Agricultural Research Programs

Johal
Corn rootworm susceptible mutant

Johnson
Giant ragweed plants surviving herbicides

Beckerman: Apple Scab

Purdue University is an Equal Opportunity/Equal Access institution.
The mission of Purdue Agricultural Programs is to serve the citizens of Indiana, the United States, and the world through:

**Discovery that expands the realm of knowledge and develops solutions to problems relevant to the agriculture, food, health, and natural resources sectors.**
National Funding Trends

- NIH, NSF, and USDA funding is flat or increasing at a rate barely approaching inflation
- Agencies seek to fund large, interdisciplinary projects
- Increased focus on development of human capital as well as problem solving (broader impacts)
- Integrated, outcomes-based
- New initiatives in Farm Bill

<table>
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<tr>
<th>Agency</th>
<th>Change</th>
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<tr>
<td>HL Security</td>
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<td>NASA</td>
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Global Challenges

• Health
  - Food safety, nutrition, disease, cancer, poverty

• Ecological Footprint
  - Water and land use, Natural resource and environmental stewardship, global climate change, depleted soils, etc.

• Agricultural Competitiveness
  - Improving crop and animal agriculture and enhancing the productivity of farms; policies; supply chain; storage and transportation

• Bioeconomy
  - Replacements for commodities for petroleum-based products and enhance community economic well being
• Ensure food safety and health
• Provide information and knowledge to improve environmental stewardship
• Improve economic return to agricultural producers
• Strengthen our communities and families
• Develop new and more competitive crop production practices and products and new uses for diverse crops and novel plant species
• Lessen the risks of local and global climatic change on food, fiber, and fuel production.
• Develop new and more competitive animal production practices, products, and uses
ISDA Strategic Plan

- **Hardwoods sector**
- **Agriculturally-derived energy**
- **Livestock production and local economic development**
  - Sound production practices
  - Public understanding
  - Appropriate land use
  - Double pork production
- **Science-based regulatory standards**
- **Diversified farming and value-added opportunities**
- **Food processing**
- **Agricultural/trade policy and foreign market opportunities**
Purdue’s plan of work for Indiana:

- Natural resources and **environment**
- **Plants** and their systems
- **Animals** and their systems
- Agricultural, natural resources, and biological **engineering**
- **Food/non-food products**
  - Development, processing, quality, and delivery
- **Economics**, markets and policy
- Human **nutrition**, food **safety**, human **health** and well being
- **Family** well being
- **Youth** development
- Economic, community **development**
Opportunities

• Integrate
  • Multi-state/Multi-institution
• Reinvigorate Tripartite Mission
  • Multi-disciplinary
  • Competitive
• Broaden goals beyond production and efficiency
• Increase inclusiveness
  • Food and fiber production
  • Human and animal health
  • Social and economic health
  • Environmental resource stewardship
  • Positive economic, social, environmental force
  • Social acceptance of agricultural systems
  • Pharmaceutical, nutritional, and biobased products
Opportunities

• **Centers and Institutes**

• **Intellectual communities**
  - Aquaculture
  - Epigenetics
  - Specialty crops

• **Collaborations with other colleges**

• **Discovery Park**
  - Nanotechnology
  - Biosciences
  - E-Enterprise
  - Regenstrief
  - Learning

- Soybeans
- Water
- Corn
- Bioenergy
- Plant biology
- Energy
- Environment
- Oncology
- Cyber
- Entrepreneurship
Big Science/New Paradigms

- Environmental, economic, and social impact of agricultural innovations
- Fundamental knowledge
- Scale/location of evaluations
- Examples:
  - Cropping systems and greenhouse gases
  - Nutrient leaching/water contamination
  - Traits
  - Nutrition/Obesity/Comparative Medicine
  - Food safety
  - Interactomes, and -omics
  - DHS initiatives
  - Site remediation
  - Animal waste/odor management
  - Bioproducts and bioenergy
  - Economics of environmental cost-benefit
Learning

Discovery <-> Engagement

Applied vs. Basic

Fundamental <-> Integrative <-> Adaptive <-> Disseminative
Teams

Integrated Parallel

Synergy
Where are we headed?

MISSION ORIENTED GRANTS
RAPID RESPONSE TEAMS
COMMON INTEREST GROUPS
INTELLECTUAL COMMUNITIES

INCENTIVES AND REWARDS

PLAN OF WORK
MISSION ORIENTED GRANTS
RAPID RESPONSE TEAMS
COMMON INTEREST GROUPS

DISCOVERY ENGAGEMENT LEARNING
DEPT. STRATEGIC PLAN
DISCOVERY ENGAGEMENT LEARNING
COLLEGE STRATEGIC PLAN
DISCOVERY ENGAGEMENT LEARNING
ISDA STRATEGIC PLAN
INTEGRATED STATE NEEDS NATIONAL NEEDS