

The 1990 Virginia Gardener Calendar



**PEST MANAGEMENT:
YOUR RESPONSIBILITY
TO THE ENVIRONMENT**

Virginia Cooperative Extension Service

Virginia Tech and Virginia State

Virginia's Land Grant Universities

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Understanding the Pesticide Label Will Help Reduce Environmental Problems

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Home gardeners often use more pesticides per square foot in their gardens than farmers do in the fields, thinking that if a little is good, more will be better. This is a serious mistake, and a misuse of pesticides. Misuse of pesticides has a number of adverse effects. It can cause health hazards such as: making your food less safe to eat, especially if there are residues at harvest time; and making handling the plants more dangerous. Each time the gardener sprays, she or he is exposed to the dangers of inhalation or absorption of the toxin. It can also cause various environmental problems: beneficial insects, earthworms, birds, even pets may be harmed or killed along with the "bad guys." Pesticides used near water may contaminate the water supply. Continuous use of certain pesticides may induce resistance in the pests, thus requiring the gardener to switch to more toxic substances. Some pesticides do not break down easily and can remain in the environment for years.

Research has shown that consumers find reading and understanding the label to be the most difficult aspect of applying pesticides. However, an understanding of the label information is essential before work begins. The label printed on or attached to a container of pesticide tells how to use it correctly and warns of any environmental or health safety measures to take. **Read the label** when you purchase a pesticide, and again before mixing or applying it. If you are confused about any part of the label, consult your Extension agent or a representative of the company which makes the product. Many pesticides now list a toll-free number for consumers. The label includes specific information that you should be aware of and learn to understand.

The **brand name** is used on the front of the label to identify the company's product. **Type of formulation** identifies the way the pesticide in that container is formulated for application such as wettable powder, dust, or ready-to-use. **Ingredient statement** lists the names and amounts of the active ingredients and the amount of inert ingredients. Comparing the cost per unit of active ingredient on different brands and formulations can save money, but don't buy more than you need just to reduce cost-per-unit; you may end up creating serious disposal problems. Pesticides have complex **chemical names** derived from their chemical composition; some also have a common name which makes them easier to identify. The same pesticide may be sold under several brand names, but either the common or chemical name will be on all of them. The **net contents** tell how much is in the container.

The law also requires the maker or distributor of a product to print the name and address of the company. A **registration number** shows that the product has been approved by the E. P. A. for the uses listed on the label and an **establishment number** tells which factory made the chemical.

The label also includes several precautionary statements. A section with a title similar to **hazards to humans and domestic animals** tells ways in which the product may be poisonous to man and animals. It also describes any special steps necessary to avoid poisoning by highly toxic products; physicians are informed of proper treatment.

The **signal word and symbol** on the label tell how toxic a product is. Signal words to look for are **danger** along with the word **poison** and the **skull and crossbones symbol** (highly toxic), **warning** (moderately toxic), and **caution** (slightly toxic).

If swallowing or inhaling the product or getting it in the eyes or on the skin would be harmful, the label contains **emergency first aid measures** and states types of exposure requiring medical attention. The pesticide label is the most important information you can take to the physician when someone has been poisoned. Without the label, it may be difficult for the physician to help.

The label tells how to avoid **damage to the environment**. Some examples are: "This product is highly toxic to bees exposed to direct treatment or residues on crops"; "Do not contaminate water when cleaning equipment or when disposing of wastes"; and "Do not apply where runoff is likely to occur."

Physical and chemical hazards are listed and include specific fire, explosion, and chemical hazards that the product may have.

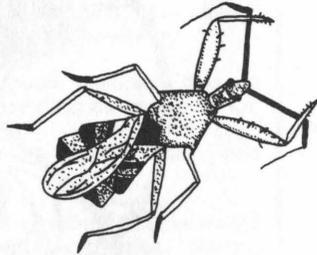
The **directions for use** includes the pests the product controls; the crops, animals or other items the product can be used on safely; how the product should be applied; how much to use; where and when the product should be applied. This is often the most difficult part of the label to follow and, therefore, needs special attention.

Application to harvest specifies the amount of time that must pass from the time of application until it is safe to pick and use a food crop. Expressed as "days to harvest," this is the time required for the residue to drop to safe levels. It is often listed as a number in parentheses following the crop name. It is a mistake to assume that a residue can be washed off. The **misuse statement** reminds you that it is a violation of Federal law to use a product in a manner inconsistent with its labeling.

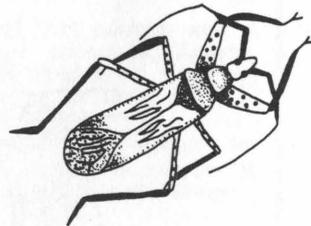
Storage and disposal directions must be followed for environmental and human safety.

Beneficial Insects

Naturally occurring predators and parasites are found in gardens, orchards, and fields. Learn to properly identify these species as the benefits of your environment. Avoid using pesticides around them. They are as susceptible to insecticides as pests.

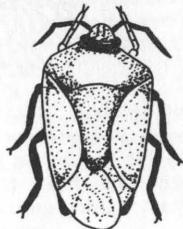


Assassin bug *Reduviidae* - The assassin bug feeds mainly on aphids, caterpillars, Colorado potato beetles, Japanese beetles, leafhoppers, and Mexican bean beetles.



Damsel bug *Nabidae* - The damsel bug feeds on aphids, leafhoppers, mites, and caterpillars.

Big-eyed bugs *Lygaeidae* - Big-eyed bugs feed on aphids, caterpillar eggs and larvae, immature bugs, leafhoppers, and spider mites.



Predacious stink bug *Pentatomidae* - Predacious stink bugs feed on Colorado potato beetles and various caterpillar larvae.

Syrphid fly larvae *Syrphidae* - Fly larvae of this species feed on aphids and mealybugs.

Some naturally occurring beneficial insects can also be ordered from insectaries. A variety of insects are available to help control the insect pests in your garden. This method, known as augmentation or colonization of natural enemy populations, depends on knowing the pest's life cycle to permit well-timed releases of natural enemies. The more of a generalist the natural enemy is in its feeding or host acceptance behavior (such as lady beetles), the less knowledge is required for successful establishment. However, keep in mind that an order of beneficial insects will enhance the control of the pests, but they are not a quick fix to eradicate a pest. Predators and parasitoids which are available from insectaries include:

Lady Beetles *Hippodamia convergens* - The lady beetle feeds mainly on aphids and other soft-bodied insects such as mealybugs and spider mites.



Green Lacewings *Chrysopa carnea* - Lacewing larvae, known as aphid lions, feed on insect eggs, aphids, spider mites, thrips, leafhopper nymphs, and small caterpillar larvae. Adult lacewings are not predacious.

Predatory mites *Phytoseiulus persimilis* and several other species - Feed on many mite pests, including the two-spotted spider mite.



Trichogramma wasps *Trichogrammatidae* - This tiny wasp attacks eggs of more than 200 pest species, including cutworms, corn borers, corn earworms, armyworms, codling moths, and cabbage moths. Release time is critical for their effectiveness since they only attack pest eggs.

Encarsia formosa *Encyrtidae* - The greenhouse whitefly is parasitized by this wasp in 3rd and 4th larval instars when Encarsia lay their eggs inside the whitefly scale.

Insects pictured are larger than their actual size.

January 1990

Selecting Plants to Avoid Pest Problems

You can reduce garden and landscape maintenance, including the amount of pesticides you need, by making wise choices of plant materials. Start by selecting plants that are suited to your area, including native plants. To maintain healthy plants with few pest problems, look for insect- and disease-resistant varieties.

At purchase time:

- * Select plants that are sturdy and have well-developed root systems.
- * Buy plants from a reputable grower who can assure you that they are disease- and insect-free, or grow your own from seed.
- * Avoid accepting plants from friends if there is any chance they have insects or disease.

Native or naturalized plants usually are more tolerant of local environmental conditions and pests, ensuring better performance with less care. Beware though—some native trees can also be problem trees, having either messy fruit (mulberry), troublesome root systems (willows), or high susceptibility to pests (black locust).

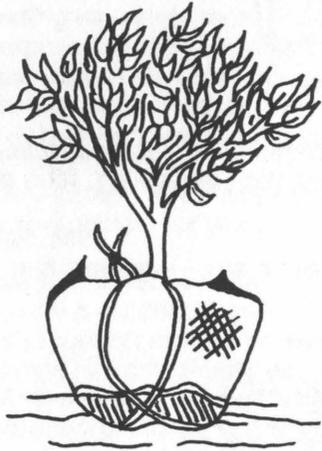
Fruit trees, including those grown for flowers, such as Kwanzan cherry, are often subject to diseases and Japanese beetle infestation. Management of fruit trees with pesticides requires a genuine commitment of time and resources; do not try to get into this halfway.

Disease-resistant varieties are plants that have been developed to resist a specific disease. A resistant variety is not resistant to all diseases, but only to those for which it has been developed. Disease-resistance does not mean that the plant will not get the disease, but the disease will at least be less severe than for susceptible varieties.

Using disease-resistant varieties of vegetables not only makes gardening easier, but also reduces the expense and potential for pollution with pesticides. Although many non-toxic materials are used to control vegetable diseases, it is best to avoid all pesticide use if possible by selecting disease-resistant varieties. Seed catalogs and Virginia Tech Extension Publication 426-480, *Vegetables Recommended for Virginia*, indicate which varieties are resistant to various diseases. Watch for disease-resistant varieties when you order seed.

Insect-resistant plants are bred to resist or repel insects by physical or biochemical means. An insect-resistant plant can physically deter insects from extracting plant juices, for example, by the composition of its leaf hairs. Another instance of physical deterrence would be a stem structure which is incompatible with a particular insect's breeding habits (egg laying).

A plant possessing biochemical insect-resistant properties will contain plant sap or toxins which are unappealing to the insect, possibly causing the insect to become sick. The plant sap could also be nutritionally incomplete for the insect, leaving the insect unable to complete its life cycle.



Notes

* Fruits that can be successfully grown in Virginia usually with minimal spraying for pest problems: gooseberry, mulberry, blueberry, currant, brambles, strawberry, pawpaw, elderberry, hardy kiwi, wild plum, sour cherry, Nanking cherry, and alpine strawberry.

