

# Week of April 6-10, 2020

# COON

All of these assignments are on google classroom. You must pick one of the 3 listed and complete by next Monday, April 13 for credit. If you would like to use google docs to complete the work that would be most efficient. However, paper copies can be returned to the school.

| <b>Class</b>     | <b>Choice 1</b>                               | <b>Choice 2</b>                            | <b>Choice 3 (Enrichment)</b>    |
|------------------|---|--|---------------------------------|
| Ag Science       | Anatomy of Animal Reproduction Systems Part 1 | Reproductive Development of Animals Part 2 | FFA journal                     |
| Ag Business Mang | Personal Finances                             | Time Value of Money                        | Chart work experiences          |
| BSAA             | Heredity and DNA                              | Animal Growth and Development              | Animal Nutrition                |
| Landscape Design | Turf Grass part 1                             | Turf Grass part 2                          | Analyzing a Landscape           |
| Intro To Ag      | History of Ag part 1                          | History of Ag part 2                       | Supervised Ag Experience Part 1 |
| Ag Mech.         | Principles of Small Engines                   | Small Engines and their components         | Small engines tear down         |
|                  |   |  |                                 |

April 6-10th

MR. Coon

Landscape design

Date

Name

Turf grass part 1

Checking Your Knowledge:

1. What are three types of turfgrass growth habits?
2. What are the different parts of turfgrasses used for identification?
3. What are the four turfgrass climate regions?
4. What is a transition zone?
5. What are the major warm-season and cool-season turfgrasses?



# Identifying, Classifying, and Selecting Turfgrass

**H**AVE YOU EVER stopped to consider whether grass plants differ from one lawn to another or from one region of the country to another? If you are like most people, you probably haven't. You might be surprised at the number of different species, varieties, and cultivars used in the turfgrass industry.

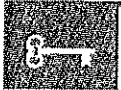


## Objective:



Explain how turfgrasses are selected and identified.

## Key Terms:



|                         |                       |                               |
|-------------------------|-----------------------|-------------------------------|
| auricle                 | fine fescues          | tillers                       |
| Bahiagrass              | Kentucky bluegrass    | transition zone               |
| Bermudagrass            | leaf blade            | turfgrass                     |
| centipedegrass          | leaf sheath           | vernation                     |
| collar                  | ligule                | warm arid and semiarid region |
| cool semiarid region    | perennial ryegrass    | region                        |
| cool humid region       | rhizomes              | warm humid region             |
| cool-season turfgrasses | Saint Augustine grass | warm-season                   |
| creeping bentgrass      | stolons               | turfgrasses                   |
| crown                   | tall fescue           | zoysiagrass                   |

## Turfgrass Plants

**Turfgrass** is a collection of grass plants that form a ground cover. All turfgrasses belong to the grass family Poaceae.

## GROWTH CHARACTERISTICS

The types of grasses vary in appearance and growth habits. All are narrowleaf plants that have fibrous root systems. Flowers of most grasses are not showy. The stem of a grass plant is short, or compacted. This compacted stem is called a **crown**. New leaves grow from the crown.

### Growth Habits

There are three types of growth habits or patterns by which a turfgrass spreads. They are stoloniferous, bunch-type, and rhizomatous.

Some grasses spread horizontally and produce new shoots called stolons. **Stolons** are stems that grow from the main plant above the ground. Bermudagrass, zoysiagrass, Saint Augustine grass, and centipedegrass are stolon-producing turfgrasses.

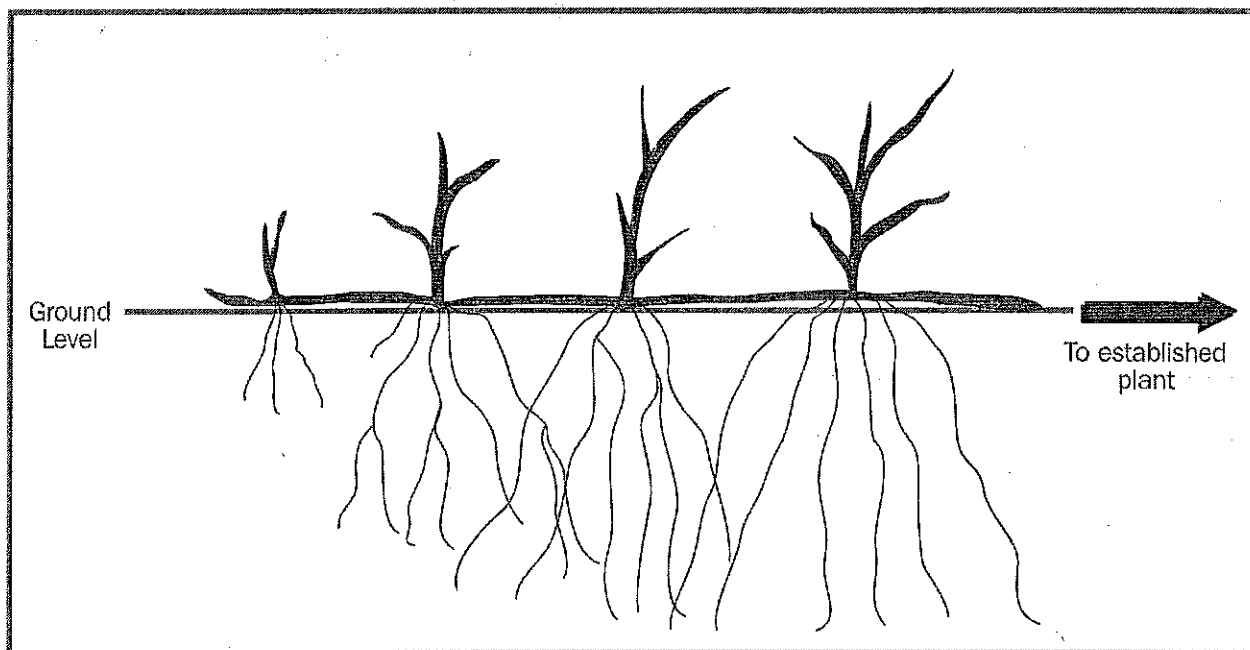


FIGURE 1. Above-the-ground creeping stems are known as stolons.

Some grasses, such as tall fescue and perennial ryegrass, grow in bunches and expand by tillers. **Tillers** are shoots that develop alongside the parent shoot. Tillers grow upward.

**Rhizomes** are stems that grow under the soil surface. Like stolons, they grow horizontally and produce new shoots. Kentucky bluegrass, Bermudagrass, and some fine fescues spread by rhizomes.

## Plant Structures

Grasses are identified by the shape of the auricle, collar regions, leaf blade, leaf sheath, ligule, and vernation and by the shape of flower inflorescence. Other identifying characteristics include growth habit, general appearance, and seed head.

An **auricle** is a pair of tiny appendages between the leaf blade and the sheath. The **collar** is a light-colored band between the leaf blade and the sheath on the lower side of the leaf. The **leaf blade** is the upper portion of a grass leaf. The **leaf sheath** is the lower portion of a grass leaf. A **ligule** is a membranous or hairy structure on the inside of a leaf at the junction of the leaf blade and the sheath. **Vernation** is the arrangement of the youngest leaf in the bud shoot, either folded or rolled.

