

# Missouri Environment & Garden

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## Fall Recovery of Cool-Season Lawns

Home lawns have once again struggled through another hot summer however this year was much different with many areas of the state receiving excess rainfall with extreme heat for an extended period of time. Conditions were in place for turfgrass diseases to run wild with brown patch and pythium working on all cool-season grasses. Moist spring conditions were ideal for egg laying of several beetles (May/June and Chafers) that could lead to white grub issues; however we have not received many reports as of yet. Dry conditions have caused several lawns to go dormant from drought and many homeowners will not realize white grub damage until cooler, moist conditions bring back dormant lawns. Calls were numerous all summer on lawn diseases; however present weather conditions have prevented many turfgrass diseases to linger. When all is said and done, many lawns still have damage and will require some fall maintenance. It's time to think about some fall aeration followed by over-seeding and fertilization.

### Core Aeration

Core aeration is a practice of pulling soil plugs to open the soil surface for better air exchange and nutrient and water movement. It is a practice that also helps to reduce compaction and thatch by spreading soil plugs on the surface. Soil plugs are crumbled and fall freely into aeration holes as well as spreading some soil into the thatch layer where soil microbes can feed on thatch debris. Aeration is a practice that can be done in both spring and fall but is the very



Aeration plugs

best way to begin fall seeding and fertilization. Applications of fertilizer after aeration will move nutrients immediately into the root zone of your lawn. This practice has shown excellent results in the density and color of cool-season turfgrasses on their way to recovery from summer stresses. Spreading grass seed after aeration is also an excellent practice in lawns that have thinned considerably from summer pests.

Aeration equipment can be found at local rental stores or garden centers. Machines that pull a ½ inch diameter plug three to four inches deep on four inch centers do an excellent job. Machines that force hollow tines into the soil are better than pull-type drums with spoon tines. Not all machines will meet these specifications; however any amount of aeration is better than no aeration to kick-off fall maintenance.

When using aeration equipment as a tool for preparing a seedbed, shallow divots are only required (½ to 1 inch deep). Creating lots of divots with multiple passes is best. However, you may still want to make one pass 3 to 4 inches deep for reducing compaction.

A de-thatching machine or vertical slicer is also an

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excellent piece of equipment to prepare seedbeds prior to over-seeding. This equipment can also be rented and provides an excellent means of breaking up soil cores from aeration. This creates a perfect situation for dropping seed into a lawn, therefore improving seed/soil contact.

### Turfgrass Selection

Turfgrass selection is an important cultural practice in turfgrass management and can have a major impact on turf quality. A quality lawn containing the recommended mixtures of species or blends of turfgrass varieties can be a difficult process and decision. Selecting turfgrass species depends on how you manage your lawn and what you expect of your lawn. Grasses differ in adaptation, cultural requirements and performance. Managing a lawn requires decisions on frequency of mowing, a fertilizer program, and your choice on whether or not to water your lawn. Selections can also be based on existing environmental conditions (level of moisture, degree of sunlight, topography) and the purpose for which the grass will be used. The answers to these questions will help you decide which type of lawn you wish to establish.



A back yard lawn

### Species Selection

Blends (three to four varieties in equal portions) of turf-type tall fescues can give deep emerald green appearances with a slightly coarser texture than bluegrass. They tend

to be a deeper rooting plant, therefore requiring less water than a bluegrass lawn. Tall fescue blends are recommended for lawns that receive no irrigation. Tall fescues are not as susceptible to dollar spot and summer patch, but generally will require some fungicides for the control of brown patch disease. Several varieties of turf-type tall fescues offer superior resistance to brown patch and therefore will improve turf quality. Tall fescues will tiller to help with density, but tend to be clumpy with severe thinning. They also grow well in full sun to partial shade.

