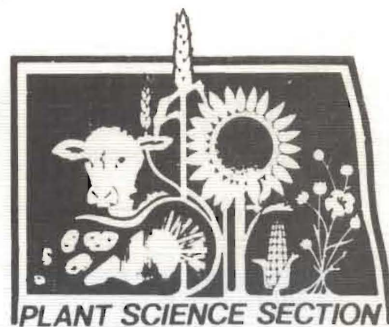


Cooperative Extension Service
 NORTH DAKOTA STATE UNIVERSITY
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 UNITED STATES DEPARTMENT OF AGRICULTURE
 COOPERATING



CIRCULAR H-244 (Revised)

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Your Lawn:

IT CAN BE BEAUTIFUL

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A well-maintained lawn is the basic element of an attractive home landscape. Lush, green turf provides a natural setting for your home and the surrounding woody and herbaceous plantings.

Time spent in preparing the soil base for your lawn before seeding or sodding will be reflected in the quality of your lawn for years to come. It is wise to control all hard-to-kill perennial weeds, especially quackgrass, before establishing a new lawn. For additional information, see Circular H-432, "Weed Control in Lawns."

To have a lasting lawn of quality, at least six inches or more of good topsoil should cover the surface. Avoid working the soil when it is too wet. Rough grading and spreading of topsoil is usually completed with a small tractor and scraper. Unless your soil tests high in phosphorus, till a high analysis phosphate fertilizer (such as 18-46-0) into the soil prior to final grading. An application rate of 5 pounds per 1,000 square feet is recommended. This is the last opportunity to apply phosphorus in the root zone. Phosphorus, unlike nitrogen, does not leach through the soil profile and, therefore, is not as effective when applied on the soil surface.

Use a garden rake or drag a metal door mat or plank over the surface to smooth irregularities and fill depressions in the final seedbed. It is advantageous if the final seedbed remains granular in tith. Fine, dusty, overly compacted seedbeds may crust badly when watered. The finished grade should slope gently away from the home in all directions for surface drainage.

WHAT TO SEED

Kentucky Bluegrass is the most desirable turfgrass for North Dakota lawns. It has a vigorous underground rhizome system and is capable of rapid recovery from heavy traffic. Where bluegrass makes up more than half of the seed mixture, it is meant to take over and dominate other grasses.

Buy lawn seed that contains at least 50-60% by weight, or higher percentages, of Kentucky Bluegrass.

Creeping Red Fescue is a desirable companion grass and is more shade and drought tolerant than bluegrass. Red Fescue is also a rhizome-forming grass and is preferred over Chewings Fescue in seed mixtures, because the latter is a bunchgrass. Both Kentucky Bluegrass and Creeping Red Fescue are generally included in a good seed mixture for the average lawn. An average lawn may be defined as one with varying growing conditions; that is, areas exposed to full sun, areas that are shaded and areas varying in slope, soil and moisture conditions. This is the reason a grass seed mixture is usually recommended rather than planting the entire lawn to only one cultivar (cultivated, named grass variety). A single cultivar may not be well adapted to all environmental conditions, even within the confines of a home yard. **KENTUCKY BLUEGRASS CULTIVARS ARE CATEGORIZED AS COMMON AND ELITE TYPES - COMMON TYPES:** These are bluegrasses with a broad genetic base. Such cultivars carry a mixture of hereditary combinations which renders them adaptable to a wide range of environmental conditions.

Common Kentucky Bluegrass (*Poa pratensis*) is one of the most widely used lawn grasses. It thrives in cool climates and is a medium-textured, bright green, sod-forming grass. It is suitable for average lawn situations and is usually less expensive than seed mixtures which list named bluegrass cultivars on the label.

Park Kentucky Bluegrass, developed in Minnesota, was selected for seedling vigor. It establishes more rapidly than many Kentucky Bluegrass cultivars. Park tends to green up a little earlier in the spring and retain this color longer in the fall than some cultivars. It is similar to Common Kentucky Bluegrass in texture and color and is well-adapted to this region.

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Newport is darker green and has a wider leaf than Common Kentucky Bluegrass. It retains its green color well into November. It is similar to Common Kentucky Bluegrass in most other characteristics.

Common types of Kentucky Bluegrass are quite upright in growth habit, of medium density and should be mowed no lower than two inches in height. They rarely thatch and do not require as high levels of fertility or irrigation as elite cultivars. Consequently, they are less demanding in management. An example of a desirable mixture would be approximately 30% Creeping Red Fescue, 55-60% Kentucky Bluegrass (composed of two or more cultivars, such as Park, Newport or other common types) and 10-15% annual or perennial ryegrass.