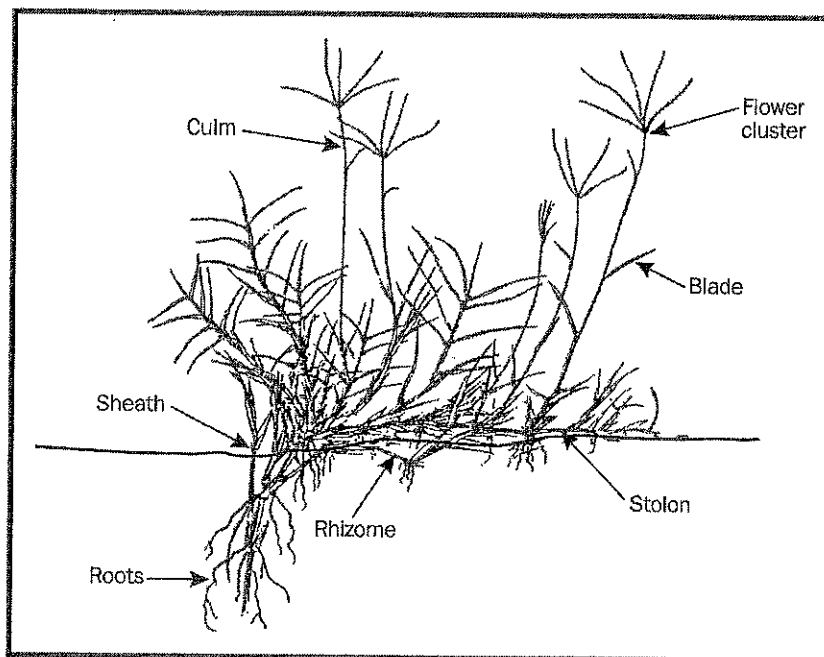


FIGURE 2. Major parts of a Bermudagrass plant.

## CLIMATE

Besides appearance, turfgrasses differ in the way they have adapted to climates. The environment plays a major role in selecting a turfgrass. Temperature and precipitation are key factors affecting the growth of a turfgrass on a site. Other environmental factors include exposure to the sun, type of soil, and humidity.

### Four Turfgrass Climate Regions

The United States has been divided into four turfgrass climate regions. Each is based on the types of grasses that can be grown well within the particular region. Each region has certain environmental conditions that restrict growth of certain grasses.

The **warm humid region** is best suited to warm-season grasses, such as Bermudagrass, zoysiagrass, and Saint Augustine grass. The soil is generally strongly acidic and may be infertile due to low organic content.

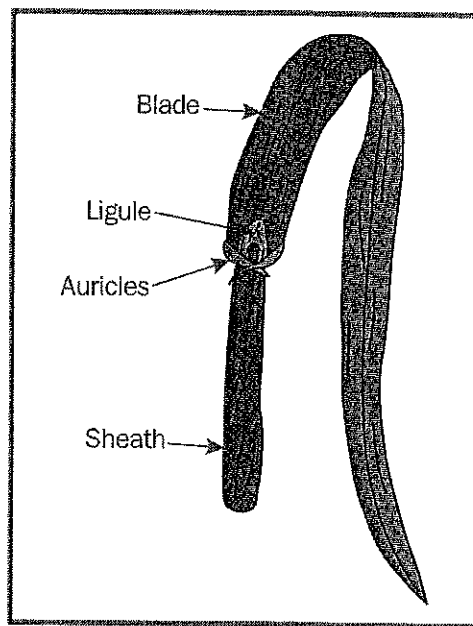


FIGURE 3. Leaf-blade organs are useful in the identification of grass species.

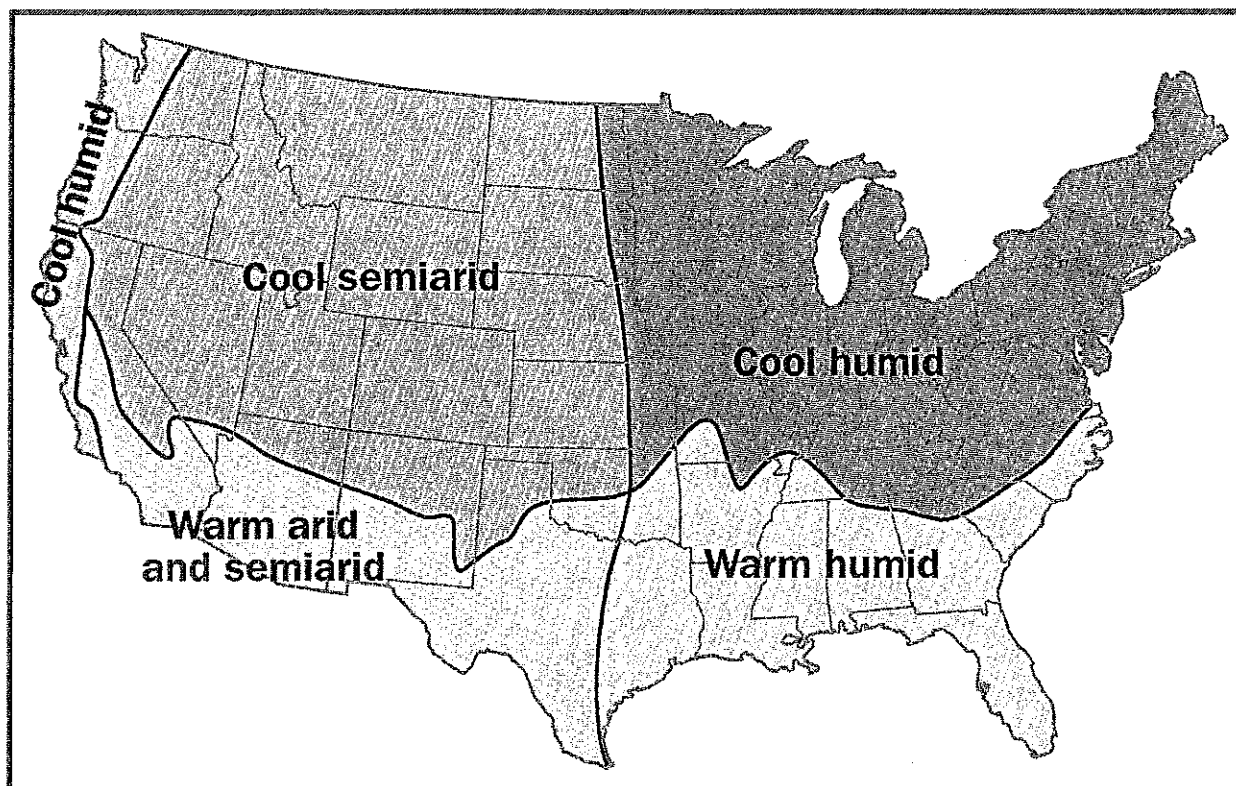


FIGURE 4. The major turfgrass climate regions.

The **warm arid and semiarid region** is best suited to warm-season grasses but only with irrigation. The soil is usually alkaline with low fertility.

The **cool humid region** is best suited to cool-season grasses, such as bluegrass, ryegrass, fescue, and bentgrass. The soil is generally acidic, and some irrigation may be needed to supplement the natural rainfall of the area.

The **cool semiarid region** is best suited to buffalograss and wheat grasses. The soil is generally acidic and will usually not support other grasses without adequate fertilization and irrigation.

### Transition Zone

A **transition zone** is an area between two major climatic regions. A transition zone can have cold winters and hot summers. Those conditions make it difficult for most warm- and cool-season turfgrasses. Only the cold-tolerant warm-season turfgrasses and the heat-tolerant cool-season turfgrasses survive in a transition zone, but the climate isn't optimal for either type.

Some grasses work fairly well in a transition zone. Bermudagrass and zoysiagrass are two warm-season lawn turfgrasses often used. The most cold-tolerant warm-season turfgrass is buffalograss. It does well in the northern regions of the transition zone in the states west of the Mississippi River, where humidity is low.

Tall fescue is the most common cool-season lawn turfgrass used in a transition zone. Kentucky bluegrass, perennial ryegrass, and fine fescues do well in a transition zone for two to

three years. They show decline after about three years. A lawn can then be overseeded to renovate the turf.

## COOL-SEASON GRASSES

**Cool-season turfgrasses** grow best in temperatures of 50° to 75°F (10° to 24°C). They grow best during the cool temperatures of spring and fall. Cool-season turfgrasses withstand cold winters in the northern part of the country. They may become dormant if allowed to dry out during the summer. Some of the major cool-season turfgrasses are creeping bentgrass, Kentucky bluegrass, fine fescues, perennial ryegrass, and tall fescue.

**Creeping bentgrass** (*Agrostis palustris*) is fine textured. It is used in situations that call for close cutting, such as golf putting greens and fairways. It is not a good lawn turfgrass because it requires high maintenance and has a high potential for disease problems.

**Kentucky bluegrass** (*Poa pratensis*) is a widely used, medium-textured grass. It prefers moist, temperate climates. Mowing at a height of 2½ to 3½ inches is recommended.

