

“Environmental Gardening”

By Kathryn Mathewson

The 1990's have been declared the environmental decade. As legislators increase pesticide regulation and the public looks for healthier alternatives to environmental problems, our industry can only benefit by becoming leaders in this national trend.

Two years ago my company was fortunate to be selected by *Good Morning America* to do a four-minute special on “Environmental Gardening.” In February, I spoke to Rodale Institute in Pennsylvania about the same subject. They have recently come to realize the importance of their work in our industry. This month I will be speaking to the California Horticulture Society about what they can do to become a community leader on environmental subjects as they relate to their business.

Adding naturally occurring nutrients like soy meal, kelp, oyster shells and bone meal to soil rather than highly soluble synthetic forms conserves soil nutrients by keeping them bonded to the soil particles until they are needed by plant roots. It also minimizes leaching of nutrients and forcing of plants to use the synthetic chemical fertilizers immediately rather than when they need it.

There are some good products available to support these ideas. Lawn Restore by Ringer Corporation is an organic lawn fertilizer inoculated with disease-fighting beneficial microorganisms. Ringer's soil aid flushes out substances like lawn thatch that inhibit high levels of microbial activity.

It is important to maintain a constant supply of organic matter when starting an organic program. Organic sources for the soil would include green cover crops, vegetable and animal waste (no oils, fats or meat, or citrus rinds) and the dead bodies of microorganisms. Bats can be used as a pesticide as well. They eat harmful active night insects and can eat up to 2000 mosquitoes in one night.

Another way to control pests is introducing beneficial insects like Green Lacewings, which eat aphids, moths and other soft-bodied insects. Introducing beneficial insects will also require planting plants they need such as Buckwheat, Caraway, Tansy, Queen Anne's Lace and Cosmos.

It is also possible to reduce pesticides by encouraging plant diversity. Certain plants produce toxic substances that inhibit the growth of other plants. This process is called alleopathy and is useful in weed control. The centuries old concept of companion planting encourages the idea that many plants do better in combinations rather than alone. Choose plants which give year-round food and shelter to birds to increase animal diversity.

Landscape designs should be developed which reduce the amount of waste requiring collection and processing. Incorporate mulching beds into the designs to use grass clippings and leaves creating on-site collection/disposal points. Consider placement of composting areas which need a water source, heat, and aeration. When selecting plants, consider that some plants are more difficult to recycle like thorny roses and holly or hard to remove weeds like ivy or bamboo or oxalis.

Following are some additional environmentally sound techniques that should be considered when gardens are being designed and built, when selling products, and when setting up maintenance procedures:

- 1) When designing a garden don't focus on aesthetics to the point of excluding maintenance problems which will build pest problems (ie: planting too closely will not provide proper space light, drainage, and wind protection).
- 2) Control weeds with soil solarization (plastic), mulching, flammers, alleopathic plants, and vinegar to spot kill or hand removing.
- 3) Use natural ways to reduce wildlife problems (human hair on trees for deer, electric fences for raccoons and deer, inverted grapefruit halves and beer for snails, flooding, or trapping or fumigation for gophers).
- 4) Plant natural hedge screens around the property to protect the garden from wind, which dries out plants and from wind blown weeds and harmful pests.
- 5) On steep slopes build retaining walls to reduce steepness. Always place soil mounds or rocks around each newly planted plant to that water goes directly to the root system. On slopes these mounds must be permanent.

Designing a garden system that largely maintains its own balance of pests and controls is the only way to achieve the goal of a garden, which takes little effort. By increasing your general knowledge about non-toxic approaches in removing pests, enhancing soil health and creating better ways to design, build, and maintain gardens; you will be creating more demand for these products and services. This will elevate our industry by increasing product demand. It will also provide services our communities need and can't find. This is our challenge as we begin the 21st Century.

“Environmental Gardening, Part II”

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One of the most critical areas of concern is soil health. Since the 1930's we have added so many chemical fertilizers and pesticides to the soil that they have killed the soil's beneficial organisms which suppress soil-borne plant disease, have left salt residue, which is turning our soil into deserts, have led to loss of plant quality and productivity and have leached from our soils high levels of nitrates and salinity into our drinking water and ground water.

It is a sad state when most people in our society, including professionals, have never experienced a healthy soil.

Healthy soil is easier to keep at the proper moisture level than dead soil, and can save as much as 50 percent of the water used on soils with large quantities of pesticides and synthetic fertilizers.

A report by the Scientific Journal Bioscience stated that one percent of the pesticides applied to plants reached its ultimate destination – the insects. The other 99% pollutes and poisons the air, soil, water, good insects, animals, and man.

There are many less toxic ways to remove harmful pests than chemical pesticides. Pesticidal soaps (sodium and potassium salts combined with fish or vegetable oil)

manufactured by Safer Inc. and Ringer Corporation control soft-bodied insects such as aphids and whitefly, preventing powdery mildew and rust from germinating, and eradicate existing infections.

Many plants are known to have insecticidal properties. Pyethrin from the chrysanthemum flower is the most important and oldest insecticide ever developed. It is toxic to ants, aphids, caterpillars, fleas, flies, mosquitos and more.

Insecticidal dusts like Diatomaceous earth or Boron have the ability to cling to the waxy outside layer of insects and they thus dies through dehydration. Inorganic substances like sulfur were used to fumigate trees for aphids and to control mildew in the 1700's. *Bacillus thuringiensis* (Bt) is a beneficial bacteria applied as a spray to kill caterpillars (sold as Thurincide, Dipel or Bio-worm). Horticultural oils were used in Roman times as both insecticides and herbicides.

The young and simplified systems of planting typical of most landscapes built since World War II lack some of the protective mechanisms of more complex natural systems and are subject to wide fluctuations in pest and pathogen numbers. More plant species within a garden means more inset species, a decrease in pests, and often an increase of beneficial insect predators and parasites. Encouraging plant diversity is, therefore, vital to a garden's health.

Controlling Drought

Because of the world-wide climactic changes and uncontrolled population growth, no region is immune to drought. Use plants that need little or no water. consider zoning areas in the landscape for water usage. Some areas would be weaned off water and eventually need no watering. Other areas will need only occasional watering. The highest used areas and those seen from inside the house will require the most water. Both irrigation systems and plant selections should be made on this basis.

Reduce lawn size whenever possible as lawns require the highest maintenance ad the most water. Do not encourage the perfect lawn concept with only one species of grass. Instead, encourage the idea of where lawns came from _ the meadow with its tremendous species diversity.

Blends of grass species enhance disease resistance. Whenever possible substitute lawns with low groundcovers that can be walked on (Thyme, Chamomile, Creeping Veronica, Moss, Erodium, Hernaria) or low grasses like Red Fescue that do not require mowing and require small amounts of water.

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