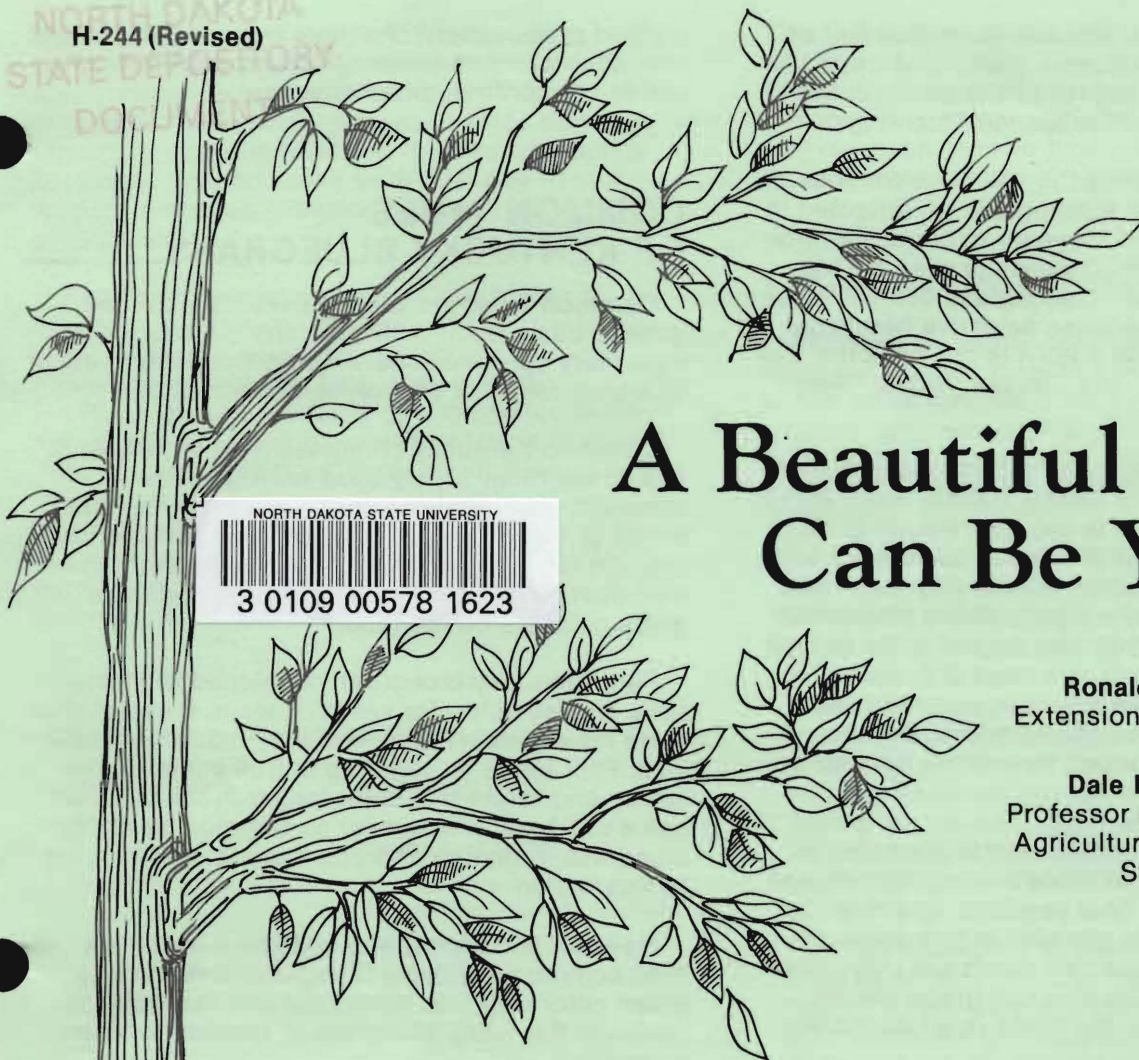


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STATE DEPARTMENT  
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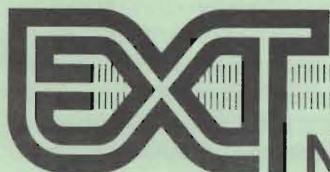
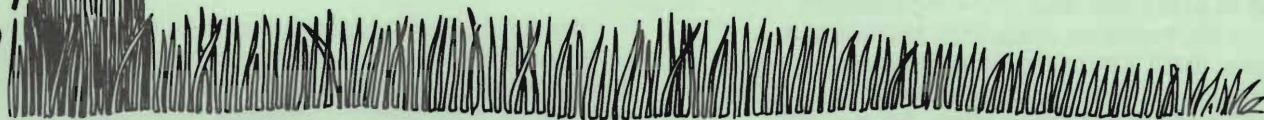