**Fine fescues** (*Festuca rubra* and subspecies) are fine-textured, bunch-type turfgrasses. They are the most shade tolerant cool-season turfgrasses. Mow fine fescues to a height of 1½ to 2½ inches.

**Perennial ryegrass** (*Lolium perenne*) is a medium-textured, bunch-type turfgrass. Mow at a height of 1½ to 2½ inches. Perennial ryegrass is often used for winter overseeding in the southern states.

**Tall fescue** (*Festuca arundinacea*) is a coarse-textured, bunch-type turfgrass. It is used in cold, cool, or transition zones. Mowing height should never be lower than 3 inches. Tall fescue is the most drought tolerant cool-season turfgrass.

## WARM-SEASON GRASSES

**Warm-season turfgrasses** grow best in temperatures of 70° to 95°F (21° to 35°C). They grow best from late spring until fall. They go dormant when temperatures drop to 40°F (4°C) or below. Warm-season turfgrasses tolerate hot summers and drought conditions better than cool-season grasses. They are also more salt tolerant. However, they do not tolerate shade. Some of the major warm-season turfgrasses are Bahiagrass, Bermudagrass, centipedegrass, Saint Augustine grass, and zoysiagrass.



FIGURE 5. Bermudagrass sprigs being planted for later testing by geneticists.



**Bahiagrass** (*Paspalum notatum*) is a coarse-textured grass used for lawns and as low-quality maintenance turf. It is adapted to mild coastal climates.

**Bermudagrass** (*Cynodon* sp.) is fine textured. It is a popular choice for home lawns and athletic fields. Mowing height, except for golf greens, is at  $\frac{1}{2}$  to  $1\frac{1}{2}$  inches. It is fairly cold tolerant.

**Centipedegrass** (*Eremochloa ophiuroides*) is a medium-textured grass adapted to a wide range of soil conditions. Recommended mowing height is at 1 to 2 inches.

**Saint Augustine grass** (*Stenotaphrum secundatum*) is a coarse-textured grass that spreads rapidly. It is mowed at a height of  $2\frac{1}{2}$  to  $3\frac{1}{2}$  inches. Saint Augustine grass is the most shade tolerant warm-season grass. It is also the most sensitive to cold temperatures.

**Zoysiagrass** (*Zoysia japonica*) is a medium-textured grass. It is fairly cold tolerant. The use of reel mowers is recommended to cut it at a height of  $\frac{1}{2}$  to 1 inch.

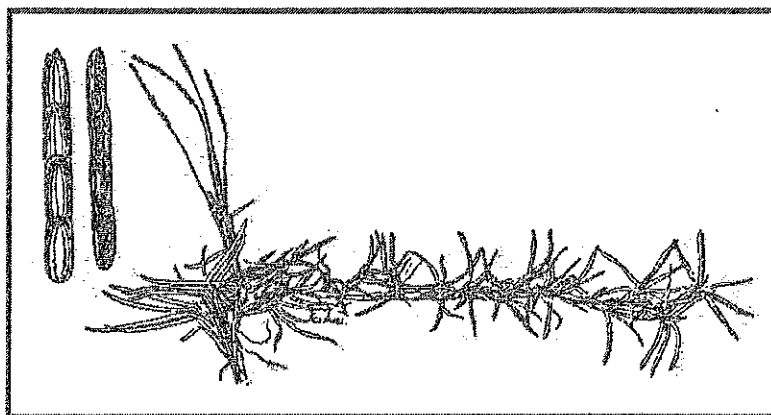


FIGURE 6. Centipedegrass stolon.

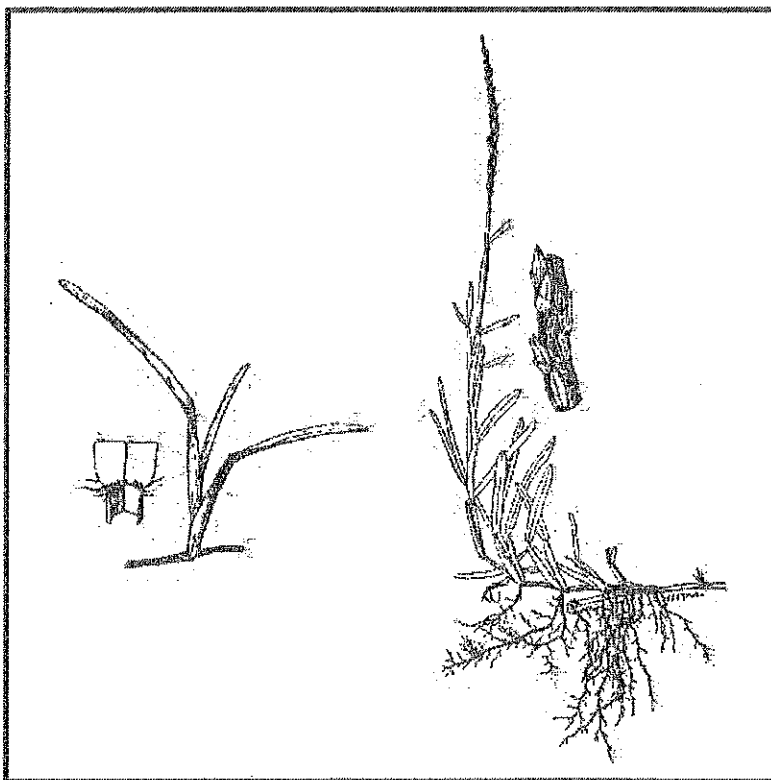


FIGURE 7. Saint Augustine grass shoot and leaf parts.

## Summary:



Turfgrass is a collection of grass plants that form a ground cover. There are three types of growth habits by which turfgrass spreads: stoloniferous, bunch-type, and rhizomatous.

Grasses are identified by the shape of the auricle, collar regions, leaf blade, leaf sheath, ligule, and vernation and by the shape of flower inflorescence. Other identifying characteristics include growth habit, general appearance, and seed head.

Turfgrasses differ in the way they have adapted to climates. The United States has been divided into four turfgrass climate regions. They are warm humid, warm arid and semiarid, cool humid, and cool semiarid.

A transition zone is an area between two major climate regions. Only the cold-tolerant warm-season turfgrasses and heat-tolerant cool-season turfgrasses survive in a transition zone.

Grasses have been broadly categorized as cool-season or warm-season grasses. Major cool-season turfgrasses are creeping bentgrass, Kentucky bluegrass, fine fescues, perennial ryegrass, and tall fescue. Major warm-season turfgrasses are Bahiagrass, Bermudagrass, centipedegrass, Saint Augustine grass, and zoysiagrass.

### Checking Your Knowledge:

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1. What are three types of turfgrass growth habits?
2. What are the different parts of turfgrasses used for identification?
3. What are the four turfgrass climate regions?
4. What is a transition zone?
5. What are the major warm-season and cool-season turfgrasses?

### Expanding Your Knowledge:

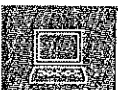
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Determine in what type of turfgrass climate region you live. Is it one where cool-season, warm-season, or transition grasses are grown? Then, go to your yard or school yard and identify the turfgrass there.

