V(A). Planned Program (Summary)

Program # 15

1. Name of the Planned Program

Enhancing Agriculture and the Environment (Extension)

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
<th>%1862 Extension</th>
<th>%1890 Extension</th>
<th>%1862 Research</th>
<th>%1890 Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>102</td>
<td>Soil, Plant, Water, Nutrient Relationships</td>
<td>8%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>112</td>
<td>Watershed Protection and Management</td>
<td>10%</td>
<td>0%</td>
<td>0%</td>
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<tr>
<td>123</td>
<td>Management and Sustainability of Forest Resources</td>
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<td>133</td>
<td>Pollution Prevention and Mitigation</td>
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<td>204</td>
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<td>0%</td>
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<tr>
<td>205</td>
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<tr>
<td>213</td>
<td>Weeds Affecting Plants</td>
<td>5%</td>
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<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>216</td>
<td>Integrated Pest Management Systems</td>
<td>5%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>307</td>
<td>Animal Management Systems</td>
<td>9%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>308</td>
<td>Improved Animal Products (Before Harvest)</td>
<td>10%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
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<tr>
<td>315</td>
<td>Animal Welfare/Well-Being and Protection</td>
<td>6%</td>
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<tr>
<td>402</td>
<td>Engineering Systems and Equipment</td>
<td>8%</td>
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<tr>
<td>403</td>
<td>Waste Disposal, Recycling, and Reuse</td>
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<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>601</td>
<td>Economics of Agricultural Production and Farm Management</td>
<td>5%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
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<tr>
<td>602</td>
<td>Business Management, Finance, and Taxation</td>
<td>5%</td>
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<td>0%</td>
<td>0%</td>
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<tr>
<td>603</td>
<td>Market Economics</td>
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<td>0%</td>
<td>0%</td>
<td>0%</td>
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<tr>
<td>721</td>
<td>Insects and Other Pests Affecting Humans</td>
<td>5%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>Total</strong></td>
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<td><strong>0%</strong></td>
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</table>

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

<table>
<thead>
<tr>
<th>Year: 2013</th>
<th>Extension</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1862</td>
<td>1890</td>
</tr>
<tr>
<td>Plan</td>
<td>28.0</td>
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</tr>
</tbody>
</table>
V(D). Planned Program (Activity)

1. Brief description of the Activity

- Develop and deliver curriculum about 'The Ohio New and Small Farm College', an eight-week introductory course covering topics including production practices and requirements, marketing alternatives, the economics of land-use choices, the assessment of personal and natural resources, the identification of sources and assistance, and individual potential productivity/profitability.
- Develop and conduct 'Small Farm Conference(s)' and trade show(s) each year in at least one location in Ohio to potentially include 30-40 different seminars taught by Extension professionals and industry leaders focusing in the areas of: aquaculture, farm management, forages and pasture, livestock (exotic and traditional), natural resources, horticulture (fruits/vegetables), and organic production.
- Develop curriculum and teach tax education workshops for tax practitioners in partnership with the IRS and the Ohio Department of Taxation; completion of the tax education can result in Continuing Education credits for students.
- Enhance the adaptation of production techniques through utilization of on-farm research to work directly with producers to evaluate practices to enhance productivity and profitability.
- Conduct workshop training sessions for livestock haulers, food animal veterinarians, livestock producers, consultants and integrators.
- Prepare and distribute research-based educational materials in the areas of animal welfare and biosecurity through worksheets, factsheets, web-based sites, podcasts, and other emerging technologies.
- Offer 'Pesticide Applicator Training' (PAT), both private and commercial
- Offer 'Transitioning Your Farm Business to the Next Generation' workshops and 'Women in Agriculture' seminars.
- Offer beginner and advanced trainings and workshops for Ohio Volunteer Master Gardneners (MGVs) and Ohio Volunteer Certified Naturalists (OCVN).
- Conduct workshops, provide publications, and serve as a resource on bed bugs to business owners, community leaders and citizens of Ohio.

