V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Competitive Agricultural Systems

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>201</td>
<td>Plant Genome, Genetics, and Genetic Mechanisms</td>
<td>5%</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>205</td>
<td>Plant Management Systems</td>
<td>30%</td>
<td>30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>216</td>
<td>Integrated Pest Management Systems</td>
<td>5%</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>307</td>
<td>Animal Management Systems</td>
<td>40%</td>
<td>35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>311</td>
<td>Animal Diseases</td>
<td>0%</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>601</td>
<td>Economics of Agricultural Production and Farm Management</td>
<td>20%</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>606</td>
<td>International Trade and Development</td>
<td>0%</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

V(C). Planned Program (Inputs)

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

<table>
<thead>
<tr>
<th>Year: 2009</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>14.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Actual</td>
<td>105.0</td>
<td>0.0</td>
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</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Extension</th>
<th>Research</th>
<th>Smith-Lever 3b &amp; 3c</th>
<th>Hatch</th>
<th>Evans-Allen</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1890 Extension</td>
<td>0</td>
<td>2250005</td>
<td>0</td>
</tr>
<tr>
<td>1862 Matching</td>
<td>1890 Matching</td>
<td>0</td>
<td>2119796</td>
<td>0</td>
</tr>
<tr>
<td>1862 All Other</td>
<td>1890 All Other</td>
<td>0</td>
<td>3051343</td>
<td>0</td>
</tr>
</tbody>
</table>

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Evaluate and develop technologies and production strategies that will enhance production efficiencies and industry profitability.

- Conduct research to improve productivity, reduce costs, reduce nutrient output on livestock waste, improve profitability, and increase production of safe, wholesome, and nutritious products.

- Increase producers understanding of their role in producing a wholesome, safe food product.
• Improve the yielding ability and quality of the agronomic crops uniquely adapted to Kansas and the Central Plains, through plant breeding and genetics.

• Develop integrated, sustainable cropping systems, which will enhance the intensity, diversity and profitability of crop production.

• Improve resource use efficiency (water, soil and inputs) within diverse and sustainable cropping systems.

• Enhance the development of the horticulture industry in Kansas.

• Manage afforestation and reforestation of Kansas to promote biodiversity, wildlife habitat and forest products.

• Assist producers in improving the economic efficiency of crop and livestock production enterprises and the marketing of products through research and educational programs.

• Contribute to the development of extensive and intensive animal production and management systems that are economically viable, ecologically sustainable, and compatible with safe and humane treatment of animals.

• Conduct applied research and educational programs, which will assist managers in assessing risk and developing risk management strategies for their farm, ranch, or agribusiness.

• Provide educational programs that assist farm managers in addressing key and emerging issues in the agricultural production sector.

• Develop decision support systems to meet the needs of large- and small-scale farmers and agribusinesses.

• Conduct applied research and educational programs, which will assist agribusiness managers, including producer-owned cooperatives, improve the profitability and sustainability of their businesses.

• Provide one-on-one financial, economic and farm business planning and management assistance through the Kansas Farm Management Association program.

• Provide tools and education for improved farm-level record keeping and analysis, including whole-farm and enterprise analysis and benchmarking.

• Develop tools and educational programs to assist producer groups in evaluating bio-fuel alternatives.

• Develop and disseminate economic-based information that will facilitate business development focused on value-added marketing and processing of agricultural products.

• Develop case studies on cooperatives and value-added ventures.

2. Brief description of the target audience

• Farm and ranch managers

• Agricultural producers and agribusinesses throughout the food industry supply chain

• Farm input suppliers, lenders, Extension educators, and policy makers

V(E). Planned Program (Outputs)

1. Standard output measures

<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>Plan</td>
<td>10000</td>
<td>0</td>
<td>1000</td>
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</tr>
<tr>
<td>Actual</td>
<td>27900</td>
<td>0</td>
<td>1200</td>
<td>0</td>
</tr>
</tbody>
</table>

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

Year: 2009  
Plan: 3  
Actual: 2

Patents listed
Enhancement of Non-Endogenous siRNA Molecules Using Host-Delivered RNAi Strategy; Spray Application Equipment

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

<table>
<thead>
<tr>
<th></th>
<th>Extension</th>
<th>Research</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
<td>15</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Actual</td>
<td>15</td>
<td>25</td>
<td>40</td>
</tr>
</tbody>
</table>