* Roses having good overall disease resistance, including resistance to blackspot, are: 'Tropicana,' 'Mister Lincoln,' 'Tiffany,' 'Portrait,' 'Pristine,' 'Pink Peace,' 'Peace,' and 'Electron.'

* Kentucky bluegrass varieties recommended for Virginia are: Abbey, America, Aspen, Baron, Blacksburg, Bristol, Cheri, Coventry, Eclipse, Enmundi, Georgetown, Gnome, Haga, Liberty, Loft's 1757, Majestic, Merit, Midnight, Plush, Princeton 104, Sydspport, Trenton, or Victa.

* Tall fescue varieties that perform well in Virginia are: Certified Adventure, Apache, Arid, Bonanza, Falcon, Finelawn I, Hounddog, Jaguar, Mustang, Olympic, or Rebel.

* Perennial ryegrass varieties suitable for Virginia are: Certified All-Star, Blaser, Derby, Palmer, Pennant, Pennfine, Prelude, Premier, Regal, or Repell.

* Winter is the time to apply miscible oil sprays to kill over-wintering mites, aphids, and scale. Use the oil on deciduous plants and hardy evergreens, but not on needleleaved species. Spray miscible oils when temperatures are above 40 degrees F but not within 24 hours of a freeze. Because the oil kills insects by suffocation, avoid spraying on windy days to ensure that all surfaces of the plant are covered.

* Overhaul your garden sprayer. Inspect the washers and plunger and replace any worn parts after thoroughly oiling new parts. It may be difficult to locate exact parts for your sprayer model, but by starting now, you'll have them by gardening season.

* Avoid using salt to melt ice on walks and drives, spread it carefully to avoid damage to nearby shrubs. Damage to needle-type evergreens will be evident next spring by copper and yellow tones. Damaged deciduous plants will have bronze or reddish leaves. Consider using sand or sawdust instead.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	 4	5	6
	<i>New Year's Day</i>					
7	8	9	 10	11	12	13
14	15	16	17	 18	19	20
	<i>Martin Luther King, Jr.'s Birthday (observed)</i>					
21	22	23	24	25	 26	27
28	29	30	31	<p><i>Problem Trees</i></p> <p>Box Elder <i>Acer negundo</i> - susceptible to box elder bugs Sycamore <i>Platanus occidentalis</i> - leaf disease common Lombardy poplar, white or silver poplar, hybrid poplars, cottonwood <i>Populus species</i> - brittle wood Willow <i>Salix species</i> - roots clog sewer and drain pipes, susceptible to cankers Mountain Ash <i>Sorbus species</i> - subject to insect damage, fire blight Female Ginkgo <i>Ginkgo biloba</i> - foul-smelling, messy fruit</p>		

February 1990

New Developments in Biological Control

In the search for alternatives to traditional pesticides, much research has been focused on biological or naturally occurring controls, such as predators and parasites, to suppress pest populations. Research has brought recent advancements in such areas as insect-growth regulators (hormones), and highly specific sexual attractants (pheromones), as well as a renewed interest in the study of allelopathy, the chemical reaction between plants.

Insect-growth regulators, under normal conditions, control the growth and development in insects from one stage to the next; however, excess amounts of these same materials are able to interfere with normal embryonic and larval development, alter metamorphosis, prevent molting, reduce reproductive ability, and inhibit chitin (exoskeleton) development. A major benefit of insect-growth regulators is that they usually are harmless to vertebrates and plants.

Insects also produce various chemicals which are used for communication. In this area of research, insect pheromones are being utilized to help control certain pests by disruption of mating. Mating disruption is a process in which enough pheromone is released into the environment so that a male is unable to successfully locate a pheromone odor trail emitted by a calling female. Artificial pheromones have been developed for a large number of insect pests and can be used in traps to monitor the presence of certain unwanted insects in an area, allowing for more effective use of insecticides. This technique has been used successfully for several fruit pests as well as the gypsy moth. Artificial pheromones are virtually non-toxic and pose no problem with their chemical breakdown in the environment.

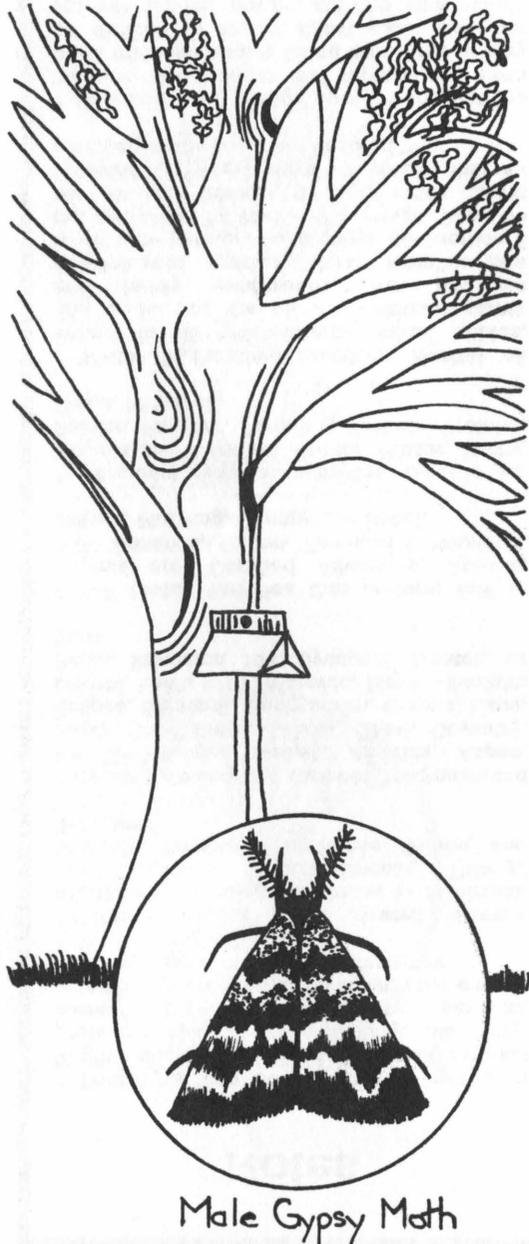
In many plants there are natural growth regulators which can affect other nearby plants. Allelopathy, the natural chemical inhibition of the germination or growth of another plant, is a complex phenomenon. Scientists have been studying it since the 1880's, and now feel that it occurs frequently, though only severe interactions such as those between tomatoes and black walnuts are easily noticed. Competition for light or moisture can obscure milder occurrences of allelopathy.

Allelopathic chemicals transfer to other plants in several ways. In arid regions, volatilization of active compounds from leaf surfaces may occur, with the resulting aerosol condensing on other plants. This can be highly effective in inhibiting the development of competing plants.

Several species of weed seedlings, including common Virginia weeds such as purslane, ragweed, and crabgrass, exude allelopathic compounds. These compounds diffuse through moist soil, to the detriment of vegetable seeds sown nearby—one more reason to keep your vegetable garden weed-free.

Despite the problems allelopathy can cause a gardener, the phenomenon does have potential for future benefits. Researchers are investigating the possibilities of breeding crops and ornamental plants that are allelopathic to common weeds. Already, we know that sunflowers suppress weeds, and that some varieties of cucumbers and oats reduce weed growth.

Gardeners have long taken advantage of the allelopathic nature of barley, rye, sorghum, and wheat when they grow these as cover crops, producing green manure and reducing weeds as well. It's a common belief that these cover crops shade weeds out. But research has shown that these crops produce chemicals toxic to many weeds, probably accounting for much of the observed effect. These same chemicals are one reason gardeners should wait several weeks after incorporating cover crop stubble into the soil before planting, especially for small-seeded plants.



Notes

* Remove snow from evergreen shrubs to prevent suffocation and breaking. Tap the branches gently.

* Check stored bulbs, tubers, and corms. Discard any that are soft or diseased.

* It is time to transplant deciduous native plants if the ground is not too wet or frozen.

* Check trees and shrubs for tent caterpillar egg masses and bag worms. Remove them now to reduce the number of destructive pests next spring. Tent caterpillar egg masses are gray and look varnished; they form a collar around twigs. Bagworms look somewhat like pine cones hanging at the end of branches.

* Root pruning will enhance success of transplanting trees and shrubs, if you can wait until next year to move them. This spring, use a sharp spade to cut a circle 8 inches deep around the plant. Distance from the trunk will depend on plant size; a small shrub may only require a circle 1 foot in diameter, while a larger plant will require a larger circle. Many new fibrous roots will grow from the cut ends of the old roots. This will make transplanting to the new location next spring much easier on the plant, because a greater percentage of its roots will move with it. Dig the root ball so that it is several inches wider in diameter than the root pruning circle, to ensure that most of the newly formed roots are moved with it.

* Before working an area in the garden for early spring planting, check the soil. It should be dry enough to crumble in your hand before you begin.

* This year plan to grow at least one new vegetable variety that you've never grown before; it may be better than what you are already growing. The new dwarf varieties on the market such as 'Sugar Bush' watermelon use less space while producing more food per square foot.

* To make old hay and manure weed-free, spread them on the soil in late winter, water well, and cover with black plastic. Weed seeds will sprout in a few days of warm weather, then will be killed by frost and lack of light.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<p><i>Problems With Attractant Traps Which Make Use of Pheromones as Sex Attractants</i></p> <p><i>Although several Japanese beetle traps on the market are effective in attracting beetles, use of these traps has not been shown to be effective in preventing Japanese beetle injury to garden plants. The traps attract beetles from a wide area and result in significantly more beetles in your garden than would normally be found. Some traps dependent on pheromones to attract insects are better used to monitor pest populations.</i></p>				1	 2	3
4	5	6	7	8	 9	10
11	12	13	14	15	16	 17
18	19	20	21	22	23	24
		<i>Presidents Day (observed)</i>				
 25	26	27	28	<p><i>For lists of beneficial insects, see the inside front page.</i></p>		
			<i>Ash Wednesday</i>			

March 1990

Attracting Bug-Eaters

Not all birds and insects are unwanted pests in your yard and garden. Among them, voracious bug-eaters abound.