Under the 'Increasing Profitable Crop Yields' OSU Extension signature program:

- Increasing field crop yields through technology adoption;
- Producing high-value crops on small tracts of land;
• Growing alternative crops for bioenergy;
• Publication of the Crop Observation and Recommendation Network (CORN) newsletter;
• Crop production conference;
• Multiple regional / local agronomy meetings and workshops;
• Website development and maintenance;
• Local and on-farm research;
• Field days;
• Precision ag data management analysis and decision workshops;
• Develop educational programs and tools to improve the efficiency of nitrogen utilization to improve farm economics and reduce environmental impact.
• Develop a user-friendly manure nutrient credit spreadsheet

2. Brief description of the target audience

The target audience for efforts under the 'Enhancing Agriculture and the Environment' programs include:

• Ohio farm families
• Commercial green-industry companies
• Consumer horticulture advocates
• Commodity/farm advocacy groups
• Federal / state agricultural & environmental agencies
• State-wide consumer groups
• Volunteer groups
• Community leaders
• Business leaders
• Elected and appointed officials
• Non-government organizations
• New and small farmers
• Tax practitioners
• Certified Public Accountants
• Banks/Financial & Lending Institutions, especially those in rural communities
• Treasurer of State of Ohio

Included in the reporting of the NIFA planned program, 'Enhancing Agriculture and the Environment', OSU Extension has a number of programs that have more specific audiences, which are detailed separately below.

The target audience for "Increasing Profitable Crop Yields":

• Grain producers
• Fertilizer chemical retailers
• Input company representatives
• Crop advisory, agency soil and water conservation districts
• Natural Resources Conservation Service
• Ohio Department of Agriculture
• Environmental Protection Agency

The OSU Extension "Ohio Volunteer Master Gardener Program" targets the following audiences:

• Ohio citizens
• Community leaders and officials
• Master gardeners

eXtension "Ask a Master Gardener" - Ohio targets the following audiences:

• New and beginning gardeners
• Gardeners with distressed gardens, plants, new/unusual problems with plants and/or diseases

The "Ohio Certified Volunteer Naturalist" program targets the following individuals:

• Ohio citizens
• Community leaders and officials
• Certified naturalists.

OSU Extension programming on the topic of bed bugs targets the following audiences:

• Local and State Departments of Health
• Business owners
• Community leaders
• Government Officials
• Citizens of Ohio

3. How was eXtension used?

Through eXtension, OSUE launched 'Ask a Master Gardener (AaMGV) - Ohio', with a link on each county webpage and the main OSUE homepage. An icon was developed to increase visibility and recognition of the service to users. The functioning of the process was streamlined, sending clientele questions straight to the master gardener volunteers (MGVs) instead of being routed through question wranglers. During the months of May through August 2013, AaMGV responded to 65% of all Ohio "Ask an Expert" questions. Out of 1,396 total questions answered by OSUE professionals for those four months, Master Gardener Volunteers (MGVs) were responsible for 911 of the responses. All of this was accomplished with one Program Manager coordinating and training 93 MGVs in 34 counties. This program has been very successful, and is another example of how the education offered through Extension "gives back" in the form of volunteer hours from the MGVs. These volunteer hours allow Extension professionals to accomplish more and feel confident that clientele's questions are being expertly answered by MGVs as the majority of AaMGVs spend between 30 - 60 minutes of prep time per response.

V(E). Planned Program (Outputs)

1. Standard output measures

<table>
<thead>
<tr>
<th>Year</th>
<th>Direct Contacts Adults</th>
<th>Indirect Contacts Adults</th>
<th>Direct Contacts Youth</th>
<th>Indirect Contacts Youth</th>
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<tbody>
<tr>
<td>2013</td>
<td>Actual</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>2390977</td>
<td>737680</td>
<td>730</td>
<td>525</td>
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2. Number of Patent Applications Submitted (Standard Research Output)

<table>
<thead>
<tr>
<th>Patent Applications Submitted</th>
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<tbody>
<tr>
<td>Year</td>
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<tr>
<td>2013</td>
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</table>
3. Publications (Standard General Output Measure)

**Number of Peer Reviewed Publications**

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<tr>
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</tbody>
</table>

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

*Output Measure*

- number of volunteers involved in delivery and implementation of program

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
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</table>

**Output #2**

*Output Measure*

- number of multi-state partnerships

<table>
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<th>Actual</th>
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</thead>
<tbody>
<tr>
<td>2013</td>
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</table>

