

V(A). Planned Program (Summary)**Program # 7****1. Name of the Planned Program**

Supporting Rural Economies

 Reporting on this Program**V(B). Program Knowledge Area(s)****1. Program Knowledge Areas and Percentage**

| KA Code | Knowledge Area | %1862 Extension | %1890 Extension | %1862 Research | %1890 Research |
|---------|--|-----------------|-----------------|----------------|----------------|
| 102 | Soil, Plant, Water, Nutrient Relationships | | | 16% | |
| 133 | Pollution Prevention and Mitigation | | | 5% | |
| 203 | Plant Biological Efficiency and Abiotic Stresses Affecting Plants | | | 20% | |
| 403 | Waste Disposal, Recycling, and Reuse | | | 10% | |
| 405 | Drainage and Irrigation Systems and Facilities | | | 5% | |
| 605 | Natural Resource and Environmental Economics | | | 2% | |
| 608 | Community Resource Planning and Development | | | 2% | |
| 801 | Individual and Family Resource Management | | | 10% | |
| 802 | Human Development and Family Well-Being | | | 10% | |
| 803 | Sociological and Technological Change Affecting Individuals, Families, and Communities | | | 15% | |
| 805 | Community Institutions, Health, and Social Services | | | 5% | |
| | Total | | | 100% | |

V(C). Planned Program (Inputs)**1. Actual amount of FTE/SYs expended this Program**

| Year: 2012 | Extension | | Research | |
|--------------------------|-----------|------|----------|------|
| | 1862 | 1890 | 1862 | 1890 |
| Plan | 0.0 | 0.0 | 1.1 | 0.0 |
| Actual Paid Professional | 0.0 | 0.0 | 2.3 | 0.0 |
| Actual Volunteer | 0.0 | 0.0 | 0.0 | 0.0 |

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

| Extension | | Research | |
|---------------------|----------------|----------------|----------------|
| Smith-Lever 3b & 3c | 1890 Extension | Hatch | Evans-Allen |
| 0 | 0 | 95727 | 0 |
| 1862 Matching | 1890 Matching | 1862 Matching | 1890 Matching |
| 0 | 0 | 147719 | 0 |
| 1862 All Other | 1890 All Other | 1862 All Other | 1890 All Other |
| 0 | 0 | 1731 | 0 |

V(D). Planned Program (Activity)

1. Brief description of the Activity

Discovery and applied research was conducted to improve ornamental horticultural crops and analyze demographic changes and special societal needs in rural populations.

2. Brief description of the target audience

Stakeholders of this research include the overall rural population; nursery and greenhouse producers; landscapers; and town, county, state and federal agencies charged with planning for and delivering services to changing rural populations.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

| 2012 | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---------------|------------------------|--------------------------|-----------------------|-------------------------|
| Actual | 275 | 20400 | 0 | 0 |

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

| | | | |
|---------------|------------------|-----------------|--------------|
| 2012 | Extension | Research | Total |
| Actual | 3 | 3 | 6 |

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of undergraduate students directly involved in the projects
Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Number of presentations at regional, national, or international scientific meetings

| | |
|-------------|---------------|
| Year | Actual |
| 2012 | 7 |

Output #3

Output Measure

- Number of workshops, training sessions and presentations to non-scientific stakeholders

| | |
|-------------|---------------|
| Year | Actual |
| 2012 | 8 |

Output #4

Output Measure

- Number of reviewed, bulletin, popular, news and other publications

| | |
|-------------|---------------|
| Year | Actual |
| 2012 | 6 |

Output #5

Output Measure

- Number of surveys or other means of gathering information and data from participants

| | |
|-------------|---------------|
| Year | Actual |
| 2012 | 10 |

Output #6

Output Measure

- Number of graduate students directly involved in the research activities.