V(F). State Defined Outputs

Output Target

Output #1
Output Measure
- Number of individuals participating in programs

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>10000</td>
<td>12000</td>
</tr>
</tbody>
</table>

Output #2
Output Measure
- Number of new/improved varieties, inbreds, germplasm developed and released

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

Output #3
Output Measure
- Number of educational events (e.g., meetings, demonstrations, field days, press releases, and distributed publications) delivered

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>650</td>
<td>1000</td>
</tr>
</tbody>
</table>

Output #4
Output Measure
- Number of producers engaged in one-on-one consultations through Kansas Farm Management Association or Farm Analyst programs

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>3000</td>
<td>3087</td>
</tr>
</tbody>
</table>
### 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 livestock producers who demonstrate best management practices (BMPs) including genetic selection, reproduction, nutrition, health, animal care and well-being, livestock safety and quality, environmental management, and optimal marketing strategies</td>
</tr>
<tr>
<td>2</td>
<td>Number of Kansas farms and ranches increasing awareness of financial performance</td>
</tr>
<tr>
<td>3</td>
<td>Number of acres planted to KAES-developed materials or materials derived from KSU varieties, inbreds, or germplasm</td>
</tr>
<tr>
<td>4</td>
<td>Number of crop producers who adopted BMPs</td>
</tr>
<tr>
<td>5</td>
<td>Number of crop acres using soil testing as a basis for nutrient applications</td>
</tr>
<tr>
<td>6</td>
<td>Percent of producers demonstrating improvement of Kansas ground and surface water with respect to nutrient loads</td>
</tr>
<tr>
<td>7</td>
<td>Number of soil samples evaluated on Kansas crop acreage</td>
</tr>
<tr>
<td>8</td>
<td>Changes in average or typical observed cropping systems, rotations, and crops</td>
</tr>
<tr>
<td>9</td>
<td>Hours and activities reported annually by Master Gardener volunteers</td>
</tr>
<tr>
<td>10</td>
<td>Reduced number of planned pesticide applications by pecan producers</td>
</tr>
</tbody>
</table>
Outcome #1

1. Outcome Measures

   Number of livestock producers who demonstrate best management practices (BMPs) including genetic selection, reproduction, nutrition, health, animal care and well-being, livestock safety and quality, environmental management, and optimal marketing strategies

2. Associated Institution Types

   ● 1862 Extension
   ● 1862 Research

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>2009</td>
<td>750</td>
<td>300</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

   **Issue (Who cares and Why)**
   Volatility is becoming the norm for livestock producers. Input costs and market prices continue to challenge producers' ingenuity and resourcefulness in order to maintain their business operations. Compared to historical prices, meat and milk prices appeared to be at reasonable levels throughout 2009; however, input costs appear to have established a new plateau with corn markets following oil prices instead of being driven by the demand as feed ingredient. Fortunately, productivity for all livestock industries continues to set new records and exceed previous benchmarks, which is a testament to the quality of producer remaining in our industries. These levels of productivity have become a necessity to lower cost of production as much as possible.

   **What has been done**
   Researchers at Kansas State University conducted numerous research trials to determine the optimal feeding level and duration of feeding of distillers' grain for swine, dairy, and beef cattle to maximize the economic benefit while minimizing the negative consequences. We also researched methods of handling distillers' grain to provide producers with options to increase their distillers' grain use. Extension specialists educated producers on the research results through field demonstrations, conferences, news releases, magazine articles, and trade publications. Extension specialists and local agents also helped producers learn how to adapt these research results to producer's individual operations through one-on-one consultation.

   **Results**
   In a partnership with Iowa State University, we made BRANDS, a beef ration formulation package, available to all extension agents in Kansas with a livestock interest. Trainings were conducted in person and via webinars to increase agent comfort level in using this tool to help beef producers lower their feed cost with prudent, effective supplementation programs and forage management systems. Agents in turn have worked one-on-one with local producers to use this program to lower feed cost. One agent related that BRANDS brought producers to her that had never used Extension before, greatly increasing our reach and impact.

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>
<tr>
<td>601</td>
<td>Economics of Agricultural Production and Farm Management</td>
</tr>
</tbody>
</table>
Outcome #2

1. Outcome Measures

Number of Kansas farms and ranches increasing awareness of financial performance

2. Associated Institution Types

● 1862 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>2009</td>
<td>3000</td>
<td>3161</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The state of the economy, along with volatile commodity and input prices, make business planning in agriculture increasingly difficult and raises the stakes of each decision a producer must make.