Mixtures, such as turf-type tall fescues (in a blend) with Kentucky bluegrasses (90 to 95 percent fescue with 5 to 10 percent bluegrass), combine the advantages or strengths of each species to mask the weaknesses of the other. This combination will work in irrigated and non-irrigated lawns. Grass seed mixtures with perennial ryegrass should not exceed 20 percent perennial ryegrass, as it is susceptible to many more diseases than fescue or blue-

grass and competes with fescue and bluegrass due to its fast germination. Ryegrass is not very heat or drought tolerant and does not recover from thinning of cover. Unfortunately, many seed mixtures and blends available to homeowners

at local garden centers contain large amounts of ryegrass (both annual and perennial) and fine-leaf fescues (creeping red fescues, hard fescues, etc.). Fine-leaf fescues have little tolerance for direct sunlight; however their use in shade mixtures is preferred.

So which varieties do you select once you decide on a blend or mixture to plant? Various resources provide recommendations for turfgrass varieties in Missouri. Garden centers, MU Extension publications, turfgrass specialists, and other lawn care experts are good sources for information about turfgrass selections. The difficulty for most individuals is to find the varieties suggested. We will discuss several options.

### Seed Tags

Grass seed bags have a seed label printed or pasted on the bag (usually the back panel). Several pieces of information on the label should be considered before purchasing seed. The seed tag will list the species (Kentucky bluegrass, tall fescue, perennial ryegrass, etc.), variety name (Kenblue, Abbey, Plantation, Crossfire II, Shining Star, etc.), purity (should be greater than 90 percent), germination (should be greater than 80 percent), weed seed content (percent), and testing date (should be 12 months or less). The species and variety name of the seed will tell you exactly what you're buying. As long as the purity and germination are acceptable, the next most important information to consider is the testing date. A current testing date less than one year old will assure the germination rate is viable.

### Specific Varieties, Blends and Mixtures Available

Countless seed products are being sold over-the-counter and can be overwhelming to homeowners. However, by looking at the seed tags of products, several can be eliminated immediately. These include products that contain large percentages of ryegrasses. Many of these seed products are packaged for national sales and while they are excellent products for many areas of the country,



A Ryan power rake

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they are not the best for the type of climate we deal with in Missouri. Concentrate more on the products that are tall fescue blends or tall fescue/Kentucky bluegrass mixtures. By doing this the selection becomes more narrow and simplified.

Individual varieties (from different vendors) of tall fescues can be found locally. By purchasing 3 or 4 varieties of equal amounts and combining these in a large bucket or clean trash can, you can create your own blend. By adding 5 or 10% of Kentucky bluegrass, by volume, you can create your own mixture. Some of the tall fescue varieties available locally include:

Turf-type Tall Fescue	
Variety	Vendor
Falcon II	Ace Hardware, MFA
Houndog V	MFA
Plantation	Lowe's
Rebel III	Lowe's
Rebel Exceda	Home Depot
Rembrandt	MFA

Several pre-packaged blends of tall fescue can also be found. These will generally have some of the better varieties acceptable for Missouri, but it still does not hurt to check those seed tags. These include:

Turf-type Tall Fescue	
Blends	Vendor
Revolution	Ace Hardware, Williams Lawn Seed
Winning Colors	Lebanon Turf, MFA
All-Pro	MFA
Pennington Ultimate Tall Fescue Blend	Lowe's, Wal-mart
The Rebels Blend	Lowe's, Wal-mart
Lesco Fescue Blend	Home Depot
Scott's Classic Tall Fescue Blend	Lowe's, Home Depot

The next selections are Kentucky bluegrasses; some may have only a single variety, others are blends. Once again, check the seed tag to know what you are purchasing. These include:

Kentucky Bluegrasses	Vendor
Scott's Classic Kentucky Bluegrass Seed	Ace Hardware, Williams Lawn Seed
Pennington Kentucky Bluegrass Lawn Seed Blend	Lebanon Turf, MFA
Tournament Quality Kentucky Bluegrass Lawn Seed Blend	MFA
Pennington Kentucky Bluegrass Lawn Seed Blend	Lowe's, Wal-mart
Scott's Turf Builder Kentucky Bluegrass Grass Seed	Lowe's, Wal-mart

The mixture we discussed with tall fescue and Kentucky bluegrass has several nice combinations available over-the-counter. Many vendors also feel the 90/10 combination of tall fescue and Kentucky bluegrass is an excellent choice. Of all mixtures, this is possibly the best for Missouri. Products available include:

