

MODULE III • Introductory Horticulture Training

# Turf Maintenance Theory

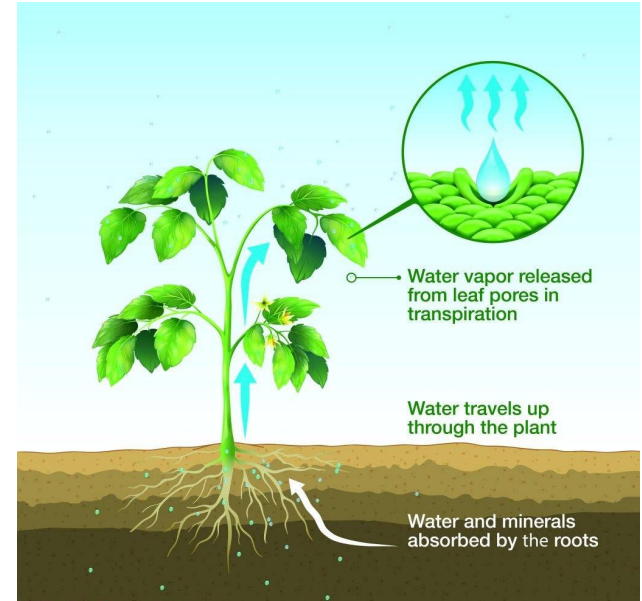
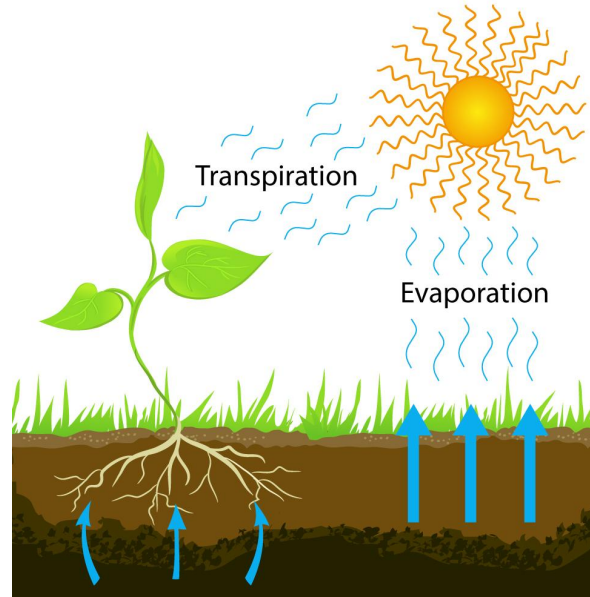
Presented by  
Landscape Ontario's  
Garden Centre Sector Group



HORTICULTURAL TRADES ASSOCIATION  
[landscapeontario.com](https://landscapeontario.com)



# The Science Behind Watering



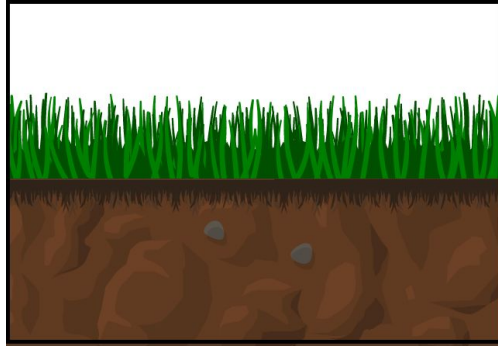
## Watering Considerations

- Municipal watering restrictions
- Flat vs sloped terrain
- Sun exposure
- Type of irrigation (manual/automatic)
- Time of day/year
- Cost factor – metered water
- Turfgrass species
- Uses: sports, recreation & lawns
- Condition of turf & mowing height
- Soil type
- Weather conditions



# Soil Type

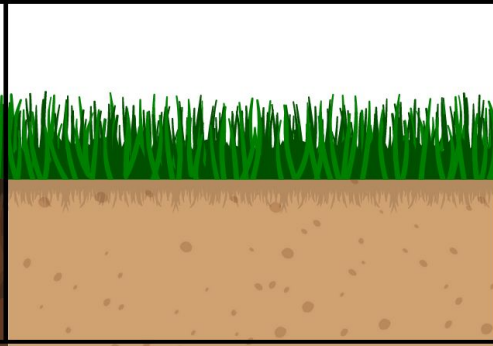
## CLAY



- Holds more water
- Slow to absorb water
- Slow to release water

Do not apply the water faster than the soil can soak it in or water in cycles.