**Output #3**

*Output Measure*

- number of people completing the 'Transitioning Your Farm/Agricultural Business to the Next Generation' workshops

<table>
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<th>Year</th>
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</thead>
<tbody>
<tr>
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**Output #4**

*Output Measure*

- number of Crop Observation and Recommendation Network Newsletters distributed

<table>
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<th>Actual</th>
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<tbody>
<tr>
<td>2013</td>
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</table>
Output #5

Output Measure
• number of participants reached with agronomic information provided in regional/local Agronomy meetings

<table>
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<th>Year</th>
<th>Actual</th>
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<tbody>
<tr>
<td>2013</td>
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</table>

Output #6

Output Measure
• number of hits to website

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<tr>
<th>Year</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>380000</td>
</tr>
</tbody>
</table>

Output #7

Output Measure
• number of local/on-farm research project sites

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
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</thead>
<tbody>
<tr>
<td>2013</td>
<td>30</td>
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</tbody>
</table>

Output #8

Output Measure
• number of participants in local Field Days

<table>
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<tr>
<th>Year</th>
<th>Actual</th>
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<tbody>
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<td>2013</td>
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</table>

Output #9

Output Measure
• number of 'Weed Control Guide for Ohio and Indiana' distributed

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<th>Year</th>
<th>Actual</th>
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</thead>
<tbody>
<tr>
<td>2013</td>
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</tbody>
</table>

Output #10

Output Measure
• number of 'Corn, Soybean, Wheat and Alfalfa Field Guides' distributed

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
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</thead>
</table>
### V(G). State Defined Outcomes

#### V. State Defined Outcomes Table of Content

<table>
<thead>
<tr>
<th>O. No.</th>
<th>OUTCOME NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Number of agronomic crop, fruit and vegetable producers that demonstrate an increase in biosecurity knowledge and skills.</td>
</tr>
<tr>
<td>2</td>
<td>Number of food animal producers that increase their knowledge of how to mitigate animal biosecurity hazards and risks on their farm operations and agribusinesses due to livestock mortality.</td>
</tr>
<tr>
<td>3</td>
<td>Increased knowledge of current practices and emerging technology.</td>
</tr>
<tr>
<td>4</td>
<td>Number of youth shows / county fairs that implement animal ID or quality assurance programs.</td>
</tr>
<tr>
<td>5</td>
<td>Increase profitability for the food animal sector of the Ohio agricultural industry.</td>
</tr>
<tr>
<td>6</td>
<td>Number of Schedule &quot;F&quot; tax forms filed by tax practitioners that participated in OSU Income Tax Schools.</td>
</tr>
<tr>
<td>7</td>
<td>Number of farms using transitioning planning.</td>
</tr>
<tr>
<td>8</td>
<td>Number of Increasing Profitable Crop Yields participants that indicate they will implement new management practices based on information received at meetings</td>
</tr>
<tr>
<td>9</td>
<td>Number of crop production acres that will implement best management practices for nutrient management</td>
</tr>
<tr>
<td>10</td>
<td>Number of crop production acres that implement weed resistance management strategies</td>
</tr>
<tr>
<td>11</td>
<td>Number of Ohio crop acres where appropriate utilization of integrated pest management (IPM) practices occur</td>
</tr>
<tr>
<td>12</td>
<td>Number of individuals taught about disease identification, control and scouting or key weed control concepts</td>
</tr>
</tbody>
</table>
Outcome #1

1. Outcome Measures

   Number of agronomic crop, fruit and vegetable producers that demonstrate an increase in biosecurity knowledge and skills.

2. Associated Institution Types

   ● 1862 Extension

3a. Outcome Type:

   Change in Knowledge Outcome Measure

3b. Quantitative Outcome

   Year  Actual
   2013  3910

3c. Qualitative Outcome or Impact Statement

   Issue (Who cares and Why)
   Fruit and vegetable safety is a growing concern to both growers/ producers and consumers. The safety of our waterways with nutrient runoff from fertilizer and manure application is of major concern to citizens, tourists, business owners, and government officials.

