

LILaC is an acronym for Low Input Lawn Care, an approach that embraces strategies and practices designed to reduce the use of lawn care products, water, and the time and labor so often required when maintaining a healthy lawn. Potential benefits to homeowners of using the LILaC approach include cost savings, water conservation, and an environmentally responsible course of action due to prudent and timely applications of lawn care products. Homeowners who prefer practicing high maintenance lawn care techniques also can employ LILaC strategies with similar benefits.

Making the transition to the LILaC approach is a gradual process and it may require an initial investment of time and effort to convert your lawn to this lower maintenance program. During the transition period, when you introduce lower maintenance turfgrass varieties, weed encroachment may increase because of modest growth rates associated with these less vigorous varieties of grasses.

Before embarking on the LILaC program, you should consider a few factors. Under LILaC, your lawn may become more unsuited to heavy traffic, and lower maintenance grasses may recover more slowly from diseases, insects, and environmental stress (e.g., lack of rain).

EVALUATING YOUR LAWN FOR LILaC

To make the transition to a lower maintenance lawn a successful one, begin by carefully evaluating current conditions, including your recent maintenance history. Before beginning corrective action, examine your lawn and surrounding landscape for the following:

- Soil compaction
- Excessive levels of thatch
- Shade
- Poor or excessive drainage

- Weeds
- Insects and other pests
- Species/varieties of grasses present

Lawn grasses that already adapted to less water and fewer nutrients (grasses such as fine-leaved fescues and common Kentucky bluegrasses) must be present. If not, you should consider adding them. (For varieties see "Renovating to a Lower Maintenance Lawn" on page 4.) In addition, have the soil where grasses are growing tested to determine fertility requirements. Contact your county Extension office to request soil test forms and sample bags.

Table 1.
Levels of Home Lawn Care

Lawn Care Level	Amount of Watering	Mowing Heights	*Pounds of Fertilizer Applicants	**Timing of Fertilizer Applicants
Very Low Maintenance (see grasses for low maintenance)	None	3 in. +	0	-----
Low Maintenance Suitable grasses are common Kentucky bluegrasses & fine-leaved fescues	Little to None	2½-3 in.	1	September
Medium Maintenance Suitable grasses are most Kentucky bluegrasses & fine-leaved fescues	Some	2-3 in.	2	mid- to late-Aug
High Maintenance Suitable grasses are improved bluegrasses & turf-type	Regularly	1-3 in.	3 or 4	Late May to mid-June, mid-Aug., & mid-Oct mid-May to mid-June, mid-Aug., mid-Sept., & mid-Oct.

* Eliminate one fertilizer application by leaving clippings on the lawn. Soils with high organic matter levels (indicated by a soil test) need less nitrogen (N) per year due to the reserve N supply in the organic matter. N will be slowly released for plant use as the organic matter further breaks down over time. Never apply more than 1 pound of N per 1,000 square feet per application.

** Use earlier times in northern parts of the state, later times in southern areas.

What Grasses Are Present in Your Existing Lawn?

Here are some hints to help you determine which grasses may exist in your lawn:

1. If your lawn is 30-35 years old (or older), chances are it consists mostly of common Kentucky bluegrass varieties (which prefer sunny areas) and some fine-leaved fescues (especially in shadier areas).
2. If your lawn was seeded or over-seeded with mixtures made for general-purpose lawns, it probably has Kentucky bluegrasses, fine-leaved fescues, and, perhaps, perennial ryegrasses.
3. If your lawn was seeded or over-seeded with mixtures for premium or elite lawns, it probably contains a blend of several improved Kentucky bluegrass varieties and some perennial ryegrasses. These grasses usually require more maintenance and do not adapt well to low maintenance programs. To convert this lawn to the LILaC program, you will have to add some low maintenance varieties.
4. If your lawn was established by sodding, most of the grass varieties are probably improved Kentucky bluegrasses. However, recent sod blends often consist of both high and low maintenance varieties, making them more adaptable to LILaC. But it is recommended that you over-seed this sod with even lower maintenance varieties.

To help you determine which category best describes your lawn, see Table 1 ("Levels of Home Lawn Care") for a description of lawn care levels, a review of grass species, and varieties best adapted to different care levels.

