

V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Food, Agricultural, and Biological Engineering Systems-OARDC Led

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

| KA Code | Knowledge Area | %1862 Extension | %1890 Extension | %1862 Research | %1890 Research |
|---------|---|-----------------|-----------------|----------------|----------------|
| 401 | Structures, Facilities, and General Purpose Farm Supplies | 0% | | 20% | |
| 402 | Engineering Systems and Equipment | 0% | | 25% | |
| 403 | Waste Disposal, Recycling, and Reuse | 0% | | 25% | |
| 404 | Instrumentation and Control Systems | 0% | | 15% | |
| 405 | Drainage and Irrigation Systems and Facilities | 0% | | 15% | |
| | Total | 0% | | 100% | |

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

| Year: 2010 | Extension | | Research | |
|------------|-----------|------|----------|------|
| | 1862 | 1890 | 1862 | 1890 |
| Plan | 0.0 | 0.0 | 2.3 | 0.0 |
| Actual | 0.0 | 0.0 | 3.5 | 0.0 |

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

| Extension | | Research | |
|---------------------|----------------|----------------|----------------|
| Smith-Lever 3b & 3c | 1890 Extension | Hatch | Evans-Allen |
| 0 | 0 | 217491 | 0 |
| 1862 Matching | 1890 Matching | 1862 Matching | 1890 Matching |
| 0 | 0 | 326396 | 0 |
| 1862 All Other | 1890 All Other | 1862 All Other | 1890 All Other |
| 0 | 0 | 0 | 0 |

V(D). Planned Program (Activity)

1. Brief description of the Activity

Scientific findings from this engineering group resulted in the full range of publications targeted to (a) specific stakeholder groups, (b) support publics such as fellow agencies, political entities, (c) the broader general public, including mass media releases, and (d) peer-reviewed journal articles. Commercialized techniques such as improved farm equipment and non-commercialized techniques such as improved construction techniques) were shared. The nature of engineering research resulted in extensive consultation services and meetings with stakeholders and supporters as well as participation in training programs/workshops for other scientist and for specific groups of stakeholders, including international visitors. To advance their 2010 research agenda large numbers of planning meeting with advisory groups, supporters, and business and industry partners, as well as with other colleges and departments, both within and external to OSU, were held. The department housing a large portion of the faculty members contributing to this program, the Department of Food, Agricultural and Biological Engineering, is ranked in the top ten in the nation for biological/agricultural engineering programs in the recent U.S. News & World Report's 2011 edition of America's Best Colleges. This ranking is indicative of the knowledge and skills these faculty members bring to OARDC and OSU Extension programs.

2. Brief description of the target audience

Targeted audiences for this group included stakeholders who have expressed a need for engineering information that is to be derived through new research, extracted from on-going research, or is derived from scientific literature. Often those requests are communicated to OARDC by an intermediary such as a staffer at a USDA office, NRCS, Ohio Department of Agriculture, Soil and Water Conservation Districts or a county extension agent. Most important are fellow academic units that rely on engineers to create systems and processes needed to support not only their research, but also the adoption of their research findings by stakeholders, e.g. food scientists need for machines that can employ their findings related to ozone treatment of eggs. Fellow agencies and support organizations are targeted in that they not only use the information but brokers of that information to others, including embedding it into groups to encourage change. there are the populations who have not requested the information but will likely benefit from that information, e.g. recreational animal owners, as well as other scientists and scientific groups, political entities, extension personnel, students for pre-school to post doctorate studies. Also targeted as users of engineering research are news organizations, commodity groups, trade groups such as the construction industry, agribusiness groups, city administrators, and county commissioners.

