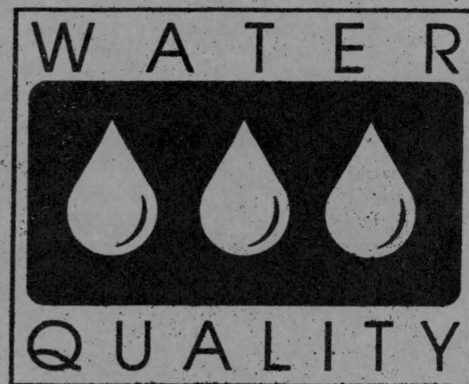


The Water-wise Gardener

An Extension Agent's Guide
to Planning and Delivering
Residential Watershed
Water-Quality Programs



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Virginia Cooperative Extension

THE WATER-WISE GARDENER

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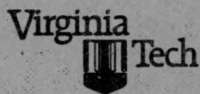
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Issued in furtherance of Cooperative Extension work, Virginia Polytechnic Institute and State University, Virginia State University, and the U.S. Department of Agriculture cooperating. C. Clark Jones, Interim Director, Virginia Cooperative Extension, Virginia Tech, Blacksburg; Lorenza W. Lyons, Administrator, 1890 Extension Program, Virginia State, Petersburg.

Welcome to *THE WATER-WISE GARDENER!*

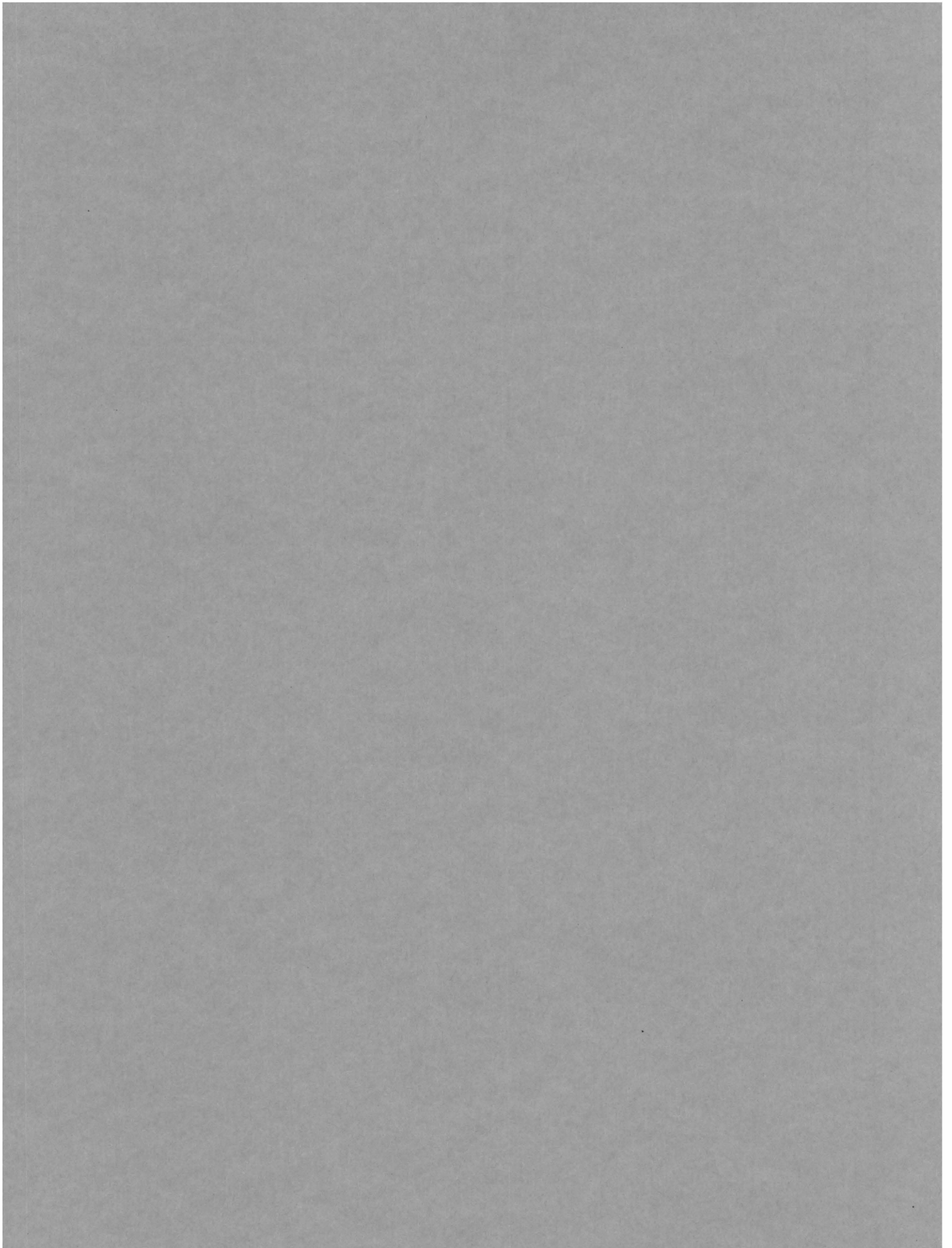
THE WATER-WISE GARDENER was developed in response to the needs of Extension agents who work on a daily basis with residential homeowners and renters. Most of these homeowners have a high level of interest in establishing and maintaining attractive landscapes. In recent years, many agents have expressed concern over the impact such activities can have on our ground and surface water as a result of contamination from pollutants carried by water percolating through the soil to the water table or washed into lakes and streams via storm and surface water runoff. Home lawns and landscapes contribute to such nonpoint source pollution when improper water management or chemical applications allow fertilizer- or pesticide-laden water to reach water sources. The Chesapeake Bay and other water bodies are ultimately threatened by overuse and abuse of lawn and garden fertilizers and chemicals.

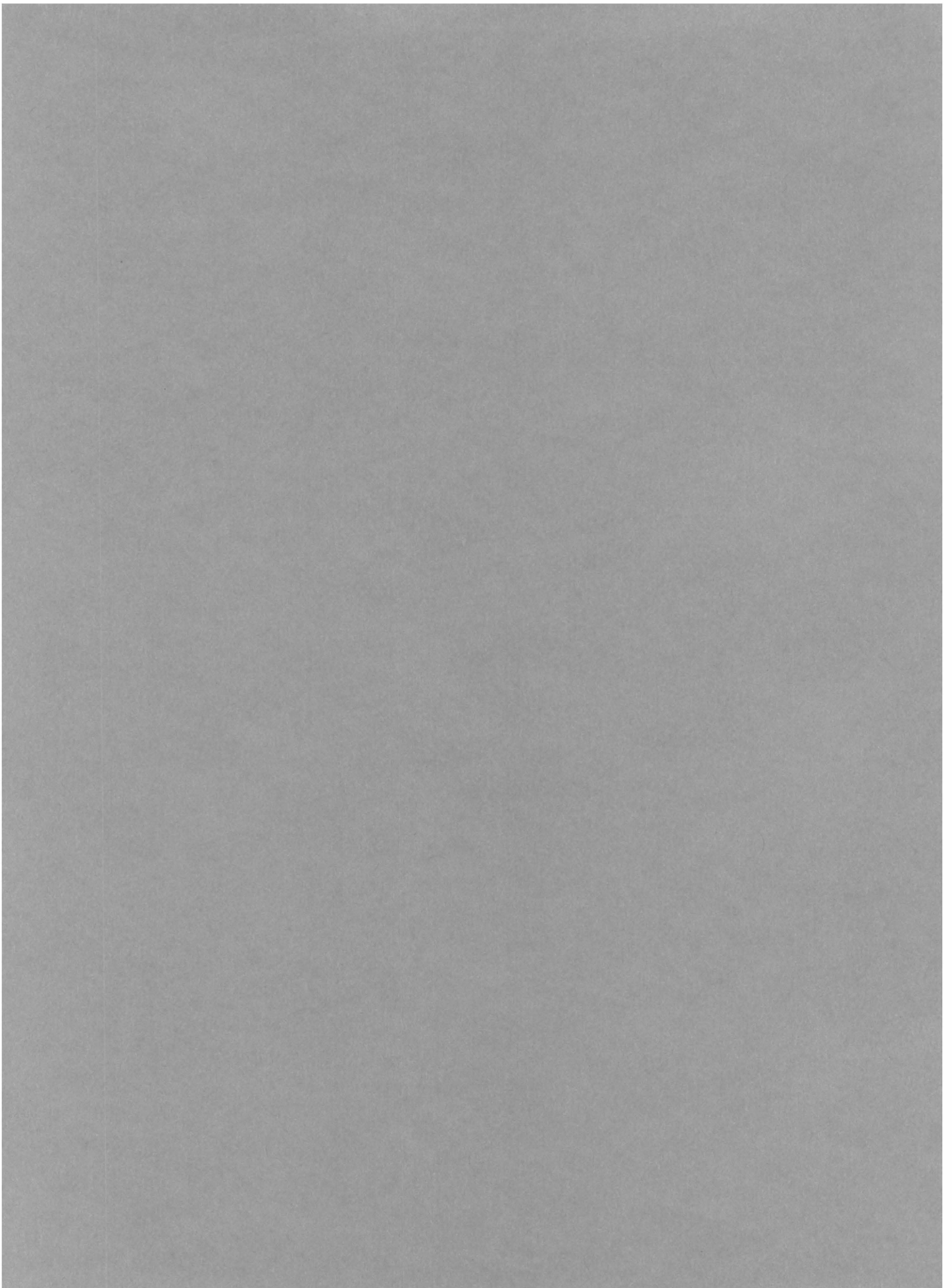
Recognizing that attractive lawns and landscapes play a vital part in our communities by increasing property values, improving community appearance, and providing a critical link in the water cycle, we set out to devise a program for the public with accurate, unbiased, university-based research and information. With special funding through the Cooperative State Research, Education, and Extension Service at the United States Department of Agriculture, THE WATER-WISE GARDENER program was developed over a five-year time frame. This multi-faceted Extension program reduces homeowner contributions to nonpoint source pollution through their participation in a progression of educational experiences focused on proper landscape management. This program brings traditional Extension teaching methods of field days, volunteer and demonstration sites, and one-on-one interactions with volunteers to the urban/suburban clientele to make them equal participants in the protection of our natural resources. Hopefully, this approach will provide a valuable model to others who work in public education.

THE WATER-WISE GARDENER is all about empowering people with the knowledge and skills to care for their own "piece of the watershed" in an attractive and sustainable way. Perhaps one volunteer put it best when she told us recently that THE WATER-WISE GARDENER exemplified to her what Cooperative Extension was all about—people programs that work!

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1

Introduction

Why a Guide on Water Quality?

You can hardly open an environmental journal or publication these days without seeing some discussion pertaining to water quality. This is for good reason since our aquatic resources are among our nation's most valuable natural assets. Nearly everything we do depends on abundant, clean water.

As a topic, water quality covers a great deal of territory, including the physical characteristics of the water we drink; the condition of our lakes, rivers, streams, and coastal areas; and pollution issues. Great strides have been made in reducing the impacts of many types of pollutants, especially from point sources, such as factories and sewage treatment plants. More work, however, needs to be done to insure safe and clean water for the next generation, particularly in urban and suburban areas where nonpoint sources contribute to water pollution.

Common nonpoint source pollution concerns in urban and suburban areas include *nutrients*, especially nitrogen and phosphorus from fertilizer and animal wastes; *sediments* in erosion resulting from poor construction and development practices; *toxic substances*, such as pesticides, household chemicals, motor oil, and road salt; and *pathogens* from disease-causing organisms in human and animal waste. The preponderance of streets and other impervious surfaces in our developed areas often means that these nonpoint source pollutants have direct access to our streams and rivers via storm drains.

Recently, the term *watershed approach* has been used to describe a more integrated and holistic strategy for restoring and protecting water resources. A *watershed* is simply the land that water flows across or under on its way to a stream, lake, or river. A *watershed approach*, therefore, focuses on hydrologically defined drainage basins (watersheds) rather than political boundaries. To protect water resources in any given area, it is necessary to address the conditions of the land areas within the watershed, such as suburban lots, city streets, or farm lands. The three major cornerstones of the watershed approach are problem identification, stakeholder involvement, and integrated actions.

This type of three-prong approach should be familiar to anyone involved in Extension work. Cooperative Extension has always functioned under the premise that good education programs are based on:

- 1) recognizing the problems and needs of people
- 2) involving people in the educational process
- 3) motivating people to take corrective action

Cooperative Extension is involved in water quality education because education is the key to the reduction and prevention of nonpoint source pollution. As a nationwide system funded and guided by a partnership of federal, state, and local governments, Cooperative Extension is well equipped to link the research, science, and technology of the land-grant university system to the needs of people where they live and work. Most Extension offices, already interacting daily with homeowners on lawn and garden concerns,

have direct access to the local grassroots level where many of our nonpoint source water quality problems can occur. It makes sense for Cooperative Extension to take the water quality message to urban and suburban audiences via well-designed educational programs. *The Water-wise Gardener* is an example of such a program.

How to Use This Guide

The Water-wise Gardener is designed to be a resource guide for Extension agents and others who are interested in conducting educational programs on water quality for the public by providing individuals with programmatic resources needed to conduct such programs. The heart of this program is the *Five-step Program Involvement Model for Water Quality Education*, as shown in Table 1.

Programming is very much like designing a landscape. If you understand what you are trying to do and complete sufficient planning and preparation, it is much easier to achieve results that you are proud of and that are meaningful to others. Likewise, water quality educational programming involves much planning and varying commitments of time, effort, and money, as determined by the needs and resources of a particular community. It is essential to understand these varying levels of commitment and involvement before program development begins, as they will be a fundamental factor in all further planning.

The *Five-step Program Model for Water Quality Education* accommodates the needs of many communities. Each step contains an increased level of commitment and effort on the part of the Extension staff and volunteers, as well as the homeowner. Although the programming steps are sequential, it is not mandatory that programming be implemented at a certain step to have value in a community. After reviewing this guide, decide what step of programming will be feasible for you and your community, then make use of *The Water-wise Gardener* resources to achieve maximum impact. Each step is explained in greater detail in Chapter 3, Implementation.

As you consider adapting some step of *The Water-wise Gardener* to your locality, realize that there are no hard and fast rules to adapting and transferring programs from one area to another. Ingenuity, imagination, and sensitivity to the needs of your community will go a long way to insuring a successful program. Because of this, your program may end up very different from the original, but the overall processes used to effectively reach the public should remain fairly similar. The guide is intended to be flexible and adaptable to many different situations and needs. After all, there are many ways to educate the public about water quality.

You will notice that our focus is on the *programmatic process* used to reach and educate the typical homeowner and that less *technical material* is provided. Most Extension offices have an abundance of technical publications that can be used to educate homeowners on water quality, such as those on lawn fertilization rates, recommended plants for the area, integrated pest management, and well and septic-system maintenance. *The Water-wise Gardener* compliments the available technical information by providing practical, field-tested information, especially for suburban and urban audiences, on designing a program, motivating individuals, measuring attitude and practice changes, conducting public relations campaigns, and evaluating and reporting programs.

Goals and Objectives

Successful programs have goals and objectives. The overall goal or purpose of *The Water-wise Gardener* program is to reduce pollution to area water ways and protect water supplies. Within this framework, our goals are to

- 1) provide clientele with the knowledge and skills to implement lawn, landscape, septic system, and well-water practices that have been demonstrated to least impact water quality
- 2) involve clientele in the educational process such that they are motivated to actually implement these practices and behavior changes can be documented

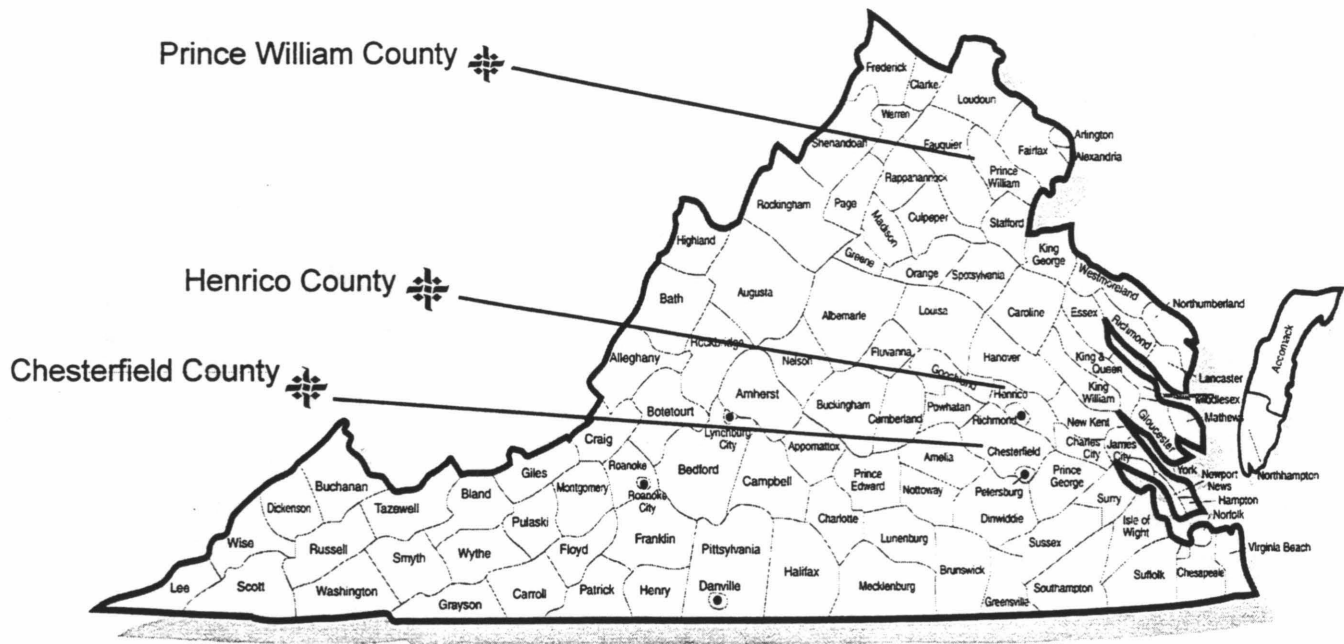
- 3) partner with Master Gardeners and other volunteers to establish and conduct this educational program

- 3) participants document a 40 percent reduction in the amount of nitrogen applied and a 25 percent reduction in pesticides used and amount of water applied

Specific objectives can be stated in measurable terms that will allow us to determine successes of the program:

- 1) 85 percent of participants complete the one-year *Water-wise Gardener* program
- 2) 90 percent of participants conduct a soil test on their lawns

These objectives are specific to the counties of Prince William, Chesterfield, and Henrico, Virginia, as they are based on results and data from programming in previous years, as well as county and state goals, priorities, and mandates. We will revisit these goals and objectives in much greater detail in Chapter 2, Planning.

