

# Discover The Ringer Way<sup>®</sup> To A Naturally Healthy Lawn & Garden

With this easy-to-follow guide you can work with nature to grow a beautiful lawn and garden without putting your family at risk or harming the environment. That's the The Ringer Way.

## Inside you'll find:

- A naturally effective fertilizing program to keep your lawn green and lush without chemicals (page 4).
- How to build the healthy soils that enable plants to thrive (pages 3 & 9).
- Natural techniques for revitalizing a thin, weak lawn and dealing with patch problems (page 6).
- Tips to prevent and defeat diseases that affect your lawn (page 7).
- Naturally effective ways to grow abundant flowers (page 12), fruits & vegetables (page 9), and healthy trees & shrubs (page 14).
- Biological pest controls that rid your yard & gardens of unwanted insect pests without killing beneficial insects (page 16).
- Over fifty color illustrations of insect pests, the damage they cause, and how to defeat them - naturally (page 18).
- Ways to recycle grass clippings, leaves and other yard and garden debris into useful humus - the natural alternative to filling up landfills (page 24).

**RINGER<sup>®</sup>**

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# Natural Lawn & Garden Care The Ringer Way<sup>®</sup>

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Biological pest controls that work with nature, not against it.

Yard and garden wastes recycled into useful, nutrient-laden compost.

Natural fertilizing systems for a healthy lawn and environment.

Beautiful flowers and vegetables without chemical-feeding or hazardous pesticides.



# The Ringer Way: Applying Nature to Keep Your Lawn and Garden Beautiful

The day you became the owner of a home you also became the owner of a lawn. And perhaps a garden, some trees and shrubs, too.

As with most houses, there probably weren't any instructions. So you winged it. But with the lawn and garden, wouldn't it have been nice to have some solid, not-too-technical advice?

Well that's exactly what this booklet will give you. It's the owner's guide you always wanted but never had. And it's filled with answers and ideas that can help you make the most of your yard and garden by working with nature, not against it. That's what The Ringer Way is all about.

We have a unique, natural approach to feeding plants and controlling insects. We don't believe in nurturing through quick fixes of chemical fertilizers fol-



There's even a Ringer Way to help you dispose of grass clippings and yard debris. We have a complete line of natural compost additives that speed up the process of turning yard wastes into rich humus that can be recycled back into your yard and garden.

Over the past three decades, the Ringer Way has been developing out of a very real need to change the way we treat our personal and global environment. It's become evident that toxic chemical fertilizers, herbicides and insecticides are a family health threat and doing irreparable

damage to ground waters, lakes and streams. Solid wastes are filling our landfills to overflowing which is why more and more communities are banning grass clippings and leaves.

These are tough problems. But thousands of homeowners like you across the country are finding The Ringer Way a very viable way to deal with them.

lowed by lethal doses of pesticides. After all, your yard shouldn't be hazardous to your family's health.

The Ringer Way to feed and nurture growing things is based on improving the condition of the soil - making it a natural, healthy place where biological activity can occur. Plants flourish in soil that retains moisture, allows deep root growth and provides a steady supply of slow-release nutrients.

The Ringer Way to control insect pests is also based on sound, natural principles. All of our control technologies harness lethal or insect-offensive agents that exist in nature. While the processes are complex, Ringer insect control agents are easy to apply. And they work.

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## How Ringer Restore® products work.

Healthy plants come from healthy soil. A rather simple idea. But quite often soil needs help to be truly healthy and more fertile. And it can be easily achieved by using a program that enhances the natural growth cycle. Which is what Ringer Restore products are all about.

Healthy soil is a natural balance of water, air, minerals, organic matter, living organisms and nutrients. Restore products are designed to regain this balance by supplying these things to the soil.

Restore products contain basic nutrients, trace elements, protein meals, wheat germ and a broad array of beneficial microorganisms. These microscopic workers are the backbone of the Restore growth system.

Microorganisms are normally abundant in healthy soil but are easily suppressed by chemical fertilizers, herbicides and pesticides. Such lifeless soil is usually compacted, relatively infertile and can't hold precious moisture.

Restore returns microorganisms to the soil in a highly concentrated state along with their own food source. Carbohydrates, in the form of wheat germ, feed the microorganisms as they work the soil.

The microorganisms main job is to convert the supplied protein meals into slow-release plant nutrients. These nutrients provide a steady, readily accessible food for continued plant growth. (Chemical fertilizers, on the other hand, force-feed plants and can pollute ground waters with unused nutrients.)

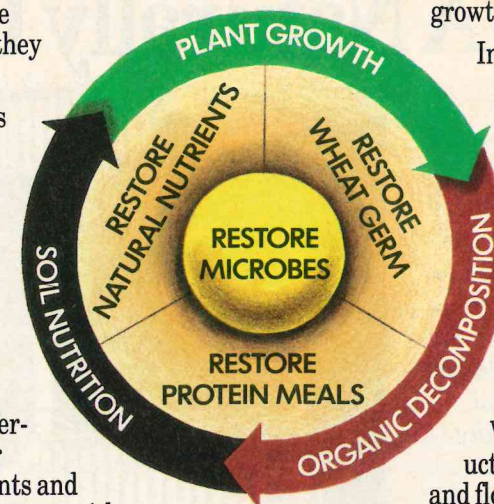
Microorganisms work the soil. They decompose organic matter such as dead plant tissue and produce humus. This spongy material helps to restructure the soil, making it more crumbly. It holds an

optimum ratio of air, water and nutrients until they're needed by plants. Plants respond by developing larger root systems which support healthier top growth.

In addition, microorganisms help detoxify soil that's been treated with chemical fertilizers and insect and weed killers. University tests have also shown the microorganisms even suppress certain plant and soil diseases.

We make Restore products for lawns, vegetable and flower gardens, trees, shrubs and houseplants. Each one is formulated to meet the specific needs of the particular plant. But they all work on the same principle: Healthy, biologically-alive soils produce healthy plants.

Restore. It takes care of plants and soil the way nature intended, only better.



## Ringer products for naturally healthy lawns and gardens.





# The Ringer Way To A Naturally Beautiful Lawn

In your travels, you'll occasionally come across neighborhoods with lawns so green and perfect you'd swear it was artificial turf.

But in truth, there's virtually nothing artificial about a beautiful lawn. Not when you consider that a healthy lawn is a reflection of healthy soil. And you can't have healthy soil via chemical means.

Sure, there are chemically treated lawns that look green and healthy. But these lawns have become chemically dependent for their nutrition. Stop chemically feeding them and they'll have a tough time surviving. That's because the microorganisms and earthworms needed for naturally feeding and aerating a lawn have been suppressed by the chemicals.

There's a better, more natural way to get a lush, green lawn. The Ringer Way. Ringer Lawn Restore® adds microorganisms and organic material that work together to enhance the natural growing cycle, producing a vigorous, green turf with deep, hardy root systems. And it



When you look at grass, you only see a small part of the plant. If grass is healthy and growing in healthy soil, the root system should make up most of the plant.

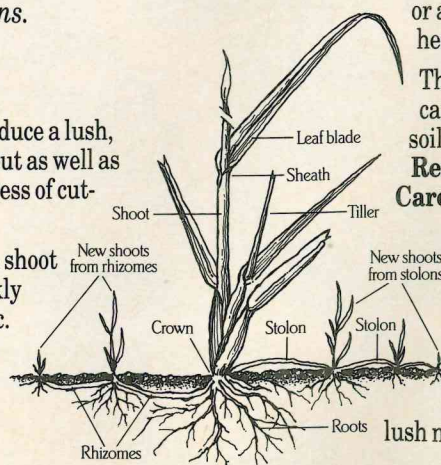
The green part is where photosynthesis occurs, and that's how the plant makes its food. The roots store starch and gather water and nutrients that make photosynthesis possible.

Ideally, you want to achieve a balance between the roots and the top of the plant. The taller you leave the top of the plant when you mow, the more plant there is for photosynthesis. This means more food for growing deep roots. And deep roots will help a plant find nutrients and give it a better chance of surviving a drought.

## Healthy lawns need healthy soil.

The soil beneath most lawns is rarely in good condition. That's because the organically-rich topsoil may have been removed or buried during construction. Or, traditional lawn care chemicals have suppressed soil life. Such soil is usually hard, infertile and cannot hold water. It's not biologically healthy and active or able to sustain healthy lawn grasses.

The best thing you can do to rebuild the soil is begin a Ringer Restore® Lawn Care Program. You'll be adding new life to the soil and you'll see the difference within one season. The turf will respond with vigorous, lush new growth.



minimizes the conditions that can cause disease.

Simply follow the Ringer 3-Point Lawn Care Program outlined on the following page, and you won't have to travel anywhere but out your own door to find one of those unbelievable lawns.

## Grass: The fiber of a natural carpet.

Grass is a unique plant. It can produce a lush, green carpet because it can grow out as well as up, and because it can take the stress of cutting.

Since it grows from the base of the shoot instead of the tip, it recovers quickly from cutting, burning, grazing, etc. Lateral side growths called tillers make the grass dense. Rhizomes and stolons make the grass spread out.



## The Ringer Restore® 3-Point Lawn Care Program:

This simple, natural program of feeding, watering and mowing techniques will enable you to keep your lawn beautiful and healthy.

### 1. Feeding

**Spring** is when your lawn kicks into gear and grows fast. So it's hungry for nutrients. It's a good time to nurture your lawn with **Ringer Lawn Restore®**. Apply with a drop or broadcast spreader and water several times during the first week after application. This will activate the microorganisms to produce nutrients for a quick spring green-up. They'll also establish a soil environment that helps your lawn make more of its own nutrients throughout the season.

**Summer** feeding has been traditionally avoided because heat-stressed lawns are easily burned by harsh chemical nitrogen. Unlike chemical fertilizers, Restore contains only non-burning, natural nitrogen. Not only is it safe to feed Restore to your lawn during the summer, it's advisable. Restore's slow release nutrients promote a deep root system that will sustain top growth through periods of heat stress and drought.

**Fall** is the most important season to feed your lawn. In cold climates, apply **Ringer Winter Store®** to prepare the grass for winter dormancy and a quick spring green-up. This specially formulated Restore has added potassium for even stronger root growth and greater winter

stress tolerance. It will enable the grass to store nutrients in its roots for next spring's growth spurt.

In warm climates, fall and winter applications of Restore will continue to nurture your lawn. And it will minimize the conditions that promote many winter fungal diseases.

### 2. Watering

Generally, underwatering is the most common lawn problem. The preferred way to water is infrequently and deeply. Supplement rainfall, if necessary, to provide 1" of water per week in 1-2 applications. This will penetrate 6-8 inches into the soil where it can reach *all* the roots. If your water pressure and sprinkler flow rate are both average, a 3-4 hour watering per location will deliver 1" of water.

The inch-a-week notion is simply a guideline.

Weather and soil conditions can cause variations.

Your lawn will tell you when it's thirsty. First, it'll turn a bluish-green color. Then you can see foot prints after you walk on it. As it gets dryer, the grass will develop a brownish cast and the soil will become hard and cracked. Don't wait until this stage. Water when you first see signs.

### 3. Mowing

Mowing is both the most visible and most essential practice in keeping your lawn healthy and beautiful.

As far as length, *don't cut off more than one-third of the plant every time you mow*. So to maintain your lawn at two inches, you should let it grow to three inches before mowing. Cutting only one-third

will minimize the stress on the lawn and increase its natural resistance to pests.

The recommended height for cutting depends on the type of grass, where you live, and time of year. Let's use Kentucky bluegrass as an example:

- During the first spring mowing, the bluegrass should be cut down to a height of 1" in cold climates. In warmer areas, maintain a 2" grass height. Subsequent mowings through the spring and until the heat of summer, should be at 1 1/2" - 2" in grass height.
- The mowing height should then be increased to 2 1/2" during the summer. This reduces heat build-up in the grass canopy.
- As it begins to cool off in the fall, bluegrass can be once again trimmed down to 1 1/2" - 2". In cold climates, during the final mowing of the season, bluegrass should be reduced to 1" in height. This short cropping reduces the conditions that promote mold under snow cover.

Except for the initial spring mowing, leave short clippings on the lawn. They decompose rapidly and return nitrogen to supplement your feeding program. They will not contribute to thatch. Clumps of clippings should be raked since they'll block sunlight to the grass.

Make sure your mower blade is sharp. A dull blade tears the grass leaves instead of making clean, even cuts. Clean cuts reduce the chances of disease.

You can tell if your blade is dull when the top surface of your lawn looks gray or white after mowing. This means the grass blades have been ripped or torn instead of sliced.

## The Ringer Restore® 3-Point Lawn Care Program

	SPRING	SUMMER	FALL	WINTER
<b>Feeding</b>	Use Lawn Restore in all climates: • stimulates new growth • promotes initial green-up	Use Lawn Restore in all climates: • Increases root system • Reduces heat stress • Non-burning	Use WinterStore in cold climates: • Prepares grass for winter dormancy Use Lawn Restore in warm climates: • Sustains active growth	Use Lawn Restore in warm climates: • Sustains growth
<b>Watering</b>	Supplement rainfall if necessary to provide 1" of water per week in 1-2 applications.			In warm climates, continue watering 1" per week.
<b>Mowing</b> <small>Heights shown are for Kentucky Bluegrass</small>	Maintain 1 1/2"-2" grass height	Maintain 2 1/2" grass height	Maintain 1 1/2"-2" grass height	In warm climates, keep grass 1 1/2"-2" high
Cut off no more than 1/3 of the grass height with each mowing				



**Lawn problems – take a good close look at your lawn.**  
Figure out what kind of condition it's in. You can learn a lot from simple observation and the chart below.



- How's the color? If it's a deep, rich green, great. But if it's brilliant green and the lawn seems to be growing very fast, you could be overfeeding. This means shallow roots and soft top growth which can make your lawn an easy target for insects and disease.
- Shallow roots can also mean you're not watering deeply enough. The roots aren't encouraged to grow down and seek water.
- If there are brown circles, there could be disease. (More on that later.)
- Do clippings disappear quickly? If your lawn isn't decomposing trimmings, you could have a thatch problem. We'll also discuss thatch later.