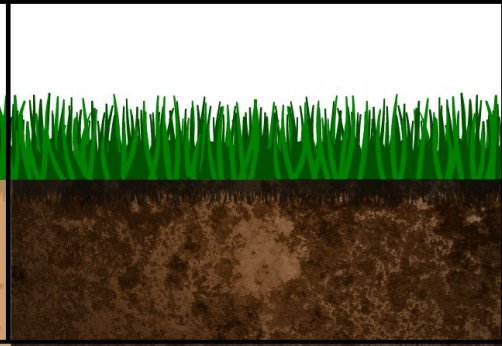
## SAND



- Extremely porous
- Allows quick water flow

Water in 1/2 inch increments to saturate soil 6-8 inches deep.

## LOAM



- Very porous:
- Retain moisture
- is the optimal soil type

Water normally.



## Underwatering

### Symptoms

- Gray-Blue-green tint to the turf (early)
- Yellow-brown (if advanced)
- Discolored or curled over at the top
- Lawn that still shows footprints after walking across it

### Impacts

- Promotes shallow root system that is not drought tolerant



## When to Water

- **Early morning or early evening**
  - Allows water to soak into the soil with the cooler temperatures and calmer winds
  - Grass blades dry quickly to reduce disease potential

**It can be beneficial to water shortly after mowing to help the lawn recover.**







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What are some signs of an unhealthy lawn?

Yellow / brown colour

Weeds

Unevenly cut

Dead patches / areas

Slow growth

● What causes a lawn to have an unhealthy appearance?

