LANDSCAPE OWNERS MANUAL

A complete guide for your outdoor success!

HARDER & WARNER LANDSCAPES , INC.

"Your Dream, Our Team"

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Harder and Warner is dedicated to creating and maintaining unique, quality outdoor environments for the benefit of our clients and community. We strive to exceed our client's expectations and strengthen our position as a leader in the industry by investing in our community. Harder and Warner prospers as a result of quality performance at every level.

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INTRODUCTION

Congratulations on your landscape! We know a ton of work has gone into creating the outdoor space you have today.

It is important to know that a garden which is properly cared for gets more beautiful with age and can greatly increase the value of your property, but the benefits don't stop there. Studies have also proven that well maintained gardens improve our health. They are contributed with lowering blood pressure, decreasing stress, and promoting a positive influence on our state of mind.

Being a living thing, our landscapes can quickly get out of control if neglected and become overwhelming. It can also be confusing on just how to care for them properly. For all these reasons, it is crucial that we give our garden the proper inputs to keep them at their best.

That's why we put this book together – to give you the proper knowledge and confidence to take care of your outdoors and let it take care of you in return! We want to stress that much of this information is crucial to the success of your outdoor space.

Thank you and enjoy reading!

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LAWN CARE

NEW LAWN ESTABLISHMENT

Hydroseed / Lawn Seeding

Congratulations on your newly planted lawn! This is where the very important work begins.

Unless otherwise specified, Harder and Warner has planted this lawn with a mix of turf grade perennial rye that will being growing in 7-10 days, creeping red fescue that will begin growing in 10-15 days, and Kentucky blue grass which will begin growing in 25-30 days. Kentucky blue grass is the most dependent on water, light and fertilizer. If proper care is given, this species is the most aggressive and will outgrow all the others.

For the proper establishment of lawn
two important things need to be remembered:
WATER & FERTILIZER!

Newly planted seed that is not regularly watered will not grow at all or will not grow evenly. Weeds will grow with minimal water and will quickly take over new grass, so the race is on to beat the weeds.

A new lawn that is watered but not properly fertilized will start growing quickly until it reaches about an inch in height. At this point, the grass will turn yellow and stop growing. The grass is not dead but in this state it won't be able to compete with the weeds and the weeds will quickly take over. Fertilizing is very, very important for success. New lawns are very tender so please follow these instructions for the best chance for a greener lawn.

Watering Newly Seeded Lawn

Immediately

Before the first watering, wait for the hydroseed to dry completely. This allows the tack filler to set up and will help keep seed in place.

- Keep the top 1" of soil moist (not wet) for 2 to 3 weeks.
- Irrigation should be set to run 3 times per day: 11:30 am, 3:30 pm & 7:30 pm
- Set the rotor zones (big spray heads) to run for 10-15 minutes
- Set spray zones (small spray heads) to run for 3-5 minutes.
- The watering time will vary depending on the site; longer times for sandy soils and shorter times for clay soils. If the soil completely dries out between watering, increase the amount of time for each watering.

Three Weeks After

- Adjust the irrigation to come on 2 times per day: 9 am and 1 pm
- Increase the watering length of the rotor zones to approx. 12-18 minutes
- Increase the spray zones to approx. 5-10 minutes.

Six Weeks After

- Adjust the irrigation to come on once per day at 6-7 am
- Increase rotor zone run for approx. 15-20 minutes
- Increase spray zones run for approx. 7-12 minutes

Twelve Weeks After

- Start daily irrigation or every other day irrigation at 6 or 7 am
- Watering length and frequency will vary based on soil types
- Sandy soils need more frequent irrigation for lesser duration times
- Heavier soils need irrigation less often but slightly longer duration times

Fertilizing

To start, never use a fertilizer with an herbicide or weed killer when establishing a new lawn (UNLESS specifically approved for seeding). This can stunt growth or kill new lawns.

Use a starter fertilizer with a substantial Phosphorus (P) percentage from the N-P-K (Nitrogen- Phosphorus- Potassium) percentage found on the bag. Even though some cities ban the use of Phosphorus it is allowed for new lawns because it promotes root growth.

During the installation, the first fertilization is included with the hydroseed.

Three Weeks after Seeding: Apply the 2nd application of starter fertilizer. Each bag of fertilizer notes the square footage of lawn it will cover. Use the appropriate amount required for the lawn size.

Six Weeks after Seeding: Apply the 3rd application

Nine Weeks after Seeding: Apply the 4th application

Twelve Weeks after Seeding: Apply the 5th and final application of starter fertilizer. After that, resume normal fertilizing, as discussed in later sections.

Quick Tips for Fertilizing:

- **Avoid over fertilizing.** Set the fertilizer spreader to ½ the rate and go over the lawn twice in two different directions. This will give the most even coverage.
- When applying fertilizers, turn irrigation systems off 1-2 days prior. This allows the soil to become firm and cause less damage.
- On hot days turn irrigation on after fertilizing to avoid burning.

Weed Control

Do not use chemical weed killers on new lawns that are being established. New lawns are established in approximately 4 months from seeding, and after they have been mowed at least 3 times.

Then it will be safe to use a lawn approved weed killer without damaging the grass. Weeds are a part of new lawns and patience will be needed until the time the new grass is ready to be sprayed with lawn appropriate weed killer.

During the establishment period of the lawn, mowing will be the best defense against weeds. Any new weeds with two distinctively wide leaves will be immediately killed after mowing. This includes any tree seedlings like maples or cherry. Mowing should be done even if the grass is not tall enough to mow, but the weeds are. This will kill the weeds, remove weed leaves that shade the grass and keep the yard looking nice and even.

Note: *Turn off the irrigation 1-2 days prior to mowing this allows the ground to become firm and will reduce damage.*

Straw Blankets

On some projects, a straw blanket is rolled out and secured down in order to lessen erosion and washout as well as speed up germination. These blankets work very well and are intended to be left down permanently (they will break down over time), but sometimes the new grass will push up the straw. If this happens the blanket may be removed (it has done its job at this point). If removed early enough, it will simply pull right up with ease. If only the edges are coming up, it is best to just cut those areas out with a sharp knife while pulling the loose section sideways with your other hand. This will reduce disturbance and damage to the young grass seedlings.

Sod Care

When it comes to establishing sod, water is the key. Sod can dry up very quickly, especially on a hot summer day. Because of its completely developed leaves and partial root system, new sod needs to be watered excessively for the first 2-3 weeks. Do not walk on the sod during this time because it will be too spongy and can shift the soil beneath.

Watering

Immediately: After installation, immediately water for 30-40 minutes per area to ease the shock and remove any air pockets. Set sprinklers to water 3 times per day: 7 am, 11 am and 3 pm for 20-30 minutes per area.

Three Weeks After: Reduce sprinkling to two times per day at 10 am and 3 pm for 15-25 minutes per area.

Six Weeks After: Reduce sprinkling to once per day at 10 am for 20-30 minutes per area

Ten Weeks After: Resume normal irrigation.

Fertilizing

Three Weeks After Installation: Fertilize the lawn with a starter fertilizer. *Refer to the hydroseed fertilization notes on page 5*

Eight Weeks After: Resume normal fertilizing. *Refer to standard fertilization practices for established lawns on page 10*

Weed Control

Weed control in a sodded lawn is accomplished the same as weed control in an existing established lawn. Turf-grass-approved herbicides can be used anytime as lawn starts to become firm.

Mowing: Sod & Seed

Hydroseed / Lawn Seed: Newly established lawns should be mowed when grass height reaches 3 inches, even if only some areas have reached this height. Mowing promotes and accelerates grass growth.

- Set the mower height for 3 inches. This is the most beneficial height for lawns.
- Turn off the irrigation 1-2 days prior to mowing this allows the ground to become firm and will reduce damage.

Sod: 2 weeks from installation, as soon as the grass grows over 3.5" tall, sod can be mowed.

- Turn off the irrigation 1-2 days prior to mowing this allows the ground to become firm and will reduce damage.
- Immediately resume watering after mowing.

Note: It is best for the first few mowings, use a push mower rather than a riding mower to reduce damage—this applies to sod & seed.

CARING FOR MATURE LAWNS

Green lawns can be the envy of the neighborhood. Most people think that it takes a lot of work to make a lawn look luscious, but it doesn't. The three most important things to do to an established lawn are mowing, fertilizing, and watering.

Mowing

Before mowing make sure equipment is properly tuned. Sharpen blades and change the oil in the mower. Sharp blades will insure a clean cut to the grass and will provide a uniform cut. Harder and Warner recommends that grass clippings be mulched and left on the lawn. This will provide nice organic matter for the soil adding nutrients back to the grass.

Harder and Warner also recommends that grass be cut at a height of 3 inches. This height reduces stress on the grass and it will perform better during the heat of the year. Maintaining a 3 inch height is the most beneficial to the overall health of the grass. Due to the amount of rainfall in the spring, the lawn may have to be mowed more often to maintain the 3 inch height. In the summer when it starts to dry out, mowing should be only done as needed if no irrigation is present. The cool season grass may go dormant and stop or slow growth until temperatures drop and rainfall increases.

As the temperatures become cooler in the fall, it is beneficial to gradually shorten the height of the mower down to 2 inches. This will cause the grass to put more energy into root growth and will create a solid base. Once temperatures consistently stay low, the grass will have gone mostly dormant and mowing can stop for the year. It is also beneficial for the last mowing of the year to be 1.5 - 2 inches to reduce fungal activity through the winter.

Fertilizing

Fertilizing is a very crucial part to making lawns lush and green. Harder and Warner recommends a 4 Step Program.