   What has been done
   Good Agricultural Practice (GAP) programs have been developed and delivered to fruit and vegetable growers, educating participants on on-farm food safety practices that can help reduce the risk of produce contamination from biological components that exist on the farm. Presentations were given to different groups on 4R Nutrient Management & Ohio's Waterway, where participants gained a better understanding of soil-plant interactions in relationship to crop productivity & the risk edge-of-field for nutrient loss & subsequent consequences downstream.

   Results
   A total of 3,910 participants attended a total of 361 4R Nutrient Management meetings and presentations; 204 conversations on nutrient management and water quality-related issues took place in 2013, and soils and soil health were discussed in 119 conversations. Mass media including 47 newspaper articles, 17 radio programs, and 128 electronic postings reached an estimated 462,680 people on nutrient management and water quality information. Additionally, a webcast on 4R Nutrient Stewardship was produced in connection with the Livestock & Poultry Learning Center (archived at http://www.extension.org/pages/66384/the-4rs-of-nutrient-stewardship).

4. Associated Knowledge Areas

   KA Code  Knowledge Area
   112     Watershed Protection and Management
1. Outcome Measures

Number of food animal producers that increase their knowledge of how to mitigate animal biosecurity hazards and risks on their farm operations and agribusinesses due to livestock mortality.

2. Associated Institution Types

● 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>170</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**
Swine diseases cause economic losses to pork producers. Pork producers face daily challenges to maintain and improve the health of their herds. In the face of these challenges, pork producers are eager for information that can reduce their risk of disease.

**What has been done**
A meeting of the Ohio Swine Health Committee, made up of the State Veterinarian, Ohio swine veterinarians, OSU Extension employees, and pork producers recommended that a Swine Health Symposium be held to educate pork producers. The fifth annual symposium was held March 20, 2013 at the Der Dutchman Restaurant in Plain City.

**Results**
*Total attendance of 170 producers and industry affiliates.
*Sponsorships and in-kind donations from industry affiliates totaled $10,500.
*102 post-meeting evaluations were collected. Producers reported a minimum yearly economic benefit of $230,000 as a result of knowledge gained from attending.
*Educational resource materials and proceedings of the presentations were made available to attendees
4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>133</td>
<td>Pollution Prevention and Mitigation</td>
</tr>
<tr>
<td>307</td>
<td>Animal Management Systems</td>
</tr>
<tr>
<td>308</td>
<td>Improved Animal Products (Before Harvest)</td>
</tr>
<tr>
<td>315</td>
<td>Animal Welfare/Well-Being and Protection</td>
</tr>
<tr>
<td>402</td>
<td>Engineering Systems and Equipment</td>
</tr>
</tbody>
</table>

Outcome #3

1. Outcome Measures

   Increased knowledge of current practices and emerging technology.

2. Associated Institution Types

   ● 1862 Extension

3a. Outcome Type:

   Change in Knowledge Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>939</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

   Issue (Who cares and Why)
   Ohio’s agriculture industry is valued at more than $200 million dollars, but increasing input costs can have a negative effect on agriculture. Learning about new and emerging technologies and practices in agriculture allow Ohio farmers and agricultural business owners the opportunity to implement them into their business and ultimately save money.

   What has been done
   The Conservation Tillage Conference is an annual event that attracts 900 or more farmers, certified crop advisors, agribusiness representatives, and agribusiness owners who attend to learn about the latest technology and trends. Traditionally, Certified Crop Advisors can obtain continuing education units for certain sessions.

   Results
   Most participants at the Conservation Tillage Conference report that they gained useful knowledge that they plan to implement in this year's growing season and that they expect to see an increase in either their crop yield, see a cost savings, or both.
4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>112</td>
<td>Watershed Protection and Management</td>
</tr>
<tr>
<td>123</td>
<td>Management and Sustainability of Forest Resources</td>
</tr>
<tr>
<td>133</td>
<td>Pollution Prevention and Mitigation</td>
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<tr>
<td>205</td>
<td>Plant Management Systems</td>
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<td>216</td>
<td>Integrated Pest Management Systems</td>
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<td>307</td>
<td>Animal Management Systems</td>
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<td>308</td>
<td>Improved Animal Products (Before Harvest)</td>
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<tr>
<td>315</td>
<td>Animal Welfare/Well-Being and Protection</td>
</tr>
<tr>
<td>402</td>
<td>Engineering Systems and Equipment</td>
</tr>
<tr>
<td>403</td>
<td>Waste Disposal, Recycling, and Reuse</td>
</tr>
<tr>
<td>601</td>
<td>Economics of Agricultural Production and Farm Management</td>
</tr>
</tbody>
</table>