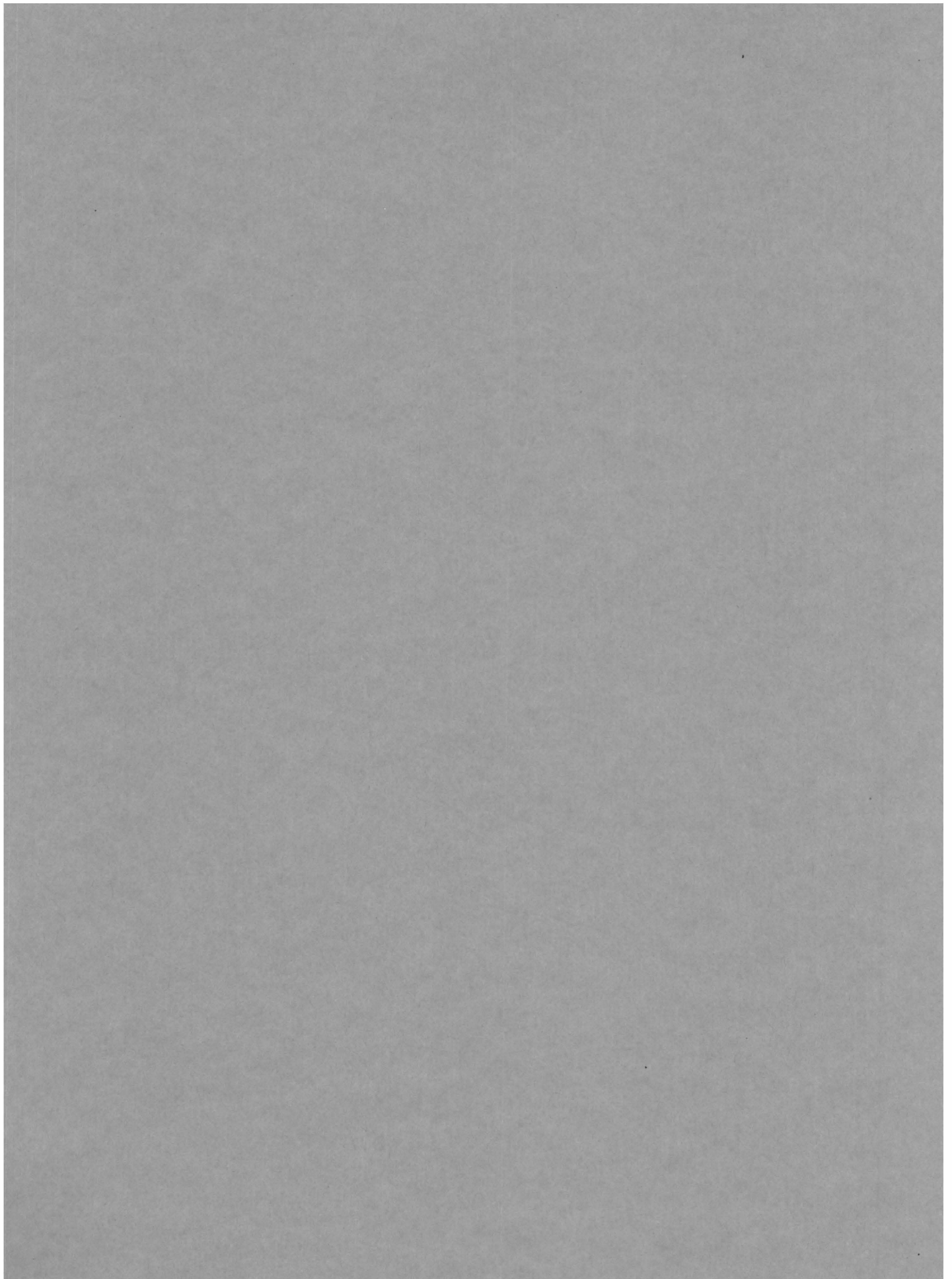


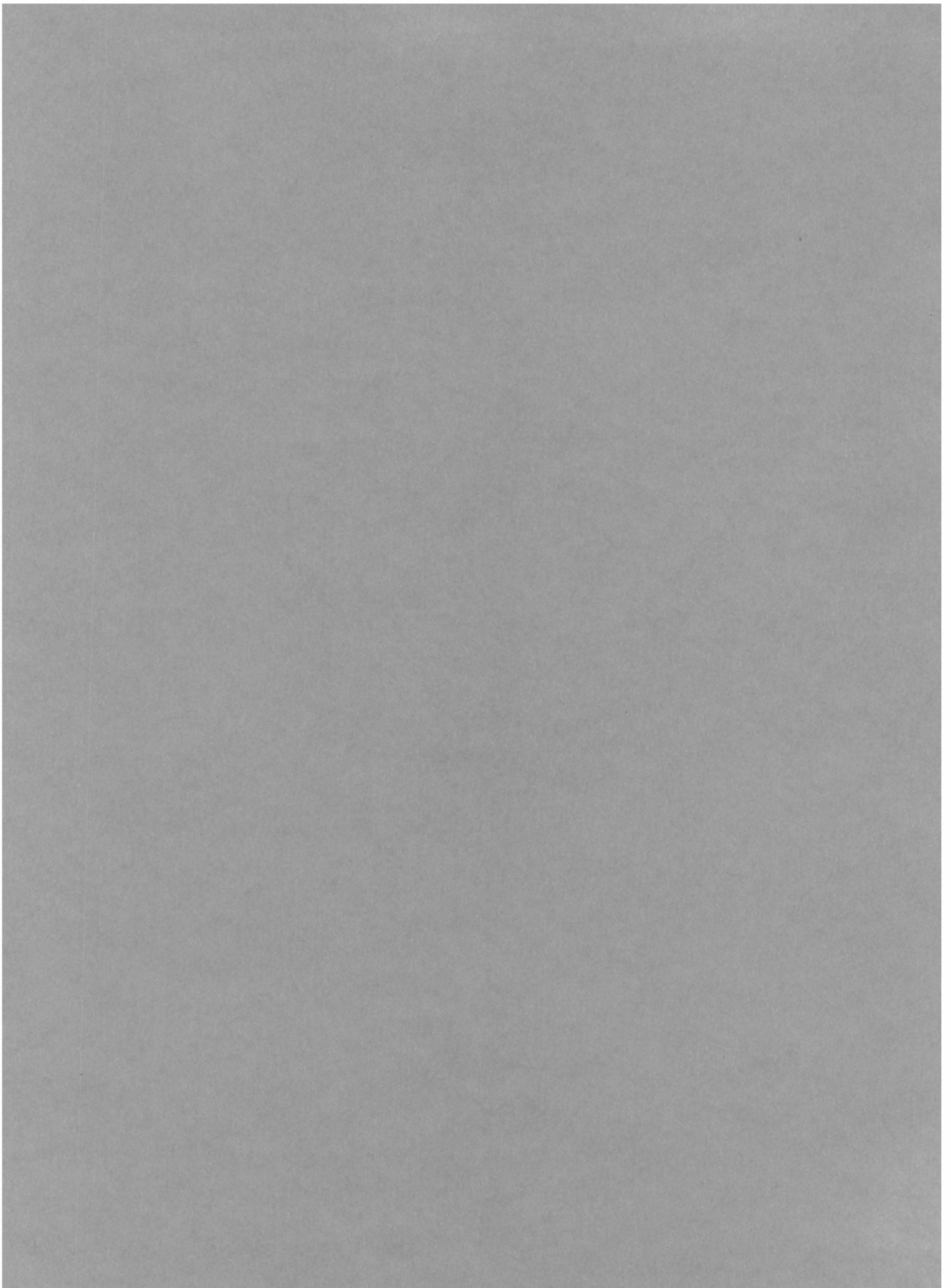
Increased Degree of Involvement	
STEP 1	estimated program duration: one year
WORKSHOP, SEMINAR, OR FIELD DAY	
<i>Program Objectives:</i>	awareness, provide written material, opportunity to hear speaker and ask questions, recruitment for next level
<i>Sample Budget*:</i>	Printing (seminar flyers, mail inserts) \$100.00 Promotional items (magnets, lawn height rulers) \$150.00 Travel (personal vehicle, speaker fees) \$100.00 \$350.00
STEP 2	estimated program duration: two years
VOLUNTEER LAWN	
<i>Program Objectives:</i>	provide skill and knowledge, adoption of best management practices, data collection; one-on-one interaction with Master Gardeners
<i>Sample Budget*:</i>	Printing (seminar flyers, mail inserts) \$150.00 Supplies (computer spreadsheet software) \$150.00 Travel (personal vehicle, speaker fees) \$190.00 Wage (part-time professional spring/fall) \$3000.00 15 hours/week for 20 weeks @\$10/hr FICA @ 7 percent \$210.00 \$3700.00
STEP 3	estimated program duration: three years
DEMONSTRATION LAWN	
<i>Program Objectives:</i>	behavior change, program publicity, long-term data
<i>Sample Budget*:</i>	Printing (seminar flyers, mail inserts) \$250.00 Supplies (computer spreadsheet software) \$250.00 Travel (personal vehicle, speaker fees) \$250.00 Wage (part-time professional spring/fall) \$5250.00 20 hours/week for 25 weeks @\$10.50/hr FICA @ 7 percent \$368.00 \$6368.00
STEP 4	estimated program duration: three years
MASTER GARDENER VOLUNTEER TRAINING	
<i>Program Objectives:</i>	develop commitment to program, train new volunteers already familiar with the program
<i>Sample Budget*:</i>	Professional Sam Agent (.10 salary) (state matching funds) \$6000.00 Fringe at 20 percent \$1200.00 Sue Specialist (.25 salary) (state matching funds) \$8750.00 Fringe at 25 percent \$2188.00

Technical			
Hourly part-time professional (grant funds)			\$10090.00
1000 hours @ \$10.09/hr			\$772.00
FICA at 7.65 percent			
Travel (grant funds)			
Specialist			\$500.00
Agent			\$500.00
Part-timer			\$250.00
Supplies (grant funds)			
Agent			\$500.00
Printing (grant funds)			
Specialist			\$500.00
Agent			\$500.00
	grant funds		\$13,612.00
	state matching funds		\$18,138.00
STEP 5			
TRANSFER TO COMMUNITY			
<i>Program Objectives:</i>	bring Extension involvement in program to closure; refocus based on new priorities	estimated program duration: four years or more	
<i>Sample Budget**:</i>			
Professional			
Sam Agent (.10 salary) (state matching funds)			\$6000.00
Fringe at 20 percent			\$1200.00
Sue Specialist (.25 salary) (state matching funds)			\$8750.00
Fringe at 25 percent			\$2188.00
Technical			
Hourly part-time professional (grant funds)			\$10090.00
1000 hours @ \$10.09/hr			\$772.00
FICA at 7.65 percent			
Hourly part-time secretarial (grant funds)			\$8070.00
1000 hours @ \$8.07			\$618.00
FICA @ 7.65 percent			
Travel (grant funds)			
Specialist			\$500.00
Agent			\$500.00
Part-timer			\$250.00
Supplies (grant funds)			
Agent			\$500.00
Printing (grant funds)			
Specialist			\$500.00
Agent			\$500.00
	grant funds		\$22,300.00
	state matching funds		\$18,138.00

*assumes sufficient technician/agent funding already in place to manage program

Table 1. The Five-Step Program Involvement Model for Water Quality Education





2

Planning

The Situational Analysis

Where does one begin in planning a water-quality program for homeowners? Virginia Cooperative Extension believes that good programs address recognized problems and needs of people. Obviously, such problem-focused programming must be based on a thorough understanding of the situation. Before conducting any water quality program, collect, review, and analyze data related to the community you serve. Data includes demographics, social and economic trends, the political environment, technical reports, clientele needs, functions of other agencies, and communication and technical trends. You may already have much of this data on hand, but it is valuable to gather it together and review it with your water-quality program in mind.

Once you have reviewed this information, analyze it to answer key questions: Is the community becoming more suburban? What is its rate of growth? What impact is development having on land use? Is well-water contamination a problem or are septic systems showing a high rate of failure? What pollutants are evident from water monitoring reports? Does the information point to a need for water-quality education? These answers will direct the focus of your program.

Identify Your Audience

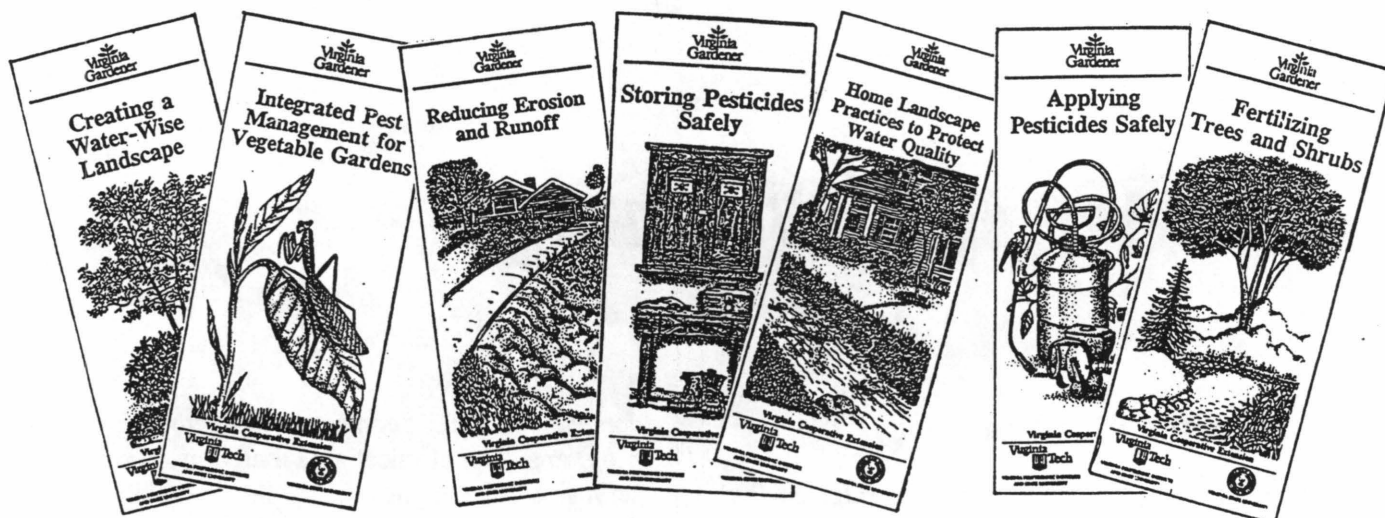
As you formulate a plan for conducting a water-quality program, identify your intended audience. There are a number of ways to classify your

community, or the people served by your programs. The physical area that your office serves—a small county, a big city, a rapidly developing suburban area—obviously plays a large part in audience determination and thus, your programming approach. An inner-city program will be different from a suburban program, which will be different from that for a rural area. It is not so much a question of a right or wrong location for water-quality programs, rather to discover which issues related to water quality are most important in your area from a political, social, and community perspective. Once you know this, you can determine where you fit in. Again, a situational analysis can be a great tool in determining priority water-quality issues in a particular locality.

Some generalizations about localities and their interest in water quality can be made. For example, in rural areas, the quality of well water and septic-system maintenance will likely be of major interest to residents and local governments alike. In suburban areas, lawn and yard care is important to residents and commercial landscapers. Neighborhood appearance is a great concern to homeowner associations, and storm water management is an issue localities are struggling to deal with. Inner cities may have polluted rivers, municipal water problems, and significant runoff due to lack of areas for water infiltration. All of these scenarios are prime candidates for innovative water-quality programming.

Keep in mind that using a *watershed approach* means that you will potentially have clientele from

Figure 1a. Sample Extension Brochures
(see Appendix B for complete listing)



urban to rural areas and you will share programming responsibilities with agents and/or other individuals from adjoining areas that are part of the same watershed. Some localities may have two or more of the above scenarios in the same area. What do you do? Possibilities include using your situational analysis to determine which is the highest priority, conducting two different programs, partnering with another agency that is already working with one of the groups, or approaching both groups to see which one is more receptive.

In determining which group you will most impact, consider location as well as socio-economic trends. The following possible types of audiences combine physical environment with socio-economic trends:

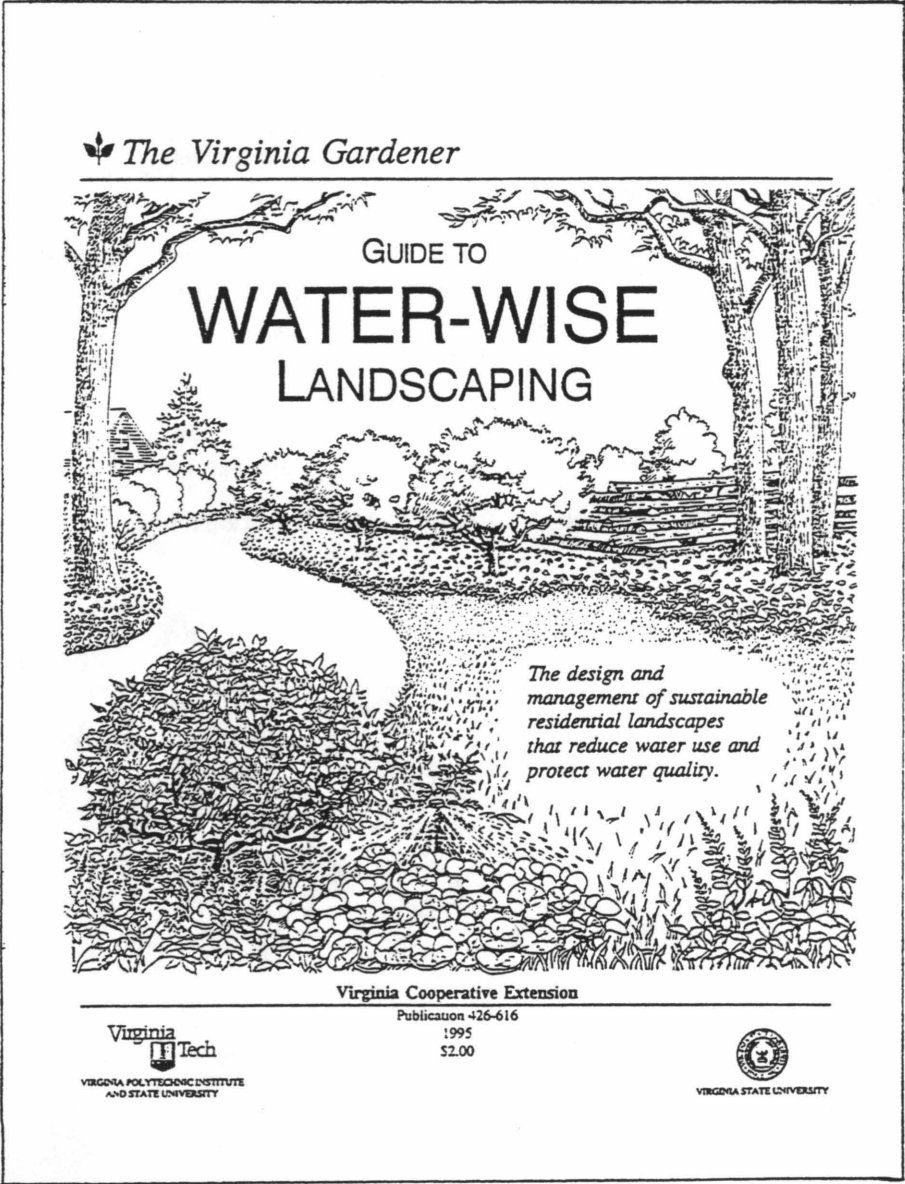
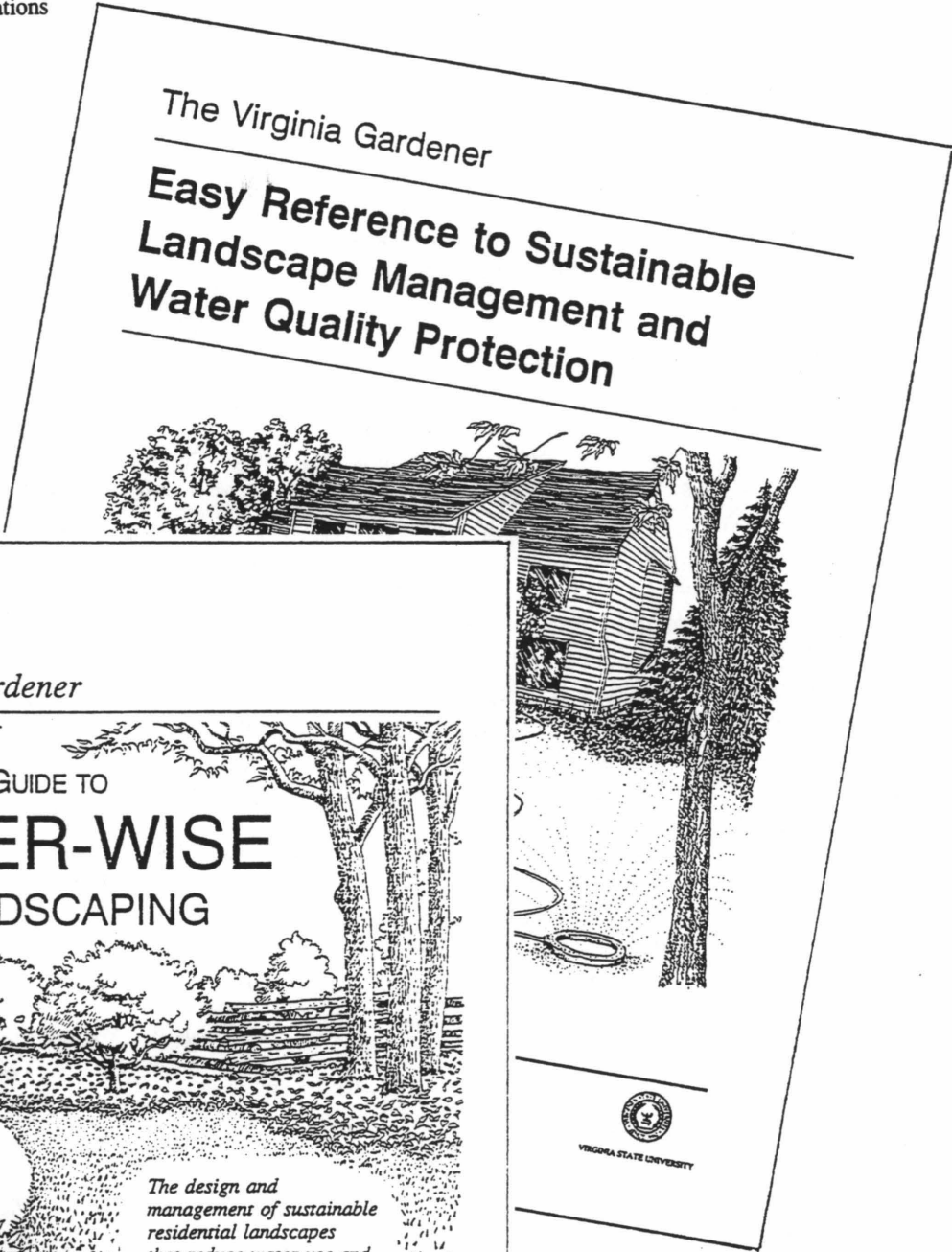
- renters in a low-to-moderate income urban area
- senior citizens and retirees in an established residential area
- first-time homeowners in a new subdivision
- homemakers in a rural non-farm area
- nursery and garden center employees in a rapidly developing area

Grouping audiences in as narrow a manner as possible allows for fine tuning the program to the actual needs of the people. Avoid the broad-brush term "residents" in describing your audience. As illustrated by the previous groupings, one can see that different audiences require different educational approaches. Avoid the dead-end trap of having a program in search of an audience by spending time now on identifying your audience. If you are currently working with a defined audience, consider if it would be appropriate to include water quality in your work plan. If you are not yet working with a group, which would have the most effective interaction? Which is a priority for your county's situational analysis?