Step 1 is a crabgrass preventer plus lawn food. This should be applied in early spring around mid April, as soil temperatures reach 50 degrees (a good rule of thumb is when the forsythia bloom). This step will prevent crabgrass from germinating and also gives lawns the first nutrients of the season.

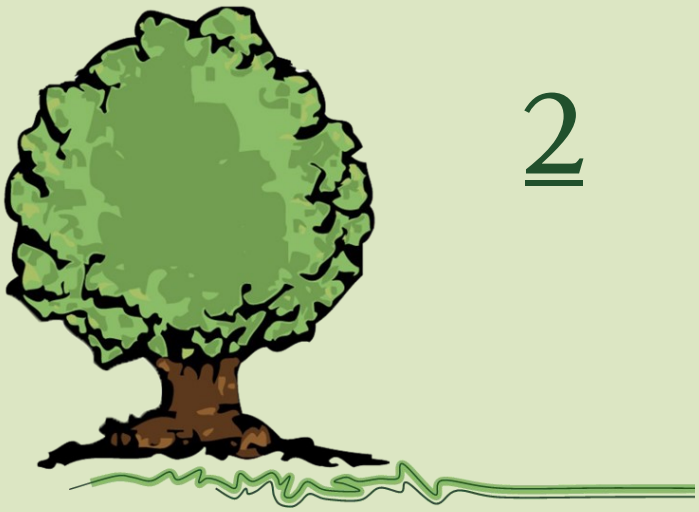
Step 2 is a weed control and lawn food. This step should be applied in late spring between May and June. This step will kill off broadleaf weeds in the lawn while feeding the grass that remains.

Step 3 is a lawn food with extra iron. This step should be applied between June and August. It will feed and strengthen the lawn during the heat of the season.

Step 4 prepares lawns for winter. It should be applied between August and November and will strengthen and safeguard the lawn during the winter months giving it an extra boost in the spring. **Be sure to follow the labels on all four steps to prevent fertilizer burn from over-applying during each step.** Follow directions closely for your lawn size.

Watering

Watering is beneficial. If a lawn is well watered it will stay green all season long. Watering is made easier with underground sprinkling. Setting the time clock to water in the morning hours for 15 to 20 minutes per zone depending on soil structure will ensure a healthy green lawn. **It's beneficial to water before the sun is out.** This allows the moisture to get into the ground before it can evaporate. It also allows the grass blades to dry out before night to lessen fungal activity. For the lawns that do not have underground sprinkling, a hose and sprinkler may be used on the lawn moving the sprinkler every 20 to 30 minutes. If sprinkling systems are not used the lawn will go dormant during the hot dry spells. This will cause the lawn to brown, but once the rains come again it will become green again. During this time of dormancy, it is advised not to fertilize. If fertilizing is done, there is a potential to burn the lawn.



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PLANT CARE

WATERING PLANTS

Watering New Plants and Trees for Establishment

Proper watering is the single most important maintenance factor in the care and successful establishment of new plants. It will take approximately 6 weeks for roots to grow out from the existing root ball and into the native soil. So this time is crucial. New plants need water to survive, but prolonged saturated soils (too much water) will kill new plants as well, so it is important to let soils dry out between watering.

Below are a set of guidelines for different types of plants in different types of soils. Clay soils drain very slowly and should never be consistently soggy around new plants. Sandy soils drain very quickly and need lots of water for plant establishment. Use common sense based on the conditions.

To establish new plants, underground sprinkling and rainfall may not be enough. Large trees and large shrubs may need additional water on top of irrigation and should be checked for soil moisture and hand watered accordingly for the first month. After that, set dedicated irrigation systems accordingly or continue to water by hand.

Watering Trees and Balled/Burlaped Shrubs

A hose should be turned on to a gentle stream (slow trickle—coming out of the hose end approximately the diameter of your pinky finger), lay the end of the hose next to the trunk for 20-30 minutes per tree.

- **Clay soils**: Water once per week
- **Sandy or Loam Soils**: Water 2-3 times per week through hot periods of Spring / Summer/Fall for 1 year

Watering Potted Shrubs

A hose should be turned on to a gentle stream (slow trickle), lay the hose at the base of the shrub for 5 to 10 minutes per plant, and then move to the next.

Planting in Spring or Fall

- **Clay Soils**: Water once per week.
- **Sandy or Loam Soils**: Water 2-3 times per week through hot periods of Spring/Summer/Fall for 1 year.

Planting in Summer

- **Clay Soils:** Water every other day for 2 weeks after planting, then water once per week for 1 year; Spring/Summer/Fall.
- **Sandy or Loam Soils:** Water every day for 2 weeks after planting, then water 2-3 times per week through hot periods of Spring/Summer/Fall for 1 year.

Watering Perennials

A hose should be turned on to a gentle stream (slow trickle) and soak each plant sufficiently, making sure the water reaches the bottom of the root ball.

Planting in Spring or Fall

- **Clay Soils:** Water twice per week.
- **Sandy or Loam Soils:** Water 3 times per week, watering through hot periods of Spring/Summer/Fall for 1 year.

Planting in Summer

- **Clay Soils:** Water every other day for the first 2 weeks then water twice per week for 1 year; Spring/Summer/Fall.
- **Sandy or Loam Soils:** Water every day for the first two weeks then 3 times per week through hot periods of Spring/Summer/Fall for 1 year.

FERTILIZATION OF TREES, SHRUBS & PERENNIALS

Just as lawns need regular fertilizing, our trees, shrubs and perennials should be fertilized too. In a natural forest, all nutrients are recycled and reused by plants. Fallen leaves, down branches, and animal waste all get broken down, entering the soil and feeding the forest flora. As natural fertilizer, this is the big difference to our manicured landscapes where all of these ecosystem inputs are normally removed to keep them looking good. This is why adding fertilizer to all of our plants is so important and should be done regularly to keep them healthy and growing.

A bag of tree and shrub fertilizer will always display a series of three numbers with dashes in between them (example: 20-20-20). These three numbers state the percentage of fertilizer within the package. The first number states the percentage of Nitrogen contained inside the bag. The second number states the percentage of phosphorus within the bag and the third number states the percentage of potash (potassium) within the bag. These are the three major elements needed for plant growth.

Nitrogen The element that promotes leaf and stem growth, enhances leaf color and is essential for photosynthesis.

Phosphorus Stimulates root development and flower production.

Potash (potassium) Aides in the flowering, strengthens the walls in each plant cell and increases winter hardiness.

The application of too much nitrogen or potassium will burn and could kill plants, so carefully read and follow all instructions on the package before applying.

Harder and Warner recommends to fertilize trees, shrubs, and perennials two times per year. Fertilize first in the spring after the first new leaves have reached full size (mid to late May). Fertilize again in the early fall as night temperatures begin to drop in early October.

Proper Fertilizing Application for Specific Plants

Trees

- **25 Feet Tall or Less**: Place fertilizer evenly around the trunk and 2 feet away from the trunk.
- **Larger than 25 Feet Tall**: Place fertilizers 5 - 8 feet away from the trunk.

Shrubs

- **4 Feet Tall or Less:** Place fertilizer evenly around the base, 1 - 2 feet from the growing point.
- **Larger than 4 Feet Tall**: Place fertilizer evenly around the base, 2 - 4 feet from the growing point.

Perennials

- **Small Perennials (2 Feet in Diameter or Less):** Place fertilizer evenly around the base, 6 - 12 inches from the growing point.
- **Large Perennials (Larger than 2 Feet in Diameter):** Place fertilizer evenly around the base 12 inches from the growing point.

To avoid plant damage when applying fertilizers, the fertilizer should never be placed in direct contact with any branches, exposed roots, or the stems of the plant.

Milorganite Fertilization

Harder and Warner recommends two different ways to fertilize based on the plant owner's experience and confidence level.

The first way is using Milorganite which is the safest way of fertilizing and has a very low potential to damage plants even if it is over applied. Milorganite is a composted organic fertilizer containing a variety of benefits beyond just fertilizer, but is required in larger amounts.

Milorganite Instructions

Trees: Use 5 pounds (approximately 15 cups) of Milorganite per inch of trunk diameter measured one foot above the ground. As a reference, a 3 inch caliper tree is about 20 feet tall and requires 15 pounds of Milorganite.

Shrubs: Apply 1 pound (approximately 2 cups) of Milorganite for each one foot in diameter of the plant size the previous year.

Perennials: Apply 2/3 of a pound (approximately 2 cups) of Milorganite for each one foot of the plant size the previous year.

Ground Covers: In new plantings, extra care should be given to accelerate growth. Lightly fertilize once a month with Milorganite for the first two years using 10 pounds (30 cups) per 100 square feet (10x10 area) of plant material. After the plants have become established, apply 20 pounds per 100 square feet twice a year.

Elemental Based Fertilizer

The second way to apply fertilizer is with an elemental based fertilizer, similar to what would be used on a lawn. Make sure this fertilizer does not contain a pre-emergent or weed killer when applying to ornamental plants. Elemental fertilizers have a high burn potential to plants if it is not applied properly, so be careful. All fertilizers have different analysis and are either fast or slow release. **Be sure to completely read and follow the directions on the fertilizer bag for correct applications.**

> **Harder and Warner recommends a slow release fertilizer with a Nitrogen percentage around 20 and a potassium percentage between 10 and 20 (Example: N19-P0-K10)**

Trees: Apply 1 cup of fertilizer per inch of trunk diameter measured 1 foot above the ground. As a reference, a 3 inch tree is about 20 feet tall and would require 3 cups of fertilizer.

Shrubs: Apply a quarter cup of fertilizer for each 1 foot of plant size (height or width, whichever is larger).

Perennials: Apply 6 tablespoons of fertilizer for each 1 foot in diameter of plant size the previous year.