When attracting and maintaining populations of beneficial birds and insects, it's important to minimize use of pesticides. Provide appropriate conditions of food, shelter, nesting material, and water to encourage insect-eating birds. In rural areas, chickens, guineas, and other domestic fowl can be allowed to eat grubs and insects in the garden.

- * Plant bushes and trees which bear edible fruits. Provide seed in feeders throughout the year. Add a birdbath to your garden.
- * Install birdhouses designed for beneficial species. Consult your local Extension office for publications on attracting birds to your garden and for birdhouse plans.
- * Use alternative ground covers instead of lawn grasses, and don't rake the area clean. The leaves which will build up under the ground cover plants provide an excellent hunting ground for birds that feed on worms and insects. Don't rake the area under shrubs clean for the same reason.
- * Vary vegetation heights to accommodate birds with different feeding and nesting level preferences.
- * Drive stakes of 3 to 5 feet above ground level in and around your garden to serve as perches for flying insect predators like phoebes.

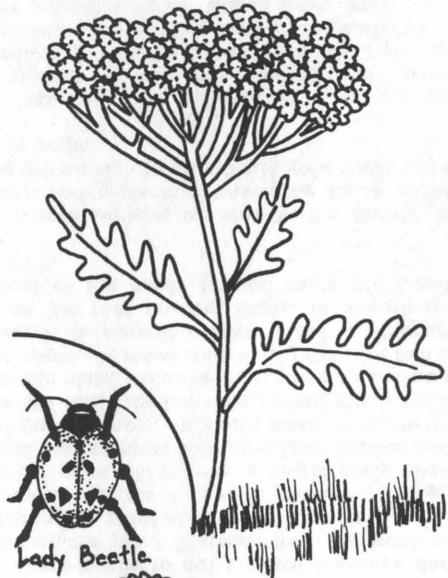
Beneficial Insects For Your Garden

By sustaining a population of beneficial insects, you achieve a natural pest maintenance program in your garden. Tiny parasitic wasps are aggressive beyond their size when it comes to pursuing aphids and caterpillars. Lacewing larvae and ladybug larvae and adults make inroads on aphid populations. Ground beetles prey on a variety of ground-dwelling pests.

These various beneficial insects consume large numbers of pest insects, but their diets are not limited to other insects. In fact, many of the beneficial species have periods in their life cycles during which they survive only on nectar and pollen. Therefore, a little planning for insects can pay off. Planting a variety of insectary plants will ensure an adequate supply of nutrients to keep beneficial insects going strong. Insectary plants also include those which provide shelter for beneficial insects, another critical requirement. See the inside front cover for more information on beneficial insects.

Mosquito Control

- * If you have a pond for water plants, maintain a collection of goldfish or frogs to devour mosquito larvae.
- * Install a bat house to control mosquitoes and other night flying insects. Six to eight bats will consume 10,000 flying insects each night.



Notes

* Use flexible ties to support newly transplanted trees between rigid stakes. Research has shown that young trees allowed to move with the wind develop greater trunk strength than trees rigidly staked.

* Don't leave stubs when pruning; stubs usually die and are entry points for decay fungus. Pruning should never be done in damp or wet weather when the fungal spores and bacteria that infect plants through fresh cuts spread easily.

* Shrubs and trees in the home landscape break up sound waves and reduce the nerve-shattering noise of modern society. Plant some new shrubs and trees this spring to improve the beauty and ambience of your home.

* When buying bedding plants, choose those plants with a compact, bushy form and bright green leaves. Young, healthy plants with no flowers or flower buds will adapt more easily and overcome the shock of transplanting much faster.

* Greenhouse-grown plants, even hardy kinds, should be acclimatized or hardened off before transplanting to the garden in the early spring to minimize the chance of frost injury. Gradually reduce water and temperature to allow the plant tissues to toughen up so that they will tolerate the less hospitable garden environment.

* Don't rush to remove mulch from strawberries. Leave it over the plants to protect them from late cold spells. When plants start to grow, the mulch must be removed to allow leaves to develop in the light. If leaves develop under the mulch, they will become etiolated and yellow from lack of chlorophyll, and may burn and die when exposed to the sun.

* Weed control is one of the most time-consuming, yet most important, practices in any fruit planting. Young strawberries, raspberries, blueberries, grapes, and tree fruits all suffer if weed growth is uncontrolled. Peach trees, of all the fruit trees, suffer the most from weed competition. Mulching helps control weeds.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<i>Insect-Eating Birds For Your Garden</i> <i>robin</i> <i>chicadee</i> <i>house wren</i> <i>barn swallow</i> <i>Carolina wren</i> <i>yellow warbler</i> <i>eastern bluebird</i> <i>white-breasted nuthatch</i>				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24 <i>St. Patrick's Day</i>
25	26	27	28	29	30	31

April 1990

Impact of the Environment on Pesticides

Before you apply pesticides, be aware that weather conditions and time of day influence application and effectiveness of the spray. Applications under optimum conditions will result in greater control with a minimum amount of chemical. Application under adverse conditions may require higher rates or multiple treatments, increasing the chemical load in the environment.

Wind

Wind can cause spray droplets to drift to adjacent, nontreatment areas. For herbicides, spray drift can result in uneven weed control, with the potential for injury to nontarget plants. For the homeowner, risk of injury to nontarget plants from spray drift is greatest for the post-emergence turf broadleaf herbicides, such as 2,4-D, and for the nonselective herbicide glyphosate. Avoid herbicide applications under windy conditions. Often early morning and late afternoon hours have the least amount of wind. Spray drift from pesticides intended only for ornamentals could contaminate food crops. Avoid drift into streams and ponds. Pesticide run-off into these areas could be damaging not only to fish, wildlife, and water plants, but to the surrounding environment, as it pollutes the water.

Rainfall

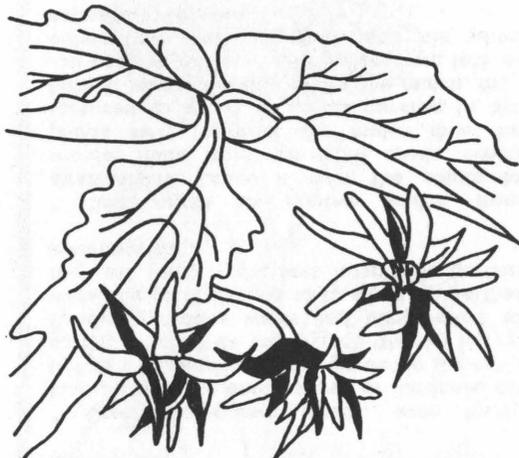
Rain within a few hours of application may reduce the effectiveness of insecticides and post-emergence herbicides, especially ones that are slowly absorbed, such as glyphosate. Rain after application is generally beneficial for pre-emergence herbicides. Excessive rain can cause leaching of some insecticides and other pesticides, with the potential for movement into groundwater. This risk is greater in sandy soils than clay soils. Excessive rain can also cause surface runoff, moving soil particles from treated areas. Pesticides may be bound to soil particles and thus carried to ponds, streams, or rivers. Avoid pesticide application when there is a potential for heavy showers that may cause runoff or deep leaching. If it does rain within 24 hours after you have applied a pesticide, do not re-apply. Monitor the plant for several days or weeks, depending on the pest, to see if the pesticide will be effective. If it's a food crop, you could be consuming food with a much greater pesticide residue than normal if a second application is made. Read the pesticide label to determine if a second application can be made once the first application has failed to control the pest. Check the weather report before spraying so you're not faced with this situation.

Temperature

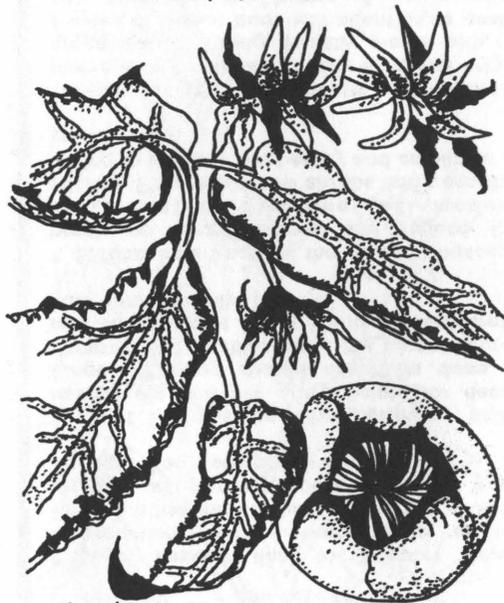
Most pesticides are more effective when applied under warm conditions (greater than 50 degrees F). Applications at lower temperatures may result in poor pest control. Although many pesticides are relatively nonvolatile, pesticide breakdown or degradation by microorganisms in the soil is generally greatest under warm, moist conditions. However, some herbicides, such as ester formulations of 2,4-D, may move as a gas under high temperatures. Avoid applications of volatile herbicides during excessively high temperatures. Read the pesticide label for temperature warnings.

Relative Humidity

Pre-emergence herbicides and other pesticides are generally not affected by the humidity level present at application. Post-emergence herbicides generally work best under high temperature and high relative humidity. Applications to plants under drought stress conditions of high temperature, low relative humidity, and low soil moisture may result in poor control. Other forms of pesticides can be significantly influenced by relative humidity. Read the pesticide label for relative humidity warnings.



Normal Tomato Plant



Tomato Plant with Herbicide Injury

Notes

* Application to harvest (days to harvest) periods on a pesticide label should be taken seriously. For example, if the label says not to harvest until five days after application, it is not safe to harvest two days after spraying even if your crop is not to be eaten for another three days. If this occurred, the breakdown of pesticides in the crop would be slowed because the harvest took place prematurely. Fruit and vegetables picked before the designated harvest time after spraying could contain a higher pesticide residue level than the normal recommended safety levels set by the EPA.

* A tall evergreen hedge north or west of your home can cut heating bills by 34 percent in windswept regions or by 10 percent in sheltered areas. If your house is exposed to winter winds, consider planting evergreens for a windbreak.

* Plant grass seed to fill in bare spots in the lawn. Loosen the soil to a depth of four to six inches with a spade, rake, or fork. Sow a high quality seed, spreading it liberally, and working it in lightly. Use a high phosphorous fertilizer formulated to encourage root development in new lawn areas. Gently water the newly seeded area. Keep it moist, but not flooded. Use a mulch to retain moisture.

