

BACKYARD CONSERVATION

Lawn Care Practices
Promoting Soil Conservation and
Protection of Water Resources



Backyard Conservation: Lawn Care Practices (Program Materials, Background, and Speakers Notes)

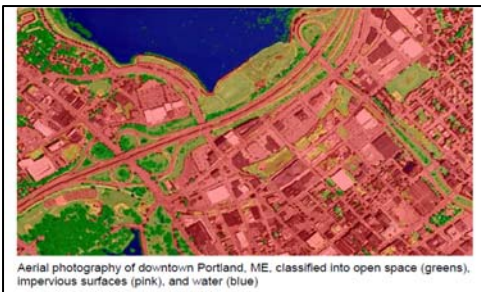
Program Introduction

Backyard Conservation: Lawn Care Practices is an outreach and education program targeting anyone with a lawn. The program focuses on practical lawn management techniques that promote soil conservation and protect water resources. Included in this packet is the full program, developed by the Ohio Federation of Soil & Water Conservation Districts and the Ohio Department of Natural Resources in collaboration with The Scotts Miracle-Gro Company. Not only do these recommendations help protect our environment, they also save time and resources. Best practices include proper mowing, grass clipping and leaf management, soil and water conservation, and nutrition.

Program Materials

- **Power Point Presentation/speakers notes** – This is the main component of the program. The power point should be given by the district personnel and incorporated into educational trainings and outreach programs. The presentation is accompanied with background information and speakers notes to help the presenters bring the information to life.
- **Supplemental Materials**
 - DVD – A short 20 minute narrated version of the PowerPoint presentation which can be given when the district personnel are not available to attend meetings held by organizations that have a basic understanding of lawn and garden care (garden clubs, Master gardeners, etc.).
 - Brochure – A simple take home reference that highlights the key components of the presentation, it can also be handed out in the circumstances where the presentation cannot be provided (booths, conferences, etc.) The brochure reinforces the best practices and highlights how lawns and gardens and simple behaviors can help our water quality efforts.
 - Magnet – A take home reference from the presentation or a reminder of the brochure that reinforces the key best practices in an easy to understand fun way.

Background Information



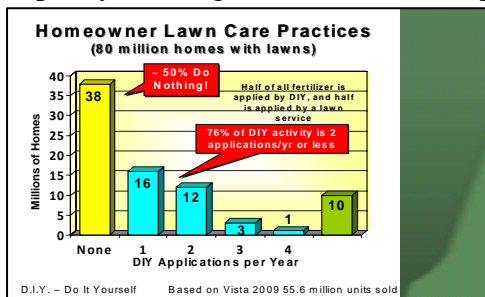
Aerial photography of downtown Portland, ME, classified into open space (greens), impervious surfaces (pink), and water (blue)

As our population grows and urbanization increases (and more impervious surfaces are developed), our greenspaces play an increasingly important role in stormwater control. Using greenspaces to collect water and reduce pollutants can be an alternative to expensive stormwater infrastructure and treatment control measures. Greenspace- lawns, gardens, and landscapes- provide a very important environmental service by collecting and filtering stormwater and the pollutants carried with it before entering our waterways.

Traditionally urban developments were built to move water off-site as quickly as possible resulting in high stormwater volumes, stream bank erosion and sedimentation, reduction in groundwater recharge, and additional strains on our water treatment plants.

Today, the concept of keeping water on site and utilizing the environmental services of greenspace is becoming more common. For this reason, the use of green infrastructure is increasing and the grass lawn is being eyed a prime resource by stormwater managers across the country. Installing rain gardens and rain barrels, and disconnecting downspouts are also becoming common practices in new and existing urban developments and all can play an important role.

Grass is a common plant used in green infrastructure and stormwater control from riparian strips in agricultural fields, to highway and utility right-of-ways, to parks and backyards. In fact, it is the most common type of greenspace in the urban environment. Because of its dense cover and growth habit as a perennial plant, lawns can be extremely effective at reducing sediment, nutrient losses, and stormwater runoff. They also increase the infiltration rate of the soil, improve soil structure and water holding capacity, add organic matter, and help to replenish groundwater.



It is estimated that there are 40 million acres of turfgrass in the U.S. Home lawns comprise of approximately 16 million acres, while the other areas are turf maintained as golf courses, sports fields, parks, and right-of-ways.

Out of the 80 million single family home lawns in the U.S with the average lawn size of 8,000 square feet (0.2 acres), nearly half of these homes do not apply any fertilizer to their lawn in a given year. The other half may apply fertilizer 1 – 2 times per year. These are what we call the Do-it-Yourself (DIY)

homeowners because they maintain their own lawn. A small portion applies more than 2 applications, and approximately 10 million homes use a lawn care service. While less people use a commercial lawn service, the activity level is higher (3 – 4 lbs nitrogen/year). As a result, 1/2 of all lawn fertilizer is applied by commercial lawn care services and half is by the DIY homeowners.