What has been done
There were 9,115 face-to-face contacts with 2,326 Kansas Farm Management Association (KFMA) members during on-farm visits or one-on-one meetings at the local extension office. Topics included improved record keeping and use of records, income planning and management, marketing decisions, equipment and other capital asset purchase/lease decisions, and transition/ succession and estate planning. Whole-farm analyses (1,909) were completed for comparative analysis and improved decision making. The analysis reports include information on the current year, along with a trend analysis of the operation for the previous five years.

Results
Each of these KFMA members gained increased awareness of the financial performance of their farm operation and of Kansas agriculture. Out of the total analyses completed, 1,585 were used in completing the KFMA summary books and the information made available to the public through the KFMA website (www.agmanager.info/kfma) and through other avenues, making this information available to all individuals.

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>
</tbody>
</table>

Outcome #3

1. Outcome Measures

Number of acres planted to KAES-developed materials or materials derived from KSU varieties, inbreds, or germplasm

2. Associated Institution Types

● 1862 Research
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>2009</td>
<td>7500000</td>
<td>7500000</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Kansas Agricultural Experiment Station (KAES) develops new varieties and releases improved germplasm of wheat, soybeans, grain sorghum and canola. New varieties can benefit Kansas farmers directly and new germplasm gives other breeders, and ultimately farmers the advantage of KAES research.

What has been done

No new varieties were released in the past year, but new lines were increased to usable quantities in anticipation of release.

Results

KAES varieties and germplasm are used extensively by Kansas farmers either directly from a KAES developed variety or indirectly from enhanced germplasm in varieties or hybrids developed by other entities.

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>201</td>
<td>Plant Genome, Genetics, and Genetic Mechanisms</td>
</tr>
</tbody>
</table>

Outcome #4

1. Outcome Measures

Number of crop producers who adopted BMPs

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Number of crop acres using soil testing as a basis for nutrient applications

2. Associated Institution Types

- 1862 Extension
- 1862 Research

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>2009</td>
<td>350000</td>
<td>400000</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**
Phosphorus is a critical nutrient for crop production in Kansas state-wide. More than 50% of the 20 million crop acres in Kansas would be expected to respond to P fertilizers, but the remaining 50% would not. Soil testing can help allocate production resources to minimize production costs and minimize P runoff to surface waters.

**What has been done**
During the 2009 crop year a number of field experiments were conducted to evaluate N and P fertilizer products, specific additives designed to reduce nutrient loss or enhance nutrient availability, and methods of fertilizer application for corn, sorghum, soybeans and wheat.

The results from this applied research show some marked differences in the performance of products and application methods in different locations in Kansas.

**Results**
In general, products claiming to enhance the availability of soil or fertilizer phosphorus did not perform. The use of these products with wheat or corn across a range of soil conditions failed to increase P uptake or crop yield. With the cost of these products ranging from $2 to $5 per acre, knowledge of this lack of efficacy can save Kansas farmers substantial sums.

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
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</thead>
<tbody>
<tr>
<td>205</td>
<td>Plant Management Systems</td>
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</tbody>
</table>

Outcome #6

1. Outcome Measures

Percent of producers demonstrating improvement of Kansas ground and surface water with respect to nutrient loads

2. Associated Institution Types

- 1862 Extension
- 1862 Research

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>2009</td>
<td>5</td>
<td>5</td>
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</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**
Access to water for drinking, recreational and aquatic life habitat, and groundwater recharge as well as irrigation, livestock and industrial uses.

**What has been done**
Best Management Practices incorporated: Grass buffers, berms, adjusted animal numbers and sizes, abandoned pens, relocated pens, resized pens, cleaned and reshaped pens, sediment basins, lagoons, waste storage structures, and manure management.

Results
Animal feed operations that implemented Best Management Practices (BMPs) to reduce pollution potential: 111 producers; 23,103 animal units.
Crop plans: 14,991 acres on 90 farms

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>205</td>
<td>Plant Management Systems</td>
</tr>
</tbody>
</table>

Outcome #7

1. Outcome Measures

Number of soil samples evaluated on Kansas crop acreage

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Changes in average or typical observed cropping systems, rotations, and crops

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Hours and activities reported annually by Master Gardener volunteers

2. Associated Institution Types

- 1862 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>2009</td>
<td>75000</td>
<td>85491</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Extension Master Gardeners are a vital part of K-State Research and Extension. Donating time in return for horticultural training, Extension Master Gardeners help extension agents meet the need for horticultural information in their communities. The Master Gardener program is designed to provide trained volunteers to help meet that need at minimal cost.

