HORTICULTURAL

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Cool-Season Grasses

Lawn Maintenance Calendar

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Lawns may be maintained at different levels of quality according to individual preference, but good lawns seldom "just happen." This summary outlines major steps required to maintain a year-round high-quality lawn.

The practices refer primarily to cool-season grasses, such as Kentucky bluegrass, perennial ryegrass, tall fescue and fine fescue. For bermudagrass and zoysiagrass lawns, see MU publication G 6706, *Establishment and Care of Zoysiagrass Lawns.*

Timing is approximate for central Missouri; it may vary two weeks or more from one area to another in the state or from year to year.

March

- As needed, start mowing at recommended heights (see Table 1).
- Use broadleaf herbicides for perennial and winter annual weeds not controlled in the fall.
- Overseed thin spots early if missed last fall. (Do not overseed with perennial or annual ryegrass.)
- Watch for moles; traps are the only effective means of control.

April

- Aerate if thatch is 1 inch deep or soil is compacted.
- Use crabgrass preventers (preemergence herbicides) by April 15. Start top-dressing low spots as grass grows.

May

- Fertilize if needed when spring growth begins to slow. Use a slow-release form of nitrogen, such as polymer- or sulfur-coated urea, urea formaldehyde, or a natural organic to improve lawn quality without promoting excessive leaf growth.
- Apply postemergence broadleaf herbicides for control of summer annual weeds. If needed, start postemergence control of crabgrass, goosegrass, or nutsedge near the end of the month (see G 6750, *Home Lawn Weed Control*).

Table 1. Recommended mowing heights for cool-season grasses in Missouri.

Turfgrass	Mowing heights (inches)*
Tall fescue	2.5–3.5
Kentucky bluegrass	2.0–3.0
Perennial ryegrass	2.0–2.5
Creeping red fescue	2.0–3.0
Chewings fescue	2.0–3.0
Hard fescue	2.0–3.0
Sheep fescue	2.0–3.0

* Mowing heights may be adjusted according to climatic conditions, level of maintenance, and intended use.

- Watch for first brood of sod webworm. Apply insecticides about 10 days after major moth flight if damage to turf is seen.

June

- Start watering as needed. Water infrequently to a soil depth of 6 inches. Overwatering can be harmful, but water frequently enough to prevent drought stress. Kentucky bluegrass under stress is susceptible to disease. Don't start watering if you cannot continue full season.

Rapidly growing lawns need frequent mowing. Let clippings remain unless they are excessive.

July

Continue frequent mowing as needed and irrigate only enough to prevent turf wilting. When irrigation is needed and conditions are hot and humid, water between 6:00 a.m. and 10:00 a.m. to reduce disease occurrences.

- Search for white grubs in brown areas.

Dead turf in those areas can easily be peeled from the surface. If 5 to 10 grubs appear in 1 square foot, treat with an appropriate insecticide near the end of the month. Thoroughly irrigate to move the insecticide into the zone where grubs are active.

August

- Fall seeding and sodding is best; prepare seedbed now.

Continue watering and insect control, if necessary. Make plans for fall lawn renovation. Select and purchase grass seed and fertilizer. If lawns are to be totally renovated, kill all vegetation with a glyphosate (Roundup®) application near midmonth.

- Have soil test performed if you are unsure of basic fertility level.
- Thoroughly water dormant lawns in last week to start fall growth.

September

- This is an important time to fertilize. Apply 1–1½ pounds nitrogen per 1,000 square feet.
- Plant or seed new lawns early; keep well watered.
- Aerate where needed to relieve compaction.
- Rake; dethatch; kill weed patches; overseed thin spots. Resume top-dressing, if needed.

October-November

- This is the best time to apply broadleaf herbicides, especially for chickweed control.
- Mow at regular heights until growth stops; mulch tree leaves into turf.
- Apply lime if soil test indicates need.

Fertilize moderately by applying 1 pound of nitrogen per 1,000 square feet after cool days slow leaf growth. Nutrients at this time will encourage root growth and thickening of turf. Soluble nitrogen fertilizers (containing urea, ammonium nitrate or ammonium sulfate) are used more efficiently by turf in late fall.

- Keep leaves from packing and smothering grass.
- Irrigate, if necessary, so that turf goes into winter with moist — not wet — soil.
- Recondition lawn mower; store with clean oil.