### Web Links:

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#### Choose and Identify Your Turf Species

<http://www.ipm.ucdavis.edu/TOOLS/TURF/TURFSPECIES/>

#### Turfgrass Program (University of Illinois)

<http://www.turf.uiuc.edu/>

#### Warm- and Cool-Season Grasses

[http://www.landscape-america.com/grasses/grass\\_index.html](http://www.landscape-america.com/grasses/grass_index.html)

#### Agricultural Career Profiles

<http://www.mycaert.com/career-profiles>



*April 6-10th*

MR. Coon Landscape design

date

name

Turf Grass 2

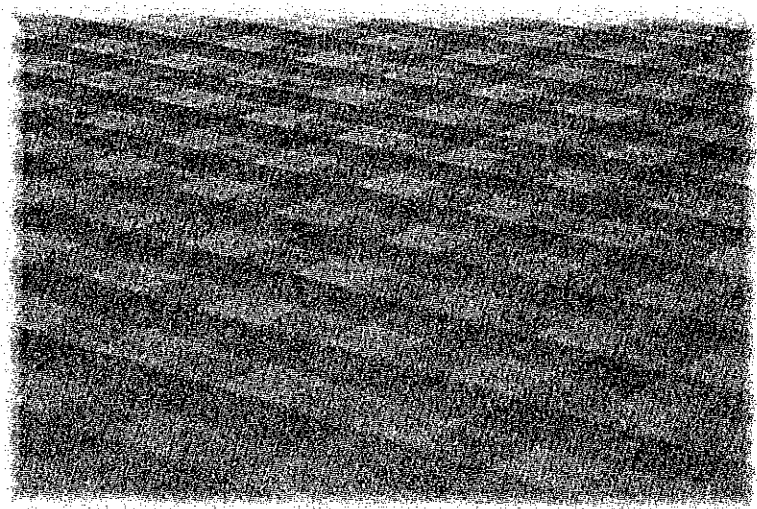
Checking Your Knowledge:

1. What steps are taken to prepare a site for planting turfgrass?
2. How does a seed blend compare with a seed mixture?
3. When is the best time of year to plant grass seed?
4. How do sodding, plugging, sprigging, and stolonizing compare?
5. What are 6 steps involved in lawn renovation?

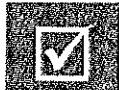


# Establishing and Growing Turfgrass

**D**O YOU WATCH professional football? Even if you don't, you may have seen news reports showing the replacement of turfgrass on entire football fields. That is an extreme example of turfgrass establishment. Although not as impressive, you have probably seen other ways of installing turfgrass somewhere in your community.



## Objective:



Describe how to establish turfgrass.

## Key Terms:



|              |              |                    |
|--------------|--------------|--------------------|
| grading      | seed mixture | sprigs             |
| hydroseeding | seed quality | sprigging          |
| plugs        | seedbed      | stolonizing        |
| plugging     | seeding      | winter overseeding |
| renovation   | sod          |                    |
| seed blend   | sodding      |                    |

## Turfgrass Establishment

The success of a newly planted lawn depends largely on site preparation, proper species selection, timing of the planting, and post-planting care.

## SITE PREPARATION

Proper preparation of the planting site is one of the most important factors in achieving a quality lawn. A site prepared for starting a new turf is called a **seedbed**. Site preparation involves a number of steps to ensure a good base for turfgrass growth.

1. Control weeds. Perennial weeds must be killed; otherwise, they will emerge in the newly planted grass.
2. Rough grade the site to achieve the desired slopes. **Grading** is moving soil and reshaping the land. Drainage patterns are established with grading. Lawns should have a minimum 1 to 2 percent slope to reduce problems from standing water.
3. Have the soil tested at a laboratory for pH and nutrient levels.
4. Install drainage tile, if necessary. During the grading process, remove debris, such as rocks or wood.
5. Select turfgrass species that will perform well on the site.
6. Calculate the amount of seed or vegetative materials necessary to complete the job.
7. Based on the soil test results, adjust the pH of the soil, if needed. Most turfgrasses grow best with a pH of 6.0 to 7.0. Soils with excessively high pH may need to be adjusted with the addition of sulfur or sulfur compounds. Lime may need to be applied to raise the pH of acidic soils.
8. Based on the soil test results, calculate the appropriate rate of starter fertilizer to be applied to the site.
9. Calculate the soil amendments needed, if any. Some soils may need to be amended with sand or organic matter. Clay soils, in particular, may need to be amended to improve percolation of water.
10. Apply soil amendments and till into the top 6 to 8 inches of the soil.
11. Install irrigation systems and landscape edging.
12. Apply the starter fertilizer.

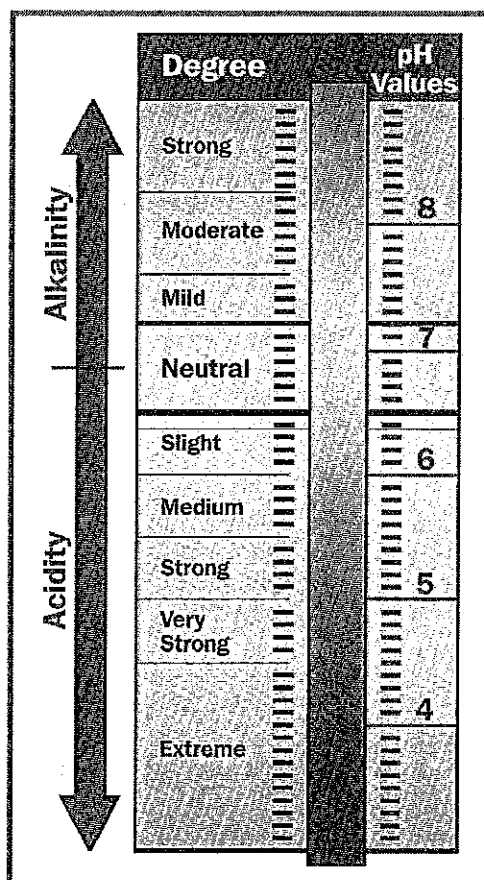


FIGURE 1. Soil pH may need to be amended.

13. Establish the final grade with hand rakes. Soil particles larger than marbles should be broken up or removed.
14. Lightly roll the site to establish an even and uniform surface.
15. If the soil is very dry, water it lightly before laying sod or planting other vegetative materials.



FIGURE 2. The "Harley Rake" on this skid-steer loader is mixing soil amendments with native soil.

## TURFGRASS ESTABLISHMENT BY SEEDING

**Seeding** involves the use of grass seed to establish a turf. Seeding is a common practice for cool-season turfgrass lawns. Advantages to seeding include using desired species or cultivars, having the plants develop in the environment in which they will be growing, having plants develop deep root systems, and costing less than other methods of turfgrass establishment.

### Selecting Seed

Choosing the seed to be planted is important. Seed can be blended or mixed. A blend or mixture gives a lawn genetic diversity. That is important for disease resistance; recovery from wear, as in athletic fields; and ability to withstand climatic conditions.

The use of a blend is recommended. A turfgrass **seed blend** consists of two or more varieties or cultivars of seed within the same species. Most blends contain cultivars chosen for their uniform appearance and growing habit.

A turfgrass **seed mixture** is a combination of two or more different species of seed, such as tall fescue and Kentucky bluegrass.

| LIFETIME GRASS SEED MIXTURE                                |             |        |
|--|-------------|--------|
| PURE SEED  | GERMINATION | ORIGIN |
| 26.33% PERENNIAL RYEGRASS #/++                             | 90%         | OREGON |
| 25.70% KENTUCKY BLUEGRASS #/++                             | 85%         | WSHGTN |
| 23.59% CRREEPING RED FESCUE #/++                           | 85%         | OREGON |
| 22.28% ANNUAL RYEGRASS #/++                                | 90%         | OREGON |
| OTHER CROP SEED: .00%                                      |             |        |
| WEED SEED: 25%   |             |        |
| INERT MATTER: 1.85%  |             |        |
| NOXIOUS WEED SEED: NONE                                    |             |        |
| DATE TESTED: JUL 20--                                      |             |        |
| LOT NO. RG-701-L152-1-19A                                  |             |        |
| # VARIETY NOT STATED                                       |             |        |
| ++ VARIETY UNKNOWN   |             |        |
| BEHM & HAGEMANN, INC./3021 FARMINGTON RD./PEORIA, IL 61604 |             |        |
| WEBSITE: BEHMANDHAGEMANN.COM                               |             |        |

FIGURE 3. An example of a grass seed label.



## Timing of Planting

Lawns should be installed at a time of year when the weather is optimal for turfgrass growth.

Fall is a good time to establish cool-season turfgrasses. The turfgrasses have time to get established before the winter season. Also, annual weeds are not a problem, because they germinate in the spring. Although growing conditions for cool-season grasses are good in the spring, the grasses will compete with annual weeds. Young cool-season turfgrasses are also subject to the stress of hot summer temperatures, particularly in a transition zone. Cool-season turfgrasses planted in the fall have both the fall and spring seasons to become established.