Even though all lawns are not fertilized, they are maintained in some form or another. While some know the impact lawns and proper management can have on the environment, others do not. Our soil and water conservation efforts around the home should focus on improving existing maintenance practices. The techniques listed in the presentation touch on basic practices that anyone with any type of lawn can do. By focusing on these practices, we are able to reach the largest audience and address the behaviors that can provide the biggest benefits.



Backyard Conservation: Lawn Care Practices – Speakers Notes

Slide 1: Backyard Conservation – Lawn Care Practices



Caring for the environment also means caring for your lawn. By using proper mowing and maintenance practices, you can enjoy a healthy, beautiful lawn while also conserving local natural resources, like streams, rivers and lakes.

At The National Association of Conservation Districts, we understand the important role lawns play in protecting our environment, so we've joined forces with The Scotts Miracle-Gro Company to make sure homeowners like yourself have the knowledge to do your part.

With 40.5 million acres of lawns across the United States (with the average lawn size of 0.2 acres or 8,700 ft²),

backyards offer homeowners everywhere the opportunity to collectively make a big difference.

By working together, we can bring conservation into each and every backyard, making our communities healthier and more sustainable places to live.

Slide 2: Lawns and Our Environment



Our urban environments contain 40 – 60% impervious surfaces (roads, rooftops, parking lots) that can't absorb and filter rainfall. This places additional demands on green space or porous surfaces to help capture rainfall and prevent erosion.

The environmental benefits of grass come from its growth habit. Grass provides a constant ground cover. Even when the grass is not actively growing (winter, dormancy) the roots help hold soil and nutrients in place. When the grass plant is active, roots are continually growing and breaking down to help hold soil and nutrients in place.

References: The role of turfgrasses in environmental protection and their benefits to humans. *J. of Environ. Qual.* 23:452-460; Lawns: your guide to a beautiful yard. 2nd ed. Meredith Corp. Des Moines, I.A.; Ortho's all about lawns. Meredith Books. Des Moines, Iowa

Slide 3: Our Role

OUR ROLE

How we care for our lawn determines the degree of the environmental benefits and impacts we achieve.



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By adding sustainable lawn care practices, you can benefit the environment, yourself, and help protect and preserve our soil and water resources.

Slide 4: Environmental Benefits of Grass

ENVIRONMENTAL BENEFITS OF GRASS

- Improves soil structure
- Reduces stormwater runoff
- Prevents soil erosion
- Captures and filters rainfall
- Replenishes groundwater
- Cleans and purifies the air
- Cools temperatures above the ground



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The grass in your lawn has tremendous environmental benefits. Healthy lawns protect soil and water quality as they knit the soil together with their roots. Grass lawns help prevent erosion, reduce runoff, and filter rainwater.

Soils under lawns are better able to capture and filter rainfall than bare soils. It is estimated that a healthy lawn can capture all of the rain from a 1.5 inch storm which is the 95th percentile rainfall event for half of the country.

Grasses in the U.S. trap an estimated 12 million tons of dust and dirt annually from the air. An acre of grass will absorb hundreds of pounds of sulfur dioxide a year.

The haze created by these pollutants can reduce the sunlight by as much as 15%. Lawns convert the greenhouse gas, carbon dioxide, into oxygen. The lawn outside of your home can provide enough oxygen for a family of four, day after day.

Lawns also provide a substantial cooling effect to the environment. One average size lawn will have the cooling effect of 2 average size air conditioners (the average for home use is a 4-ton air conditioner). Summer air temperatures above a lawn can be up to 30 degrees cooler than above a paved area.

NOTES: A lawn and landscape provides an outdoor atmosphere that is therapeutic and relaxing. Of the 56 million Americans who do all or part of their own yard work, the majority consider it healthy physical and mental exercise. Green spaces have been documented to improve recovery time of physical and mentally ill patients. Lawns can also provide recreational spaces for kid and family activities.

References: The role of turfgrasses in environmental protection and their benefits to humans. *J. of Environ. Qual.* 23:452-460; Lawns: your guide to a beautiful yard. 2nd ed. Meredith Corp. Des Moines, I.A.; Ortho's all about lawns. Meredith Books. Des Moines, Iowa

Slide 5: Backyard Conservation - Lawn Care Practices



Best lawn care practices are basic maintenance practices for your lawn. Anyone who has a lawn most likely engages in some version of these practices already. Mowing at the correct height can promote healthy roots, drought resistance, and suppress weeds in the lawn. Managing vegetation by mulching lawn clippings and leaves can recycle nutrients back into your yard and cut down on landfill space. Inefficient water use can have a negative impact on water quality and quantity. Letting your lawn go dormant and/or proper watering techniques can protect our water resources. These cultural practices

are easy to apply and provide many environmental benefits including soil and water conservation.