ELITE TYPES OF KENTUCKY BLUEGRASS

Elite Kentucky Bluegrass cultivars have been selected for specific purposes and with specific characteristics. These include low growth profile, uniformity, high density, disease resistance, shade tolerance, improved color, slow growth and advantages for sod production. In general, they are characterized by having a more restricted genetic makeup and adaptability than common bluegrass types. Most elite cultivars also require higher fertility and irrigation management levels than the common types. Elite bluegrasses form dense, dark green turf and may be regularly mowed as low as 3/4 - 1 inch. Dethatching may sometimes be necessary. Elite types are recommended for high quality athletic turf and where exceptional lawns are desired. If you are willing to water, mow and fertilize regularly, you may desire to use these elite grasses.

Elite Kentucky Bluegrass cultivars most often found in lawn seed mixtures in this area are: Adelphi, Aquila, Glade and Parade. Others, such as Bristol, Fyking, Merit and Victa may be included in packaged lawn seed. Any of these elite bluegrass cultivars will provide a satisfactory bluegrass lawn. Remember, mixtures or blends of two or three cultivars are preferable to seeding lawns to only one cultivar.

SHADE TOLERANT TYPES

Most Kentucky Bluegrass cultivars lack shade tolerance. Several selections, however, have been named that will grow satisfactorily in 50-60% shade. These include Nugget, Glade and Ben Sun. If you desire to establish a lawn where heavy shade is a problem, an example of a desirable mixture would be approximately 40-60% Creeping Red Fescue and 40-60% Kentucky Bluegrass (including one or more shade tolerant cultivars).

SEED DISTRIBUTION

Major seed distributors in North Dakota retail standard lawn seed mixtures through local elevators and seed stores. Such seed mixtures commonly contain approximately 60% certified Park Kentucky Bluegrass, 20-25% Creeping Red Fescue and 10-20% perennial ryegrasses. These seed mixtures are very satisfactory for an average, low maintenance lawn in North Dakota. Many rural and urban lawns may be considered low maintenance lawns. Such lawns

are not regularly fertilized or watered, and mowing is often done when it is convenient for the homeowner rather than when the grass should be cut.

A number of reputable out-of-state seedsmen also package and distribute various lawn seed mixtures in the state. They range from high priced, high quality lawn mixtures to lower priced, low quality lawn mixtures. Read the label on the container carefully. **Be cautious of lawn seed bargains.** The price of lawn seed is based on the percentage of bluegrass and other fine-textured species in the mixture; consequently, low priced seed often contains high percentages of non-permanent, coarse-textured grass species. Such mixtures are not desirable for home lawns.

NURSEGRASSES

Seed mixtures containing more than 10-20% of annual or short-lived perennial nursegrasses are not recommended. Small percentages of these coarser-textured grasses can be beneficial in establishing new lawns since they germinate rapidly, reduce slope erosion problems and protect the slower germinating permanent grass seedlings from drying winds. Annual or perennial ryegrasses are the preferred nursegrass species. Redtop is not recommended as a nursegrass because it is very coarse-textured and clumps may persist, imparting a weedy appearance to the lawn. Ryegrasses and redtop are both deficient in shade tolerance. Avoid buying seed for home lawns that contains tall fescue or timothy. Both are extremely coarse-textured, weedy species.

SOW SUFFICIENT SEED

It is false economy to make careful preparation for the seedbed and then skimp on either quality or quantity of seed. For most lawn seed mixtures, 2 to 3 pounds per 1,000 square feet are adequate. Two pounds are more than adequate if the seed mix contains primarily Kentucky Bluegrass and if conditions for germination are optimum. If seed mixtures contain 30 to 40% or more of Creeping Red Fescue, then 3-4 pounds are recommended. Even distribution of seed and adequate water after seeding reduces the need for heavier seeding rates.

ZOYSIA GRASS NOT RECOMMENDED

Zoysia (Meyer Zoysia) receives national advertising each year. It is a warm season grass that is **not adapted** to North Dakota and should not be planted.

WHEN TO SEED

Lawns are best seeded in **early fall or early spring**. Fall is an excellent time because annual weeds are not a problem, evaporation is diminishing, and erosion due to heavy thundershowers is of less concern. However, lawns may be seeded anytime between May 10 and September 15. Turfgrasses may not establish satisfactorily and may suffer winter-kill if sown after September 15. During July to mid-August, when daytime temperatures are high, considerably more irrigation will be necessary to insure an adequate stand of grass.

