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2022 AUG 25 PM 3:36

LANDSCAPING
and
INTEGRATED PEST MANAGEMENT PROGRAM (IPM)
TO MINIMIZE ENVIRONMENTAL RISKS
at the
Brainard Gardens
Senior Residential Development
Brainard Road, Enfield, CT

I. BASIC DEFINITION & CONCEPTS: Low Impact Landscaping with Integrated Pest Management (IPM) is an ecologically-based, sustainable approach to landscaping and managing pests that combines biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks. IPM is a program of prevention, monitoring, and control which offers the opportunity to eliminate or drastically reduce the use of pesticides, and to minimize the toxicity of and exposure to any products which are used. Low Impact Landscaping uses site-specific knowledge of vegetation, soils, environmental/climatic conditions, and pests, to select the best combination of management strategies to achieve healthy, attractive plant growth and prevent or minimize a multitude of pest problems, without excessive fertilizer use or dependence on chemical pesticides.

IPM is a term that is used loosely with many different definitions and methods of implementation. IPM can mean virtually anything the practitioner wants it to mean. However, it should not be a program of chemical dependency masquerading as IPM. Conventional pest control tends to ignore the causes of pest infestations and instead rely on routine, scheduled pesticide applications. Pesticides are often temporary fixes, ineffective over the long term, aside from their health and environmental risks.

The basic program concepts, which should be applied in all Low Impact Landscaping/IPM programs, are the following:

Monitoring. This includes periodic soil tests, regular site inspections, and pest trapping to determine the types and infestation levels of pests at each site.

Record-Keeping. A record-keeping system is essential to keep track of fertilizer applications and establish trends and patterns in pest outbreaks. Information recorded at every inspection or treatment should include pest identification, population size, distribution, recommendations for future prevention, and complete information on the treatment action.

Action Levels. Pests are virtually never eradicated and fungal or insect damage is often "cosmetic." An action level is the population size and or specific extent and type of pest damage, which requires remedial action for

human health, economic, or aesthetic reasons.

Prevention. Preventive measures must be incorporated into the landscaping design in the selection of pest-resistant and low-maintenance turf and plant species. IPM preventive practices result in healthy soils, which in turn promote healthy plant growth. Prevention is and should be the primary means of pest control in an IPM program.

Tactics Criteria. Under a low-impact landscaping/ IPM Program the possibility of fertilizer releases off-site and into groundwater is minimized. Chemical pesticides are used only as a last resort, but when used, the least-toxic materials should be chosen, and applied to minimize or eliminate adverse exposure to humans and all non-target organisms.

Evaluation. A regular evaluation program is essential to determine the success of the pest and soil management strategies. Staff at the Connecticut Agricultural Experiment Stations, located in Windsor and New Haven, could be consulted to evaluate an existing IPM program.

II. SITE SPECIFIC GOAL: *Maintain the functions of wildlife / aquatic habitat, and production export in proposed residential clusters within the site, where there is some potential for pesticide and fertilizer impacts, based on known properties of many pesticides used for landscaping (e.g., half life, solubility, affinity for soil particles, toxicity). Maintain functions within wetland setbacks (including grass and shrubs in residential yards) - as well as within the wetlands themselves by:*

- A. Avoid direct harm to amphibians, small mammals, birds, fish, and potentially humans;
- B. *Avoiding indirect harm* to their food supply: the soil invertebrates, foliage and bark insects, and aquatic biota;
- C. Develop healthy soils with ecologically suitable plantings and cultural practices, which resist pests and disease and sustain diverse microflora and fauna, beneficial insects, and native-ornamental plant species.

III. STRATEGY: Require that all landscaping activities conform to a detailed set of guidelines (summarized below), which effectively eliminates the double threats of fertilizer runoff into wetlands and incidental exposure of the vertebrate and invertebrate fauna on the site to potentially toxic pesticides. This is legally practical

and possible when a single entity, such as a home owners association (rather than multiple separate homeowners), is responsible for grounds maintenance throughout the site.

INITIAL GRADING, LANDSCAPING AND TURF ESTABLISHMENT:

- A. Use groundcovers extensively, especially in shaded yard areas (e.g. periwinkle and pachysandra).
- B. Where grading is not needed, but no natural, attractive groundcover is present, leave existing topsoil in place to preserve the soil biota as well as to allow for embedded native ground cover to proliferate, if desired.
- C. Select planting locations to provide appropriate growth conditions for each species, in terms of soil moisture, sunlight, and pH, to maximize resistance to pests and insects. Plant drought tolwereant shade-tolerant fine fescues in shady lawn areas.
- D. When installing landscaping, emphasize native woody plantings (not hybrids or purely ornamental cultivars) with high ornamental value (e.g., viburnums, azaleas, blueberry, winterberry, and laurels). Select low maintenance perennials to reduce the amount of water & nutrient requirements (e.g. ornamental grasses, daylily, rudbeckia).
- E. At the time of turf establishment incorporate organic matter, phosphorus, trace minerals, etc. as necessary, based on soil tests, in order to promote healthy, disease-resistant turf from the onset.