# A Beautiful Lawn Can Be Yours!

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**NDSU EXTENSION SERVICE**

North Dakota State University, Fargo, ND 58105

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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. Control of all hard-to-kill perennial weeds is wise before establishing a new lawn. Quackgrass control is especially important because selective herbicidal control of quackgrass in a lawn is not possible. For additional information, see Circular W-926, "Weed Control In Lawns."

Six inches or more of good topsoil should cover the surface to support a lasting quality lawn. 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, at a rate of 5 pounds per 1,000 square feet. Phosphorus, unlike nitrogen, does not leach through the soil profile and, therefore, is more effective when incorporated than 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. The final seedbed should remain granular in tilth because 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. Bluegrass 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 to 60 percent by weight 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 chewings fescue is a bunchgrass. Both Kentucky bluegrass and creeping red fescue generally are 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 usually is recommended rather than planting the entire lawn to only one cultivar

(named grass variety). A single cultivar may not be well adapted to all environmental conditions, even within the confines of a home yard.

## COMMON TYPES OF KENTUCKY BLUEGRASS

Common types are bluegrasses with a broad genetic base. Such cultivars carry a mixture of hereditary combinations which allow them to adapt 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.

Newport is darker green and has a wider leaf than common Kentucky bluegrass. It retains its green color well into November and 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 2 inches in height. They thatch less and require less fertility and irrigation than elite cultivars. An example of a desirable mixture would be approximately 30 percent creeping red fescue, 55 to 60 percent Kentucky bluegrass (composed of two or more cultivars, such as Park, Newport or other common types) and 10 to 15 percent 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, elite types 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 turfs and may be regularly mowed as low as 0.75 to 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, Fylking, Merit and Victa may be included in a 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 to 60 percent shade. These include Nugget, Glade and Ben Sun. An example of a desirable mixture for establishing a lawn where heavy shade is a problem, is approximately 40 to 60 percent creeping red fescue and 40 to 60 percent Kentucky bluegrass (including one or more shade tolerant cultivars).

## GRASSES FOR SPECIAL PURPOSES.

### Fusarium Resistant

Kentucky bluegrass cultivars that are resistant to Fusarium blight include Rugby, Parade, Adelphi and Vantage.

Fusarium-resistant perennial rye cultivars include Delray, Derby, Pennfine, and Manhattan II.

### Drought/Heat Tolerant

Kentucky bluegrass cultivars that have more tolerance to heat and drought conditions include Adelphi, America, Columbia, Parade, Vantage and Challenger.

Cultivars of perennial rye that show good drought and heat tolerance are Dasher, Derby, Pennant and Pennfine. NK 200 is both drought and cold tolerant.

Wintergreen is a drought and heat tolerant creeping red fescue cultivar; Scaldis and Biljart are tolerant hard fescue 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 percent certified Park Kentucky bluegrass, 20 to 25 percent creeping red fescue and 10 to 20 percent perennial ryegrass. 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 often is 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 nonpermanent, coarse-textured grass species like annual ryegrass. Such mixtures are not desirable for home lawns.

## SUPPLEMENTAL GRASSES

Seed mixtures containing more than 10 to 20 percent of annual or short-lived perennial supplemental grasses 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. Perennial ryegrasses are the preferred supplemental grass species. New varieties like NK-200, Delray and Golden all have improved longevity and winterhardiness. Redtop is not recommended as a supplemental grass because it is very 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 is adequate. Two pounds is 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 percent or more of creeping red fescue, then 3 to 4 pounds per 1000 square feet is recommended. Even distribution of seed and adequate water after seeding reduces the need for heavier seeding rates.