Slide 6: Mow High



The first and most effective step towards achieving a healthy lawn is to change your mowing routine. Taller grass is stronger grass. Long grass blades slow top growth, block weeds, and develop deeper roots. The majority of lawn grasses should be kept at a height of 3 – 4 inches*. The majority of walk behind mowers offer a range of settings. People naturally tend to use a middle setting which is too low for the grass. These mowers can be set as high as they will go and you never have to touch the settings again. Mowing at a higher setting encourages deeper root growth and helps prepare the

lawn for mid-summer periods of heat and drought.

*NOTES: The exception to 3 – 4 inches occurs with some warm season grasses like Bermuda, Seashore Paspalum, and Creeping Bentgrass which should be maintained at 2 inches or lower.

References: Lawns: your guide to a beautiful yard. 2nd ed. Meredith Corp. Des Moines, I.A.; Turfgrass: science and culture. Prentice Hall. Englewood Cliffs, NJ; Handbook of turfgrass management and physiology. CRC Press. Boca Raton, F.L.; Ortho's all about lawns. Meredith Books. Des Moines, Iowa

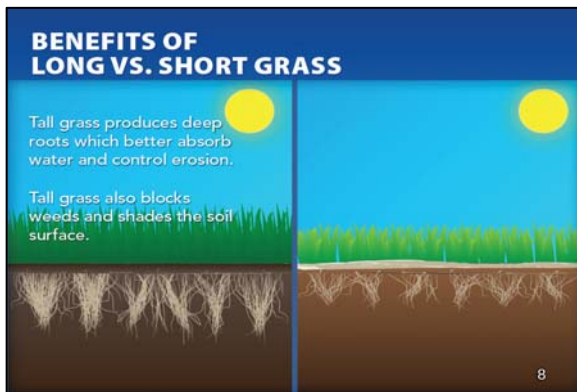
Slide 7: Myth vs Fact of Mowing Low



A common myth is that mowing often and short results in a healthy lawn that grows back slower. When grass blades are mowed too short, the plants will not have enough energy stored to keep the entire plant healthy. The plants will try to build stronger energy reserves by putting all of their effort into growing grass blades. This can lead to an increase in frequency of mowing because the grass blades are growing faster than the roots. A lawn maintained at a height of 3 to 4 inches provides many important benefits.

References: *Lawns: your guide to a beautiful yard*. 2nd ed. Meredith Corp. Des Moines, I.A.; *Turfgrass: science and culture*. Prentice Hall. Englewood Cliffs, N.J.; *Handbook of turfgrass management and physiology*. CRC Press. Boca Raton, F.L.; *Ortho's all about lawns*. Meredith Books. Des Moines, Iowa

Slide 8: Benefits of Long vs Short Grass 1



Tall grass blades also allow the plant to have plenty of area to capture the sunlight. Sunlight provides part of the energy required to develop strong, tough plants and deep roots.

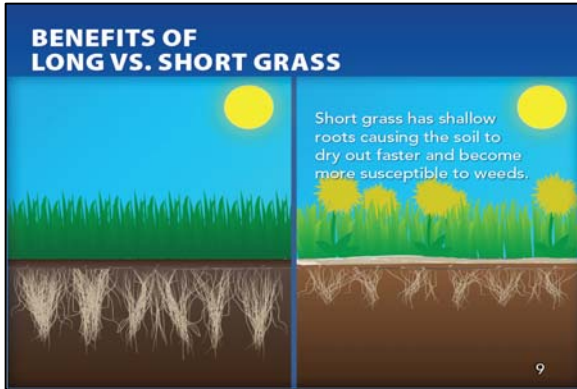
Tall grass blades also develop deeper roots which allow the lawn to withstand longer periods of heat and drought because the roots are able to find water and nutrients in deeper layers of the soil. The soil surface will not dry out as fast because it is supplied with constant shade from the grass blades. Deep roots extend

far into soil allowing the water to flow laterally through the soil and are better able to absorb and filter water. This can reduce the amount of storm water runoff from your property compared to a lawn with thin and shallow grass roots.

A Healthy, deep rooting system improves soil quality. As roots grow, they break up the soil improving soil texture, and improve the ability of the soil to absorb water. The roots turn over every year meaning roots decompose and new roots grow every season. This turnover provides organic matter to the soil.

References: *Lawns: your guide to a beautiful yard*. 2nd ed. Meredith Corp. Des Moines, I.A.; *Turfgrass: science and culture*. Prentice Hall. Englewood Cliffs, N.J.; *Handbook of turfgrass management and physiology*. CRC Press. Boca Raton, F.L.; *Ortho's all about lawns*. Meredith Books. Des Moines, Iowa

Slide 9: Benefits of Long vs Short Grass 2



Short grass blades can cause sunlight to reach open areas on the soil surface which can cause weeds to germinate. This is a result of weed competition for light, soil moisture, and soil nutrients. When weeds are blocked from receiving sunlight, the lawn can grow more grass with less competition from the weeds.