What has been done
The means of providing this information is diverse including horticultural 'hotlines,' demonstration gardens, working

garden shows, public presentations, and providing tours. Extension Master Gardeners require continual education

in best management practices, conservation of natural resources, waste management, integrated pest

management, and identification and selection of proper plant materials for healthy people, plants, and the

environment.

**Results**

Extension Master Gardeners donated more than 85,000 hours with a value of more than $1.5 million in 2009.

Though most Kansas EMG groups only require 40 hours of volunteer time the year of training and less for every

year thereafter, our EMGs averaged more than 74 hours of volunteer time during 2009. This level of enthusiasm

and commitment not only impacts our volunteer projects but often results in our EMGs influencing family, friends,

and neighbors to use proven horticultural practices. Homeowners sometimes over-fertilize and often misdiagnose

problems in their landscape and garden resulting in overuse of unneeded or ineffective products. By providing

timely, accurate information, our Master Gardeners influence our clientele to use less and more effective inputs

resulting in better results and a savings of time and money. Using less fertilizers and pesticides also helps protect

the environment.

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>205</td>
<td>Plant Management Systems</td>
</tr>
</tbody>
</table>

**Outcome #10**

1. **Outcome Measures**

   Reduced number of planned pesticide applications by pecan producers

2. **Associated Institution Types**

   - 1862 Extension
   - 1862 Research

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>2009</td>
<td>(No Data Entered)</td>
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</tbody>
</table>

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

   **Issue (Who cares and Why)**
   Pecan producers in Kansas, Missouri, and surrounding states look to the Pecan Experiment Field to provide

   research-based answers to production questions. The applied pecan research program at K-State is focused on

   developing production systems for both native pecan groves and orchards of improved cultivars.

   **What has been done**
   To ensure profitability of new orchards, landowners seek research-based information on cultivar selection, tree

   culture, and pest management. Extension bulletins and fact sheets are developed to answer common questions

   asked by landowners starting new pecan orchards. New research-based information is delivered to growers during

   field days and through newsletters. Native pecan producers are encouraged to regenerate their groves by planting

   new pecan orchards in open area within and adjacent to existing native groves.

   **Results**
   Armed w/area-wide data obtained from pecan weevil traps, many producers cancelled pesticide applications, thus

   zero applications.
Success Story: "Over 12 years ago, two young men (ages 20 and 17) came to me with questions about improving their father's native pecan grove. I set up a time to visit their farm and to advise them on the steps I would take to increase nut production on their farm. We spent half a day walking the groves, stopping to talk about individual trees or my philosophy for native grove management. As the afternoon turned into early evening I was invited into their home for the evening meal. It was only then I discovered that I had been welcomed into a Mennonite home. The Mennonite community has a general distrust for the secular world, especially college-educated professor types. But somehow I was invited into their world (must have been the beard and overalls). Over the years, I returned to their farm to check the progress being made in the native pecan grove. They had taken every suggestion I had made and were beginning to see their nut crops increase. Soon, I was answering questions about pest management and buying harvest equipment. I also attended their weddings and held their newborn children. As their young families grew, so grew their commitment to the pecan industry. They now manage over 300 acres of native pecans. Building trust through strong personal relationships is important for reaching the Mennonite community. I regularly receive letters or phone calls for Mennonite families across the country with questions on nut trees or growing trees in general. I am now part of their social network and someone they can trust."

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>205</td>
<td>Plant Management Systems</td>
</tr>
<tr>
<td>216</td>
<td>Integrated Pest Management Systems</td>
</tr>
<tr>
<td>601</td>
<td>Economics of Agricultural Production and Farm Management</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
- Competing Programmatic Challenges
- Other (Technological change)

Brief Explanation

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

1. Evaluation Studies Planned

- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Comparisons between program participants (individuals, group, organizations) and non-participants

Evaluation Results

We are choosing the option to skip this section. We've recently contracted with the Office of Educational Innovation and Evaluation to work with our Program Focus Teams and strengthen our evaluation skills.

Key Items of Evaluation

Note: A flat logic model does not convey the continuous feedback loop and the recycling that occurs from issue identification through research outputs/outcomes back into extension education on to change in condition and restarting issue identification.