## **ZOYSIAGRASS NOT RECOMMENDED**

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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**

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Lawns are best seeded in early fall or early spring. Fall is the best time because annual weeds are less of a problem, evaporation is diminishing, and erosion from heavy thundershowers is less likely. Turfgrasses may not establish satisfactorily and may suffer winter-kill if sown after about September 15. Considerably more irrigation will be necessary to insure an adequate stand of grass during July to mid-August, when daytime temperatures are high. Excessively high temperatures could limit establishment.

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 usually are 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, newly seeded lawns should be watered two or three times a day for 5 to 10 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 good germination in 10 to 12 days if daytime temperatures are 70 degrees Fahrenheit or above. Lawn grass that germinates and establishes quickly will get the jump on weeds.

## **SODDING VERSUS SEEDING**

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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 percent shade (half-day sun, half-day shade).

Several newer Kentucky bluegrass cultivars, such as Glade, Nugget or Ben Sun, will tolerate up to 65 percent shade. If available, a commercial sod blend containing a percentage of Glade Kentucky bluegrass might be used 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 preparations 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. Sod to be held more than 24 hours should be spread out and kept 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. Pegging or staking may be necessary on steep slopes.

Immediately after laying, roll the sod with a half-filled balast roller. This is to make sure all root surfaces of the sod are in good contact with the soil.

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.

## **COST COMPARISONS — SODDING VS. SEEDING**

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For budget determinations, a cost comparison between sodded and seed lawns is made for an area of approximately 10,000 square feet. A low, competitive price for sod in this area would be \$800 to \$900 or \$80 to \$90 per 1000 sq. ft. If the homeowner chooses not to do this very labor intensive work and opts for the contractor to do the laying, add another \$250 to \$300 or \$25 to \$30 per 1000 sq. ft., depending on the extent needed. This totals between \$1350 to \$1700 to grade 10,000 square feet and install quality sod. Seeding the

same lawn would cost \$80 to \$100 for seed, \$300 to \$500 for the grading, and about \$200 to \$300 for spreading seed and raking. The total cost to have a lawn installed by hand seeding would be \$800 to \$900.

## HYDRO-TURF

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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 also may 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 of home lawns.

## MOWING

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For new or established lawns, adjust the mower to approximately 2 inches and then mow whenever the grass has grown an 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 five days, while in the heat and drought of summer, 10 to 14 day intervals may be sufficient. Allow the lawn to make good growth early in the spring before mowing begins. Clipping close in early

spring 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. Continue mowing into late October to facilitate fall and spring raking of leaves. Cutting grass 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 2.5-inch height is recommended to maintain vigor and density of shaded turf.

## CLIPPINGS — TO CATCH OR NOT TO CATCH? \_\_\_\_\_

Not catching clippings returns nutrients to the soil and saves labor in getting the task of lawn mowing completed. Some people compromise and mow their lawns in a round-up pattern so, when removal of clippings is necessary, it may not be as time consuming as emptying the grass catcher. Allowing clippings to fall returns nutrients to the turf.

One method is to do both...collect the clippings when the grass has gone beyond the standard height of about 3 inches at the time of mowing. Let the clippings go if grass growth has slowed due to heat or drought conditions or the mowing interval is short. Short clippings fall deep into the turf and rapidly decompose.

Catching is recommended where the grass has not been mowed regularly or recently applied fertilizer is causing excessive top growth. Windrows of excessive clippings are unsightly and may eventually cause disease problems. If fungicides are being used to control current disease problems, don't catch the grass clippings for the first couple of mowings after application. If a herbicide has been applied to the lawn, it is better to allow the grass clippings to remain to maximize weed control and to be sure that clippings are not used as a mulch around trees, shrubs, flowers or vegetables.

Thatch build-up, is often cited as the reason for clipping removal, but this has little validity. Grass clippings are composed mostly of water and do not contribute significantly to thatch accumulation in a lawn.

## WATERING AND AUTOMATIC IRRIGATION SYSTEMS

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, apply more water each time 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.

In northern climates, any new irrigation system should be equipped so that a pressurized air tank can blow all water out of the lines at the end of the season. Otherwise, water remaining in the lines, valves and heads over winter will freeze and cause damage.

