

LANDSCAPE TRAINING MANUAL FOR MAINTENANCE TECHNICIANS



MAINTENANCE



NATIONAL
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**LANDSCAPE
PROFESSIONALS**

LANDSCAPE TRAINING MANUAL FOR MAINTENANCE TECHNICIANS

The essential how-to resource for
landscape maintenance written by
experienced industry professionals!

“Being a properly trained technician increases your chances of getting and retaining a job. Today's employers can't afford mistakes made by their employees. Training helps reduce those mistakes and makes you a more valuable asset. This study manual is a great tool to enhance your skills in the landscape industry, and helps prepare you for the Landscape Industry Certified Technician-Exterior exam.”

Clifford D. Ruth, *Landscape Industry Certified Manager & Technician*
North Carolina Cooperative Extension Service-Henderson County
Hendersonville, North Carolina

“In our company, good training and certification have always been top priorities. The training manuals are an important back-up to the hands-on training that we do to prepare our employees for their jobs and for certification testing.”

Jesus “Chuy” Medrano, *Landscape Industry Certified Technician*
President, Cocal Landscape Services, Denver CO

“To be successful in any certification exam, the candidate needs to be prepared. This training manual really provides relevant information that will benefit even the most experienced technician. It's a great tool to help people at all levels become more prepared for the certification program and to be a true landscape professional.”

David Iribarne, *Landscape Industry Certified Technician*
City of Petaluma, Petaluma, California

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Introduction

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Built landscapes are constantly changing and with those changes come adaptations in how landscapes are maintained. When property owners respond to situations like drought or environmental factors, their maintenance requirements may need to be adjusted to compensate for these shifts in priorities. And as urban landscapes continue to mature, maintenance requirements must reflect a commitment to protecting the increasing value these landscapes represent. Other considerations like wear and tear, design flaws, growth habits and environmental issues will also impact maintenance requirements.

Landscape maintenance professionals are required to manage any combination of these challenges. To do so effectively requires a wide-ranging knowledge base and skills that include equipment operation, basic irrigation know-how, pest and disease identification and treatment, competency to apply fertilizer and pesticides, and the ability to care for a variety of plant materials.

This manual and supplemental web-based videos were developed to help landscape maintenance technicians acquire this information. This manual is unique in that it has been designed by practicing industry professionals — contractors who know and regularly perform landscape maintenance.

These hands-on experts developed this book specifically to offer:

- The highest quality employee training for landscape maintenance personnel — everyone from beginning laborers to experienced crew foremen.
- Study material for certification testing under the Landscape Industry Certified Technician — Exterior program in the United States and Canada.



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Turf Maintenance

What You Will Learn

After reading this chapter, you will be able to:

- State typical activities involved in spring and fall clean-up as they occur in your region.
- Explain why mowing height is important.
- Explain important factors to consider when watering turf.
- Describe consequences to the turf of overwatering and underwatering, and of frequent shallow waterings.
- Explain why aerating and de-thatching are done.
- State two reasons why overseeding is done.
- State the purpose of providing nutrients to turf.
- Describe and contrast synthetic and natural fertilizers.
- Describe several factors to consider when developing a fertilization program.
- Explain when it is best to fertilize.
- State the meaning of the numbers in fertilizer formulations.
- State the most important preventive measure for a healthy lawn.
- State three main categories of weeds and give an example of each.
- Name some common insect pests and describe the damage they cause.
- Name the most common cause of turf disease.

Chapter

4

Preview

Spring and Fall Clean-up

Mowing

- Mowing practices

Watering

Aerating and De-thatching

- Aerating
- De-thatching

Overseeding

Fertilization

- Synthetic fertilizers
- Fertilizer alternatives (natural fertilizers)
- Turf fertilization programs
- When to fertilize
- Fertilizer formulation

Weeds, Insects and Diseases

Overview

Turf maintenance refers to the many practices that maintain healthy and attractive lawns. These practices include mowing, watering, fertilizing, aerating, de-thatching, and controlling weeds and pests.