There are hundreds of weed seeds in one square foot of your lawn waiting for the right opportunity to germinate. Weed seeds are present in the soil from a variety of sources and can survive for hundreds of years. Some sources of these weed seeds include past land uses, the

movement of soil during house construction, and arriving via wind.

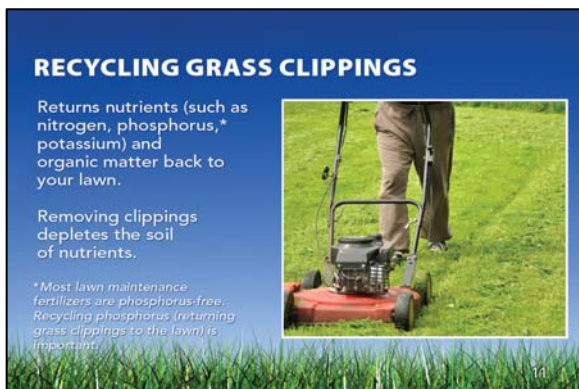
References: Lawns: your guide to a beautiful yard. 2nd ed. Meredith Corp. Des Moines, I.A.; Turfgrass: science and culture. Prentice Hall. Englewood Cliffs, N.J.; Handbook of turfgrass management and physiology. CRC Press. Boca Raton, F.L.; Ortho's all about lawns. Meredith Books. Des Moines, Iowa

Slide 10: Recycle Clippings & Leaves



The average lawn produces 1,500 pounds of grass clippings. That's 1,500 pounds of recyclable material that could be used to keep your lawn healthy. Leaves are another plant material which can be easily recycled into your lawn. It's as simple as removing the grass collector and/or using the mulching feature on your lawn mower.

Slide 11: Recycling grass Clippings



Leaving grass clippings on your lawn recycles plant nutrients back into the soil. Clippings contain the same beneficial nitrogen, phosphorus, and potassium nutrients as fertilizer. Clippings from a 1,000 square foot lawn contribute 1/2 to 1 lbs of nitrogen*. In fact, clippings can provide up to one-third of the annual feeding requirement for your lawn if your soil already contains the proper amount of nutrients. Clippings also fall to the surface of the soil where they help block sunlight from reaching the soil and reduce the chance for weeds to germinate.

Recycling grass clippings to your lawn is as simple as removing the grass collector bag from your mower. If you don't have a collector, you are ready to recycle. If you mow on a regular basis, the

clippings should be small enough to return without an additional mowing. If the clippings are large enough where you can't see the grass underneath, another mowing pass may be necessary to reduce the clipping size so that the grass is visible and the clippings have settled into the lawn**.

NOTES: *The amount of nitrogen that can be returned to your lawn via clippings will depend on many conditions including the amount of fertilization, soil and environmental conditions.
**Clippings can also be raked up and used as mulch or used in your personal compost pile.

References: The primary productivity of lawns in an urban environment. J. of Appl. Eco. 17:689-696; Ortho's all about lawns. Meredith Books. Des Moines, Iowa; Turfgrass: science and culture. Prentice Hall. Englewood Cliffs, N.J.; Handbook of turfgrass management and physiology. CRC Press. Boca Raton, F.L.; Grass clippings compost and mulch: questions and answers. University of Missouri XPLOR guide sheet g6958; Don't bag it, recycle your grass clippings. University of California Extension; Mowing to recycle grass clippings: Let the clips fall where they may! Virginia Cooperative Extension;

Slide 12: Same Benefits for Leaf Mulching



SAME BENEFITS FOR LEAF MULCHING

Leaves break down and supply organic matter and nutrients to your lawn.

Mow (1-3 passes) until leaves are chopped up to about a dime size.

Grass mulching and leaf mulching do not contribute to thatch build-up.

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Leaves can also be mulched and recycled into the lawn. When reduced to about a dime size, microbes and earthworms can breakdown the leaves and provide a source of nutrients and organic matter to your lawn. Research has shown that grass with mulched leaves in the fall tends to green-up quicker in the spring.

Mulching leaves involves simply mowing and removing (1-3 passes) dry leaves and until chopped up fine enough (dime size or smaller) to settle into the lawn and disappear. The process is complete once the pulverized leaves are small enough so that the grass is

visible through the mulched leaf layer. Make sure not to cover the grass entirely since turf still needs sunlight to grow. The natural composting process begins once the tree and grass vegetation has settled into the grass at the soil level.