- Is your lawn drinking water? If moisture simply runs off, your lawn needs aeration. Aerate your lawn once or twice annually with an aerating machine or tool. Then apply Ringer Lawn Restore to put more microorganisms to work.

**Spot Repairs.**  
Weak or thin spots can appear on your lawn for a number of reasons. Here's how to fix them:

Loosen the top 2-3 inches of soil, turning under dead grass and thatch. Spread at least a quarter-inch layer of **Ringer Grass Patch**® evenly over the spot. Water lightly and keep moist until the seeds germinate. A gelatin-like layer will form and hold the seed in place so it doesn't wash off when watered or blow away when mowed. Grass Patch contains a blend of selected grass seed, a moisture retaining agent, and organic agents to encourage faster germination. It's a complete growing system














that starts grass in six to seven days, depending on the type of grass. Bare spots should fill in completely in three to four weeks.



**Extensive repairs.**  
If the entire lawn is diseased or has a severe thatch problem, it probably can't be repaired. Till the grass under and follow the directions for starting a new lawn, that will follow later.

If your lawn is extremely thin, say 50% green with soil visible between grass plants, it can still be saved. Rejuvenate the bad areas by overseeding with a pest resistant, climatically adapted seed in the fall or spring.

LAWN PROBLEMS AT A GLANCE			
LAWN COLOR	OTHER SYMPTOMS	POSSIBLE CAUSE	SOLUTIONS  When this symbol appears, use the Ringer Restore Lawn Care Program. (See page 5)
Bright green	Grows fast, lacks resiliency	Overfeeding	Reduce nitrogen  Apply Ringer Lawn Restore 3 times per year
	Grows slow and thin	Compacted soil	 Core aerate spring and fall
	Grows slow and thin	Lack of sunlight	Reduce shade
Pale green	Grows slow and thin	Underfeeding	
Dull green	Weeds, lacks vigor	Underwatering	 Water 1" per week
Yellow	Leaf tips torn, ragged	Dull mower	Check and sharpen mower routinely
	Black dots on leaves	Septoria Blight disease	 (Will reduce causes of disease) Overseed with resistant grasses
	Entire leaf is yellow	Chlorosis (lack of iron)	 Plus chelated iron supplement
	Brown, oblong leaf spots	Leaf Spot disease	 (Will reduce causes of disease) Overseed with resistant grasses
Bleached	White speckled leaves	Leafhopper insects	Use Ringer Yard & Garden Insect Attack (See page 22)
Brown	Thin, weak growth	Excess thatch	 Core aerate in spring and fall and water deeply
Black patches	Matted, slimy water-soaked	Pythium Blight disease	 (Will reduce causes of disease) Allow soil to dry between waterings
Dead patches	Irregular, brown	Webworms	Use Ringer Caterpillar Attack (See page 22)
	Irregular, brown, easily rolled back	Grubs or Armyworms	Use Ringer Attack controls (See page 22)
	Brown circular	Brown Patch disease	Use Ringer Grass-Patch (See page 7)
	Brown circular, bright green edges	Pet urine	Use Ringer Grass-Patch (See page 7)
	2" tan spots turning brown	Dollar Spot disease	Needs nitrogen  (Will reduce causes of disease)
	2-6" reddish brown spots	Fusarium Blight disease	Use Ringer Fusarium-Patch (See page 7) Water lightly in afternoon

Prepare the area with a power rake to loosen soil surface (also called a vertical mower and available from rental companies). This will give you good seed penetration.

Apply seed at the recommended rate with a drop or broadcast spreader. Then apply Ringer Lawn Restore to feed the emerging seedlings. It is critical to water frequently and lightly to prevent the surface from drying out, until the seedlings are established.

**Managing thatch.**  
Thatch is a good barometer of soil and turf health. It's a tightly intermingled layer of living and dead stems, leaves and roots of grasses. Disease thrives where excess thatch exists. It usually results from incorrect mowing and watering practices and overfeeding with inorganic fertilizers. Inorganic fertilizers suppress the microorganisms that decompose thatch and keep the soil structure open. Roots can't penetrate this hard, lifeless soil. Instead, they grow to the surface and add to the matting of thatch.

Thatch is the most common problem in lawns over five years old. It occurs above the soil, but below the visible grass leaves and produces a mat or cushion effect often thick enough to prevent water penetration.

How much thatch is too much? A layer that exceeds 1/2 inch will cause problems. The Ringer Lawn Restore Program plus aeration can actually help decompose this thatch buildup, usually in two growing seasons. Restore opens the soil, allowing air and water to reach the roots and help speed further decomposition of thatch. Since Restore makes nutrients available to grass plants slowly, as they're needed, it prevents overfeeding and the resultant increase of thatch.

**Surviving a drought.**  
Most types of grass can survive an occasional drying out. If a drought is predicted, here are some things you can do to help your lawn survive:

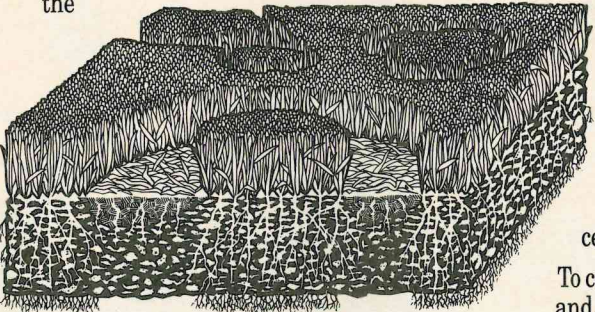
- Maintain a high 3 1/2" - 4" grass height.
- Water deep once a week as allowed.
- Minimize all foot traffic.

We do not recommend letting your lawn go dormant unless it's absolutely necessary.

**Defeating disease.**  
The best way to fight disease problems is to practice a little preventative medicine. And the Ringer Lawn Restore Program is one of the best preventatives you can use.

But sometimes lawn diseases can appear no matter what you do. Here are the most common lawn diseases:

**Fusarium Blight** appears as leaf lesions with white centers surrounded by light brown margins. Circular, light tan areas appear on the



lawn and increase in size until they grow together. It occurs only in hot, sunny areas, often near a walkway or driveway.

Good watering practices (as outlined earlier) and keeping the lawn cool should control this



disease. Light sprinklings or mistings, during heat of the day, will help to reduce the heat build-up in the grass canopy. If this fails, you can apply **Ringer Fusarium-Patch**™. Specially selected fusarium-resistant seeds that combine with organic materials and a moisture retention agent to encourage faster germination.

**Brown spots and dead patches** caused by pets are a common spring lawn problem. **Ringer Grass Patch**® quickly repairs the damage with high quality grass-seed...a moisture retaining mulch to aid germination...and a special ingredient to neutralize pet "use" areas.

**Pythium** is a very destructive fungus that requires hot, humid conditions to take hold. It first appears as dark, water-soaked, irregular areas two to four inches in diameter. As leaves die, they become matted and appear slimy.

It moves so rapidly, it's nearly impossible to control. Watch soil pH and avoid under or overfeeding and avoid over-watering.

**Dollar Spot** symptoms are straw-colored leaf spots surrounded by a band of light-brown infected tissue. Dollar Spot occurs generally during cool, wet weather and can range from two to three inches in diameter or the size of a silver dollar.

To control Dollar Spot, water adequately and use Restore to minimize the conditions that promote disease.

**Brown Patch** results from hot, humid nights. It appears as irregularly shaped patches ranging in size from several inches to several feet in diameter. The outer edge of the infected area is surrounded by a narrow band of dark, smoke-colored grasses while the center is brown.

To control it, avoid late afternoon watering and avoid thatch buildup.

**Keeping weeds out of the way.**  
Weeds usually favor extremes of wetness or dryness and compacted soil. If they begin to take over, it can mean something is amiss in the soil.

The best way to keep weeds under control is to grow a stand of grass so healthy it simply prevents them. But sometimes they show up in spite of your best efforts.

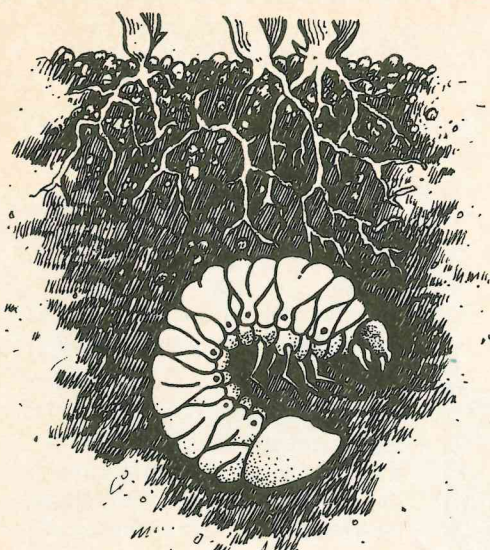
To control a few scattered weeds, simply dig and pull them out. This is easiest after a heavy rain or after deep watering.

Ringer recommends using herbicides only as a last resort, and then, very sparingly and according to label directions. Light applications of herbicides will not harm the beneficial microbes in Restore.

**Get the bugs out.**  
Small yellow patches on your lawn could indicate insect or pest infestation. Serious lawn pests can destroy a lawn fast if conditions are right for their development.

It's critical to diagnose the problem correctly. Use the insect guide in the insect section of this booklet to determine what's causing the problem. It'll help you identify some of the more common insects or pests that could attack your lawn, and suggest ways to control them using Ringer Attack biological controls and other natural means.





Japanese Beetle grubs are a serious problem east of the Mississippi. They live below the soil surface and attack grass roots, causing distinct brown patches. You'll know grubs are the problem if you can pull loose a dead patch of grass and roll it back easily.

Grubs can be controlled with a bacteria called *bacillus popilliae*. It's the main ingredient in **Ringer Grub Attack**®. A single application will kill grubs for over fifteen years! See pages 16 and 22 for more details.

### New lawns need healthy soil.

New lawns need a good quality topsoil. One that is made up of at least two percent organic matter to serve as a food source for soil microorganisms. Organic matter also allows the soil to retain moisture, provides aeration and helps the soil maintain proper temperature for optimum growing conditions. These characteristics, more than fertility, indicate good quality soil. Fertility can be improved by adding nutrients, but there's no substitute for a good organic mix.

The best base for a new lawn is loam. Loam is a mixture of sand, clay and humus (organic matter). It absorbs and holds just the right amounts of water and nutrients.

But most soils are composed of either too much sand, or too much clay. By adding humus (the product of compost), you'll improve both soil types. Apply 250 pounds per

1000 square feet on sandy soil; 1200 pounds on clay soil. Till in 6 inches deep.

### Make sure the soil is balanced.

You can get soil tests from local garden centers, universities and county extension offices. The service is inexpensive and easy to use and they will advise you on how to correct imbalances such as pH.

### Sodding tips.

The preferred method for creating a lawn. It costs more, but you get an instant lawn. And it can be applied anytime during the spring, summer or fall -- even winter in areas where the soil isn't frozen.

#### Here's what to do:

1. Choose good quality sod with a lush, uniform color and a thick-bodied cut (the sod is knit together in such a way that it can be handled without tearing). Check for thatch, it should be less than 1/2 inch thick.
2. Before laying the sod, put down Ringer Lawn Restore with a spreader at the recommended rate on the package. Rake it into the soil and moisten. This feeding will encourage the roots to extend deeper into the soil and help the sod become established more quickly.
3. Lay sod as soon after harvest as possible to keep the rolls from drying out.
4. While laying sod, adjust strips so the ends of adjacent strips are staggered to minimize cracks or openings -- much like the way a brick wall is laid. Fit the strips together as tightly as possible.
5. Roll or tamp the newly laid sod to press it firmly against the soil.
6. When laying sod on slopes, lay pieces at right angles to the slope rather than up and down the slope. This will prevent washing between the pieces. Hold the sod in place with pegs.
7. For the first watering, use a soaker hose to apply lots of water, slowly. Then water daily

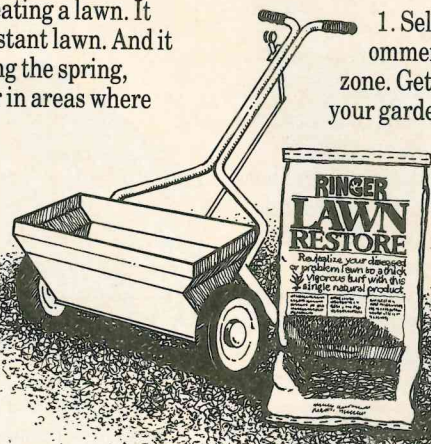
for the first week to ten days, keeping it moist but not saturated.

Sod usually takes two weeks to establish itself.

### Seeding tips.

This is the most economical way to get a new lawn going. Fall or late spring are the best times for seeding.

#### Here's what to do:



1. Select a grass seed blend recommended for your climatic zone. Get this information from your garden center or extension agent. Be sure the package is dated in the current year as old seed doesn't germinate as well.
2. Put down Ringer Lawn Restore with a spreader at the recommended rate on the back of the package.
3. Apply seed at the recommended rate with a spreader and rake the surface lightly to make sure the seeds are in firm contact with the soil.
4. For best results, roll the surface to pack the soil and hold seeds in place. Lawn rollers are available from rental services.
5. Mulch with a light cover of hay or straw to reduce moisture loss and protect the soil from erosion or baking.
6. Lightly water as needed to prevent the surface from drying out and to create an environment where seeds can succeed. Germination should occur in five to six weeks.
7. Mow the new lawn when seedlings are one and a half to two inches high. Remove mulch carefully, using leaf rake, if the mulch is restricting grass growth. Be sure the lawn mower blade is sharp.

Apply Ringer Lawn Restore again 60 days after the first mowing.