Tall Fescue/Bluegrass (90/10)	
Mixtures	Vendor
Revolution Plus	Williams Lawn Seed
Winning Colors Plus	Lebanon Turf
Tournament Quality Ultra Premium Fescue Plus Lawn Mixture	Lowe's
Pennington Fescue/Bluegrass Lawn Seed Mixture	Lowe's, Wal-mart
Master Turf Ultimate Blue Lawn Seed Mixture	Wal-mart

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Heat and drought is always a major concern during Missouri summers for cool-season grasses. New heat tolerant bluegrasses are now available to homeowners in a packaged mix with tall fescue. Scott's "Pure Premium Heat-Tolerant Blue" includes one of these new heat tolerant bluegrasses called, "Thermal Blue." Heat tolerant bluegrasses are genetic crosses between Texas Bluegrasses and Kentucky bluegrasses that are to provide higher heat and drought tolerance. They are recommended in areas where tall fescue and Kentucky bluegrass are presently recommended. This product should be available where other Scott's products are sold.

Shade effects on turfgrass are a very common question for home lawns. Many turfgrass species and varieties are tolerant of moderate shade; however no turfgrass is tolerant of total shade. This final table does list some mixtures available for moderate shade. Just keep in mind that moderate shade should still allow at least three hours of direct sunlight daily. Anything less will produce a thin turfgrass canopy. Full shade usually requires an alternative ground cover such as vinca, English ivy or liriop.

Shade Mixtures (Tall fescues, creeping red fescues, Ky. bluegrass and perennial ryegrass)	
Mixtures	Vendor
Pennington Smart Seed Dense Shade Mixture	Home Depot, Lowe's, Wal-mart
Pennington Dense Shade Mixture	Home Depot, Lowe's, Wal-mart
Scotts Turf Builder Dense Shade Mix	Home Depot, Lowe's, Wal-mart
Scotts Turf Builder Dense Shade Mix for Tall Fescue Lawns	Home Depot, Lowe's, Wal-mart

The above information is intended to make the selection process for turfgrass seed less troublesome and give you more confidence in your choices. Be sure to always check with your local garden centers first for availability of these products, since all stores do not carry complete product lines.

### Fall Fertilization

Fall fertilization should always start with a soil test to determine what the needs of the soil are, if any. Soil pH is also important as it affects nutrient availability to the plants. Soil test results will give you nutrient levels, soil pH and any information about lime requirements. A soil pH around 6.5 to 6.8 is optimum. Soil pH between 6.0 and 7.0

are acceptable. MU guide #G6954, Soil Testing for Lawns gives information on how to take and submit soil samples to the University of Missouri Soil Testing Labs. This guide sheet can be accessed through the Extension Publications Website at <http://extension.missouri.edu/>.

Homeowners have a wide variety of fertilizers available to them for fall fertilization. Many organic fertilizers, such as Organica, Milorganite, Earthworks, Nature Safe and Ringer are available and will provide an excellent source of slow released nitrogen. Organic fertilizers do require soil microbes to release nutrients, therefore as soil temperatures decrease by late Fall, performance of these fertilizers will drop off.

Many more inorganic types of fertilizers are available to homeowners and can be somewhat confusing. Many products have much higher amounts of nitrogen and most are soluble forms (quick release) of fertilizers. Quick release forms of fertilizers are quickly dissipated after three or four weeks. You will get a quick flush of green growth, then a quick tapering off of color and growth. Find fertilizers with a good balance of N-P-K (nitrogen/ phosphorus/potassium) with a ratio somewhere around 3-1-2. Also look at the analysis label on the bag and find a product with 30 to 70 percent slow-release nitrogen. An asterisk (\*) next to the nitrogen source will indicate any slow-release forms of nitrogen. This way your fertilizer is released over a longer period of time requiring fewer applications and allowing the plants to more efficiently utilize plant nutrients.