Sprinkler systems for lawns in North Dakota should be designed so that the spray pattern from one head overlaps an adjacent head. In areas subjected to shifting wind patterns, sprinkler coverage should be head-to-head. This will insure complete coverage and offset the effects of North Dakota winds, which can greatly distort a sprinkler pattern (See Figure 1).

## 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 fertilized from each bag. Pre-packaged fertilizers generally are available from nurseries, greenhouses, garden centers, local elevators and hardware stores. These fertilizers contain similar nutrient analysis, such as 22-5-9, 24-4-8 or 28-3-3.

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 percent N, 5 percent  $P_2O_5$  and 9 percent  $K_2O$ . Complete fertilizers, high in nitrogen, will benefit nitrogen-deficient lawns as well as lawns deficient in phosphorus and potassium. However, since nitrogen is the major nutrient that is nearly always deficient in lawns, high analysis straight nitrogen fertilizer such as 46-0-0 (urea) or 21-0-0 (ammonium sulfate) sometimes is recommended to meet nitrogen requirements.

## TIME TO APPLY FERTILIZERS

Fall and late spring are the best times to fertilize lawns. Heavy early spring fertilization should be avoided because this simply promotes excessive shoot growth and, in turn, additional mowing requirements. Therefore, fertilization should be delayed until May 25 to June 10, after the early flush of growth has occurred. Excessive shoot growth from fall fertilization is not a problem

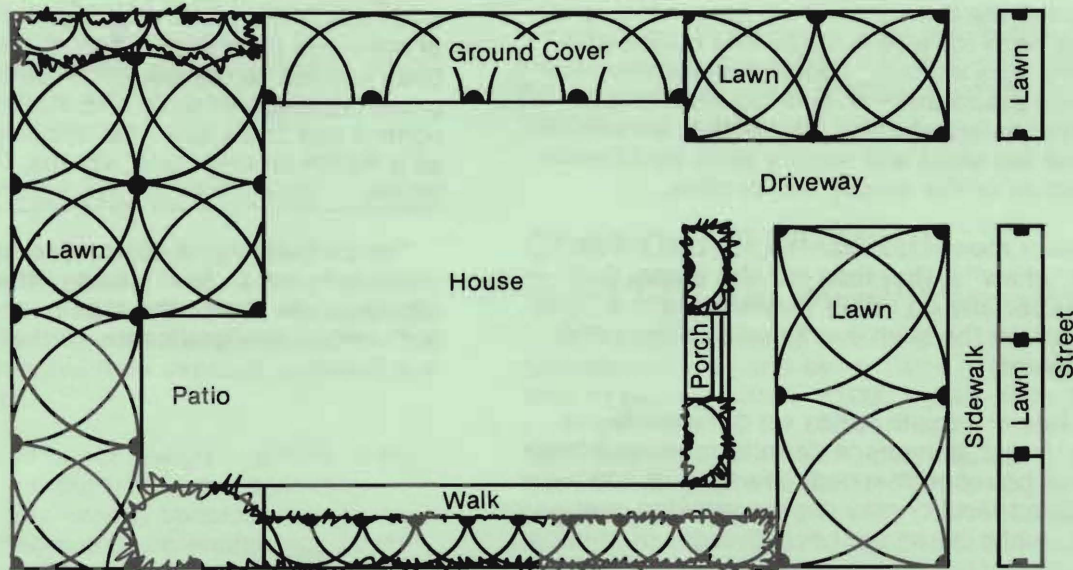


Figure 1. Typical Sprinkler Positioning for Home Lawns.

because the shorter days and cooler nights in the fall result in a compact growth habit. Fall fertilization between September 15 and 30 is very desirable because it greatly increases grass density through promoting tiller and rhizome production. Fertilizing dryland lawns from mid July to mid August is not recommended due to heat and drought stress.

Fertilization requirements will be higher if irrigation is practiced throughout the growing season, due to increased growth and nitrogen losses from leaching. Also, high analysis nitrogen fertilizers generally should not 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.