# The Ringer Way To Abundant Vegetables & Fruits

*In the summer, one of the hardest things to drive by and not stop at is a roadside fruit and vegetable stand.*

*You just know what they're selling is going to taste far better than what you find in the grocery store. And it really does. Here's why: Homegrown is fresher, and fresher means there's more flavor. Fresh-picked produce also has more vitamins and minerals than those that have been riding in a truck or sitting in a store-room.*

*There really is nothing quite like fresh-from-the-garden taste. Of course, in this brochure we're interested in fresh-from-the-natural-garden taste.*

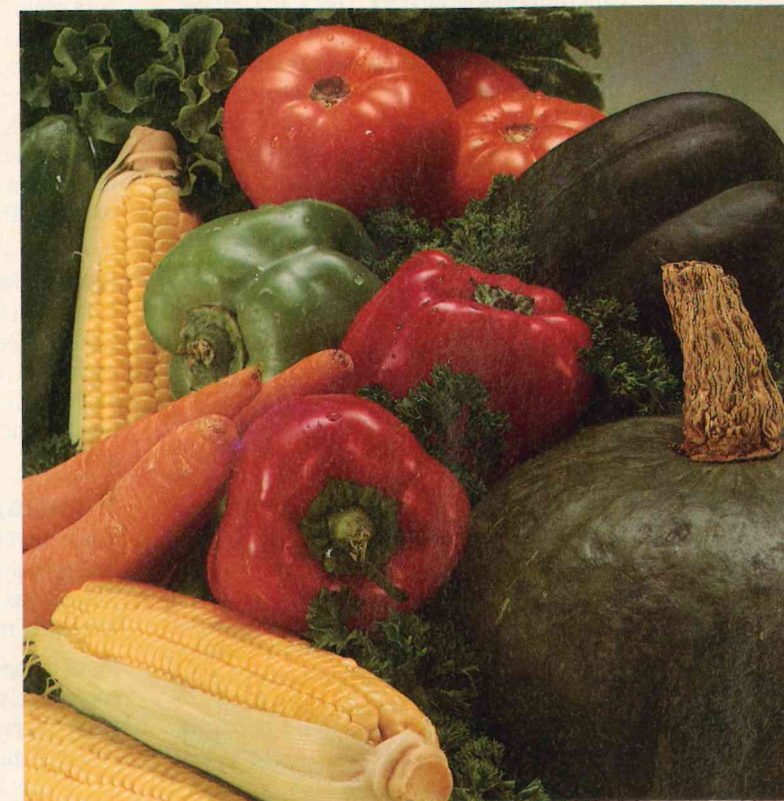
*Growing your own food can be one of the more satisfying experiences you'll ever have.*

*Not only will it save money on your grocery bill, you'll have peace of mind knowing that your food does not contain toxic residues from chemical pesticides and fertilizers. And you'll know you're not harming the environment.*

*With a little help from Ringer® natural growth systems and pest controls, and the insights you'll gain from this section, the taste of natural home grown goodness can be abundantly yours every summer.*

### Getting started.

You don't have to wait until the weather warms up to get your garden started. Crops that need a long growing season can be started indoors under grow-lights, or on a sunny window sill. If you visit your garden center, you'll find many excellent seed starting kits as well as guides for plant propagation (raising plants of useful size from seeds or stem cuttings).



If your space is small, there are ways to maximize it:

- Grow vertically. Grow vine crops on a fence or a trellis rather than letting them ramble on the ground. Stake tomatoes instead of letting them lay on the ground. (This will also improve your yield.)
- Grow fast-maturing crops between the slow-maturing variety. For example, carrots between cabbage. Or onions between tomatoes.
- Try dwarf varieties. There's midget corn and cherry tomatoes. What's more, they mature weeks earlier.
- Add vegetables and herbs that have attractive foliage to flower gardens. You might consider beets, rhubarb, strawberries, thyme, rosemary and parsley.

### A bountiful harvest begins with the soil.

As we said in the introductory portion of this brochure, healthy plants come from healthy soil.

And the best thing you can do for your garden is have the soil in good condition. And that's what Ringer Restore products will help accomplish.

They contain a broad array of microorganisms normally found in the soil, but in a much more concentrated state. They also contain natural, non-burning nitrogen, potassium and phosphorus -- the nutrients that make plants grow.

As microorganisms work the soil they convert organic matter (such as dead plant tissue) into humus. This spongy material helps to restructure the soil, making it more crumbly. It holds an optimum ratio of air, water and nutrients until they're needed by plants. Plants respond by developing larger root systems which support healthier top growth.

### Where to put your garden.

Keep in mind that you want maximum sun exposure -- at least eight to ten hours of full sun per day -- and minimal wind exposure.

Make sure the garden is close to a source of water or within reach of your garden hose.

Plant away from trees and shrubs since their roots will compete for water and nutrients. Also, their canopy blocks light and can be a haven for insect pests.

Check for drainage. You don't want standing water in your garden. Wet soils lead to fungus and disease.

### Garden dimensions.

You want gardening to be a pleasure. Making your garden too big can turn it into drudgery. So be honest with yourself when assessing how much watering and weeding you want to do.



In essence, Restore adds natural vitality to the soil to create an environment where plants can't help but succeed.

### Give it the acid test.

This is the best way to find out whether or not a soil is viable for planting. The pH test is a chemical measurement of acidity and alkalinity. The pH affects a plant's ability to absorb nutrients.

The pH is easy to check by using soil test kits, pH meters, or by taking a sample to a garden center or a county extension service. If a soil tests 0 - 7, it's acidic. If 7 - 14, it's alkaline. Vegetables and fruits prefer a pH somewhere between 6 & 7.

Adjusting soil pH is easy. If the pH is too acidic, add lime. If alkaline, add sulphur. Check with your local garden center for more information on specific problems.

### Smooth out soil texture.

An ideal soil is loam. This is a mixture of sand, clay and humus. Loam absorbs and holds just the right amount of water. It's usually damp, but not wet. It holds its shape, but crumbles easily.

However, most soils are composed of either too much sand, or too much clay - so they either dry out too fast or too slow. By adding organic matter such as humus, you'll improve the texture of both soil types. The benefits of proper soil texture are:

- Improved aeration. Soil will hold the right amount of water and nutrients until they're needed by the plants. Roots grow deep to support greater top growth and a more bountiful harvest.
- Improved drainage. Soil will drain and absorb water more quickly. This cuts erosion and diminishes soil-borne diseases. Weeds are also easier to control as they favor extremes of wetness and dryness.
- Improved microbial action. Soil will be alive with those nutrient-producing microorganisms. Plants grow strong and fast.

### Tilling can help.

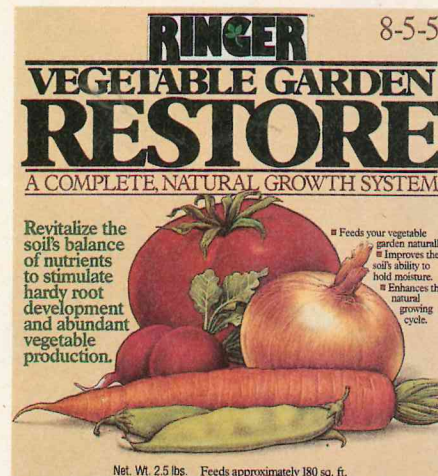
Tilling reduces compaction so air and water can penetrate. Loose soil also promotes root growth. It exposes soil insects for the birds to eat and uproots weeds.

Till in the fall when the soil is warm and dry rather than the spring when things are moist. Heavy clay soils won't clod up as much.

Till lightly, 3" - 4" deep for most crops. Only go deeper when needed, such as for carrots. Anything deeper will mix in poorer subsoil.

### Feed your fruits and vegetables Ringer Restore®.

All gardeners strive for great tasting, abundant fruits and vegetables. That's why Ringer formulates each Restore product to contain the best ratio of nutrients needed for growth and productivity.



**Ringer Vegetable Garden Restore®** contains a balance of nutrients that's great for the entire garden. There's 8% nitrogen for vigorous top growth, 5% phosphorous for abundant fruiting, and 5% potash for strong roots and stems.

**Ringer Tomato Restore®** provides a ratio of nutrients to meet the specific needs of tomatoes, eggplants and peppers. It's 6% nitrogen, 8% phosphorous and 5% potash. The extra phosphorous encourages more blossoms and helps to set more fruit.

To provide fruits and vegetables with a steady flow of natural nutrients, apply Restore:

*Before spring planting*, broadcast Restore over entire garden at a rate of 1 cup per 15 square feet and work into soil to a depth of 4 inches. Make this initial application 2 to 4 weeks before planting time. This will enable the microorganisms time to prepare a nutrient rich environment for your seeds and seedlings.

*During spring planting*, feed seedlings two tablespoons of Restore per plant. Mix Restore and a handful of compost into the soil you've dug out for the seedling. Set the seedling in, fill the hole half way with soil, add water, the rest of the soil, then tamp to remove air pockets. Use the same Restore and Compost mixture when sowing seeds. Add 1 cup of Restore to 2 gallons of compost. This will be enough to enrich 15 square feet of soil. When sowing seeds in a row, enrich the soil in a band 12 inches wide and 4 inches deep. Make a furrow in the middle of this band, sow the seeds as directed on the seed packet, then backfill and moisten carefully.

*At midseason*, side-dress all plants with Restore. Use 1 tablespoon for large plants and 1 teaspoon for small plants. For tomatoes use 2 tablespoons. Sprinkle around the base of each plant, mix into the soil and water thoroughly. This final feeding will keep plants healthy and productive for the rest of the season.

### Planting strategy.

There are certain crops that definitely taste better when homegrown and picked fresh. They're the best for planting. Such as corn, tomatoes, raspberries and strawberries.

Plant successively so you can harvest successively. For example, plant corn at two week intervals and your harvest will last longer. Plant warm-season crops only when night temperatures are consistently mild. Tomatoes, for example, won't grow well when night temperatures go below 50°F.

Plant cool-season crops early and late in the season. Cool temperatures promote optimum growth in peas, lettuce and spinach to name a few. They hate heat.

Plant rhubarb, asparagus, raspberries and other perennial crops in separate areas so they won't be disturbed by annual tilling. Corn and

other tall crops should go where they won't shade other vegetables.

Plant varieties that are resistant to disease and insect damage. More and more of these are coming on the market each year.



### Rotate plantings regularly.

Rotate crops frequently to disrupt the life cycles of problem insects and disease pathogens. Various fungi, larvae, nematodes and rots tend to build up year after year. By removing one of their favorite crops, or if you plant a resistant variety, they'll eventually die out.

### Putting in seedlings.

Seedlings are delicate and need to be gently introduced to the outdoors. Before putting them in the ground, let them get used to the sun by letting them spend a week in shaded areas. And keep them away from drying winds.

Once in the ground, very gently water them if you're not expecting rain. Protect them from wind and sun, and feed them with Restore (as outlined earlier).

### Watering ways.

Soil conditions, mulches and cloudy weather influence how much and how frequently you water. It's a good idea to use a rain gauge to keep track of what nature's providing.

As far as methods of irrigation, sprinklers don't cost a lot but there's a lot of waste due to evaporation.

Soaker hoses are economical and also save time since you can leave them in place for the season. You can put soakers either above or below ground. Used above ground, they irrigate an area about three feet wide. Buried 12 inches, soakers deliver water slowly and evenly directly to the root zone and not to weeds.

You should water early in the day so plants dry off by nightfall. This helps prevent fungus diseases.

### Make the most of mulch.

Mulch is a protective soil covering placed around plants. A 2 - 4 inch layer in your garden can help in a number of ways:

- Mulch conserves soil moisture which will save you time and money on your water bill.
- It keeps soil cool and helps plants resist heat stress. It keeps fruit off the ground, reduces insect pests, and helps control weeds. It'll also let you work in the garden without getting your feet muddy.
- You can use grass clippings, hay and straw. These will also add organic matter to the soil which will improve your soil structure.

- There are also plastic weed barriers that are porous enough to let water and air penetrate but not weed seeds or insects. They last three to five years.

### The right way to weed.

Cultivating is the digging and loosening of soil around plants. It aerates the soil and prevents weeds from taking over.

Cultivate before weeds appear. A shallow, one-inch deep cultivation is best. When you cultivate deeply, you just bring up more weed seeds and risk harming crop roots.

Remember: Mulch is your best preventative.

### There's bound to be bugs.

Insect pests are a fact of life when it comes to gardening. Insects are survivors. They can actually metabolize chemicals that killed their ancestors. They build resistances to man's chemical bug weapons. However, studies have shown that common garden insect pests have not developed resistances to natural, biological controls, natural insecticides and various traps.

You can help the many natural controls that keep insect pests in check by:

- Providing food, water and shelter for birds and beneficial predator insects.
- Intermixing plants that naturally repel insects.
- Growing insect-resistant varieties of plants.

For more information about these and other cultural tips to control insect pests, see page 16.

Despite all your preventative measures, insect pests may still show up. Then use Ringer Attack® biological insecticides. Since they do not leave toxic residues, they can be used right up to harvest time for uninterrupted protection.

Follow these guidelines:

**Small insects** such as mealy bugs and mites are controlled by the insecticidal soap in **Ringer Aphid-Mite Attack®**.

**Crawling insects** such as caterpillars and leaf eating worms are controlled by the *Bacillus thuringiensis* (Bt) in **Ringer Vegetable Insect Attack Dust® and Spray**.

**Large insects** such as hard bodied beetles are controlled by the pyrethrum in **Ringer Yard & Garden Insect Attack®**.

Refer to pages 16 - 23 for more information about these controls and help in identifying pests.

### Harvest time.

You'll get the most in vitamins, minerals and flavor when you pick your crops at the right time.

Cucumbers, zucchini, and many other vine crops are best when small. Pick peas as soon as pods are full. Beans are best when the seeds are a little on the immature side. And sweet corn has unbelievable flavor if you cook it within minutes of picking it.

### Clean up for the fall.

Don't plow under plant remains, especially if diseased. Instead, you should compost the entire plant, roots and all. Diseases carry over and strengthen from season to season. Composting will destroy disease pathogens.

In the fall, till in compost and such soil amendments as pH buffers (they make the soil more acidic or more alkaline). And till no deeper than eight inches.