Total fertilizer rates for fall give best results if 2.5 to 3.0 lbs of nitrogen can be applied per 1,000 square feet. These totals should be divided over two or three applications throughout the fall on 4 to 6 week intervals. Possible combinations would include a pound of nitrogen per 1,000 square feet in early September after maintenance procedures followed by 1.5 pounds of nitrogen per 1,000 square feet in late October. A second alternative would include a pound of nitrogen per 1,000 square feet applied in early September (following fall maintenance procedures), October and November. Most fertilizers are complete fertilizers including nitrogen, phosphorus and potassium; therefore requirements for those nutrients should be based on soil test results. Soil test results indicating high to very high amounts of phosphorus and potassium may require applications of fertilizers with nitrogen alone or lower amounts of P and K. With sufficient fall fertilization, it may be possible to avoid spring applications of fertilizer, therefore reducing the potential for many turfgrass diseases.

Winterizing fertilizers are usually recommended as

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the final fall application for cool-season grasses. Good winter fertilizers will have higher and equal amounts of nitrogen and potassium (first and third numbers of the fertilizer components). However, there are conflicting comments about applications of additional potassium for hardening of plants. Additional potassium does not increase plant tissue potassium if amounts of potassium in the soil are already adequate. Your soil test will tell you this. If you regularly soil test and know that your potassium levels are high, then a winterizer fertilizer will not provide additional benefit for you.

These simple lawn maintenance items will insure good lawn recovery following summer. Improving lawn growth and density prepares for next season's battles. Remember to mow tall (3.5 to 4 inches) and let those clippings fall!

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## Dahlia: The Forgotten Fall Flower

Dahlias produce some of the garden's most spectacular flowers. Indeed, the "dinner plate" type of dahlia often produces flowers 12 to 14 inches in diameter if given proper care. Although dahlias flower throughout the summer, the warm days and cool nights associated with fall causes them to produce greater numbers of flowers with more intense, vivid color. However, since hardy chrysanthemums and asters also make their annual displays of color at this time of the year, dahlia often is overlooked as a fall flower. September is a good time of the year to enjoy the explosion of color this popular garden flower is known for and to start planning for dahlias in the garden next spring if you do not already grow them.

Dahlia is both the common name and genus to which this native of central Mexico belongs. Although it is a perennial in its native habitat, we treat dahlia as an annual because of its sensitivity to cold temperatures. Dahlia is a member of the *Asteraceae* (Composite) family and is the National Flower of Mexico. It was being grown by the Aztecs when the Spanish conquistadors lead by Cortez arrived on the scene in the 16th century. The Spaniards brought with them botanists who were to select plants to take back to Spain; dahlia was one of the plants selected. It originally was given the Genus name *Georgina* in error, a name by which it still is known in many parts of Eastern Europe. The current name of dahlia was given by Abbe Cavanille in the late 1800's in honor of Andreas Dahl, a Swedish botanist and environmentalist. Early dahlias imported into Europe were of the single flower type and probably belonged to the species *D. pinnate*, *D. rosea* and *D. coccinea*.

As hybridization work began between the more than 30 species of the genus *Dahlia*, the first fully double-flowered forms made their appearance along with new color combinations. Two hundred years later, dahlia has one of the largest arrays of flower forms, colors and sizes of any cultivated plant and today more than 50,000 cultivars

in 795 classes have been named and registered. Dahlias are classified according to flower size, type, and color. The flower itself actually is a compound inflorescence known as a head which contains both ray florets and disk florets. There are nine different classifications of size, fifteen of color, and twenty of size accounting for the 795 different classes. Readers are invited to visit the web site of the American Dahlia Society ([www.dahlia.org/](http://www.dahlia.org/)) for a complete description of the various classes of dahlia.



Pink dahlia

When most people think of dahlias, the large-statured types propagated from tuberous roots each year come to mind. Indeed, the majority of named dahlia cultivars are of these types which are popular for the cutting garden or the backdrop of borders. However, because of their height and large flower size staking or some sort of additional support is often required. In recent years, dwarf or bedding dahlias propagated from seed have gained much popularity. Bedding dahlias produce small flowers in great abundance on bushy plants making them ideal for annual beds or in the forefront of borders. Although these dahlias also form tuberous storage roots they usually are not saved from year-to-year because of the ready availability of inexpensive plants in the bedding plant market each spring.