References: When leaves turn to litter. Grounds Maintenance. Penton Media; Recycling leaves in the yard. University of Illinois Extension; Recycling leaves. University of Delaware cooperative extension. Recycling leaves. Alabama cooperative extension; Leaf recycling. Kansas State University Cooperative Extension

Slide 13: Other Benefits of Recycling Clippings and Leaves



OTHER BENEFITS OF RECYCLING CLIPPINGS AND LEAVES

- Improves soil quality
- Saves landfill space
- Saves on the cost to send to a compost facility
- Saves time to rake and bag

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You can also improve your soil quality. Many home lawn soils are compacted for a number of reasons. Some reasons include heavy foot traffic or poor soil quality after construction.

Roots are constantly breaking down and regenerating. The break down of roots into organic matter can reduce soil compaction over time because organic matter improves pore space and soil quality. Pore space provides a place for water, air, and nutrients to move through the soil.

Relieving compaction and promoting pore spaces also

provides a place for beneficial organisms to live. Earthworms are an example of one beneficial organism. They burrow through the soil providing additional pore space as they are feeding on the soil. The digested soil from earthworms or “worm droppings” provides additional organic matter to the soil.

The important thing to remember is soil quality starts with proper nutrition. If your soil does not contain the proper nutrients to aid in the breakdown of organic material, you won’t see any improvements in your soil quality. This is why it is important to have your soil tested and add any nutrients you may be lacking.

Besides recycling nutrients and improving your soil quality, recycling clippings and leaves saves time, space, and money. By recycling grass clippings and leaves, you are saving landfill space and eliminate a waste stream. Even if your town bans leaves and clippings from landfills, there are costs associated to remove the vegetation off site to a compost facility. Recycling can reduce hundreds of tons of waste to a landfill in the U.S. each year, as well as saving on transportation costs associated with hauling waste. Recycling also saves time from raking leaves and bagging all of that vegetation.

NOTES: Remember that a sharp mower blade can be beneficial when mulching. Besides being more effective at chopping up those clippings and leaves, a sharp blade can give your grass a clean cut which makes it more healthy and will give it a better appearance overall. It will also help our during those periods of the year when the grass is more susceptible to insect and disease pressures (a dull blade can beat up on your grass leaving them ragged looking and more susceptible to environmental stresses).

References: Grass clippings compost and mulch: questions and answers. University of Missouri XPLOR guidesheet g6958; Don’t bag it, recycle your grass clippings. University of California Extension; Mowing to recycle grass clippings: Let the clips fall where they may! Virginia Cooperative Extension; Nikolai, T. 2001. When leaves turn to litter. Grounds Maintenance. Penton Media; Recycling leaves in the yard. University of Illinois Extension; Recycling leaves. University of Delaware cooperative extension. Recycling leaves. Alabama cooperative extension; Leaf recycling. Kansas State University Cooperative Extension; Turfgrass Soil Fertility and Chemical Problems. John Wiley and Sons. Hoboken, NJ; The Nature and Property of Soils. Prentice Hall. Upper saddle River , NJ.; Soil Processes and the Carbon Cycle. CRC Press. Boca Raton, FL

Slide 14: Clean up is Key to Water Quality



It is important to remove grass clippings and leaves from any hard surfaces. Don’t blow clippings or leaves into streets, ditches, curbs, or storm drains. They contain phosphorus and nitrogen which can have negative impacts on water quality when large amounts enter the waterways. Nitrogen and phosphorus can wash into lakes and streams, and can cause algae blooms and eutrophication. When you recycle grass clippings and leaves, you are supplying this phosphorus to the lawn and reducing the chance that it can enter the waterways.

Leaves should not be left on curbs. Even though they can be picked up by street sweepers, they sit on the roadside, degrade, and with rainfall make “phosphorus soup” that can easily enter the waterways. Instead of leaving these leaves on the curb, recycle them back into your lawn. It will cut down on raking time and protect the water.

References: Phosphorus, urban runoff, and aquatic weeds: RISE Publication; Grass clippings compost and mulch: questions and answers. University of Missouri XPLOR guidesheet g6958; Don’t bag it, recycle your grass clippings. University of California Extension; Mowing to recycle grass clippings: let the clips fall where they may! Virginia Cooperative Extension;

When leaves turn to litter. Grounds Maintenance. Penton Media; Recycling leaves in the yard. University of Illinois Extension; Recycling leaves. University of Delaware cooperative extension. Recycling leaves. Alabama cooperative extension; Leaf recycling. Kansas State University Cooperative Extension