Sow seed evenly on a calm day. Dividing the seed into two equal parts and then seeding the area twice in different directions will give a more uniform coverage than a single application. Mechanical seeders are usually available for loan from local firms selling lawn seed. Gently rake in the seed. Kentucky Bluegrass seed requires light to germinate so the seed should only be slightly covered. Water thoroughly immediately after seeding. On warm, sunny, windy days it is necessary to water newly seeded lawns two or three times a day for 15 to 20 minutes at a time. Never allow the seedbed to dry out during the germination period. Water more heavily and less often as seedlings develop.

The use of high quality lawn seed, proper planting techniques, and adequate moisture should give you good germination in 10 to 12 days if daytime temperatures are 70°F or above. Lawn grass that germinates and establishes quickly gets the jump on weeds.

SODDING VERSUS SEEDING

Sodding is preferred to seeding when turf is required immediately, where erosion may be a problem or where it is difficult to get seedlings to establish, such as on terraces or steep banks. Sodding is more expensive than seeding even if you lay your own sod.

Good quality sod is not always available. Kentucky Bluegrass sod cut from the prairie may contain troublesome, weedy species such as quackgrass, bromegrass or perennial broadleaf weeds. Costly and disappointing errors may be avoided by obtaining quality cultured sod or by seeding desirable lawn mixtures. High quality sod contains permanent grasses such as Kentucky Bluegrass or bluegrass cultivar blends. Commercial sod seldom contains shade tolerant Creeping Red Fescue. It may be wise to seed shady sites with a shade tolerant grass seed mixture containing Creeping Red Fescue rather than sodding those areas. Kentucky Bluegrass will not perform satisfactorily in areas of more than 50% shade (half-day sun — half-day shade). Several newer Kentucky Bluegrass cultivars, such as Glade, Nugget or Ben Sun, will tolerate up to 65% shade. If available, one might order a commercial sod blend containing a percentage of Glade Kentucky Bluegrass; where new lawns are being established in heavily shaded yards.

Sodding may be done any time throughout the growing season if sufficient water is available. Adequate soil preparation is often neglected before laying sod. **A sodded lawn requires the same soil preparation as a seeded lawn.** Sod is best laid on moist soil. If you lay your own sod, be prepared to lay it immediately upon arrival, since it can be easily damaged by heating if not laid promptly. If sod is to be held more than 24 hours, spread it out and keep it moist. Lay the first row of sod along a straight line across the width of the site. Then, in the next row, stagger the end joints as if laying bricks. The individual sod pieces should be placed as close together as possible, but they should not overlap. Do not stretch the sod during the laying process. When laying sod on a slope, work from the lowest point up to the top. Lay sod strips across, not up and down, the slope. On steep slopes pegging or staking may be necessary.

Water sod immediately after laying and keep moist, but not saturated, until it is well rooted into the soil beneath. After rooting, treat the sodded lawn as any established lawn.

HYDRO-TURF

Hydro-turf can provide a compromise between seeding and sodding for your home lawn. Hydro-turf is a process whereby wood cellulose fiber, grass seed and fertilizer are mixed with water and sprayed on the prepared lawn surface in a slurry form by a commercial applicator. Seed may also be sown on the soil surface and hydro-mulch applied immediately after sowing. The latter is preferable, since all the seed is under the mulch and less apt to dry out during germination. These lawns also require regular watering to insure adequate moisture for germination and growth of grass seedlings. However, the wood cellulose fiber serves as a mulch and helps retain moisture as it adheres to the soil surface. Hydro-turf applications have been successful on slopes or steep banks where installation of sod was previously necessary to establish grass without erosion. Hydro-turf is not a do-it-yourself project as is possible with seeding or sodding home lawns.

MOWING

For new or established lawns, the mower should be adjusted to approximately 2 inches and then mow whenever the grass has grown 1 inch; that is, at a 3-inch height. Lawns maintained at this length are much more vigorous and attractive than "scalped" lawns. Close clipping weakens the grass plants since it removes most of the leaves, exposes the yellowish stems, gives the lawn a parched appearance and opens the door for weeds. A cutting height of 2 inches provides a shady, cooler soil surface, lessens direct evaporation of soil moisture and inhibits weed establishment. Lawns that are continuously cut too short will require extra fertilization and irrigation or the quality will decline.