The tuberous roots of dahlia can be planted about 14 days before the frost-free date for an area. If plants have

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White and yellow dahlias

to eight hours of direct sun in an airy location protected from high winds. Dahlias are fairly heavy feeders and do well in fertile, well-drained garden soils high in organic matter. If soil lacks the latter, incorporating up to four inches or well-rotted manure, compost or other forms of organic matter before planting is a good soil management practice. When preparing the soil for dahlias, incorporate about one-fourth pound of a general purpose garden fertilizer (e.g. 12-12-12) for each 10 square feet of garden area. Top dressing with an equal amount of fertilizer in July will help fall blooming. Dahlias grow rapidly and consume large amounts of water. Soil should be kept moist but not extremely wet. Organic forms of mulch can help to conserve water while at the same time controlling weeds.

Dahlias benefit from pruning which is preformed according to the intended use of the plant. Plants destined to producing exhibition type flowers should be pruned to one main stem. Plants whose purpose is to produce a lavish display in the garden should be pinched after initial growth in the spring reaches a height of about one foot. A second pinch after emerging shoots achieve a length of one foot will delay flowering but make for a more spectacular display late in the growing season.

There are a number of diseases and insects that plague dahlias. Botrytis (gray mold) blight and powdery mildew are two foliage disease that can be discouraged through sanitation, proper site selection and keeping foliage as dry as possible. Additionally, fungicides such as thiophanate methyl are effective in preventing these diseases. Since most dahlias are vegetatively propagated and gardeners

been started indoors, do not set them out until after the danger of frost has passed. Plant dahlias in a location that gets six

tend to save their tuberous roots from year-to-year, there is the tendency for dahlias to develop virus diseases such as dahlia mosaic virus. Sanitation, insect control and selection of tolerant cultivars can help to control the latter. Troublesome insects to watch for include aphids, leafhoppers, spider mites, stalk borers and thrips.

Dahlias are not frost tolerant. Therefore, in the Midwest the tuberous storage roots must be dug and stored each fall following the first light frost. Dig them with a spading fork and take special care not to injure the necks of the tuberous roots. Most cultivars have long storage roots connected to the main stem by a thin neck. This neck contains the “eyes” that are needed to produce shoots next growing season. The root alone cannot produce new growth if the neck is broken or badly damaged.

After digging, wash off as much of the remaining soil as possible and allow the roots to dry, taking care not to dry them in direct sunlight. Tuberous roots may be separated in the fall by cutting them from the main stem, taking care to allow the portion of the stem attached to the containing the eyes to remain. Dust the cut ends with a fungicide. Conversely, the entire root system can be left whole and separated the following growing season. Pack the roots in moist peat moss, sawdust or other inert organic material and place in a wooden or cardboard box. Tight containers promote excess moisture retention which encourages storage rots. The temperature range ideal for storing dahlia roots is 40 to 45 degrees F.

With over 50,000 from which to choose, cultivar selection can be a daunting task. The American Dahlia Society list the Fabulous Fifty each year on their web site. Additionally, readers might look for cultivars that have won awards sponsored by the society including the Hart Award, Dudley Award, Gullickson Award and Johnson Award.

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# Vanishing Leaves

Homeowners are commonly alarmed in early fall to find that the leaves on trees in their landscapes seem to have disappeared overnight. There are several possible culprits to blame for this vandalism, the most common being colony feeding insects, such as walnut caterpillar and yellownecked caterpillar. The adult moths of these two closely-related insects look very similar and both have larval stages with caterpillars up to 2 inches in length in their final instars, before pupation.



Skeletonization of crabapple leaves by yellow-necked caterpillar

the foliage of the host. Since they are only ¼ inch long, the damage is usually not noticeable at first. However, in the second, through fourth instars, “skeletonization” of host plant leaves by the dark red caterpillars begins to become more obvious. After feeding, there may be nothing left but the midveins of the leaves or even just the petiole. Walnut caterpillar larvae are gregarious until the final instar. Often, they will move as a mass to a point on the host tree and shed all of their skins together, forming a hairy mass. Full grown larvae are up to 2 inches long with a black body covered with long white hairs. Soon after reaching this stage, they drop to the ground to pupate. The amount of foliage consumed by the final instar larvae can be impressive.