Use Ringer Vegetable Garden Restore now to revitalize the soil. Simply till or hoe it in with ample amounts of compost. It'll promote hearty root development and healthy, productive plants next year.





# The Ringer Way To Bountiful Flower Gardens

*A blooming bed of flowers is one sure sign that spring has arrived. Flowers are an ever-changing display of color and beauty.*

*Many of the suggestions given for vegetable gardening also apply to flower gardening. And to keep from repeating too much information, you'll often be referred to other sections of this booklet.*

*You'll also find valuable flower-specific advice and ways to use Ringer products that can turn your garden into a symphony of color and beauty.*

## Plan what you plant.

There's a huge variety of highly ornamental plants to choose from that are hearty, insect and disease-resistant and easy to work with.

But be realistic about garden plans. Something too big can become a real burden in terms of cost and time.

Sketch your plans on paper and include the shape, size, location and existing plants. By knowing what you're going to do before lifting a trowel, you'll work more efficiently.

Gardening encyclopedias, seed catalogs and, better yet, local nurseries and county extension services will help you learn about:

- blooming seasons • flower colors • heights
- spacing • sun and shade preferences • hardiness • plant combinations • water requirements • perennials vs. annuals • Gardening is extremely regional. That's why local advice is best.

Be conscious of climate zones. These are based on average annual minimum temperatures. They range from zone 3 at the U.S. and Canadian border to zone 10 at the southern tip of Florida. A plant's hardiness is usually indicated by a zone number, the smaller the number, the colder the climate it can tolerate.



(unlike chemical fertilizers that force feed plants and can produce excess top growth with few flowers).

**Ringer Flower Garden Restore®** works for all ornamental plants. It promotes larger, more colorful flowers and more of them. It also works great on ground covers and foliage plants. Even sensitive plants such as ferns will benefit from Restore's slow-release, non-burning nutrients. It contains 8% nitrogen, 6% phosphorous and 5% potash. Follow the box directions and apply at planting time, in mid-season and in fall.

**Ringer Rose Restore®** is a special formula for a special flower. It has the right balance of ingredients for growth and flowering. It's 5% nitrogen, 8% phosphorous and 5% potash. Roses are heavy feeders so apply in the spring, again when budding starts and in the fall.

## Prep the soil.

The principles of soil preparation for vegetable gardens also apply to ornamentals. Refer to page 10.

Follow your plans as you prep the soil. Remember that perennials need good soil to run deep enough to accommodate many years of root growth. Work the soil to a depth of 12 inches, add lots of compost and mix in Ringer Restore. For annuals, prep the soil 6 inches deep and add compost and Ringer Restore.

## Feeding flowers.

Use Ringer Restore, the natural growth system. The microorganisms in Restore produce slow-release nutrients that are held in the soil until they're needed by plants



## Planting.

When you can plant is determined by the zone where you live. Farther north will mean later planting.

Planting time also depends on whether your plant is a seed, seedling or dormant. For example, most dormant perennials (such as tulips) are planted in the fall in zones 6-10 and in the spring in zones 3-5. Actively growing plants can be set out anytime in the spring or fall.

Planting depth is important to new plants, so you should follow instructions carefully. For example, peonies and iris won't bloom if planted too deep.

To give plants a jump start, feed each of the seedlings with two tablespoons of Ringer Restore. Add a handful of compost and mix both into the soil you've dug out for the seedling. Set the seedling in, fill the hole half way with soil, add water, the rest of the soil, then tamp to remove air pockets which will kill roots.

Mark your plantings rather than relying on memory. You could accidentally dig up plantings while cultivating.

Thoroughly water new plantings. This will get things going and eliminate air pockets.

Watch new plantings for any signs of wilting. They're quite vulnerable to wind and heat. You may need to protect them with rings of cardboard.

## How to keep things growing.

- Cultivating helps. It reduces compaction and lets water and air penetrate. Air is important to certain soil microorganisms. Cultivating also uproots competitive weeds. There are many tools to choose from. Tined cultivators won't hurt roots as much as sharp hoes. Cultivate about once a month and only to a depth of one to two inches. Anything deeper could cause root injury and bring up weed seeds.
- Water whenever rain levels fall below the needs of specific plants (it helps to group plants by common moisture requirements). Try soaker hoses either above ground or below. They save time since you can leave them in place. And they'll save water since evaporation is less than with sprinklers.
- Mulching conserves soil moisture. It also keeps the soil cool which is important for plants that need cool roots. For example, clematis, one of the most beautiful flowering

vines, is extremely hearty if its roots are kept cool. Cool soils also help plants resist heat stress. Weeds, soil-borne insect pests and diseases are also kept under control. Mulch even keeps mud from splashing on plants and gardeners.

- Put down two to four inches of mulch on top of the soil and keep it away from plant stems. Use grass clippings, peat moss and compost. They'll last through the season and add organic matter to your soil. Wood chips or bark last three to five years, but wind and rain can move them.
- Staking prevents storm damage of tall, lanky plants. When you tie up plants, make sure the tie is loose around the stem but secure around the stake. And use soft ties that won't cut through the stem. Ring stands, like those used for tomatoes are great for bushy plants.
- Pruning encourages multiple leads and bushier, fuller plants with more and bigger blooms. It can even cause reblooming. For example, mums bloom better in the late fall if pinched back in summer. You'll be promoting stronger stems that lessen the need for staking.
- After flowering, cut back spring blooming lupines and they'll rebloom in the fall. Remove spent flowers before they go to seed. This saves plant strength and stimulates reblooming.
- Feed during the growing season with Ringer Flower Garden Restore around the base of perennials when flower buds appear. Apply to annuals in mid-season.

## Get ready for winter.

Even if plants are winter hearty in your particular zone, certain species need protection. Apply light mulches such as hay or straw in areas that don't get a good blanket of insulating snow. Mulches that mat down can hold water and cause rot. They'll help keep the ground frozen so roots are not broken by alternate thaws and freezes. Mulch will also offer protection from drying wind. Be careful in the spring when removing mulch so you don't damage new tender growth.

## The Ringer Way to healthy indoor plants.

Healthy indoor plants especially need healthy soil. Since their roots are constricted by pots, they are particularly sensitive to the effects of fertilizers.

Residues from synthetic fertilizers and tap water build up in the soil. These salts burn roots, tie up nutrients and suppress soil life. The soil becomes hard and crusty.

Chemical fertilizers also force feed plants. Because of the unnatural light and humidity indoors, plants cannot utilize nutrients fast enough to produce strong, healthy growth. Instead, they produce soft growth that's susceptible to diseases and insects.

Indoor plants need the natural foods and microorganisms found in **Ringer Indoor Plant Restore®**. It has 5% nitrogen, 5% phosphorous and 4% potash to strengthen top growth, roots and stems. As the microorganisms break down natural food sources, they produce non-burn-

ing nitrogen that's released slowly and only when needed by the plants. They also improve soil texture and return soil health.

## Watch for insects

Insect pests are highly attracted to both indoor and outdoor plants. They're drawn by the nectar of flowers. Without natural predators indoors, pests can quickly multiply. You can supply the necessary controls without using traditional toxic pesticides.

Use Ringer Attack® natural pest controls and follow these guidelines:

**Small insects** such as mealy bugs and mites are controlled by the insecticidal soap in **Ringer Aphid-Mite Attack®**.

**Crawling insects** such as caterpillars and worms are controlled by the *Bacillus thuringiensis* (Bt) in **Ringer Vegetable Insect Attack Dust® and Spray**.

**Large insects** such as hard bodied beetles are controlled by the pyrethrums in **Ringer Yard & Garden Insect Attack®**.

Refer to pages 16-23 for more information about these controls and help in identifying pests.





# The Ringer Way To Healthy Trees And Shrubs

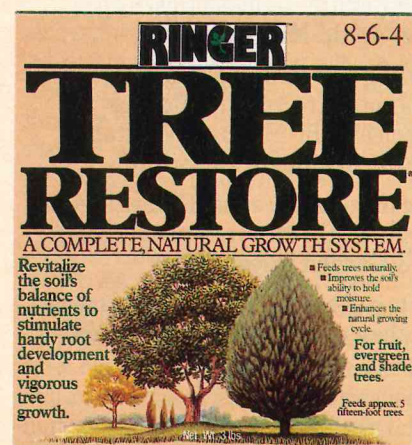
*Humans have always had a special bond with trees. They give shade, shelter, food, furniture & paper. They're even a financial asset since they can increase property value.*

*Aesthetics and value aside, trees perform an elemental function essential to our existence. And that's converting carbon dioxide into oxygen through photosynthesis. With excess carbon dioxide accumulating in our atmosphere causing global warming, the importance of trees has never been greater.*

*Trees and shrubs also make a house a home. With Ringer Restore products and a little knowledge, you'll keep the ones you already have healthy and give new ones a good strong start.*

## Taking care of trees and shrubs.

All trees and shrubs benefit from a Ringer Restore feeding program. It contains soil microorganisms along with other natural materials. When activated, the microorganisms feed on the organic



Large trees shouldn't be forgotten at feeding time. Application involves digging or augering holes around the drip line (the outer perimeter of top growth) and filling the holes with Restore. This will help get food deep into the root zone.

Add Restore to the soil as you backfill newly planted trees and shrubs. It will get them off to a good start. And, unlike harsh chemical fertilizers, Restore won't burn sensitive, newly transplanted roots.

Thoroughly water all trees so water gets deep into the root zone. Shallow watering promotes shallow, drought-susceptible root systems. Soaker hoses work best since they get the water deeper. Watch for symptoms of thirst. New or young growth will wilt, followed by tip (outer edge) dieback. Also, watch for symptoms of overwatering. It's the same as under-watering, except it shows up faster. Branches die from the tips inward in just a few days or weeks. Check subsurface moisture and deeper if possible.

Water newly planted trees regularly for two seasons unless there is sufficient saturating rain.

Prune for health and appearance. For health: Prune to remove diseased and dead wood to prevent further decay. Prune weak and injured growth so disease and insect pests can't get a foothold. Cut away all suckers and narrow-angled crotches (they're weak).



materials, decomposing them to produce plant and soil nutrients. Restore also contains slow-release natural organic nitrogen which assures that nutrients are available throughout the growing season as needed.

**Ringer Shrub Restore®** contains 7% nitrogen, 6% phosphorous and 5% potash. **Ringer Tree Restore®** contains 8% nitrogen, 6% phosphorous and 4% potash.

Both are formulated to produce healthy top growth, abundant flowering and strong roots and stems.

Restore is especially good for trees grown in heavy clays. The microorganisms work to break up the soil and make it more air and water penetrable. And when air and water can move easily, so can roots.

For appearance: Pruning will keep the most valuable assets in your yard looking great. It helps keep trees within boundaries, away from structures and out of traffic paths. Pruning also keeps your trees and shrubs in scale with the rest of your yard and garden.

Diseased or injured branches should be removed immediately. Appearance pruning can be done almost anytime, except for conifers, beeches, oaks, maples, birches and many flowering shrubs. They should be pruned only at specific times.

## Protect the trunk.

Protect the trunk from drying winds, sunscald and insects with a good tree wrap, such as **Ringer Tree Skin®**. Tree Skin is a biodegradable, self-adhesive tape derived from tree sap. During dry spells, it prevents moisture loss and, conversely, during wet spells it absorbs excess moisture to help protect against rot.

## Look up for insects.

Controlling insect pests on a tree has its own set of problems - the canopy is simply too large and overspray from chemical pesticides could be hazardous. **Ringer Aphid-Mite Attack®** with a hose end sprayer eliminates both problems. It reaches the entire canopy quickly and easily with biological insecticidal soap. For more information about other natural insect controls for trees and shrubs, and help in identifying pests, see pages 16-23.

## Planting plans.

If you've priced trees and shrubs lately, you know any mistake you make with them will be costly. So plan carefully.

Use gardening encyclopedias, catalogs, local nurseries and county extension services to learn about: • mature size and shape • specific uses • weather hardiness • longevity • soil & light preferences • seasonal aspects such as flowers, fruit, fall & winter color • diseases and insects. Also, look to your neighbors to see what has worked or what hasn't.

There are some mistakes commonly made that are easy to avoid. You can plant a tree that will outgrow its setting, such as a sugar maple that grows too big for its small suburban lot. Or a home practically smothered by a pine tree planted in the corner. There are alternative species more fitting that won't grow beyond a reasonable size.

Avoid planting for "instant effect." Plant adolescent trees and shrubs at proper intervals. The initial look will be open or sparse, but the plantings will be able to attain their adult shapes without crowding each other.

## Buying considerations.

Once you've settled on the best tree or shrub for a particular location, you'll have to decide what size you're going to buy.

Size is usually determined by whether the tree is sold bare-rooted, container-grown, or balled & burlapped (B&B). Bare-root stock is usually under six feet. Trees grown in one to 15 gallon containers are usually under 15 feet. Balled & burlapped trees are dug with a ball of soil and wrapped in burlap. They can reach near adult proportions.

Young trees are usually not as stressed by transplanting as older ones. Many times, a youthful

transplant will pass up a more mature one within several years. That's because their roots can work on establishing themselves in the soil rather than having to try and support a tree with a substantial amount of growth present.

Buy only healthy stock. Don't buy trees with wilted, small or discolored leaves — this could indicate poor roots. Broken branches or bark make a tree susceptible to disease or insect attack.

A broken ball on a B&B tree indicates broken roots. Also, a flat ball means few roots. Check the roots on container-grown trees. They should be tan or brown with active, growing white tips. Bare-rooted stock should have a damp packing around the roots. If it's dry, the roots are dry and probably dead.

## Timing for planting.

The best time to plant most trees and shrubs is in spring just before active growth begins. B&B and container-grown trees can be planted almost anytime. Avoid planting during the hottest days of summer. Trees will be doubly stressed from heat and transplanting.

Conversely, evergreens shouldn't be planted in the winter in areas of severe frosts and cold, drying winds. Without a developed root system, evergreens will winterburn when exposed to cold winds.