Keep your mower blades sharp. A dull mower tends to "chew" rather than cut the grass. Dull blades, especially on rotary mowers, leave a "gray hair" effect on the lawn due to uncut fibers and bruised stems.

Since rate of growth varies on different lawns and in different seasons, a definite mowing schedule cannot be recommended. Lawns with adequate moisture and fertility may require mowing every 5 days, while in the heat and drought of summer, 10-day intervals may be sufficient. Allow the lawn to make good growth early in the spring before mowing begins. Clipping close at this time favors weeds at the expense of the grass. In late summer and fall, extending mowing intervals allows grass to store up food reserves for winter. However, in late October lawns may be mowed shorter to facilitate fall and spring raking of leaves. Cutting grass shorter and removing the clippings in late fall will also help reduce damage from such diseases as snowmold during late winter and early spring.

Grass in shaded areas may be mowed less frequently than the remainder of the lawn. Mowing at a 2 1/2-inch height is recommended to maintain vigor and density of shaded turf.

WHAT ABOUT CLIPPINGS (THATCH)?

If lawns are not mowed at regular intervals or if lawns are consistently watered and fertilized, grass clippings may become so abundant that they cannot filter down between the grass blades. Remove them. Heavy accumulations of clippings result in buildup of thatch and can lead to lawn diseases.

Under average conditions of maintenance and frequent mowing intervals, however, clippings can be returned to North Dakota lawns. Light clippings should be left on the lawn, especially new lawns. They not only help conserve moisture but also recycle nutrients to the soil. The decay of these clippings represents one to two average fertilizations over the growing season. Annual spring raking will tend to reduce the possibility of thatch buildup.

WATERING

Proper watering is a major factor in lawn success. The best practice is to soak your lawn until the soil is moistened to a depth of 5 to 6 inches or more each watering rather than applying frequent light sprinklings that only wet the surface of the soil. With liberal watering, roots penetrate the soil more deeply and are better able to withstand drought conditions. Apply about 1 to 2 inches of water each time you water. Lawns need approximately 1 inch of water per week (or 4 to 5 inches per month) to maintain quality.

Although you soon develop a practiced eye, do not guess on how much water to apply. Set a coffee can under the typical fall-out area of your sprinkler. Then check the amount of time that it takes to apply an inch of water to a given lawn area. Despite the convenience of watering in the evening after working hours, it is best to apply water early in the day. Grass that stays wet through the night is more susceptible to disease.

Kentucky Bluegrass-Red Fescue lawns that are not watered during hot, dry summer weather will normally enter dormancy. As moisture is replenished and nights become longer and cooler in late August or early September, these cool-season grasses naturally regreen.

FERTILIZERS

Lawn fertilizers and fine-textured grasses are partners in producing a quality lawn. Commercial brands often list the number of square feet of lawn each bag will cover. Pre-packaged fertilizers are generally available from nurseries, greenhouses, garden centers, local elevators and hardware stores. These fertilizers contain similar nutrient analyses, such as 22-5-9, 24-4-8 or 25-3-3.

A complete lawn fertilizer is one that contains the nutrient elements nitrogen, phosphorus and potassium (potash). For example, a 22-5-9 analysis contains 22% nitrogen, 5% phosphate and 9% potash. Most soils in North Dakota contain adequate amounts of potash. Complete fertilizers, high in nitrogen, will not only benefit nitrogen-deficient lawns but also lawns deficient in phosphorus and potas-

sium. However, since nitrogen is the major nutrient which is nearly always deficient in lawns, straight, high analysis nitrogen fertilizers such as 46-0-0 (urea) or 34-0-0 (ammonium nitrate) are generally recommended to meet nitrogen requirements.

TIME TO APPLY FERTILIZERS

Fall and spring are the best times to fertilize lawns. It is not desirable to fertilize heavily in early spring because this simply promotes excessive shoot growth and in turn additional mowing requirements. It is preferable, therefore, to wait until May 25 to June 10 to fertilize, after the early flush of growth has occurred. This is not a problem with fall fertilization, because the shorter days and cooler nights result in a compact growth habit. Fall fertilization between September 15-30 is very desirable, because it greatly increases density by promoting tiller and rhizome production. Fertilizing lawns from mid-July to mid-August is not recommended due to heat and drought stress encountered by our cool-season grasses.