Poor soil / compacted soil = not enough oxygen for healthy roots

Insufficient nutrients

Poor soil ecosystem

Shallow or weak roots

Presence of weeds / diseases / insect damage

Over or under watering

Cut too low or too high

Cutting more than 1/3 of the grass blade at one time

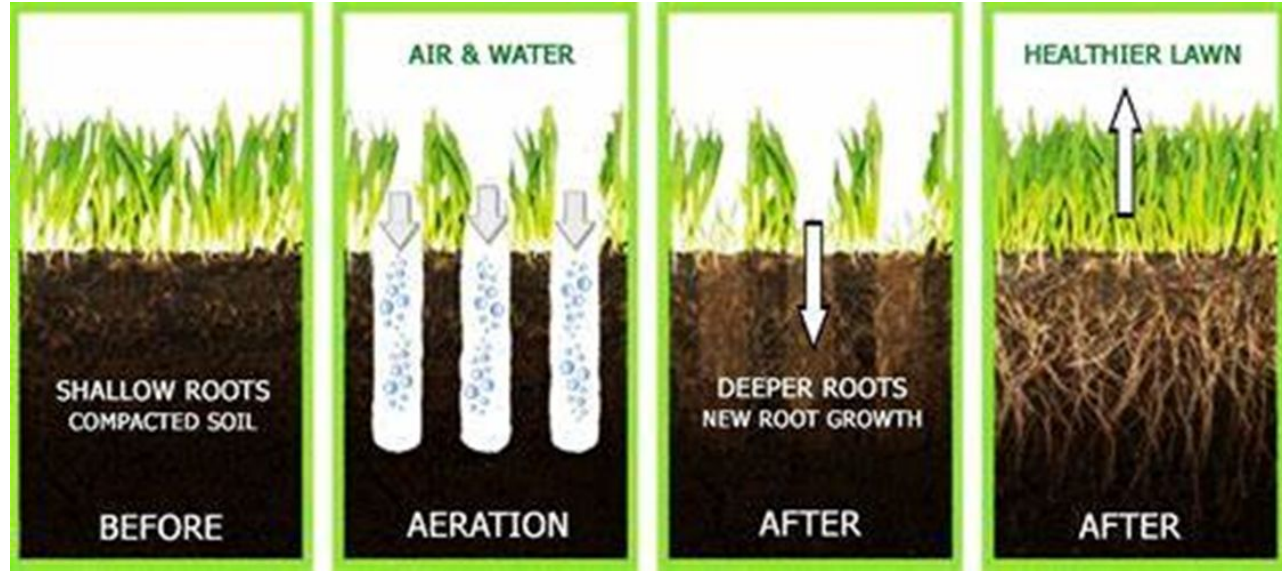
Traffic

Wrong species for the application/use



# Soil Compaction

eliminates air spaces in the soil and can make it more difficult for roots to penetrate & establish to support healthy growth.



# Aeration





# Dehatching



# Overseeding

The practice of seeding grass into an existing lawn to thicken turf, fill in bare spots and crowd out weeds.





## Top Dressing

- Helps to create a smooth surface
- Helps in controlling lawn thatch
- Improves the soil structure
- Improves germination and growth when overseeding



## How to Top Dress a Lawn

**Step 1:** Pile up small mounds of topsoil evenly over the lawn

**Step 2:** Spread the piles of topsoil out with the back of a rake

**Step 3:** Work the soil into the lawn with a stiff boom or rake




**Step 4:** Water the lawn



# Fertilizing

Provide nutrients required for healthy root growth, colour, and foliage growth

**NPK**  
**Nitrogen, Phosphorus and Potassium Explained**

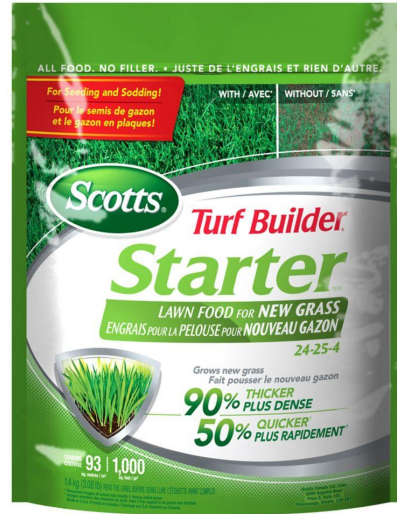
<b>Healthy Foliage</b>	<b>N</b>	
<b>Strong Roots</b>	<b>P</b>	
<b>Healthy Plants</b>	<b>K</b>	

**Nitrogen (N)**  
 Nitrogen aids plants in making proteins that are using for healthy foliage growth. Excess causes rapid growth but poor flowering, deficiency causes stunted growth.

**Phosphorus (P)**  
 Phosphorus aids in strong root growth as well as flower development and larger seeds. Excess causes poor growth and bleaching, deficiency causes leaf death.