How Grass Plants Grow

Before describing the steps toward making the transition to LILaC practices and to help you understand the prudent and timely use of lawn care products, here is a brief description of the growth cycle of lawn grasses. The turf grasses grown in our climate are perennials known as cool-season grasses. Turf grasses adapted to southern states are perennials known as warm-season grasses. Cool-season grasses have growth peaks in both the spring and fall, while warm-season grasses have their peak growth during summer months.

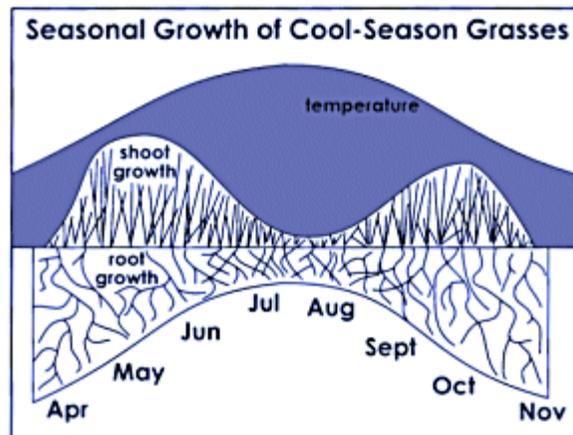


Figure 1. Peak periods of root and shoot growth of cool-season grasses; does not accurately show depth of rooting.

During the short days and cool temperatures of late fall and early spring, mature shoots of cool-season grasses cease to produce new leaves; they "switch" over to shoots that produce flower stems during the long days and warm temperatures of late May through June. So, most of the growth that occurs during this period is the

production of flower stems, which often goes unnoticed due to regular mowing.

Once grass shoots complete their flowering cycle, both the shoots and their roots die. Since these dead shoots are continually replaced by new ones and by those not mature enough to flower, there is little detectable difference in the lawn other than a somewhat thinner appearance by the end of June and early July. Natural rejuvenation of the lawn begins again in mid-July or early August, and the process starts over.

Roots of cool-season grasses grow during the cool weather of spring and fall. Root growth begins and peaks **before** peak shoot growth in the spring. (See Figure 1 on page 3.) Though there is some shoot growth during summer months (provided that grass plants are not in summer dormancy), root growth at this time is very slow. Their growth activity begins again in fall.

Since maximum root growth and maximum shoot growth do not occur at the same time (and are even somewhat antagonistic to each other), it is important to adjust your management practices to optimize growth of either roots or shoots. This establishes a healthy turf, which is especially important as you consider lower inputs.

RENOVATING TO A LOWER MAINTENANCE LAWN

To begin the transition to a lawn using lower inputs, over-seed your existing lawn with lower maintenance grass varieties. Lawn grasses more tolerant of lower moisture and nutrient levels include the common varieties of Kentucky bluegrasses (Kenblue, Park, South Dakota Certified, and Newport) and fine-leaved fescues (creeping red fescue, chewings fescue, and hard fescue). Other bluegrass varieties that do acceptably well once adapted to lower input levels include Rugby, Parade, Touchdown, Ram I, Nugget, Sydsport, and Monoply.

Note: Because there are many more seeds per pound of bluegrass than fine-leaved fescues, slightly higher seeding rates are required when using mixtures that include fine-leaved fescues.

The Two Best Times to Seed

The preferred time for over-seeding/renovating a lawn is from mid-August to early September. The second best time is early spring as the lawn is beginning to turn green and grow. (See "Basic Steps For Renovating Lawns" on Page 5.) Use these methods also when introducing different species and varieties into your lawn.

BASIC STEPS FOR RENOVATING LAWNS		
Steps	Options	Comments
1. Soil Test		Contact your county Extension office for soil test forms and bags.
2. Weed Control	Physically pull. Broadleaf	For large or spreading weeds; won't kill all weeds. If weeds are primarily non-grasses.