Outcome #4

1. Outcome Measures

Number of youth shows / county fairs that implement animal ID or quality assurance programs.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Increase profitability for the food animal sector of the Ohio agricultural industry.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>40</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement
Issue (Who cares and Why)
Detailed financial and production data is essential for dairy farmers to understand their cost of production, profitability, and competitive advantage.

What has been done
Detailed, on-farm financial analysis and dairy/crop enterprise evaluations were completed on 40 Ohio farms.

Results
Farmers were able to compare average on-farm data with the top 20% of their peers in the cohort group. For example, the average cost per cwt was $21.87; but those in the top 20% for profitability had a lower cost of $18.93 cwt. Net farm income per cow was $321 on average, however, the top 20% of farms averaged $1294 per cow.

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
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<tbody>
<tr>
<td>601</td>
<td>Economics of Agricultural Production and Farm Management</td>
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<tr>
<td>602</td>
<td>Business Management, Finance, and Taxation</td>
</tr>
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<td>603</td>
<td>Market Economics</td>
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Outcome #6

1. Outcome Measures
Number of Schedule "F" tax forms filed by tax practitioners that participated in OSU Income Tax Schools.

2. Associated Institution Types
- 1862 Extension

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

<table>
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<tr>
<th>Year</th>
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<tbody>
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<td>2013</td>
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3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The OSU Income Tax School program has been providing education for Income Tax Preparers since 1964. Focusing on new tax rules and regulations for the coming tax season, the OSU Income Tax School "prepares the preparers" for tax season. The tax school is designed for tax preparers with some experience preparing and filing federal tax returns for individuals and small...
businesses. Additionally, the OSU Tax School offers an Agricultural Tax Issues and Form Preparation Workshop concerning the special issues with farm tax returns.

**What has been done**
The OSU Tax Schools curriculum is offered 8 convenient locations throughout Ohio. Instruction focuses on tax law changes and on the problems faced in preparing tax returns. Highly qualified instructors explain and interpret tax regulations and recent changes in tax laws. New in 2013, the Agricultural Tax Issues and Form Preparation Workshop was offered as a webinar.

**Results**
*1,166 attorneys, Certified Public Accountants, Tax Preparers, bankers and lenders attended the 2013 OSU Tax Schools.
*212 attorneys, Certified Public Accountants, Tax Preparers, bankers and lenders attended the 2013 Ag Issues Workshops via webinar.
These tax preparers helped to file 88,272 Schedule "F" tax forms in 2013.

4. **Associated Knowledge Areas**

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
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<tbody>
<tr>
<td>602</td>
<td>Business Management, Finance, and Taxation</td>
</tr>
</tbody>
</table>

**Outcome #7**

1. **Outcome Measures**

   Number of farms using transitioning planning.

2. **Associated Institution Types**

   • 1862 Extension

3a. **Outcome Type:**

   Change in Condition Outcome Measure

3b. **Quantitative Outcome**

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>215</td>
</tr>
</tbody>
</table>

3c. **Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**
As farm and agricultural enterprise / businesses owners age, they need to develop a farm transfer plan and increase family communication regarding the process of transitioning the farm to the next generation.

**What has been done**
Four “Transferring the Farm to the Next Generation” workshops were held throughout 2013 with a total of 212 participants. A six month follow-up survey was conducted to discover whether or not the tools they learned during the workshop had been implemented.

Results
Families are beginning the process of transferring the farm to the next generation. 205 of the 212 participants in the "Transferring the Farm to the Next Generation" workshops indicated that they gained skills to develop a farm transfer plan and to increase family communication. In the 6-month follow-up survey, past participants indicated they made great strides in putting some of the tools into action that they learned during the workshop. Some participants were farther along than others in their plan, and 7 participants had decided to postpone their plan for various reasons.