* Thin young fruit of apples, pears, and peaches to ensure large, healthy fruit. For apples and pears, thin within 25 days of the peak bloom, leaving 4 to 6 inches between fruit. For peaches, thin within 40 to 50 days of peak bloom, leaving 6 to 8 inches between fruit.

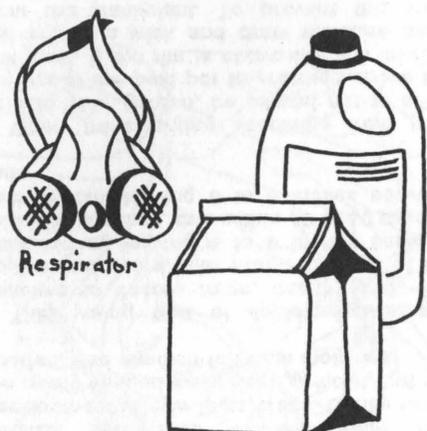
* When transplanting seedlings from peat pots to your garden, be careful not to allow the rim of the peat pot to protrude above the soil level. If the rim is above the soil level, it will act as a wick and draw moisture away from the transplant. To prevent this from happening, break away the rim of the pot before planting, and make sure the pot is completely covered with soil.

* Start herb seeds indoors in moist planting medium. Place in bright, indirect light and move to a sunny window when germination begins. When the seedlings are 2 to 3 inches tall, transplant into peat pots for the garden or into clay pots for use on your terrace or balcony.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1		2	3	4	5	6
8		9	10	11	12	13
		Passover				14
15	16	17		18	19	20
Easter						21
22	23		24	25	26	27
						28
29	30	<p>Maintain optimum conditions for turf growth to reduce the severity of weed problems. Bare patches resulting from poor turf growth or mowing too close will stimulate weed seed germination. Healthy turf can out-compete certain weed species. Fertilize and adjust soil pH to levels optimum for turf growth.</p>				

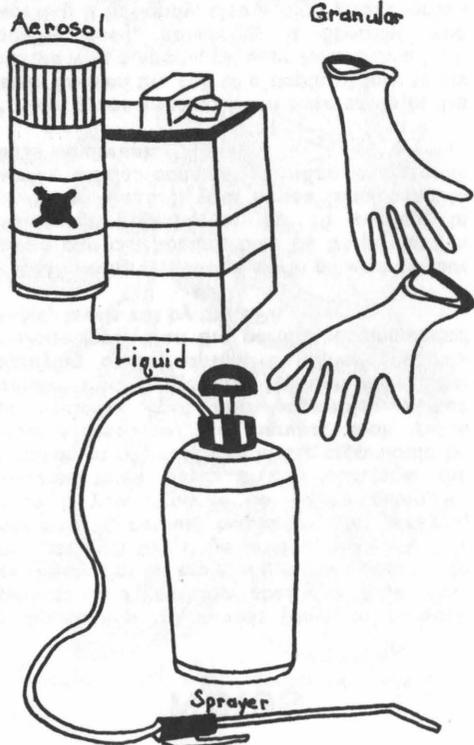
May 1990

Selecting the Right Package: Pesticide Formulations and Quantity



Respirator

Granular



Aerosol

Liquid

Sprayer

The formulation describes the physical state of a pesticide and determines how it will be applied. The chemical in the pesticide formulation that actually kills the pest(s) is termed the active ingredient. Inert ingredients are added to make the product easy and safe to mix or apply. The common pesticide formulations are divided into two groups.

Formulations that require mixing and special equipment are concentrates that require mixing with water to form a dilute spray which is applied to the plants. They are less expensive if a large area is to be treated. But due to their concentrated form and mixing requirements, they require more handling and escalate the risk of spray drift. They may also increase environmental risk if left unused due to storage and disposal problems. These formulations include:

Emulsifiable concentrates (EC or E): active ingredient mixed with an oil base

Flowables (F or L): active ingredients in a liquid

Wettable powders (WP or W): active ingredient attached to a fine powder

Soluble powders (SP): active ingredient in powder form that dissolves in water

Formulations that are ready to use (proper dilution) as they are purchased include:

Solutions (S): in spray bottles

Aerosols (A): for a fine spray or mist

Dusts (D): active ingredients attached to a fine inert powder or talc and used dry

Granules (G): active ingredient attached to coarse particles of inert material like fired clay particles

Baits (B): active ingredient attached to a substance edible or attractive to pests

Use pesticides that are packaged specifically for home garden and landscape. These products are packaged in small quantities, i.e., pints, quarts, ounces, or pounds. They are seldom highly toxic pesticides and are usually in low concentrations. The label rate is given in spoonfuls per gallon or pounds per 1000 square feet.

Products packaged for the commercial grower may be less expensive per unit of active ingredient, but homeowners should not attempt to use them. They are generally more toxic than those for home use and require special protective clothing and equipment for application. They are more concentrated and come in larger containers than the homeowner could expect to use or safely store. They are also more difficult to mix since rates are usually based on a per-acre application.

Try to buy only the amount of pesticide you can use in one season. If you do buy more than you can use in a season, store chemicals in a cool (60 to 70 degrees F), dry, secure location. The location should be fireproof, well-ventilated, well-lighted for use, dark when not being used, and it should be heated and cooled to maintain temperatures between 32 and 90 degrees F. Pesticides should be stored away from feed, seed, and fertilizers. Herbicides should be stored separately from other pesticides. Shelves and floors of storage areas should be designed to allow easy clean-up. They should not be stored near sinks or floor drains that allow access to the water system. And most importantly, these chemicals should be locked up and out of reach of children, pets, and other unauthorized persons to avoid possible poisoning! If you live in an apartment or a home with limited storage space away from the living area, don't store concentrated pesticides and spraying equipment. Purchase ready-to-use formulations if you need to apply pesticides.

Notes

* Set out marigolds, petunias, ageratums, and fibrous begonias. All are good border plants.

* Regularly water newly planted trees and shrubs during the first year or two after planting to help establish a good root system. They need at least one inch of water each week. It is better to water deeply once a week than to water lightly every day; the former practice encourages deep, drought-resistant roots while the latter practice encourages surface roots that may suffer during dry spells. Mulch to conserve moisture.

* Slugs love cool, moist weather and succulent, leafy crops, especially lettuce and cabbage. Debris in the garden provides them with a place to hide and should be removed promptly. To see if your garden is under attack, put out a board or invert a flower pot in the garden. The next morning, see if there are any slugs clinging underneath. If so, begin removing them by hand every few days to decrease their populations.

* Plan vegetable gardens with nutrition in mind. For example, your family will get more vitamins and minerals from a block of spinach than from an equal amount of lettuce.

* Sprinkle small seeds evenly by putting them in a shaker. A set of caps for seed sprouting jars will probably include one with appropriate-sized holes for the seeds you are planting. The problem of sowing fine seeds too thickly can be reduced by mixing them with sand.

* Flea beetles can severely damage newly set plants. Protect plants with a currently recommended insecticide (check with your county Extension agent) as soon as these small shiny, black, hopping insects are noted. Even better, use floating row covers such as spun polyester to prevent flea beetles from damaging plants.

* Vacation hint: sink house plants in clay pots and all, in the soil in a shady area of the garden. Mulch to reduce the need for frequent watering.

* Where earwigs and sowbugs are a problem, try trapping them with rolled up newspapers which have been moistened with water. The insects will hide in the papers by day. Gather up the traps and dispose of them frequently.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		 1	2	3	4	5
6	7	8	 9	10	11	12
13	14	15	16	 17	18	19
<i>Mother's Day</i>						
20	21	22	23	 24	25	26
27	28	29	30	 31	<i>See the inside cover for reading and understanding the pesticide label.</i>	
	<i>Memorial Day</i>					

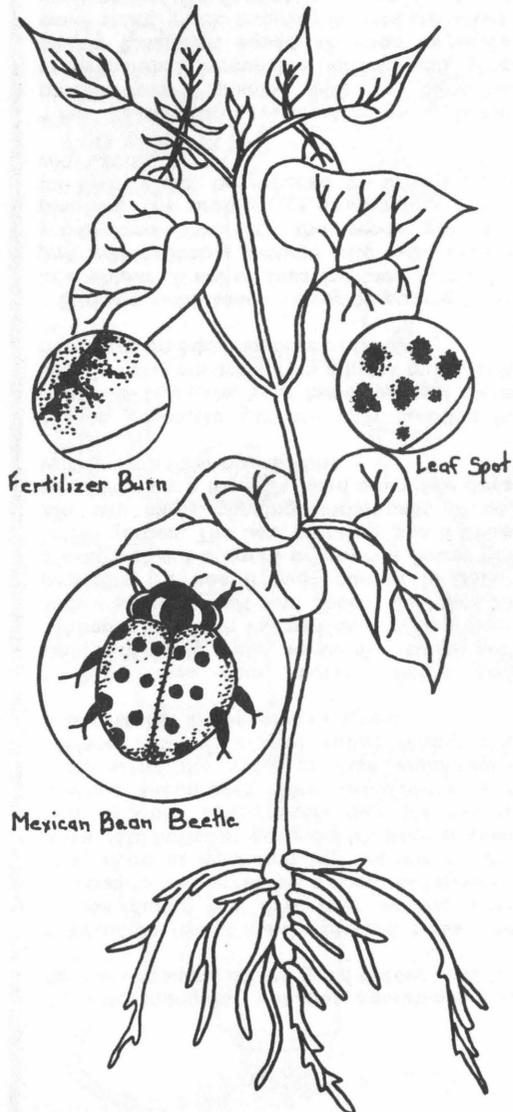
June 1990

Properly Identifying Pest Problems

Diagnosing the problem and treating the problem are not the same. Some plant problems are "treated" without a proper diagnosis and, more than likely, the problem never gets solved. Here are some guidelines to follow before you reach for something from your garden cabinet that does not solve the problem, or could end up being a threat to your plants' health and the environment.