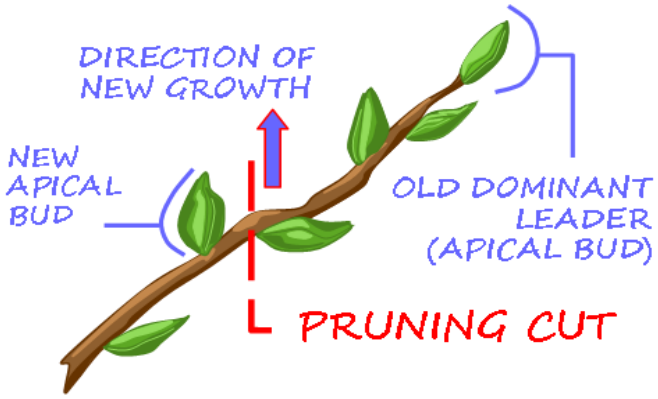
Ground Covers: Milorganite is recommended due to the low risk of burn from contact with the stems and leaves. *See Milorganite fertilization application on the previous page.*

PRUNING & TRAINING

Proper pruning and training is detrimental to the upkeep and aesthetics of the landscape. Pruning is a learned art form where practice makes perfect and mistakes are inevitable, but not permanent. In the plant world, not all plants can be trimmed the same. In the landscape, different plants will require different pruning based on their flowering, growth habits, and hardiness. This section will provide a general guideline on the why, how, what and when of pruning.

The reason pruning is important includes maintaining size, acquiring desired shape, increasing light and air penetration, rejuvenating, strengthening or improving structure, removing dead or diseased parts, maintaining, and altering flower and fruit production.

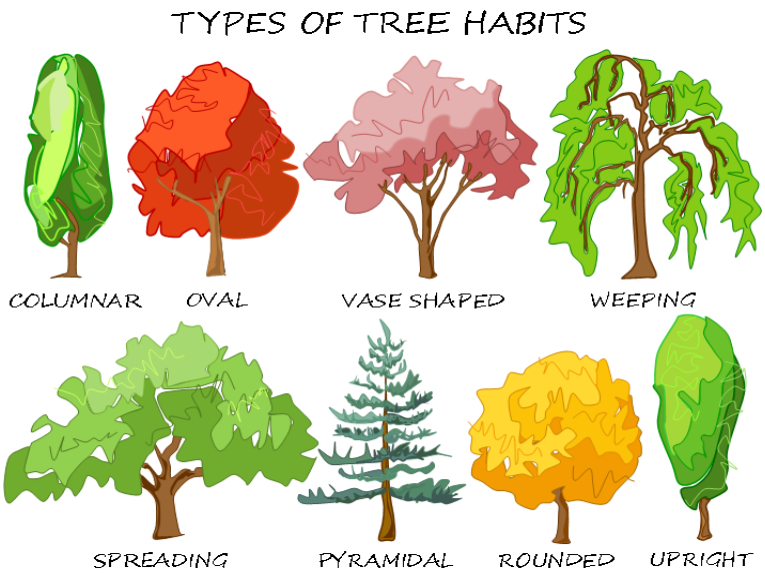
It is also important to know what happens after a pruning cut is made. On trees and shrubs, each branch has a dominant bud or leader called the apical bud. This point is located at the branch tip and is the area where growth is the fastest. When pruning or trimming, the apical bud is removed, this does not stop the plants growth, but rather, changes the location and direction of growth. Just under the cut an existing bud will open and become the new dominant leader (new apical bud) growing in the direction it faces.



Pruning Trees

Pruning the trees in the landscape will not need to be done on a regular basis. On average, a properly grown tree 18 feet tall or more will only need to be pruned every 3—5 years. Harder and Warner recommends pruning trees in the winter months because the structure of the tree will be easy to see without the leaves blocking the view.

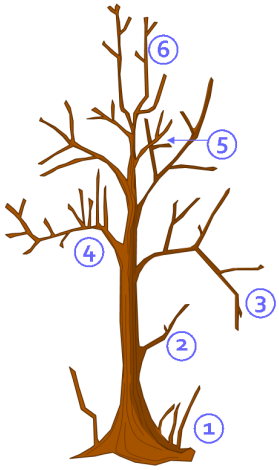
Winter pruning is also beneficial because harmful insects are not present. During the growing season, some insects can sense the chemicals release from the pruning wounds on a tree and may attack it, thinking the tree is stressed.



When analyzing the tree for pruning, it is important to first know the growing habit. Some trees grow tall and upward and others will grow short and outward. Knowing this will help in deciding what should stay and what should be pruned. Below is a sampling of tree habits as a reference.

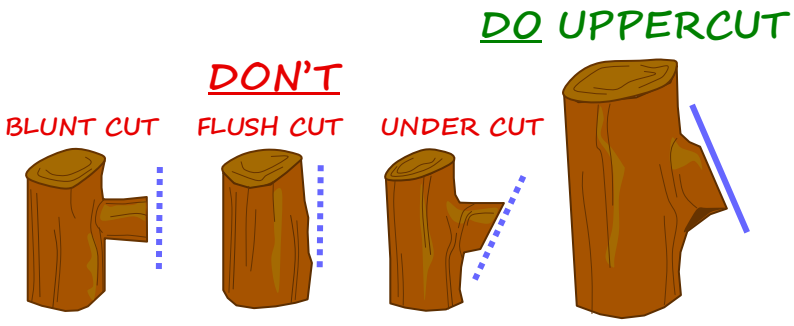
Tree Pruning: Identifying and Tips

1. SUCKERS
2. LOW BRANCHES
3. DOWNWARD FACING BRANCHES
4. WATERSPROUTS
5. CROSSING BRANCHES
6. COMPETING BRANCHES



- **Remove suckers and low branches:** Any branch that protrudes from the trunk in the area between the ground and the first major branches
- **Remove downward facing branches**
- **Remove waterspouts:** Any branch that is growing straight up in the center of the canopy.
- **Remove crossing or rubbing branches**
- **Remove competing leaders:** If the tree has two branches trying to be the leader at the top, one should be removed.

The pruning cuts should be made just above a bud, or at a point where two stems meet, referred to as the tree crotch. While trimming trees, use hand pruners, loppers or a saw. Whatever is the smallest possible for each cut to ensure clean, precise cuts.



Pruning Shrubs

Pruning shrubs is an extremely important job because it helps keep the garden neat and tidy. It also helps to make shrubs fuller and healthier if done properly. There are many factors to consider before pruning, but the most important factor is knowing what time of year to prune.

Pruning will stimulate plant growth. It causes shrubs to break new buds just under the cut and rapidly produce new stems and leaves. This is normally a good thing, but if new growth occurs too late in the season, it will not have time to harden off before winter and that part of the plant may die. *Note, the majority of shrubs are fast growing and pruning mistakes will eventually grow out and be forgotten, so don't stress about your first time.*

> **Harder and Warner recommends that extensive pruning not be done in the month of September. By October, buds should be going into dormancy and will not normally break open after pruning. Any growth that occurs before September will have plenty of time to harden off before winter.**

Another reason to prune at the right time is flowering. Every flower starts out as a flower bud with some plants producing flowers on new wood while other produce flowers on old wood.

Some shrubs will set their flower buds in late summer, holding them all the way through winter until spring when they dramatically open. These are known as shrubs that bloom on old wood and include plants like lilac, forsythia, and Oakleaf hydrangea.

Other shrubs will set their flower buds in the spring that will open later in the growing season. These are known as shrubs that bloom on new wood and include plants like panicle hydrangeas, Rose of Sharon and Butterfly Bush. Knowing bloom times is important because trimming a shrub at the incorrect time will result in no flowers for that season. An example would be trimming a lilac in the fall, which will result in removal of flowers for the spring.

Harder and Warner recommends that any tree or shrub that blooms before June be pruned after it blossoms, but before the end of July. Any tree that blooms after June, prune them late winter to early spring. A safe rule of thumb is always prune flowering shrubs after they are done blooming because then future blossoms will not be removed. Shrubs that do not have a significant flower may be trimmed at any time and as often as needed with the exception of the month of September.

It is important to know how to prune shrubs. First analyze each individual shrub in its environment. Look at how it is growing. Some shrubs will grow tall and wide and others will stay low, but wide. If the shrubs are not getting in the way of sidewalks or other plants or out growing their boundaries, then no pruning is needed, but may be desired to alter its look.

The 4 D's: The First Pruning Cuts

The first pruning cuts should remove any of the 4 D's: Dead, Damaged, Diseased, or Disorderly.

Dead branches are easy to spot, they either have no leaves or their leaves/needles have turned brown. Remove dead branches back to a healthy bud or crotch branch with a clean cut.

Broken or cracked branches may have occurred from animals, snow/ice or by human activity. Remove damaged parts back to a healthy bud or crotch branch with a clean cut.

Diseased growth is a little tougher to spot. Closely look at branches for abnormal color or size of the leaves. Also, look for abnormal growth on the stems. If present remove diseased growth several inches below the first healthy growth. This will ensure all of the diseased tissue is removed. After removing diseased growth, discard branches in the garbage or burn to make sure the disease does not spread through the garden. Also, disinfect pruners in between each cut and when finished pruning disinfect pruners with a bleach water mix or with Lysol.

Branches can grow out of control and become disorderly sometimes. This growth is completely disproportionate with the rest of the plant. Examples of this are straight long branches coming out of the top of the shrub or a branch that is growing much faster than the rest. This growth should be removed approximately one third of the way into the shrubs canopy all the way or at the ground. This will redirect energy throughout the shrub.

Branches that have different looking leaves coming from the shrub are known as mutations. Mutations should be removed all the way to the ground or to the originating branch from where the growth is natural.

