

**V(A). Planned Program (Summary)**

**Program # 3**

**1. Name of the Planned Program**

Aquaculture

**V(B). Program Knowledge Area(s)**

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
123	Management and Sustainability of Forest Resources	25%	0%	25%	0%
131	Alternative Uses of Land	25%	15%	25%	15%
302	Nutrient Utilization in Animals	0%	10%	0%	10%
307	Animal Management Systems	25%	35%	25%	35%
311	Animal Diseases	0%	15%	0%	15%
312	External Parasites and Pests of Animals	0%	10%	0%	10%
403	Waste Disposal, Recycling, and Reuse	0%	5%	0%	5%
601	Economics of Agricultural Production and Farm Management	10%	10%	10%	10%
604	Marketing and Distribution Practices	15%	0%	15%	0%
	<b>Total</b>	100%	100%	100%	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	1.6	1.0	0.0	0.5
Actual	0.6	1.0	0.6	1.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
52687	351184	38603	126967
1862 Matching	1890 Matching	1862 Matching	1890 Matching
52687	351184	38603	126967
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

FVSU's Georgia Center for Aquaculture Development (GCAD)

#### Research

- Water quality management and disease diagnosis services were provided for producers
- A variety of herbs were grown aquaponic systems Some were evaluated using tilapia RAS wastes as the sole nutrient sources. Herbs and vegetables in aquaponic units showed positive results.
- Number and diversity of aquatic macrophytes used was increased to begin work on bio-integration, waste cycling and feed. Work has begun on fish waste as a nutrient for algae, which show great promise as an alternative fuel.
- Vermiculture demonstration continued using excess aquatic macrophytes as food for the worms, along with fruits and vegetables.
- Work with some species show the vital importance of RAS in the off-season spawning and production of commercially important species, as harvestable fish become scarcer.

#### Facilities

- FVSU's Georgia Center for Aquaculture Development (GCAD) gave direction to the implementation and installation of the new aquaculture facilities and continues improvement and operations. Aquaponic units, both monoculture and polyculture, have increased from 6 to 26.
- Progress was made in equipping the water quality, fish nutrition and disease diagnostic laboratory. Critical equipment was acquired and continues to be purchased, further enhancing research and diagnostic capabilities.

#### Collaboration:

We continued to collaborate with a number of other institutions and ngos. The director graduated from the LEAD21 program, providing new opportunities. Work with the USDA Southern Regional Aquaculture Center, UGA, Georgia Organics, Davis Farms, Digging Roots Educational Farm Inc., Auburn University, Growing Power, Alabama A &M, Sleepyhollow Farm, Delaware State, VETS LLC, Nature's Last Stand, and the University of Florida. GCAD is also collaborating as the site for selected marine fish testing of the INAD for gonadotropin implants.

Efforts continued for additional staffing besides existing two FTEs, Carpenter/ Production Asst Position, vacant since 7/09 resubmitted.

#### Education

- Numerous publications were created, including articles, brochures, abstracts, and news articles.
- Presentations and workshops were offered with a variety of speakers, on subjects including: best management of optimum health, optimum water quality, proper nutrition, identification and prevention of diseases.
  - Twice as many participants received in-depth training from workshops at FVSU than any previous years, even though the GCAD staff was reduced by 33%. Over 11,772 received either written info or training.
  - For the first time a 30 hour course on recirculating aquaculture production techniques was requested, developed and taught to over 23 Georgia teachers , who received continuing education credit.
  - More than 7,236 participants gained information at aquaculture exhibits and field days.
  - Tours of the aquaculture facilities with hands-on experience were provided to more than 1,000 visitors.to the FVSU.

**2. Brief description of the target audience**

Georgia farmers and citizens who plan to enter the aquaculture business or are already in business. Catfish processing plant operators and their clients are helped directly and through county extension agents. County extension agents are trained at workshops and update meetings.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Plan</b>	400	300	800	0
<b>Actual</b>	2352	4800	3672	5520

**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
<b>Plan</b>	5	5	
<b>Actual</b>	4	0	4

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

**Output Target**

**Output #1**

**Output Measure**

- Number of significant publications including referred journals articles, bulletins and extension publications.