DIAGNOSING PLANT PROBLEMS

Symptoms	Possible Causes	Possible Cures	Symptoms	Possible Causes	Possible Cures
Dying young plants	Fertilizer burn	Mix fertilizer thoroughly with soil. Water heavily to leach excess salts from soil.	Holes in leaves	Insects	Identify the insect and use recommended control measures.
	Disease (Damping off)	Avoid over-watering. Do not plant seed when soil is excessively moist. Select well-drained garden sites.	Spots, darkened areas on leaves and stems, molds	Disease	Identify disease. Use recommended control measures to reduce damage. Consider disease resistant varieties for next crop.
Stunted plants (pale to yellow)	Low soil fertility	Add 2 to 3 lbs. of a complete fertilizer for 100 sq. ft.	Failure to set fruit	Fertilizer burn	Wash off plants if fertilizer comes in contact with leaves.
	Poor soil drainage	Add organic matter and improve drainage.		Pesticide burn	Use recommended rates of pesticides. Do not apply pesticides to plant species on which they are not registered for use.
	Shallow or compacted soil	Plow deeper. Add organic matter.	High temperatures	Fruit set will improve as weather cools.	
	Insects or diseases	Identify the insect or disease and use currently recommended control measures.	Low temperatures	Protect from freezing.	
Stunted plants (purplish color)	Lack of phosphorus	Wait for warm weather; protect from frost. Add phosphorus (P) fertilizer.	Insects	Identify insect and use controls.	
Wilting plants	Low temperatures	Protect plants with covers.	Poor pollination	Bee activity may be reduced in cloudy weather.	
	Dry soil	Apply water if possible.	Fruit rots	Disease	Protect the foliage and fruits with recommended fungicides. Stake vines to avoid contact with the soil.
Excess water in soil	Dig ditches to drain surface water away.	Abnormal leaves and growth		Virus disease	Remove infected plants to prevent spreading. Identify the disease. Control insects that spread the disease. Consider resistant varieties for next crop.
Weak, spindly plants	Disease caused by fungus, bacteria, or nematodes	Use resistant varieties if possible or recommended control measures. Consider soil fumigation before planting.	Herbicide injury	Use of herbicides near the garden can result in misshapen leaves and fruit. Destroy affected plants and fruit.	
	Too much shade	Move garden to sunny location.		Neighbors' kids	Share melon in exchange for garden work.
	Too much water	Make ditches.			
	Plants too thick	Thin plants.			
	Too much nitrogen	Avoid excess nitrogen fertilizer.			



Notes

* Spring flowering shrubs such as deutzia, weigela, viburnum, and forsythia should be pruned as soon as they finish blooming.

* Mulch promotes faster growth of trees and shrubs than grass or ground covers. In three experiments across the country, researchers have shown that a number of different trees and shrubs including dogwood, forsythia, Burford holly, Japanese black pine, and cottonwood had growth reduced significantly by both ground covers and grasses growing up to the trunk.

* The time of day can make a difference in the taste and texture of your vegetables. For sweetness, pick peas and corn late in the day. That's when they contain the most sugar, especially if the day was cool and sunny. Other vegetables, such as lettuce and cucumbers, are crisper and tastier if you harvest them early in the morning before the day's heat has a chance to wilt and shrivel them.

* For very efficient, steady feeding of vegetables, sink a large can or bucket with many holes in its sides into the soil and fill it about 2/3 full of rotted manure; rain or occasional watering will keep a rich supply of nutrients seeping out to feed plants in a circle several feet wide.

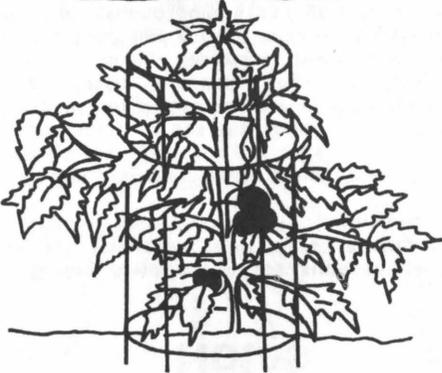
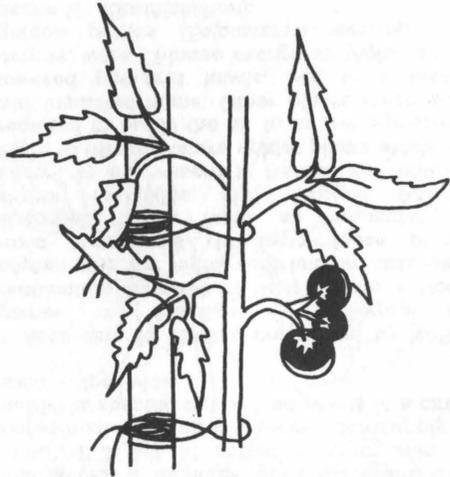
* According to studies conducted by NASA, plants can function as biological air purification systems. Spider plants (*Chlorophytum sp.*) are highly efficient in absorbing toxic substances. In tests these plants absorbed toxins such as formaldehyde, carbon monoxide, and nitrogen dioxide, known to be present in homes and offices. Eight to fifteen mature spider plants would be required to purify the air in an average-sized, well-insulated home. Other plants which also lowered pollutant levels, but to a lesser degree, were Chinese evergreen (*Aglaonema*), golden pothos (*Epipremnum aureum*), and peace lily (*Spathiphyllum*).

* Bromeliads are excellent indoor plants as they tolerate low light conditions.

* Do not allow children to ride or drive riding lawn mowers. Such mowers are more dangerous than they appear. Always disengage the mower blades and set the brake before getting off for any reason.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Plants which are growing poorly will exhibit any or all of these symptoms: <i>light green or yellow leaves</i> <i>leaves with dead spots</i> <i>leaves smaller than normal</i> <i>fewer leaves and/or flowers than normal</i> <i>short annual twig growth</i> <i>dying back of branches at the tips</i> <i>wilting of foliage</i>					1	2
3	4	5	6	7	○	8
10	11	12	13	14	◐	16
17	18	19	20	21	●	23
Father's Day						
24	25	26	27	28	◑	30

July 1990



Cultural Practices to Minimize Pests in the Vegetable Garden

Start by selecting varieties that are insect- and disease-resistant and adapted to growing in Virginia. Then, time garden plantings in such a way that the majority of the crop will avoid the peak of insect infestations. For example, plant squash as early as possible to avoid borers, which lay eggs in July. Keep a record of the dates insect problems occur. Plant warm-weather crops after the soil has warmed to avoid problems with seed and root rots.

Avoid planting the same kind of crop in the same place each year. Use related crops in one site only once every 3 or 4 years. Thin young plants to proper spacing. Overcrowding causes weak growth and subsequent insect and disease problems.

Water in the morning so that plants have time to dry before the cool evening. Drip irrigation prevents the foliage from getting wet. For plants susceptible to fungus infections, leave extra space between plants to allow good air flow, and orient rows so that prevailing winds will help foliage dry quickly after a rain or watering. To prevent spreading diseases, stay out of the garden when the plants are wet with rain or dew.

Stake plants or plant them in wire cages to prevent the fruit from touching the soil and rotting. Caging helps reduce sunscald often seen in staked tomatoes; since caged plants do not require as much pruning, a heavier foliage cover can act as a sunscreen. Boards or a light, open mulch such as straw placed beneath melons will prevent rotting. Use a mulch to reduce soil splash, which brings soil-borne diseases into contact with lower leaves.

Mulch to keep down weeds and grass which often harbor pests and compete for nutrients and water. Use your dried grass clippings as a mulch. Drying the clippings from your lawn keeps them from packing down, fermenting, and smelling. If your lawn contains grasses that spread from runners (bermudagrass, centipede, etc.), spread layers of newspaper or cardboard before mulching to reduce rerooting. Do not use clippings from lawns treated with herbicides.

Do not use tobacco products such as cigarettes or cigars when working in the garden. Tomato, pepper, and eggplant are susceptible to a mosaic virus disease common in tobacco which may be spread by your hands.

Remove infected leaves from diseased plants as soon as you observe them. Dispose of severely diseased plants before they contaminate others. Clean up crop refuse as soon as harvesting is finished. Old sacks, baskets, decaying vegetables, and other debris which may harbor insects and diseases should be kept out of the garden.

Avoid injury to plants. Cuts, bruises, cracks, and insect damage are often the site for infection by disease-causing organisms. In cases where fruits are difficult to remove such as cucumbers, watermelons, and peppers, cut them off instead of pulling them from the plant. If you cultivate your garden, avoid cutting into the plant roots.

The most effective and most important of all practices to minimize garden pests is to observe what is going on in the garden. Many serious disease or insect problems can be halted or slowed down early by the gardener who knows what to look for. Regularly visit the garden for the purpose of trouble-shooting.

Notes

* Do not plant too many flowering annuals in the vegetable garden. The bees will be so attracted to them that they will leave your blossoming vegetable plants alone, meaning less pollination for your plants, and less produce for you.

* Disbud chrysanthemum flowers to secure large, beautiful blooms on straight strong stems. To disbud, remove the small side buds along the stem which form in the angles of the leaves.

* Sow seeds of hollyhocks, English daisies, foxgloves, violas, Canterbury bells, and Sweet William now for next year's bloom.

* Hot, dry weather brings out red spider mites. Inspect roses, evergreens, and marigolds in particular for pale green coloration. Hold a white sheet of paper underneath a leaf and briskly tap it. Tiny, crawling mites will drop onto the paper if they are present on the leaf. Severely infested annual plants should be removed from the garden and destroyed. Mild infestations can be chemically controlled. Consult your Extension agent for current pesticide recommendations.

* Cut back and fertilize delphinium and phlox to encourage a second show of bloom.

* Inner leaves and twigs of trees normally drop from lack of sunlight, but falling clusters of leaves attached to short twigs may result from insect or squirrel activity. Girdling insects make shallow, encircling depressions, while twigs broken by squirrels have diagonally severed ends.

* For a fall harvest of cabbage, broccoli, cauliflower, and Brussels sprouts, set transplants in late July. For a fall harvest of lettuce, radish, carrots, beets, turnips, kale, and spinach, sow seeds in late July to early August.

* Stop vine crops from taking over your garden by pinching off the fuzzy growing tips. This also directs the plant's energy into ripening fruit rather than producing more vine.