Use soluble fertilizer or calcium chloride instead of salt for melting winter ice.

Maintenance

The following steps should provide satisfactory lawns if they are followed properly.

Fertilization

In the past, too much emphasis has been given to spring as the best time to fertilize Kentucky bluegrass. If a lawn is stunted and has a pale to yellowish green appearance, a very moderate feeding at this time would be advisable.

On the other hand, fertilizing a lawn that already had moderate vigor at the time most of us get "spring gardening fever" will stimulate excessive, succulent growth. Excessive leaf growth usually occurs at the expense of new root growth; this places the plant at a further disadvantage for summer and needlessly increases the amount of mowing required. Turf becomes more susceptible to disease and other stresses that will take their toll during summer.

When to fertilize

All lawns should be fertilized in the fall. Additional late winter or early spring fertilization may be necessary if fall applications were missed. Fertilization at this time will be influenced by desired level of turf appearance, turfgrass species, soil type, irrigation intensity, and fertilizer carrier.

As indicated in Table 2, late spring fertilizer applications may be desirable and even necessary depending on the condition of the turf. When an application is required, do so about mid to late May, after the spring growth surge is over.

Table 2. Fertilizer application schedule.

Turf type	Total lb N per year	Apply at recommended rates* Sept.	Oct.	Nov.	May
Common type Kentucky bluegrass	2–3	•	•		•
Higher quality bluegrass	3–4	•	•	•	•
Red and other fine fescues	1–2	•	•		•
Kentucky bluegrass and fine fescue mixtures	2–3	•	•		•
Tall fescue or perennial ryegrass	3–4	•	•	•	•

* Rates usually supply approximately 1 lb N/1,000 sq ft. (In May, supply ½ to 1 lb N/1,000 sq ft only if needed.)

Nitrogen fertilizer

These materials fall into two basic groups: soluble and slow-release. **Soluble** types are available quickly to plants even at low temperatures they stimulate rapid growth and are depleted quickly. Steady, uniform growth requires frequent, light applications. **Slow-release** types of several different forms release nutrients to plants over a long period of time.

Lawn specialty fertilizers often contain 24 to 50 percent of the total nitrogen in slow-release form and the remainder in quickly soluble forms. This combination gives immediate response in cool weather while the remainder is available over a longer period.

When 35 to 50 percent or more of the nitrogen is a slow-release type, rates may be increased up to 50 percent. With these fertilizers, frequency of application may sometimes be reduced.

A precaution should be observed: Nitrogen sources from urea (quickly soluble) should not be confused with urea-formaldehyde, UF, (slowly available).

Rates and frequency

Recommendations are usually based on amounts required to supply a given amount of nitrogen per 1,000 square feet of lawn. Most lawn fertilizers are "complete" in that they contain the three major nutrients: nitrogen (N), phosphorus (P) and potassium (K) and, therefore, the amount of phosphorus and potassium applied is determined by the ratio of these two elements to nitrogen.

Two fertilizers with label analyses of 20-5-10 and 12-12-12 would contain 20 and 12 percent N, 5 and 12 percent P, and 10 and 12 percent K, respectively. For the first fertilizer, the N:P:K ratio would be 4:1:2, and the second would be 1:1:1. The amount of fertilizer required to apply 1 pound nitrogen to 1,000 square feet can be calculated by dividing 100 by the percentage of nitrogen in the fertilizer (100 ÷ 20 = 5 pounds fertilizer per 1,000 sq ft).

Suggested annual fertilization schedule

For routine maintenance where soil test or experience indicates no major deficiencies, use a lawn fertilizer with an approximate ratio of 3:1:1 or 4:1:1 or 4:1:2 at the recommended rate according to the schedule in Table 2.

Where soil test indicates low phosphorus or potassium levels or where basic fertility levels are not known, use fertilizer with a ratio that more closely approximates 1:1:1 or 2:1:1 or 3:1:2. If lawn application rates are not given on the container, amounts to apply can be calculated as in the example above.

Lime

Do not apply lime routinely to established lawns unless a soil test indicates a need. Excess can be as harmful as deficiency. Established lawn soils seldom need to be limed unless a soil test indicates a moderately to severely acid soil of pH 5.5 or lower.