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>601</td>
<td>Economics of Agricultural Production and Farm Management</td>
</tr>
<tr>
<td>602</td>
<td>Business Management, Finance, and Taxation</td>
</tr>
<tr>
<td>603</td>
<td>Market Economics</td>
</tr>
</tbody>
</table>

Outcome #8

1. Outcome Measures

   number of Increasing Profitable Crop Yields participants that indicate they will implement new management practices based on information received at meetings

2. Associated Institution Types

   ● 1862 Extension

3a. Outcome Type:

   Change in Action Outcome Measure

3b. Quantitative Outcome

   Year  Actual
   2013  18350

3c. Qualitative Outcome or Impact Statement

   Issue (Who cares and Why)
   The target audience for the 'Increasing Profitable Crop Yields' programming is farmers. The ultimate outcome of the program is adaption of management techniques that will increase farm profitability.

   What has been done
Topics at agronomy programs focus on maximizing production, integrated pest management, reducing pesticide resistance, understanding social impacts of agricultural practices, and best management adoption.

**Results**

Program surveys using paper instruments and audience response technology (clickers) show 87% of producers and professional agronomists learned at least one new idea that will potentially increase farm profitability.

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>102</td>
<td>Soil, Plant, Water, Nutrient Relationships</td>
</tr>
<tr>
<td>133</td>
<td>Pollution Prevention and Mitigation</td>
</tr>
<tr>
<td>205</td>
<td>Plant Management Systems</td>
</tr>
<tr>
<td>213</td>
<td>Weeds Affecting Plants</td>
</tr>
<tr>
<td>402</td>
<td>Engineering Systems and Equipment</td>
</tr>
<tr>
<td>601</td>
<td>Economics of Agricultural Production and Farm Management</td>
</tr>
</tbody>
</table>

**Outcome #9**

1. **Outcome Measures**

   number of crop production acres that will implement best management practices for nutrient management

2. **Associated Institution Types**

   - 1862 Extension

3a. **Outcome Type:**

   Change in Action Outcome Measure

3b. **Quantitative Outcome**

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>825000</td>
</tr>
</tbody>
</table>

3c. **Qualitative Outcome or Impact Statement**

   **Issue (Who cares and Why)**

   Excess or lost soil-applied plant nutrients can cause water quality impairment when they enter Ohio's streams, rivers, and lakes. Municipal and recreational users of Ohio's water can be affected by declining water quality.

   **What has been done**
OSU Extension teaches landowners and farmers production practices to mitigate the potential losses of plant nutrients to Ohio's waters. Education occurs at workshops, summer field days, conferences, and one-on-one consultations.

**Results**
43% of workshop participants report they will continue their current farming practices because they match university recommendations, 41% will change 1 or more current farming practices, 22% will adopt a new idea/practice learned at the workshop, 16% will recommend changes of 1 or more farm practices to clientele/customers, 19% will recommend adopting a new idea/practice to clientele/customers.

**4. Associated Knowledge Areas**

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>102</td>
<td>Soil, Plant, Water, Nutrient Relationships</td>
</tr>
<tr>
<td>112</td>
<td>Watershed Protection and Management</td>
</tr>
<tr>
<td>133</td>
<td>Pollution Prevention and Mitigation</td>
</tr>
</tbody>
</table>

**Outcome #10**

1. **Outcome Measures**
   number of crop production acres that implement weed resistance management strategies

2. **Associated Institution Types**
   ● 1862 Extension

3a. **Outcome Type:**
   Change in Action Outcome Measure

3b. **Quantitative Outcome**

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>3750000</td>
</tr>
</tbody>
</table>

3c. **Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**
Weed resistance causes crop yield loss and loss of applied herbicide products (due to ineffectiveness), which require a shift in weed control systems. Implementation of multiple modes of herbicide action, tillage, seed bank reduction and other integrated weed management practices can reduce weed impacts and the cost of controlling weed to farmers; this cost savings is consequently passed on to consumers.

**What has been done**
Through research and educational programs, a discussion of re-introducing primarily glyphosate-based pre-emergent herbicides into soybean production systems has encouraged different modes of actions. Discussion about weed size has focused on application timing to target smaller weeds with adequate rates to achieve control.