	Herbicide Nonselective Herbicide (glyphosate)	Kills most green vegetation; requires 5-14 days.
3. Soil Moisture Replenishment	If needed (especially in fall)	Soak soil to a depth of 6-8 in.; then allow surface to dry until steps 4 and beyond can be done (may require 1-2 days)
4. Thatch Removal	Vigorous hand raking	Not practical for extreme thatch problem or large areas.
	Vertical Mower	Rent of hire; use also to prepare seedbed (see below)
	Sod Cutter	Recommended for extreme thatch problem; rent or hire.
5. Soil Preparation	Vigorous hand raking	For small sites with little vegetation remaining.
	Aerification	3-5 passes with commercial aerifier; use for compacted soil.
	Vertical Mowing	Tines should nick surface to a depth of 1/8-1/2 inch.
6. Fertilize	Nitrogen (N) Phosphorus (P) Potassium (K)	1/2-1 pound of N per 1,000 sp. ft; add P & K as determined by soil test (depends on whether or not clippings are left on lawn). Too much N stimulates growth of existing grass and competes with new seedlings.
7. Seeding	Hand	Divide seed lot in half or quarters and seed in 2 or 4 directions. Small sites (less than 8 ft. across): mix 1 part seed with 4 parts sawdust or a product like Milogranite.
	Rotary Spreader	Preferred method if mixed sawdust or Milogranite
	Drop Spreader	
	Slit Seeder	Seed in 2 directions or overlap 1/2 way Rent equipment (but requires skill); generally best done by a professional. Go over site 2-4 times.
8. Irrigate		Lightly to provide seed-to-soil contact; then, water lightly twice daily to rewet soil surface (if surface remains moist, may require watering once or not at all). Don't allow soil to become soggy.

9. Mow

When 3-3½ inches tall, mow to 2½ inches with sharp mower; as lawn thickens, gradually lower mowing height until desired grass height is reached.

Watering

Proper watering plays a major role in a grass plant's ability to tolerate/resist stress and pest problems. Approximately ¾ to 1½ inches of water per week (including rainfall) during the growing season keep lawns green.

During hot, dry summer months, grass can begin a dormancy period, which is a state of "plant rest" in common Kentucky bluegrasses that helps them survive drought conditions. However, lawns that are watered regularly may not go dormant. To prepare for summer dormancy, cool-season grasses should be properly conditioned first. As summer approaches, reduce water supplies to the lawn. Watering heavily prior to the summer stress period and then abruptly withdrawing water leaves grass in a succulent condition and much less able to endure extended hot, dry periods.

On heavier soils during drought periods, apply ¼ to ½ inch of water approximately every 3 weeks. This keeps grass plant crowns from dehydrating beyond a point of recovery, but does not bring the plants out of dormancy. On sandy soils during drought periods and high temperatures, apply water at shorter intervals to achieve the same results. However, during prolonged and extreme conditions of drought and high temperatures, some turfgrass death may still occur. Once cooler temperatures and natural rainfall return in late summer or early fall, resume regular irrigation practices if needed. Table 2 summarizes proper conditioning of lawns for drought stress.

Overwatering causes several problem for grass roots and blades. Soils that are too wet, particularly in the spring and fall, predispose root systems to fungal diseases. Also, moisture on grass blades for long periods of time encourages development of fungal diseases on them as well. Therefore, it is best to water lawns from early morning through mid-afternoon.

Table 2. How to Increase Drought Tolerance

- Choose tolerant species.
- Avoid excessive growth stimulation.
- Maintain adequate potassium levels.
- Raise mowing height.
- Condition turf to drought.
- Limit foot traffic.

Mowing

Regular mowing with a sharp mower blade at the proper mower height keeps grass growing vigorously and maintains adequate plant density to thoroughly cover the soil surface. Continually scalping turf seriously weakens grass plants, leaving an opening for weed invasion.

For most lawns, mowing at a slightly higher height of 2½ to 3½ inches screens out light to the soil surface, thus preventing weeds (such

as light-loving crabgrass seeds) from germinating. Also, a higher height

encourages slightly deeper root systems, allowing them to gather moisture and nutrients from a larger soil volume, thereby increasing a grass plant's stress tolerance. If your grass has become very long (e.g., during extended rainy periods), lower the mower blade height gradually rather than cutting grass back all at once to reduce unnecessary stress on plants.