What Type of Education Will You Do?

Educating the public is no small task. Education means different things to different people. For example, brochures (Figure 1a), Extension publications (Figure 1b), videos, press releases, articles, workshops, and field days are common public education techniques or tools used by Extension agents. These tools and techniques are often more *informational* than educational; that is, they satisfy an immediate need for information or solve a specific problem, but many have little impact or sustained behavioral change. These

Figure 1b. Sample Extension Publications



techniques provide a "one-shot" approach that is difficult to quantify other than to document the number of people who attended, watched a video, or received a publication. The impact of the material (e.g., did people change their actions for the better or go on doing what they did before?) is hard to determine. Nonetheless, such informational tools certainly have a place and are effective at raising awareness and imparting some knowledge or skills.

More in-depth educational opportunities, such as programs in which people progress through a series of steps or classes, are generally referred to as *developmental*. In this case, people learn and change behaviors as they go through an educational program. This change can be assessed by various methods. One common way is with a pre- and post-survey. The impact of this type of education is documented by percent change in recommended behaviors, practices, or attitudes. The developmental education opportunity is more involved, requiring a higher level of staff and participant commitment than an informational program, but the developmental program is not applicable to all situations.

Early in the planning stage, you will need to determine your approach to education. Decide the outcome you want to achieve, such as a change in participant's attitude, knowledge, skill, or behavior change. Table 2 illustrates considerations of different approaches to public education.

You may wish to construct your program so that all of the above educational approaches are addressed and feed into one another in a vertical fashion, similar to the five-step model of *The Water-wise Gardener* program. Having several steps with varying levels of commitment will allow community members more flexibility to enter and exit your program according to their needs. For example, some people become aware of the program through a flyer, attend a field day, sign up for volunteer training, and go through the one-year program. Other individuals may only wish to attend particular field days of interest to them. If the program is flexible, more members of the community may be reached. Another programming option is to add a step in the

program each year or as resources and interest justify.

Identify Goals and Measurable Outcomes

Successful programs begin with goals and objectives. *Goals* can be thought of as what you want your program to achieve. *Objectives* to carry out these goals should be achievable, measurable, and for a specific time frame. For example, the objective, "to educate 100 county residents on proper lawn fertilization techniques so that 50 percent report a decrease in fertilizer use after one year," meets this criterion and is easily referenced to check progress. It can be difficult to set objectives months before any work is actually done, but it is essential so that you have a starting point. Objectives can always be adjusted up or down as the project gets underway, just as goals may change as more information becomes available.

Many people feel that they have somehow failed if they set a goal and subsequently do not meet it. This is not the case at all! Perhaps the goal was too ambitious, or factors beyond your control, such as weather or staff changes, prevented you from achieving the objective. Using the knowledge you have after initiating the program, revisit your

Table 2. Types of Public Education and Likely Outcomes

Education Approach	Likely Outcome
Informational	
Promotional items, brochures, a seminar	Change in <i>attitudes and knowledge</i>
Developmental	
Series of seminars, volunteer training	Change in <i>attitudes, knowledge, and skills</i>
Implementational	
Above <i>plus</i> one-on-one consultation with repeated reinforcement	Change in <i>attitudes, knowledge, skills, and behavior change</i>

objectives and adjust them up or down or change them entirely for the next year. This is what is so great about setting goals and objectives—you can see where you did okay and where you need to do better.

Sometimes, especially with low numbers of participants, people feel it is not worth setting objectives and measuring results. It is easier, however, to gauge achievable goals and objectives by starting with a small program, then expanding and growing with the program. Your program will also stand out in terms of effectiveness if it is developmental rather than informational only. In terms of impact, it is more valuable to achieve a 50 percent increase in participants composting than to give 15 people a handout on backyard composting. Additionally, many grant sources require established goals and objectives as a standard part of any proposal. A percentage reporting system based on established goals and objectives also fits nicely with many state and local reporting requirements, annual reports, performance reviews, and Board of County Supervisor/City Council updates.

If you are having difficulty establishing goals, talk with peers you respect and ask to see the goals they have set for their programs. Ask them what they think about the goals you are setting. Most importantly, involve your clientele or “stakeholders” in setting goals.

Strategies

The goal to educate the public on alternative lawn care practices to prevent nonpoint source pollution is the framework on which *The Water-wise Gardener* builds. Our objectives are “what” we will do; “how” we do it constitutes our strategies. Many people find it helpful to have a holistic approach here, with all strategies relating to one another just as all your objectives relate to one another. In this case, they all deal with some aspect of teaching people about water quality. Let us look at some actual strategies.

- plan, promote, and conduct 14 seminars on lawn care and water quality

- develop promotional items on lawn care and water quality
- recruit, collect data, and evaluate 100 volunteer and 25 demonstration lawns
- compose six articles on water quality for newsletters and other media
- conduct water quality training for five Master Gardener classes state-wide
- train and supervise 15 Master Gardeners volunteers
- plan, promote, and conduct two septic-system maintenance conferences

You can see that these *strategies* will put us on the right path to reaching our general goal of educating the public on nonpoint source impacts from lawn and septic systems. In order to meet the more specific objectives, such as 85 percent of homeowners stay with the program for a year, 90 percent of soil sample tests completed, and 40 percent reduction in homeowner fertilizer use, more specific procedures are still needed.

Examples are:

- collect written agreements signed by volunteers, stating they will participate in the program for one year
- collect volunteer soil samples and pre-surveys; enroll participants in program
- conduct two workshops on fertilization
- provide additional training to Master Gardeners on proper lawn fertilization

While these specific procedures are no guarantee that the goals will be met, you can see that thought has been put into coming as close as possible to meeting the goal.

Establishing goals, objectives, strategies, and procedures allows you to effectively and efficiently implement a program and accurately measure your program accomplishments (and disappointments) in a manner consistent with continuous program improvement. The goals and objectives you set now will allow you to see how your program functions over time, provide you with

documentation for reports and reviews, and, most importantly, put you on the right path to a highly successful program. We will discuss evaluation of programs in Chapter 4, Data, Evaluation, & Reporting.

Identify Resources

Now that you have answered some major questions relating to goals and audience, you are ready to address resource needs for your program. There are many possible types of resources needed to conduct a water-quality program, including part-time help, qualified speakers, your time, trained volunteers, supplies, a location for seminars or field days, and technical publications. Some of the more obvious *administrative* resources to consider in planning a program include:

- staff and volunteer time to design, promote, train, conduct, and manage
- funds for wages and salaries
- funds for travel
- funds for printing
- secretarial support
- office equipment, such as computers, printers, phones, and fax machines
- office supplies, such as paper, pens, and pencils
- office space

If you are starting out with a small program, many of these may be available at no direct cost. For example, a specialist agrees to develop a new publication on lawn care and water quality. The agent allots one afternoon a week out of his or her regular schedule to spend on the program, using existing office resources. Although these donated services require no direct transfer of dollars, it is important to account for their value.

Budgeting

Preparing a budget allows you to establish how much the program is costing your organization, even if it is only a few hundred dollars. A budget

is, of course, an absolute necessity if you are applying for external funding. Table 1 provided sample budgets for various steps of *The Water-wise Gardener* program. Realize that some things involved in your program will not fit nicely onto a budget sheet, such as time spent planning and getting the program off the ground, training volunteers, and attending meetings.

To reduce the actual cash costs of your program, develop contributions. Consider as sources of supplies and services all businesses and agencies within your community. Businesses are often willing to support parts of your project by providing supplies and services, especially if they receive public attention from the visibility of your program. Table 3 provides examples of donated contributions. If you have available plenty of donated services, you may not need any funding for the first year. Later, when your program is off and running, you may apply for funding to expand it.

Table 3. Examples of Donated Supplies and Services

Supplies

- Office supplies
- Plant materials and tools for demonstrations
- Promotional materials, such as magnets and lawn height mowing gauges
- Event door prizes, such as shirts, hats, or cups
- Snacks and beverages for refreshment during an event

Services

- Advertising and promotion of events
- Printing of programs and flyers
- Mailing of promotional materials, such as in utility bills
- Volunteer support

Table 4. Possible Funding Sources for Water Quality Education Programs

- Local public works department, especially storm water divisions or utilities
- Water authority
- Health department, especially environmental health or well and septic division
- Soil and water conservation district
- Park authority
- Board of county supervisors or city council
- Rural electric cooperative
- Farm bureau
- State department of natural resources
- U.S. Environmental Protection Agency nonpoint source contact for the region
- Forestry departments and divisions
- Department of Transportation
- Land-grant university Cooperative Extension water quality contact
- U.S. Department of Agriculture, Natural Resources Conservation Service
- Other federal agencies operating in your area, e.g., U.S. Fish and Wildlife Service, U.S. Corps of Engineers, U.S. Geological Survey, National Oceanic and Atmospheric Administration
- Other public/private conservation/ water groups, e.g., Izaak Walton League, National Wildlife Federation, Trout Unlimited, and local or state watershed groups

If you do need actual operating funds, investigate the numerous government agencies (federal, state, local) that provide grants for educational programs on water and environmental issues. Talk to your department head, director, county administrator,

or on-campus specialist about possible funding sources. Many agencies (e.g., public works departments) that are now required to do public education as a result of the National Pollutant Discharge Elimination System (NPDES) may be willing to allot some funds to you if they are not equipped to do education. Additionally, private foundations are a potential source, although they tend to want to fund a single activity or event (field day, flyers, registration fees) rather than provide on-going funding for actual positions. Table 4 should give you some ideas.

Cooperating with other state and local agencies or volunteer groups is a key to successful programming. Perhaps another agency could assist you in establishing a program, such as by paying for flyers, providing speakers, or meeting other needs. Jointly applying for grants or funding also conserves resources and increases credibility. Think of other components that might be included in your program that you are not equipped to provide, such as monitoring, sampling, or testing water; conducting scientific research; or computer modeling, and develop a partnership with another agency or group currently involved in such activities that might assist you by adding a public education component to their program. You might even add them to your program. As the role of public education in water quality protection continues to become more widely recognized, many other groups and agencies are likely to develop water-quality education programs.

Establishing Program Partners

Identifying and talking with community leaders early in the program is worthwhile for a number of reasons. It will ensure that your efforts are well grounded and not duplicative of other community efforts and that you will have community support for your program. In time and with proper cultivation, such individuals could become advocates or volunteers for your program. Having such people outside your office able and willing to devote time to your program increases your credibility and sends a strong message that this issue is important. In addition, the media is generally more willing to provide gratis program

promotion because of the involvement of these individuals.

Identifying appropriate community leaders is no small endeavor in our transient and busy society. Obvious starting places are elected and appointed officials, such as mayors, county supervisors, and members of the General Assembly. If you know of an elected official who has a particular interest in the environment or who lives in a community you will be working in, he or she might be a tremendous ally and resource.

Those individuals who are in charge of or work in various departments and divisions with water responsibility are also valuable partners. Examples include watershed protection, public works, water conservation districts, and the health department. Such individuals are likely to be knowledgeable about the more technical aspects of local water quality, priority watersheds in your community, or a particular issue with which these departments are currently dealing. Many of these agencies have associated boards or commissions that convene specifically to address water-related issues. It may be worthwhile to attend a meeting or two and just listen before presenting your request for information and guidance.

Another important group to work with is the established local volunteer network. Examples include all the environmental groups and councils; civic and religious groups; Master Gardeners, Homemakers, and 4-H clubs; business groups; and homeowners' associations and neighborhood watch groups. In some localities, the local Chamber of Commerce maintains a list of volunteer and homeowner association contacts. A brief survey asking for input could be mailed out to all the groups. Great ideas often come from such informal surveys. Once tabulated, the results should be announced with a press release to the local media to stimulate awareness of the problem and interest in the solution. This is an excellent time to request additional input and announce your program plans.

One of the best ways to insure grassroots involvement is to form a leadership council or advisory board for your program. Many such councils or advisory committees used for other Cooperative Extension program areas experience high degrees of success. If you actively solicit

advice and help from people "in the know" before designing your program, the subsequent program cannot help but have advantage over one that has been designed without such help.

Try to balance what the community needs or wants with what you are prepared to do. Obviously, there is some risk involved here. For example, you may be prepared to do a horticultural program and the group may prefer a well-water testing program. Perhaps you could combine the two in some way or learn more about the other topic. The key is to remain flexible from the beginning and consider all program options.

Select Community, and Gather Support

Where will you conduct your program? One option is to select a defined community, neighborhood, or subdivision for your program based on your situational analysis and the subsequent efforts put into needs assessment and community involvement. Water-quality programs work very well as partnerships with grassroots entities, such as homeowner associations or civic groups. At this most local of all levels, you are likely to find the greatest interest among residents regarding any issue. This does not mean that another type of program will not work; it is just that experience conducting both types of programs gives an edge to the community program. This should be no surprise when you consider that a hallmark of Extension programs has always been the ability to extend to the grassroots level. This is an important point to keep in mind because many other agencies and groups interested in conducting public education are ultimately not successful or become frustrated because they are never able to get down to the grassroots level.

Careful selection of community is essential. Assuming you go the community route, you will be obligated to conduct the program in the community for some period of time, at least a year. You may want to consider and evaluate two or three locations before making a final selection. One way to evaluate the receptiveness of a community is to give a presentation to a homeowner or neighborhood group and see how you are received. Table 5 provides sample

questions useful in evaluating a community for water-quality programs.

It may be helpful to make a list of such questions and answer them for each community. Keep in mind that rarely will one community be ideal in every way. Two of the most important factors in selecting a community are the presence of supportive community leadership and active volunteers. Even if all other answers are favorable, your chances for a successful program are minimized without leadership and volunteers in the community. Be selective in your choice; you are offering a valuable service to the community!

Early Marketing Efforts

At this point, you are well on your way to initiating a well-planned water-quality program. Now is a great time to let others know of your intentions, even if the actual program is still months away. Program marketing is something that many Extension agents are not accustomed to or comfortable doing. Perhaps they feel that the program should speak for itself, or they feel they do not have the time for promoting their programs. Marketing is essential because a favorable reputation is no guarantee that people will come out to a program. In some locations, many citizens are unfamiliar with Cooperative Extension. Therefore, a major percentage of time needs to be allotted to marketing the program and Cooperative Extension. Many of the ideas used are covered in more detail in the media section and are shown in the example section. For now, let us concentrate on some early marketing efforts.

If you have identified the water quality issue you will address, have targeted the community, and have obtained the support of leaders and volunteers in that community, then you have some news to share. A mailed news release to local media, such as announcing that "...the Lakeridge community was selected by the Cooperative Extension Water Quality Leadership Council for a lawn care and water-quality program to begin next fall," is a good way to get things rolling. A sample news release format can be found in Figure 2. Have your volunteers call up local media contacts a few days later to see if they received the release. The volunteers can offer themselves as a source of

Table 5. Questions to Ask in Evaluating a Community for Potential Water-Quality Programs

- Is the community in a priority watershed (as defined by water authorities/grant sources)?
- Any water quality problems (algal blooms, water contamination, failing septic systems) ?
- Evidence of leadership in the community (homeowners association, neighborhood watch)?
- Are community leaders interested in a water-quality program? Are residents?
- Are community members active in local politics?
- Do politicians or other VIPs live in the community?
- Does the community have a local newsletter?
- Do Master Gardeners or other Extension volunteers live in the community?
- Is there a lake, river, creek, or reservoir in or near the community?
- Are lawns and landscapes well kept?
- Is the water supply public or private wells?
- Are any residents on septic systems?
- Is there a location that can hold 50 people (park, club house, school, pavilion)?
- Is the community large enough to support such a program?

more information now or in the future. It is a good idea to set up a "clippings" file to keep track of all the press articles your program generates (see Figure 3). Be sure to slip the source title, date, and other publication information for your records. Funding sources and award applications like to see evidence of press coverage.

Think creatively; do not limit your early marketing efforts to only a news release or two. Design a program brochure, develop a logo, or get on the local cable access channel to discuss water quality. Some find it helpful to work up a marketing plan for the upcoming program. Continually staying in the public's eye will require innovative ideas.


Timing and Schedules

To effectively structure a program, you need to develop a written schedule. A schedule should address the actual times, dates, and locations of your activities. Setting dates six months ahead of the event provides time to reserve desirable

locations, acquire good speakers, and market the events. As many events take place on weekends, it is important to plan other professional and personal commitments with these dates in mind.


When you hold specific events is up to you, but you should consider convenience for your audience and speakers, convenience to you, and availability of meeting locations. Saturday mornings are great times for events because people have a few extra hours in

Figure 2. Sample News Release Format



Virginia Cooperative Extension

PRINCE WILLIAM COUNTY OFFICE
Water Quality Program
8033 Ashton Avenue, Suite 105
Manassas, Virginia 22110
703-792-6285 FAX 703-792-4630



FOR IMMEDIATE RELEASE

JANUARY 10, 1995

FOR MORE INFORMATION CONTACT:

Marc Aveni

Marc Aveni, Extension Agent

LOOKING FOR LAWNS

Prince William County, VA - Spring is right around the corner and Virginia Cooperative Extension wants your lawn to look good, save you time and money, and help prevent pollution of our local waterways and the Chesapeake Bay all at the same time! A little attention to what you do on the lawn and landscape is all that's needed to keep the green in your pocket, on your lawn, and in our environment.

As part of their water quality public education efforts, the Extension office is looking for individuals interested in "volunteering" their lawn to learn more about proper lawn care and water quality. The only requirement is a willingness to learn and implement lawn care practices that are beneficial to the lawn and do not contribute to non-point source pollution (water pollution not attributable to single source).

Free lawn and garden field days will begin March 18 at Ann Moncure Wall Park in Montclair, and March 25 at The Ben Lomond Community Center in Manassas. In addition, trained Master Gardener volunteers will be available to consult one-on-one with homeowners who sign up to follow the programs recommendations. Additional field days are being planned in Arlington, Loudoun, and Fairfax. For more information on this award winning program, or to volunteer your lawn, call the Prince William unit of Virginia Cooperative Extension at 703-792-6285.

#####

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the morning. Try to avoid holiday weekends when people are likely to be out of town or involved in family or religious events. Lawn and garden seminars are best scheduled according to times of peak interest, such as in the spring and fall in Prince William County, Virginia. The well and septic seminars are not as seasonal in nature, and, therefore, not as time dependent. Remember that no one date and time is perfect for everyone so use your judgement and pick some dates!

Locations will require serious consideration on your part. To begin with, The Americans with Disabilities Act (ADA) mandates that all government-sponsored events be fully accessible and barrier free. Keep this in mind when

evaluating potential sites. Also, if events will be held outside, consider that factors, such as inclement weather, could be a problem and use of overheads and slides is limited. If held inside, it may be difficult to have actual demonstrations of certain practices and the likelihood increases of longer (and potentially less interesting) presentations. A covered pavilion in a park or on school grounds works very well as a location for an outdoor seminar. The cover provides some protection from rain and wind, schools and parks are easy for people to find, and most pavilions have picnic tables where people can sit and write notes. Many pavilions must be reserved in advance, so check into it months before the planned date.

Figure 3. Sample "Clippings" File



When all the locations, dates, and times are determined, send out a news release to the local media and prepare a flyer that describes the program and gives the specifics of who, when, where, and why (e.g., why people will want to attend). Professional-looking, attractive flyers can be produced at a relatively low cost and are an

item that should have been included in your budget. Look for price-reducing alternatives, such as a local high school with a print shop that will design and print the flyer at cost, a Master Gardener volunteer with word processing skills, or having the local water authority agree to produce one as a community service. Examples of flyers are included in Figure 4.