Where lime is needed, apply finely ground or specially pelletized agricultural limestone at rates up to 50 pounds per 1,000 square feet. If more is required, make separate applications about six months apart. Limestone can be applied almost any time, but fall or early winter is the best time.

Mowing

Mowing height and frequency directly affect lawn quality. The common practice of mowing a lawn short, under the assumption it will require less frequent cutting, is responsible for much lawn deterioration.

If cut too closely, there is not enough leaf surface to manufacture necessary foods for balanced growth. For this reason, a standard guide is to never remove more than one-third of the green leaf area with a single mowing. If a mowing is missed, cut only half the way back to the intended heights, then re-mow in a couple of days to regular level. Recommended mowing heights are presented in Table 1.

Clippings seldom need to be removed. With proper mowing, clippings filter down to the soil surface, decay and recycle nutrients back to the soil. Remove clippings when they remain on the surface or when excessive thatch is already causing a problem.

Watering

Kentucky bluegrasses, fescue and other cool-season grasses naturally protect themselves by going into a semidormant stage during periods of high temperature or drought. They cease growth and turn brown, but bounce back quickly with sufficient water and cooler temperatures, as long as they have not been severely thinned by excessive summer traffic.

Except in cases of extreme prolonged drought, tall fescue and Kentucky bluegrass do not need water to stay alive during the summer. However, their appearance suffers. During dormancy, drought-tolerant weeds such as plantain, thistles and dandelion dominate lawns.

Because of its deep, extensive root system, tall fescue remains green longer into the summer than other nonirrigated cool-season grasses.

Kentucky bluegrass has many underground stems, called rhizomes. Each rhizome can produce several new bluegrass shoots that result in turf thickening in autumn when water becomes available following summer dormancy.

The principal purpose of summer watering is to maintain an attractive green surface. Watering will not substitute for poor fertility or improper mowing, and can encourage crabgrass and other weeds. Extra growth stimulated by watering increases fertility requirements, thatch accumulation and disease pressure.

If you cannot give attention to management, let the turf follow its natural tendencies to go dormant during summer. (Plants are brown in appearance from lack of water, but not necessarily dead.) Homeowners who have a lawn care service should not allow their lawn to enter drought dormancy.

Rules for watering

- Shallow, frequent sprinkling to add a little water each day is not generally recommended. It encourages shallow, weak roots, crabgrass and some diseases.

Irrigate to the full depth of the root system often enough to prevent wilting. (See MU publication G 6720, *Home Watering Guide.*)

- Kentucky bluegrass and fine leaf fescue roots may not reach depths greater than 4 to 6 inches during the summer. About 1 inch of water (620 gallons per 1,000 sq ft) can be stored in an average Missouri

soil to this depth, and this should last about a week.

A reasonable guideline for summer lawn irrigation is to apply enough water in addition to natural rainfall to total 1 inch per week. Greater frequency with lesser amounts may be required on sandy soils that cannot store this much.

- Don't guess at how much water is being applied to reach the desired wetting depth. Place tall, straight-sided cans in the sprinkler pattern. Measure water depth in the cans to determine the amount of water applied.

Thrust a small probe (screwdriver) into the soil. Decreased resistance to the probe in wetted soil can help gauge depth of wetting.

- Some sprinklers apply water faster than soil can absorb it. Few established lawn soils in Missouri can absorb ½ inch per hour; many absorb much less. To prevent waste, move portable sprinklers frequently. Properly engineered permanent irrigation systems with timing controls for "interval watering" do the best job. A soaker hose is also an excellent choice.
- Steep slopes, hard spots and hot areas require special attention. Mechanical aeration, extra slow watering and use of wetting agents may help water infiltration.

Aeration

On clay- or silt-type soils, or any turf receiving constant traffic, soil surface sealing and compaction can seriously impair turf growth. Grass roots are injured because air, water and fertilizers cannot reach them in sufficient quantities. Mechanical aeration to reduce compaction is essential for continued turf health.

Aeration is best done by power equipment that pulls out small cores of soil. Machines that cut vertical grooves every 3 to 4 inches will relieve surface sealing. Power equipment is usually available at rental stores. Lawn care companies may also provide these services to their customers.