Mulching mowers and mulching attachments for mowers reduce the size of grass clippings, thus increasing the rate at which they decompose. And mowing on a regular basis with a sharp mower blade produces clippings that decompose fairly quickly. Allow these clippings to remain on the lawn whenever possible. They do not contribute to thatch build-up because when they decompose they become a valuable organic source of nutrients for grass plants. In fact, yearly nitrogen applications may be reduced by 1/3 to 1/2 when grass clippings are left on the lawn. However, remove clippings that form large clumps on top of the grass.

Fertilizing

The goal of any fertilization program is to compensate for nutrient deficiencies in the soil and provide those nutrients that are needed by grass plants to sustain healthy growth and remain competitive against diseases, insects, and weed invasion. Healthy lawns need nitrogen, phosphorus, and potassium (though nitrogen is needed the most).

Few soils contain enough available nitrogen to maintain healthy turfgrass. Nitrogen shortages lead to very slow growth, yellowing of the plants, thinning of turf, weed infestation, and increased incidence of some diseases. On the other hand, over-fertilizing with nitrogen leads to excessive shoot and leaf growth, reduced root growth, low plant carbohydrate (food) reserves, increased susceptibility to environmental stresses, and some diseases. In fact, lawns containing grasses adapted to lower water and nutrient inputs (as described earlier), when over-fertilized with nitrogen and/or over-watered, will decline in health rather than improve.

Nitrogen contained in fertilizers comes from either inorganic or organic sources, and may be either quickly or slowly available for plants to use.

Inorganic Fertilizers

Inorganic fertilizers, such as ammonium nitrate, are water soluble or quick-release nitrogen sources; that is, nitrogen becomes available for plant use soon after water is applied. The response is quite predictable and results are often visible in 5-7 days. However, the effects are relatively short-lived. On sandy soils, high application rates of fertilizers combined with heavy watering or rainfall, usually causes nitrogen to leach through the soil beyond the turfgrass root zone.

Organic Fertilizers

Organic fertilizers are either natural or synthetic and contain carbon in their chemical structure. Nitrogen from **natural organic fertilizers** becomes available only after the product begins to break down due to soil microbial or chemical action. These are considered slow-release nitrogen sources because nitrogen is

gradually released to the soil solution and becomes available for plant use over a longer period. Soil temperature and moisture are key factors governing microbial activity and, thereby, nitrogen release. Compared to quick-release sources, these have a lower leaf-burn potential and can be applied at slightly higher rates, less often, and without damaging turf.

The primary **synthetic organic fertilizer** is urea, which is considered a quick-release nitrogen product. But urea is often processed and/or combined with other materials to create products with a more or less slow-release characteristic, such as polymer coated urea. As with natural organic fertilizers, nitrogen release from slow-release sources is dependent on soil temperature, moisture, and chemical and/or microbial action.

A soil test will determine if your lawn has adequate levels of phosphorus and potassium to sustain its health and, if not, how much to apply. Unless otherwise indicated by soil test results, fertilizers should contain nitrogen, phosphorus, and potassium (N, P, K) in ratios of 4-1-2 or 3-1-2, respectively. Where soil tests indicate ample phosphorus, purchase a fertilizer with the middle number at zero. Table 1 ("Levels of Home Lawn Care" on page 2) indicates the proper timing and number of applications for lower maintenance lawns. Remember that making the transition to a lawn requiring fewer nutrients is a gradual process and may require the introduction of low maintenance grasses. This is especially true if your existing lawn thins out significantly during the transition process.

Pest Control

Properly maintained, healthy turfgrass can tolerate low levels of pest populations without suffering permanent damage and usually recovers more quickly from insect or disease infestations. However, there may be times, even in healthy lawns, when some pest control is needed to prevent significant damage. Apply pesticides only to areas where pests are evident rather than to an entire lawn. The first step in using pesticides responsibly is to follow the label directions exactly as stated on the container. The label provides important information on its use and on how to dispose of the container.