Regular turf maintenance practices help prevent weeds and pests. However, when pests become a problem, prompt attention is needed, and integrated pest management strategies are recommended.

Turf maintenance remains a large part of the landscape industry, despite a recent movement to decrease the number and size of turf installations in North American landscapes. It seems that demand for turf maintenance services will continue to be high for many years to come.

Note: Though fertilizing is an important consideration for turf maintenance, it is not included in this chapter. Instead, it is covered in detail in the next chapter, "Pest Management."



Example of a poorly maintained lawn. Regular turf maintenance practices help prevent weeds, stress and disease.

Spring and Fall Clean-up

Though *not exclusively turf maintenance tasks*, spring clean-up and fall clean-up are an important part of landscape maintenance and should be included as part of a general maintenance program. Typical seasonal tasks are listed below according to when they should be carried out. Spring and fall tasks vary in different regions.

Spring:

- In colder climates, remove sand, gravel and debris left from snow removal from turf and planting bed areas.
- Identify winter damage to trees and shrubs and prune, as needed.
- Remove tree wrap, if present.
- Inspect turf areas for winter damage and disease problems.

Fall:

- Wrap trees according to appropriate regional standards. In some regions, tree wraps are not used.
- Remove leaves.

Spring and fall:

- Clean up planting beds:
 - Pick up fallen branches and leaves, trash and other debris.

- Regional practices may include leaving leaves for mulching. Proper mulch depth needs to be monitored, as appropriate, for local conditions.
- Prune perennials. Depending on the plant, pruning of perennials can take place in both spring and fall.



David Winger Landscape Photography

Mowing

Mowing and watering are usually the most common and frequently performed turf maintenance tasks. Refer to the next section for information about watering.



Mowing practices

The visual impact of a freshly mowed lawn is immediate. However, proper mowing techniques should not be taken for granted.

Why mow?

Mowing is done for more than just appearance. Lawns that are mowed regularly and properly have greater tolerance to heat and drought and are less susceptible to problems.

Mowing heights

Ideal mowing height varies by grass type and region. Cool season grasses, such as ryegrass, Bluegrass or fescue, should be mowed to a height of 2 – 3" (5.0 – 7.5 cm). Buffalograss can be mowed to shorter heights of less than 2" (5 cm) or it can also be left unmowed. Bentgrass, commonly used on golf course putting greens, can be mowed to 1/8".

As a guideline, no more than about 1/3 of the grass blade should be removed at one time. Since growth rates may vary during the growing season, the length of the grass at mowing time in July, for example, may be different than in April. It is best to adjust the frequency of mowing based on the growth rate of the grass in

order to remove approximately 1/3 of the grass at each mowing. (See the next section, "Mowing frequency").

If grass is cut too short, it may become stressed.



48" Riding mower with bagger



Technician using a 21" mower

Continuously cutting grass too short can cause part of the root system to die back. Lawns mowed to shorter heights tend to have reduced tolerance to heat and drought, and also tend to have more weeds, insects and disease.

Mowing frequency

Mowing should be done on a regular schedule. In general, weekly mowing is recommended, but this can vary with different turf types, seasons and changing conditions. Less frequent mowing is beneficial; it promotes root growth and produces healthier turf. Bluegrass and fescue lawns may require mowing twice a week in the spring when growth is fastest. In hot, dry or cold conditions, these grasses may need mowing only once every week to 10 days.

Buffalograss may only require mowing every 10 – 20 days, depending on how much water it receives. Bentgrass may be mowed two or more times per week depending on the desired appearance and texture.

Remember, adjust mowing frequency based on the growth rate of the grass to remove approximately one third of the grass at each mowing.

General mowing guidelines

Where possible, begin by making two passes the width of the mower around the perimeter of the area. Blow clippings to the inside.

- Overlap each pass using the following guidelines:
 - 21" mower — overlap approximately 2" (5 cm)
 - Intermediate walk-behind mower — overlap approximately 4" (10 cm)
 - Riding mower — overlap approximately 8" (20 cm)
- Mow in a direction perpendicular (at right angles) to the direction mowed the previous time. Note: On slopes, mow from side to side to prevent rollover.
- If mulching mowers are used, clippings may be left on the lawn to decompose, which will provide the lawn with nutrients and organic matter. (Handling of clippings for weed control may be different. Refer to

the upcoming section "Weeds, Insects and Diseases.")

