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Establishing a New Lawn Using Seed

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Successful lawn establishment means doing the right thing at the right time. Commonly, new lawns fail to become established because of poor quality seed, improper selection of turfgrass species or varieties, poor soil conditions, improper site preparation or lack of irrigation after seeding.

New lawns can be established using seed either by traditional seeding methods or by hydroseeding. Traditional seeding has several advantages:

- The desired species or varieties can be used.
- Cost is less than hydroseeding if the homeowner does the work.
- Less time is needed for job completion.
- Seed grown plants have stronger root systems initially.

Seeding also has some disadvantages:

- The optimum time for seeding is limited.
- Initial establishment takes longer.
- Additional moisture is needed.
- Weed invasion can be a problem, particularly in the spring.

Hydroseeding is suited to severe slopes, which are susceptible to soil erosion. Hydroseeding involves spraying (blowing) a combination of seed, water, fertilizer, lime (if needed) and mulch on a prepared lawn area. Because you don't have to mix fertilizer in the soil or add mulch, there is less labor involved with hydroseeding than with the traditional method. The disadvantage of hydroseeding is that the seed does not have complete contact with the soil and may dry out and die.

- 1- Determine the time and method of establishment.
- 2- Measure the area to be planted.
- 3- Soil test the area to be planted.
- 4- Remove large rocks and debris.
- 5- Incorporate organic matter.
- 6- Incorporate fertilizer and lime (if needed).
- 7- Rake the surface to be planted.
- 8- Select proper turfgrass species.
- 9- Seed the site.
- 10- Rake and roll the seeded surface.
- 11- Mulch the seeded area.
- 12- Irrigate the newly seeded area.
- 13- Mow the area after establishment.
- 14- Apply weed control.

Your success in establishing your lawn depends on how well you prepare the site, choose the best seed varieties for your conditions and carry out each of the following steps:

Step 1. Timing: Late summer and early fall plantings produce the best results in Michigan. The best time to seed your lawn is from August 15 to September 15. The warm days and cool nights are ideal for seed germination and seedling growth. Spring is the second best time to seed turfgrass, beginning in late spring or early summer but no later than June 15. No matter what time of

year you seed your lawn, you must frequently sprinkle lightly to keep the topsoil moist without creating puddles. Adding extra organic matter to the soil before seeding, covering the seed with a little extra topsoil and protecting the seed with a seed cover such as straw mulch to conserve moisture will encourage the turf seedlings to grow. If you cannot water your lawn, do not seed your lawn in late spring or early summer. Weeds can quickly invade a newly seeded lawn that isn't growing rapidly because of water stress.

Step 2. Measuring: Accurately measure the area to be seeded. You won't be able to carry out most of the following steps unless you know the size of your new lawn.

Step 3. Soil testing: Soil testing is important to determine the nutrient status and pH of your soil. Samples should be taken well before you want to seed. Soil test mailing kits may be obtained from your county Extension office for a nominal fee. These kits provide the necessary information on how to take soil samples properly and include a mailing container to forward the



sample to the Michigan State University Soil and Plant Nutrient Laboratory. Start by taking several composite samples (at least eight), using a shovel or spade to cut 1-inch slices of soil from the surface to a depth of 4 inches from scattered parts of the proposed lawn area. Combine the samples in a clean bucket and remove any plant parts present in the sample, mix well and send 1 cup of the mixture to: Soil and Plant Nutrient Laboratory, 81 Plant and Soil Sciences Building, Michigan State University, East Lansing, Michigan 48824.

Recommendations for liming and fertilizer will be returned to you along with the laboratory results.

Step 4: Preparing the soil: When building a new home, keep your topsoil in a pile off to the side. After the building is complete, spread it evenly over the lawn area. Spreading topsoil and final grading may be started once the soil is dry enough to be worked without sticking to implements or becoming compacted. Remove stones, roots, large soil clods and other material. The thickness of the topsoil should be uniform on slopes and in level areas alike. The final grade or slope of the lawn should be away from the building, and good surface drainage should be evident. Normally, a fall of 1 foot every 50 feet will keep excess water from standing on the surface of the lawn. Too great a slope may lead to erosion, difficulties in mowing and possible scalping.