Slide 15: Conserve Water



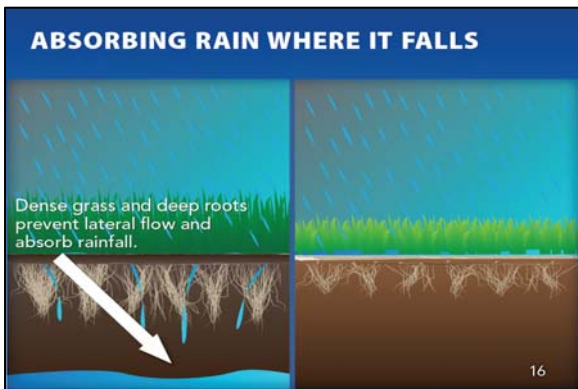
It is imperative to use our natural water resources responsibly. 97.5% of the water on earth is ocean water and 2.5% is fresh water. Of our freshwater, 70% is tied up in glaciers and polar ice caps, some is tied up in the soil and deep beneath the ground in aquifers, and < 1% of freshwater is readily available. Since there is a limited supply of freshwater, there are concerns over the quantity and quality of our drinking water, the water used for recreational purposes, and water for aquatic ecosystems. In some areas of the country, water use may be restricted due to rapid urban development and prolonged drought

conditions.

Rainfall can be a large supplier of freshwater. However, most of the rain gets washed away on impervious surfaces where it is not able to infiltrate. Increasing the amount of pervious (or porous) spaces is a way to recycle rain water. It is important to let water filter where it falls to recharge the groundwater, reduce the chance of storm water overflow, and supply water to your plants.

References: Water quality and quantity issues for turfgrass in the urban landscape: CAST publication

Slide 16: Absorbing Rain Where it falls 1



Lawns are perennial and supply a permanent ground cover, protecting soil and water resources. Dense, healthy lawns knit the soil together with their roots and stems to prevent erosion that is typically caused by runoff on bare ground and thin turf. The deeper roots of a healthy turf establish a pathway for water to flow.

A healthy lawn system can also capture and filter the water downward and preventing it from moving off site. This cuts down on the amount of water entering storm drains and sewers as well as the cost to treat stormwater. In Fact, A 10,000 sq ft lawn can absorb

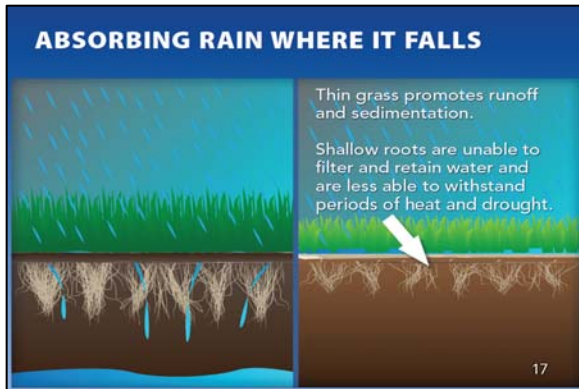
6,000 gallons of water from a single rainfall event*.

A runoff study by the University of Wisconsin found that healthy turf can reduce the amount of nutrient runoff compared to an unhealthy turf.

NOTES: *6,000 gallons over a 10,000 sq ft lawn is equivalent to a 1.5 in rainfall event (i.e. the 95th percentile rainfall event for half of the country).

References: Water quality and quantity issues for turfgrass in the urban landscape: CAST publication; The role of turfgrasses in environmental protection and their benefits to humans. J. of Environ. Qual. 23:452-460; Lawns: Your guide to a beautiful yard. 2nd ed. Meredith Corp. Des Moines, I.A.; Ortho's all about lawns. Meredith Books. Des Moines, Iowa

Slide 17: Absorbing Rain Where it falls 2



A thin unhealthy turf may not have a deep root system. Water may puddle on the surface and runoff since the unhealthy turf can not absorb as much rainfall.

References: Water quality and quantity issues for turfgrass in the urban landscape: CAST publication; The role of turfgrasses in environmental protection and their benefits to humans. *J. of Environ. Qual.* 23:452-460; Lawns: Your guide to a beautiful yard. 2nd ed. Meredith Corp. Des Moines, I.A.; Ortho's all about lawns. Meredith Books. Des Moines, Iowa

Slide 18: Most Yards Don't Need Supplemental Irrigation



The amount of water needed for grass varies by grass type, soil type, and environmental conditions. Most grasses can go for an extended period of time without any water (dormancy). In fact, half of the U.S. receives enough rainfall for grass growth. The other half may require supplemental irrigation to keep the grass thriving. For example, Ohio receives an average of 37 inches per year and most grasses like 1 inch per week. Since the active growing season in Ohio is around 7 months (April – October requiring 28 inches of water), the natural rainfall supplies more than enough water for grass

growth.

It is important to grow the right type of grass in the right region because different grass types are adapted to different climates just like landscape plants. In some areas of the US where there are extreme environmental conditions and little rainfall, (i.e. the arid southwest) landowners should consider an alternative to grass.


NOTES: New cultivars of grass requiring less water are widely available. Consider fall over seeding with improved varieties to gradually transition your lawn to a more sustainable, environmentally protective yard.