* Mulching herbs during hot weather protects the plant roots and helps keep them healthy. Perennial herbs also need mulch in the fall for protection from winter thaws and freezing.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4 <i>Independence Day</i>	5	6	7 
8	9	10	11	12	13	14
 15	16	17	18	19	20	21 
22	23	24	25	26	27	28
 29	30	31				

August 1990



Pest and Plant Life Cycles: How They Influence Control Measures

Scout your home landscape for insect and plant pests. Learn to distinguish the good guys from the bad. Before you apply control measures, be sure you properly identify the pest. Educate yourself about the pest, its life cycle, and feeding habits. Time your pesticide application to the most effective periods in the pest's life cycle or population development.

Timing of Control For Common Garden Insects

Scale - On outside ornamentals, use pesticides when scales are at the crawler stage during the growing season or use dormant oil in winter.

Whitefly - Whiteflies are susceptible to most control measures in the adult and nymph stage. Thoroughly coat the undersides of the leaves with a recommended insecticide where the whitefly eggs and nymphs are usually most prevalent. Since whiteflies produce many broods each year, repeat according to the pesticide label as eggs hatch, (in 4 to 12 days) since most pesticides don't harm eggs.

Bagworm - Pesticides can be used in the first 2 weeks of June when the worm is small enough to be controlled (1/4 inch or less, before it forms a bag). Pick off bagworms in fall, winter, and spring, and destroy.

Leafminer - Employ pest control measures on the immature pest after eggs hatch but before the leafminer starts to burrow into the leaves. It is difficult to control leafminers once they're in the leaf, since they are resistant to systemics. Once the insect emerges from the leaf as an adult (small fly, moth, or beetle), it can be controlled before it lays eggs.

Cucumber Beetle - Appearing in early summer, these beetles spread bacterial wilt and squash mosaic disease, which can damage and possibly kill plants. One of these beetles should be enough warning to take the precaution of controlling this pest at once.

Timing of Herbicide Applications for Weed Control in Lawns

Crabgrass - Apply a recommended pre-emergence crabgrass herbicide in early spring prior to crabgrass germination. Use the flowering of forsythia as a guide for proper time to treat. For certain crabgrass preventers, a second application later in the year may be needed for season-long control.

Annual bluegrass - Apply a recommended pre-emergence herbicide in late August prior to annual bluegrass (*Poa annua*) germination.

Dandelion, plantain, buttercup, chickweed, henbit - Apply a recommended turf post-emergence broadleaf herbicide in October or November. Apply to actively growing weeds under good soil moisture conditions. Risk of injury to deciduous trees and shrubs is less at this time than during periods of active growth (April to June).



Notes

* Clean up fallen rose and peony leaves. They can harbor disease and insect pests over the winter if allowed to remain on the ground.

* The American elm may not become extinct due to the ravages of Dutch elm disease, according to a recent survey of 14 sites in eight states where Dutch elm disease was reported 50 years ago. At each site, healthy American elms were observed, including trees of seed-bearing size, large trees that survived early epidemics, young seedlings in abundance, and relatively new populations of trees of various ages. The elm continues to survive, despite earlier predictions of its impending demise.

* If your apple or pear trees have dead branches with leaves still clinging to the twigs, they may have fire blight. This bacterium is best controlled by pruning. When making cuts, prune at least eight inches below the dead part of the twig and dip shears in a ten percent bleach solution between cuts to prevent transmitting the disease to healthy wood. Also avoid excessive fertilizing with nitrogen in the spring, as succulent new wood is more susceptible to fire blight bacteria.

* When washing clothing contaminated by pesticide residues, use a heavy-duty detergent and hot water. Use the amount of detergent recommended on the package. Clothing which has come in contact with full strength chemicals needs to be laundered twice. You can remove pesticide residues from your washer by running the machine through a complete cycle using detergent, but no clothing.

* There are many resources for gardeners contemplating the creation of an historical garden. Local historical societies often have invaluable records, photographs, and engravings. Horticulturists at public historical gardens often will be immensely helpful. Dozens of specialty seed companies and nurseries are springing up to meet the demand for "antique" plants.

* Comfrey makes a great addition to the compost pile. Its succulent green leaves are rich in nitrogen that aids in the breakdown of dry material in the compost pile.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<i>Control of Diseases</i>			1	2	3	4
5	○	6	7	8	9	10
12	◐	13	14	15	16	17
19	●	20	21	22	23	24
26	27	◐	28	29	30	31

September 1990

Vigorous Plants are Less Susceptible to Pests

Follow general maintenance and cultural steps to keep your trees and shrubs healthy and prevent pest problems. Cultural practices reduce and may eliminate the need for spraying, as healthy plants are less susceptible to insects and diseases.

Pruning

Pruning maintains plant health by eliminating dead, dying, or diseased wood. Any dying branch or stub can be the entry point or build-up chamber for insects or fungi that spread to other parts of the plant. When removing wood infected with a disease, such as a fungal canker or fire blight, make the cut in healthy wood beyond the point of infection. Sterilize blades with alcohol after pruning to prevent spread of disease. Clean and oil pruning tools regularly, including wiping an oily cloth on blades and other surfaces. Keep cutting edges sharp.

The development of a sound framework of branches will help prevent upper branches from shading out lower branches on the plant. It will prevent wounds from rubbing branches and will reduce potential for branch splitting due to ice or wind. Broadleaved evergreen shrubs usually will benefit from an occasional thinning of foliage. This thinning will allow penetration of light and air throughout the shrub, resulting in even growth of the foliage.

Fertilizing

Fertilizers add elements essential for healthy growth. To ensure tree vigor, fertilize as required and maintain the optimum pH for the tree or shrub. Keep soils free of compaction so roots can get water and essential elements. A well fertilized lawn provides adequate fertilizer for the trees it surrounds or borders. On mature trees and shrubs, maintain the existing growth without overstimulating new growth by feeding every 2 to 4 years. Simply broadcast the desired fertilizer on the soil or turf surface under the trees and shrubs and water it in. Spread the fertilizer, starting at the stem or trunk, and extending an average of twice the radius of the crown, out beyond the drip line. Use 1 to 6 pounds of actual nitrogen (N) per thousand square feet of root zone area for trees that have shown a need for fertilization. The best time to fertilize is in the fall, when the leaves start to drop and plants are dormant, but before soil temperature drops below 45 degrees F.

Watering

Watering correctly is vital for developing and maintaining a healthy landscape planting. Lack of water can cause a plant to wilt and ultimately die. Excessive water blocks the uptake of nutrients by roots and ultimately kills the roots. As a rule, plants are capable of withstanding moderate drought more easily than excessive water. For this reason, it is important to allow the soil to become fairly dry between waterings and then water thoroughly so soil is moist 6 to 8 inches deep.

Winterizing Trees and Shrubs

It is often necessary to give a little extra attention to plants in the fall to help them overwinter and start spring in peak condition. Avoid late summer pruning or fertilizing that will stimulate new growth that can not harden-off before frost. If autumn rains have been insufficient, give plants a deep soaking that will supply water to the entire root system before the ground freezes. Mulch to reduce soil erosion and water loss. Protect small evergreens by using wind breaks made out of burlap or canvas to reduce the force of the wind and shade the plants. Remove snow that is collecting on branches with a broom. Always sweep upward with the broom to lift snow off. When the branches are frozen and brittle, avoid disturbing them until a warmer day.



Notes

* Cover crops are an excellent way of improving garden soil over the winter. Cover crops reduce soil compaction, decrease winter erosion, and add organic matter when incorporated into the soil. Winter cover crops can be planted from September 1 thru November 1. Check with your Extension agent or seed store for the recommended varieties for your area.

* Perennial flowers which will bloom in September include: Biglow sneezeweed (*Helenium bigelovii*), hardy asters, hardy chrysanthemums, showy stonecrop (*Sedum spectabile*), false dragonhead (*Physostegia virginiana*), bigleaf sea lavender (*Limonium latifolium*), and great azure sage (*Salvia pitcheri*).

* Establish new perennial flower beds; dig, divide, and replant overcrowded beds of cannas, daylilies, violets, and shasta daisies. Spread a liberal amount of organic matter and bulb fertilizer evenly over the area. Mix this into the soil at least 6 to 8 inches deep. Space divisions at least 1 foot apart in all directions so that root competition will not be a problem for several years.

* For early blooms in May and June next year, certain annuals can be sown now, including larkspur, nigella, calendula, Shirley poppies, annual scabious, and coreopsis. Sown in the open, they should be well established by the time the cold weather comes.

* Fall is the best time to sow cool season grass seed. Grass sown in spring is often killed by hot, dry summer weather. For more vigorous growth, spread a very thin mulch of clean straw over newly seeded areas. The straw shades delicate seedlings from the hot sun and helps preserve moisture in the soil, yet lets enough light through for germination. By the time cold weather arrives, the grass is fairly well established and ready to grow and thicken early the following spring.

* To keep from spreading diseases and insect pests, sterilize used plastic flower pots by washing, then dipping in a solution of one part bleach to nine parts water.

* Pot up chives, parsley, and other herbs to extend their growing season in the house.

Sunday Monday Tuesday Wednesday Thursday Friday Saturday

1

Mower and String-Line Trimmer Wounds Can Kill Trees

Injury and infection started by lawnmower wounds often can be the most serious threat to tree health on home lawns. Most tree injuries occur when mower operators attempt to trim close to tree trunks with a power mower. This can be prevented by removal of turf around trees or by hand trimming. Care must also be used to avoid harming trees with filament-line weed-trimming machines. They can do a great deal of damage to the bark, particularly on young trees.

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Labor Day

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Rosh Hashana

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Yom Kippur

October 1990

Fall Cleanup Cuts Down on Next Year's Pests

By the end of October, most Virginia gardeners are wrapping up the garden season. With a little extra care now, gardening can be easier and more rewarding in future seasons. Yard and garden cleanup at this time is important to prevent pest problems in the coming year.

Preparing the Vegetable Garden for Winter

Remove all crop debris from the garden. Dead plants provide winter hiding places for insects and diseases which can cause problems the following spring. Either till debris into the garden or put it on the compost heap. Plant material that is diseased should be disposed of or properly composted so that the temperature in the pile is high enough to kill disease organisms.