If available topsoil is not adequate to level the soil surface or provide an adequate root zone (at least 4 inches), additional topsoil can be purchased. Specify that the purchased topsoil be screened to eliminate weedy perennial grasses and stones. Try to match the texture of the additional topsoil as closely as possible to the texture of the soil on the site.

If you are renovating an existing lawn or if grass or broadleaved weeds are present, use a suitable systemic herbicide (weed killer) such as glyphosate, and repeat the treatment as necessary before seeding. Rototill the soil to a depth of 4 to 6 inches. After tilling, rake the soil to remove any plant debris and eliminate drainage problems (slope away from house, garage, etc.) and low areas as listed in previous steps.

If topsoil or organic matter isn't added, the existing subsoil should be tilled to a depth of at least 6 inches to increase water and root penetration. Tilling to this depth is usually not possible with small, walk-behind

tillers so a tractor-mounted tiller should be used. Avoid tilling the soil when it is excessively moist because clods will be formed. To determine if the soil is dry enough to be tilled, take a small handful from a depth of about 4 inches and squeeze it lightly. If the soil cracks and starts to break apart after you relax your hand, it is dry enough to till.

Step 5. Adding organic matter: Organic matter can improve the soil's drainage, aeration and nutrient-holding capacity. A 2-inch or deeper layer of peat moss, manure, compost or other organic material can be applied. Use well-rotted organic matter to avoid problems with weed seeds, diseases or other factors that can inhibit turfgrass growth. Organic matter and other soil additives should be tilled into the topsoil. Hand mixing is slow, hard work and seldom results in a uniform mixture. Even distribution of organic matter in the top 4 to 6 inches of soil is very important.

Step 6. Applying lime and fertilizer: Incorporate any recommended lime or fertilizer into the top 4 inches of soil as you prepare the final grade and planting bed. Follow the rate recommendations that came with the soil test results. In the absence of a soil test, use 10 pounds of 10-10-10 fertilizer (or its equivalent) per 1,000 square feet to supply minimal fertility. Rake any fertilizer or lime into the top 4 inches of the soil without delay.

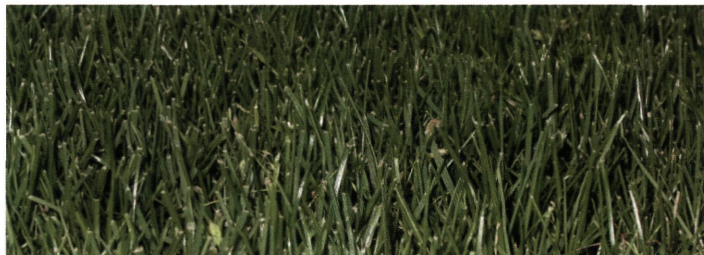
Step 7. Rolling the seed bed: After raking, roll the soil with a roller weighing 200 to 300 pounds to firm the soil, or water the soil thoroughly and allow it to settle. If the heel of your shoe sinks in approximately $\frac{1}{2}$ inch, you have the proper loose planting bed for ideal seed germination. If any humps or hollows appear, fill them in or rake them out until the surface is smooth.

Step 8. Selecting the right type of grass for your site and use: Kentucky bluegrass, perennial ryegrass, tall fescue and fine fescue are cool-season turfgrasses commonly used in Michigan. These grasses grow best when soil temperatures are between 50 and 65 degrees F and when air temperatures are between 60 and 75 degrees F. These conditions occur in both spring and fall in Michigan. Without irrigation, cool-season turfgrasses may become dormant during periods of hot or dry weather in the summer.