For small areas, suitable hand equipment is available, but using it is hard work. Even a spading fork plunged into the soil at 3-inch intervals when the soil is lightly moist — not wet — is far better than nothing at all.

Aeration should be done at least once a year where compaction is a problem. Fall is the best time for Kentucky bluegrass and tall fescue lawns, but aeration will be highly beneficial anytime the grass is actively growing and is not under heat and drought stress.

Thatch control

Thatch is a layer of undecayed and decayed plant parts at the soil surface. It forms a barrier to water and air movement in the manner of a thatched roof.

Thatch is primarily a problem of intensely fertilized and watered lawns. These practices promote excessive lateral growth of stems (stolons and rhizomes) and shallow roots; these shallow stems and roots are the main cause of thatch because they are resistant to decay. Properly mulched leaf clippings decay readily and do not contribute to thatch. Aggressive species, like Kentucky bluegrass and bermudagrass, and those that produce plant tissues resistant to decay, like zoysiagrass, are prone to thatch.

Thatch removal should be initiated whenever accumulation exceeds ½ inch. Early fall is the preferred time for dethatching bluegrass lawns.

For additional information on thatch, see MU publication G 6708, *Thatch — Enemy of Lawns.*

Top-dressing

Top-dressing is the periodic addition of a thin layer (¼ to ½ inch) of soil or compost to the surface of growing turf. Top-dressing to mix soil with accumulating plant debris hastens thatch decay. Shallow depressions in turf can be gradually leveled by this practice as well.

Top-dressing may be done immediately after coring, dethatching or slicing. Never bury the existing turf with too much top-dressing soil. After top-dressing, at least three-fourths of the grass plant should be exposed to sunlight.

Rolling

Rolling is not desirable for smooth, even lawns. Surface compaction is common in many lawns without adding to the problem by heavy rolling. Rolling moist soil causes maximum compaction — a fine way to build roadways but not soils for turf.

When late winter freezing and thawing have resulted in "heaving" young plants out of the ground, or if mole activity is serious, rolling may be required. In such cases, roll soon after spring thaw when the soil surface is relatively dry, and use as light a roller as possible. Don't roll more than is absolutely necessary.

Weed control

The best weed control is a healthy, dense, competitive turf. Cultural practices to achieve this will keep out most weeds.

Chemical weed killers are useful, but should not be relied upon entirely to cure lawn weed problems (see MU publication G 6750, *Home Lawn Weed Control*). Suggestions for timing herbicide application for several common weed problems are indicated in the calendar of this guide.

Relative merits of using fertilizer-herbicide (weed and feed) or fertilizer-insecticide combinations should be considered carefully before they are used indiscriminately. In many cases, at least one of the ingredients

may not be needed or will be used at an inopportune time.

Renovation

If your lawn is less than acceptable but contains at least 40 percent desirable grasses, you may be able to replant without preparing a completely new seedbed. Start in August with steps similar to the following:

- Kill weeds and undesired grasses with appropriate herbicides. (If only annual weeds are present, skip this step.)
- Remove dead vegetation and prepare seedbed with vertical renovating machine or heavy rake, set deep enough to bring soil to the surface. Clear off all debris.
- Add fertilizer and lime according to soil test and rake in. In late August or early September, scatter seed or desirable variety and drag or rake into loosened soil surface.
- Water thoroughly and treat as a newly seeded lawn.
- If the original problem was due to soil itself, poor drainage or excessively thick thatch, till the lawn and start over following steps for establishing a new lawn. (See MU publication G 6700, *Cool-Season Grasses: Lawn Establishment and Renovation*.)

Disease and insect problems

Prevention is the best approach to disease problems in home lawns. Often by the time the disease is diagnosed, the damage has been done.

Controlling thatch, avoiding frequent, light irrigation and fertilizing properly for healthy but not succulent grasses are simple lawn-grooming practices that may aid disease prevention.

Two major insect pests are white grubs and sod webworm. White grubs are described in MU publication G 7200, *White Grubs in the Lawn*. Treating lawns every year with insecticides to prevent insect infestations is neither necessary nor advised.

Routine inspection of the lawn for white grubs and sod webworms is advised. Treat only after the insects have been properly identified, and only when they are in sufficient numbers to cause a noticeable loss of turf.

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