Bare-root stock must be planted while still dormant in early spring so that roots can develop before top growth occurs.

## Soil concerns.

Two commonly overlooked areas are soil moisture and pH. The latter effects a tree's ability to absorb nutrients. See page 10 for an explanation and ways to correct pH as well as moisture extremes.

Soils with unsuitable pH and moisture conditions can be adjusted for shrubs, but not for trees. Their root zone is simply too large. Instead, choose trees that will thrive in your soils. For example, if you want a maple and have a slightly acidic soil with good drainage, choose a sugar maple. For wet, even swampy soils, try a red maple.

## Dig in.

The hole for bare-root stock should be wide enough to fan out roots and deep enough so the crown (where roots meet trunk) is at ground level. Keep bare-root trees moist while you're digging.

Holes for B&B and container-grown stock should be twice the diameter of the root ball and the same size as its depth. Set the tree in place. The top of the root ball should be at ground level.

If the hole was dug in rock-hard clay, use a post hole digger and dig an eight-inch drainage hole to looser soil below (this could be several feet). Fill the hole with gravel. This will improve drainage.

Peel back burlap on B&B trees so it can be buried with the tree. If covering is a synthetic material, remove it completely.

For container-grown trees, remove the container and make four vertical one-inch-deep cuts through the roots that encircle the root ball. This root pruning will stimulate new root growth in the planting hole and the tree will establish quicker. Set the tree in position and backfill half way. Add water, then add remaining soil so the tree is at the same depth that it was growing in the nursery. Tamp the soil to eliminate air pockets. Finish with a rim of soil around planting hole to form a water basin. Fill the basin with water. In heavy clay soils, eliminate the basin.

Stake trees that are wobbly or exposed to wind. New roots venturing into adjoining soil can be easily broken if the root ball isn't stable.



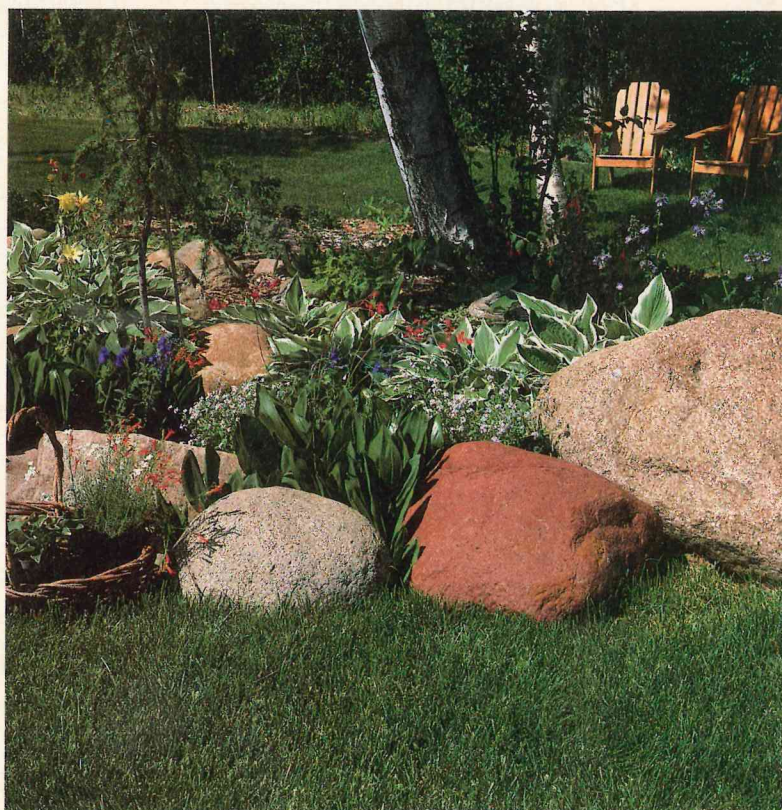
# The Ringer Way To Control Insect Pests Naturally

*In the chemical war that's been waged against insects, there have been countless instances of environmental damage.*

*We're not going to add to what's been written about the evils of many chemical pesticides. The threats they pose are already well documented.*

*This section is about the many safe, natural, biological systems you can use as effective alternatives to chemicals. Alternatives that won't harm our waters, wildlife, you and your family. This includes our line of Ringer Attack® biological pesticides that work with nature, not against it.*

*We'll also look at good gardening practices that can make plants stronger and give them an edge in their fight to survive.*



## Can you tell a boxelder bug from a potato beetle?

One of the problems with insect control is trying to identify exactly what kind of bug is causing problems. That's why on the following pages we've put together a comprehensive insect pest/problem identification guide. You'll find full color illustrations, a description of the damage each insect causes and natural solutions for controlling the pest.

## Fight pests before they show up.

There are several easy, yet effective steps you can take to reduce the chances of having insect problems:

- Avoid high nitrogen chemical fertilizers. They stimulate soft rather than sturdy growth. And that makes a plant susceptible to sucking insects. Inorganic fertilizers can lead to lower levels of beneficial soil microorganisms.

- Interplant repellent crops and flowers. There are certain kinds that produce strong odors or cause abnormal insect development. Planting them near and among vulnerable plants can offer protection. For a complete list, talk with the folks at your lawn and garden center or refer to an organic gardening book.
- Grow insect-resistant varieties of plants. There are certain plants that naturally resist insects. And through careful breeding, scientists have created resistant hybrids. More and more are being developed.
- Provide food, water and shelter for birds and helpful insects. Set up bird houses and bird baths in your yard. Have a wide variety of plantings around your property. This in turn will attract a wide variety of helpful insects and birds.
- Keep gardens mulched, cultivated, pruned, weeded and properly watered to keep plants strong.

- In the fall, cleanup the garden and cultivate. By removing decaying leaves and twigs, you'll take away the winter quarters for pests. And by turning the soil, you'll expose insects to birds and helpful bugs.
- Use natural growth systems that help to rebuild the soil with microorganisms, enzymes and nutrients. This will nurture healthy plants.
- Revitalize your soil with compost. It does wonders for a plant's strength. Microorganisms in humus-rich soil produce natural nutrients for plants. Strong plants have a much better chance against both insects and disease.

## 6 natural technologies make Ringer Attack® highly effective.

All Ringer Attack pest controls are based on the following biological technologies that work in harmony with nature:

1. **Pyrethrum** is derived from the chrysanthemum flower. It's the primary ingredient in **Ringer Yard & Garden Insect Attack®**, **Wasp & Hornet Attack®**, and **Crawling Insect Attack®**.

Applied as a spray, pyrethrum works on contact passing through the skin of the insect paralyzing the nervous system. It's fast acting, knock down action controls many pests. It's the heavyweight in the Attack line, yet it is less toxic than common aspirin.

Pyrethrum breaks down quickly in sunlight and leaves no residues to harm the environment. It is best applied during cool times of the day.

2. **Bacillus thuringiensis (Bt)** is a naturally occurring bacteria. It's the main ingredient in **Ringer Caterpillar Attack®**, **Vegetable Insect Attack® Dust** and **Vegetable Insect Attack® Spray**. This family of organisms effectively controls bee-

tle larvae, leaf-eating worms and caterpillars. Applied as a spray or dust, it disrupts the pests' stomach lining. They stop eating, become paralyzed and die. Crops can be sprayed with Bt and harvested the same day. And since it is extremely species specific, it will not harm beneficial insects.

3. **Bacillus popilliae (Bp)** is another naturally occurring microbe. It's the primary ingredient in **Ringer Grub Attack®**. This microbe causes Milky Spore disease in grubs of the Japanese Beetle. As the grub feeds, it ingests the lethal bacterial spores. The spores germinate and infect the grub with the disease. The grub dies and releases billions of new spores which spread the disease to other grubs. This chain reaction is so thorough, that one application of Bp will kill grubs for 10 - 15 years! Bp is very specific to Japanese Beetle grubs, so it won't pose risks to humans, birds, pets or beneficial insects.

Bp is applied either as a powder or in granular form in a drop spreader. Use in the spring or fall when grubs are most active.

4. **Nosema locustae** is yet another natural bacterial spore. It's the primary ingredient in **Ringer Grasshopper Attack®**. As grasshoppers and crickets feed they ingest the spores. The spores germinate, reproduce and kill the host. Grasshoppers eat their own dead, thus spreading the disease.

5. **Insecticidal Soap** is made from potassium salts of fatty acids. It's the main ingredient in **Ringer Aphid-Mite Attack®**. This formula uses an improved insecticidal soap to quickly disrupt the external membranes of insect pests. The insect loses body fluids, desiccates and dies. Insecticidal soaps are particularly effective against soft bodied insects such as aphids, mites and mealy bugs.

Ringer Aphid-Mite Attack® is the only insecticidal soap formula that includes citrus aromatics. It is completely biodegradable and it also won't harm beneficial insects when it's used properly.

Thoroughly cover all surfaces of the plant. All insects must come in contact with the soap for it to be effective.

6. **Traps** appeal to an insect's need for food, shelter and sex. The **Ringer Beetle Trap Attack®** uses a system of both scent and pheromone sex lures to capture males and females. Simply hang the trap 20 - 30 feet down wind from any plant that attracts beetles. The beetles will fly to the trap, fall in and die. Each trap can catch thousands of beetles in the disposable bag.

**Ringer Flying Insect Attack Traps®** use color to draw their quarry. Small flying insects are drawn to the extremely sticky yellow bar. Once they touch it, they're stuck permanently. This trap is effective all season long, especially for white flies, fungus gnats, aphids and black flies.

These technologies make Ringer Attack easy on the environment, but tough on insect pests. When used as part of a natural pest control program, Attack products will provide effective results and peace of mind.







Size: 1/8"-1/2"

**Aphid***Colors:* Green, Brown, Black, Pink*Symptoms:* • Stunted, curled or yellowed leaves and buds • Leaves sticky with honeydew which may be covered with sooty mold*Common Plants Affected:* • All crops*Control:* • Ringer Aphid-Mite Attack at 1 week intervals • Ladybugs and Lacewings

Size: 1 1/2"

**Cabbage Looper***Symptoms:* • Irregular holes in leaves • Worm doubles up or loops as it crawls*Common Plants Affected:* • Cabbage • Cauliflower • Brussels sprout • Turnip • Beet • Celery • Lettuce • Potato • Tomato*Control:* • Ringer Caterpillar Attack • Ringer Yard & Garden Insect AttackSize:  
Larvae 1/2"

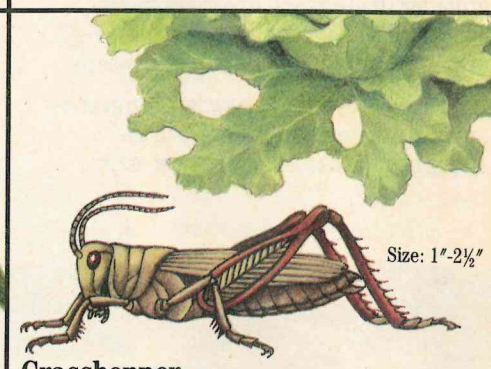
Size: Beetle 3/8"

**Colorado Potato Beetle***Symptoms:* • Stripped leaves and shoots • Irregular holes in leaves • Orange eggs clustered under leaves*Common Plants Affected:* • Potato • Pepper • Eggplant • Tomato • Bush Green Beans*Control:* • Larval stage: Ringer Colorado Potato Beetle Attack • Adult stage: Ringer Yard & Garden Insect Attack

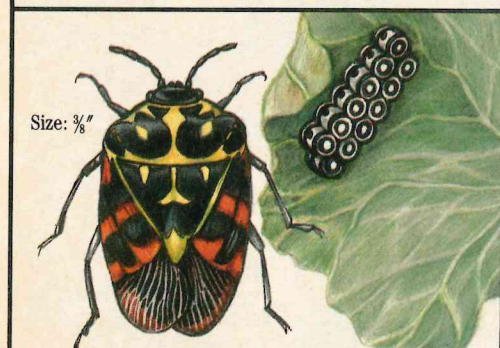
Size: 1 1/2"

**Cutworm***Symptoms:* • Seedlings chewed off at ground level • Severed leaves and buds of mature plants*Common Plants Affected:* • Bean • Cabbage • Corn • Tomato • Orchard crops • Vineyard crops*Control:* • Ringer Vegetable Insect Attack • Surround seedling stems with 2" collar to stop climbing worms

Size: 1"

**European Corn Borer***Symptoms:* • Young, unfolding corn leaves are shredded • Castings outside of holes in mature stalks and ears*Common Plants Affected:* • Corn • Bean • Beet • Celery • Pepper • Potato*Control:* • Ringer Caterpillar Attack • Applied to whorl when knee high and at base when plants are bigger

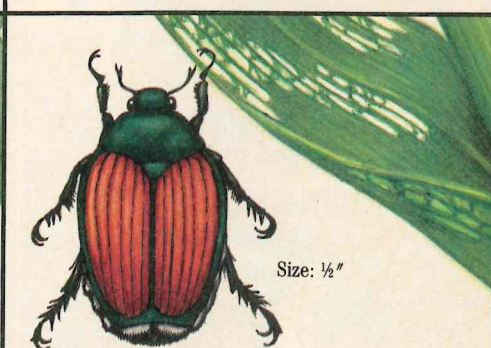
Size: 1"-2 1/2"

**Grasshopper***Colors:* Grey, Brown, Black, Green*Symptoms:* • Severe defoliation*Common Plants Affected:* • All crops*Control:* • Ringer Grasshopper Attack • Fall plowing

Size: 3/8"

**Harlequin Bug***Symptoms:* • White or yellow leaf spots • Desiccated leaves • Stunted growth • Distinctive barrel shaped eggs in double rows on leaf undersides*Common Plants Affected:* • Asparagus • Corn • Lettuce • Potato • Bean • Squash • Grape • Citrus • Plum*Control:* • Ringer Yard & Garden Insect Attack sprayed directly on bug

Size: 1"

