Research Verification

V(A). Planned Program (Summary)

1. Name of the Planned Program

Research Verification

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>307</td>
<td>Animal Management Systems</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Total

100% 0%

V(C). Planned Program (Inputs)

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

<table>
<thead>
<tr>
<th>Year: 2007</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>0.0</td>
<td>0.5</td>
</tr>
<tr>
<td>Actual</td>
<td>0.0</td>
<td>0.5</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Extension</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smith-Lever 3b &amp; 3c</td>
<td>1890 Extension</td>
</tr>
<tr>
<td>0</td>
<td>11917</td>
</tr>
<tr>
<td>1862 Matching</td>
<td>1890 Matching</td>
</tr>
<tr>
<td>0</td>
<td>21845</td>
</tr>
<tr>
<td>1862 All Other</td>
<td>1890 All Other</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Develop management recommendations
- Monitor commercial catfish ponds
- Publish results
- Give presentations

2. Brief description of the target audience

- Arkansas catfish farmers
- Research scientists
- County Extension agents

Report Date 12/03/2009
V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

<table>
<thead>
<tr>
<th></th>
<th>Direct Contacts Adults</th>
<th>Indirect Contacts Adults</th>
<th>Direct Contacts Youth</th>
<th>Indirect Contacts Youth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>Target</td>
<td>Target</td>
<td>Target</td>
<td>Target</td>
</tr>
<tr>
<td>Plan</td>
<td>250</td>
<td>3800</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2007</td>
<td>250</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

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

Patent Applications Submitted

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
<td>0</td>
</tr>
<tr>
<td>2007</td>
<td>0</td>
</tr>
</tbody>
</table>

Patents listed

3. Publications (Standard General Output Measure)

<table>
<thead>
<tr>
<th>Number of Peer Reviewed Publications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extension</td>
</tr>
<tr>
<td>Plan</td>
</tr>
<tr>
<td>2007</td>
</tr>
</tbody>
</table>

V(F). State Defined Outputs

Output Target

Output #1

Output Measure
- Number of Publications

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Output #2

Output Measure
- Number of Presentations

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>
V(G). State Defined Outcomes

<table>
<thead>
<tr>
<th>O No.</th>
<th>Outcome Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Number of commercial Arkansas baitfish farmer learning about Extension recommendations and program results</td>
</tr>
<tr>
<td>2</td>
<td>Number of Commercial Arkansas catfish farmers adopting Extension recommendations</td>
</tr>
<tr>
<td>3</td>
<td>Number of commercial Arkansas catfish farmers increasing efficiency and profitability</td>
</tr>
</tbody>
</table>
Outcome #1

1. Outcome Measures
   Number of commercial Arkansas baitfish farmer learning about Extension recommendations and program results

2. Associated Institution Types
   • 1890 Extension

3a. Outcome Type:
   Change in Knowledge Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>90</td>
<td>50</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Numerous commercial baitfish farmers are still hesitant to feed their baitfish large quantities of commercial feed because they are worried that it may deteriorate the ponds water quality and increase fish mortalities even though scientific research has shown that feeding baitfish improve yields and profit.

What has been done
Three highly fed commercial golden shiner ponds equipped with a number of electric paddlewheel aerators and oxygen monitoring systems were monitored throughout 2007.

Results
Despite the relatively high feeding rates reaching over 20 lb/ac/day, water quality parameters such as dissolved oxygen concentration, total ammonia nitrogen, and pH remained within safe limits for golden shiner production. The nightly paddlewheel aeration prevented oxygen depletion. Yields reach 800 lb/ac. The farmers where the study was conducted decided to expand the feeding and aeration recommendations to most of his farm in 2008.

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>307</td>
<td>Animal Management Systems</td>
</tr>
</tbody>
</table>

Outcome #2

1. Outcome Measures
   Number of Commercial Arkansas catfish farmers adopting Extension recommendations

2. Associated Institution Types
   • 1890 Extension

3a. Outcome Type:
   Change in Action Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Numerous commercial baitfish farmers are still hesitant to feed their baitfish large quantities of commercial feed because they are worried that it may deteriorate the ponds water quality and increase fish mortalities even though scientific research has shown that feeding baitfish improve yields and profit.

What has been done
Highly fed commercial golden shiner ponds equipped with a number of electric paddlewheel aerators and oxygen monitoring systems were monitored throughout 2007.
Results

The cooperating farmer in the study adopted Extension recommendations on a selected number of ponds.

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>307</td>
<td>Animal Management Systems</td>
</tr>
</tbody>
</table>

Outcome #3

1. Outcome Measures
   Number of commercial Arkansas catfish farmers increasing efficiency and profitability

2. Associated Institution Types
   • 1890 Extension

3a. Outcome Type:
   Change in Condition Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Numerous commercial baitfish farmers are still hesitant to feed their baitfish large quantities of commercial feed because they are worried that it may deteriorate the ponds water quality.

What has been done
Highly fed commercial golden shiner ponds equipped with a number of electric paddlewheel aerators and oxygen monitoring systems were monitored throughout 2007.

Results
The cooperating farmer in the study increased fish yields in ponds where Extension recommendations were adopted.

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>307</td>
<td>Animal Management Systems</td>
</tr>
</tbody>
</table>

V(H). Planned Program (External Factors)

External factors which affected outcomes
- Other (Cash flow and fish supply on the cooperating farm catfish prices and demand operating costs and cash flow baitfish demand)

Brief Explanation

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

1. Evaluation Studies Planned
   - Before-After (before and after program)
   - During (during program)

Evaluation Results
Key Items of Evaluation