The female moth of the yellow-necked caterpillar lays eggs in mid-summer on the undersides of leaves of a wide range of host plants, including birch, maple, crabapple,



Dwarf river birch partially defoliated by yellow-necked caterpillar

Eggs of the walnut caterpillar are laid in early summer in groups of up to 300 on the undersides of leaves of favored hosts such as walnut, pecan and hickory. When the larvae hatch out, they begin to feed on

oak, cherry and many other species. As with the walnut caterpillar, the larvae consume large amounts of foliage in a short time as they near the final, 2-inch-long stage. This is when the foliage on a small tree can seem to disappear overnight, even though feeding may have been

occurring for several weeks. The final stage larvae are very dramatic-looking with black heads, yellow bands on the prothorax (neck) and longitudinal yellow or white stripes. They are even more dramatic when disturbed, since they appear to rear up their heads and tails.



Rearing up behavior of disturbed yellow-necked caterpillars

Although the damage caused by colony feeders like walnut and yellow-necked caterpillars may appear drastic, it is rarely life-threatening. If a small tree is defoliated several years in a row, it may be weakened to the point that it will decline. However, since the damage occurs late in the season, trees will have begun to store carbohydrate reserves in their stems and will be able to grow new foliage the following spring. It might be worthwhile to make a note on your calendar to check affected trees the following summer. When the caterpillars are small, they can be controlled by Bt (*Bacillus thuringiensis*) which will not have negative effects on beneficial insects.



Defoliation of walnut by the final instar of the walnut caterpillar

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# Fall is the time to control perennial broadleaf weeds

Spring is usually the time of year we see multiple advertisements for lawn care product, especially weed n' feed products. The labeling on these products always contains a photo of a weed-free lawn with photos of weeds the product will control. What is the weed most commonly shown? Dandelions!

Dandelion is a perennial broadleaf similar to other perennial broadleaf weeds (broadleaf plantain, buckhorn plantain, ground ivy, violets, clover, etc.) that have a central taproot. In the spring, weeds such as these will flower and produce seed. When this happens, plant foods and energy move upward in the plant for reproduction of seed. In early fall, perennial broadleaf weeds prepare for winter by building up carbohydrate reserves. The storage vessel is the large, central taproots characteristic of perennial broadleaf weeds. Therefore, most internal plant activity is carrying these reserves downward.



Dandelions

Broadleaf weeds are best reduced by maintaining a taller mowing height (3.5 to 4”). While we

know that taller mowing heights reduce weed populations up to 80%, you will still notice some weeds like dandelions and others. Increased mowing heights may provide you some savings in weed control by resorting to some hand pulling or spot spray applications of broadleaf herbicides. Blanket applications of broadleaf herbicides are usually not necessary for just a few weeds and are costly. A ready-to-use spray product for broadleaf weeds takes just a few minutes to treat a few weeds for the desired result.

So, why is fall the best time to control perennial broadleaf weeds? All broadleaf herbicides sold over-the-counter for homeowners are considered systemic herbicides. This indicates that the plant absorbs the product then is translocated throughout the plant to disrupt normal plant functions. That large taproot we discussed in the engine house for that plant to survive. If the taproot lives, so does the plant. Therefore, that downward movement of food reserves into the taproot during fall allows the herbicide to translocate more easily into the root for a more efficient control. Broadleaf herbicides are also considered selective herbicides, which indicate they will control the broadleaf weeds without harming your desirable turfgrass.

One precaution to keep in mind when controlling perennial broadleaf weeds in fall is to read the label

concerning re-seeding intervals. Fall (September) is also a great time to over-seed lawns. Many broadleaf herbicides require a wait time of 3 to 4 weeks following an application of product before seeding. In some situations it may be better to seed first for proper timing, and then follow up with broadleaf weed control.

Broadleaf weed control products will contain some combination of various active ingredients. They usually include some three-way or four-way mix of the following - 2,4-D, MCPA, MCPP, sulfentrazone, dicamba, or triclopyr. Most products are three-way mixes of 2,4-D, MCPP and dicamba. Some products have removed 2,4-D and replaced it with triclopyr. These products tend to do a better job on the tougher perennial broadleaf weeds like ground ivy and violets. Active ingredient of the products can always be found on the front panel/label of the container under the ACTIVE INGREDIENT section. Some of the more common trade names include: Ortho's Weed b Gon and Weed b Gon MAX, Pbi/Gordon's Trimec, and Spectracide's Weed Stop for Lawns.

