V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Global Food Security and Hunger

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>20%</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>204</td>
<td>Plant Product Quality and Utility (Preharvest)</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>205</td>
<td>Plant Management Systems</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>212</td>
<td>Pathogens and Nematodes Affecting Plants</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>213</td>
<td>Weeds Affecting Plants</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>216</td>
<td>Integrated Pest Management Systems</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</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>Actual</td>
<td>0.0</td>
<td>0.0</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>Hatch</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1862 Matching</td>
<td>1890 Matching</td>
</tr>
<tr>
<td>0</td>
<td>0</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

This area includes the following activities:

- Conduct discovery research on plants and plant systems using genomics, metabolomics, and proteomics tools;
- Develop improved crop varieties using traditional and genomic approaches;
- Introduce/discover new plants for food use and the green industry;
- Develop systems for production of plants for biofuels;
- Seek new uses for plants and plant byproducts;
- Develop production systems for organic farmers;
• Develop diagnostic techniques for indigenous and introduced pathogens;
• Partner with industry;
• Develop sustainable production systems for both large scale and limited resource farmers;
• Enhance IPM programs through new techniques and strategies;
• Set up applied research/demonstration plots;
• Write papers for scientific community;
• Prepare publications for grower and homeowner audiences;
• Develop Web sites to deliver information to grower and homeowner audiences;
• Conduct workshops, meetings, and other focused educational programs for farmers, commodity groups, and industry.

This plan of work includes broad and extensive research and extension programs. NC Agricultural Research Service scientists will conduct research projects to study methods to improve the efficiency of animal production. Research will focus on methods to improve reproductive performance, nutrient utilization, and genetic influence on growth and reproduction. Scientists will also work to improve animal management systems, decrease the incidence of animal diseases and parasites (external and internal) and improve the management of animal and agricultural pests. Species and commodity groups included in this plan of work are also very broad and include poultry such as turkeys, broiler chickens, and table-egg chickens. The plan of work also includes swine, fish such as flounder, and cattle such as beef and dairy, and numerous pests such as house flies. Research will include many phases of commodity production such as meat and dairy goats, chicken breeders (both broiler and table egg birds), commercial broilers (commercial refers to those animals produced for meat), breeder turkeys, commercial turkeys, swine breeders, commercial swine, all phases of aquaculture and beef and dairy production. Disciplines that will be involved include nutrition, physiology, reproductive physiology, genetics, virology, bacteriology, microbiology, mycology, entomology, and many animal management systems such as grazing and forage management programs, hatchery management, feeding and drinking water systems, litter and bedding management, lighting programs, and breeder selection and management. A very important part of this plan of work is to transfer technology and knowledge to our stakeholders and clientele. Therefore, an extensive outreach effort through Cooperative Extension will be conducted by field and campus based faculty, who are based on-site as well as being located across the state and based in local communities. Stakeholders and clientele will be directly engaged in many ways, including workshops, conferences, discussion groups, one-on-one teaching, demonstrations, field days, short-courses, continuing education classes, and scientific meetings. Indirect methods to reach stakeholders and clientele will include long-distance education, newsletters, web sites, newspaper releases, television and radio programs, trade journals, scientific journals, and popular press articles. Participants and programs will be evaluated at least annually for success, progress, and effectiveness. Special educational programs focused on limited resource farmers will continue to be a priority for NC A&T focused Extension efforts in pasture based production systems, aquaculture, and alternative breeds.

2. Brief description of the target audience

Target audiences are the scientific community, regulatory agencies, agricultural chemical companies, agribusiness, commercial and limited resource farmers, new and part-time farmers, homeowners, consultants, news media, general public, non-governmental organizations, and other public agency staff.

V(E). Planned Program (Outputs)

1. Standard output measures

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2009</th>
<th>2009</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct Contacts Adults</td>
<td>Indirect Contacts Adults</td>
<td>Direct Contacts Youth</td>
<td>Indirect Contacts Youth</td>
</tr>
<tr>
<td>Plan</td>
<td>(NO DATA ENTERED)</td>
<td>(NO DATA ENTERED)</td>
<td>(NO DATA ENTERED)</td>
<td>(NO DATA ENTERED)</td>
</tr>
<tr>
<td>Actual</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

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

Patent Applications Submitted

Year: 2009
Plan: 0
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications
V(F). State Defined Outputs

Output Target

Output #1

Output Measure

• {No Data Entered}
V(G), State Defined Outcomes

V. State Defined Outcomes Table of Content
1. Outcome Measures

{No Data Entered}

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

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)
- Case Study
- Comparisons between program participants (individuals, group, organizations) and non-participants

Evaluation Results

Key Items of Evaluation