Figure 4. Sample Flyers

Is Your Lawn Polluting the Water?

Much of what goes on the landscape can end up in the water due to erosion and rain water run-off. Learn to care for your yard while protecting local water quality and the Chesapeake Bay!

Fall Landscape Tips to Protect Water Quality:

- ✓ take a soil test through the Extension office
- ✓ fertilize and lime carefully based on soil test results
- ✓ keep or sweep fertilizer off paved areas
- ✓ aerate and overseed thin lawns
- ✓ keep leaves, pet wastes, and debris out of storm drains
- ✓ rototill excess leaves into for spring composting

another public ec
Virginia Cooperative Ex

703-

Turn for informati

Learn How to Have a Great Looking Lawn and Landscape While Protecting Water Quality

Join Us Fall 1995 at:

Anne Wall Park (AWP), 4450 Waterway Drive in Montclair
Ben Lomond Community Center (BLCC), 10300 Sudley Manor Drive in Manassas (in the brown barn)

soil testing, aeration, overseeding
Sept 9 (AWP)/Sept 16 (BLCC)

lawn fertilization
Oct 14 (AWP)/Oct 21 (BLCC)

leaf recycling and mulching
Nov 11 (AWP)/Nov 18 (BLCC)

Anne Wall Park meets outdoors; Ben Lomond Community Center meets indoors. Both are free and run from 9-11 a.m. Bring your lawn and garden questions and ask the experts!

Let us show you how to have a great looking lawn and landscape

Join us this Spring at:
Anne Moncure Wall Park
4450 Waterway Drive, Dumfries (Montclair)

March 19	Mowing and Pruning	9-11 AM
April 16	Backyard Composting	9-11 AM
May 17	Integrated Pest Management	9-11 AM
June 4	Plant to Avoid Problems	9-11 AM

All field days are free!
Bring your lawn and garden questions and ask the experts.

Prince William Cooperative Extension
703-792-6285

Funding Provided by ES-USDA Project #93-EWQ1-1-9054
Chesapeake Bay Residential Watershed Water Quality Management

You're the Solution to Water Pollution

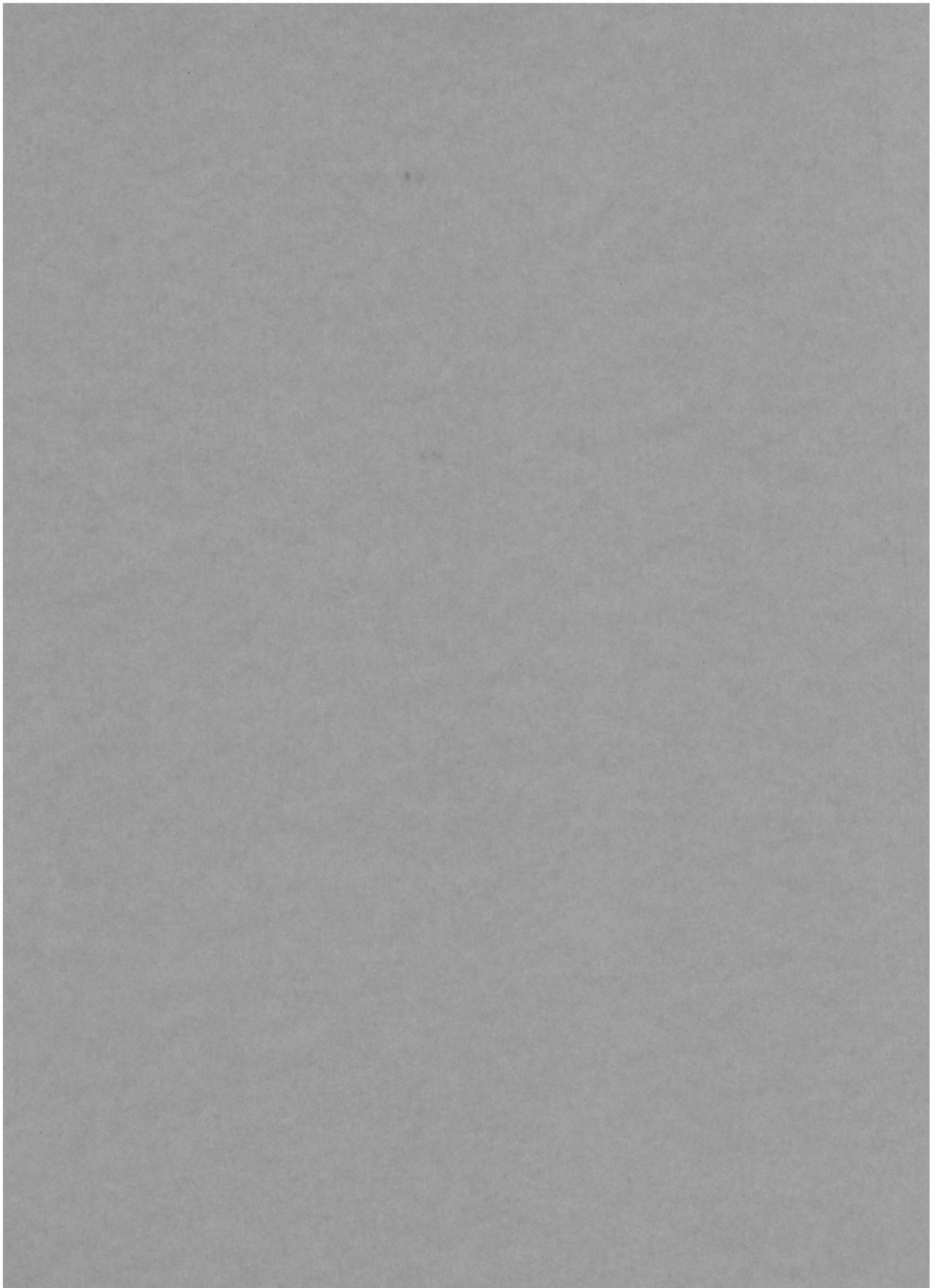
Find out from the experts the best way to care for your lawn and landscape. Learn to do it yourself while protecting local water quality and the Chesapeake Bay!

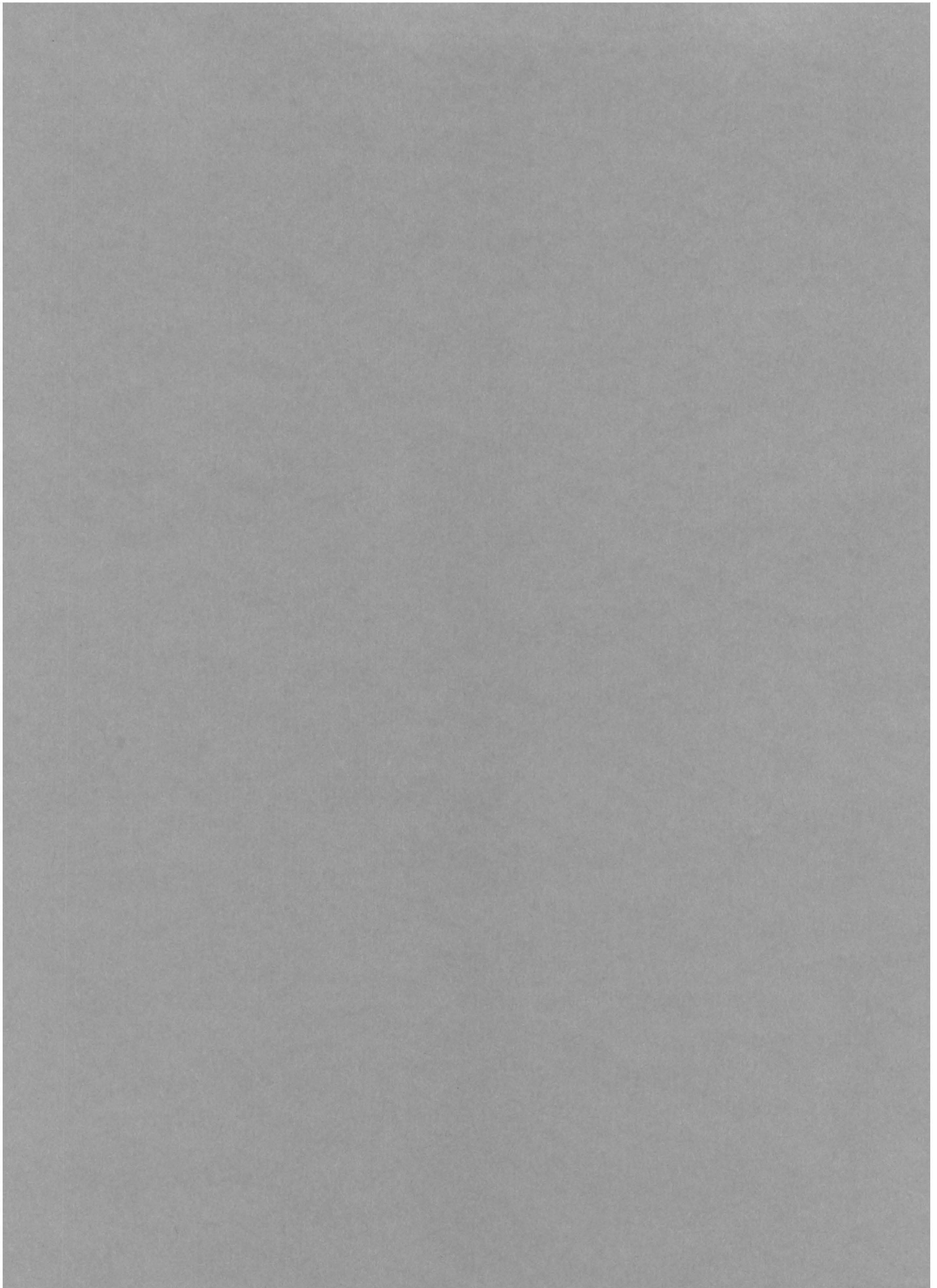
Join us this Spring at:
Ben Lomond Regional Park
7500 Ben Lomond Park Drive, Manassas

March 26	Mowing and Pruning	9-11 AM
April 23	Backyard Composting	9-11 AM
May 14	Integrated Pest Management	9-11 AM
June 11	Plant to Avoid Problems	9-11 AM

brought to you by
Prince William Cooperative Extension
703-792-6285

Turn for information on Montclair area field days.





3

Implementation

After all the time spent planning your water-quality program, you are probably anxious to implement it. In Chapter 2, we discussed the different education approaches, such as informational, developmental, and implementational. Hopefully, you have determined which style best suits your needs, and at which programming step you will work. Many programs will have components of all three approaches at any given time. Regardless, it is essential to know what you hope to achieve with your program and your plan of attack as you begin to define your water-quality message.

Program Delivery

Keep in mind that you will be delivering a message to the public. In your role as an "expert", the public will naturally look to you for help in defining the water-quality message for themselves. It is, therefore, critical that your message convey sound science rather than personal opinion. In addressing issues affecting water quality, consider whether or not your message conveys that any and all uses of fertilizers and pesticides are bad for the environment *period*, or that pesticide and fertilizer use can significantly compromise water quality when inappropriate and excessive. Consider whether or not your audience will understand that, as individuals, they do indeed make a difference in water quality through their individual actions. Determine if your message promotes long-term landscape sustainability or emphasizes how to achieve a good looking lawn and landscape the fastest way possible. These messages are not

necessarily mutually exclusive, but show the importance of considering *ahead of time* what message you and your speakers will be giving.

Most Cooperative Extension programs contain a mixture of informational, developmental, and implementational components. *Informational* programs are focused on giving out and sharing information, such as going before a group and speaking for 20 minutes or so about a topic. You may even give out a handout or two. In most areas, Cooperative Extension programs are trying to get away from the purely informational approach to education in favor of a more *developmental* approach. The aim of a developmental program is to move a targeted audience confronted with a *problem* (poor water quality, a bad lawn, overuse of fertilizer) through an educational process that provides the attitudes, knowledge, and skills necessary to adopt desired behaviors. *The Water-wise Gardener* also adds an *implementational* element that leads to long-term behavior change by providing one-on-one consultation and supervision to carry the clientele through the process until the individual is assured of personal ability.

The Five-step Program Involvement Model developed for *The Water-wise Gardener* program is summarized in terms of educational approaches (see Table 6). As was mentioned previously, each step contains an increased level of commitment and effort on the part of the agent, volunteers, and homeowners. Most agents are already conducting Step 1 activities, and some are even doing Step 2. Hopefully, this guide will help agents to increase

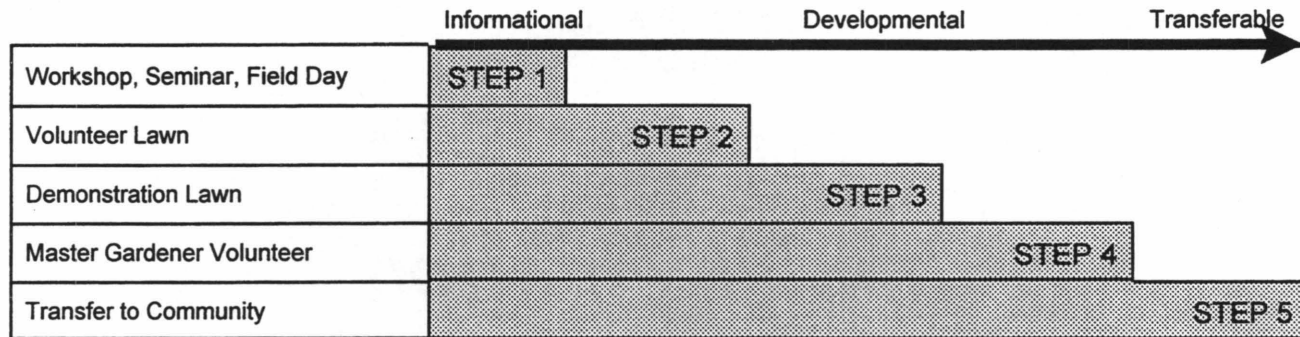


Table 6. The Five-step Program Involvement Model for Water-Quality Education

programming efforts. The main benefit of the five-step arrangement is that everyone enters *The Water-wise Gardener* program at the same place (Step 1), thus simplifying data and demographic collection. It also affords participants the flexibility to exit the program at whatever step they choose. In most cases, the majority of people will be involved at Step 1. As time goes on, some will move up to Step 2, 3, and 4. Most program participants will have exited the program before reaching Step 4, putting their knowledge directly to use rather than becoming a Master Gardener. Ideally, all Cooperative Extension programs should culminate at Step 5, where they are so vital that the community seeks a more active role in the day-to-day operation of the program, and transfer of program management occurs.

Step 1 - Workshops, Seminars, and Field Days

Seminars, workshops, and field days are typical Cooperative Extension program delivery methods. An agent will probably begin by conducting a workshop or seminar. Such methods work well to kick off or introduce a new program to a community, and are great informal educational opportunities.

Be aware that there are subtle differences between these delivery methods. A seminar implies specialized study of a topic by a smaller group under expert guidance, whereas a workshop usually means that more than one topic is covered in a more general way and in a shorter time period of time. A field day means different topics are

presented at the same time, and people are free to choose those in which they are most interested.

Figure 5. Sample Program for Workshops

MAY WATER QUALITY WORK SHOP


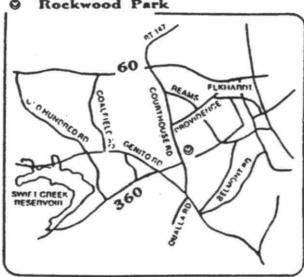
INTEGRATED PEST MANAGEMENT

OBJECTIVES

AT THE END OF THIS WORK SHOP, PARTICIPANTS SHOULD BE ABLE TO:

- UNDERSTAND THAT PESTICIDES ARE CHEMICALS USED TO KILL OR REPEL PESTS.
- UNDERSTAND THAT PESTICIDES MAY POSE A HEALTH THREAT TO PERSONS APPLYING THEM IF NOT HANDLED CORRECTLY, AND THAT THEY ALSO POSE A THREAT TO ANIMALS, PLANTS, AND INSECTS BEYOND THE INTENDED PESTS.
- UNDERSTAND THAT GROUND AND SURFACE WATER CAN BE CONTAMINATED WHEN PESTICIDE POLLUTED WATER MOVES OVER THE LAND SURFACE OR THROUGH THE SOIL TO THE WATER TABLE.
- UNDERSTAND THAT INTEGRATED PEST MANAGEMENT (IPM) IS AN ECOLOGICAL APPROACH TO PEST MANAGEMENT THAT INTEGRATES CULTURAL, MECHANICAL, BIOLOGICAL, AND AS A LAST RESORT, CHEMICAL CONTROL METHODS.

Figure 6. Sample Program for Field Days

SPRING LAWN CARE FIELD DAY		
<p>Purpose</p> <p>This Field Day is designed to inform commercial groundskeepers, nurserymen, landscapers, and homeowners on turf management problems, varieties of fescue, turf pests and diseases, spring lawn care, as well as the methods and benefits of backyard composting and grasscycling.</p>	<p>Highlights</p> <p>Informational brochures, demonstrations, and exhibits will be provided on the following:</p> <ul style="list-style-type: none"> * Backyard Composting * Fescue varieties * Soil testing * Core aeration * Grasscycling * Turf pests and diseases * Environmentally Sound Yard Care 	<p>Bring your questions to discuss with Master Gardeners and Extension Agents who will be on hand.</p> <p>Location</p> <p>Call the Chesterfield Extension Office if you need further instructions at 751-4401.</p>
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>Saturday March 26, 1994 9:00-12:00 noon</p> </div> <p>Come anytime between the above hours. No pre-registration required.</p> 		<p>Rockwood Park</p> 

delivery methods, depending on your topic.

Step 2 - Volunteer Lawns

While seminars or workshops are great places to start, developmental programs should challenge people to greater levels of involvement. One of the most successful methods for developmental education on lawn care and water quality is the volunteer lawn, the second step of *The Water-wise*

All three delivery methods can be successful. Which one you use depends on your topics, speakers, and time availability. The informal approach of a workshop to share lawn and landscape information is usually successful, allowing two or three different speakers to discuss a topic for 30 minutes or so, then do a demonstration. A sample workshop program is presented in Figure 5. Field days work well if many different agencies or groups will be presenting information, and, if properly planned and promoted, they can accommodate large numbers of people (see Figure 6). For the well and septic information, a seminar format in which an "expert" lectures from a podium and the audience can sit at small tables and take notes is effective (see Figure 7). You may alternate between different

Gardener program. At this step, homeowners volunteer to implement the recommended practices they are learning at the workshops on their individual lawns. The homeowner signs a form of intent to implement the practices (see Figure 8), as well as keep track of lawn and landscape activities

Figure 7. Sample Seminar Program

**IF YOU DRINK WELL WATER
WHAT DO YOU NEED TO KNOW**

... to protect your family's health, the value of your property, and local water quality?
Find out from the experts!

**WELL HEAD PROTECTION
AND
WATER TESTING FOR HOMEOWNERS**

SATURDAY, OCTOBER 29, 10 a.m. TO 12 noon

Sudley North Complex, 7987 Ashton Avenue, Manassas, VA
Presented by Virginia Cooperative Extension, Prince William Department of Housing and Interior Design at Virginia Tech; and The Prince William Health Department
Turn for information on topics and registration ...

topics to be discussed include ...

- well anatomy
- well maintenance
- do's and don'ts around the well head
- when, how, and where to test your water
- household contaminants
- water treatment options

speakers include ...

Dr. Kathy Parrott, Extension Housing Specialist, Virginia Tech
Eric Aveni, Extension Agent, PW Cooperative Extension
Representatives from the Prince William Health Department

SEMINAR IS FREE, BUT SPACE IS LIMITED, PRE-REGISTER BY CALLING PWC EXTENSION: 703-792-6285
Sessions occur in 2nd floor conference room "A", persons requiring special arrangements should contact: PWC Extension by October 14, 1994.
Funding provided by the Virginia Cooperative Extension, U.S. Dept of Agriculture Project 891-EWQ2-1-0034, Virginia Residential Watershed Water Quality Management



and amounts of chemicals used on a calendar/record form for a specified period of time (see Figure 9). The volunteer works and consults with a designated Master Gardener in the implementation of recommended practices. Master Gardeners conduct at least one personal visit with the homeowner and establish regular phone hours when their assigned homeowners can call them with questions. We are very clear that the homeowner is responsible to see that the practices are implemented, not the Master Gardener or the Extension office. With some innovation, the concept of a volunteer lawn could also work as a volunteer well or septic system.