V(E). Planned Program (Outputs)

1. Standard output measures

| 2010 | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---------------|------------------------|--------------------------|-----------------------|-------------------------|
| Plan | 0 | 0 | 0 | 0 |
| Actual | 0 | 0 | 0 | 0 |

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2010
 Plan: 0
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

| 2010 | Extension | Research | Total |
|---------------|------------------|-----------------|--------------|
| Plan | 0 | 17 | |
| Actual | 0 | 18 | 18 |

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- number of graduate students completed

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2010 | 18 | 0 |

Output #2

Output Measure

- peer-reviewed publications will be tracked in terms of name and tier of journal, as well as record of citations of the article

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2010 | 17 | 0 |

Output #3

Output Measure

- patents by number and who partnered/purchased/commercialized;

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2010 | 1 | 0 |

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

| O. No. | OUTCOME NAME |
|--------|---|
| 1 | - provide appropriate facilities and engineering processes commensurate with stakeholders demand to the extent that they have all the information necessary for making adoption decisions |
| 2 | - provide appropriate facilities and engineering processes commensurate with fellow research units demands necessary to inform their research efforts in a timely manner |
| 3 | - develop enhanced systems to support integrated plant growth systems that will annually result in increased productivity at reduced costs for the industry |
| 4 | - improve systems to that will permit small farmers to take advantage of alternatives to traditional commodity crops at a rate commensurate with demand, with an expectation of at least three economically successful adoptions per year |
| 5 | - improve mechanical devices and instrumentation needed by stakeholders to the extent that no less than one patent is awarded within each five year period |
| 6 | - develop improved systems to aid in meeting new or yet to emerge or novel needs and annually demonstrate progress to at least one stakeholder group or publish a peer-reviewed journal article of the results |
| 7 | - advance development of state of the art integrated waste management systems to the extent that OARDC and Ohio are viewed as one of the top ten programs/states in this area nationally |
| 8 | - advance the knowledge of ecological based engineered systems for waste management to the extent within five years that, where cost effective and appropriate, they will be adopted over mechanical systems |
| 9 | - aid rural stakeholders through research and extension with onsite waste disposal systems to the extent that within ten years 95% of all rural Ohio onsite waste management systems meet state standards - |

Outcome #1

1. Outcome Measures

- provide appropriate facilities and engineering processes commensurate with stakeholders demand to the extent that they have all the information necessary for making adoption decisions

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

- provide appropriate facilities and engineering processes commensurate with fellow research units demands necessary to inform their research efforts in a timely manner

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

- develop enhanced systems to support integrated plant growth systems that will annually result in increased productivity at reduced costs for the industry

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

- improve systems to that will permit small farmers to take advantage of alternatives to traditional commodity crops at a rate commensurate with demand, with an expectation of at least three economically successful adoptions per year

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

- improve mechanical devices and instrumentation needed by stakeholders to the extent that no less than one patent is awarded within each five year period

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

- develop improved systems to aid in meeting new or yet to emerge or novel needs and annually demonstrate progress to at least one stakeholder group or publish a peer-reviewed journal article of the results

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

- advance development of state of the art integrated waste management systems to the extent that OARDC and Ohio are viewed as one of the top ten programs/states in this area nationally

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

- advance the knowledge of ecological based engineered systems for waste management to the extent within five years that, where cost effective and appropriate, they will be adopted over mechanical systems

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

- aid rural stakeholders through research and extension with onsite waste disposal systems to the extent that within ten years 95% of all rural Ohio onsite waste management systems meet state standards -

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

For 2010 all planned programs in the CFAES were impacted by multiple factors. Perhaps the greatest factor has been the overall decline in base financial support over the past decade resulting in a significant reduction in research faculty and staff. While a portion of the research funds have been made up by increased extramural support, rehiring lost tenure-line research faculty members on those funds is not possible. Also as we commit more personnel time to meet research obligations associated with extramural contracts, less personnel time is available to address day to day science and consultation needs of our traditional stakeholders, as well as less time to address growing needs of new populations moving into the state and the underserved. Further reductions in base budgets, either in real dollars or in losses due to not keeping up with inflation, will reduce our capacity to compete for extramural support and further erode our capacity to respond to day-to-day stakeholder needs. The tornado that struck the Wooster Ohio campus in 2010 will have long lasting impacts even though remediation has been rapid and rebuilding was moving well at the end of 2010. Loss of facilities and even experiments, per se, disruption of the research process, and demands to redirect funds for remediation and reconstruction beyond insurance payments, collectively, did and will continue affect our productivity. This group in particular was hardest hit in that their Wooster -based facilities were destroyed.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

Evaluation Results

Key Items of Evaluation