Fall plowing or tilling can benefit the garden in several ways. Besides mixing in organic matter to improve soil structure and fertility, it can also disrupt the life cycle of many insect pests, exposing larvae and pupae to winter cold. If a soil test indicates the need to apply lime or sulfur to alter soil pH, apply them to the garden before fall tilling. By spring, they will have corrected the pH problem. Plant a cover crop in the fall to reduce winter and spring weeds and to control soil erosion.

Do not apply fertilizer to the garden in the fall. Winter rains will leach most fall-applied nutrients from the soil, wasting your time and money. The nutrients which are washed away can cause problems where they are not needed, polluting groundwater or causing algal blooms in ponds, streams, and rivers where they end up. Wait until planting time to apply fertilizer.

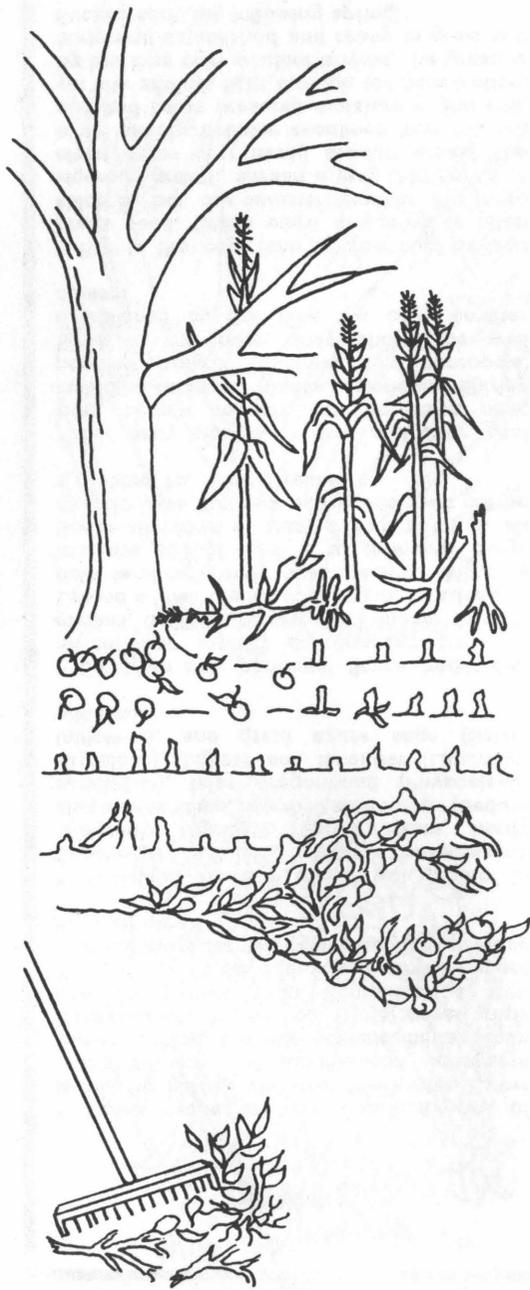
Sanitation in Fruit Crops

Adopt good orchard sanitation practices. The destruction of harboring places for insects and diseases plays a large part in the control program. Conditions which encourage mice should also be eliminated. Mice live in the grass around the trees, so it is difficult to be rid of them without trapping or baiting. Practices to include in an orchard sanitation program:

- * Collect and dispose debris.
- * Remove and destroy all dropped fruit.
- * Rake and dispose apple and cherry leaves.
- * Scrape loose bark from trunks, crotches, and main limbs of apple trees.
- * Prune and destroy all dead or diseased limbs, branches, and twigs.

Canes of bramble fruits are biennial in nature; the crowns are perennial. Each year, new shoots grow from buds at the crown, mature, and set fruit the next year. After fruiting, the old canes die, while new shoots are developing from the crowns.

Old fruiting canes may be removed any time after harvest. They should be cut close to the base of the plant, removed from the plot, and destroyed. Some growers, as a sanitation practice, do this immediately after harvest. Most, however, wait until the dormant pruning in late winter.



Notes

* Spread any available organic matter, such as collected leaves, on the garden if you will be tilling it before winter. If you will not be tilling until spring, compost the organic matter to add at that time. Leaves that are tilled into the garden in the fall will have time to decompose and release valuable nutrients to the soil as well as improve soil structure.

* As you plant your spring bulbs, remember that mass planting one flower type or color will produce a better effect than mixing many colors. Flowers stand out more vividly when displayed against a contrasting background: for example, white hyacinths among English ivy, yellow daffodils against a 'Burford' holly hedge, or red tulips over a carpet of yellow pansies.

* In fall and early winter, don't forget to water new trees and shrubs to increase winter hardiness. Deep watering once a week during dry periods is adequate if the trees are properly mulched. Continue until the ground freezes.

* Many viral diseases overwinter in the roots of perennial weeds. Tomato mosaic virus overwinters in the roots of ground cherry, horsenettle, jimson weed, nightshade, and bittersweet; cucumber mosaic virus lives in the roots of milkweed, catnip, and pokeweed; and many cabbage diseases spread from wild members of the cole family. So, from the aspect of disease control, a good fall cleanup is essential.

* Christmas cactus needs special care now to reveal its beautiful flowers this December. Buds will form at 50 to 60 degrees F or if the plant is exposed to at least 13 hours of complete darkness each night. The extra effort is well worth it.

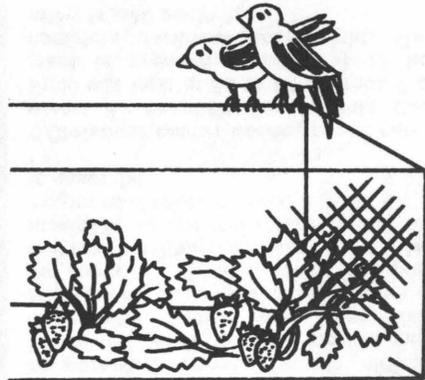
* House plants need to come indoors before they are damaged by the cold (below 50 degrees F). First be sure to check them for pests. Rinse the plants' leaves and soak pots in water for 15 to 20 minutes to drown most soil-dwelling pests.

* Mulches applied too early can do more harm than good. A mulch is used to keep soil temperatures constant and prevent frost heaving, not keep it warm. Therefore, it is best not to mulch until the soil temperature has reached 32 degrees F.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	○ 4	5	6
7	8	9	◐ 10	11	12	13
	<i>Columbus Day</i>					
14	15	16	17	● 18	19	20
21	22	23	24	25	◐ 26	27
28	29	30	31	<i>Fertilize Cool Season Lawns in the Fall</i> Fall fertilizer applications are most beneficial to the cool season lawn grasses found in Virginia. Apply the amounts of lime and fertilizer nutrients (nitrogen, phosphorus and potassium) recommended in your soil test report. Splitting the total yearly amount of fertilizer into three applications is recommended to minimize the potential for leaching. September, October, and November/December are best.		
			<i>Halloween</i>			

November 1990

Using Proven Biological Controls



Take advantage of the biological control already at work in your garden by encouraging natural predators, such as ladybugs, lacewings, ground beetles, syrphid fly larvae, and others. Study the food and habitat preferences of these helpers. Provide these conditions where possible. Learn to recognize the eggs and larvae of beneficial insects and avoid harming them. Spiders, toads, and dragonflies are beneficial and should not be a source of fright to the gardener; in most cases they are harmless to people. See the inside cover for more information concerning beneficial insects.

Use various insect traps to reduce insect population levels. Uprturned flower pots, boards, etc., will trap earwigs and sowbugs; collect them every morning and feed to pet frogs, toads, turtles, and fish, or destroy with boiling water. Slugs can be caught in shallow pans filled with beer. Sink the pan into the soil, setting the rim of the pan at ground level. Indoors or outdoors, whiteflies can be caught with sticky yellow traps, made with boards painted yellow and lightly coated with oil or grease. Commercial sticky traps are also available through some catalogs. Although several Japanese beetle traps on the market are effective in attracting beetles, use of these traps has not been shown to be effective in preventing Japanese beetle injury to garden plants, since the traps attract beetles from a wide area.

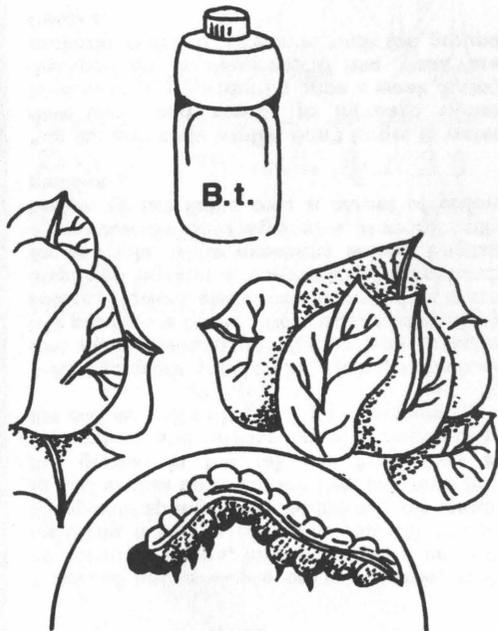
Botanical insecticides are favored by some because they break down rapidly, but remember, they are toxic and can be dangerous. In addition to the botanical insecticides, some biological products can help in the battle against insects. *Bacillus thuringiensis* is an effective product commonly used against moth larvae. B.t., as it is known, is a bacteria that produces a toxin quite lethal to caterpillars, but nontoxic to beneficial insects and mammals. B.t. is most effective on young larvae.

Commercial insecticidal soap, a special formulation of fatty acids, has been proven effective against aphids, leafhoppers, mealybugs, mites, pear psylla, thrips, and whiteflies. Homemade soap sprays also work to some extent: use three tablespoons of soap flakes (not detergent) per gallon of water, and spray on plants until dripping. These homemade materials can cause leaf damage to many plants, so some experimentation is advised.

Various materials can be used to physically block or repel insects and keep them from damaging the plants. Place wood ash, cardboard tubes, or orange juice cans around seedlings to keep cutworms away from plant stems. Use paper bags over ears of corn to keep birds and insects out, but do not cover until pollination is complete. Net-covered cages and row covers over young seedlings will help prevent insect, bird, and rabbit damage.