Size & Shape: The Second Pruning Cuts

After the 4 D's are taken care of, the next step is pruning for shape and size. Pruning for shape and size can be broken into two categories, slow growers or dwarfs (less than 1.5 feet of growth a year) and fast growers (1.5 feet or more of new growth a year).

Dwarf plants are a lot easier to maintain, but do require yearly trimming to stay looking good. Until plants reach their desired size, as needed, lightly prune the outside of the canopy to keep it even. Not only will this keep them neat, it will also cause them to thicken up as they grow. This happens on most shrubs because every time a branch is cut, 2 to 3 new buds break open creating 2 to 3 new branches with leaves. Once dwarf shrubs have reached the desired size prune them at least once a year to a size of 3 to 12 inches smaller than the desired size. The amount of pruning will vary depending on individual growth rate of each shrub.

Faster growing shrubs will be pruned more , slower growing shrubs less. Pruning fast growing shrubs is the same principle as slow growing shrubs with exception of how much is removed at each pruning. Until fast growing shrubs have reached their desired height, prune them the same way as discussed for slow growing shrubs.

After large growing shrubs have surpassed the desired size, Harder and Warner recommends that they be pruned as needed to approximately 1 to 2 feet below the desired height. This may require multiple pruning's throughout the year to achieve the right look. Be careful of the timing as discussed earlier with flower buds. It is okay to allow large shrubs to grow without trimming, but many landscapes do not have the space or it may not have been the intent of the original landscape design. Be careful before letting them grow wild.

Every 2 to 3 years, Harder and Warner recommends a rejuvenation cut on larger shrubs. This is pruning back twice as much as normal. An example would be cutting back 12 inches rather than the normal 6 inches done every year. Rejuvenation pruning helps to eliminate all of the growth occurring only at the canopy and will increase light penetration into the shrub and encourage new growth. If rejuvenation pruning is started when the shrubs are young, aesthetics of the shrub will not be lost, but if done to an older shrub for the first time the look of the shrub will be drastically altered.

Pruning Perennials

Herbaceous perennials are the plants in the garden that start in early spring boldly emerging from the soil. They completely rebuild all of their above ground structure each year producing new stems, leaves and flowers. This is possible because their roots remain alive and contain stored food. In the spring when ground temperatures become favorable, the plants use that stored food to break buds on the root system and start its seasonal growth. Throughout the season the plants will produce more food through photosynthesis and use its energy for flowering and reproduction. As temperatures start to fall the perennials will pull nutrients from the leaves and store them in their roots as they die back to the ground.

There are five reasons to prune perennials. They are deadheading, cleaning up, controlling for size, cutting back for winter, and dividing roots. Not all perennials will need all five pruning techniques but these descriptions will help tell what to look for and when each is needed.

Deadheading

Sometime during the season most of perennials will produce a beautiful flower. The sole purpose of flowers is for reproduction. Once a flower is pollinated the plant will change from producing flower to developing seeds. Deadheading serves two purposes. One purpose is removing pollinated flowers so the plant will produce more. The second purpose is to keep plants looking nice by getting rid of old, brown, dead flower parts. Deadheading is done once the flower petals start to turn brown. Remove the old blossom with hand pruners or with the thumb and forefinger by pinching and twisting. Remove the old flower and stem down to the next flower stem or bud.

Clean-Up Pruning

After the perennials have finished blooming and the blossoms faded away all that is left is the plant's green leaves. As the season progresses the leaves can turn yellow and start to look leggy and ratty. This is when clean-up pruning should be performed. Clean-up pruning is only done after the perennials are finished blooming otherwise flowers buds will be removed. Perform a clean-up prune with hand pruners or hedge shears and remove 1/3 to 1/2 of the plant. This will remove any leggy growth that has occurred and most of the yellow leaves. Depending on the timing and plant species more flowers and leaves may be produced. Clean-up prunes are used to make perennials look clean and neat late into the year.

Controlling for Size

Some perennials can grow quickly and outgrow their boundary. Dividing may be required to control their size (discussed later in this section). It may be wise to change the large and out-of-control perennials to a different species that may stay smaller longer. This is an easy way to keep them within their boundary. Perform this pruning technique after the majority of the flowers have bloomed and before the perennials get too large. The more of the perennial that is pruned at one time, the worse it will look after pruning. Prune perennials evenly, not just in one area if needed. After pruning, perennials will keep growing. Perform controlling-for-size pruning as needed. Use hedge sheers for this technique and remove as much foliage as needed keeping in mind the plants regrowth after pruning.

Cutting Back for Winter

Herbaceous perennials are the plants in the garden that start in early spring boldly emerging from the soil. They completely rebuild all of their above ground structure each year producing new stems, leaves and flowers. This is possible because their roots remain alive and contain stored food. In the spring when ground temperatures become favorable, the plants use that stored food to break buds on the root system and start its seasonal growth. Throughout the season the plants will produce more food through photosynthesis and use its energy for flowering and reproduction. As temperatures start to fall the perennials will pull nutrients from the leaves and store them in their roots as they die back to the ground.

Root Division for Perennials

Root division is not a conventional pruning technique but it is a very important practice in the garden. Sometimes perennials get way too big for their space or they can start flowering poorly. These are reasons to do root divisions (divide perennials). Dividing perennials is best done in the spring before growth, but many species can tolerate dividing throughout the year. Root division should be done with a spade or shovel. Dig around the perennial being divided by stabbing a shovel into the ground and wiggling back and forth all the way around the plant. The majority of the plants root system should be included inside the circle. Remove the perennial from the ground and shave loose soil from around the edges. Depending on size, divide the root ball into multiple sections. A strong section of root is required to successfully divide a perennial. Once divided, take one section and replant it in the original location with new soil. The other sections can be replanted throughout the garden, given to family or friends, or composted into garden soils.

Pruning perennials is very important in the garden and some perennials will need more and different pruning than others, so keep an eye on the garden and remember that practice makes perfect.

Pruning Ornamental Grasses

With all the unique characteristics of ornamental grasses, they have grown in popularity in gardens over the past few decades. Ornamental grasses provide clean lines, elegant movement, fast growth, and winter interest within landscapes. This makes them a valuable tool in landscape design unlike any other plants. There is also a wide diversity of different grass species and cultivars that range in characteristics. This gives the ability to fit ornamental grasses along with all their benefits into any landscape. When ornamental grasses are used in the landscape, it is important to know how to take care of them properly.

Understanding the yearly life cycle of how grasses grow throughout the year is important. Just like the other perennial flowers in the garden, ornamental grasses also go through dormancy in the fall. As soil temperatures drop into the 50's ornamental grasses stop growing and turn a golden brown hue. At this point the leaves (but not the roots) are lifeless and will not return to green. Throughout the winter, the grasses will stay dormant until the soil reaches a favorable temperature. At this point, the leaves will break from the crown and start growing to their maximum height. In most cases, if conditions are favorable ornamental grasses will flower with their wheat style blossom before slipping back into winter dormancy.

Ornamental grasses can be divided into two categories: cool season grasses and warm season grasses. Cool season grasses will emerge from the soil at a colder temperature, much sooner than warm season grasses. Cool season grasses will also bloom before mid-summer where warm season grasses will require more heat and bloom after mid-summer. It is important to know that not all of grasses will emerge at the same time or act alike.

When should grasses be cut down? This is a great question that doesn't have a black and white answer.

One of the benefits of leaving grasses uncut through the winter includes temperature buffering. Research has proven that leaving the grass uncut helps to protect the plant crown from injury due to extremely cold winter. Another benefit of leaving grasses uncut through the winter is aesthetics. It is important to keep interest in the garden through the winter months, and many grasses will do just that.

Cutting grasses down in the fall also has its advantages. It is convenient. Gardening work can be completed all at the same time. Gardens will look clean and neat. Some grasses get so large that snow weighs them down and they can look bad. Another advantage to cutting grasses in the fall is that it is easier. Small grasses can get saturated and flatten to the ground in the winter making it harder to clean in the spring. Some grasses will reseed into the garden so trimming in the fall reduces the seeds released into the garden.

Determining When to Trim

Taking all of the advantages into consideration between fall and early spring, Harder and Warner has come up with a few recommendations for trimming grasses. These may be altered based on the situation.

Small Grasses Less Than 2.5 Feet Tall: Since these grasses do not provide much winter interest and they will most likely be flattened to the ground from winter, cut them back in the late fall to early winter.

Medium Grasses 3 to 5.5 Feet Tall: These grasses are normally the most resistant to snow and ice. Leave them uncut throughout the winter for the beauty they provide and cut them back in the late winter to early spring before they start to grow.

Large Grasses Over 6 Feet Tall: These grasses will most likely get overwhelmed with snow and ice throughout the winter, diminishing their looks as spring approaches. On the other hand, these grasses also have the biggest wow factor if they are standing tall through the winter. There are two options for this size of grass.

The first option is for convenience, less focused on aesthetics and winter protection. Cut them down to the ground in the late fall or early winter when trimming the rest of the perennials in the landscape. The second option will take more work, but will be more rewarding throughout the long and dreary winter. If nothing is done, larger grasses will be destroyed by snow and ice.

Maintaining Winter Grasses

If grasses are left uncut for the winter, it is recommended to tie biodegradable ropes around them to keep them from falling to the ground. Ropes should be wrapped around the grass two times before being tied tightly. The taller the grass, the more sections of rope that will be needed. Start with the first rope being tied 2 feet up from the ground. Tie a new rope around the grass in intervals of two feet with the last rope being at 2/3rds the height of the grass. Going any higher will decrease the aesthetics of the grass through the winter. Example for a nine foot tall grass, tie a rope around the grass at 2, 4, and 6 feet from the ground.