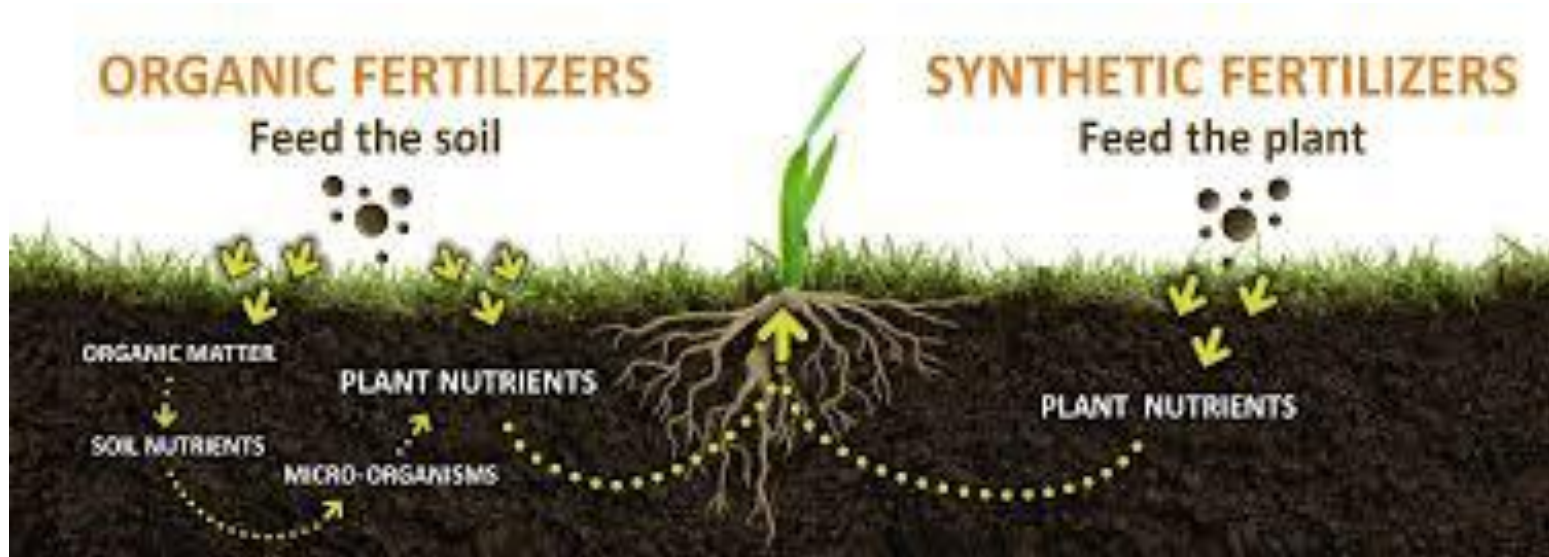
**Potassium (K)**  
 Potassium aids in overall plant health and development of the crop. Excess can cause N and P uptake to be blocked, deficiencies can lead to disease and general poor health.

## Fertilizing





# Fertilizing



## Weeds, Pests and Diseases

- Sound turf maintenance practices can minimize the occurrence of turf problems
- Monitor and control measures using IPM approach (Integrated Pest Management)



# Weeds, Pests and Diseases

- Weed sources?
  - Grass seed
  - Sod
  - Soil
  - Manure
  - Runoff
  - Wind
  - Pets
  - Wildlife
  - Neighbouring properties

Weed = Any plant growing in an unwanted place



## Weeds, Pests and Diseases

### Types of Weeds:

- **Grassy**
  - Crabgrass is a common grassy weed that thrives in poor quality lawns
- **Broadleaf**
  - Include: dandelion, thistle, bindweed, clover, plantain, purslane and mallow
- **Sedges**
  - Include: purple nutsedge and yellow nutsedge
- **Weed Lifecycles:**
  - Annual, Biennial or Perennial





# Weeds, Pests and Diseases

## Dandelion – a Weed?

The entire plant, including the leaves, stems, flowers, and roots, is edible and nutritious.

A close-up photograph of a bee on a bright yellow dandelion flower. The bee is positioned on the lower left, facing the flower. The background is a soft-focus field of more dandelion flowers.

**DANDELION**  
COMMON

Taraxacum officinale  
250 Seeds

Seed Needs.

Dandelion is often seen in empty fields, along highways and most commonly seen in our own backyards. It is usually considered to be a pesky weed, but what you may not know is, Dandelions are actually delicious herbs. The leaves and flowers of dandelions can be eaten in salads, or used as a garnish. Perennial herbs. Harvest: 95 Days.

## Weeds, Pests and Diseases

White Clover – a Weed?