**Table 1. Lawn fertilization recommendations**

Example Fertilizers	Application Rates*
46-0-0 (Urea)	1 lb. actual N per 1,000 sq. ft. September-October, June.
21-0-0 (Ammonium sulfate)	0.50-0.75 lb. actual N in July and August if irrigation is available.
28-3-3 (Complete — with slow release N)	
19-3-12 (Complete — with slow release N**)	

\* To compute rate to apply, use the weight of the material in the bag to calculate amount of N contained. For example a 50 pound bag of 28-3-3 contains 14 pounds of nitrogen and would therefore cover 14,000 square feet.

\*\* This fertilizer is recommended for September-October fertilization, due to higher potassium level. Also, N from slow release forms will provide a more uniform feeding.

Note: Where an irrigation system is not available or a high quality lawn is not desired, a fertilization in late September or early October with a material of a 19-3-12 analysis or something similar and again the following June with a 28-3-3 material will provide a sufficiently attractive lawn for many people.

## FERTILIZER APPLICATION

Use a lawn fertilizer spreader to obtain even distribution of fertilizer. Spreading fertilizer evenly by hand is difficult. Uneven distribution results in "patch-colored" lawns. Apply fertilizer only when the grass is dry and then water the lawn thoroughly. Fertilizer residues are 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 to 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 selected fertilizer contains 50 percent 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.

## LAWN RENOVATION

Improper watering, poor nutrition, shade, disease, rodents, insects, thatch accumulation and winter snow removal practices all contribute to weaken turfgrass stands and the lawn may reach a point where renovation is the only answer to a healthy turf. Here are some basic tips for turf renovation:

- \* First try to determine the cause of the turf decline... disease, insects or environment. Find the cause and correct before proceeding.
- \* If the problem is a thin turf from thatch, disease or insect devastation, rent a power rake (dethatcher) in late August or early September to loosen the dead or weak grass and score the soil. This time of year is better than spring as the grass will have a better chance to re-establish itself. Spring dethatched lawns will have difficulties with water and heat stress in July and with weed competition. Both are eliminated with fall dethatching.
- \* Fertilize according to the recommended rates; seed at about 1 to 1.5 pounds per 1000 square feet of a Kentucky bluegrass mix. Water deeply and infrequently throughout the balance of the season. Mow at a height of 2 inches to encourage a thick, weed-free turf.
- \* If the lawn is spongy from excess thatch (greater than one-half inch thick) and is not responding to fertilizer or water, then use a spoon aerifer which will pull plugs of thatch and soil to the surface about 2 inches long and three-quarters of an inch in diameter. These plugs are then swept up or allowed to disintegrate on the surface. Fertilization, seeding and watering then follow.
- \* Allow about six weeks before the ground freezes for a satisfactory renovation job. Timing should be from mid August in the northern third of the state to no later than mid September for the southern third.
- \* A second fertilization in mid to late October will assure the turf of getting off to a good start the following spring.

## OTHER GRASSES WORTH CONSIDERING FOR NORTH DAKOTA LAWNS \_\_\_\_\_

The following grasses have been grown successfully in experimental trials and are recommended on a limited basis for lawn use:

### **Turf type tall fescues**

Bonanza, Galway, Tribute

### **Fine fescues**

Serra hard fescue, Scaldis hard fescue,  
Lawson hard fescue, Jamestown chewings  
fescue

### **Bluegrasses**

'Rubens' Canada bluegrass, 'Nassau' Kentucky  
bluegrass, 'Baron' Kentucky bluegrass, 'Kenblue'  
Kentucky bluegrass

### **Other turfgrasses**

Buffalo — local or regional seed source only.  
'Fultz' alkali grass, 'Fairway' crested wheatgrass

Many other grasses are being evaluated and when the results are known they will be added to this list.

## SOIL ADDITIONS AND ROLLING \_\_\_\_\_

Topsoil may be added to uneven areas of your lawn. One to two 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 as 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 non-volatile amine or oil soluble amine forms of 2,4-D herbicides rather than volatile esters and spray only on calm days. Protect 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 W-926, "Weed Control in Lawns."

## INSECTS \_\_\_\_\_

Lawn insects generally are not a serious problem in North Dakota. Occasionally ants and white grubs create minor problems. Both pests can be controlled with the insecticides Diazinon (Spectracide) or Dursban. 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".

*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 State University Extension Service is implied.*

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