**Imported Cabbageworm***Symptoms:* • Huge, ragged holes in leaves • Tunnels in cabbage heads*Common Plants Affected:* • Cabbage • Cauliflower • Brussels sprouts • Kale • Radish • Lettuce*Control:* • Ringer Caterpillar Attack • Ringer Yard & Garden Insect Attack applied to all exposed leaf surfaces

Size: 1/2"

**Japanese Beetle***Symptoms:* • Skeletonized leaves • Eaten ripe fruit • Disappearing corn silk*Common Plants Affected:* • Over 250 plants*Control:* • Larval stage: Ringer Grub Attack • Adult stage: Ringer Japanese Beetle Trap Attack placed 20-30 feet down wind from garden and Ringer Yard & Garden Insect Attack

Size: 3/8"-1 3/4"

**Leaf Roller***Symptoms:* • Leaves rolled together with fine webbing • Skeletonized leaves*Common Plants Affected:* • Bean • Citrus • Fruit trees*Control:* • Ringer Vegetable Insect Attack applied when caterpillar is first seen

Size: 3/4"

**Pickleworm***Symptoms:* • Tunnels in buds, vines and fruit*Common Plants Affected:* • Cucumber • Squash • Melons*Control:* • Ringer Vegetable Insect Attack applied to buds at first sign of worm. Reapply after rain or watering. • Fall plowing

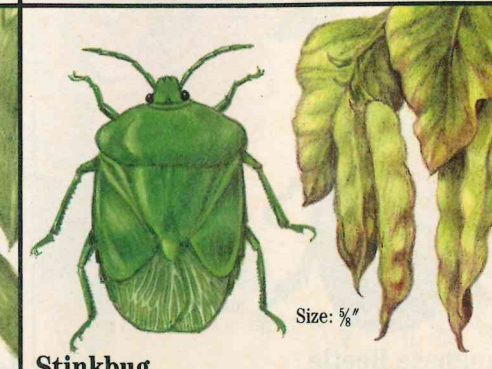
Size: 1/16"-1/8"

**Scale***Colors:* Red, Brown, Grey, White*Symptoms:* • Small bumps on leaves, stems and fruit • Loss of vigor • Yellow leaves • Stunted growth • Leaves sticky with honeydew*Common Plants Affected:* • Many crops*Control:* • Ringer Aphid-Mite Attack sprayed on scales until they are thoroughly wet • Ladybugs

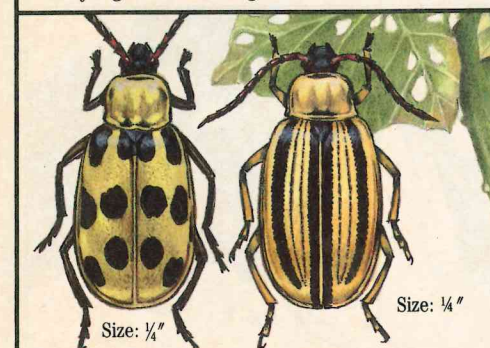
Size: Microscopic (1/100")

**Spider Mite***Symptoms:* • Yellowed leaves especially along veins • Fine webs • Dry, copper colored leaves • Loss of vigor • Stunted or poor growth • Leaf drop • Few or distorted flowers and fruit*Common Plants Affected:* • All crops*Control:* • Ringer Aphid-Mite Attack sprayed on all plant surfaces, especially leaf undersides • Ladybugs and Lacewings

Size: 1/8"

**Spittlebug***Symptoms:* • Froth (spittle) on leaves and stems • Wilted plants • Loss of vigor*Common Plants Affected:* • Pea • Bean and other legumes*Control:* • Ringer Yard & Garden Insect Attack sprayed directly on bug which is hiding under spittle

Size: 3/8"

**Stinkbug***Symptoms:* • Pitted, malformed or fallen pods • Wilted plants • Loss of vigor*Common Plants Affected:* • Pea • Bean and other legumes*Control:* • Ringer Yard & Garden Insect Attack sprayed directly on bugs which are usually on undersides of leaves

Size: 1/4"

Size: 1/4"

**Striped and Spotted Cucumber Beetles***Symptoms:* • Large irregular holes in leaves, stems, blossoms and fruit • Eaten roots—grubs devour roots, toppling plant*Common Plants Affected:* • Cucumber • Squash • Melons • Corn • Peas • Beans*Control:* • Ringer Yard & Garden Insect Attack sprayed directly on beetles

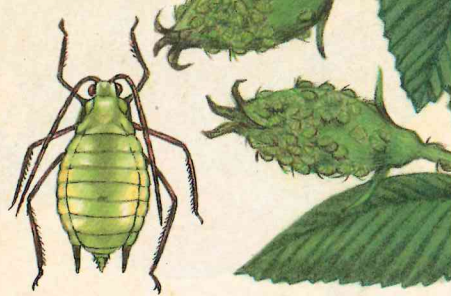
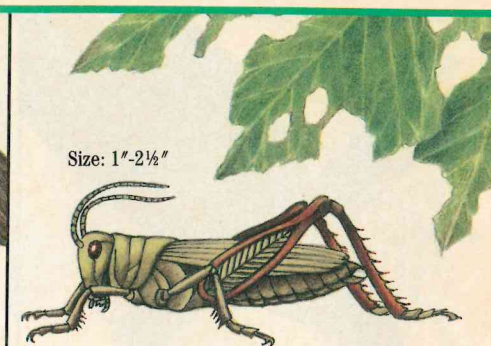
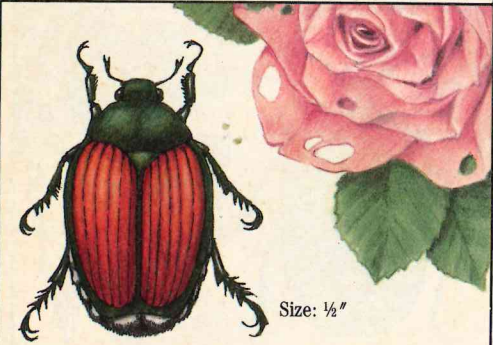
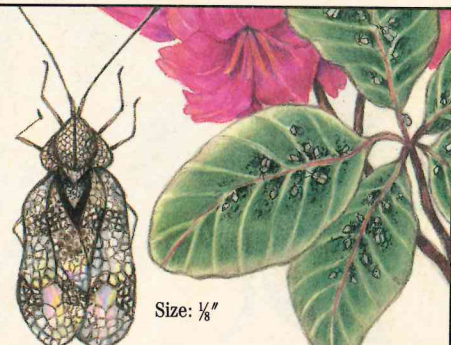
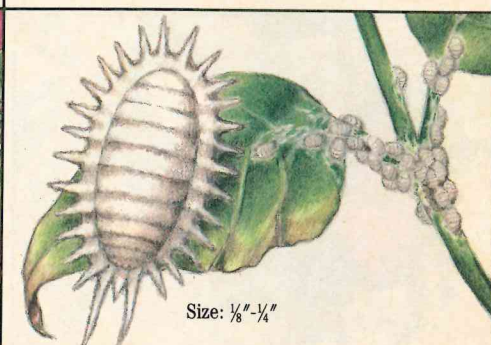
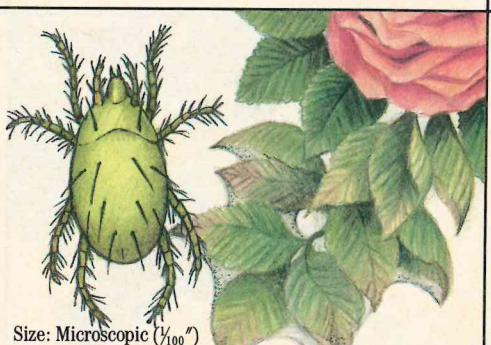
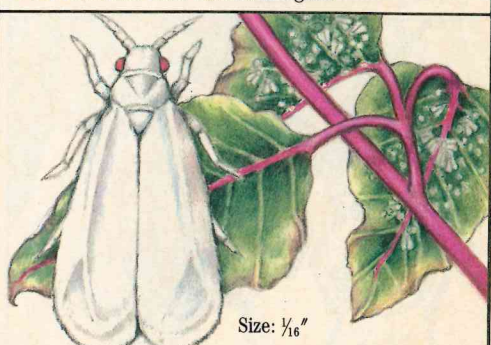
Size: 1 1/4"

**Tomato Fruitworm (Corn Earworm)***Symptoms:* • Holes in green tomatoes near stem • Castings outside of holes in corn ears • Tunnels under skin of green tomatoes • Severely eaten fruit*Common Plants Affected:* • Tomato • Corn • Bean • Cabbage • Lettuce • Broccoli • Pepper • Strawberry • Squash*Control:* • Ringer Vegetable Insect Attack • Remove plant debris in fall

Size: 2"-3"

**Tomato Horn Worm***Symptoms:* • Evenly chewed leaf edges • Leaves sometimes yellowed*Common Plants Affected:* • Tomato • Potato • Pepper • Eggplant*Control:* • Ringer Caterpillar Attack applied to all leaves every 5-7 days and after rain and watering

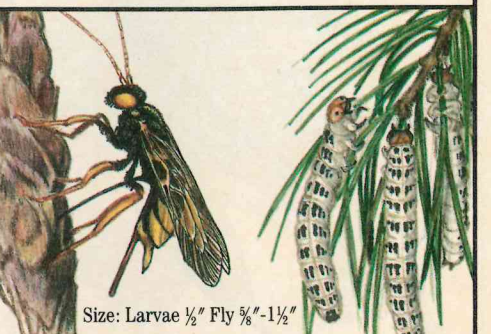
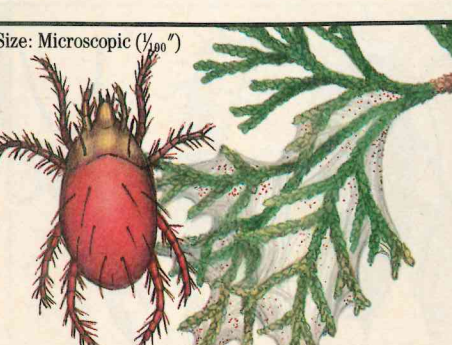
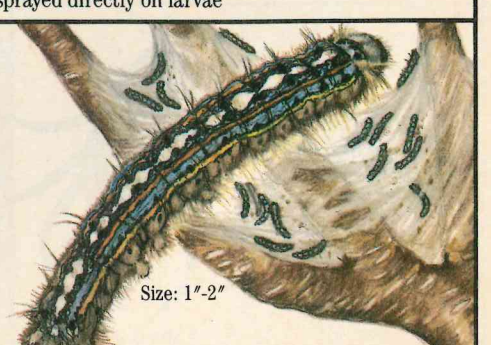


Size:  $\frac{1}{8}$ "- $\frac{1}{2}$ "**Aphid***Colors:* Green, Brown, Black, Pink*Symptoms:* • Stunted, curled or yellowed leaves and buds • Leaves and buds sticky with honeydew which may be covered with black sooty mold*Common Plants Affected:* • Many*Control:* • **Ringer Aphid-Mite Attack** apply at 1 week intervals to all plant surfaces • Ladybugs and LacewingsSize:  $\frac{1}{4}$ "**Buffalo Treehopper***Symptoms:* • Double rows of curved slits on stem with elongated yellow eggs • Fungus invades the scar areas in slits • Insects look like thorns*Common Plants Affected:* • Roses • Orchard crops and others*Control:* • **Ringer Yard & Garden Insect Attack** sprayed directly on insectSize: 1"-2 $\frac{1}{2}$ "**Grasshopper***Colors:* Grey, Brown, Black, Green*Symptoms:* • Severe defoliation*Common Plants Affected:* • All*Control:* **Ringer Grasshopper Attack** (optimal results are achieved in second summer)Size:  $\frac{1}{2}$ "**Japanese Beetle***Symptoms:* • Skeletonized leaves and flowers*Common Plants Affected:* • Over 250 plants*Control:* • Larval stage: **Ringer Grub Attack** • Adult stage: **Ringer Japanese Beetle Trap Attack** placed 20-30 feet down wind from affected plants and **Ringer Yard & Garden Insect Attack**Size:  $\frac{1}{8}$ "**Lacebug***Symptoms:* • Upper leaf surface mottled or pale • Lower leaf surface stained reddish orange • Loss of vigor • Poor flowering*Common Plants Affected:* • Azalea • Rhododendron*Control:* • **Ringer Aphid-Mite Attack** sprayed on all leaf surfaces, especially undersides • **Ringer Yard & Garden Insect Attack**Size:  $\frac{1}{8}$ "- $\frac{1}{4}$ "**Mealybug***Symptoms:* • Cottony masses on foliage, stems, buds and flowers • Wilted leaves • Small distorted flowers • Foliage sticky with honeydew which may be covered with sooty mold*Common Plants Affected:* • Fuchsia • Gardenia • Mum • Camellia • Begonia and others*Control:* • **Ringer Aphid-Mite Attack** sprayed at 1 week intervals until insects are goneSize:  $\frac{1}{16}$ "- $\frac{1}{8}$ "**Scale***Colors:* Red, Brown, Grey, White*Symptoms:* • Small bumps on leaves, stems and buds • Loss of vigor • Yellow leaves • Stunted growth • Leaves sticky with honeydew*Common Plants Affected:* • Many*Control:* • **Ringer Aphid-Mite Attack** sprayed on scales until they are thoroughly wet. Repeat 7-10 days if needed • LadybugsSize: Microscopic ( $\frac{1}{100}$ "**Spider Mite***Symptoms:* • Yellowed leaves mainly along veins • Fine webs • Dry, copper colored leaves • Loss of vigor • Stunted or poor growth • Leaf drop • Few or distorted flowers*Common Plants Affected:* • Many*Control:* • **Ringer Aphid-Mite Attack** sprayed on both leaf surfaces every 7-10 days • Ladybugs and LacewingsSize:  $\frac{1}{16}$ "**Whitefly***Symptoms:* • Dried, yellow foliage • Undersized flowers • Loss of vigor • Leaves sticky with honeydew which may be covered with sooty mold*Common Plants Affected:* • Fuchsia • Camellia • Aster • Begonia • Coleus • Lantana • Primrose • Rose and others*Control:* • **Ringer Aphid-Mite Attack** • **Ringer Flying Insect Attack Traps**Size:  $\frac{1}{8}$ "- $\frac{1}{2}$ "**Aphid***Colors:* Green, Brown, Black, Pink*Symptoms:* • Stunted, curled or yellowed leaves and buds • Leaves and buds sticky with honeydew which may be covered with sooty mold*Common Plants Affected:* • Many*Control:* • **Ringer Aphid-Mite Attack** at 1 week intervals • Ladybugs and LacewingsSize:  $\frac{3}{4}$ "-1"**Bagworm***Symptoms:* • Conical silk bags covered with leaves and twigs from the host plant • Loss of vigor • Severe defoliation at times*Common Plants Affected:* • Arborvitae • Juniper • Hemlock • Pine and other conifers and many deciduous trees such as Maple*Control:* • **Ringer Caterpillar Attack** is especially effective when larvae are small