It is generally a good idea to start out with a small number of volunteer lawns (perhaps 10) the first year and become familiar with the process before committing to more. Some volunteer lawn owners can be rather needy, especially if their yard is a disaster and they are counting on the Master Gardener to answer all their questions! In many cases, the lack of trained (and interested) Master Gardeners will be the limiting factor on the number of volunteer lawns you can handle. Try to limit the number of volunteer lawns to what you and your Master Gardeners can realistically

Figure 8. Homeowner Agreement Form

Virginia Cooperative Extension
PRINCE WILLIAM COUNTY OFFICE
8033 Ashburn Avenue, Suite 103
Manassas, Virginia 22116-4202
(703) 792-4225 FAX (703) 792-4630

VOLUNTEER LAWN GUIDELINES

Purpose

This program is intended to inform you of new or alternative lawn care practices that have proven to be effective in non-point source pollution prevention. If you agree to follow the guidelines below, Prince William Cooperative Extension staff and volunteers will provide you with educational information that will help you, through your own efforts, to produce an attractive and sustainable lawn and landscape without the excessive use of nutrients and chemicals which contribute to non-point source pollution of our waterways. To be successful, we ask to make a commitment to the following:

As a volunteer lawn, I am willing to:

- Learn new or alternative lawn care and landscape practices
- Attend 7 Field Days a year, 4 in Spring and 3 in Fall
- Meet with trained Master Gardener volunteers
- Fill out 3 questionnaires during the year
- Promote this program in the community
- Follow a lawn care calendar for one year

I have read the above and am willing to follow the above requirements for a 1 year period

Signed: _____ (PLEASE PRINT)

Date: _____

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Figure 9. Lawn and Landscape Calendar/Record (see Extension publication 426-612 for original form)

Water Quality Landscape & Lawn Care Calendar & Record

Pull-out Section

HOME OWNER: _____

Year _____
Front Yard _____ sq ft of lawn
Back Yard _____ sq ft of lawn
Other _____ sq ft of lawn

Activity/Cost	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	Totals
Soil test ¹ ; Date, Location, Results													pH
Fertilizer ² ; Date, Analysis, Rate (Program I—Quick-release Fertilizer, Cool-season Grass) ³													lb/1000 sq ft
Fertilizer ² ; Date, Analysis, Rate (Program II—Slow-release Fertilizer, Cool-season Grass) ³													lb/1000 sq ft
seed \$													\$
Lime ⁴ ; Date, Type, Rate													lb/1000 sq ft
seed \$													
Care section: Date, Area													
seed \$													
Overseeding: Date, Species, Variety, Rate, Soil Preparation													
Mowing: Height, Dates, Clippings Left on Lawn/Composted/Chop													
seed \$													
Water Application: Time, Amount													
seed \$													

How to Use this Calendar

Use this calendar to help plan your landscape maintenance schedule for the year. The white areas on the chart are recommended times for a given maintenance practice. You may also wish to note the appropriate seed, the cost, and the time needed for each activity. This will allow you to evaluate the effectiveness of following recommended landscape plans. The calendar can provide a useful record if you wish to discuss your current landscape practices with your local Extension agent.

Lawn Fertilization

The lawn fertilization programs outlined here are for cool-season grasses only—Kentucky bluegrass, perennial ryegrass, tall fescue, and fine-leaved fescue. Warm-season grasses are best fertilized in the summer, use the fall. Consult your local Extension agent for information on fertilizing warm-season grasses.

Lawn Fertilization Program I

The fertilizer program is designed for quick-release fertilizers and is not suitable for ready soils. Slow-release fertilizers make savings readily available to plant roots, an advantage when fast results are needed. Also, because these fertilizers are available in the soil very long, you have better control over when the fertilizer is acting. This is useful, for example, if you wish to apply fertilizer in the spring and want to ensure that the fertilizer is no longer acting during the summer months. Quick-release fertilizers have several disadvantages, however, especially in terms of water quality protection. If placed on an area within the limit of application, excess nitrogen may be leached through the soil before it is used. Quick-release fertilizers are applied more often, but at lower rates, than slow-release types. The primary disadvantage, however, is the potential for water pollution when nitrogen leaches through the soil into the groundwater. The longer of water contamination is greatest in areas with sandy soils or high nitrate-N. For this reason, Lawn Fertilization Program I is not recommended for these areas.

Lawn Fertilization Program II

The fertilization program uses slow-release fertilizers such as those with more than 50 percent water-insoluble nitrogen (WNI), sulfur-coated urea, and

White areas are recommended times for activity

LAWN FERTILIZATION PROGRAM I—Cool-season Grasses
Recommended rates and times for quick-release fertilizers (see text 80% WNI)⁴

Maintenance Level	Sept	Oct	Nov	May 15 to June 15
Low	0	1	0	0 to 1/2
Medium	1	1	0	0 to 1/2
High	1	1	1	0 to 1/2

LAWN FERTILIZATION PROGRAM II—Slow-season Grasses
Recommended rates and times for quick-release fertilizers (see text 80% WNI)⁴

Maintenance Level	Sept	Oct	Nov	May 15 to June 15
Low	0	1	0	0 to 1/2
Medium	1	1	0	0 to 1/2
High	1	1	1	0 to 1/2

any natural organic fertilizers. These fertilizers gradually release nitrogen and are therefore much less likely to leach nitrate through the soil. Slow-release fertilizers are themselves especially recommended for ready soils. Slow-release fertilizers also can save time, as applications usually only be made less frequently than with other fertilizers. Unfortunately, you cannot closely control when nitrogen is released. For urea-type fertilizer applied in late fall any still be releasing nitrogen in spring. Because natural organic fertilizers, such as

Soil Test Management

Soil testing is a critical step in lawn care. It provides information on soil pH, nutrient levels, and soil texture. Testing should be done every 2-3 years. The results of a soil test can help you determine if you need to apply lime, fertilizer, or other soil amendments. For more information on soil testing, contact your local Extension agent.

Water Management

Proper watering is essential for a healthy lawn. Water should be applied deeply and infrequently, about once a week. This encourages deep root growth and drought tolerance. Avoid watering during the heat of the day. For more information on watering, contact your local Extension agent.

PULL-OUT LANDSCAPE & LAWN CARE CALENDAR AND RECORD

handle, and direct the crowds to the field days and workshops. You can then recruit the best of the field day and workshop attendees to volunteer lawn status. A one-year commitment from the volunteer lawn homeowners is requested, and many stay with the program for up to two years.

Once you have large numbers of volunteer lawns with Master Gardener consultants, it becomes essential to establish a Master Gardener Volunteer Coordinator to work with these individuals and report to you. A part-time technician to help you in the volunteer lawn management, especially after you have over 20 or so volunteer lawns, is a viable alternative to a Master Gardener Volunteer Coordinator. You may be able to hire a technician by obtaining a grant or other funding from your state's §319 program or local public works department.

Several benefits arise from having the Master Gardener work directly with the homeowner. The one-on-one interaction insures that the water-quality message is truly reaching the "grassroots" step. The homeowner's efforts can be encouraged by the Master Gardener, and questions can be answered there on the lawn. The personal contact establishes a relationship from which accurate data can be collected and reported, and the agent is free to spend time in other ways. We will discuss training Master Gardener volunteers to work one-on-one with homeowners in the volunteer section.

Step 3 - Demonstration Lawns

Demonstration lawns are the third step in *The Water-wise Gardener* program. A demonstration lawn signifies achievement, mastery, and knowledge gained. Once people have been in the volunteer lawn status for a year or more, they are fairly knowledgeable about how lawn care relates to water quality, they are willing to become involved in the public education mission of Cooperative Extension, and their lawns are

Figure 10. Demonstration Lawn Sign



looking good. This is when we want to highlight their efforts to the community via a lawn sign of some type (see Figure 10). The dangers in calling a lawn a demonstration too soon (e.g., the first year) are that the homeowner likely does not know what is going on yet and the lawn may not look its best. This not what you want to demonstrate to the community. A realistic goal is to have about 20 percent of the volunteer lawns continue as demonstration lawns for a year or more.

A demonstration lawn owner is probably the best spokesperson for your program. In most suburban residential neighborhoods, neighbors talk with and learn from other neighbors, especially about lawn care. You can bet that if one of the neighbors has an attractive lawn and an intriguing sign proclaiming that it is a demonstration lawn for water quality, conversations (and conversions) will occur! It also helps to have educated citizens to whom you can direct the media and public officials to get a first-hand account of your program. Homeowners with demonstration lawns can also provide you with long-term data, new recruits, and ideas for program improvement. Really, the only responsibility the demonstration lawn owner has is to continue to implement recommended practices.

Be aware that the term "demonstration" is often encountered in other situations that have less educational impact. One popular example is a designated area or plot at a park, library, or other

public place as a demonstration for water quality landscaping. This can be useful if you schedule field days and workshops at the plot and use it to show or demonstrate what a sustainable landscape can look like. Some people even put up a sign and have brochures available during the spring and summer months. A plot by itself, however, is really another *informational* technique rather than a developmental or implementational one.

Meaningful data cannot be collected from a plot other than how many people visited it. There is also the question of who will maintain it in the manner which your program advocates. Most Parks and Recreation departments are really too busy to treat your plot differently than the rest of the park, and having Master Gardeners maintain it can bring problems with scheduling, equipment, and conflicting missions. Again, think about what you are getting into before you set up a demonstration site that you will be responsible for maintaining.

Another type of "demonstration" is an event at which a community lawn is hand-selected to have the recommended practices done to it on a set date before an audience. Typically, a workshop will be scheduled at the site, and various experts will assemble and carry out the recommended practices (e.g., aerate the lawn, overseed it, calibrate a spreader, etc.). This can be quite useful for demonstration purposes, as it approximates the very conditions that most people will be dealing with on their own lawns. Again, this is really an *informational* technique for the homeowner and those attending the demonstration. If the homeowner and participants are merely passive observers month after month, they will not learn as much as if they actually did it themselves.

Step 4 - Master Gardener Training

Once people have been involved with your program for two to three years, it would be a shame to let them get away! Step 4, therefore, recruits the homeowner to become a Master Gardener Volunteer Educator. At this point, you have taken an individual full-circle through informational, developmental, and implementational education. Now, they are ready to commit to 40 to 50 hours of additional training and sharing their knowledge with others. It is a good idea to talk about Master Gardener training

and volunteer opportunities at the different events you have. You may even want to have a Master Gardener on the agenda to speak about the program. You can also use your program to recruit other Extension volunteers. Short presentations from time to time on the county 4-H and home economics programs often yield new volunteers for those programs.

Step 5 - Transfer to Community

Programs should not last forever. At some point, your goals and objectives will be accomplished and you will be ready for new challenges. Similarly, if the community truly feels vested in the water-quality program, they may seek a more active role in program management. Transfer of a program to the community is perhaps the highest honor a program can receive. It means enough to the community to keep it going without Extension's direct involvement. Obviously, not all programs reach this step; in fact, few actually do. It may be helpful, however, to think about your program as one that the community will feel vested in enough

Table 7. Educational Objectives and Forms of Communications to Achieve Them

Awareness

mass media: news release, tv, radio, exhibits, posters, flyers, inserts, promotional items

Knowledge

targeted media: direct mailings, magazines, newspapers, newsletters, letters, editorials, Internet resources

Attitudes

community gatherings: meetings, seminars, workshops, field trips, luncheons, dinners, walk-a-thon, "fun" run

Action

one-on-one contact: home and office visits, telephone conversation, one-on-one interactions with volunteers

(adapted from Robert Topor, Marketing Cooperative Extension, Ithaca NY, 1983)

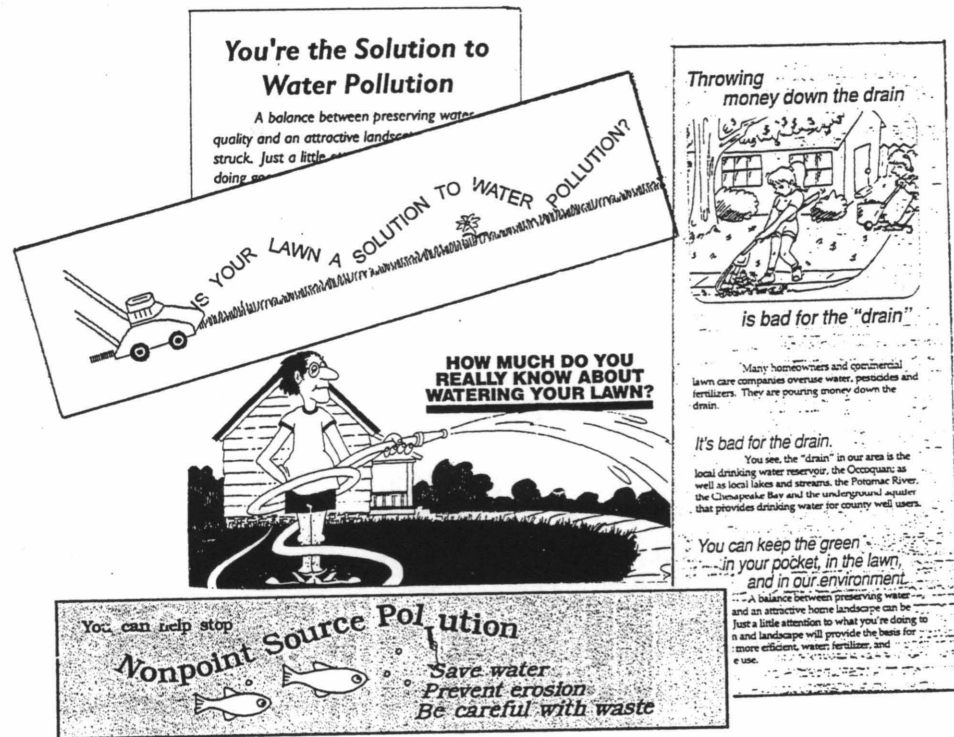
to want to take over one day. Such a transfer will allow you to refocus your efforts based on new information or priorities or start another water-quality program in a different community. Guidelines on this topic are currently being developed by Virginia Cooperative Extension.

Public Relations and the Media

It would be practically impossible to conduct any type of Cooperative Extension program without publicity. People have to know that something is happening in order to sign up for it. The challenge as public educators is not only making people aware that something is happening, but also motivating them to attend and get involved. In this section, we will discuss different ways that you can use public relations and the media to get the word out about your water-quality program.

One of the first things you should do when mapping out a public relations strategy is to go back and review who your audience is. Professionals in the media business will tell you that it is essential to know the *media habits* of the target audience you want to reach. For example, if you are targeting younger, well-educated adults in a new subdivision, your public relations approach will be much different than if you are targeting nursery and garden center employees in a tri-county area. Knowledge of when and where your audience typically gets together (houses of worship, community centers), common concerns (neighborhood appearance, property values), and how they get their information (major newspapers, free circular and weeklies, television) will be valuable information to have. You can gather much of this information yourself through personal observation and input from advisory committees.

Figure 11. Catchy Program Appeals



Others who conduct public relations programs in the community are also good sources of information. This may be an ideal project for a Master Gardener. Your actual approach will vary, depending on your program goal. An immediate goal of awareness will require a different approach than a goal of actual implementation. Typical approaches to public relations center around *high-intensity* and *low-intensity* appeals. High-intensity methods involve community and social interactions and one-on-one personal interaction. Consequently, they work best when major change is the objective. Low-intensity methods are mass- and targeted-media related and, likewise, work well for a more awareness-oriented campaign. Most programs will contain a mixture of both approaches. In general, the concept is to move people from awareness to action using a combination of the various communication forms shown in Table 7.

As you design your promotional and media materials, keep in mind some basic appeals to which people are likely to respond. For water-quality programs, popular appeals include health

(well-water programs especially), lawn and landscape appearance, concern for the environment, saving money, increasing property value, personal enjoyment, and a sense of accomplishment. Try to entice people with a catchy appeal in your program communications. Examples, such as *You're the Solution to Water Pollution* and *Throwing Money Down the Drain Is Bad for the "Drain"*, are included in Figure 11.

Be sure to use your volunteers and homeowners in your public relations work. In general, most reporters—and politicians—will be more interested and responsive to them. Create opportunities for media events, such as a demonstration of some lawn care activity, and have a volunteer call and invite the local supervisor to participate. Then, notify the media by phone or fax that Supervisor Jones will be taking soil samples from neighborhood lawns in order to help educate residents about the benefits of soil testing to protect water quality. Be sure to take black-and-white as well as color pictures of people doing things the day of the event. These can be used later in newsletters, articles, and displays.

Another publicity idea is to call reporters directly and tell them about your program. Offer to send them some program information, and provide the names of some volunteers and homeowners they might call upon to get a first-hand perspective. Lawn care stories are especially popular in spring and fall, and water-quality programs are unique enough to generate interest from a reporter at any time of year. Many reporters routinely call the local Extension office for ideas on a gardening story, and this is a great opportunity to tell them about your program and possibly get an article.

Paid advertisements are another possibility, especially if your budget allows for it. A quarter-page ad in the local weekly paper usually costs less than \$100. A nicely formatted flyer can usually be reduced to fit the size ad you can afford. Do not forget to send information to local homeowner association newsletters, environmental groups, churches, and park authorities. It is a good idea to develop a "media list" for your program that includes newspapers, newsletters, cable TV, and radio for your area. Try to update the list every six months to keep up with changes and additions.

Check with your local water or park authority or public works department, as many will allow limited publicity on bills and other mailings. Keep a supply of program flyers handy, and mail them out with every information request to which you or your Master Gardeners respond.

The bottom line is to get the word out about your program in many different ways. This helps ensure good participation and representation for your program. Keep in mind that this type of public relations work takes time; writing news releases, compiling mailing lists, and stuffing and mailing are time-consuming tasks. As program coordinator, your job should be to supervise Master Gardener volunteers or grant-funded technicians in managing this effort.

Master Gardener Volunteers

Volunteers are an essential part of water-quality program efforts. It should be no surprise to anyone involved in Cooperative Extension work that volunteers are a vital link in the public education process. Most Extension offices literally could not conduct their programs without them. Since a large part of *The Water-wise Gardener* program deals with lawn and yard care, Master Gardener volunteers are relied on heavily. For other water-quality programs, such as well and septic work, other volunteer groups, such as Extension Homemakers or 4-H's, could be utilized to help get the job done.

Master Gardeners bring many desirable elements to a water-quality program. First and foremost, they are a nationally recognized volunteer group, active in counties and cities throughout the United States and Canada. They also possess a university-sponsored education covering most aspects of proper horticultural practice. Master Gardeners are also recognized as "the neighbor next door", and many have a history of active participation in community affairs. These elements make Master Gardener volunteers ideal candidates to provide one-on-one mentoring directly to homeowners. Most homeowners need more motivation to implement recommended practices than just a Saturday morning seminar. Master Gardeners can meet this need. By offering guidance and advice to homeowners in your program, the Master

Figure 12. Sample Master Gardener Support Materials

**LAWNKNOWERS
GUIDELINES FOR MASTER GARDENERS
TURFGRASS MAINTENANCE CALENDAR**

PROTECTION & PROMOTING GROWTH	MAR	APR	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER thru NOV 15
Control Winter Annual Broad leaf Weeds								MOST EFFECTIVE
Control of grass-type weeds	CRABGRASS 3/15 - 4/15					ANNUAL BLUEGRASS BERMUDAGRASS 8/15 - 9/15		
Control Summer Annual Broad leaf weeds	MOST EFFECTIVE							
Grub Control					MOST EFFECTIVE			
Prevent or Control Fungus Disease	SEASONAL CONTROL OR PREVENTION DEPENDING UPON FUNGUS							
Seeding						MOST EFFECTIVE		
Fertilizing						MOST EFFECTIVE		
Mowing Practices	REMOVE ONLY ONE-THIRD BLADE							
Irrigation Practices	WATER SELDOM BUT HEAVY							
Soil Conditions	LEAVE CLIPPINGS TO IMPROVE STRUCTURE							
Sun/Shade Pattern	CHANGE IN GRASS TYPE NEEDED?							

Gardener can play a key role in taking the homeowner beyond the public awareness step to that all-important step of actual recommended practice implementation. For their part, the Master Gardeners receive a rewarding opportunity to return volunteer hours to their communities as educators. The time Master Gardeners spend in the community conducting this program increases visibility for Cooperative Extension as well as water quality and will likely be viewed as a model for community action to address other important issues.