- Keep mower blades sharp. Dull blades shred grass instead of cutting it cleanly. As a general rule, sharpen mower blades as needed, and at least weekly.

How to Mow:

The following three important safety guidelines should be followed to help prevent accidents and injuries, as well as limit liability issues.

1. Walk the site before mowing.
2. Remove debris before mowing.
3. Identify any hazards or obstacles.

Watering

There are several factors to consider when determining how much and how frequently to water turf. They include: type of turf, condition of turf, soil type, weather conditions, slope, type of irrigation system, if applicable, time of year, cost factor — metered water and watering restrictions.

How much to water

Ideally, criteria for determining how much to water include turf type, soil type, slope, weather conditions, regional conditions and water source. As a general rule, a lawn should receive at least 1" (2.5 cm) of water per week during the growing season. This can vary. For example, water requirements are less in shade and in cool or cloudy weather. In addition, water filtration



For the best turf health, schedule irrigation to give turf the amount of water it needs without overwatering or underwatering.

rate is lower in clay soils compared to sandy soils, which means application rate can vary.

Be careful not to underwater or overwater. Underwatering can first be detected by seeing a blue-gray tint to the turf. Overwatering is wasteful and can be detrimental to turf by depriving roots of oxygen and promoting disease. To promote healthy root development, avoid frequent shallow watering of turf.

When to water

The best time for watering is in the early morning or the evening. At these times, it is generally cooler, more humid and less windy, resulting in less water loss from evaporation. Water pressure may be higher at these times as well, which adds to irrigation system operating efficiency.

Note that in some areas, late-day watering may encourage fungus growth. (See the “Weeds, Insects and Diseases” section later in this chapter). Also, with irrigated turf, it is beneficial to water shortly after each mowing to help the lawn recover.

In addition, other seasonal considerations, such as fertilization or aeration, may require modification of regular irrigation schedules to promote healthy turf (see the “Turf Products” chapter and also the *Landscape Training Manual for Irrigation Technicians*).

Water conservation

Water conservation has become increasingly important in recent years and supports the principles of sustainable landscape management in landscape design and maintenance. Many climate-based (weather) and soil moisture-based landscape irrigation control devices are available. These are called “smart” controllers because once they are programmed; they adjust irrigation schedules automatically in response to environmental changes and can save water, time, energy and money.

Aerating and De-Thatching

Aerating and de-thatching are also important to maintaining healthy turf. These procedures can deal effectively with the build-up of too much thatch and provide other benefits to overall turf health. Prior to aerating or de-thatching, it is useful to take a core sample from the turf area to determine the amount of thatch (build-up of decaying organic matter and debris), soil moisture and compaction. The core sample actually allows you to “see” what the conditions are several inches below the grass, which includes the thatch layer and underlying soil.



Aerating

Aerating creates small, evenly spaced holes, 3 – 4" (7.5 – 10.0 cm) deep throughout a turf area. Aerating helps the turf by:

- Reducing soil compaction
- Improving uptake of oxygen, fertilizer and other nutrients
- Breaking down thatch
- Improving irrigation effectiveness — after aeration, water reaches the root zone quicker and run-off is reduced
- Creating a more favorable environment for roots to grow

When to aerate

Do aerate:

- Clay soils twice a year, in spring and fall
- Sandy soils once a year, in spring or fall
- Before fertilizing or reseeding

Avoid aerating:

- In periods of high heat or during drought conditions to minimize stress to the root system

Aerating equipment

Manual, tow-behind, and power aerators are available. Manual aerators have a foot plate with hollow cylinders extending from the bottom. The operator steps on the foot plate, forcing the cylinders into the ground. Manual



Use a manual aerator in small areas and around pavement or flagstone.

aeration is slow and therefore practical only for small areas. Tow-behind aerators come in various widths and are typically towed using a riding mower or tractor.