Helpful Tips for Cutting Grasses in the Fall or Spring

Harder and Warner recommends that a biodegradable rope be tied tightly around each grass plant before cutting occurs. Doing this greatly reduces cleanup time, helps to make clean and even cuts, and is a lot safer because visibility is not blocked when cutting.

Small Grasses Less Than 2.5 Feet Tall: Cut evenly 2 inches above the ground.

Medium Grasses 3 to 5.5 Feet Tall: Cut evenly 2 - 4 inches above the ground.

Large Grasses Over 6 Feet Tall: Cut evenly 4 - 8 inches above the ground.

If grass plants are small, use hand pruners. As grasses grow larger use a pruning saw or power trimmers to make the job easier.

If cutting grasses in the spring it is very important to do so before new growth starts. Failure to do so can result in ringing out. Ringing out is when the center of the grass dies and only the outside edge (a ring) begins to grow. This is mainly due to lack of sunlight because the old grass blades have not been properly removed.

Dividing Grasses

There are many signs that will indicate when it is time to divide grasses. The first sign is that the grass will grow too wide. Healthy grasses keep getting wider and wider and may outgrow their boundaries, getting too close to walkways, structures, or other plants. If this happens the grasses will need to be divided to a smaller size. Changing out the grass for a smaller variety may be a better option for controlling the size of the grass. Another reason to divide grasses is if the grass starts ringing out. As discussed earlier, dividing the grass is a good fix to resolve the ringing out problem. The final reason to divide grasses is if the overall health of the grass is deteriorating. Look for signs of spotty or uneven growth throughout the crown. Dividing the grass and replanting the healthy parts is the best way to rejuvenate the plant.

What time of year should grasses be divided?

With ornamental grasses, it is best to divide them in the mid to late spring after the leaves have emerged from the ground and the grass is actively growing. This will ensure proper root development. It is best not to divide ornamental grasses as temperatures get hot or after they bloom.

How should ornamental grasses be divided?

When dividing an ornamental grass, first dig completely around the clump with a shovel or spade. After this is finished, dig underneath the grass and pop it out of the ground. Once this is finished, cut the circular clump into an appropriate number of pie-shaped pieces. Each piece should be about 4 to 6 inches wide. Cut off the point or center section and discard. This part of the clump is the weakest and will not do the best if it is replanted. Once the clump is completely divided, replant the healthiest section back into the hole with new soil and mulch. All of the other healthy sections can be relocated throughout the garden or gifted to friends.

GROUND COVER CARE

An established ground cover can create a beautiful carpet in the garden and eliminate the need for mulch while suppressing weeds. In the early establishment of ground covers, extra care should be given to accelerate its growth. Lightly fertilize the groundcover once a month during the growing season for the first 2 to 2 ½ years (*see plant fertilization section for more information)*. Remove all weeds within the groundcover beds, quickly. Pulling weeds that have grown large can damage the surrounding root systems of young groundcover plants. It is never a good idea to use general weed killer within the groundcover beds. Never heavily mulch groundcover beds because this will greatly slow down the growth and drastically increase the time it will take for the ground cover to fully establish. Only a light application of mulch is needed.

In most cases, groundcovers never want to be constantly wet. They prefer to have their soil moist but not saturated. Adjust watering as needed. In heavy or clay soils, groundcover should only be watered 1 to 2 times per week. In sandy soils, groundcover should be watered 2 to 3 times per week. Improper watering is the biggest cause for groundcover failure. Groundcovers that get too much or not enough water become weak and have a much higher chance to be attacked by insects or diseases.

Most groundcovers are evergreens. This means they do not need to be cut down for the winter. They will start growing again in the spring and continue to spread. Of course there is an exception to everything and the same is true with groundcovers. There are several groundcovers used in the landscape that are not evergreen. This means they will need to be cut back to the ground in late fall. An easy rule of thumb that Harder and Warner came up with is "If it turns brown, cut it down". When herbaceous groundcovers turn brown, they will never turn back to green. Cut these groundcovers back to a few inches above the ground.

Groundcovers spread. Sometimes they can become aggressive and can over grow their boundary. For natural landscape settings, leave the groundcover alone to fill up all spaces and possibly remove grass or other plantings to give the groundcover more room. For formal settings, the groundcover should be stopped from invading surrounding areas. The best way to do this is with a shovel or a spade. Remove the groundcover that has overgrown the boundary along with 8 to 10 inches of soil underneath it. This removes the groundcover roots along with the above ground structure. Dispose of the soil off-site and replace the removed soil with new soil or sand and 4 inches of mulch. Repeat this process as needed. Maintenance is the best approach because it is very easy to fix this problem when it is found early, but very difficult if it has been let go for too long.

Another big problem is grass growing in the groundcover. If discovered early this can easily be removed by hand or with a shovel. The root must be removed or it will come back. If not discovered early, there are some great chemicals that will only kill the grass and not affect the groundcover. These chemicals are not as effective as general purpose weed killer so be persistent and spray the grassy weeds every 1.5 to 2 weeks. With the proper maintenance groundcovers will look great in the landscape, but neglected they can be a nightmare.

PLANT BED MAINTENANCE & BARK MULCHING

Without proper maintenance, it is impossible to keep the landscaping looking great. The fresh look of a newly mulched bed in the spring is what everyone desires, but turf grass from the lawn starts to invade the bed lines and new weed seeds blow in from the top and start to grow. To prevent things from getting out of hand, preventative and post maintenance is required.

In the spring, the most important step is to re-mulch the landscape beds. Bark mulch provides many benefits like weed suppression, temperature moderation around plants, prevents evaporation of water from the soil, helps improve the soil conditions and increases the overall aesthetics of the landscape. Before mulching is started, there are several steps to follow.

First, remove all weeds and unwanted vegetation from within the landscape beds. It is important to remove the roots of the unwanted plants along with their leaves or the plants will regrow in a few short weeks. To do this, grab the weed as close to the ground as possible and wiggle back and forth while pulling up. A small shovel may be needed to ensure all of the roots have been removed.

Second, edge the beds. This redefines all of the boundaries, provides space for the new mulch to fill, and helps to slow the grass invading from the lawn. To properly edge the beds, first use a spade to cut 3 to 4 inches down creating a nice flowing line all the way along the bed's perimeter. Create a trough by removing 4 to 12 inches of the soil from the inside of the bed's edge. This will create a gap for the mulch to fill with a clean line.

If aluminum edging surrounds the landscape bed, there is no need to enlarge the bed size due to plant growth, just follow the inside edge of the aluminum edging with a spade. This is also the best time to make sure the edging is adjusted properly. Throughout the year different weather conditions combine with different soil types, human traffic and small critters can cause edging to sink in or to push out of the ground. This can cause landscape beds to look unkempt, can damage lawn mower blades, can create a safety concern and can completely eliminate the bed-defining benefits of the edging. The top of the edging should be flush with the soil but no more than one inch above the soil level. This will give the most benefits of the aluminum edging.

Third, it is recommended that a pre-emergent weed preventer be applied. These chemicals work by preventing new seeds from growing into weeds. They will only affect the weed seeds, not weeds that are already established. There are many different pre-emergent products, be sure to read the products label and apply it accordingly.

Now mulching may begin. When it comes to mulch, there are many options, such as hardwood mulch, an economical mulch composed of bark and wood shavings. Hardwood mulch may consist of extremely fine to course particles. The finer the particle, the faster it will decompose and break down. Hardwood mulch can fade to a light color throughout the season, but can be restored by lightly ruffing it up with a steel rake.

Another mulch option would be colored enhanced mulch. These mulches are available in many colors from chocolate brown to bright red color. This mulch is generally produced from chipped up wood pallets and then dyed with an environmentally safe color. When applying colored enhanced mulch, it is important to know that the color dye needs to dry

Avoid installing mulch before heavy or persistent rain or the color may wash away turning it to a white wood color. If this occurs the solution is to simply ruff it up with a steel rake, or reapply a very thin layer over the areas. Colored dye may also be purchased and sprayed over the surface of the existing mulch with a pump sprayer. When it dries it will look brand new.

Cedar mulch is another option and is made of cedar tree shavings. Cedar trees naturally have resistance to many fungi and insects which slow their decay. Cedar mulch also has a wonderful fragrance that is present for days after applying. Cedar mulch tends to have a light color with slight warm brown tones. In moist environments it will decompose similar to other mulches but if it stays dryer and in a sunny location cedar mulch will decompose slower and fade less than other mulches. There are many other types of mulch available today and when applying other mulches further research should be done.

When maintaining the bark mulches specified in this book it is recommended to have approximately a 2 to 3 inch depth of bark mulch throughout the landscape beds. This will provide all of the benefits mentioned earlier. Depending on the past year and the remaining mulch cover, on average, only one to two inches of new mulch will need to be applied each year. For reference, one cubic yard of mulch will cover 324 square feet (18'x18') at one inch deep and 162 square feet (12.75'x12.75') at two inches in deep.

Apply the mulch evenly making sure not to pile any mulch in contact with tree trunks or shrub stems. Also, avoid covering perennials with mulch when possible. This could trap moisture within the crown and encourage fungal growth.

When finished spreading the mulch, use a leaf rake to finely smooth out the bed. This is the end of the hard work for the year. Quick routine maintenance is all it will take to keep the landscape beds looking good. Harder and Warner recommends that one time every three weeks, all weeds and invading grasses be removed. This can be done in two ways, one by pulling them as discussed earlier, or two, by spraying them with a non-selective weed killer as described in the Helpful Tools Section under Pump Sprayer.