ONGOING CULTURAL PRACTICES:

- F. Use slow release nitrogen fertilizers at rates determined by soil tests. Fall applications will not be permitted in the vicinity of the wet pond micropool.
- G. Use fertilizer formulations without phosphorus (unless soil testing shows a need for phosphorus); these are available but often need to be special ordered. Any phosphorus applications will be accompanied by soil aeration, so that fertilizer will wash into holes, reaching roots, rather than remaining on soil surface, vulnerable to runoff.
- H. Monitor irrigation to maintain proper soil moisture and to reduce run on dry soils.
- I. Maximize use of mulch to control weeds in beds and around the bases of trees and shrubs, leaving a four to five inch gap between mulch and woody stems to

prevent winter rodent damage.

- J. Use cultural methods to limit broadleaf plants in lawns (e.g. mowing no shorter than two and one half to three inches, hand-pulling, and the above-listed soil development strategies).

LIMITED USE OF LANDSCAPING PRODUCTS:

- K. Avoid any applications (including organic fertilizers) onto moderate or steep slopes (over 8%) draining towards a road or wetland.
- L. Limit herbicide use to targeted application methods (rather than broadcast spraying) of non-toxic herbicides (e.g., cut-stump or targeted foliar applications of glyphosate and/or triclopyr), only for poison ivy and certain invasive plant species with a strong tendency to resprout from root fragments. (Refer to the Invasive Plant Management Guide available on line at <http://www.hort.uconn.edu/cipwg>).
- M. Strictly limit use of low risk pesticides to "emergency" situations; in these cases use a site-specific risk and pesticide selection method, following the principals recommended by the USDA Natural Resource Conservation Service (NRCS): consider soil permeability, slope steepness, and the mobility and persistence properties of the pesticide. Check the WIN-PST internet database for updates biennially.
- N. Tolerate "cosmetic" damage, which will not kill or seriously weaken the plant, or a pest that is threatening a species present only at low levels on the site. An appropriate "emergency situation" would be to prevent the spread of a beginning, life-threatening insect infestation or fungal disease of a tree or shrub species that is abundant on the site.
- O. Exclude all use of turf or landscaping chemicals with medium or high toxicity to humans, fish, birds, aquatic organisms, earthworms, or bees. Strictly minimize use of all herbicide, fungicide, and miticide/insecticide products that exceed specified soil mobility, solubility, and/or persistence criteria, published for all permitted pesticides [See the USDA WIN-PST Pesticide Property Database, available on the internet.]: **Solubility >50 mg/l, Half Life >7 days, soil sorption (Koc) > 1000.**
- P. Use natural control methods whenever possible (only if they are nontoxic). For grub control use Milky Spore disease and/or nematodes in lieu of the more toxic pesticides. Another potential natural control method is to allow grass to go dry and dormant during late July to mid August, the egg-laying period for Japanese beetles.

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- Q. When evaluating a disease or pest problem, *consider the life cycles* of the plant and the pest/disease, to optimize *timing* of control efforts.
- R. *Only licensed landscape personnel retained by the community*, not residents or services hired by residents, *may apply pesticides and fertilizers*, when used.
- S. *Maintain a record of all fertilizer applications, soil test results, and chemical pesticide use*, including date of application, active ingredient and brand name, formulation/concentration, location and aerial extent of application, quantity used, rainfall within the previous two weeks (available on the internet from the National Weather Service) and during the week after use, the rationale for use, and any advisory communications with Connecticut Cooperative Extension personnel. The record form will also include fields for the key pesticide properties, solubility, half-life, etc. The record book shall be available for viewing upon request by any resident, property staff person, Town land use board staff, or government regulatory personnel (e.g., Department of Environmental Protection).
- T. Property owners and/or tenants shall be informed of the Conservative IPM policy in writing policy prior to purchase of a unit in the housing community. Specifically they shall be aware that no application of pesticides is permitted, except by the property management on a limited basis, and that this applies to fruit trees and flower/vegetable garden plots.

For Additional Information:

The IPM WIN-PST Pesticide Property Database is on line at:
<http://www.wcc.nrcs.usda.gov/pestmgt/winpst.html>.

Appendix:

General guidelines for IPM (University of Rhode Island Landscape Horticulture Program)

TABLE I – Mitigation Effectiveness Guide – Reducing Pesticide Impacts on Water Quality (NWCC Pest Management Team)