Kentucky bluegrass: Kentucky bluegrass is the most popular turfgrass species in Michigan. Varieties differ in color, texture, density, tolerance to close mowing, disease and insect resistance. Kentucky bluegrass is best suited to well-drained soils and moderate to high levels of sunlight. With proper management, it will form a high quality, long-lasting turf. It has an aggressive sod-forming nature that allows rapid recovery from injury in heavily trafficked areas. Kentucky bluegrass germinates and becomes established slowly, so weeds may become a problem if the lawn is seeded in late spring or early summer. For a high quality, weed-free turfgrass, Kentucky bluegrass requires at least four applications of fertilizer per season and frequent irrigation during hot, dry periods. All varieties should be mowed to a height of 2 to 2½ inches or higher.



Perennial ryegrasses: Both perennial and annual (Italian) ryegrasses are used for lawns. Among lawn grass species they germinate the quickest and have the fastest rate of seedling establishment. Perennial and annual ryegrasses are not recommended in pure stands except when quick establishment is needed, as on heavily trafficked areas of athletic fields. The turf quality of annual ryegrass is poor. It is difficult to mow and is useful only as a temporary cover. Both ryegrass species are susceptible to heat, cold, leaf spot and brown patch disease. On sites where Kentucky bluegrass is the grass of choice, it is beneficial to include 10 to 15 percent perennial ryegrass in the mixture to provide quick soil coverage and improve germination conditions for the bluegrass.

Tall fescue: Tall fescue in general has low maintenance and fertility requirements and possesses good insect and disease tolerance. It performs best on well-drained soils. It has good drought tolerance and provides moderate to good levels of turfgrass quality with limited maintenance. If you are concerned about conserving water for lawn irrigation, tall fescue is a good choice. Tall fescue is best seeded in a pure stand, not mixed with other turfgrass species. Tall fescue **must** be seeded as listed in Table 2. Low seeding rates result in a clumpy, coarse-textured lawn.



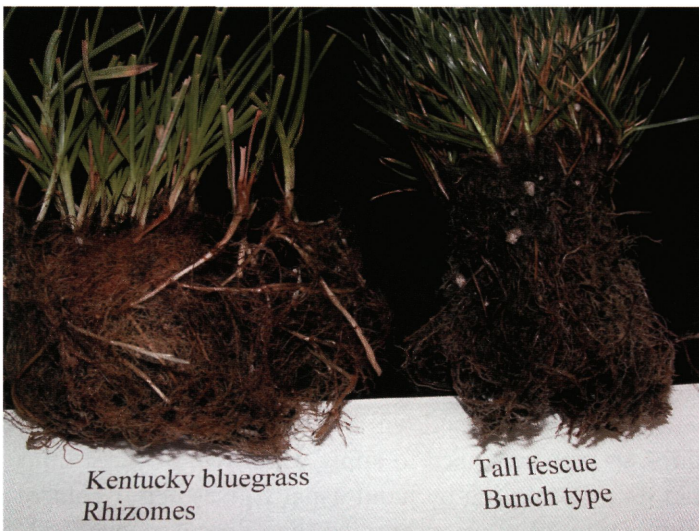
Fine fescue: Red, hard and Chewings fescues are fine-leaved turfgrasses that grow well in shady locations with low soil moisture and fertility. Fine fescue should not be seeded in pure stands because it will rapidly develop thatch, which leads to a decline in turf quality. Fine fescue is best used as a companion grass with Kentucky bluegrass in mixtures containing 85 to 90 percent Kentucky bluegrass and 10 to 15 percent fine fescue for low-maintenance and shaded lawns.

Various turfgrass species have different growth habits and characteristics. Table 1 provides a summary of these differences (For variety selection, see Extension bulletin E2912 entitled, "Turfgrass species and cultivar selection.")



Table 1: Adaptations and characteristics of cool-season turfgrasses.