Keeping up on weed prevention is very important. Weeds are easier to kill at a young age and less disturbing to the overall look of the landscape. Also, less time will be spent doing maintenance. As they grow larger they become overwhelming and completely ruin the overall look of the landscape. Mushrooms or other types of surface fungi may present themselves on the mulch. This is more prevalent during wet years or can be a sign of over watering. During plant establishment they may be more prevalent around individual plants. The vast majorities of these fungi are harmless to the plants and are only feeding on the wood of the mulch. If mushrooms appear, check how wet the soil is and adjust watering accordingly. Remember plants do not like to be constantly wet. When fungi are found in landscape beds the best thing to do is to knock them over with a steel rake and ruff the mulch up lightly. Doing this in combination with proper watering will reduce its severity and keep landscape beds looking good. Do not worry, in nature there is fungus all amongst.

PEST MANAGEMENT

Pests will happen within the landscape. Pests like to consume the beauty of the plants for food. Harder and Warner wants to stress that not all insects are bad, and if there are only a few bad insects present in the landscape at one time, that is not bad either. There are many beneficial insects around the garden. They keep unwanted pests in balance by consuming them. Some beneficial insects will use the unwanted insects to rear their young. **Before insecticides are used, be sure there is a true pest that is out of control and intolerable.**

The first step in pest management is scouting. When looking at a garden with a pest problem there are three signs that will help determine what is happening.

The first sign is the presence of a harmful insect. This is the easiest diagnostic method because research can be done and speaking with a professional based on its appearance and progress will help determine a suitable solution if its damage is unacceptable. A lot of insects are mobile and may not be present when looking for them.

The second sign to look for is the damage they are creating. This would be plant parts that are being affected. The plant parts may be wilted, chewed on, or discolored. Different insects have different mouth parts and feeding styles and identifying which type of feeding damage it is helps narrow down which pest it is.

The final sign to look for is anything the pest may leave behind. This is most often excrement. This will often have a distinctive look to each pest.

The final puzzle piece is the plant species that is being attacked. Most insects are host specific and will only feed on one or a few different plants. With all or as much of this information as possible, a diagnostic of the pest should be easy with a little research and that will determine management practices.

After the specific pest has been determined, the next step should be to see if it is tolerable at its current level of damage and population. Beneficial insects or birds can surprisingly fix some pest out breaks quickly and so can a hard rain or frost. If the pest is not bad, let it go a while, but keep a close eye on the problem so it does not get out of control. If it is determined that the pest needs to be controlled, first look to cultural practices like removing the pest by hand or if the population is localized to one part of the plant, cut it off and discard it in the trash or burry it. If the pest is only attacking the new growth, consider pruning that off. If all else fails, it is time to take action with pesticides. To save the plants, make sure through research the right product has been selected and is applied it at the right time and rate. When selecting a pesticide, pick ones that will kill the pest only by ingestion and pesticide has a short residual (fast decay rate). This way the beneficial insects will not be harmed and the plants will be protected.

NECESSARY & HELPFUL TOOLS

Just as mechanics need wrenches and doctors need stethoscopes, gardeners must have tools to make gardening easier. Harder and Warner has put together a list of 10 must-have garden tools.

Protective equipment: Eyewear, Leather gloves, etc.

A lot of plants have thorns, needles, and freshly pruned branches that are sharp. Also, biting and stinging insects can ruin a peaceful day in the garden. Always wear a good pair of gloves and protective eyewear. This will keep the body and eyes from pokes and scrapes.

Hand Pruners: Hand Pruners are used to cut small branches on trees, shrubs, and perennials. This tool is one of the most beneficial. It is used for many tasks including, deadheading flowers on shrubs and perennials, removing damaged vegetation and removing any undesirable plant parts as desired for optimal plant growth.

Loppers: This tool is used for trimming large branches on shrubs and trees. oppers pick up where hand pruners fall short because of their small size. They can easily cut branches from half inch in diameter up to one and a half inches in diameter. If the branch is too large for loppers, then a pruning saw will be needed.

Hedge Sheers: This tool is also used for pruning, but in a different way. Where hand pruners and loppers are used for specific braches with each cut, hedge sheers are used to remove a lot of small branches to a desired height all at once giving shrubs a specific size or shape. They are also used to cut back perennials for rejuvenation or for clean up at the end of the year.

Pump Sprayers: This tool consists of a small tank used to mix and hold liquids, a handle, hand pump, hose, wand a spray nozzle. Pump sprayers are designed to be small and mobile while having the capability to apply it's liquid payload to a specific target. Pump sprayers are great in the yard for spaying a wide variety of weeds in garden beds, spraying broad leaf weeds in the lawn, or to spray harmful insects on shrubs. It is very important that the sprayers are clearly labeled with their contents. It is recommended to dedicate one sprayer for each specific task. Harder and Warner recommends to have three separate sprayers, one solely for non-selective weed killers. This sprayer should only be sprayed on undesirable weeds. Be very careful when spraying around other plants, never use it on windy or hot days and use a course spray because fine mists can easily drift and kill the plants it comes in contact with within the garden or lawn. The second sprayer should only be used for lawn approved weed killers or broad leaf weed killers. These are products that do not affect turf grass, but will kill weeds within lawns. These products will also kill shrubs and perennials it comes in contact with, so take care when using these products. Never use them on a windy or hot day and use a course spray not a fine mist. The third must-have sprayer is for spraying trees, shrubs, and perennials for pests with insecticides or repellents. Only use products in this sprayer that are safe to be applied directly on the plants. It is very important to have separate sprayers and label them clearly. Not doing this could lead to damage or death of plants. It is also important to read all of the instructions on any chemical before application. The instructions will provide vital information like personal protective equipment, application rate, and what to do in case of an emergency. The label is the law so take the time to read.

Shovel/Spade: Digging tools are the backbone to installing landscapes. They still play a huge role in maintaining the landscape as well. Use these tools for tasks like edging the beds before spring mulch, dividing overgrown perennials, preparing annual beds, addition of new plants, and for the removal of unwanted or dying plants.

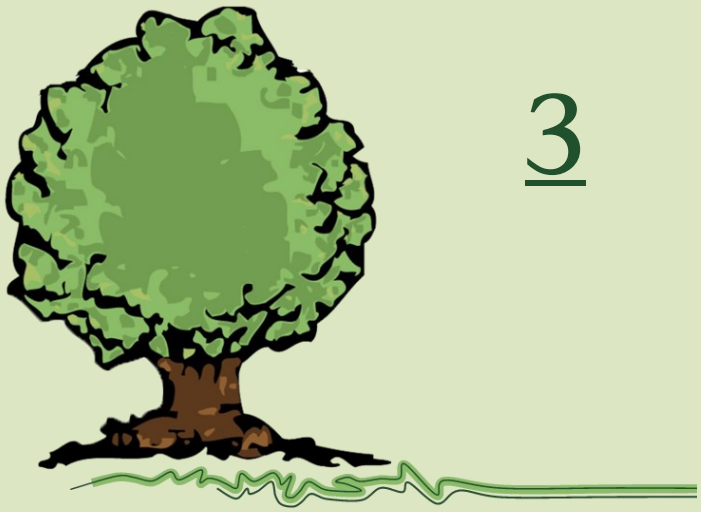
Rakes: Steel Rakes and Leaf Rakes: These tools are used for detailing and clean up and are a must to keep everything neat and clean. Gently use a leaf rake after pruning shrubs. This will remove the cut branches from on top of the shrub before they turn brown and unsightly. It can also be used to remove leaves from on top of the mulch and around plants as needed. Steel rakes are used to groom out heavier materials such as larger branches, unwanted fruit from messy trees and to move mulches and soils that may get misplaced from dogs, rodents or human activity.

Garden Hose: This may sound like a no brainer, but it is important not to underestimate the importance of a high quality and reliable hose. They help to effortlessly complete all types of tasks like watering plants, filling sprayers, cleaning sidewalks, and can also be used as a visual guide on the ground to help envision a new bed outline.

Soil Probe: This small tool gives the ability to neatly remove a small sample of soil from the root zone of the plants. This is so important in the landscape because the majority of problems start underground with growing conditions, being too dry or too wet. The way a soil probe is used is first the top two inches of soil is cleared from the sampling area. This removes any obstructions that may impede the probes path. Then the narrow end is eased into the ground 10 to 14 inches. After reaching this depth, the probes (T) handle should be turned one rotation before extracting it from the ground. Pull the soil sample out of the probe and squeeze it between the fingers and thumb. If it breaks up to a fine dust or powder it is way to dry. If water droplets are able to be squeezed out, it is way too wet. The soil should feel moist and loosely hold together. If it proves impossible to insert the probe into the ground, chances are the ground is way to dry. On the other hand, if the probe comes out of the ground and it makes a "slurp" sound, the ground is way too wet. Adjust watering practices accordingly.

Magnifying Glass: This under used gem in the toolbox is a must for exploring the things that harm the plants. Viewing insects or disorders in a larger size gives a ton of clear information that can in turn be used to diagnose problems on the internet. The newly found information can also be used while speaking with a professional. This tool will speed up the timeline to diagnose problems, help with misdiagnosing problems and may help to save beneficial insects from unnecessarily sprayed insecticides if they are present.

All these tools are vital in the landscape and if used properly will save a ton of time and make the landscape look great with less effort.



3

HARDSCAPING MAINTENANCE

From homes to sidewalks, concrete is everywhere and the landscape is no exception. Concrete provides landscapes with a reliable, hard surface for walkways, patios and driveways. There are also a lot of options, when installing concrete. Concrete can be colored, stamped, and have exposed aggregate added to it, all giving the concrete a unique look.

When it comes to concrete, one thing is certain. It can crack! Score joints are put into concrete to help control where cracking happens, but due to weather conditions and shifting soils, there is no guarantee that a crack will not appear outside of the joints, ruining the aesthetics. Hairline cracks will not ruin the integrity of the concrete, but any crack that opens wide enough to fit a nickel inside should be immediately patched within the months of May through September so further damage does not occur during freezing temperatures.