Warm-season turfgrasses are generally established by vegetative methods, such as sprigging, plugging, or sodding. Some warm-season turfgrasses also can be seeded.

## Winter Overseeding

A warm-season grass in a southern region often receives a **winter overseeding**, which involves seeding a cool-season turfgrass on the warm-season turfgrass in the late fall when the warm-season turfgrass begins to go dormant. The cool-season grass extends the period of actively growing turf. The cool-season turfgrass lasts for one winter and dies out the next spring when the warm-season turfgrass starts to grow. Perennial ryegrass is the most common cool-season turfgrass used for winter overseeding.

## Sowing and Early Care

Following are some steps to be followed in the seed planting process.

1. Choose high-quality seed. **Seed quality** refers to the germination rate based on 100 seeds and to the purity of the seed. High-quality seed is fresh, has a high germination rate, and has a low level of weed seeds.
2. Apply the seed at the recommended rate. Apply half the seed with a seed spreader going in one direction, and then sow the other half at a right angle to the first application.
3. Lightly rake the soil surface to ensure good contact between the seed and the soil. A light rolling of the lawn also promotes good contact between the seed and soil particles.
4. Scatter straw (free of seeds) or paper mulch lightly over the surface. Light mulching of the seedbed helps keep tender seedlings from drying out. Mulching also reduces the amount of seed that blows or washes away.
5. Water the seedbed lightly and frequently for the first few weeks. Water is essential for seed germination and development. Keep the seedbed consistently moist yet not saturated. As the grass begins to mature, irrigation should become less frequent. The site should receive enough water to keep the soil well hydrated to a depth of 1 inch.

In general, new turfgrass is not mowed until it has grown about  $\frac{1}{2}$  inch taller than its desired height. No more than one-third of the grass blade should be removed at each mowing.

## Hydroseeding

Another method of seeding is called **hydroseeding** or hydromulching. The process involves mixing mulch, seed, fertilizer, and water in the tank of a hydroseeding machine. The material has a thick consistency and is referred to as slurry. The slurry is pumped from the tank and sprayed onto the ground, which has been prepared.

Areas planted by hydroseeding are smooth. Golf greens are often seeded by hydroseeding to produce a smooth surface.

Wood fibers or recycled paper may be used for the mulch. The mulch fibers are dyed green for two reasons: The color makes the mulch more attractive, and it makes monitoring the thickness of the application easier. Mulch application rates vary with the conditions. Hot, humid conditions require more mulch, and cool conditions less mulch. The mulch reduces evaporation from the grass and the soil. It reduces erosion by holding the soil in place until the seedlings can get established. Furthermore, the mulch can provide light shade for the emerging seedlings.

The hydroseeding process is used for new home lawns, for golf course construction, and along highways.

## TURFGRASS ESTABLISHMENT BY VEGETATIVE MATERIALS

Vegetative materials are used to establish both warm-season and cool-season turfgrass lawns. However, the practice is more common with warm-season grasses. Vegetative establishment of turfgrass is accomplished by sodding, plugging, sprigging, or stolonizing.

### Sodding

The most common method of vegetative turfgrass establishment is sodding. **Sodding** is the use of **sod**, which is a harvested piece cut from mature turf. Sod is available in rolls, squares, or strips, depending on the region of the country. A common size is 1 square yard. Sodding provides instant coverage of the soil.

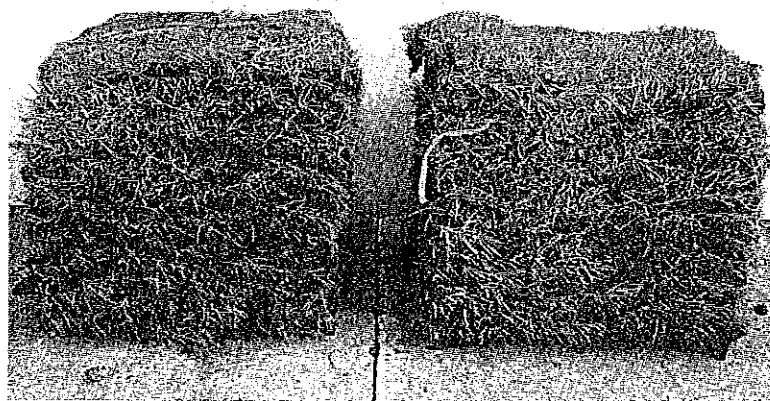


FIGURE 4. These squares of sod are ready to use.

### Plugging

**Plugging** is a method of establishing new turf using **plugs**, which are 2- to 4-inch square or round clumps harvested from a mature turf. Although plugging is more labor intensive than sodding, it is less expensive.

## Sprigging

A third method is sprigging. **Sprigging** involves the use of **sprigs**, or pieces of stolons, cut from mature turf. Sprigs are usually planted in furrows.

## Stolonizing

**Stolonizing** is broadcasting stolons over a site, covering them with topdressing, and then rolling the soil.

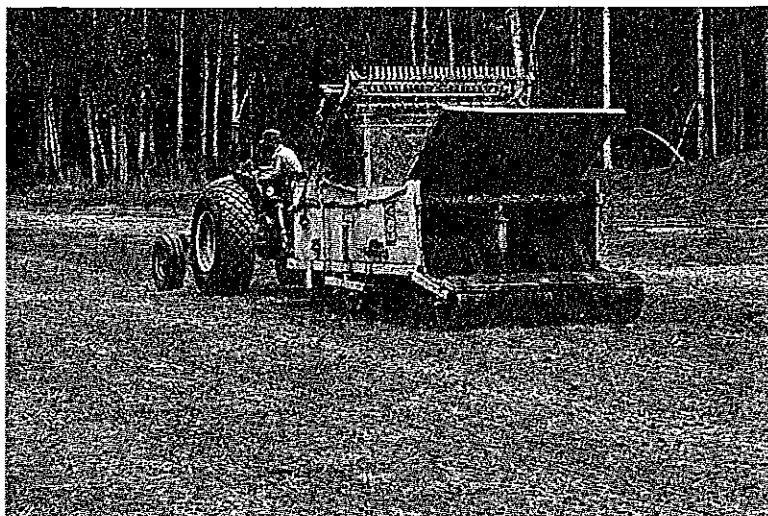


FIGURE 5. Using sprigs to establish turf with a mechanical planter.

## Procedures for Installing Vegetative Turfgrass Materials

Prepare the site the same way you would prepare it for seed. Moisten the soil lightly before planting.

Sod is laid starting at a straight edge. Sod pieces should be closely butted together but not overlapped. The pieces must also be in good contact with the soil for the grass plants to survive. Stagger the pieces in a running-brick-bond pattern to reduce gapping of the sod. Once the sod has been laid, it should be irrigated regularly until well established.

Plugging involves insertion of plugs into an established turf or in a prepared seedbed. Plugs are planted 6 to 8 inches apart. This method is particularly useful in the establishment of plant species that do not produce seed well, such as zoysiagrass and other warm-season turfgrasses. Plugging is done in spring or early summer.

Sprigs are planted in furrows 2 to 3 inches deep and 10 to 18 inches apart. The soil is firmed around the stems. The site is then topdressed with  $\frac{1}{4}$  to  $\frac{3}{8}$  inch of soil and lightly rolled. Bermudagrass is often established by sprigging.

Lawns established by vegetative means need to be kept moist until the grass plants have developed root systems to support the growth.

## TURFGRASS RENOVATION

Sometimes a lawn declines in appearance and needs to be replaced or renovated. **Renovation** is a practice used to improve poor turf. Renovation of a lawn is similar to planting a new lawn, but it is done without destroying the existing lawn. It requires less material than new lawn establishment.

Steps to renovating a lawn are as follows:

1. Select the proper turfgrass and planting procedure.

2. Have the soil tested.
3. Control the weeds on the site.
4. Measure the site to be seeded, planted, or sodded.
5. Calculate the seed, vegetative parts, or sod needed to complete the job.
6. Aerate the entire lawn.
7. Add soil amendments based on the soil test.
8. Apply starting fertilizers based on soil test recommendations.
9. Roll the site to have an even and uniform surface.
10. Lightly water the site to moisten the soil.
11. Seed, plant, or sod based on the calculations.
12. Water the site when needed until the turfgrass is established.