Adaptation	Kentucky bluegrass	Perennial ryegrass	Turf-type tall fescue	Fine fescue
Growth habit	rhizomes	bunch-type	bunch-type	rhizomes
Establishment rate	slow	fast	medium	medium
Mowing frequency	high	medium	low	low
Tolerates close mowing	good	medium	good	poor
Traffic tolerance	good	medium	good	poor
Drought tolerance	poor	poor	good	good
Shade tolerance	medium	medium	medium	good



Step 9. Seeding: The most important step in establishing turfgrass is to select high quality species and varieties adapted to the site conditions and the intended use of the turf. Table 1 lists the characteristics of each type of grass and where it is best used.

The seed label will list the name of the turfgrass species and cultivars present in the package, seed purity, seed germination percentage, crop seed content, amount of inert matter, weed seed content, lot number and the date on which the germination test was conducted. Always retain the label after purchasing turfgrass seed — it will assist your communications with the vendor or producer in case a problem arises. Avoid species that are undesirable in your lawn, such as timothy, red top, ryegrass, orchard grass, bentgrass or pasture-type grasses such as Kentucky-31 tall fescue and Linn perennial ryegrass cultivars. Don't buy unlabeled seed. The cost of good seed is a small price to pay for a high quality lawn.

Most commercially available seed is both a blend (two or more cultivars of the same species) and a mixture (cultivars of two or more species). Some retailers have seed in bulk and you can mix your own. If you decide to mix your own get specific instructions on the types and varieties best suited to your conditions. Carefully follow the recommendations for the number of pounds of each type of grass to be included. Mixture recommendations are based on the number of seeds of each type, and the number of seeds per pound varies widely between types.

A blend — a combination of two or more cultivars of the same species, such as two varieties of Kentucky bluegrass — is advantageous because varieties differ in their resistance to diseases and insects. Your blended lawn is likely to look good even if one of the types of grass is under attack.

A seed mixture, made up of two or more turfgrass species such as a combination of Kentucky bluegrass and perennial ryegrass gives good results under a variety of growing conditions. Each species in the mixture is best adapted to certain conditions such as shade, sandy or poorly drained soils and a certain level of maintenance required. Few lawns have uniform drainage or the same amount of sun throughout, but the same seed mixture can be used on the whole area.

When buying packaged seed, look for high seed purity and germination percentage and seed at the correct rate (Table 2). Excessive seeding rates lead to excessive competition and increased disease. Light seeding rates result in poor plant density and invite weed invasion, particularly with bunch-type turfgrasses.

Sow the seed using a mechanical drop spreader or scatter it by hand. Both methods work best when the air is calm. Best results are often obtained by dividing the



Table 2: Recommended turfgrass species mixtures¹ and their seeding rates.

Turfgrass species mixtures (by weight)		Seeding rate (pounds/1,000 sq. ft.)
Kentucky bluegrass/ perennial ryegrass	85% 15%	3-4
Kentucky bluegrass/ fine-leaf fescues	85% - 90% 10 -15%	3-5

¹Do not purchase mixtures with pasture grasses such as Kentucky-31 tall, annual ryegrass or Linn perennial ryegrass for lawn use.



seedbed into several equal parts and setting apart a portion of the seed for each area. Sow half of the seed recommended for each area in one direction and the remaining half at right angles to the first.

Step 10. Raking and Rolling: Rake in the seed lightly; the teeth of your rake should just lightly touch the soil surface. Too much pressure will cover the seeds too deeply or will move some of the seed, resulting in bare spots in your new lawn. Cover the seed so that about 10 percent is still visible. Roll the area with a light roller (50 to 75 pounds), such as a roller with most of the water ballast removed, to firm the soil around the seed. Light rolling will speed up germination and increase seedling survival.

Step 11. Mulching: Straw is the traditional material used for mulching, but processed wood fiber and other types of mulches are available. Processed materials contain no weed or grain seed and are easier to spread, but they are more expensive. If you use straw as mulch, use



clean wheat, oat or barley straw. Avoid using rye straw. Spread the straw so that there is only one layer of straw stems on the

ground. This will usually require about two, 60-pound bales per 1,000 sq.ft. You should be able to see the soil surface between the straw stems. Mulch put on at this rate may be left on the ground to decompose. Heavier mulches that completely cover the soil should be removed as soon as you see grass blades emerging from the soil. If seeding is done in late fall, the mulch should be left on during the winter. Another type of mulching is polyethylene, a white fabric blanket. This material increases air and soil temperature and enhances seed germination while stopping soil and seed erosion. It also acts as an excellent windbreak and effective insect control.