Frequent inspections of the concrete perimeter should be done. Animals like chipmunks, mice and moles, woodchucks and dogs can dig around and under the concrete. Then, over time, as weather and gravity go to work, it will cause settling and large cracks. All animal damage should be immediately filled in with compactable aggregate or concrete. This will minimalize or eliminate further damage.

De-icers / Salt

De-icers or salt should never be used on concrete less than one year old unless there is a serious safety concern.

Even road salt dripping off cars will be damaging to the new concrete. These products cause a reaction within the new concrete and will cause surface pitting. Pitting is when small to large pieces of concrete flake off the surface. Deicers will greatly reduce the look and longevity of the new concrete. If deicing is necessary, Harder and Warner highly recommends using a salt repelling sealer before the first winter.

Sealers

From the instant colored concrete is installed, the sun's rays will start fading the color. This is why sealing colored concrete is so important. Harder and Warner recommends that sealing be done on all colored, stamped, and exposed aggregate concrete for the best look and longevity. Different sealers will alter the look of the concrete. There are high gloss (color enriched) sealers, medium gloss sealers and matte (natural look) sealers, it is important to choose the appropriate look.

Heavy duty masonry cleaner should be used before sealing the concrete. This will remove oils, algae's, mildew, and remaining sealers. Next, rinse the surface to remove the entire cleaner. Allow the concrete to completely dry before applying the sealer. Per instructions, colored, stamped, and exposed aggregate concretes should be sealed every 2 to 4 years, depending on wear patterns.

Over time, all concrete starts to look dingy, especially on the North side of the home or in areas of heavy shade. To prevent this and to keep it looking great, cleaning the surface should be done as needed. Power Washers can be a great tool, but if the pressure is too great or the nozzle is held too close to the surface, the concrete can be damaged. Using a gentle masonry cleaner and a scrub brush and then rinsing with a hose and water regularly will keep the concrete looking fresh. This procedure is also recommended for colored, stamped, and exposed aggregate between sealing.

PAVER & BRICK CARE

When it comes to walkways, patios, and driveways, it doesn't get much better than using pavers. Pavers provide a high end quality look that can elevate any outdoor space into a bold statement! With all of the beauty from using pavers, it is important to know how to maintain them properly. There are many problems and challenges when it comes to pavers. They include routine cleaning, fading colors, red wine or leaf stains, settling edges, the digging of animals around the paver or ants living within them, or moving of the jointing sand due to heavy rainfall. With this long list of concerns, it is important to know the proper maintenance. Frequent inspections can eliminate or greatly reduce all of them.

From the day the pavers are installed, the sun is degrading the color. Using a sealer is the key to prevent this. Different sealers will alter the look of the pavers. There are high gloss (color enriching) sealers, medium gloss sealers, and matte (natural sealers). High gloss sealers bring out the color the most, giving a wet look and the natural sealers will alter the pavers' appearance very little. It is important to choose the appropriate look.

A masonry cleaner should be used to remove the oils, algae's, mildew, dirt and remaining sealers before sealing the pavers. Rinse the surface to remove the cleaner and let the surface dry completely. At this point joining sand should be added to any low areas between the pavers. After this is done, make sure the surface is clean of any excess jointing sand and then apply the sealer per instructions.

NOTE: New pavers should never be sealed within the first six months after installation. This can trap in efflorescence ruining the appearance. Pavers should be sealed every 2 - 4 years depending on the sealer and normal wear and tear.

Cleaning

Between sealings, pavers can start to look dirty or dingy especially in areas of heavy shade. When this happens, the pavers should be cleaned. A power washer can be a great tool for this but if the pressure is too great or if it is held too close, it may damage the pavers or remove the jointing sand. Harder and Warner recommends using a gentle masonry cleaner and a scrub brush. Gently rinse with water and a hose for that fresh look.

Sealing and routine cleanings with help preserve the color and prevent staining. It is important to frequently inspect the pavers for any unexpected changes. Animals have been known to dig around or under pavers causing then to settle ruining both function and appearance. If settling does occur, the pavers should be removed in the altered area. New aggregate paver base should be installed with proper compaction and the pavers should be reinstalled and sanded with joint sand. Repairing the damage as soon as possible is advised as it can quickly get out of control.

Jointing sand stabilizer should be used if weeds begin to grow, if ants become a problem, or rain begins to wash out the jointing sand. This product binds together the jointing sand making it very hard. If applied per the instructions, it will eliminate or greatly reduce all three disadvantages. Pavers are a beautiful accent to any landscape but require special care to better enjoy the time spent outdoors.

Outdoor kitchens serve as true centerpieces for outdoor living. They also provide the foundation for quality time and enjoyment with family and friends. With all these benefits from outdoor kitchens, it is important to remember that regular maintenance is a must to keep it all working and looking great. Below are helpful maintenance tips for outdoor kitchens.

Granite Counter Top Care

Darker granites are denser than white granites. This means they will hold up better against the Michigan elements and need less sealing. Light granites should be sealed every 2 years where darker granites should be sealed every 3 to 4 years.

Granites need to be sealed with a high quality outdoor sealer (such as Drytreat, Stain Proof, or equivalent). For cleaning use a simple soap and water solution as needed. A granite polish spray can also be used. For darker granite the polish spray will help with water spots because most sprays will have a sealing property.

Grills, Appliances, and Cabinetry

In spring before use, polish and wipe down all stainless steel with a high quality stainless steel polish using a soft rag. Continue to clean stainless steel as needed throughout the year.

Grills in the spring need to be plugged in or have new batteries installed if required. Turn on the gas and test the grill for ignition. When the grill is not in use, cover it to extend the life of the unit. After the last use of the season, turn off the gas and unplug or remove the batteries from the unit. Remove and store accessories, such as a rotisserie, inside a clean dry space and then cover the grill for the winter.

Cabinets and drawers should have everything removed from them for the winter (cabinets and drawers are not weather tight unless specified).

Refrigerators should be wiped down and polished on the outside in the spring with a high quality stainless steel polish and a soft rag. Continue to clean throughout the year as needed. The inside should be disinfected, cleaned and dried in the spring before plugging it in. In the fall, as average day temperatures drop below 45 degrees, the refrigerator should be emptied, unplugged, cleaned, completely dried, and closed up for the winter. If possible, it is highly recommended that refrigerators are removed and stored in a heated area for the winter unless otherwise noted. This will increase the life of the unit.

Grill Islands

Michigan winters are harsh and cold so any protection that can be provided is beneficial to keep out the elements. Harder and Warner recommends that the entire island be covered with a tarp and secured down from wind and movement.

Clean Water Lines

Bringing clean potable water to an outdoor kitchen provides tons of advantages ranging from easy access of drinking water to cleaning up messes before they are brought inside. Having this timesaver in an outdoor space does require seasonal maintenance to ensure everything functions properly. In the fall before temperatures drop below freezing, all water lines must be drained and gently blown dry with an air compressor. This also includes any appliances that use clean water too, like ice makers. Removing all of the water will eliminate any broken pipes due to water freezing in the winter. Seal any open pipes to ensure debris does not get into the water supply over the winter.

In the spring before hooking up the water, make sure to clean any connection points from the house to the supply pipe. This will remove any debris that may have accumulated at the valve so it does not get into the supply pipe. After cleaning the connection pipe, Harder and Warner recommends disinfecting the supply line. This is done by pouring a bleach-water solution into the supply water line with a funnel at the point of connection closest to the home. Use one cup of bleach per ten feet of water line. After adding the bleach, connect the supply line to the house water and open the valve a quarter of the way. Then slowly open the water faucet at the outdoor kitchen until water starts to flow out. Then immediately turn off the faucet and let it set for thirty minutes. After thirty minutes has passed turn the valve at the house on from one quarter to full and completely flush all pipes with clean water for as long as it takes to remove the bleach from the system. Do not forget to run any appliances that utilize the clean water as well. If necessary this disinfecting process can be repeated throughout the year.

RAISED FIRE FEATURES

The addition of fire into an outdoor living space is priceless. Fire features extend the time spent outside well into the night. People in general love to gather around a fire. Whether it is a gas or wood burning option, it is important to know how to take care of them.

Wood Burning

Wood burning fire pits get much hotter than gas burning pits. It is important to know that after a fire feature has been constructed, all concrete or masonry parts cannot be exposed to fire for 30 days because they contain large amounts of water as they cure. If these parts are exposed to high heat, the water will expand and can damage the fire feature or cause personal injury.

After 30 days, concrete products can still contain water. Harder and Warner recommend that wood fires start out small for the first 30 to 40 minutes and then be increased in size. Also, be aware of the size of the structure and build a fire in it appropriate to its size. It is never a good idea to have flames extending over the concrete or masonry edge. This will excessively heat up the concrete or masonry and may damage the material or result in personal injury.

Gas Burning

Nothing beats the convenience of a gas fire. There are many options when it comes to ignition. The most common is a manual igniter. To start this fire the key gas valve should be turned slightly only releasing a small amount of gas. Using a grill style lighter, a flame should be exposed to an area 6 - 12 inches inside the raised feature's cap. This will ignite the gas flame. After ignition, the key valve can be turned up to achieve the desired height of the flame.