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	1	8

**Output #2**

**Output Measure**

- Number of educational contact hours generated from formal educational programs presented to county extension agents by state faculty directly associated with this planned program.

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	80	138

**Output #3**

**Output Measure**

- Number of educational contact hours generated from formal educational programs presented directly to clientele by state faculty directly associated with this planned program.

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	20	1767

**Output #4**

**Output Measure**

- Number of invited presentations by faculty directly resulting from the success of this planned program.

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	4	11

**V(G). State Defined Outcomes**

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

O. No.	OUTCOME NAME
1	Number of additional direct extension contacts made by volunteers, staff, or county agents not receiving federal funds as a direct outcome of the work of federally funded faculty associated with this planned program.
2	Number of pond acres in catfish production in Georgia reported annually.
3	Farm gate value of catfish production in Georgia. Reported annually in millions of dollars.

**Outcome #1**

**1. Outcome Measures**

Number of additional direct extension contacts made by volunteers, staff, or county agents not receiving federal funds as a direct outcome of the work of federally funded faculty associated with this planned program.

**2. Associated Institution Types**

- 1862 Extension
- 1890 Extension
- 1862 Research
- 1890 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	850	5186

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

**Issue (Who cares and Why)**

**What has been done**

**Results**

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land
307	Animal Management Systems
311	Animal Diseases
312	External Parasites and Pests of Animals
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

## **Outcome #2**

### **1. Outcome Measures**

Number of pond acres in catfish production in Georgia reported annually.

### **2. Associated Institution Types**

- 1862 Extension
- 1890 Extension
- 1862 Research
- 1890 Research

### **3a. Outcome Type:**

Change in Condition Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	2600	2248

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

**Issue (Who cares and Why)**

**What has been done**

**Results**

Acres last reporting year: 2,213

Acres this reporting year: 2,248

Increase of: 35

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land
601	Economics of Agricultural Production and Farm Management

### **Outcome #3**

#### **1. Outcome Measures**

Farm gate value of catfish production in Georgia. Reported annually in millions of dollars.

#### **2. Associated Institution Types**

- 1862 Extension
- 1890 Extension
- 1862 Research
- 1890 Research

#### **3a. Outcome Type:**

Change in Condition Outcome Measure

#### **3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	5	6

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

##### **Issue (Who cares and Why)**

##### **What has been done**

##### **Results**

Value last reporting year: 8,156,102

Value this reporting year: 5,994,094

Decrease of: (2,162,008)

#### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
131	Alternative Uses of Land
307	Animal Management Systems
311	Animal Diseases
312	External Parasites and Pests of Animals
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

## **V(H). Planned Program (External Factors)**

### **External factors which affected outcomes**

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

### **Brief Explanation**

Lack of completion of aquaculture laboratory greenhouse and pond facilities have delayed progress of accomplishing some of the planned outcomes. Employment of additional aquaculture staff besides one FTE (aquaculture director) came after the second part of the year and work was still directed at facilities development. Capacity for research had not been reached with facilities nor had staff been trained in aquaculture research capabilities in 2008.

The late date of the hire of assistance and the lack of completed laboratory, aquaculture facilities and acquisition of required research equipment prevented research goals from being accomplished in 2008.

## **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 different groups of individuals or program participants experiencing different levels of program intensity.

### **Evaluation Results**

Four different aquaculture workshops were held at the Georgia Center for Aquaculture Development at FVSU during 2010. At the completion of the workshops evaluations were given to workshop participants for comments on each topic of the workshop. An overwhelming positive response was given by the workshop participants on the usefulness and quality of information available at the different workshops. Participants ranked the usefulness and interest in the workshops an average of 9.6 on a scale from one to ten for all of the different workshops. Speakers also were ranked high by the participants with an average of 9.5 on a scale from one to ten when judged on speaker information and quality. Suggestions on the evaluations included that more workshops be given on aquaculture, additional subject areas in aquaculture, in addition to the development of an aquaculture

degree at FVSU. The only major complaints were on the size of the room of the event when larger crowds came to the workshop than anticipated. Future workshops will incorporate some of the new requests for additional information such as pond aquaculture and also ensure that the workshops are held in larger meeting areas.

**Key Items of Evaluation**