Size: 1"

**Cankerworm***Symptoms:* • Skeletonized leaves • Worms double-up as they move • Worms hang from silk threads*Common Plants Affected:* • Apple • Apricot • Cherry • Plum and other fruit trees • Oak • Elm • Linden • Maple • Birch and other shade trees*Control:* • **Ringer Caterpillar Attack** • Apply sticky band around tree trunk to stop females from laying eggs in canopy

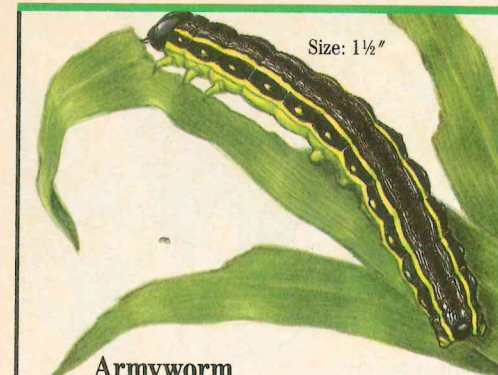
Size: Larvae 2"

Size: Moth 1 $\frac{1}{2}$ "**Gypsy Moth***Symptoms:* • Severe defoliation*Common Plants Affected:* • All deciduous trees and shrubs • All conifers*Control:* • For small infestations use **Ringer Caterpillar Attack** is especially effective when larvae are small—apply on leaves around caterpillarSize:  $\frac{3}{4}$ "**Leafroller***Symptoms:* • 1 or 2 leaves rolled together with fine webbing sometimes enclosing fruit*Common Plants Affected:* • Most citrus and fruit trees • Ash • Elm • Oak • Walnut • Hickory • Willow • Sassafras • Chestnut • Locust and other shade trees*Control:* • **Ringer Caterpillar Attack**Size: Larvae  $\frac{1}{2}$ " Fly  $\frac{3}{8}$ "-1 $\frac{1}{2}$ "**Sawfly***Symptoms:* • Eaten leaves and needles • Skeletonized leaves • Curled twigs • Fine webs may be present*Common Plants Affected:* • Arborvitae • Larch • Balsam • Cypress • Pine and other conifers and many deciduous trees and shrubs*Control:* • **Ringer Yard & Garden Insect Attack** sprayed directly on larvaeSize:  $\frac{1}{16}$ "- $\frac{1}{8}$ "**Scale***Colors:* Red, Brown, Grey, White*Symptoms:* • Small bumps on leaves, stems and buds • Loss of vigor • Yellow leaves • Stunted growth • Leaves sticky with honeydew which may be covered with sooty mold*Common Plants Affected:* • Many*Control:* • **Ringer Aphid-Mite Attack** • LadybugsSize: Microscopic ( $\frac{1}{100}$ "**Spider Mite***Symptoms:* • Yellowed leaves mainly along veins*Symptoms:* • Fine webs • Dry, copper colored leaves • Loss of vigor • Stunted or poor growth • Leaf drop • Sticky honeydew on leaves*Common Plants Affected:* • Many*Control:* • **Ringer Aphid-Mite Attack** sprayed on both leaf surfaces every 7-10 days • Ladybugs and Lacewings

Size: 1"-2"

**Tent Caterpillar***Symptoms:* • Silken tents in forked tree branches (can be large) • Tents have rolled in leaves and stems • Large colonies will defoliate trees*Common Plants Affected:* • Wild Cherry • Apple • Pear • Peach • Plum and other fruit and deciduous trees • Shrubs below affected trees*Control:* • **Ringer Caterpillar Attack** applied on foliage around tent colony

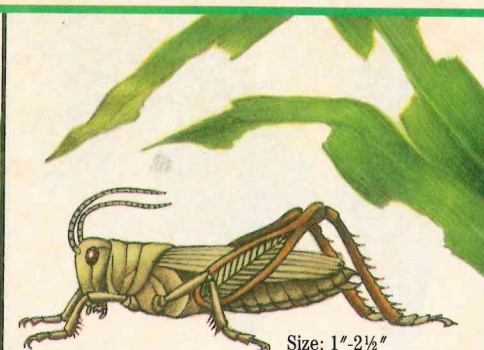




Size: 1½"

**Armyworm**

**Symptoms:** • Irregular patches of dead grass • Sod is easily peeled back revealing worms  
**Common Plants Affected:** • All grasses  
**Control:** • **Ringer Caterpillar Attack** applied near and around dead patches of grass



Size: 1"-2½"

**Grasshopper**

**Symptoms:** • Individual grass blades chewed off especially in dry, heat stressed lawns  
**Common Plants Affected:** • All grasses  
**Control:** • **Ringer Grasshopper Attack** (optimum results are achieved in second summer) • Maintain a correctly watered lawn



Size: 1"

**Grub (Larval stage of Japanese Beetle)**

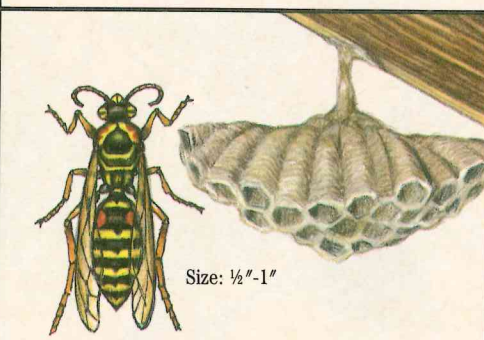
**Symptoms:** • Irregular dead patches of grass • Rootless grass plants are easily rolled back revealing the grubs  
**Common Plants Affected:** • All grasses from Maine South to Georgia and West to Illinois and Missouri  
**Control:** • Larval stage: **Ringer Grub Attack**  
 • Adult stage: **Ringer Japanese Beetle Trap Attack** and **Ringer Yard & Garden Insect Attack**



Size: ½"

**Leafhopper**

**Symptoms:** • White speckled grass leaves • Large areas look wilted and bleached • Individual blades of grass may be sticky with honeydew  
**Common Plants Affected:** • All grasses especially near vegetable gardens and orchards  
**Control:** • **Ringer Yard & Garden Insect Attack** Leafhoppers move with the wind—spray as needed



Size: ½"-1"

**Wasp**

Most wasps are beneficial predators of harmful insect pests. Use controls only if they nest in unavoidable areas or if they are a serious health threat  
**Control:** • **Ringer Wasp & Hornet Attack** sprayed in evening when all wasps are present and inactive

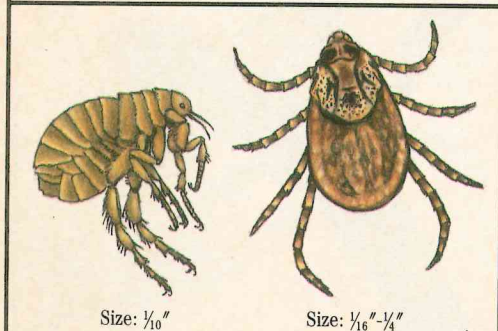


Size: Moth 1"

Size: Larvae ¾"

**Webworm**

**Symptoms:** • 2" patches of dead grass in spring that increase to large dead areas in August • 1" moths hovering in zigzag pattern 1-2 feet above grass  
**Common Plants Affected:** • All grasses  
**Control:** • **Ringer Caterpillar Attack** applied to healthy grass around dead patches

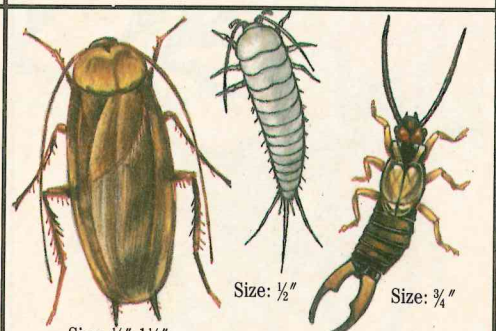


Size: ⅓"

Size: ⅓"-¼"

**Flea****Tick**

Both fleas and ticks are wingless, bloodsucking parasites. As carriers of diseases they can be a serious threat to man and pets.  
**Control:** • **Ringer Flea & Tick Attack** sprayed on pet resting areas



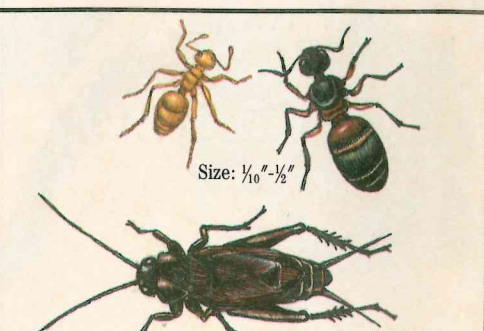
Size: ½"-1½"

Size: ½"

Size: ¾"

**Roach****Silverfish****Earwig**

These nocturnal pests feed on a variety of human food as well as glues for stamps, wallpaper and book bindings. They contaminate our foods and spread disease.  
**Control:** • **Ringer Crawling Insect Attack** sprayed directly on insects

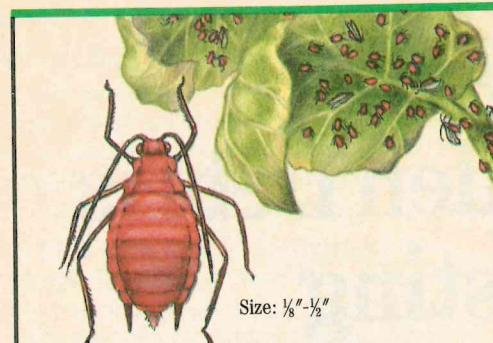


Size: ⅓"-½"

Size: ¾"-1½"

**Cricket****Ant**

These common pests feed on man's food, clothing and shelter. They also spread disease as they forage.  
**Control:** • **Ringer Crawling Insect Attack** sprayed directly on insects—follow ant trails to nest and spray if possible



Size: ⅓"-½"

**Aphid**

**Colors:** Green, Brown, Black, Pink  
**Symptoms:** • Stunted, curled or yellowed leaves and buds • Leaves sticky with honeydew which may be covered with sooty mold  
**Common Plants Affected:** • Many  
**Control:** • **Ringer Aphid-Mite Attack** at 1 week intervals • Ladybugs and Lacewings



Size: ⅓"-½"

**Fungus Gnat**

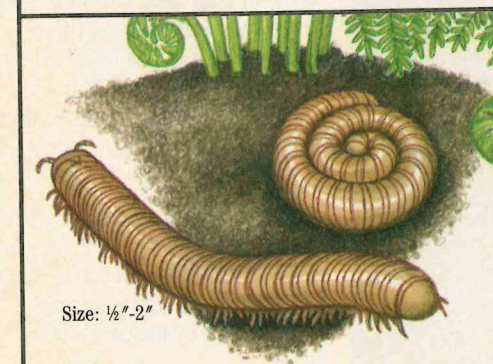
**Symptoms:** • Loss of vigor and, or color • Weak, small new growth • Damaged roots • White, threadlike maggots in soil • Gnats hover around host plant  
**Common Plants Affected:** • All plants grown in damp soils rich in organic matter  
**Control:** • **Ringer Aphid-Mite Attack** • **Ringer Flying Insect Attack Traps**



Size: ⅓"-¼"

**Mealybug**

**Symptoms:** • Cottony masses on foliage, stems, buds and flowers • Wilted leaves • Small distorted flowers • Foliage sticky with honeydew which may be covered with sooty mold  
**Common Plants Affected:** • Fuchsia • Gardenia • Mum • Camellia • Rosemary • Begonia and others  
**Control:** • **Ringer Aphid-Mite Attack** sprayed on all plant surfaces until thoroughly wet



Size: ½"-2"

**Millipede**

**Symptoms:** • Declining vigor • Stunted growth • Damaged roots  
**Common Plants Affected:** • All plants grown in soil rich in organic matter  
**Control:** • **Ringer Crawling Insect Attack**



Size: ⅓"-⅓"

**Scale**

**Colors:** Red, Brown, Grey, White  
**Symptoms:** • Small bumps on leaves, stems, and buds • Loss of vigor • Yellow leaves • Stunted growth • Leaves sticky with honeydew which may be covered with sooty mold  
**Common Plants Affected:** • Many  
**Control:** • **Ringer Aphid-Mite Attack** sprayed at 7-10 day intervals • Ladybugs



Size: ½"

**Sowbug**

**Symptoms:** • Declining vigor • Stunted growth • Loss of, or damaged roots  
**Common Plants Affected:** • All plants potted in damp organically rich soils  
**Control:** • **Ringer Crawling Insect Attack**



Size: Microscopic (⅓")

**Spider Mite**

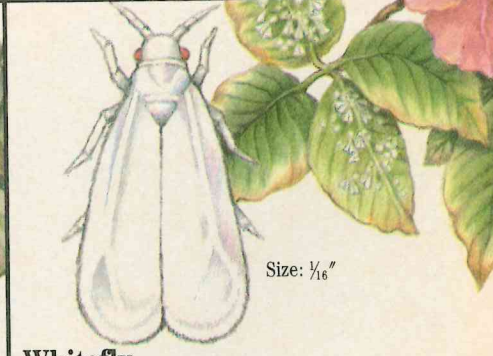
**Symptoms:** • Yellowed leaves mainly along veins • Fine webs • Dry, copper colored leaves • Lack of vigor • Stunted or poor growth • Few or distorted flowers  
**Common Plants Affected:** • Many  
**Control:** • **Ringer Aphid-Mite Attack** sprayed on both leaf surfaces every 5-7 days • Ladybugs and Lacewings



Size: ⅓"

**Thrip**

**Symptoms:** • Bleached, silvery then brown leaves • Wilt • Loss of vigor • Blasted or distorted buds • Petals on opening buds stick together, and are discolored  
**Common Plants Affected:** • Rubber plant • Begonia • Palm • Fuchsia • Fern • Orchid • Croton • Cyclamen and many others  
**Control:** • **Ringer Aphid-Mite Attack**



Size: ⅓"

**Whitefly**

**Symptoms:** • Dried, yellow foliage • Undersized flowers • Loss of vigor • Leaves sticky with honeydew which may be covered with sooty mold  
**Common Plants Affected:** • Fuchsia • Camellia • Aster • Begonia • Coleus • Fern • Primrose and others  
**Control:** • **Ringer Aphid-Mite Attack** • **Ringer Flying Insect Attack Traps**



# The Ringer Way To Recycle Yard & Garden Debris Through Composting

Hardly a day goes by when you don't hear or read about overflowing landfills. The problem isn't being ignored.