If irrigation is practiced throughout the growing season, fertilization requirements will be higher due to increased growth and also nitrogen losses due to leaching. Also, it is not generally recommended that high analysis nitrogen fertilizers be applied beneath the drip line of trees or shrubs in lawns from mid-June to mid-September. Such applications could induce late season growth which may inhibit natural hardening-off, predisposing woody plants to possible winter injury. Table 1 lists fertilizer recommendations for minimal and adequate lawn maintenance levels in North Dakota.

FERTILIZER APPLICATION

Use a lawn fertilizer spreader to obtain even distribution of fertilizer. Spreading fertilizer evenly by hand is difficult. Uneven distribution results in "patchy-colored" lawns. Apply fertilizer only when the grass is dry and then water the fertilizer in thoroughly. Fertilizer residues are then washed from leaf blades without any danger of burning. If the homeowner follows the fertilizer recommendations in Table 1, each application will not exceed 1-2 pounds of actual nitrogen per 1,000 square feet. This will further eliminate the danger of burning and stream pollution due to run-off. If the fertilizer selected contains 50% or more of the total nitrogen in a slowly available or water insoluble form (e.g., an organic type such as ureaform), there is no danger of burn either.

WHAT ABOUT AERATORS (COMPACTED SOIL)?

Aeration is most necessary on heavy clay soils. Sandy, lighter-textured soils may never need aerating. Lawn areas subject to heavy foot traffic are most prone to compaction.

Aeration involves opening the soil to allow more rapid penetration of water, oxygen and nutrients to the roots of the grass. This enables the turf to develop a deeper, more vigorous root system.

If you use a mechanical aerator, select one that removes a plug of soil. Moist soil is necessary for satisfactory operation. However, an aerator should not be used when the soil is too wet.

SOIL ADDITIONS AND ROLLING

Topsoil may be added to uneven areas of your lawn. One to 2 inches of soil can be raked into low areas annually until proper grade is restored without smothering the established grass.

Spring rolling of established lawns is not recommended on heavy clay soils. Compaction of soil may result. Limit rolling to leveling of added soil and firming the seedbed for new lawns or smoothing established lawns on light-textured soils.

WEED CONTROL

The best weed control is a healthy turf. However, selective herbicides are often necessary to control certain troublesome weeds. Read labels carefully and follow the manufacturer's directions. Use only amine or oil soluble amine forms of 2,4-D herbicides and spray only on calm days. Pro-

tect broadleaf cultivated plants growing nearby. Tomatoes are especially sensitive to spray drift or fumes of 2,4-D. Hand pull occasional large weeds rather than using herbicides unnecessarily. For additional information, see Circular H-432, "Weed Control in Lawns."

INSECTS

Lawn insects are not generally a serious problem in North Dakota. Occasionally ants and white grubs create minor problems. Both pests can be controlled with the insecticide Diazinon (Spectracide). Follow directions on the label for time and rate of application.

LAWN DISEASES

North Dakota lawns are occasionally attacked by certain diseases. For lawn disease information see Circular PP-653, "Lawn Diseases" or "Lawn Diseases in the Midwest," North Central Regional Extension Publication No. 12, 1978.

The information given herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by North Dakota Cooperative Extension Service is implied.

TABLE 1: LAWN FERTILIZATION RECOMMENDATIONS

FERTILIZER ANALYSIS	ADEQUATE LAWN MAINTENANCE		MINIMUM LAWN MAINTENANCE
	SPLIT APPLICATION METHOD (2) Apply May 25-June 10 AND September 15-30.		SINGLE APPLICATION METHOD (2) Apply May 25-June 10 OR September 15-30.
	Rate in pounds of fertilizer per 1,000 sq. ft. (to supply approximately 1 lb. of actual N in spring and 2 lbs. actual N in fall).		Rate in pounds of fertilizer per 1,000 sq. ft. (to supply approximately 2 lbs. of actual N).
Examples of Straight Nitrogen Fertilizers (1)	May 25-June 10	Sept. 15-30	
46-0-0 (urea)	2 1/2	4 1/2	4 1/2
34-0-0 (ammonium nitrate)	3	6	6
Examples of Complete Fertilizers (1)			
22-5-9, 23-7-7, 24-4-8 and 25-3-3	4-5	8-9	8-9

- (1) Only one application of a **complete** fertilizer is needed each year. **Straight** nitrogen fertilizers may be used for additional applications.
- (2) If turf is damaged by heavy traffic, snowmold or other overwinter causes and improvement in quality is desired in early spring, apply an additional N application between April 25-May 5 at the rate listed under the **Split Application Method** for May 25-June 10.