**Results**
Greater than 80% of Ohio's licensed private pesticide applicators have increased the efficiency of their applications by better timing, pest identification and correct product choice to manage resistant weed populations. Additionally, 5499 farmers attended pesticide applicator recertification sessions and received training on crop weed control strategies, an update on new herbicide products, and information of the efficacy of various herbicides. 712 employees of commercial ag businesses received training on weed control. 3200 weed control guides were sold, 2000 Marestail fact sheets were distributed. 10 Weed Control videos were produced and posted to http://agcrops.osu.edu

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>213</td>
<td>Weeds Affecting Plants</td>
</tr>
</tbody>
</table>

**Outcome #11**

1. **Outcome Measures**

   number of Ohio crop acres where appropriate utilization of integrated pest management (IPM) practices occur

2. **Associated Institution Types**

   ● 1862 Extension

3a. **Outcome Type:**

   Change in Condition Outcome Measure

3b. **Quantitative Outcome**

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>500000</td>
</tr>
</tbody>
</table>

3c. **Qualitative Outcome or Impact Statement**

   **Issue (Who cares and Why)**
   Utilizing integrated pest management (IPM) practices protect cropland yields from insects, diseases, and weeds. This has environmental and economic benefits.

   **What has been done**
   The Crop Observation and Recommendation Network (CORN) newsletter is distributed to over 3700 subscribers weekly via e-mail. 67% of the articles in 2013 delivered IPM information and strategies to protect crop yields from damage and economic loss.
Results
In 2013, there was a 23% increase in the CORN newsletter subscription over 2012 subscription rates.

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>205</td>
<td>Plant Management Systems</td>
</tr>
<tr>
<td>213</td>
<td>Weeds Affecting Plants</td>
</tr>
<tr>
<td>216</td>
<td>Integrated Pest Management Systems</td>
</tr>
</tbody>
</table>

Outcome #12

1. Outcome Measures

number of individuals taught about disease identification, control and scouting or key weed control concepts

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>7111</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Practical agronomic skills of pest identification, risk assessment knowledge, and control of strategies are essential for servicing Ohio's cropland needs. This knowledge is of immediate benefit to farmers and Certified Crop Advisors (CCA), and of secondary benefit to farm product consumers (i.e. general public).

What has been done
*900 individuals attended the 2013 Conservation Tillage Conference, a 2-day educational conference attended by Certified Crop Advisors (for renewal credits), farmers, ag business professional, etc.
*6211 farmers & ag business employees attended pesticide applicator recertification sessions, receiving training on crop weed control strategies, an update on new herbicide products, & info of efficacy of various herbicides
*Weed surveys conducted by OSUE Educators & Field Specialists
Results
Marestail is a difficult weed to control in soybeans. To control this weed, it is essential to follow OSUE research-based recommendations. Field weed surveys conducted by OSUE personnel annually indicate a 16% improvement in 2013 in the control of this weed from 2012. The potential value to Ohio farmers can be calculated at $6.8 million for OSUE soybean weed control research and education.

4. Associated Knowledge Areas

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<td>213</td>
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</tr>
<tr>
<td>216</td>
<td>Integrated Pest Management Systems</td>
</tr>
</tbody>
</table>

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

After only (post program) assessments were used as the evaluation study and data collection method in 2013 for assessing the 'Enhancing Agriculture and the Environment' planned program. Evaluation is commonly done following workshops and formal teaching events. Here, we would like to share results regarding one of the highlight conferences hosted by OSU Extension yearly.

The Conservation Tillage Conference (CTC) is an annual event that attracts 900 or more farmers, certified crop advisors, agribusiness representatives, and agribusiness owners who attend to learn about the latest technology and trends. In 2013, the event was evaluated using over 800 audience response clickers.

After attending the CTC, the following expectations about soybean yields per acre per year were shared:

- 71% of participants indicated they expected to increase their soybean yields by 1 - 2 bushels
- 16% expected a 3 - 5 bushel increase
• 11% expected a 5+ bushel increase
• 8% indicated no expected increase in soybean yields/acre/year

After attending the CTC, the following expectations about corn yields per acre per year were shared:

• 36% expected a 3 bushel increase
• 31% expected a 1 - 2 bushel increase
• 18% expected a 4 bushel increase
• 10% expected a bushel increase
• 7% expected no increase

Key Items of Evaluation