### Summary:



The success of a newly planted lawn depends largely on site preparation, proper species selection, timing of the planting, and post-planting care. Site preparation involves a number of steps to ensure a good base for turfgrass growth.

Seeding involves the use of grass seed to establish a turf. Seeding is a common practice for cool-season turfgrass lawns. Seeds can be blended or mixed. Lawns should be installed at a time of year when the weather is optimal for turfgrass growth. A warm-season grass in a southern region often receives a winter overseeding. Hydroseeding is a process in which a mixture of mulch, seed, fertilizer, and water is sprayed onto the ground.

Vegetative establishment of turfgrass is accomplished by sodding, plugging, sprigging, or stolonizing.

Sometimes a lawn needs to be replaced or renovated. Renovation of a lawn is similar to planting a new lawn, but it is done without destroying the existing lawn.

### Checking Your Knowledge:



1. What steps are taken to prepare a site for planting turfgrass?
2. How does a seed blend compare with a seed mixture?
3. When is the best time of year to plant grass seed?
4. How do sodding, plugging, sprigging, and stolonizing compare?
5. What is involved in lawn renovation?

## Expanding Your Knowledge:

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Participate in a turfgrass planting project at school or at home. Follow recommended steps in preparing the site for planting, selecting the seed or vegetative material, and planting.

## Web Links:

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### Establishing a Home Lawn

<http://www.umext.maine.edu/onlinepubs/htmlpubs/2367.htm>

### Establishing Your Florida Lawn

<http://edis.ifas.ufl.edu/LH013>

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<http://www.ext.vt.edu/pubs/envirohort/426-718/426-718.html>

### Agricultural Career Profiles

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*April 6-10th*

Mr. Coon Landscape Design

Date

Name

Analyzing a landscape

1. What is the purpose of the family inventory survey?

2. What observations are included on a site analysis plan?

3. How is a base plan produced?

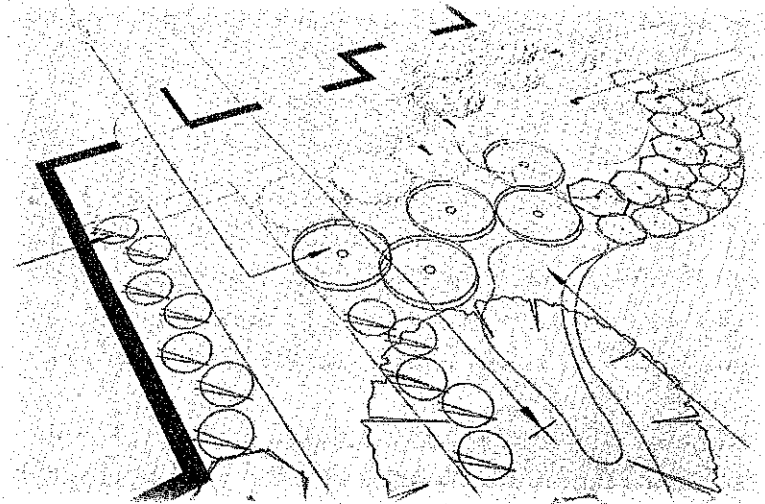
4. What is scale?

5. What equipment is used in landscape design?



# Analyzing the Residential Landscape

**W**E OFTEN BELIEVE artists have the liberty to create anything they want. That is sometimes true, but many artists are hired to do particular types of work. Landscape designers are also hired. Their artwork is attractive landscape designs, and much of their work is based on the desires of their clients.



## Objectives:



1. Collect information necessary to begin a landscape design.
2. Demonstrate the proper use of drafting equipment.

## Key Terms:



|                       |                         |                    |
|-----------------------|-------------------------|--------------------|
| architect's scale     | eraser                  | plat of survey     |
| base plan             | erasure shield          | scale              |
| 'circle template      | existing vegetation     | site analysis plan |
| computer-aided design | family inventory survey | software           |
| drafting tape         | French curves           | T-square           |
| drawing board         | hardware                | trash paper        |
| drawing paper         | lettering instrument    | triangles          |
| drawing pencils       | macroclimate            | views              |
| elevation view        | microclimate            |                    |
| engineer's scale      | plan view               |                    |



## Beginning the Design Process

Landscape design can be broken down into a series of steps. Some of the first steps involve gathering information that will influence the design. Two items used for this purpose are the family inventory survey and the site analysis plan. The designer must then prepare the base plan using either computer-aided-design software or drafting equipment.

### FAMILY INVENTORY SURVEY

The **family inventory survey** is a form on which the client provides information about factors that affect the landscape project. The landscape designer's initial meeting with the client is much like an interview. The designer consults with the client to find out what the client wants the property to look like. At the same time, the client relies on the designer to ask the right questions to gather all the needed information. The information is then recorded on an inventory survey.

The designer needs to know about the family. Family specifics that should be recorded include the number and ages of family members, family hobbies (e.g., baseball, gardening, badminton), and pets. Each of these things may influence the design.

The gardening interests of the family should be determined. The designer should find out if the client wants a vegetable garden, an annual garden, a bulb garden, or other landscape features. The amount of time a client is willing to spend in the yard doing maintenance should be established.

The use of the landscape must be ascertained. The level of entertainment planned by the family influences the size of the patio or deck. A pool or plenty of open lawn space for games may need to be incorporated into the design based on the client's wishes.

The designer should ask what favorite plants should be included in the landscape and what plants, if any, should be avoided. Anything else that may pertain to the specific yard should be discussed at this time.



FIGURE 1. All family members should be involved in the inventory survey.

### SITE ANALYSIS PLAN

Before a landscape designer can start changing a landscape site, he or she must know what is already on the site. The designer needs to complete careful observations of the site and record

these observations on a **site analysis plan**. The site analysis plan is a sketch of the home and the property lines, along with a record of observations about the site that the designer can later refer to when beginning the design process. The observations should include existing vegetation, soil conditions, microclimate, macroclimate, and views. Often the site analysis is conducted during the same visit as the family inventory survey.

**Existing vegetation** includes trees, shrubs, and other plants on the site. The species should be noted on the plan, along with the size and location of the plants. Comments about the removal of any unwanted plant material are appropriate.

Knowing what kind of soil is present at various locations throughout the site is important. The type of soil would affect the plants that could thrive on the site and the amount of water drainage off the land. Any sloping or elevated areas should also be mentioned. Notes should include the addition of topsoil at any location on the site.

The **microclimate** is the temperature, precipitation, humidity, and wind on the site or on small areas of the site. The orientation of the house on the lot affects the microclimate. For instance, a portion of a landscape protected by two or three walls of the house will have a different microclimate than a more exposed area. It is important to visit a site at different times during the day to determine areas of full sun or shade and the temperatures.

The **macroclimate** is the temperature, precipitation, humidity, and wind of the region. Prevailing winds are a part of the macroclimate.

The **views** of a site include how people within the yard will look out into neighboring yards and how neighbors and passersby will see the landscaping. Any areas that need to be screened, framed, or enhanced should be noted on the site analysis plan.

Service companies should be contacted ahead of site analysis to mark utility lines. The lines should be noted on the site analysis plan.

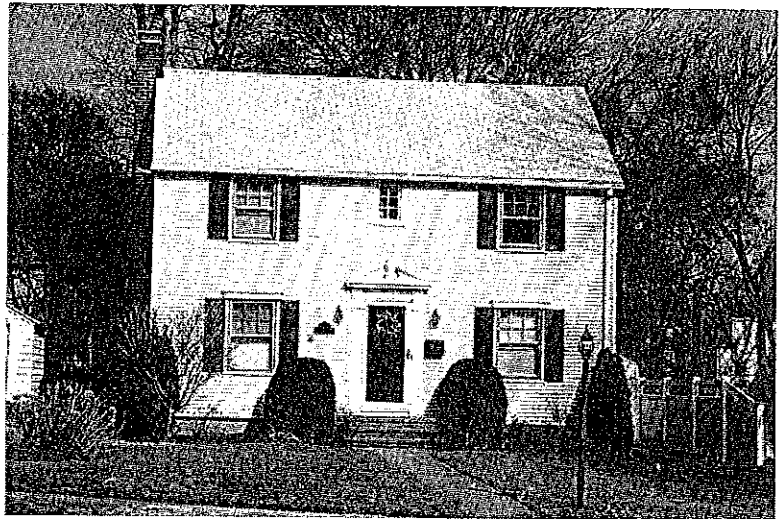


FIGURE 2. The existing site should be analyzed as the main starting point.