Training

In Virginia, Master Gardeners receive over 50 hours of training in practical horticulture and an equal number of internship hours as volunteers in their communities. The basic training is technical in nature and does not really prepare them for programming, such as one-on-one homeowner work. Master Gardeners may need help understanding the benefits of working one-on-one with homeowners to bring about recommended practice adoption, as well as understanding the importance of proper record keeping and data collection. *The Water-wise Gardener* provides

eight hours of additional training on these programmatic aspects. Typically, a Saturday morning in the spring and fall is set to go over the specifics of what Master Gardeners can expect from involvement in the program. Allow time to hear feedback from them. Remember, well-trained volunteers that understand the program goals and objectives and recognize the importance of current, complete, and accurate data and records are invaluable. Providing Master Gardeners with program support materials, such as the reference chart in Figure 12, also helps keep them on track as the program progresses. It is well worth the time and effort to keep Master Gardeners up-to-speed and current in these

areas. Since they also need to be current in the more technical aspects of horticulture and water quality, try to send them regularly to local or regional advanced training. Much of the Master Gardener work in a water quality program would fit very nicely into an advanced training module or curriculum. See if there is interest from the state or regional Master Gardener coordinator in developing such a session, then get the coordinator to help you.

Master Gardeners are most effective if they schedule regular times to visit with or be contacted by homeowners. If you are working with large numbers of homeowners (more than 20), appoint a Master Gardener coordinator to oversee and advise the other Master Gardeners and monitor progress. Your Master Gardener coordinator can collect the information and data sheets from the other Master Gardeners, compile them, then submit a summary to the agent (see Figure 13). Agents should meet regularly with Master Gardener volunteers and volunteer coordinators to provide direction, resolve issues, and discuss program results. Many Master Gardeners can provide you with useful feedback on how the program is working on the

Figure 13. Volunteer Lawn Summary for Agent

DUMFRIES MAGISTERIAL DISTRICT	LTR SENT DATE/ MG ASSIGNED	RESP REC'D DATE	FOLDER REC'D	SRV REC'D	SOIL TEST
MR. RICHARD ARVIN 135 LANCELOT CT DUMFRIES, VA 22026 S/95 852-4791	4/7/95 RUTH	4/21/95	???	Y	Y
MRS. GLENDA BURLEY 265 MARION DR DUMFRIES, VA 22026 S/95 586-3647	4/25/95 LINDA J.	???	5/3/95	Y	Y
MRS. BARBARA CAMPBELL 16 EDGEWATER DR. DUMFRIES, VA 22026 F/95 463-2334	8/28/95 DON	9/20/95	9/9/95	Y	Y
MR. BUCK DARLING 367 WINDJAMMER LN DUMFRIES, VA 22026 F/95 875-5630	8/2/95 LINDA L.	8/11/95	???	Y	Y
MR. DOUG DOERR 800 MONTICELLO DUMFRIES, VA 22026 S/95 349-2741	9/9/95 NEEDS MG	9/13/95	???	Y	Y
MR. BUCK EVANS 657 SHADOW WATER DUMFRIES, VA 22026 F95 878-1567	9/6/94 LINDA J	11/5/94	4/2/95	Y	Y
MR. BOB FALSONE 54A DARVIN DRIVE DUMFRIES, VA 22026 F/95 963-4568	3/29/95 LINDA L	5/5/95	???	Y	Y
MS. SANDRA FARRELL 12 FERN TRAIL MANASSAS, VA 22111 S/95 365-7914	8/28/95 THERESA	9/19/95	9/9/95	Y	Y

grassroots level. Many worthwhile program improvements result from suggestions made by Master Gardeners who have worked directly with homeowners.

Retention

Retaining well-trained volunteers is a real challenge. Just as you do not want to lose the homeowner who has been with the program for the past two years, you also do not want to lose the Master Gardener trained to work in the program. Volunteers will always need to resign for special circumstances, such as a new job, prolonged illness, or unexpected move. Aside from such events, volunteers will generally continue volunteering with a program that they are committed to. This commitment can be enhanced if the volunteers:

- have a job description detailing their duties
- receive assignments that promote learning and growth
- find the job worthwhile and challenging

- are kept informed on program status and activities
- receive support and advice from their supervisor
- are treated with the respect and opportunities due a staff member
- receive appropriate recognition

The agent has a large part to play in volunteer retention. If volunteers are simply requested to do what the agent does not like to do, retention rates are low. To promote high retention rates of volunteers, agents should consider the following:

- select Master Gardeners suited to this type of work
- make sure they understand program and task goals
- give clear, written instructions on how work is to be done
- provide additional training specific to the task
- provide resources and keep lines of communication open
- evaluate and recognize volunteer performance yearly

Some Master Gardeners do not enjoy working one-on-one with homeowners, while others never appear to tire of it. Usually, most will let you know this before they become involved in the program. However, time spent assessing which Master Gardeners are of the right attitude and temperament for this type of work will mean higher retention rates later. Similarly, the Master Gardener needs to understand what is to be accomplished with the program. Involve the Master Gardener in setting goals and objectives. You and the Master Gardener will need to agree on and state exactly what is to be done. Do not leave it up to the individual Master Gardener to determine or you will not get consistent results. Remember, people skills are essential for one-on-one work, so you may need to provide additional opportunities for Master

Gardeners to practice communication skills, interviewing, and record keeping.

Recognition

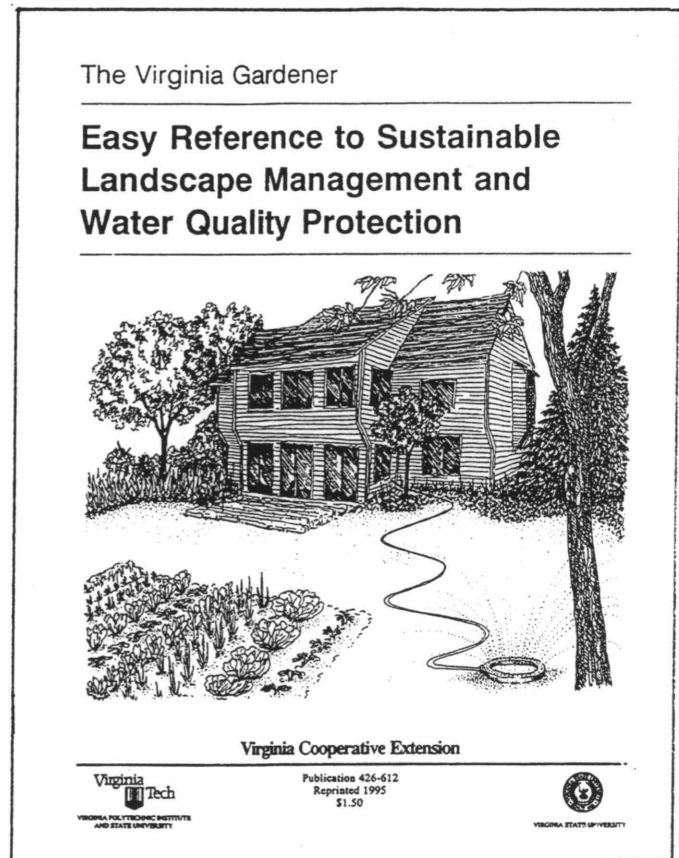
Everybody likes to be recognized for what they do, and volunteers in a water-quality program are no different. Beyond saying thank you regularly, it is a good idea to periodically thank volunteers in a more formal manner. Certificates of merit, letters of appreciation, proclamations by county boards of supervisors or city councils, volunteer lunches, and small presents are all examples of recognition that have been used successfully. Since they are volunteering for a water-quality program, recognitions could involve a water theme. Try to periodically survey the volunteers. Ask them why they volunteer and what can be improved upon. Encourage the volunteers to take advantage of educational opportunities your state or locality might offer. In many public agencies, volunteers are considered staff and are eligible to attend in-service and other types of training sessions at no cost.

Technical Publications

It should be clear that the focus of this guide is on the *programmatic* aspects of conducting a water-quality program. Most Cooperative Extension offices and units should either have or be able to get technical publications on lawn care, fertilizers, pesticides, well head protection, and septic-system maintenance. Appendix B lists VCE Resources, including publications, that can be used in public education programming in Steps 1 through 3 of our program model.

Giving people too many handouts can overwhelm and even intimidate them, especially if the publications are rather technical. For *The Water-wise Gardener*, all the publications developed and tested over the course of the first year were compiled into one publication. This reference guide/calendar (Figure 14) is made available at the field days and workshops and given to all Step 2 participants. Giving volunteer lawn homeowners a single folder to keep their program information in will also help simplify the information transfer process. It also gives them a place to put the additional handouts that most speakers will invariably bring, as well as a handy place to keep

Figure 14. Reference Guide/Calendar

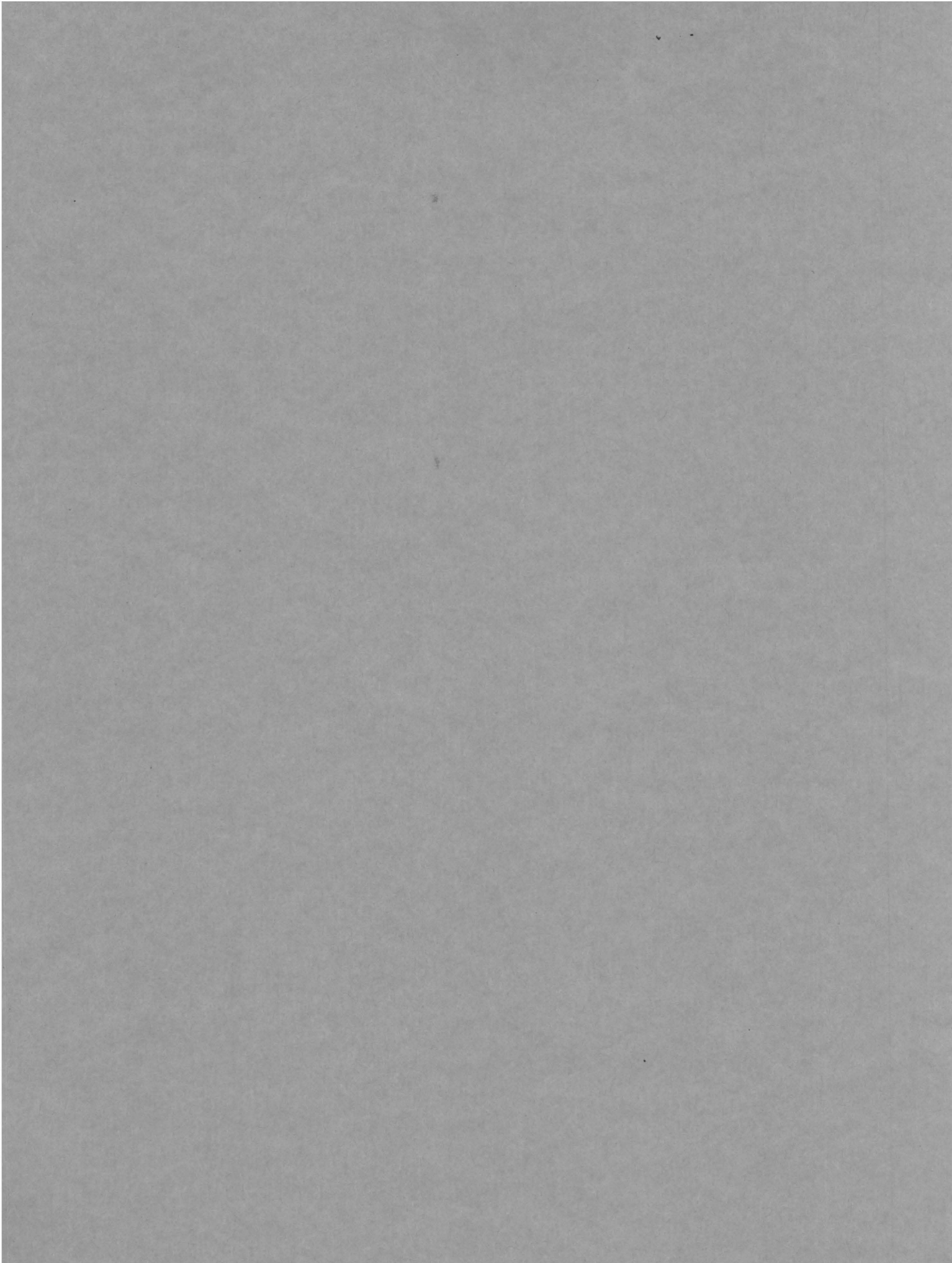


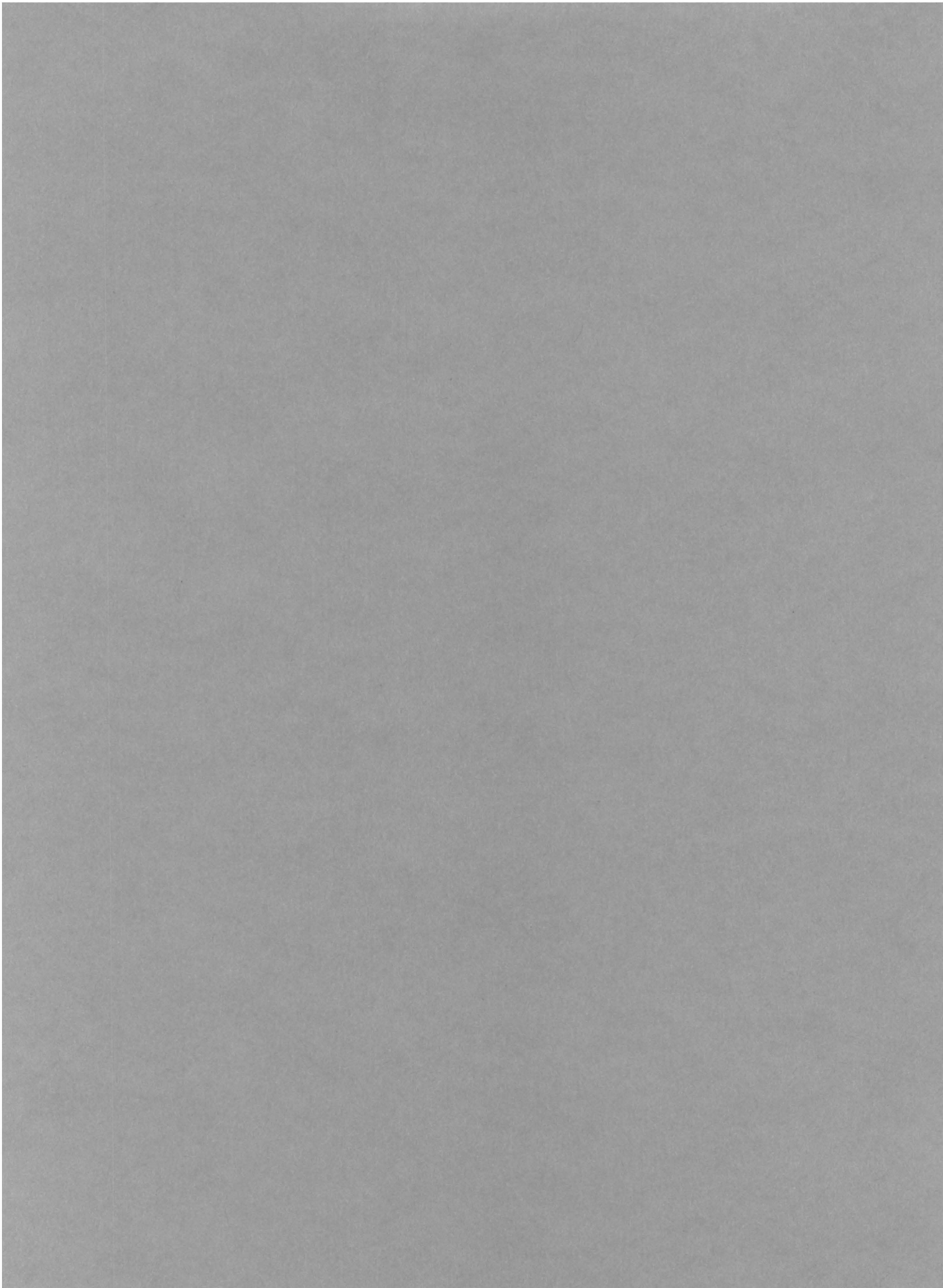
soil test reports and other forms. It is generally a good idea to think simple and not give people more information than they can realistically use.

As an agent, you also have needs for technical publications to keep you up to date and current on the many issues pertaining to water quality. If available, regular use of Internet "home pages" and university "gophers" can provide much information to the agent and homeowner alike. As well, various water and horticulture related publications and newsletters are available at no or low cost. Some valuable Internet resources are listed in Table 8 (see next page).

Name	Internet Address	What To Expect
Virginia Cooperative Extension Consumer Horticulture Database	http://www.ext.vt.edu/hort/consumer	Publications on environmental issues, IPM, horticulture, and Master Gardeners; monthly news releases, questions and answers
Texas A&M University	gopher://leviathan.tamu.edu/11s/mg	Extensive clip art and slide collection, Master Gardener resources
University of Pennsylvania PENPages	gopher://penpages.psu.edu	Agriculture/Horticulture reports and fact sheets
Purdue University-National Water Quality Database	http://hermes.ecn.purdue.edu:8001/server/water/water.html	Computer access to educational material from Extension Specialists throughout the US, searchable index for water quality information
Environmental Protection Agency Home Page	http://www.epa.gov	Tremendous water/nonpoint source information at various places in this series of pages
U.S.D.A. National Agricultural Library Water Quality Info Center	http://www.inform.umd.edu:8080/EdRes/Topic/AgriEnv/Water	Extensive reference to water-related events, research, bibliographies and discussion lists; links to other water resources world-wide
U.S.D.A. Cooperative State Research, Education and Extension Service	http://www.esusda.gov/csrees.html	Links to land-grant universities and resources, including local county Extension contacts, in all states and territories
U.S.D.A. Natural Resources Conservation Service	http://www.ncg.nrcs.usda.gov/	Engineering and other technical references, natural resources data, current news releases on NRCS programs and volunteer activities
U.S. Geological Survey	http://www.h2o.usgs.gov/	Water and map resources, links to other web water resources
Indiana WETnet	http://ingis.acn.purdue.edu:9999/wetnet.html	Prototype internet water resource, some sections still under construction

Table 8. Residential Water Quality Internet Resources





4

Data, Evaluation, & Reporting

By now, your program is underway and running smoothly. At this point, many people let out a deep breath and look forward to letting up the pace a bit. Go ahead and take a well-deserved break. Before you get too comfortable, however, remember that a programming effort does not end with implementation, but must include evaluation and reporting of results. Evaluation begins with the goals and objectives set for the program as they determine what data is to be collected. It is impossible to evaluate your program objectively unless you have data. Most grant sources and increasing numbers of states and county agencies are requiring outcomes and impacts to be measured for all programs. Data collection will actually make your job easier by showing you where problems are with the program and how to go about fixing them.

Collecting Data

The overall goal of *The Water-wise Gardener* program is to reduce pollution to area waterways and protect water supplies. Our specific goals are:

- 1) provide clientele with the knowledge and skills to implement lawn, landscape, septic system, and well-water practices that have been demonstrated to least impact water quality
- 2) involve clientele in the educational process such that they are motivated to actually implement these practices and behavior changes can be documented
- 3) partner with Master Gardeners and other volunteers to establish and conduct this educational program

These goals were further broken down into measurable objectives:

- 1) 85 percent of participants complete the one-year *Water-wise Gardener* program
- 2) 90 percent of participants conduct a soil test on their lawns
- 3) participants document a 40 percent reduction in the amount of nitrogen applied and a 25 percent reduction in pesticides used and amount of water applied

Measuring progress on the objectives gives an idea of how you are progressing toward your goals. To measure objectives, you will need accurate and complete data. Data can be various types of information and statistics that allow objective evaluation of how you did at a certain task. Strategies to reach objectives (see page 11) will be the source of much of your data. For example, the data collected on the strategy to conduct 14 workshops on lawn and garden topics include your attendance sheets, pre/post surveys of knowledge, survey of clientele satisfaction with your programs, etc. You will need other, more-detailed results and collection procedures to evaluate whether 85 percent of homeowners stay with the program for one year or reduce fertilizer usage by 40 percent.

A pre- and post-survey that includes a place for the homeowner's name is a good start for the more detailed information needed to evaluate the water-quality program. Surveys are valuable in obtaining data on homeowner practices and attitudes as well as demographic information, such as age, race, income, voting district, etc. A properly written pre-survey (see Appendix A) that asks the right

questions, completed before a homeowner attends the first seminar or workshop, will supply data on his/her knowledge and attitudes relative to yard care and water quality as well as specifics on how much fertilizer and pesticides are being used. Similarly, a post-survey (see Appendix A), completed after a participant is in the program at least a year, will give a good idea of what the homeowner has learned, how attitudes have changed, and how actions have been changed in terms of reduction of fertilizers and pesticides being applied. By comparing this information and data to the pre-survey, you will be able to assess if you met the goal of a certain percentage change in homeowner use of recommended practices, changes in attitudes, and fertilizer and pesticide use. Use of any popular spreadsheet-type of database software allows you to easily keep track

of, measure, and manipulate this data as shown in Figure 15.