References: Water quality and quantity issues for turfgrass in the urban landscape: CAST publication; The role of turfgrasses in environmental protection and their benefits to humans. *J. of Environ. Qual.* 23:452-460; Lawns: your guide to a beautiful yard. 2nd ed. Meredith Corp. Des Moines, I.A.; Ortho's all about lawns. Meredith Books. Des Moines, Iowa; <http://ga.water.usgs.gov>

Slide 19: Grass Can Go Dormant

GRASS CAN GO DORMANT

- Grass has a survival mechanism – going dormant – when moisture is scarce
- If your lawn turns brown, limit walking on it and don't feed it
- When the rain returns, the lawn should bounce back
- If drought is unusually long in your region, give your grass a deep watering



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You can choose to let your lawn go dormant during periods of drought. The amount of time the lawn can go dormant will depend on environmental conditions, grass type, and soil type. When grasses go without water for an extended period of time, they start to conserve water as much as possible. The top of the leaf blades will start to roll and the roots will grow deeper into the soil searching for water. Even though the grass may look brown and wilted, it will recuperate after receiving adequate rainfall or irrigation. Drought conditioned lawns with deep root systems are also better able to

withstand these environmental stresses.

References: Drought conditioning your Tampa Bay area lawn. University of Florida; Water quality and quantity issues for turfgrass in the urban landscape: CAST publication; Drought-Dormant lawns. Louisiana State University; Watering Practices. University of Minnesota.

Slide 20: Best Practices When Watering

BEST PRACTICES WHEN WATERING

- Think conservation when considering watering
- Rely on normal rainfall for all or most of your yard watering
- Water in the early morning to limit evaporation
- If you use an irrigation system, use water-saving controllers such as moisture sensors and rain sensors to eliminate unnecessary watering



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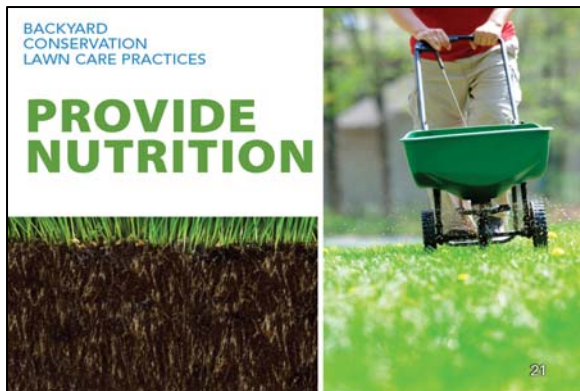
Many people with irrigation systems may have an automatic timer which does not take into account the amount of rainfall received. Frequent, short watering leads to shallow roots that are accustomed to more water than lawns that have undergone drought conditioning. Overwatering can stress the lawn and lead to more pest and disease problems. Your yard will also require more water over time to stay healthy because it is so used to the frequent water.

Irrigating less frequent for a longer period of time can promote a deep root system which can withstand extended periods between irrigations*. A good technique for irrigating is to wait until the grass shows signs of wilt. When the grass needs watered, leaf blades will look bent, the color of the grass may turn bluish-green, and footprints remain imprinted in the grass longer than normal.

NOTES: *An average of ½ to 1 inch per week is sufficient although it depends on soil type and environmental conditions.

References: Water quality and quantity issues for turfgrass in the urban landscape: CAST publication; Lawns: your guide to a beautiful yard. 2nd ed. Meredith Corp. Des Moines, I.A.; Ortho's all about lawns. Meredith Books. Des Moines, Iowa

Slide 21: Provide Nutrition



Similar to humans, grass needs a healthy diet of nutrients. Whether these nutrients come from soil, amendments, or fertilizer it is important to make sure your lawn has the right nutrients to stay healthy.

Slide 22: Feeding Your Lawn

FEEDING YOUR LAWN

Grass, like any plant, needs nutrients to stay healthy.

Sources of nutrients include:

- Grass clippings/mulched leaves
- Compost
- Lawn fertilizer

Generally, only new lawns require phosphorus for root growth. For mature lawns, choose a fertilizer that is phosphorus-free unless a soil test shows a need for this nutrient.

Key Nutrients	
Nitrogen (N)	Growth, density and color
Phosphorus (P)	Plant vigor, seedling root and shoot growth
Potassium (K)	Drought tolerance, disease and stress resistance

The three most important nutrients for grass are nitrogen, phosphorus, and potassium.

Nitrogen plays a part in almost every function of the plant. Nitrogen aids in food production, gives the plant its green color, and increases plant density. When nitrogen is deficient, the grass turns yellow and thin. Nitrogen is the element grass plants use the most and is lacking in most soils. Therefore, nitrogen is needed at higher rates than any other nutrient.