## BASE PLAN

Back in the design studio, the designer begins putting the plan to paper by drawing a base plan. The **base plan** is an accurate representation of a house on the lot. The base plan shows the plan view of the house as it sits within property lines. The **plan view** is a view from above looking down as opposed to a view of the front of the house, known as the **elevation view**. The plan should include doors, windows, and existing hardscapes, such as sidewalks, driveways, and patios. Property lines and easements are included on the plan.

Helpful tools in preparing the base plan are a plat of survey and house plans. A **plat of survey** is a legal document indicating the exact locations of physical structures on a piece of prop-

erty and the exact dimensions of the property. A blue-line copy of the house plans gives valuable information concerning the floor plan, room usage and sizes, and the locations and sizes of doors and windows. On-site visits are necessary to obtain exact measurements that may not be included on the plat of survey or the house plans.

### Drawing to Scale

A drawing of the home is made to scale either on paper or in the computer if computer-aided design is being used. **Scale** is the proportion that the drawing bears to the original. Scale allows the designer to shrink the house, the lot, and the landscape plan to a size that is manageable and will fit on the paper. The preferred scale for most landscape design work is  $\frac{1}{8}$  or  $\frac{1}{4}$ . With  $\frac{1}{8}$  scale,  $\frac{1}{8}$  inch on the plan represents 1 foot at the site. One inch on the plan represents 8 feet at the site ( $1 \text{ inch equals } 8 \times \frac{1}{8}, \text{ or } \frac{8}{8}$ ). If the chosen scale is followed strictly, all measurements will be accurate.

Select a scale that will provide the largest image possible on the paper and still be attractive. Most normal-size lots can be drawn at  $\frac{1}{8}$  scale. Smaller plots can be drawn at the larger  $\frac{1}{4}$  scale. A lot that cannot fit on the paper at  $\frac{1}{8}$  scale must be drawn at a smaller scale. Scales of  $\frac{1}{10}$ ,  $\frac{1}{16}$ , and  $\frac{1}{20}$  are used to fit larger properties on standard-size paper. Of course, plans drawn at the larger scales are easier to read than plans drawn at the smaller scales.

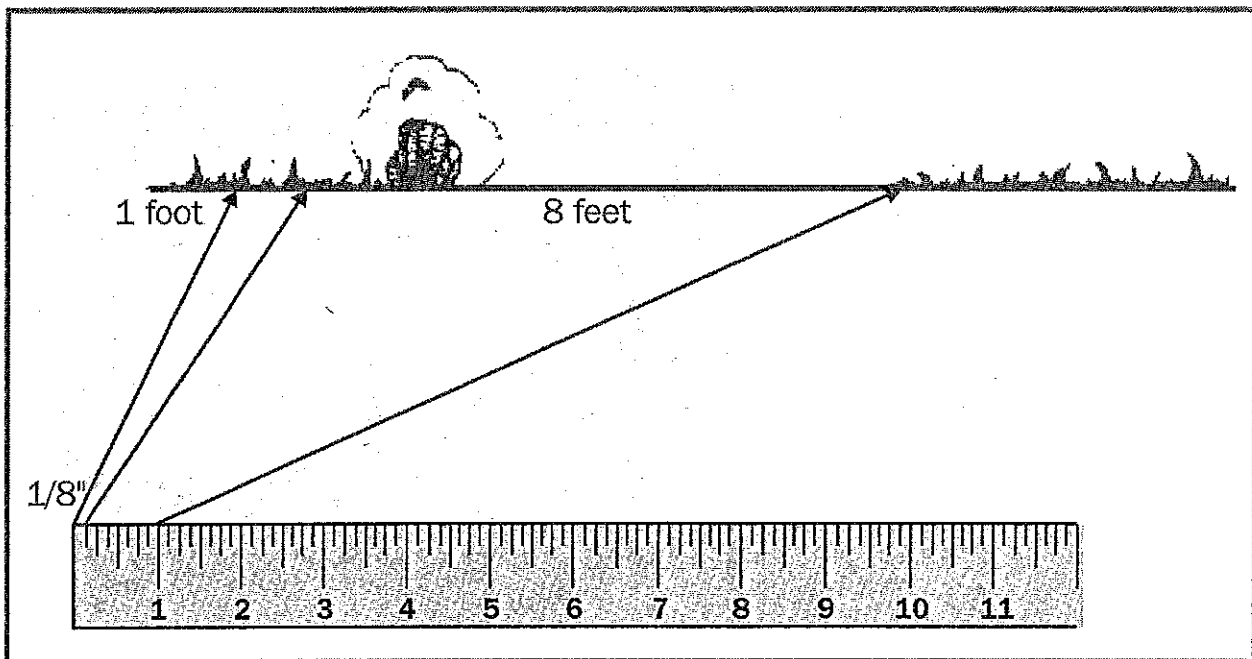


FIGURE 3. Scale is the proportion that the drawing bears to the original. With  $\frac{1}{8}$  scale,  $\frac{1}{8}$  inch on the plan represents 1 foot at the site, and 1 inch on the plan represents 8 feet at the site.

## Design Equipment

A landscape design may be produced with the simplest equipment or with sophisticated computer technology. Whether low-tech or high-tech equipment is used, the needs of the client and the principles of design must be followed in the design process.

## COMPUTER-AIDED DESIGN (CAD)

More and more landscape designers are turning to computer technology to produce their design work. The term **computer-aided design** (CAD) refers to the use of computer hardware and software to produce drawings. **Hardware** is the computer equipment. Hardware includes input devices that allow a designer to enter information into a computer. These devices may include a standard computer keyboard, a mouse, a pen plotter, and more. **Software** is the programs (instructions) that make the equipment function.

Designers need training and practice to master computer-aided-design systems. Learning how to use a CAD system, however, does not make someone a landscape designer or landscape architect any more than knowing how to use a calculator makes someone a mathematician. Knowledge of the fundamentals, such as design principles, plant materials, grading and drainage, and hardscape materials, is essential. A CAD system is a tool to help the landscape designer.

One of the major advantages of a CAD system is the ease with which a design can be edited to satisfy changes desired by the client. A CAD system is particularly useful for making changes to a large, complex design. Changes to a small, less complex design seldom call for redrawing the plan.

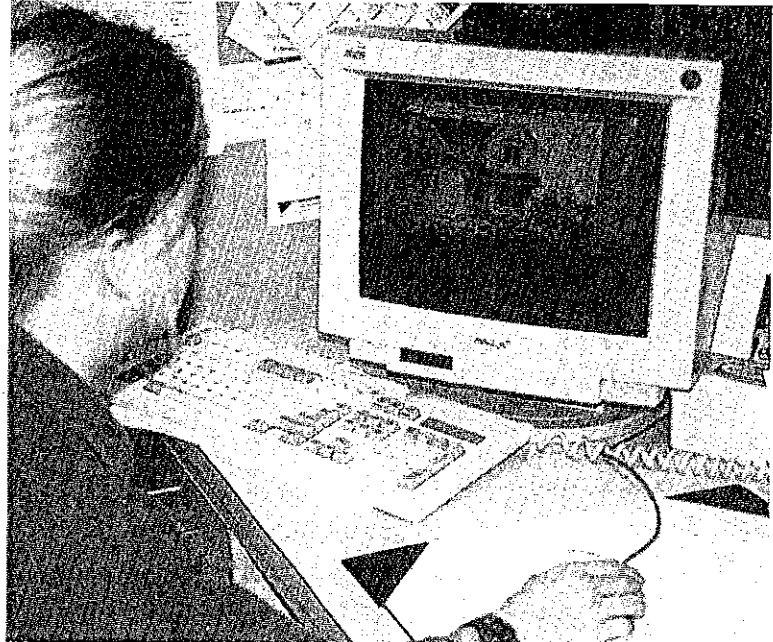


FIGURE 4. Computer technology can play an important role in landscape design.