| Year | Actual |
|-------------|---------------|
| 2012 | 5 |

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

| O. No. | OUTCOME NAME |
|--------|--|
| 1 | Increased knowledge about economics and policy related to waste management. |
| 2 | Increased knowledge among rural individuals and families related to employment and health care. |
| 3 | Number of presentations to civic and government entities to increase knowledge of demographics and migration in the region and nation. |
| 4 | Availability of modified production systems for woody nursery crops in northern nurseries. |
| 5 | Availability of new management guidelines for use of controlled-release fertilizers in greenhouse floriculture. |
| 6 | Determine demographic trends in rural areas of NH. |

Outcome #1

1. Outcome Measures

Increased knowledge about economics and policy related to waste management.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

| Year | Actual |
|------|--------|
| 2012 | 0 |

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Solid waste management continues to be a problem for local governments in rural communities. Concerns include rising costs, and facilities siting problems. Town governments are looking into privatization as a way to increase efficiency and reduce direct costs to their limited tax base.

What has been done

A town level survey of households in towns considering adopting single stream recycling was conducted. Three towns with different demographics were surveyed.

Results

Survey results and contingent choice analysis revealed most respondents do not favor single stream recycling adoption or curbside collection in their towns. Results also indicated that respondents were willing to pay a per bag fee to recycle, and that they were not willing to pay additional amounts for the "convenience" of single stream.

These results were disseminated to municipal and state waste management and planning agencies.

4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|---------|--|
| 133 | Pollution Prevention and Mitigation |
| 403 | Waste Disposal, Recycling, and Reuse |
| 605 | Natural Resource and Environmental Economics |
| 608 | Community Resource Planning and Development |

Outcome #2

1. Outcome Measures

Increased knowledge among rural individuals and families related to employment and health care.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

| Year | Actual |
|-------------|---------------|
| 2012 | 0 |

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Rural families face economic and life obstacles not experienced in urban areas: limited types of employment; lower wages; difficulties in arranging child care; and inadequate access to health care, especially mental health care. Statewide policies are often designed around urban communities without consideration of special obstacles to their implementation in rural areas. One of the greatest difficulties is finding out what family support services are available in rural areas.

What has been done

Semi-structured in depth interviews were conducted with eight rural, poor families to assess how they learn about health care and other support options.

Results

In 2008, the NH 2-1-1 service was initiated. It is supported by charitable, corporate, and state agencies to provide one-stop shopping for information about health care and other support opportunities. Interviews conducted in the NHAES project demonstrated that rural, low-income families benefit from access to community services through NH 2-1-1 as compared with prior periods.

4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|----------------|---|
| 805 | Community Institutions, Health, and Social Services |

Outcome #3

1. Outcome Measures

Number of presentations to civic and government entities to increase knowledge of demographics and migration in the region and nation.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

| Year | Actual |
|-------------|---------------|
| 2012 | 11 |

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|----------------|--|
| 803 | Sociological and Technological Change Affecting Individuals, Families, and Communities |

Outcome #4

1. Outcome Measures

Availability of modified production systems for woody nursery crops in northern nurseries.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

| Year | Actual |
|------|--------|
| 2012 | 0 |

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

- The research objective is to develop modified production systems for woody nursery crops in northern nurseries, which enhance the growth and quality that result in lower production costs and better availability of locally grown landscape plants.
- Controlled freezing tests will help develop a better understanding of root cold tolerance and confirm whether different container types can affect cold tolerance in woody plants.
- Current production systems (pot in pot) lead to malformations of growing roots, which may result in plant failure after landscaping.

What has been done

- Modified sampling procedures for root cold tolerance tests on excised roots were developed. Multiple freezing tests were conducted on five species acclimated under natural conditions.
- Eight presentations on tree and shrub container production were given at research field days, horticultural conferences, and landscape association meetings, etc.
- A video on tree nursery production methods was produced and is accessible, along with other updated information on the UNH Extension nursery crop production webpage, at <http://extension.unh.edu/Agric/AGNLT/NLTNC.htm>.

Results

- Over 80% of the 257 people who attended the related presentations increased their knowledge and are making more informed tree purchasing choices by opting for trees with improved root morphology, which will reduce landscape failures.
- Over 90% of the growers attending the nursery conferences indicated the intention to adopt new practices based on the presentations, impacting a total of \$1.28 million dollars in plant sales.
- A total of 321 people viewed the video on production methods for landscape trees.