Plants to Attract Beneficial Insects

- Coriander - syrphid flies
- White clover - aphelinid wasps
- Angelica - ladybugs, predatory wasps
- Yarrow - ladybugs, braconid wasps
- White sweet clover - tachinid flies, predatory wasps
- English ivy - flower flies, tachina flies, braconid wasps, predatory wasps
- Fennel - syrphid flies, tachinid flies, braconid wasps, ichneumon wasps, predatory wasps
- Queen Anne's Lace - syrphid flies, tachinid flies, minute pirate bugs, braconid wasps, chalcid wasps, ichneumon wasps, predatory wasps, lacewings
- Evergreen euonymus - ladybugs, syrphid flies, tachinid flies, braconid wasps, predatory wasps, ichneumon wasps, lacewings
- Tree of heaven - syrphid flies, tachinid flies, braconid wasps, predatory wasps, ichneumon wasps, lacewings



Notes

* Select accent plants for your landscape that will provide interesting autumn colors. Trees which turn red include dogwood, black gum, red maple, sweet gum, and red or scarlet oak. Shrubs with red fall foliage include viburnum, winged euonymus, and barberry.

* Leaf fall makes renovation of overgrown deciduous shrubs easier. Begin this year by removing all diseased or broken stems. Next, remove 1/3 of all remaining shoots, eliminating the oldest and tallest. If the bush is still too tall, cut the remaining stems to a side bud or branch. Repeat the process a second or third year to complete renovation.

* Winterize lawn mowers by scraping off all dirt, rust, and accumulated grass. Remove the sparkplug and drain out excess oil and gasoline. Replace the oil and store in a dry place.

* Clean, oil, and mend all hand tools. Repaint handles or identification marks that have faded over the summer. Sharpen all blades and remove any rust.

* Keep the compost heap moist to aid in the decay process. Turn the pile to mix in all late fall additions. Add fertilizer residues from nearly empty bags onto the pile and mix.

* Do not let plant wastes overwinter in the garden. They harbor insects and disease, which will also overwinter in the garden. Remove and shred all dead plants and add to the compost pile. When the clean-up is complete, mulch your garden with shredded leaves to prevent soil erosion.

* In the northern part of the state, the gypsy moth can be found in the egg stage from now until April. Look for tan, fuzzy patches resembling a piece of camel-hair coat, 1 inch long and 1/2 inch wide, attached to trees, rocks, fences, lawn furniture, wood piles, and buildings. If you find any, scrape them off and kill them by burying them in the ground 8 inches deep, disposing of them in the trash in a sealed plastic bag, burning them (where municipalities allow burning), or stepping on them until they're completely destroyed. To confirm identification of the gypsy moth, bring samples of the egg mass to your local Extension office.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	 2	3
4	5	6	7	8	 9	10
		<i>Election Day</i>				
11	12	13	14	15	16	 17
		<i>Veterans Day</i>				
18	19	20	21	22	23	24
				<i>Thanksgiving</i>		
 25	26	27	28	29	30	

December 1990

Dispelling Pesticide Myths

MYTH When it comes to garden chemicals, if a little bit is good, a lot is better.

This myth is not only false but dangerous. Doubling or tripling the dose of any chemical can have disastrous results. Weed killers used in this manner can injure plants you never intended to harm, not to mention leaving long-lived residues in soil. Over-use of insecticides may kill beneficial bugs, harm plants, and render vegetables unfit for consumption. Doubling the recommended rate of any pesticide increases the chances of poisoning people by inhalation, absorption through the skin, or ingestion.

MYTH Nonselective herbicides control only herbaceous plants.

Nonselective herbicides are just that - nonselective. They will also injure or kill your ornamental woody plants if sprayed along a border or at the edge of the planting. Do not apply nonselective, pre-emergent herbicides meant for long-term weed control within the root zone of desired plants. Use weed and feed formulations with caution. The herbicide portion cannot distinguish between trees, shrubs, and dandelions. Feeder roots of trees can extend to well beyond the drip line, so over-applying "weed-and-feed" within these areas could endanger a favorite specimen. This also applies for shallow-rooted shrubs such as azaleas which could absorb the herbicide portion.

MYTH Small amounts of leftover pesticides, when diluted with water, can be safely disposed of down the drain or sewer trap.

It is not only unsafe, it is illegal to dispose of any pesticide, however diluted, down the drain. You could create an environmental hazard in your home by carrying unused pesticide indoors. In septic systems, pesticide contamination can kill the beneficial bacteria in a sewage field, rendering it inoperable. Read the pesticide label to determine how to properly dispose of a pesticide or contact your local Extension agent for help.

MYTH When you discover a problem with your plants, your first course of action should be to apply a pesticide as soon as possible.

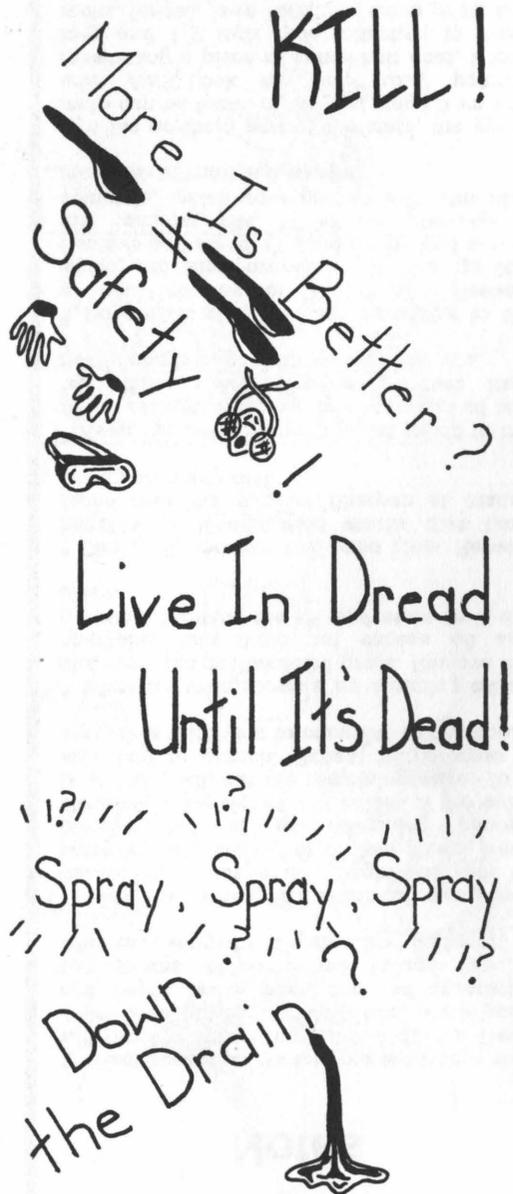
The first cardinal rule of keeping your plants healthy is proper identification of the cause of your problem. Very often the problem is environmental or cultural. The pests you see may be secondary and may disappear if the problem were solved. Use a pesticide only as a last resort.

MYTH Pesticides should be applied weekly to control insects and diseases on food crops.

Spray only if a problem exists that warrants a pesticide application. Do not overspray. Prevention of disease in certain plants requires timely applications for control.

MYTH This herbicide worked well in my lawn so it should work well in my garden.

Most herbicides are selective, meaning they kill certain plants and do not affect others. Most of the turf post-emergence broadleaf herbicides will injure or kill most vegetable crops. Only apply pesticides to sites listed on the label.



Notes

* The more tender plants in rock gardens will benefit from a light covering of evergreen boughs or oak branches which have retained their leaves. The purpose of this covering is to lessen dessication by wind. Care must be taken not to smother the plants. You should be able to see the plants through the branches.

* Minimize traffic on a frozen lawn to reduce winter damage.

* When spreading mulch around the base of fruit trees, leave a bare circle, 1 foot wide from the trunk so the mice won't nest there. Also, wrap the trunks to prevent rabbit damage.

* The purpose of tree wrapping for newly transplanted trees in the fall or winter is to keep the trunk from heating unevenly on bright, sunny, winter days. When using tree wrap, be sure to start wrapping the tree from the base of the trunk, otherwise water will collect in the folds of the material, bringing about fungus and disease. Remove the tree wrap next spring, so the young tree's growth will not be restricted.

* A home weather station that includes a minimum-maximum thermometer, a rain gauge, a soil thermometer, and a weather log is a splendid gift for a gardener, and it can be put to use at once.

* Start conditioning seeds which require stratification, such as many of the woody ornamentals. Follow instructions from the seed packet, or a book from the library can tell you what soil medium to use to prepare seed for stratification. Plant the seeds in the proper medium in a cold frame or put them in the refrigerator or freezer for the required amount of time.

* When decorating for the holidays, be sure you do not place fresh, needleleaved evergreens directly on finished furniture or a mantelpiece; use felt or a tablecloth under them. Sap from branches may take the finish off wooden surfaces.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
○ 2	3	4	5	6	7	☾ 8
9	10	11	12	13	14	15
			Hanukkah			
● 16	17	18	19	20	21	22
23	☾ 24	25	26	27	28	29
30	○ 31	Christmas				

PEST MANAGEMENT: YOUR RESPONSIBILITY TO THE ENVIRONMENT

Learn to manage pests wisely in your landscape:

Start by selecting plants that are suited to your area including native plants.

By sustaining a population of beneficial insects, you achieve a natural pest maintenance program in your garden.

Before you apply pesticides, be aware that weather conditions and time of day influence application and effectiveness of the spray.

When purchasing pesticides, buy only the amount you can use in one season.

Learn to identify the cause of a pest problem before you decide what control method to use.

For plants susceptible to fungus infections, leave extra space between plants to allow good air flow; orient rows so that prevailing winds will help foliage dry quickly after a rain or watering.

Maintain optimum growing conditions for your trees and shrubs by allowing the soil to become fairly dry between waterings and then watering thoroughly so soil is moistened 6 to 8 inches deep.

Use proven biological controls such as covered cages and row covers over young seedlings to help prevent insect, bird, and rabbit damage.

Using these and other methods from this calendar will provide:

Increased awareness of your own environment

Reduced use of pesticides

Increased plant vigor

Increased water quality

Play an active role in implementing these practices and you will become an expert of your own environs and steward of clean water. For more information, contact your local Extension office for slide and video programs and publications available on pest management.

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