largely responsible for our multi-institutional and multi-state effort. In addition, we have projects that are managed through memoranda of agreement (both signed or in development) that coordinate and/or fund multi-state/institution research.



**Integrated Activities:** Penn State University, under President Graham Spanier, has set a goal of becoming "the premier university in the nation in the integration of high-quality teaching, research, and service." The University's strategic plan, *Academic Excellence: Planning for the Twenty-First Century* states, "We seek a University that is passionately committed to excellence and academic achievement, embraces diversity and rejects intolerance, encourages discovery and the creation of new knowledge, serves the Commonwealth, and leads the nation in the integration of high-quality teaching, research, and service."

Penn State's College of Agricultural Sciences, Penn State Cooperative Extension, and Penn State's Experiment Station have a long-standing commitment to integrating research and extension activities at Penn State. At the Dean's level, each associate dean has responsibility for cross-functional initiatives and activities. Each of the twelve academic department heads has an appointment split among extension, research, and resident education. The Dean, associate deans, academic department heads, and the Directors and Associate Director meet together regularly to discuss current and future issues in integrated research and extension programming.

The vast majority of faculty with research responsibilities in our College of Agricultural Sciences also have appointments in either extension or teaching. These faculty members conduct basic and applied research which inform and shape extension programs. Of 560 faculty and staff at University Park who are supported with research funds, 262 have split research and extension appointments. Funds supporting the research portion of these positions account for 25% of Hatch funds. In addition to this integration, the College also integrates research with resident education, with 339 research faculty and staff at University Park having appointments that includes a resident education component.

**Summary of Resources:**

**Total Resources from ALL Appropriated Sources (\$ in thousands):<sup>1</sup>**

Goal	FFY 00	FFY 01	FFY 02	FFY 03	FFY 04	FFY 05	FFY 06	Total
1	\$18,732	\$17,571	\$21,160	\$20,573	\$20,573	\$20,573	\$20,573	<b>\$139,756</b>
2	\$3,098	\$3,573	\$1,134	\$1,341	\$1,341	\$1,341	\$1,341	<b>\$13,170</b>
3	\$1,198	\$1,208	\$599	\$633	\$633	\$633	\$633	<b>\$5,537</b>
4	\$5,931	\$6,828	\$6,697	\$5,814	\$5,814	\$5,814	\$5,814	<b>\$42,714</b>
5	\$2,266	\$2,144	\$2,210	\$2,136	\$2,136	\$2,136	\$2,136	<b>\$15,164</b>
<b>Total</b>	<b>\$31,225</b>	<b>\$31,324</b>	<b>\$31,800</b>	<b>\$30,498</b>	<b>\$30,498</b>	<b>\$30,498</b>	<b>\$30,498</b>	<b>\$216,341</b>

The dollars indicated in the above chart include federal appropriated funds (Hatch, Multi-State Hatch, McIntire-Stennis, and Animal Health) and state appropriated funds (General).

**Federal Outlays (\$ in thousands):<sup>1</sup>**

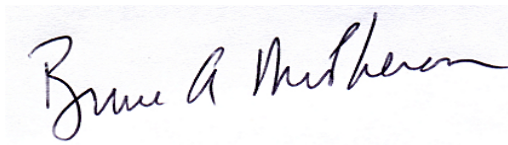
Goal	FFY 00	FFY 01	FFY 02	FFY 03	FFY 04	FFY 05	FFY 06	Total
1	\$3,793	\$3,696	\$4,341	\$4,211	\$4,211	\$4,211	\$4,211	<b>\$28,676</b>
2	\$507	\$568	\$305	\$289	\$289	\$289	\$289	<b>\$2,536</b>
3	\$253	\$287	\$146	\$153	\$153	\$153	\$153	<b>\$1,296</b>
4	\$1,364	\$1,445	\$1,168	\$1,311	\$1,311	\$1,311	\$1,311	<b>\$9,221</b>
5	\$531	\$463	\$404	\$398	\$398	\$398	\$398	<b>\$2,991</b>
<b>Total</b>	<b>\$6,448</b>	<b>\$6,458</b>	<b>\$6,364</b>	<b>\$6,362</b>	<b>\$6,362</b>	<b>\$6,362</b>	<b>\$6,362</b>	<b>\$44,720</b>

The dollars indicated in the above chart include federal appropriated funds (Hatch, Multi-State Hatch, McIntire-Stennis, and Animal Health).

**Allocated SYs (in units):<sup>2</sup>**

<b>Goal</b>	<b>FFY 00</b>	<b>FFY 01</b>	<b>FFY 02</b>	<b>FFY 03</b>	<b>FFY 04</b>	<b>FFY 05</b>	<b>FFY 06</b>	<b>Total</b>
<b>1</b>	155.6	128.3	167.3	166.2	166.2	166.2	166.2	1116.0
<b>2</b>	26.8	34.8	12.6	16.8	16.8	16.8	16.8	141.4
<b>3</b>	14.6	14.9	11.1	7.2	7.2	7.2	7.2	69.4
<b>4</b>	45.5	46.8	41.2	43.6	43.6	43.6	43.6	307.9
<b>5</b>	23.9	17.3	19.1	19.2	19.2	19.2	19.2	137.1
<b>Total</b>	<b>266.4</b>	<b>242.1</b>	<b>251.3</b>	<b>253.0</b>	<b>253.0</b>	<b>253.0</b>	<b>253.0</b>	<b>1771.8</b>

**Certification:**



29 March 2004

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Dr. Bruce A. McPherson  
Director, Pennsylvania Agricultural Experiment Station

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Date

<sup>1</sup>The resources and outlays indicated in this document are based on actual expenditures for FFY 00, 01, 02, and 03 and projected expenditures for FFY 04, 05, and 06. These resources do not include fringe benefits or University overhead.

<sup>2</sup>The allocated SYs indicated in this document are based on actual Full-Time Equivalents (FTEs) for FFY 00, 01, 02, and 03 and projected Full-Time Equivalents (FTEs) for FFY 04, 05, and 06.