You may want to collect data from other sources, as well. Soil test report results provide information on pH and phosphorous, and basic yard condition data may be useful to verify subjective data presented in the pre- and post-surveys. Information on amounts of nitrogen and lime recommended and applied, amount of compost maintained, lawn area, and aeration dates can be kept by homeowners on a report form or calendar (see Figure 9 on page 22). Make sure the form is clear and easy to understand. To be sure, test it out on a few people in the office and at home. Master Gardeners can collect much of this information with the homeowner in a personal interview. Data collection is simplified if all Master Gardeners use

Figure 15. Sample Spreadsheet for Collecting Data

LAST NAME	HOME TEST SITE	LAWN AREA (SQ FT)	TOTAL LBS N RECOM	TOTAL LBS N APPLD	PH	TOTAL LBS LIME RECOM	TOTAL LBS LIME APPLD	TOTAL COMPT VOL (cu FT)	DATE LAWN AERATED
BAILEY	FYARD	1775	8.9	3.6	5.2	260	85	0	11/03/91
BAILEY	BYARD	3200	16.0	6.4	4.7	700	160	50	11/03/91
BIEHL	BYARD	1000	5.0	4.0	5.8	0	0	20	11/08/91
BIEHL	FYARD	2500	12.5	10.0	6.3	0	0	0	11/08/91
BORSARI	FYARD	2000	10.0	0.0	6.5	0	0	0	01/01/91
BREWER	FYARD	6672	33.0	0.0	5.8	570	0	0	09/01/91
CONTRUC	FYARD	2000	10.0	10.0	6.7	0	0	0	09/01/91
CONTRUC	BYARD	4800	24.0	24.0	6.6	0	0	20	09/01/91
DOUGLA	FYARD	9000	45.0	45.0	6.2	315	0	20	04/01/91
FUJIO	BYARD	1600	8.0	0.0	6.1	55	0	20	04/01/91
FUJIO	FYARD	1600	8.0	0.0	6.8	0	0	0	04/01/91
GODIN	FYARD	1000	5.0	5.0	5.3	75	18	0	11/11/91
HARTUNG	BYARD	5400	27.0	23.0	5.1	755	600	200	12/13/91
HARTUNG	FYARD	4000	20.0	20.0	5.7	320	320	0	12/13/91
LYDANNE	FYARD	2500	12.5	10.0	5.0	425	100	0	11/14/91
MALONEY	FYARD	1932	9.5	9.3	5.7	175	80	20	06/01/91
PHILLIPS	FYARD	2300	11.5	6.0	5.5	253	253	20	10/18/91
STONE	FYARD	2900	14.5	11.6	7.2	0	0	20	11/16/91
TRINIDAD	FYARD	2000	10.0	4.0	5.6	160	0	20	11/11/91
TRINIDAD	BYARD	5800	37.5	15.0	5.0	870	0	0	11/11/91
ZAGROB	FYARD	3000	15.0	6.0	6.4	0	0	64	09/01/91
ZAGROB	BYARD	5000	25.0	10.0	6.3	0	0	0	09/01/91
TOTALS		71979	367.9	222.9		4933	1616	474	

improve your water-quality program for the coming year. Do the results show that recommended landscape practices are being implemented? To what extent? Have attitudes changed; to what extent? If people are not adopting the recommendations and changing attitudes markedly after one year, you need to determine why. Perhaps certain areas consistently show lower gains than others, such as calibrating fertilizer spreaders. It may be that you need to emphasize this more next year or devote more time to the topic during a workshop or seminar. It is okay to use your results to modify the program to better achieve goals and objectives; in fact, this is how a good program becomes even better.

As you evaluate your results to determine if goals are being met, you will naturally want to report this information to appropriate agencies and persons, as well as the community with which you are working. Making people aware of your results is one of the best ways to generate interest in your program with the public, other agencies, and elected officials. Many of these groups or individuals could be potential sources of funds for program expansion or continuation. You need to format results in an easy-to-read way, referred to as an impact statement. This type of paper, usually one page (front and back) in length, is easily sent out to interested parties or reformatted for faculty or annual reports. See Appendix A for an example of one.

Try to be consistent in how you report figures and percentages (e.g., always increasing or decreasing) to make it easy for readers to follow. You may want to add a narrative sheet to accompany and explain the data, but be sure to keep it brief and to the point. A front and back report on high-quality

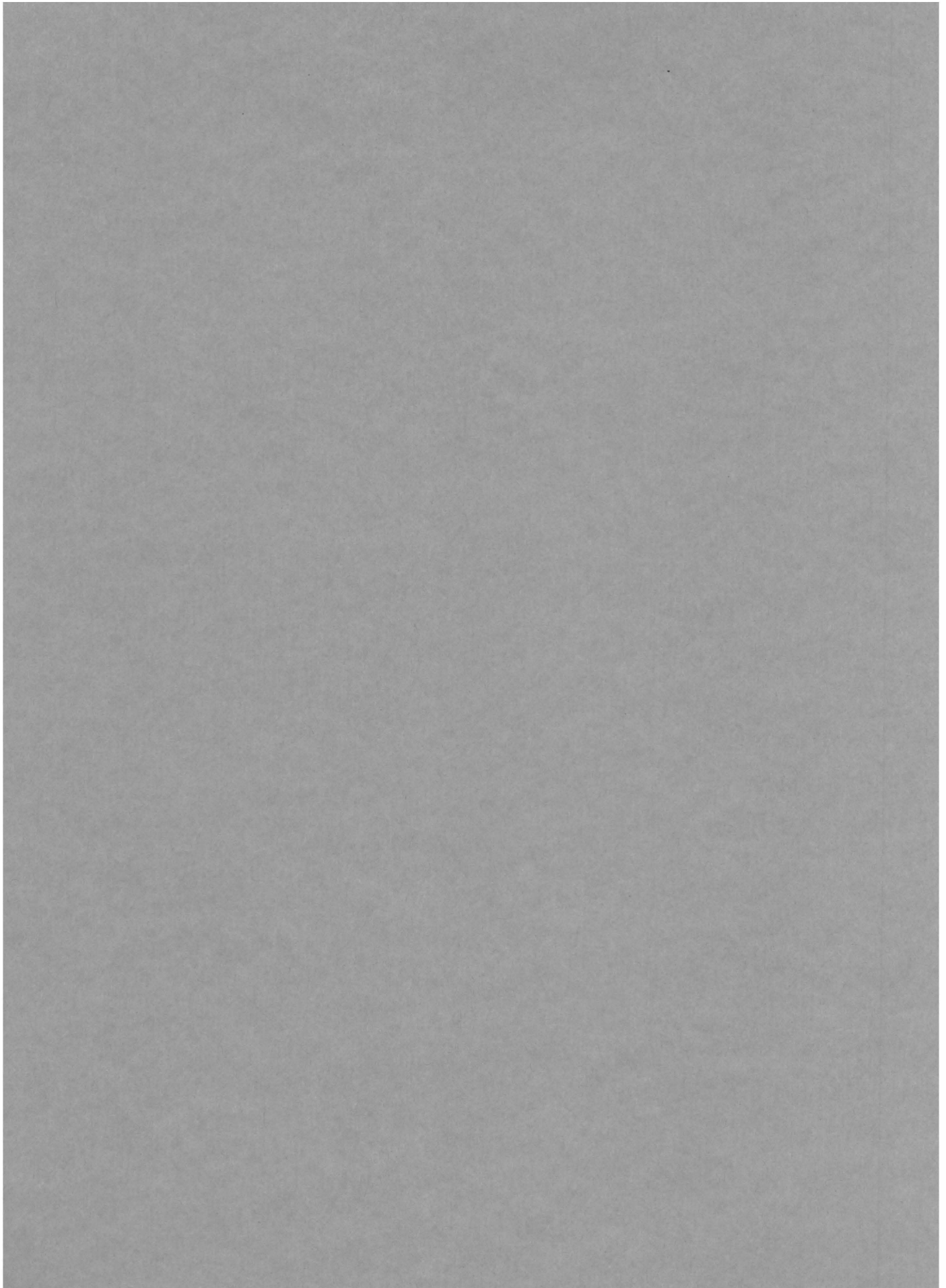
paper, such as cardstock, works well. Once you have your impact sheet, be sure to use it in annual reports, performance appraisals, and grant reports.

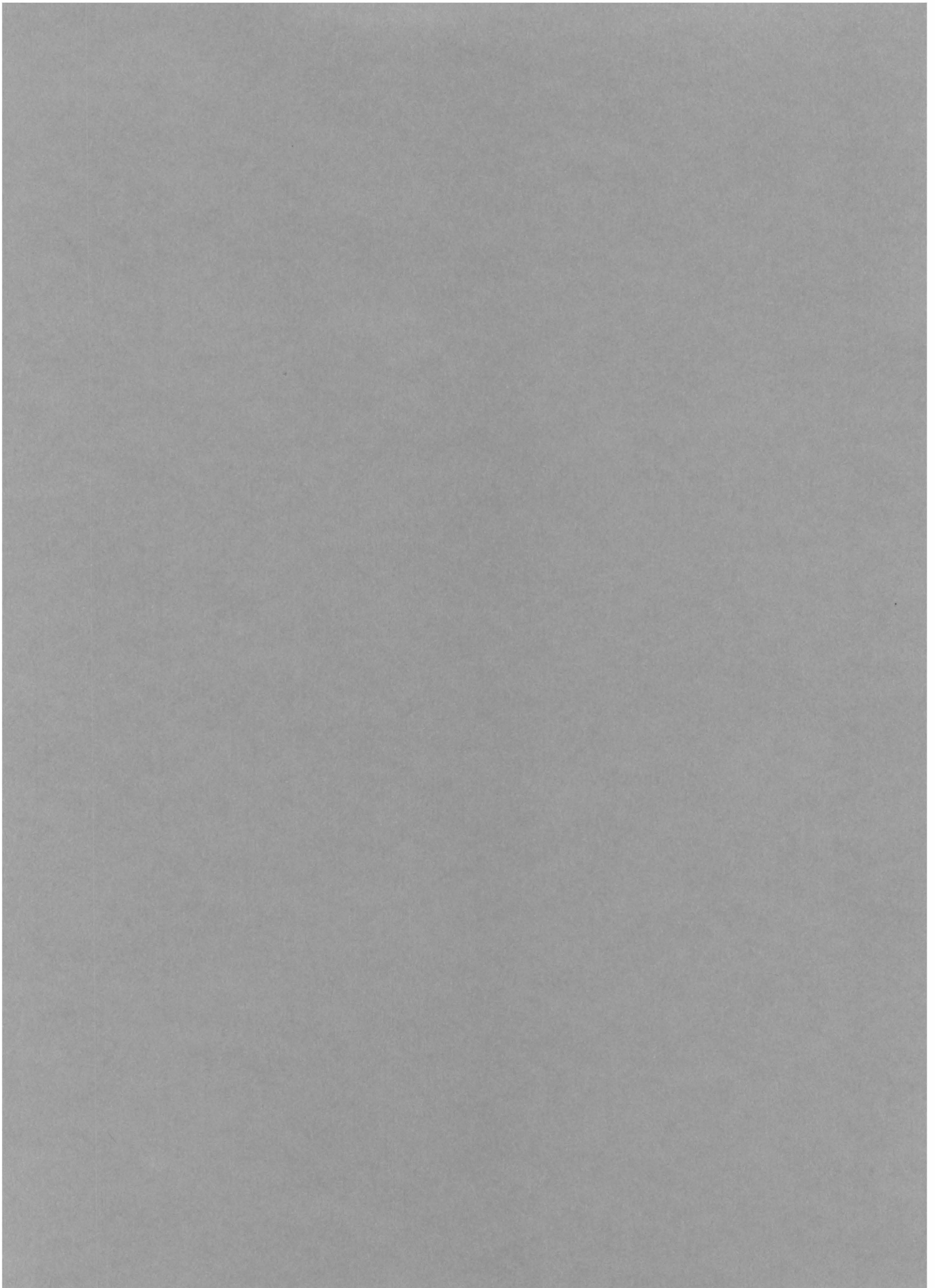
Where Do You Go From Here?

Many aspects of *The Water-wise Gardener* probably seem familiar to you from other programming efforts you have been involved in. This is because all good programs, regardless of topic area, share the core characteristics of planning, implementation, evaluation, and reporting. It is our hope that you will use these core characteristics to either start or improve your water-quality program efforts. If you are ready to start a water-quality program soon, you may find it helpful to develop a time line around the core characteristics to guide you. Remember to start small and build on your successes little by little each year.

Because we believe that all programs can be improved, especially ours, we hope you will share your successes and questions with us as you go along. Best of luck to you in your important work.

Virginia Cooperative Extension
8033 Ashton Avenue, Suite 105
Manassas, VA 20110
703-792-4630
e-mail: ex153@vt.edu





❧ *Appendix A* ❧

Sample Surveys and Reports



Virginia Cooperative Extension

PRINCE WILLIAM COUNTY OFFICE
8033 Ashton Avenue, Suite 105
Manassas, Virginia 22110-8202
(703) 792-6285 FAX (703) 792-4630
ex153@vt.edu



PRE-SURVEY AND DEMOGRAPHIC INFORMATION

YARD CARE PRACTICES (Please answer all of the questions.)

1. In the past 1 to 2 years, have you soil tested your lawn?
Yes _____ No _____ Don't know _____
2. What type of grass do you have?
Cool season (e.g. fescue) _____ Warm season (e.g. zoysia) _____ Don't know _____
3. When is your lawn usually fertilized?
Fall _____ Spring _____ Summer _____ Winter _____ Don't fertilize _____
4. At what height do you normally mow your lawn?
Lowest setting _____ About 2 inches _____ Highest setting _____ Don't know _____
5. What do you do with grass clippings?
Don't remove _____ Compost _____ Curb-side-pickup _____ Other _____
6. Do you have a compost pile? Yes _____ No _____
7. Do you usually aerate and/or overseed your lawn?
Yes _____ No _____ Don't know _____
8. How often do you routinely water your lawn during the summer?
Daily _____ Weekly _____ Seldom _____ Never _____
9. What kind(s) of pest control do you use on the lawn? Insecticides/grub control _____
Broadleaf weed control _____ Weed and feed _____ Fungicides _____
Preemergent crab grass control _____ Other _____ Don't use any _____
10. How do you determine whether and what kind of pesticide(s) to use?
Always apply preventively _____ Sales person advice _____ Extension Office advice _____
Product labels _____ Past experience _____ Other _____
11. Do you make an effort to keep fertilizer off driveways and debris out of storm drains and ditches? Yes _____ No _____ Don't know _____

Land-Grant Universities—The Commonwealth Is Our Campus

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ATTITUDES ABOUT WATER QUALITY AND YARD CARE (Please indicate your opinion of the statements listed below.)

1. Lawn and/or yard fertilizers and chemicals pose little or no threat to surface and ground water quality. Agree _____ Don't know/No opinion _____ Disagree _____
2. Accurate soil testing provides critical information for planning lawn and/or yard care. Agree _____ Don't know /No opinion _____ Disagree _____
3. Pesticides should be used on a regular basis to control weeds, insects and disease. Agree _____ Don't know/No opinion _____ Disagree _____
4. A low population of weeds and pests is an acceptable part of your lawn and/or yard. Agree _____ Don't know/No opinion _____ Disagree _____
5. Excessive use of fertilizers can be linked to Chesapeake Bay water quality problems. Agree _____ Don't know/No opinion _____ Disagree _____
6. Non-point source (NPS) pollution contributes to the degradation of local water quality. Agree _____ Don't know/No opinion _____ Disagree _____

DEMOGRAPHIC INFORMATION (Please provide background information requested below.)

1. What is the approximate size of your lawn area?
 Less than 5,000 Sq. Ft. _____ 5,000-10,000 Sq. Ft. _____ 10,001- 20,000 Sq. Ft. _____
 More than 20,000 Sq. Ft. _____ Don't know _____
2. Who routinely maintains the lawn and/or yard? Head of household _____ Spouse _____
 Children _____ Lawn care company _____ Property manager _____ Other _____
3. How much do you usually spend annually on lawn and/or yard care? Less than \$100 _____
 \$100 - 200 _____ \$201-300 _____ \$301-400 _____ More than \$400 _____ Don't know _____
4. How did you find out about this program? Newspaper _____ Local newsletter _____
 Friend or neighbor _____ Posted notice _____ Extension Office _____ Other _____
5. Where do you usually obtain your lawn and/or yard care information?
 Extension Office _____ Labels _____ Friends/neighbors _____ Garden center _____
 Newspapers/books/magazines _____ Lawn Company _____ Don't use any _____



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FOLLOW-UP SURVEY

YARD CARE PRACTICES (Please answer all of the questions.)

1. In the past 1 to 2 years, have you soil tested your lawn?
Yes _____ No _____ Don't know _____
2. What type of grass do you have?
Cool season (e.g. fescue) _____ Warm season (e.g. zoysia) _____ Don't know _____
3. When is your lawn usually fertilized?
Fall _____ Spring _____ Summer _____ Winter _____ Don't fertilize _____
4. At what height do you normally mow your lawn?
Lowest setting _____ About 2 inches _____ Highest setting _____ Don't know _____
5. What do you do with grass clippings?
Don't remove _____ Compost _____ Curb-side-pickup _____ Other _____
6. Do you have a compost pile? Yes _____ No _____
7. Do you usually aerate and/or overseed your lawn?
Yes _____ No _____ Don't know _____
8. How often do you routinely water your lawn during the summer?
Daily _____ Weekly _____ Seldom _____ Never _____
9. What kind(s) of pest control do you use on the lawn? Insecticides/grub control _____
Broadleaf weed control _____ Weed and feed _____ Fungicides _____
Preemergent crab grass control _____ Other _____ Don't use any _____
10. How do you determine whether and what kind of pesticide(s) to use?
Always apply preventively _____ Sales person advise _____ Extension Office advise _____
Product labels _____ Past experience _____ Other _____
11. Do you make an effort to keep fertilizer off driveways and debris out of storm drains and ditches? Yes _____ No _____ Don't know _____

ATTITUDES ABOUT WATER QUALITY AND YARD CARE (Please indicate your opinion of the statements listed below.)

1. Lawn and/or yard fertilizers and chemicals pose little or no threat to surface and ground water quality. Agree _____ Don't know/No opinion _____ Disagree _____
2. Accurate soil testing provides critical information for planning lawn and/or yard care. Agree _____ Don't know /No opinion _____ Disagree _____

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3. Pesticides should be used on a regular basis to control weeds, insects and disease.
 Agree _____ Don't know/No opinion _____ Disagree _____
4. A low population of weeds and pests is an acceptable part of your lawn and/or yard.
 Agree _____ Don't know/No opinion _____ Disagree _____
5. Excessive use of fertilizers can be linked to Chesapeake Bay water quality problems.
 Agree _____ Don't know/No opinion _____ Disagree _____
6. Non-point source (NPS) pollution contributes to the degradation of local water quality.
 Agree _____ Don't know/No opinion _____ Disagree _____

DEMOGRAPHIC INFORMATION (Please provide background information requested below.)

1. What is the approximate size of your lawn area?
 Less than 5,000 Sq. Ft. _____ 5,000-10,000 Sq. Ft. _____ 10,001- 20,000 Sq. Ft. _____
 More than 20,000 Sq. Ft. _____
2. Who routinely maintains the lawn and/or yard? Head of household _____ Spouse _____
 Children _____ Lawn care company _____ Property manager _____ Other _____
3. How much do you usually spend annually on lawn and/or yard care? Less than \$100 _____
 \$100 - 200 _____ \$201-300 _____ \$301-400 _____ More than \$400 _____ Don't know _____
4. Where do you usually obtain your lawn and/or yard care information?
 Extension Office _____ Labels _____ Friends/neighbors _____ Garden center _____
 Newspapers/books/magazines _____ Lawn Company _____ Don't use any _____

YOUR OPINION AND COMMENTS

3. Rate your yard and write your comments on this program.

Rate the appearance of your yard **now** versus the appearance before entering the program.

Much worse _____ Worse _____ The same _____ Better _____ Much better _____

Rate the effort it takes to maintain your yard **now** compared to before the program.

Much less _____ Less _____ The same _____ More _____ Much more _____

Rate the cost of maintaining your yard **now** compared to before starting this program.

Much less _____ Less _____ The same _____ More _____ Much more _____

Comment on the most useful information you gained from this program. _____

Comment on any changes that could be made to improve this program. _____

Name (Please Print) _____ Date ____/____/____

I (am) (am not) interested in a Demonstration lawn.