For best results, it is recommended not to mow two days prior to two days following applications. Do not irrigate the lawn following applications for at least 24 hours. Always check the forecast for rain prior to applications as well.

All product information is presented with the understanding that no endorsement of named products is intended, nor criticism implied of similar products that are not mentioned. Before using any weed control product please read the label carefully for directions on application procedures, appropriate rate, first aid, storage and disposal. Make sure that the product is properly registered for the intended use (specific weeds and site).

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# October Gardening Calendar

## Ornamentals

- **Weeks 1-4:** Continue watering, especially evergreens if soils are dry.
- **Weeks 1-4:** Nuts or seeds of woody plants usually require exposure to 3 months cold before sprouting. This may be provided by outdoor planting in fall or “stratifying” in an unsealed bag of damp peat moss placed in the refrigerator.
- **Weeks 1-4:** Container grown and B & B trees and shrubs can be planted. Loosen the soil in an area 5 times the diameter of the root ball before planting. Mulch well after watering.
- **Weeks 1-4:** Plant spring bulbs among hostas, ferns, daylilies or ground covers. As these plants grow in the spring they will hide the dying bulb foliage.
- **Weeks 1-2:** For best bloom later this winter, Christmas cactus, potted azaleas and kalanchoe may be left outdoors until night temperatures drop to about 40 degrees Fahrenheit.
- **Weeks 2-4:** Spring bulbs for forcing can be potted up now and stored in a cool, frost-free place until it is time to bring indoors, usually 12 to 15 weeks.
- **Weeks 2-3:** Cannas and dahlias can be dug when frost nips their foliage. Allow the plants to dry under cover in an airy, frost-free place before storage.
- **Weeks 3-4:** Transplant deciduous trees once they have dropped their leaves.
- **Week 4:** Plant tulips now.
- **Week 4:** Trees may be fertilized now. This is best done following soil test guidelines.

## Lawns

- **Weeks 1-2:** Seeding should be finished by October 15.
- **Weeks 2-3:** Broadleaf herbicides can be applied now to control cool season weeds such as chickweed and dandelion.
- **Weeks 3-4:** Continue mowing lawns until growth stops.
- **Weeks 3-4:** Keep leaves raked off lawns to prevent smothering grass.
- **Weeks 3-4:** Now is a good time to apply lime if soil tests indicate the need.
- **Week 4:** Winterize lawn mowers before storage.

## Vegetables

- **Weeks 1-4:** Sow cover crops such as winter rye after crops are harvested.
- **Weeks 1-2:** Harvest winter squash and pumpkins before frost. For best storage quality, leave an inch or two of stem on each fruit.
- **Weeks 1-2:** Dig sweet potatoes before a bad freeze.
- **Weeks 1-2:** Gourds should be harvested when their shells become hard or when their color changes from green to brown.
- **Weeks 1-2:** A few degrees of frost protection may be gained by covering tender plants with sheets or light-weight fabric row covers.
- **Weeks 1-2:** Continue harvesting tender crops before frost.
- **Week 2:** The average first frost usually arrives about October 15-20.

## Fruits

- **Weeks 1-4:** Store apples in a cool basement in old plastic sacks that have been perforated for good air circulation.
- **Weeks 2-4:** Persimmons start to ripen, especially after frost.
- **Weeks 3-4:** Monitor fruit plantings for mouse activity and take steps for their control if present.
- **Week 4:** Place wire guards around trunks of young fruit trees for protection against mice and rabbits.

## Miscellaneous

- **Week 1:** Fall color season begins.
- **Week 3:** Begin peak fall color in maples, hickories and oaks.
- **Week 4:** End of peak fall color.

*Gardening Calendar supplied by the staff of the William T. Kemper Center for Home Gardening located at the Missouri Botanical Garden in St. Louis, Missouri. ([www.GardeningHelp.org](http://www.GardeningHelp.org))*