Step 12. Watering: Frequent light watering promotes seed germination and rapid establishment of the lawn. Avoid allowing the seedbed to dry out as well as applying so much water that the soil becomes soggy or seed is washed away. The soil will dry quickly on warm, sunny days, so you may need to apply water two or three times per day. Sprinkling by hand usually gives better control of the amount of water applied than does a mechanical sprinkler. As the grass begins to grow, about a week after sowing, decrease the frequency of watering but increase the amount of water applied each time to encourage deep rooting. Normally, a 2-month-old turf may be watered the same as an established lawn. Water when the grass shows signs of stress, such as the turf turning a dull green rather than bright green or the grass blades remaining flat after you walk across the lawn.

Step 13. Mowing: Mow as soon as grass blades exceed 3 inches in height. Keep your mower blades sharp to avoid injuring the young plants. Keep traffic off the new lawn until the new turf has filled in enough that you cannot see the soil. Until then, the only traffic on the turf should be you and your mower. Fertilizer in the seedbed of spring-started lawns will normally last until fall, when the turf should be fertilized again. Lawns established in the fall will need additional fertilizer the following spring.



Step 14. Weed control: In lawns planted in late spring or early summer, crabgrass can be a problem. Siduron preemergence herbicide should be applied immediately after seeding and before mulching and irrigating. Broadleaf weeds in newly seeded turfgrass areas can be most effectively controlled after the second or third

mowing by using traditional broadleaf herbicides such as 2,4-D, dichlorprop, mecoprop, triclopyr, dicamba or combinations of these materials. When selecting and using a herbicide, read and follow label directions carefully.

Sources of Seed

The following list of seed companies is included to help the reader who may not be able to find sources of some varieties of seed — it is not intended as a recommendation of these companies, or as an inclusive/exclusive listing.

CSI/GEOTURF INC.
1225 76th Street
Byron Center, MI 49315
Phone: 888-208-5772

J. MOLLEMA & SONS
4660 E. Paris, S.E.
Grand Rapids, MI 49512
Phone: 800-234-4769

MICHIGAN STATE SEED SOLUTIONS
717 N. Clinton
Grand Ledge, MI 48837
Phone: 800-647-8873, 517-627-2164

RHINO SEED AND LANDSCAPE SUPPLY
850 Old US-23
Brighton, MI 48114
Phone: 810-632-5640

SOUTHERN MICHIGAN SEED
48580 County Road 352
Decatur, MI 49045
Phone: 269-423-7051

STANDISH MILLING COMPANY INC.
1331 West Cedar Street
Standish, MI 48658
Phone: 989-846-6911

SWEENEY SEED COMPANY
110 South Washington Street
Mount Pleasant, MI 48858
Phone: 800-344-2482

TRI TURF
3751 Blair Townhall Road
Traverse City, MI 49684
Phone: 800-636-7039

Other Publications in this Series

(The following publications and other materials on lawns, turfgrasses and related topics are available online at: www.web2.msue.msu.edu/bulletins/intro.cfm or from your MSU county Extension office — look under “Government, County” in your phone book.)

E-2911, Nine Steps for Establishing a New Lawn Using Sod

E-2912, Turfgrass Species and Cultivar Selection

E-2913, Calendar for Lawn Care

E-2917, Performance of Bentgrass Cultivars and Selection Under Putting Green and Fairway Conditions (for golf courses)

E 2923, Performance of Tall Fescue Turfgrass Cultivars in Michigan: 2001-2003

E-2924, Performance of Kentucky Bluegrass Cultivars in Michigan: 2002-2003

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