Virginia Cooperative Extension



Chesapeake Bay Residential Watershed Program

Introduction

Involvement in a regional Virginia Cooperative Extension program has enabled over 600 homeowners throughout northern Virginia to reduce the amount of nitrogen fertilizer annually applied to their lawns by more than 2 pounds. Over a five year period, this has amounted to an estimated 20,000 pounds (10 tons!) *less* fertilizer being applied to area lawns than before program involvement. These same participants have also voluntarily reduced pesticide use by more than 30 % through integrated pest management (IPM) practices. These results indicate that citizens can have a positive impact upon water quality by helping to reduce non-point source pollution (pollution resulting from many individual actions) by actually implementing recommended practices in and around their homes and yards.

volunteers in a multi-tier approach that allows for involvement at different levels. The objective is to have homeowners actually implement recommended practices related to fertilization, integrated pest management, water use, composting, plant selection, well-water protection and septic system maintenance through a partnership with trained Master Gardener volunteers. The specific targets of success included:

- 85 % of participants complete the one-year program
- 90 % of participant lawns are soil tested
- Document a 40 % reduction in the amount of nitrogen applied, a 25 % reduction in yard trimmings sent to landfill and a 25 % reduction in pesticides used.

Background and Objectives

The Chesapeake Bay is one of the largest and most productive estuaries in the world. Bay restoration efforts to date have had some successes. Most notably, phosphorus concentrations have been declining. However, nitrogen has remained stable, even increasing in some tributaries. Expanded efforts with urban audiences will be needed to achieve a self-imposed 40 % nutrient reduction goal by the year 2000. In 1991, Virginia Cooperative Extension and the Public Works Department of Prince William County, in conjunction with the Cooperative State Research, Education and Extension Service at the US Department of Agriculture, recognized that an increasingly suburban population would benefit from simple and voluntary educational opportunities to modify lawn, yard, and septic system non-point source impacts.

The goal is to provide educational opportunities such as field days and seminars, demonstration lawns, and one-on-one visits from trained Master Gardener

Program Partners

Virginia Cooperative Extension

Cooperative State Research, Education and Extension Service, US Department of Agriculture

Prince William County, Virginia Public Works Department

Montclair Property Owners Association

Virginia Department of Conservation and Recreation

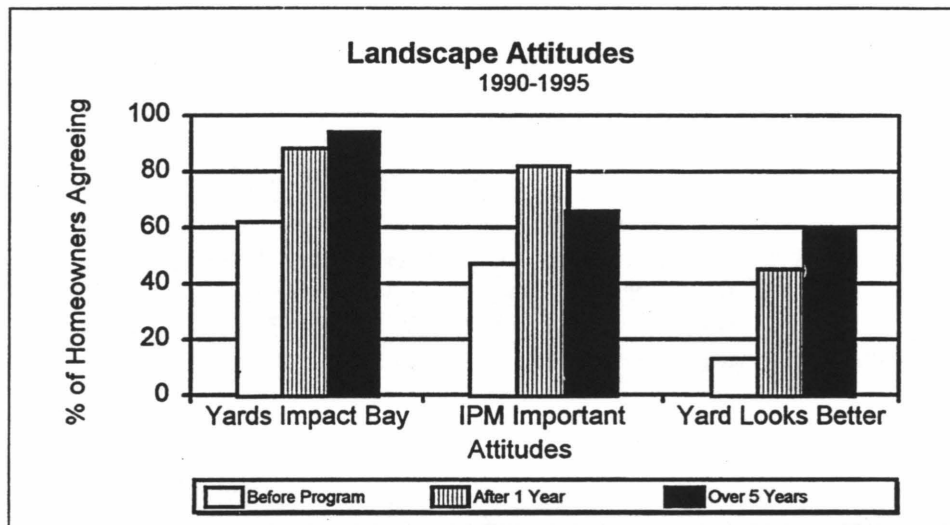
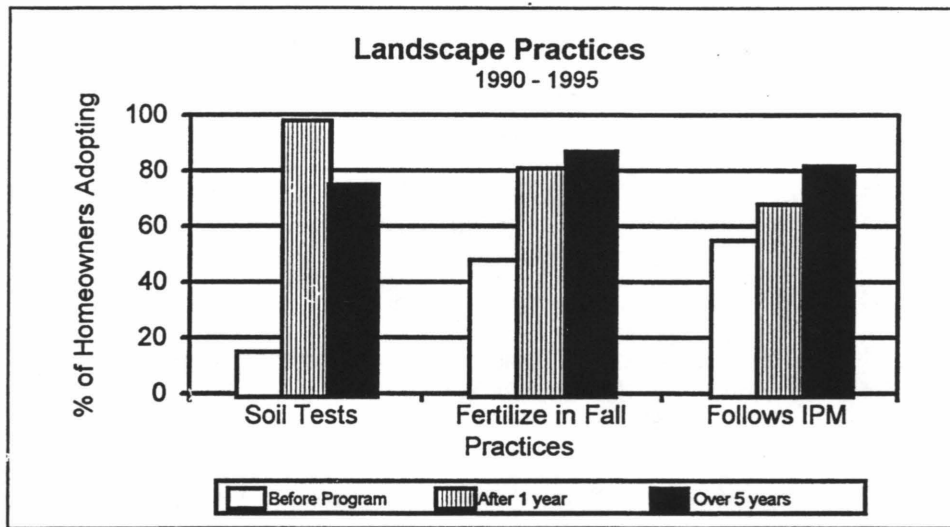
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Results

Over 600 people have completed the program. As the graphs below indicate, impressive increases in recommended practice adoption and attitude change regarding non-point source pollution have been achieved concurrent with the decrease in fertilizer and pesticide use. Surveys from participants over the five year period show that recommended practice adoption is increasing for some practices. The program is currently being expanded to other Virginia Extension units, and a model program guide has been developed. Further expansion is expected.



For more information contact:
 Marc T. Aveni, Area Agent for Water Quality, Virginia Cooperative Extension
 8033 Ashton Avenue Suite 105, Manassas, Virginia 22110
 phone: 703-792-4632 fax: 703-792-4630 email:ex153@vt.edu

Extension ANSWERS

IMPACT STATEMENT *Chesapeake Bay Residential Watershed Program*

Question

Can lawns and landscapes look great while protecting water quality?

Situation

The Chesapeake Bay is one of the largest and most productive estuaries in the world. Over 150 rivers, creeks, and branches contribute freshwater to this estuary. With this freshwater flow comes sediment, nutrients such as phosphorus and nitrogen, metals, and organic chemicals from both point and non-point sources of water pollution. Bay restoration efforts to date have had some successes. Most notably, phosphorus concentrations have been declining. However, nitrogen has remained stable, even increasing in some tributaries. It is estimated that improper agriculture practices contribute most significantly to Bay water pollution, with runoff from urban and suburban areas a close second. There is recognition that an increasingly suburban population would benefit from simple and voluntary educational opportunities to modify lawn, garden, and septic system non-point source impacts on Bay tributaries.

Extension Answers

In 1992, with special funding from the Extension Service - U.S Department of Agriculture, the Prince William County unit of Virginia Cooperative Extension developed a water quality program for homeowners. Educational opportunities such as field days, demonstration lawns, and one-on-one visits from trained Master Gardener volunteers, were established in a multi-tiered approach that allows for involvement at different levels. The overall objective was to help the homeowner understand how to implement recommended techniques related to fertilization, integrated pest management, water use, composting, plant selection, and septic system maintenance that have been demonstrated to reduce the likelihood of non-point source pollution to the Bay.

The Results

Over 500 people have participated in some aspect of the program. Pre and post surveys show impressive increases in recommended practice implementation and attitude change regarding yard care, non-point source pollution, and the Chesapeake Bay. Participants also reported spending less money and having a better looking lawn. This demonstrates that a sustainable landscape can be both attractive and economical. In 1993, the program was awarded the Governors' Award for Environmental Excellence in Pollution Prevention.



VIRGINIA COOPERATIVE EXTENSION
CHESAPEAKE BAY RESIDENTIAL WATERSHED WATER QUALITY PROGRAM

	PRE-SURVEY (before Extension education)	POST-SURVEY (after Extension education)
<u>HOMEOWNER LAWCARE PRACTICES</u>		
• soil tested to determine proper fertilizer rates	15%	98%
• adopted fall fertilizer schedule	48%	81%
• identified the pest before selecting a control	55%	68%
• composted leaves and grass instead of throwing them away	48%	63%
<u>HOMEOWNER LAWCARE ATTITUDES</u>		
• linked excessive fertilizer with Chesapeake Bay problems	62%	88%
• felt that pesticides should not be used regularly	47%	82%
• considered lawn appearance to be very good or excellent	13%	45%
• spent less money on lawn and yard care post-program		64%

For more information:
 Marc T. Aveni, Extension Agent - Virginia Cooperative Extension, 8033 Ashton Ave #105
 Manassas, VA 22110 Phone: 703-792-6285 Fax: 703-792-4630

Appendix B

VCE Resources

This section contains some of the many materials available through Virginia Cooperative Extension to support *The Water-wise Gardener* program.

Numbered Extension Publications

- Indicates information that can be accessed from the Virginia Tech Internet web pages (<http://www.ext.vt.edu/hort/consumer>) as well as ordered as hard copy publications from Extension Distribution, 112 Landsdowne Street, Blacksburg, VA 24061-0512; tel. 540-231-6192.
- ◆ Indicates regional or national award.
- (\$) Indicates cost; for-sale publication.

The Virginia Gardener Publication Series

000 000	Notes from The Virginia Gardener - Vol I (\$7.00)	426 326	Mulches for the Home Garden •
000 000	Notes from The Virginia Gardener - Vol II (\$7.50)	426 331	Vegetable Planting Guide & Recommended Planting Dates
430 017	Calibrating Your Lawn Spreader	426 334	Fall Vegetable Gardening •
426 020	Gardening in Raised Beds and Containers for Older Gardeners and Individuals with Physical Disabilities◆(\$1.50)	426 335	Intensive Gardening Methods •
426 030	Daylilies in Virginia	426 336	Container Gardening •
427 035	Weed Control in the Vegetable Garden	426 363	Selected Vegetable Diseases
426 059	Groundwater Quality and the Use of Lawn and Garden Chemicals by Homeowners (\$2.00)	426 366	Minimum Chemical Gardening •
426 312	Planning the Garden •	426 381	Season Extenders •
426 313	Soil Preparation •	426 480	Vegetables Recommended for VA
426 315	Garden Equipment	426 500	Winterizing Trees and Shrubs •
426 316	Seeds for the Garden	426 599	A Guide to the Master Gardener Training Videotape Series
426 322	Irrigating the Home Garden •	426 602	Growing Azaleas and Rhododendrons •
426 323	Fertilizing Your Garden •	426 603	Boxwood in the Landscape •
426 325	Composting •	426 604	Selecting Landscape Plants - Rare and Unusual Trees •
		426 605	Selecting Landscape Plants-Needled Evergreens•
		426 606	Selecting Landscape Plants - Deciduous Shrubs •

- | | | | |
|---------|----------------------------------------------------------------------------------|---------|------------------------------------------------------------------------------------------------------------------|
| 426 607 | Selecting Landscape Plants - Broad Leaved Evergreens • | 426 613 | The Year-Round Guide to Nutrient Management (replaced The Virginia Gardener Calendar - 1989 Nutrient Management) |
| 426 608 | Selecting Landscape Plants - Ornamental Vines • | 426 615 | The Year-Round Guide to Pest Management (replaced The Virginia Gardener Calendar - 1990 Pest Management) |
| 426 609 | Selecting Landscape Plants - Ground Covers • | 426 616 | The Virginia Gardener Guide to Water-wise Landscaping |
| 426 610 | Selecting Landscape Plants - Shade Trees • | 426 617 | Planting on Your Septic Drain Field |
| 426 611 | Selecting Landscape Plants - Flowering Trees • | | |
| 426 612 | Easy Reference to Sustainable Landscape Management and Water Quality Protection◆ | | |

Well and Septic Publications

- | | | | |
|---------|------------------------------------------------------------|---------|---------------------------------------------------------|
| 356-480 | Questions to Ask When Purchasing Water Treatment Equipment | 356-486 | Buying Bottled Water |
| 356-481 | Household Water Treatment | 356-487 | Bacteria and Other Microorganisms in Household Water |
| 356-482 | Home Water Quality Problems—Causes and Treatments | 356-488 | Hydrogen Sulfide in Household Water |
| 356-483 | Lead in Household Water | 356-489 | Interpreting Your Water Test Report |
| 356-484 | Nitrates in Household Water | 448-400 | Septic System Maintenance |
| 356-485 | Household Water Testing | 448-401 | Maintenance of Mound Septic Systems |
| | | 448-402 | Maintenance of Low Pressure Distribution Septic Systems |

Brochures Designed for Answering Homeowner Questions

Reproducible black-and-white sets of these publications in plastic sheet protectors bound in three-ring binders are available for \$23 per set through the Office of Consumer Horticulture, 407 Saunders Hall, Blacksburg, VA 24061-0327. Make check payable to *Treasurer, Virginia Tech.*

- | | | | |
|---------|---------------------------------------------------|---------|--------------------------------------------------------|
| 426-701 | Planting Shrubs ◆ | 426-713 | Creating a Water-wise Landscape◆ |
| 426-702 | Planting Trees◆ | 426-714 | Diagnosing Plant Problems◆ |
| 426-703 | Making Compost from Yard Waste◆ | 426-715 | Fertilizing Trees and Shrubs◆ |
| 426-704 | Using Compost in Your Landscape◆ | 426-716 | Landscaping for Less in the Landfill◆ |
| 426-705 | Storing Pesticides Safely◆ | 426-717 | Maintaining Lawns◆ |
| 426-706 | Choosing Pesticides Wisely◆ | 426-718 | Establishing Lawns◆ |
| 426-707 | Understanding Pesticide Labels◆ | 426-719 | Choosing Turfgrass◆ |
| 426-708 | Integrated Pest Management for Vegetable Gardens◆ | 426-720 | Fertilizing Lawns◆ |
| 426-709 | Pruning Deciduous Trees and Shrubs◆ | 426-721 | The Value of Landscaping NEW! |
| 426-710 | Applying Pesticides Safely◆ | 426-722 | Reducing Erosion and Runoff NEW! |
| 426-711 | Building Healthy Soil◆ | 426-723 | Home Landscape Practices to Protect Water Quality NEW! |
| 426-712 | Conserving Energy with Landscaping◆ | 426-724 | Mulching for a Healthy Landscape NEW! |

Videotapes

Videotapes can be reserved by contacting Virginia Tech Media Services by phone (540-231-6358) or by e-mail (mctr@vtvm1.cc.vt.edu).

MASTER GARDENER TRAINING LECTURES VIDEOTAPES

Basic Botany, 2 parts

Understanding Residential Soils, 2 parts

Basic Insect Identification

Insects in the Home Landscape

Insects in the Home Vegetable Garden

Beneficial Insects

Diseases of the Home Vegetable Garden

Diseases of Woody Ornamentals

Asexual Plant Propagation

Sexual Plant Propagation

Pruning - one tape contains the following:

Introduction to Pruning

Pruning Shade Trees

Pruning Shrubs

Pruning Fruit Trees

Pruning Small Fruit

House Plants

Vegetable Production

Selecting Vegetable Crops

Tree Fruits for the Home Garden

Small Fruits for the Home Garden

Home Lawn Establishment and Maintenance

Woody Ornamentals

Herbaceous Plant Materials

Home Landscape Design

The Virginia Master Gardeners - Promotionals

ENVIRONMENTAL ISSUES

Applying Pesticides Safely for the Environment

Proper Management of Fertilizers in Home
Vegetable Gardens

Proper Management of Fertilizers on Home Lawns

Reading and Understanding the Pesticide Label for
the Lawn and Garden

Appendix C

Other Resources and Organizations

Other State Cooperative Extension Water-Quality Resources

Project Nemo

University of Connecticut Cooperative Extension, 1066 Saybrook Road, Box 70, Haddam, CT 0643; tel. 203-345-451. Nonpoint education program for municipal officials using GIS technology.

Great Lakes: Great Gardening

Cornell Cooperative Extension, 21 South Grove Street, East Aurora, NY 14052; tel. 716-652-5453. Individual fact sheets related to gardening and water quality; water quality stewardship program for individuals.

University of Wisconsin-Extension

Environmental Resources, 1450 Linden Drive, Rm 216, Madison, WI 53706-1562; tel. 608-262-1916. Water-quality and storm-water management fact sheets for residential and commercial areas; information on Wisconsin Priority Watersheds Program; free newsletter.

Florida Yards and Neighborhoods

Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, P.O. Box 110409, Gainesville, FL 32611-0409; tel. 904-392-2801. Guide to environmentally friendly landscaping for coastal conditions, especially Gulf Coast.

Blue Thumb Program/Storm Sewer in a Suitcase

Oklahoma Cooperative Extension, Tulsa County, 4116 East 15th, Tulsa, OK 74112; tel. 918-746-3700. Urban water-quality improvement program. Includes information on volunteer water monitoring, storm drain stenciling, and storm-water model in a "suitcase".

National Water-Quality Evaluation Project

NCSU Water Quality Group, 615 Oberlin Road, Suite 100, Raleigh, NC 27605-1126; tel. 919-515-3723. Technical fact sheets and publications on various water-related topics; programming and evaluation information from watershed projects they conduct; free newsletter.

*National Farm*A*Syst/Home*A*Syst Program*

National Farm*A*Syst/Home*A*Syst Program, B142 Steenbock Library, 550 Babcock Drive, Madison, WI 53706; tel. 608-262-0024. Environmental self-assessment materials for homeowners and farmers to use; evaluation and program resources, as well.

Other Sources of Information and Program Resources Related to Water Quality

National Small Flows Clearinghouse
West Virginia University
P.O. Box 6064
Morgantown, WV 26506-6064
tel. 1-800-624-8301
On-site systems and wastewater research, including experimental systems, publications; free newsletter

National Wildlife Federation-Backyard Habitat Program
8925 Leesburg Pike
Vienna, VA 22184
tel. 703-790-4434
Information and publications on turning any backyard into a wildlife habitat

USEPA Chesapeake Bay Program
410 Severn Avenue, Suite 109
Annapolis, MD 21403
tel. 410-267-5700, 1-800-968-7229
Regional partnership directing and conducting Chesapeake Bay restoration in the three Bay states (Virginia, Maryland and Pennsylvania) and Washington, D.C.

Alliance for the Chesapeake Bay
6600 York Road, Suite 100
Baltimore, MD 21212
tel. 1-800-662-2747
Information on the various Bay programs and activities, sponsors conferences and seminars; free newsletter

Water Environment Federation
601 Wythe Street
Alexandria, VA 22314-1994
tel. 703-684-2400
Publishes "The Water Quality Catalog", a source book of public information materials (many are free) from around the United States

Center for Watershed Protection
8737 Colesville Road, Suite 300
Silver Spring, MD 20910
tel. 301-589-1890
Journal (fee) on timely watershed issues and research; frequently offers in-depth training opportunities

Conservation Technology Information Center
1220 Potter Drive, Rm 170
West Lafayette, IN
tel. 317-494-9555
Coordinates "know your watershed" program; information on watershed partnerships throughout the US; free newsletter

Izaak Walton League of America
707 Conservation Lane
Gaithersburg, MD 20878
tel. 1-800-284-4952
Coordinates "Save our Streams" volunteer, stream water monitoring program

Operation Waterworks
City of Olympia Public Works Department
Water Resources Program
P.O. Box 1967
Olympia, WA 98507
tel. 360-753-8314
Program guide for involving local businesses in pollution prevention

National Nonpoint Source Federation
1717 K Street NW, Suite 802
Washington, DC 20006-1501
tel. 800-795-3634
Membership organization for corporate, environmental, governmental, and grassroots interests in nonpoint source pollution; newsletter for members

Notes

The first part of the notes discusses the importance of water conservation in gardening. It mentions that water is a precious resource and that gardeners should be mindful of their water usage. The text suggests several ways to save water, such as using mulch to retain moisture in the soil, watering plants in the early morning or late afternoon to reduce evaporation, and using drip irrigation systems.

The second part of the notes talks about the benefits of using native plants. Native plants are adapted to the local climate and soil conditions, which means they require less water and care. They also provide habitat for local wildlife and insects. The text lists some examples of native plants that are drought-tolerant, such as succulents, cacti, and certain types of grasses.

The third part of the notes discusses the use of greywater. Greywater is wastewater from household activities like washing dishes, clothes, and taking showers. It can be used to water plants, but it must be filtered and treated properly to avoid harming the soil and plants. The text provides instructions on how to collect and use greywater safely.

The final part of the notes talks about the importance of soil health. Healthy soil is able to retain water and nutrients, which helps plants grow and thrive. The text suggests several ways to improve soil health, such as adding organic matter like compost or mulch, and avoiding the use of synthetic fertilizers and pesticides.

