Outreach Scholars 2008
Project Summary
Julia Peterson

PROJECT TITLE: Changing Homeowner's Lawn Care Behavior to Reduce Nutrient Inputs in Urbanizing Watersheds

PROJECT DESCRIPTION:
This is an integrated, interdisciplinary, multi-state project that is applying environmental and behavioral research results to Extension efforts to reduce the application of excess nutrients (nitrogen N and phosphorus P) on turf by homeowners (do-it-yourselfers DIY) in targeted, urbanizing neighborhoods throughout New England with the ultimate goal of protecting surface and groundwater quality.

BACKGROUND INFORMATION:
Development pressure is high in the exurbs of New England where areas that were formerly agricultural or forested are being turned into residential subdivisions. Conversion of land from natural states to built is often accompanied by increases in nutrient runoff. Both fresh and marine water resources in the region are showing evidence of increasing nutrients which, in excess, are harmful to water ecosystems.

There is a lack of understanding of what drives homeowners' choices in home and yard care, although these practices have direct impacts on environmental quality. Eliciting knowledge, attitude or behavior changes related to these yard care choices may be one way of reducing runoff. There are also varying recommendations within states and even within organizations, often depending on whether the recommendation is commercially based or not and whether the recommendations are agronomically or ecologically based.

There is also a lack of a rational basis for nitrogen application in particular. Nitrogen fertilizer application rates are typically based on a standard rate recommendation which is not site specific. An objective soil based test to determine the need or lack of need for nitrogen application could lead to reduced runoff by reducing unnecessary or excessive applications.

PROJECT DETAILS:
Goal: Reduce nutrient runoff from residential properties in urbanizing watersheds in New England.

Objectives:
The project includes environmental research, social science research, extension and education objectives.

The Environmental research (UConn) was used to develop regionally specific recommendations for fertilizer use (or non-use) that minimize water quality impacts and is also developing a reliable soil based nitrogen test for turf since most applications are guided by routine schedules rather than objective methods.

Social science research (Plymouth State) was conducted in five target communities to identify the primary drivers of homeowners' fertilizer choices and application behaviors by examining the relative strength of various influences including environmental values, attitudes and norms, the level of trust in and influence of opinion leaders (E.g. Master Gardeners, local garden centers, and mass media), and the relative influence of different types of informational messages.

The Extension (UNH, UMaine, UConn, URI, UVM) objectives are for opinion leaders and homeowners to increase their knowledge about recommendations for water quality friendly lawn care practices, particularly regarding nutrient management. Some professionals in the opinion leader category will also learn how to use the soil based nitrogen test to guide turf fertilization or non-fertilization. Participants in the DIY category will also increase in their willingness to adopt the recommended practices. With enough time, we hope to determine that some DIYers actually changed practices based on the outreach.

The education component of the project incorporates undergraduate or graduate students in both the environmental and the social science research. So far, 8 students have been involved in the project from BA to PhD candidate levels.

Methods:

The social science is based primarily on the Theory of Planned Behavior. The first component involved semi-structured, in-depth interviews of 50+ lawn care opinion shapers. The results of these interviews were then used to develop surveys that were distributed in communities and neighborhoods meeting certain criteria within the region. The surveys provided information about homeowners knowledge, attitudes and behaviors related to yard care. The results of this information are now being used drive the outreach messages and delivery. We received close to 700 responses, about a 41% return rate.

The environmental research is being carried out by testing two types of N soil tests which are relatively new and typically used in cornfields, for their ability to determine responsiveness of turf to nitrogen application. Because of the buildup of soil organic matter in lawn soils as they age and when clippings are returned, mineralization of this organic matter can provide considerable amounts of N to the turf. To date, however, these potential sources of N are not considered in the current fertilizer recommendations. Estimating this mineralization potential through these new tests and relating those values to turf responses would be a major step forward in turf N and water quality management. Both of these new soil tests have the potential to provide site-specific information by identifying those lawns that have a low probability of responding to fertilizer N – suggesting that sufficient N is already present in the system and application of fertilizer N should not be encouraged.

The environmental science also included compiling and vetting of turf nutrient management recommendations specific to northern and southern New England in order to have a scientifically based set appropriate for the region.

Extension is being designed by incorporating the nutrient application recommendations from the environmental research into messages and delivery methods that have been determined to be compelling to neighborhood residents based on social science research. Extension staff will then

work with those considered to be reliable, credible local sources (opinion leaders) of yard care information to deliver the messages to residents of targeted neighborhoods. The project is currently in the outreach design phase.

External Collaborations and Partnership:
The project team includes 5 different states and 6 academic institutions. There is an advisory team which includes the project team plus environmental agency staff from participating states, additional extension staff from water and agricultural program areas, a municipal stormwater outreach staff member and a garden center owner.

It's anticipated that partnerships with garden center owners and some watershed outreach groups will increase as pilot outreach products are designed and tested.

Expected Impact:
We anticipate that neighborhood residents' knowledge about environmentally friendly lawn care practices will increase, and that their willingness to adopt a few of those practices will increase.

We also anticipate that the participating opinion leaders knowledge of recommended practices will increase, and that they will feel better equipped to share information on the topic.

Scholarly Connection:
The project lends itself to a number of scholarly opportunities. The leaders of both research components are anticipating publishing papers related to their work for this project. It is considered a very innovative project largely because of the integrated and cross-disciplinary nature. The outreach evaluation component will also lend itself to scholarly opportunities as we try to answer the question, "was our outreach effective at changing the knowledge and attitudes of opinion leaders and DIYers ?" with a particular interest in whether or not the outreach design benefited from the social science foundation.

EVALUATION PLAN:
An evaluation of the project will establish whether changes in knowledge, attitude and possibly behavior have occurred as a result of the Extension effort for both opinion leader and DIYer audiences. The exact design has not yet been determined because the outreach activity design isn't complete yet. We will be working with the social science team to design the evaluation questions, tools and timetables.