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Municipal Landscaping

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Minimum Measure: Pollution Prevention/Good Housekeeping for Municipal Operations

Subcategory: Municipal Activities

Description

Lawn and garden activities can contaminate stormwater with pesticide, soil, and fertilizer runoff. Proper landscape management, however, can effectively reduce water use and contaminant runoff, and enhance a property's aesthetics. Environmentally friendly landscape management protects the environment through careful planning and design, routine soil analysis, appropriate plant selection, use of practical turf areas and mulches, efficient water use, and appropriate maintenance.

Other activities that benefit water resources include maintaining healthy plants and lawns, and composting lawn wastes. Healthy plants better resist diseases and insects. Therefore, they require fewer pest control measures. To promote healthy plants, it is often beneficial to till composted material into the soil. Recycling of garden wastes by composting is also effective at reducing waste, although compost bins and piles should not be located next to waterways or storm drains because leachate from compost materials can cause contamination.



A typical composting bin (Source: Alameda County Waste Management Authority, 2001)

There are several benefits to environmentally friendly landscape design. First, proper site planning can reduce maintenance requirements by selecting native species and locating plants in areas where conditions are optimal for growth requirements. Soil analysis can prevent overapplication of fertilizers by eliminating uncertainty regarding existing soil fertility. Careful selection of turf can minimize watering and fertilizer requirements by choosing grasses that thrive in a particular climate. Minimizing turf area by replacing it with ground cover, shrubs, and trees reduces mowing requirements, which subsequently reduces air, water, and noise pollution. Efficient watering practices reduce pollutant transport and erosion from runoff of wasted water. Mulches stabilize exposed soils, prevent growth of nuisance vegetation, and improve soil fertility through the slow release of nutrients from decomposition. Finally, the reduction or judicious application of pesticides and fertilizers reduces the probability of contamination, while ensuring that the maintenance requirements of vegetation are being met.

It is important for municipalities to set a good example for residents. To encourage the use of less-toxic alternatives by municipal crews, King County, Washington, and the City of Seattle voluntarily phased out the use of dozens of pesticides (Johnson, 1999). The decision followed criticism that while the municipalities were urging residents to stop using weed killer and pesticides in yards to help endangered Chinook salmon, they were allowing municipal crews to apply herbicides in municipal parks and along roadsides. Based on a study by the City of

Seattle, the municipalities phased-out the use of all hazardous Tier 1 chemicals. Major health and safety concerns from pest outbreaks are excepted from the phase-out. Environmental groups support the phase-out and hope to see zero pesticide use in the future. Groups representing agriculture, landscaping, and timber interests oppose the plan. They warn that overwhelming weed, mosquito, and rat problems will result. More information can be found at the [Seattle Pesticide Reduction](#) [EXIT Disclaimer] website.

Applicability

Municipalities can use environmentally friendly lawn and garden practices on their properties, and they can encourage residents to use the same practices in their yards. Such practices include landscape planning, integrated pest management, planting indigenous species, soil testing, and the reduction, elimination or judicious use of fertilizers and pesticides. Planting drought-resistant plants and using [Water Conservation Practices for Homeowners](#) can be especially useful in areas of low rainfall. Areas of high rainfall experience more erosion, so protecting exposed soils with vegetation and mulches is of particular importance in these areas.

Siting and Design Considerations

The following guidelines describe ways in which municipalities can promote environmentally friendly landscaping techniques:

General Programs. An effective public education campaign can help landowners understand the value of good yard practices. The Florida Yardstick, part of the Florida Yards and Neighborhoods Program (University of Florida Cooperative Extension Service, no date), helps landowners evaluate their yard. A 19 x 37 inch poster of a yardstick indicates credits homeowners have earned for recycling, fertilizing, selecting indigenous plants, and so on. The credits represent inches, the best yards adding up to 36. Landowners meeting the 36 inch goal are rewarded with a certificate. More information can be found at the [Florida Yardstick](#) [EXIT Disclaimer] website.

Planning and Design. It is important that property owners develop a landscape plan that recognizes the property's natural conditions. For example, a landscape plan should recognize regional and climatic conditions. It should consider the site's topography and existing vegetation, and group plants together according to their water needs. The site's intended use should be considered. A thoughtful landscape plan will promote natural vegetation growth and minimize water loss and contamination. Residents and municipal crews can partner with local nurseries and irrigation and lawn services to determine appropriate landscape designs for a specific site.

Soil Analysis and Improvements. Residents and municipal crews should be encouraged to test soils every 3 to 4 years to determine the amount of nutrients necessary to maintain a healthy lawn. Municipalities can encourage home and garden centers to market and sell soil test kits so that property owners can perform such tests on their own. A local extension service can also perform soil analyses, and their representatives can then provide suggestions for improving a site's ability to retain water and to support specific vegetation.

Appropriate Plant Selection. Encourage property owners and municipal crews to choose local or regional plants when developing an environmentally friendly landscape. Indigenous plant species are generally more water efficient and disease resistant. Furthermore, exotic plants can potentially invade local waterways. Local nurseries can assist in choosing appropriate regional plant species.

Practical Turf Areas. Property owners and municipal crews should be encouraged to plant non-turf areas where possible, because lawns require more water and maintenance than wildflowers, shrubs, and trees. If turf is used, it is important to select a type of grass that can withstand drought and that becomes dormant in hot, dry seasons. Local nurseries can assist property owners and municipal crews with selecting grass types. In addition, when maintaining lawns, the grass should not be cut shorter than 3 to 4 inches in height. Mulched clippings should be left on the lawn as a natural fertilizer.