There are many styles of automatic ignitions that are much easier to start a fire. They include a push of a button or the flip of a switch. The key valve will ultimately control the size of the flame no matter the style of igniter. Fire can only be present if gas is supplied to the burner. Harder and Warner recommends that when not in use, the key valve be off and in a secure location to ensure safety. When starting the flame, it is important to know that moisture will be in the medium surrounding the burner. Lava rock is a big culprit of this. If lava rock is heated up too fast, the water vaporizes causing the rocks to pop and explode. This can be startling as well as a safety hazard. For the first time lighting your new fire pit you must allow it to burn for 2 hours with no one around or until it stops popping. Normally this is only severe during the first time lighting your new pit. After that it will only happen sporadically. Once you have completed the initial lighting from here on you should warm up the pit each time you burn by lighting a small flame for 20 to 30 minutes. Then adjust the flame as desired.

Harder and Warner highly recommends covering the fire pit when not in use. A cover reduces moisture that can enter both the burner and medium surrounding the burner. It will also protect any advanced ignition systems from the elements. Using a cover will increase safety and increase the longevity of the fire pit.

The fire pit needs to be winterized at the end of the year. Turn off the gas valve that is connected to or inside the home. Turn the key valve all the way off. Turn off any electricity going to the fire pit. Also, remove any batteries that may be present before winter. The final step is to secure the cover and dream of the time the fire pit can be started again.

IRRIGATION SYSTEM

An irrigation system is the single best investment to help ensure the health of trees, plants, and lawns. It will save time and increase the enjoyment of the landscape. Too much or too little water can be very harmful to trees, shrubs, and lawns. For this reason, make sure that the irrigation system is set up properly at the control clock based on the time of year and weather conditions. Make sure that the system is functioning properly and that all sprinkler heads are adjusted to cover the proper areas. This all starts in the spring with turning on the irrigation.

The turn on starts by opening all water valves inside the home. This will supply water to the irrigation mainline. Harder and Warner recommends that a sprinkler zone be turned on at the clock timer and the water valve be opened very slowly until the mainline is full. This will minimize any damage. After the mainline is full, turn off the opened zone. Next, check the backflow preventer to make sure it is sealing properly and no water is flowing out of it. Then, walk through the yard and look for bubbling water. If water is seen bubbling up without the sprinklers running, this means the mainline is broken. Turn the water off at the backflow preventer until the mainline is repaired. If no water is seen, cycle through all irrigation zones at the clock timer, turning them on and off to ensure all the zones are working properly.

After completing this, run each zone to observe each head making sure they are turning on, turning properly, spraying the correct areas, and are not clogged with debris. Adjust all sprinklers to achieve proper coverage. After making sure the system is functioning properly, set all times appropriately based on the head water output, soil, site conditions, and the plant water needs for the time of year.

Harder and Warner recommends that watering be adjusted frequently and the durations on the click timer are altered a minimum of three times per year:

Spring: Adjust as temperatures start to rise and rainfall stops becoming sufficient.

Mid Summer: Adjust in mid-summer as rainfall decreases even more and temperatures rise to their highest points.

Early Fall: Adjust as temperatures begin to drop and rainfall starts to become more frequent.

Established plantings need to be watered less than grass. Grass may need to be watered every day or every other day while it is best to water plants once or twice a week. Throughout the year it is important to keep an eye on the lawn and plants for signs of too much or too little water. This could be as simple as adjusting the irrigation clock timer or could be a sign of something that is not functioning properly.

As the fall approaches and temperatures get close to the freezing mark, it is important to call Harder and Warner to schedule a winterization or to blow out the irrigation. This service is necessary to remove all water from the irrigation lines and to turn off the water supplying the mainline. During the irrigation blow out, an air compressor is attached to the mainline and all zones are turned on individually. This removes the water out of the pipes through the sprinkler heads so it does not freeze and cause damage to the system. It will be opened once again in the spring.

PLANTERS & POTS

A properly planted and cared for flower pot is a showpiece in the garden that others will envy. Here are some tips to help you make a flower statement.

Begin by filling the pots and planters with new soil in the spring. Using new soil has many benefits. The first is the soil fertility. The soil from previous years is robbed of all nutrients and becomes less productive because the previous year's plants deplete the soil. Another benefit is to prevent the freezing and cracking of ceramic and plastic pots and planters through the winter months. In the fall all of the soil should be removed from ceramic and plastic pots. This will make adding soil in the spring easier. Only thick concrete pots with wider tops that taper down smaller toward the bottom can be left filled with soil over the winter.

Large pots and planters do not need to be filled up all the way with soil. A filler can be put in the bottom to take up space, to save money, and to keep the pots lighter. A good thing to use would be Styrofoam insulation. Styrofoam insulation is closed cell so it will not take up water. It will also lay flat so the planting soil will not settle or sink into the cracks and crevasses. Be sure to have at least 12+ inches of adequate soil on top of the Styrofoam for root growth. If the pots are in a very sunny area, more soil is better. This will increase the water holding capacity and root development.

Planting the Pots: The Thriller, Spillers & Fillers

There is one trick to remember to produce a perfect pot every time. Within the pot there needs to be a Thriller, some Spillers, and some Fillers. If these three types of plants are used, then pot "Perfection" will have been reached. The Thriller plant is the centerpiece. It should grow the tallest, stand out and be a showstopper.

The Spillers are plants that grow out or down and spill over the edges of the pot. They should be planted around the outside edge giving fullness and tailing growth to the pots. There may be multiple varieties of spillers in the same pot. The Fillers give substance and color to the pot. They are planted around the Thriller, but should not exceed the height of the Thriller. There may be multiple varieties of Fillers in the same pot to give different color, fullness, and provide a stage for the thriller to pop out and shine.

Summer Care for the Pots

Fertilizing is very important. It is best to use a liquid fertilizer every watering, but this is difficult to do. Harder and Warner recommends a slow release fertilizer at the time of planting and once every month. This will be easier to do and will cause larger and more full flowers. Be careful when using these fertilizers because each one is different, be sure to read and follow the directions on the package.

Pinching, Deadheading, and Pruning

Pinching, deadheading and pruning should be able to be avoided with careful planning and planting. On a regular basis, there are a handful of plants that require a lot of deadheading such as marigolds, old petunia varieties, and zinnias. Newer petunia varieties are great and offer a lot of color with minimal to no deadheading. However, plants may become leggy and starting to fall over. Don't just pull it out. Give it one more chance by pinching it back. Take the thumb and forefinger, find a spot on the plants stem just above a healthy looking leaf and "pinch." By removing the top, this should produce a stronger, bushier plant in the weeks to come. If it does not work, the conditions may not be right for the plant. Remove it and replace it with a different variety.

Some Spillers may get aggressive and start growing on the ground. If this look is desired, then let the plant continue growing. If it is not the desired look then they may be trimmed back. Some spillers may be winter hardy and can be invasive in the landscape. Every year, be sure to remove any plant material in the fall to eliminate the risk of the plants becoming invasive.

Winter Color

It is nice to see some green during the drab winters and it is easy to accomplish. The pots should be emptied in the late fall and this is a perfect time to add some winter interest. The best way to incorporate winter interest to the pots is by filling up smaller pots with sand and stick the ever greens in them. Be creative at this point and use plenty of greens. Overfilling the pot will create a nice full look. Once the desired look is acquired, simply place it into the permanent flower pot. Some good evergreen cuttings to use would be; White Pine, Junipers, Arborvitae, Fir, Spruce, and Holly. To add some color and a little more uniqueness, add some branches such as; Red or Yellow Twig Dogwood, Snake/Corkscrew Willow, Birch, or some Inkberry. Sometimes a nice red bow around the pot adds the perfect finishing touch.

QUICK SPRING CHECK LIST

- Edge and clean up all landscape beds
- Trim any shrubs that bloom on new wood as needed
- Fertilize all shrubs, trees, and apply pre-emergent weed preventers to landscape beds
- Cut down all remaining perennials
- Mulch all landscape beds
- Apply crabgrass preventer fertilizer to lawns
- Schedule irrigation turn on

QUICK FALL CHECK LIST

- Cut back perennials
- Remove weeds and unwanted vegetation
- Apply winterizing fertilizer to lawn
- Schedule irrigation winterization
- Protect all necessary plants from deer, rabbits, and mice as needed

HARDER & WARNER

Landscapes & Boutique Gardens

THANKYOU!

Thank you so much for your time and attention! We know proper care and knowledge is the key to a successful garden and hope this book provides you with the information and confidence to get started, making your outdoor living space a more beautiful place.

On behalf of the Harder and Warner Team, thank you for everything!!

GLOSSARY

Aesthetics: The appreciation of nature through the visual sense.

Aggregate: A material or structure formed by a loose particles.

Backflow Preventative: A device that prevents water from flowing back through an irrigation system.

Crown of Plant: This is the part of the plant where the stem meets the roots. Usually found just below, right at, or just above the soil line.

Cultivar: A plant that has been produced through selective breeding to increase resistance to disease, produce a more aesthetically pleasing character, or to increase plant hardiness.

Efflorescence: An accumulation of minerals and salts on masonry surfaces.

Growing Point: The point of origin where the plant emerges from the ground.

Herbaceous Perennials: a plant that dies back to the ground every year, but will re-emerge the following year.

Irrigation Clock Timer: A device that keeps track of irrigations systems and the time and length they run each day.

Irrigation Mainline: The main pipe that supplies water to the entire irrigation system.

Irrigation Zone: This is a specific section of irrigation that runs multiple irrigation heads at one time. Usually a property has multiple irrigations zones.

Jointing Sand: A fine sand that is used between pavers to ensure pavers do not slide around.

Key Valve: A valve used in conjunction with gas burning fire pits that requires a special key in order to turn the gas on and off.

Mulch: A material used to cover bare soil around plants to aid in moisture retention and weed suppression. Usually consists of shredded bark.

Photosynthesis: The process plants use to convert sunlight into food and energy.

Root Ball: This refers to a Balled and Burlaped plant and is used to define the root structure and the surrounding soil.

GARDEN NOTES

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