## Weeds, Pests and Diseases

Depending on the types of weeds present, controls include:

- **Hand pulling** (removing roots)
- **Mowing prior to seed production** (if seeds already set, then bag clippings -do not compost)
- **Implement a well-designed Integrated Pest Management (IPM) program** to support minimal use of selective herbicides





## Weeds, Pests and Diseases

- Different lawn pests have different feeding habits and therefore attack the lawn in different ways
- **Above ground feeders:** sod webworms, chinch bugs and armyworms
- **Underground feeders:** grubs and young pill bugs





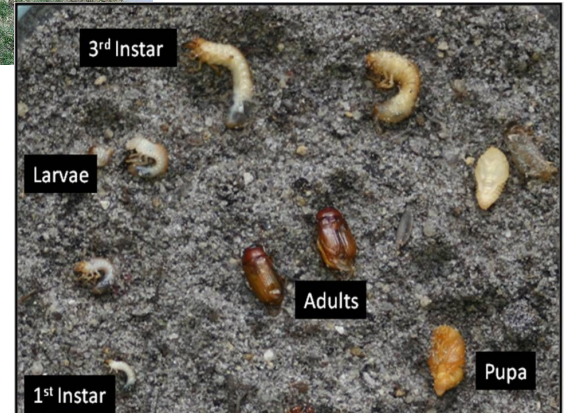
## Weeds, Pests and Diseases

- Patches of thinning, dead or discoloured turf may indicate the presence of insect pests.
- Correct identification should be obtained prior to implementing control measures.



*June Bug Life Cycle*

*Indicator – Why is this lawn dug up?*



## Weeds, Pests and Diseases

- Night visitors to lawns to feed on grubs
- Network of paths observed in early spring when snow melts . Generally caused by voles, mice



[This PhotoCC BY-NC](#)



*Indicator – Why is this lawn dug up?*

# Weeds, Pests and Diseases

## Pest Control:

- Biological controls: for example, nematodes for controlling grubs
- Pesticides (insecticides, fungicides, miticides)
  - Requires license to use
  - Before using, be sure it is the correct one for the pest, location and timing
  - Carefully read the label for proper application techniques and potential hazards



- Regardless of the pest type, be sure to know what type of pest is causing the condition so the best treatment methods can be determined.

# Weeds, Pests and Diseases

## Turfgrass Diseases & Prevention





## Container Planting Considerations

- Planting in pots/containers...
  - Drainage is important!
  - Consider material types: glazed ceramic, terra cotta, fiberglass, metal, etc.
  - Size matters



[\(Planet Natural, 2013\)](#)

## Other Planting Considerations

- **Planting in pots/containers...**
  - Always loosen the root ball
  - Basic container design:  
*Filler, spiller, thriller*



(MerrifieldGardenCt, 2013)

## Other Planting Considerations

- **Planting in pots/containers...**
  - Potted plants dry out quicker than plants on the ground
  - Water slowly and deeply
  - Ensure there is drainage in the container
  - Requires regular fertilizing to optimize performance



[\(Growing Wisdom, 2011\)](#)

## Transport and Handling

- Plants are sensitive living organisms that come under stress when transported from the nursery
- Poor handling and care jeopardizes survival and growth
- Stressed plants divert their efforts from growth to survival, from growing new cells to repairing damaged cells





## Handling and Storage

- Bare root trees must be kept covered and moist at all times, kept protected from frost, freezing sun and wind
- Container grown trees are to be handled by the container only
- Balled and burlapped (B&B) and wire basket trees are to be handled with caution in order to maintain the firmness of the root balls
- Trees should not be lifted by the trunk (special lifting equipment may be required)
- Plants should be protected against damage to stems and branches
- When transporting a covered vehicle is preferred, if in an open environment cover with a mesh tarp
- On site storage should provide shaded cover and water

# Other Planting Considerations

## Quality

- Evaluating plant health upon receipt, do they look healthy? Do they look wilted? Are the plants the correct size according to the invoice
- Examine the leaves, stems and trunks. Start at the top, check for disease, damaged branches, wounds on trunks
- Examine the roots, are they fully rooted? A fully rooted container plant has white healthy roots that are consistent throughout the pot. Are they root bound? Roots that circle thickly around the bottom of the pot.

# Other Planting Considerations

## Quality

- Check to make sure the plants are the right variety
- Check to make sure that the right quantity of plants has been received
- Make sure the invoice matches the business name.



# Congratulations!



MODULE I:  
**Introduction  
to Botany**



MODULE II:  
**Applied Watering,  
Soils & Fertilizer**



MODULE III:  
**Turf Maintenance**

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# Questions