## DRAFTING EQUIPMENT

Many residential designers prefer to draw plans by hand. Hand-drawn designs are considered by many designers to lend a personal touch appreciated by clients. The drafting equipment needed is inexpensive. Many designers are comfortable with pencil-and-paper designs. In addition, clients of residential projects seldom require drastic changes to plans. Small changes can easily be made by hand.

A simple, low-cost setup might include a drawing board, a T-square, drawing paper, trash paper, drafting tape, drawing pencils, triangles, an eraser and an erasure shield, scales, a circle template, a compass, French curves, and a lettering instrument.

A **drawing board** or drafting table must have at least one true side, and the surface, to which drafting paper is affixed, must be smooth.

A **T-square** is held along the side of the drawing board. The working edge of the T-square must be straight and at a 90-degree angle to the edge of the drawing board. The T-square is held firmly to the edge of the board. The top edge of the T-square is used to draw horizontal lines.

**Drawing paper** is translucent, so lines can be seen through the paper. White vellum or tracing paper is commonly used for drafting purposes. Many sizes are available. Use the T-square to line up the top edge of the paper on the drawing board. It is important that the paper is square. Then, fasten the free corners with 1- to 2-inch-long pieces of drafting tape. Smooth the paper from the center with your fingernails to avoid smudging any pencil marks, and secure the remaining corners. Check to make sure the paper is still square after it has been secured, and make adjustments if needed.

**Trash paper** is often a buff color. It is a lightweight and inexpensive tracing paper. The designer can sketch ideas on trash paper laid on top of the base plan without altering completed work beneath.

**Drafting tape** is used to secure drawing paper. It is similar to masking tape but less sticky.

**Drawing pencils** are available in different grades, or degrees of hardness. Select medium-grade pencils for drawing: 3H, 2H, H, F, HB, and B. 3H-grade pencils have harder lead than B pencils and, thus, provide lighter lines. HB pencils have medium softness and can be used effectively for most drawing. Always keep your pencil sharp to maintain uniform lines. Hold the pencil at a 60-degree angle to the paper. Another tip is to pull the pencil across the paper rather than pushing it. Roll the pencil slowly between your thumb and forefinger as you draw to help maintain a uniform line.

**Triangles** are used to draw vertical and angled lines. Two triangles commonly used are the 45-degree triangle and the 30/60-degree triangle. Hold a triangle firmly on the top side of the T-square and use the edge to draw 90-, 60-, 45-, and 30-degree lines. Be sure to hold the T-square so it is snug to the side of the drawing board as you draw.

An **eraser** and an **erasure shield** are tools used in the removal of unwanted lines. The erasure shield is a thin metal plate used to protect lines while others are being erased. To avoid a messy, smudged drawing, think about every line before drawing it and erase completely when erasing is necessary.

Two types of scales are used in landscape design work. The most common scale is the architect's scale. The **architect's scale** can easily be used for scale mea-

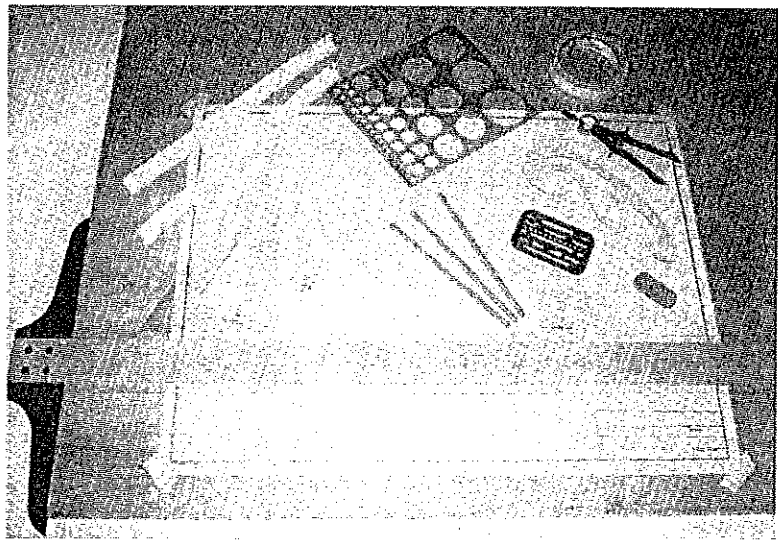


FIGURE 5. Attractive, functional landscape plans can be produced using low-cost drafting equipment.

measurements of  $\frac{1}{16}$ ,  $\frac{1}{8}$ , and  $\frac{1}{4}$  inch. It is also preferred because the homeowner can use a ruler to read the plan. The other scale is the engineer's scale. The **engineer's scale** is divided into tenths and is used to produce  $\frac{1}{10}$ -,  $\frac{1}{20}$ -,  $\frac{1}{50}$ -, and  $\frac{1}{100}$ -scale drawings. It is useful to have an engineer's scale on hand to convert plat-of-survey measurements, which are normally drawn using an engineer's scale, to the base plan. The engineer's scale is used in large-scale projects as a way to fit the plans on paper. The edge of the scale should never be used to draw lines.

The **circle template** is an instrument used as a guide in drawing circles and curves on the landscape plan.

A compass can be used to make large circles and curves not possible using the circle template.

**French curves** are tools used to draw irregular curves.

A **lettering instrument** is used to draw light parallel guidelines for lettering. The space between the lines can be adjusted depending on the size of letters desired. Place a well-sharpened pencil in a hole and slide the lettering instrument along the top edge of the T-square. Move the pencil to the next hole and repeat the process.

### Summary:



The family inventory survey is a form on which the client provides information that affects the landscape project. The information includes what the client wants the property to look like, family specifics, gardening interests, the use of the landscape, and types of plants.

Careful observations of the site are recorded on a site analysis plan. The observations include existing vegetation, soil conditions, microclimate, macroclimate, and views.

The base plan is an accurate representation of a house on the lot. The plan includes doors, windows, existing hardscapes (such as sidewalks, driveways, and patios), property lines, and easements.

Scale is the proportion that a drawing bears to the original. The preferred scale for most landscape design work is  $\frac{1}{8}$  or  $\frac{1}{4}$ .

Landscape designs may be produced with computer-aided design (CAD) or with low-cost drafting equipment. Drafting equipment includes a drawing board, a T-square, drawing paper, trash paper, drafting tape, drawing pencils, triangles, an eraser and an erasure shield, scales, a circle template, a compass, French curves, and a lettering instrument.

### Checking Your Knowledge:



1. What is the purpose of the family inventory survey?
2. What observations are included on a site analysis plan?

3. How is a base plan produced?
4. What is scale?
5. What equipment is used in landscape design?

### **Expanding Your Knowledge:**

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Conduct a family inventory survey for your family. Are your family needs being met with your landscape? If not, what should be changed to make your landscape more suitable for your family?

### **Web Links:**

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#### **Landscaping Analysis**

<http://www.the-landscape-design-site.com/landscapesiteanalysis.html>

#### **Homeowner Survey**

<http://72.14.203.104/search?q=cache:dFsOIYZhi1AJ:hort.ufl.edu/fyn/quest.pdf+landscape+design+site+survey&hl=en&gl=us&ct=clnk&cd=11>

#### **Developing a Home Landscape Plan**

<http://msucares.com/lawn/landscape/design/plan.html>

#### **Residential Landscaping**

[http://ipm.ncsu.edu/urban/horticulture/res\\_landscaping.html](http://ipm.ncsu.edu/urban/horticulture/res_landscaping.html)

#### **Residential Landscape Design**

<http://72.14.203.104/search?q=cache:JJ2b2dW-1JgJ:www.oznet.ksu.edu/library/hort2/sections/s4p1-14.pdf+landscape+design+family+inventory&hl=en&gl=us&ct=clnk&cd=24>

#### **Agricultural Career Profiles**

<http://www.mycaert.com/career-profiles>