Efficient Irrigation. Much of the water that is applied to lawns and gardens is not absorbed by the vegetation. When water is applied too quickly, it is lost as runoff along with the top layers of soil. To prevent this, it is important to encourage the use of low-volume watering approaches

such as drip-type or sprinkler systems. In addition, encourage property owners and municipal crews to water plants only when needed to enhance plant root growth and avoid runoff problems.

Use of Mulches. Mulches help retain water, reduce weed growth, prevent erosion, and improve the soil for plant growth. Mulches usually contain wood bark chips, wood grindings, pine straws, nut shells, small gravel, or shredded landscape clippings. Property owners should be encouraged to use mulches and should be informed of the benefits of these materials. Additionally, municipalities can start a program to collect plant materials from municipal maintenance activities as well as yard waste from property owners. These materials can be converted to mulch and used at municipal properties or redistributed to property owners.

Fertilizers. Property owners and municipal crews should be discouraged from using fertilizers, or if they are used, from over-applying them. Municipalities can recommend less-toxic alternatives to commercial fertilizers, such as composted organic material.

Municipalities can also recommend practices to reduce the amount of fertilizer entering runoff. For example, slow-release organic fertilizers are less likely to enter stormwater. Application techniques, such as tilling fertilizers into moist soil to move the chemicals directly into the root zone, reduce the likelihood that the chemicals will be mobilized in stormwater. Timing is also important: Warm season grasses should be fertilized in the summer, in frequent and small doses, while cool season grasses should be fertilized in the fall. Also, fertilizer should not be applied on a windy day or immediately before a heavy rain. Municipalities can recommend that property owners apply fertilizer at rates at or below those recommended on the packaging or should apply fertilizer based on the needs of the soil (as determined by a soil test). Safe disposal of excess fertilizer and containers should be encouraged. (see [Proper Disposal of Household Hazardous Wastes](#) fact sheet.)

Pesticides. Like fertilizers, pesticides should be used on lawns and gardens only when necessary. Pesticide use can be avoided by selecting hearty plants that are native to the area and by keeping them healthy. It is important to identify any potential pests to determine if they are truly harmful to the plant. The pests should always be removed by hand when possible; chemical pest control should be used only when other approaches fail. If it is necessary to use chemical pesticides, the least toxic pesticide that targets the specific pest in question should be chosen (i.e., boric acid, garlic, insects, etc). If a pesticide is labeled with the word "caution," it is less toxic than one labeled "warning," which is, in turn, less toxic than one that is labeled "danger/poison."

It is important to follow the label directions on the pesticide. Property owners and municipal crews must wear the appropriate protective equipment listed on the label when working with organophosphate insecticides or concentrated sprays or dusts. Read and follow all safety precautions listed on pesticide labels and wash hands and face before smoking or eating. Tools or equipment that were used to apply or incorporate pesticides should always be rinsed in a bucket and the rinse water applied as if it were full-strength pesticide. Any unused pesticide can be saved and disposed of at a household hazardous waste collection location. (see [Proper Disposal of Household Hazardous Wastes](#) fact sheet.)

The following websites provide education and information regarding safe pesticide use and disposal:

- [University of Nebraska's Pesticide Education Resources](#) [EXIT Disclaimer]
- [University of Illinois College of Agricultural, Consumer, and Environmental Sciences' Pesticide Safety Education](#) [EXIT Disclaimer]
- [Pennsylvania State University Pesticide Education Program's Pesticide Urban Initiative](#) [EXIT Disclaimer]
- [Washington State University's Pesticide and Environmental Stewardship](#) [EXIT Disclaimer]
- [National Coalition Against the Misuse of Pesticides' Beyond Pesticides](#) [EXIT Disclaimer]
- [Cornell University's Pesticide Management Education Program](#) [EXIT Disclaimer]
- [The Pesticide Education Center](#) [EXIT Disclaimer]

Ordinances. Municipalities can use ordinances as a means of controlling or preventing pesticide usage in the future. For example, the city of Arcata, California, created an ordinance that officially eliminated the use of pesticides on all city properties (Californians for Alternatives to Toxics, 2000). This ordinance followed a 14-year moratorium on pesticides in which the city council and a citizen's task force researched less-toxic alternatives to pesticide use. Municipal workers adapted to the moratorium by devising innovative pest control methods, such as covering the infield dirt in the baseball stadium with tarps between games to prevent weed growth. Other methods that Arcata crews used to prevent weeds included planting local plant species adapted to the city's climate; timely mowing, irrigating, weeding, and thatching lawns; and performing regular street maintenance such as sweeping and crack sealing. The ordinance also mandates the creation of a pest control management plan that will be linked to the city's stormwater discharge program and includes a public education component. The text of the ordinance can be found at the [Californians for Alternatives to Toxics](#) [EXIT Disclaimer] website.

Limitations

There are virtually no limitations associated with implementing environmentally friendly lawn and garden practices. Some practices are more applicable in certain climates (for example, there is little need for irrigation practices in areas of very high rainfall), but in general, all practices are low cost and relatively easy to implement. With guidance from a local environmental agency, extension service, or nursery, proper decisions can be made regarding which practices are best for the site in question.

Effectiveness

Using proper landscaping techniques can effectively increase the value of a property while benefiting the environment. Attractive, water-efficient, low maintenance landscapes can increase property values between 7 and 14 percent (USEPA, 1993). These practices also benefit the environment by reducing water use; decreasing energy use (because less water pumping and treatment is required); minimizing runoff of storm and irrigation water that transports soils, fertilizers, and pesticides; and creating additional habitat for plants and wildlife.

Cost Considerations

Proper landscape activities are very cost effective. Promoting the growth of healthy plants that require less fertilizer and pesticide applications minimizes labor and maintenance costs of lawn and garden care. Using water, pesticides, and fertilizers only when necessary and replacing store-bought fertilizers with compost material can increase the savings for a property owner as well as benefit the environment.

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