Before applying insecticides and fungicides to a lawn area, verify that an insect or a disease is causing damage symptoms. Accurate diagnosis may require the assistance of a trained turfgrass professional. When a particular insect or a disease is properly diagnosed, select the appropriate control method, which may or may not include pesticides. Also, the presence of certain weeds often indicates that current cultural conditions may need correcting.

Timing Pesticide Applications

Proper timing of pesticide applications is crucial to their overall effectiveness against pests and to minimize adverse environmental impacts. For example, when weeds or insects are large and mature, herbicides or pesticides may not be sufficiently effective. Likewise, treating diseases during early stages of infection is more prudent and often requires less fungicide than attempting to treat large, heavily infected areas.

Normally, it is only under extraordinary conditions that a fungicide is recommended for a home lawn situation.

Proper timing may also relate to the time of year when a pesticide is most effective. For example, fall is the best time to control perennial broadleaf weeds, such as dandelions or creeping charlie. From mid-September to early October, these plants grow actively and more readily take up an herbicide. Since most other landscape plants are either going dormant for the winter or have been removed from your garden, there is less chance of injuring them. However, that does not give you license to be careless when applying a weed-control product.

Sometimes it is necessary to water an herbicide into the soil for it to be most effective. An example is pre-emergent herbicides used in spring for controlling crabgrass and other annual weedy plants. These herbicides affect seeds as they begin to germinate before they emerge from the ground. Depending on your soil type, apply ¼ to ½ inch of moisture following application. (This is about 1-2 hours of watering with most common lawn sprinklers.) Adjust automatic irrigation systems accordingly. Controlling insects that inhabit soil and thatch also requires watering after application to move the pesticide into the soil and thatch where it is most effective. This reduces the chances of it being carried away in runoff and potentially reduces your exposure to the material. While thatch can hold these materials and potentially reduce their effectiveness, it also can shorten their persistence in the environment.

When applying a post-emergent broadleaf herbicide, spray only enough to thoroughly wet the foliage but not run off from the plant. This prevents the herbicide from going into the soil where it may reach non-target plants, or leach out.

If only a few weeds exist or are confined to a few small areas, hand remove or "spot" treat them with an appropriate herbicide. Apply pre-emergent herbicide only to those areas where crabgrass grew last year. These usually include areas that border sidewalks, driveways, or curbs. Crabgrass may not be present in the remaining lawn areas where it is cooler and where other lawn grasses are more competitive.

It is also important to remember that an occasional weed is not uncommon in lawns. Hand removal and more tolerance on your part of a few "weedy" plants, while maintaining an otherwise healthy lawn, goes a long way toward reducing weed control inputs.

Once pest problems are reduced, proper lawn care practices will encourage vigorous, healthy grass plants, making future pesticide applications minimal or even unnecessary.

While not all these LILaC practices and strategies will fit into everyone's lawn care program, incorporating some of them will go a long way toward reducing expenses, products, time, and labor required to maintain lawns that retain soil and enhance our neighborhoods and communities.

For further information, contact the University of Minnesota Yard & Garden Line

at 612-624-4771, (1-888-624-4771, in greater Minnesota) or your county Extension office.

Upper Midwest Home Lawn Care Calendar for Cool-Season Grasses

This lawn care calendar is a general guide on how to adequately maintain average home lawns in the Upper Midwest area whether or not you use the LILaC program. In these lawns, the density of grass plants is sufficient to completely cover the soil surface so that no part of the underlying soil is left exposed or visible. This calendar does not cover all aspects of lawn care, nor does it cover the many different growing conditions that may exist on a specific property.

	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT	NOV.
SEEDING				—————			
SODDING	—————			—————			
FERTILIZING				—————			
MOWING	—————							
WATERING	—————							
AERATION				—————			
DETHATCHING				—————			
WEED CONTROL	*Crabgrass: pre-emerge —————		Crabgrass: post-emerge			Broadleaf —————		

Legend

(—————) Indicates preferable times to carry out certain lawn care practices.

(.....) Indicates general times to carry out lawn care practices.

* Pre-emergent herbicides are put down before crabgrass seedlings emerge from the ground.

Apply post-emergent crabgrass herbicides to visible growing crabgrass plants. It is best to apply these products when plants are small.

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