4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|---------|---|
| 203 | Plant Biological Efficiency and Abiotic Stresses Affecting Plants |

Outcome #5

1. Outcome Measures

Availability of new management guidelines for use of controlled-release fertilizers in greenhouse floriculture.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

| Year | Actual |
|-------------|---------------|
| 2012 | 0 |

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

- Most greenhouse crops are fertilized with a water-soluble fertilizer on a constant or near-constant basis. Although constant liquid feed programs are relatively easy to manage, they can be very wasteful unless runoff is captured and reused.
- Controlled-release fertilizers (CRF) represent a potential economical alternative, with considerably less loss of excess fertilizer to the environment but have not yet been widely adopted in greenhouse production.
- Recent advancements in CRF production have decreased the size of fertilizer particles and provide more precision in nutrient delivery.

What has been done

- The growth of Gerbera and Begonia plants and seed geraniums and marigolds were compared with different treatments of controlled-release fertilizer or water-soluble fertilizer.
- Plant growth was measured as dry weight at termination and the cumulative leachate for nutrients were measured.
- These experiments were repeated for more than a year-long period, while monitoring air and substrate temperature and light levels, to develop guidelines for use of CRFs in greenhouse production systems.

Results

- The information from this study is providing guidelines in order for greenhouse growers to utilize controlled release fertilizers in fertilizer programs.
- The switch from constant liquid fertilizers to controlled-released fertilizers in greenhouse production systems has the potential to reduce fertilizer costs as well as environmental impacts.
- The guidelines for CRF application in Begonia, Gerbera, marigold, and geraniums in greenhouse production have been distributed through trade magazines and presentations at greenhouse

grower conferences, including Plant nutrient triangle, 2012; OFA Perennial Conference, Grand Rapids, MI; Using controlled released fertilizers in the greenhouse, 2012; and Ohio Florists' Short Course, Columbus, OH.

4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|---------|--|
| 102 | Soil, Plant, Water, Nutrient Relationships |
| 133 | Pollution Prevention and Mitigation |

Outcome #6

1. Outcome Measures

Determine demographic trends in rural areas of NH.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

| Year | Actual |
|------|--------|
| 2012 | 0 |

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Rural populations continue to change. Knowledge about the demographics and needs of rural populations is critical to municipal, county, state and national policy makers and planners.

What has been done

Census data has been evaluated and compared to previous demographic information about the Northern Forest of NH and New England.

Results

- There is growing diversity and poverty of children in rural areas
- Although racial and ethnic diversity in NH remain modest, more than 50% of the state's population growth over the first decade of the century were among minority groups.
- There are changing patterns of natural population increase in rural areas of Northern New England
- Details of these findings have been widely report in media outlets; more than 1000 copies of the Carsey's Institute Policy Brief were distributed; the same brief was downloaded 1100 times so far

(<https://carseyinstitute.unh.edu/sites/carseyinstitute.unh.edu/files/Report-Carsey-Meta-web-reduced.pdf>)

4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|---------|--|
| 803 | Sociological and Technological Change Affecting Individuals, Families, and Communities |

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Appropriations changes
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

- Significant reductions in state funding to the University System and the NH Agricultural Experiment Station has reduced support for staff and individual research projects.
- The Great Recession and its nascent recovery has impacted migration to and from rural parts of NH.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The primary evaluation of research and integrated projects in planned program area come from a robust record of publication in peer-reviewed publications, popularity of workshops, response to surveys at education sessions, and the utilization of results by popular media and government agencies. By all of these criteria, the research covered by this planned program area appears to be successful.

Key Items of Evaluation

In this planned program area, demographic studies by Ken Johnson of the Carsey Institute are supported by a multi-state project. His work is widely followed by the press and by policy makers. For example, research findings about the growing diversity of the child population in rural areas have been widely reported and frequently quoted both in academia and the media. Overall, Johnson's work has been cited more than 3000 times in the media (newspapers, news magazines, TV, and radio outlets) over the last five years.