Already more than half the states have taken action to ban grass clippings, leaves, shrub prunings and other yard debris from landfills. It's estimated this material makes up 20 - 30% of America's garbage.

New ordinances and restrictions are being enacted on an almost daily basis. If you aren't already having to find new ways to dispose of lawn debris on your own, chances are good you will very soon.

So where does that leave you? Here's where. With a chance to produce a richer, more workable soil by adding material you recycle



In living green plants, the sun's energy is captured and stored in the tissue as chemical energy. When plants die, their remains are returned to the soil. Organisms in the soil literally chew-up and decompose what's left, reducing them to a substance called humus. That way their nutrients can be used again by plants. Old soil is enriched and growing plants absorb the nutrients, thus continuing nature's cycle.

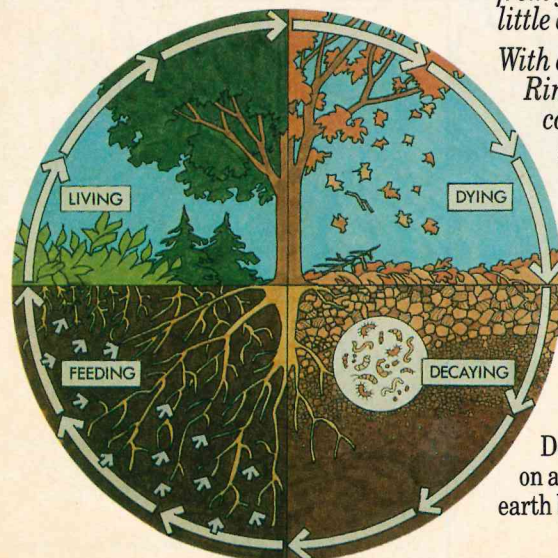
A compost pile is simply a natural reactor that speeds along decomposition. Basically all you're doing is taking advantage of nature's organic cycle by making it work faster.

In just a few easy steps and with some help from Ringer, you can productively compost leaves, grass, twigs, vegetable peelings and other materials right in your own yard.

## Humus: The good earth.

Humus is the fruit of composting. With little more than grass clippings, leaves, twigs, garden waste, certain household waste and not much effort, you can create an abundant supply of humus - a fine-grained, dark to black organic material. It's a rich material that turns brown or gray soil to black. It makes clay soil less clumpy and more granular. And since it can hold six times its weight in water, it improves the water retention of sandy soil.

Although it doesn't have enough nutrients to completely replace fertilizer, humus does contain some low levels of nitrogen, phosphorus, potassium and mineral elements which it slowly releases to growing grass, gardens, shrubs and trees.



from yard and garden waste. And in as little as four weeks.

With a little know-how and help from Ringer, you can have a productive compost pile in your back yard. We have over 20 years of experience with composting that's going to make recycling easy for you, good for your yard and garden, and of course, good for the environment.

Composting isn't a new idea. It's just something all of us need to do now more than ever.

## How composting works.

Decomposition is a sort of miracle going on around us all the time. It's the way the earth both creates soil and recycles itself.

## 3 ways to compost.

How much you get involved with composting depends on the size of your recycling job. There are basically 3 ways to compost: 1. The Ringer Recycle Kits, 2. Bins and enclosures, and 3. Thermal bins and shredders.

1. The Ringer Recycle Kits® are good ways to get started. They contain everything you'll need to recycle all the grass clippings or brown leaves from a city-sized yard. Simply put the



clippings or leaves into the large, ventilated, extra-durable plastic bag, add the provided Ringer Compost Maker and moisten. The Ringer Recycle Kit For Grass Clippings will produce humus in about 30 days and it will compost 280 gallons of clippings. The Ringer Recycle Kit For Brown Leaves will take 60-90 days to complete the job, and it will handle 560 gallons of leaves. Both kits come with Ringer's exclusive 'Success With Composting' guide.

2. Bins and enclosures can handle all your grass clippings and garden wastes.

Aside from aesthetic reasons, composting in a bin or enclosure is much better than using open piles. They keep materials from blowing away or being eaten by neighborhood pets.

But there are more important reasons for choosing an enclosure, particularly a solid one. It'll hold the heat and moisture that are

important for active and productive compost piles. Higher temperatures will create humus quicker. Also, the heat helps to destroy weed seeds and disease causing bacteria. Finally, solid enclosures maintain effective composting temperatures during cool weather.

Of course, the enclosure you choose is a matter of personal preference. But gardeners usually go with one of these:

- Plastic styled bins • Flexible wire panels
- Bricks or cement blocks • Wood frame • "In-a-bag" composter
- Tumbler bins

You'll want to be sure your enclosure has enough side openings so air can penetrate the pile. It's not a bad idea to have two piles, either. While one has ready-to-use compost, the other can be processing newer raw material.

Locate bins and enclosures in a shaded spot with good drainage. If placed in the sun, they will dry out too fast. Keep them away from tree roots

which could leech out the nutrients. If possible, place them close to a water source and near the garden in which you'll be using all that humus.

3. Thermal bins recycle the most the fastest. And when used in conjunction with a shredder they can recycle even more - quicker.

These insulated thermal bins generate higher temperatures than regular bins or enclosures. They produce compost fast. Even if you've added hard-to-compost things like wood chips, you'll have a fresh supply of humus in as few as 5 - 8 weeks. The higher temperatures will kill weed seeds and destroy disease pathogens. The bins will also stay warmer well into the winter - extending your recycling season.

Finally, since they're made of heavy-duty plastics, thermal bins won't decompose themselves.

You can speed-up thermal bins by first coarse-shredding the material. You'll also be able to add more. Shredded material retains more moisture and decomposes faster. Several manufacturers make shredders specifically for home composting.







### Accelerate decomposition naturally with Ringer Compost Makers.

It's the action of microorganisms that converts raw material into humus. Ringer Compost Makers speed up this decomposition naturally. They add a blend of fast-acting microorganisms to the compost in a highly concentrated state along with their own food source. Some of these microorganisms work at low temperatures to kick-off the process. Others take over at high temperatures to accelerate and complete the decomposition.

Each Ringer Compost Maker contains specific microorganisms and food sources that work with the material to be composted:

**Ringer Grass Clippings Compost Maker®** has microorganisms that turn clippings and other green refuse into humus. It also contains the carbohydrate foods they need to accelerate the process. The clippings can become humus in 30 days.

**Ringer Brown Leaf Compost Maker®** is for recycling leaves or a combination of leaves and grass clippings. It contains microorganisms that specifically decompose leaves along with the high nitrogen food they require. Use it to recycle your spring clean-up and you'll have rich humus in 60 - 90 days.

**Ringer Compost Plus®** is for hard-to-compost things like wood chips, hay, straw, sawdust and pine needles. These combinations usually take a long time to compost, but special decomposers such as "wood hungry" microorganisms speed-up the process. These decomposers are supported by a blend of extra-strength nutrients and will finish the cycle in 60 - 90 days.

When temperatures fall below 40 degrees F, microbe activity slows down. Compost piles can even freeze up in the winter. Simply re-apply Ringer Compost Makers or Compost Plus (depending on the mix) in the spring.

### What you can recycle.

As you gather refuse together to be composted, remember that it's helpful to achieve a proper mix: of *course & fine* and *green & brown* organic materials.

A mixture of course and fine materials will reduce compaction and help air reach the living microorganisms.

Green wastes are high in nitrogen and decompose quickly. Brown wastes are high in

carbon and decompose slowly. Both are needed for good compost. They'll provide a more balanced diet for the microorganisms and speed-up the process. And the finished humus will contain a better balance of nutrients.

Ringer Compost Makers will correct for missing ingredients in the mix. For example, if you are missing brown waste, simply use Ringer Grass Clippings Compost Maker.

You can compost almost anything that was once alive - cornstalks, sod trimmings, hay, straw, pine needles, kitchen scraps, whatever. But don't add meat scraps. They're hard to decompose and they attract rodents.

### Shred to give composting a head start.

One way to make your pile work faster and more successfully is to first coarse-shred the material. You don't have to, but it speeds composting while making it easier for moisture to reach the material.

Several manufacturers make shredders specifically for home composting. But you can also use equipment you probably already have. Put home vegetable wastes through the blender. Run the lawn mower over leaves to shred them. Chop up garden wastes with a roto tiller.



### Stacking and watering.

Your compost pile will work best if it's built in a series of layers. As you build, thoroughly dampen the layers with water. Activate each layer with Ringer Compost Makers or Compost Plus (depending on what you're about to compost) and stir to moisten all the surfaces.

Keep adding layers until your enclosure is full or the pile is four to five feet high or a minimum of six to seven layers. Don't pack the materials too tightly, or make the pile too large. Too much weight will squeeze out air needed for decomposition.

When you water the finished pile, make it about as damp as a squeezed-out sponge. But don't let it get too moist. If you smell sulphur, that means your pile is too wet.

Once built and moistened, your pile will heat up. Inner temperatures should reach 120 to 150 degrees F in three or four days. This will destroy most weed seeds and disease organisms. You can check temperatures with a thermometer.

### Aerating helps your compost pile breathe.

Frequently turn your compost pile with a pitchfork or aerating tool. Move the fully decomposed material out of the hot center of the pile and replace it with the partially composted material on the sides. Re-moisten.

Turn piles that contain grass clippings every 5 days. Piles that contain brown leaves or combinations of organic matter should be turned every 7-10 days.

### The flat compost pile.

"Soil surface" composting doesn't involve a pile at all. You simply add organic material directly to the soil. Layer and spread organic material over the garden area and till it into the soil with a hoe, spade or roto tiller.

Fall is the best time for it. That's when your garden has stopped producing. Soil surface composting can also be done in the spring, but wet soil makes it difficult.

Autumn leaves provide the ideal organic source as they till easily and decompose quickly. You can also use grass clippings, manures, garden and kitchen wastes (except meat scraps).

### Here's what to do:

1. In the fall, spread a four to six inch layer of organic wastes on the garden's surface. If you soil surface compost in the spring, cut the layer size to two to three inches. Do this three to four weeks before planting time.
2. Depending on the garden type, apply Ringer Restore (for example use Vegetable Garden Restore on vegetable gardens). The microorganisms in these products will help decompose organic wastes and free-up nutrients for plant growth.
3. For vegetable gardens, roto till organic materials until they thoroughly blend into the soil.
4. For established perennial flower gardens, till the organic materials lightly with a spade or hoe.



### What to do with your humus.

In four to eight weeks (depending on the raw material) you'll have a fresh batch of dark, rich, earthy-smelling humus from your compost pile. So what do you do with it?

Use it to improve your garden soil by applying a three-inch layer, digging it to a depth of six inches with a spading fork or roto tiller.

You can side dress around roots of transplanted vegetables, bushes or trees. Humus also makes a great mulch over bulb gardens, but don't bury it — hoe it in lightly.

If you put in a new lawn, blend humus into the soil before sodding or seeding. As a general rule, apply 250 pounds per 1000 square feet on sandy soil; 400 to 600 pounds on loamy soil; 1200 pounds on clay soil.

Existing lawns can also benefit from a natural feeding of humus. Spread a one-inch layer on top of your lawn in the spring.

Composted leaves and grass contain about one-percent nitrogen. So 250 pounds of compost will provide two-and-a half pounds of nitrogen. That's enough for 2500 square feet of lawn. You can lightly top dress the lawn throughout the growing season.

Mix humus with equal parts sand and loam to start seeds indoors or in a cold frame. The compost-enriched mixture discourages damping-off diseases that commonly afflict seedlings.

### Problems with your compost pile?

If your compost pile isn't working, you'll probably notice one or more of these symptoms.

**PROBLEM:** It's too dry.

**SOLUTION:** Dampen it so it has the moisture consistency of a squeezed-out sponge.

**PROBLEM:** It has a bad odor.

**SOLUTION:** It's over-watered or packed too tightly so oxygen can't penetrate. Certain microorganisms that don't need air to work are causing the odor. Don't "stomp down" materials when they're added and don't add all fine materials. Add some coarse material and turn the pile so it aerates.

**PROBLEM:** It's inactive.

**SOLUTION:** You need a broad range of microorganisms, and a balance of carbon and nitrogen,

for decomposition. Chances are, not all of them are present. Add Ringer inoculants that have all the necessary organisms for rapid composting.

**PROBLEM:** It's frozen.

**SOLUTION:** At 40 degrees F, microbes become inactive and can have a hard time starting up in the spring. Jump start the pile by mixing in Ringer Compost Maker and turning over surface material.

*Ringer provides you with everything you'll need to recycle yard and garden debris. But the art of composting is personal. Experiment with your own recipes and maintenance procedures to achieve the best results.*