Phosphorus assists with growth of new roots and shoots as well as plant vigor. Most mature lawns already

contain enough phosphorus. For this reason, most lawn maintenance products are phosphorus free or will be phosphorus free in the near future. Phosphorus should only be used when seeding or laying sod on turf and/or when a soil test shows a phosphorus deficiency. New seedlings need more phosphorus than mature plants because phosphorus is immobile in the soil. Mature grass plants cover more area and can find a larger supply of phosphorus while small, developing root systems may be unable to find a large enough supply. A phosphorus deficient lawn will first turn dark green and then almost purple in color.

Potassium is good for overall plant health. It helps the plant resist many environmental stresses such as extreme temperatures and wear tolerance. This is why many winter-type fertilizers contain a higher amount of potassium. Deficiency symptoms for potassium are hard to identify, but may cause a yellowing of the grass.

Other important nutrients in a lawn situation include iron, calcium, and magnesium. Iron is the most likely micronutrient to be deficient, particularly in high pH soils. It is involved in chlorophyll production, so deficiency turns the grass yellow. Many lawn fertilizers contain iron.

Calcium is important in plant vigor (mostly plant cell health and development). Deficiencies are rare and usually show up only in acid soil. The main symptom is slow growth.

Magnesium helps with chlorophyll production. The major symptom of deficiency is yellowing. Deficiencies in magnesium are also rare and when lacking usually happen in sandy, acid soils.

Soil testing should be done every 3 years or when you notice a problem with your lawn. Soil tests can find any nutrient deficiencies in your lawn as well as problems with pH and organic matter content. The key nutrients may be in the soil but simply not available to the plant due to pH imbalance.

Correcting the pH with lime or sulfur can make these nutrients available. Contact your local soil and water conservation district to find more information on soil testing in your area.

NOTES: While Nitrogen, Phosphorus, and Potassium are the major nutrients needed to sustain healthy grass growth (and are found in most lawn fertilizers), macronutrients are also important. In a lawn situation, common macronutrient issues are with Calcium, Magnesium, Iron, and sulfur.

References: Turfgrass soil fertility and chemical problems. John Wiley and Sons. Hoboken, NJ; Lawns: your guide to a beautiful yard. 2nd ed. Meredith Corp. Des Moines, I.A.; Ortho's all about lawns. Meredith Books. Des Moines, Iowa; Turfgrass: science and culture. Prentice Hall. Englewood Cliffs, N.J; Handbook of turfgrass management and physiology. CRC Press. Boca Raton, F.L.

Slide 23: Optimal Time to Feed



There are two major types of lawn grasses in the U.S. Cool Season grass primarily found in the Northern half of the U.S. and Warm Season grass found in the southern half of the U.S.

You can decide to maintain your lawn at a low or high maintenance level. Most lawns are managed low maintenance where grass clippings are returned, leaves are mulched, and fertilizer is applied at 1 – 2 lbs N/1000 ft²/year. High maintenance is typically only needed for a lawn which will have high activity (i.e. sports fields) or when you are initially establishing a lawn. A high

maintenance lawn consists of 3 – 4 lbs N/1000 ft²/year.

The optimal times to fertilize depend on if you have a cool season or warm season grass and their growth habits. If you feed your lawn once a year, the ideal time in the north is in the fall and the ideal time in the south is in the middle of the summer*. If you do subsequent feedings, it is good to space them out every couple of months.

NOTES: *Did you know early fall is actually the best time to fertilize your lawn in the north? The fertilizer protects your lawn from winter stresses as well as a faster green up in the spring. The fall fertilizer also helps to establish more soil microbes which aid in the breakdown of your mulched vegetation (clippings and leaves)

- The area of a residential property is usually described in square footage with the average size lawn around 8,000 – 12,000 sq. feet. For this reason, lawn fertilizer is usually described in pounds of nitrogen per square foot. This is different than agriculture, which describes fertilizer applications as lbs per acre because agricultural fields are typically much larger than a lawn.

References: Turfgrass soil fertility and chemical problems. John Wiley and Sons. Hoboken, NJ; Lawns: your guide to a beautiful yard. 2nd ed. Meredith Corp. Des Moines, I.A.; Ortho's all about lawns. Meredith Books. Des Moines, Iowa; Turfgrass: science and culture. Prentice Hall. Englewood Cliffs, N.J; Handbook of turfgrass management and physiology. CRC Press. Boca Raton, F.L.; Guidance for federal land management in the Chesapeake Bay watershed. chapter 5: turf management.

Slide 24: Clean Up

CLEAN UP

Keep all nutrient sources – grass clippings, leaves, compost and fertilizer – off of hard surfaces, such as driveways, sidewalks and patios.

Sweeping up keeps nutrients from being washed into the sewer systems – which go into our waterways.

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When applying any lawn product, it is important to follow the directions for use on the label. Make sure you return any extra product back to the bag after application. Sweep any product off of hard surfaces and back into the lawn. Just like grass clippings and leaves, fertilizer and pesticides left on hard surfaces can enter waterways.

References: Lawns: your guide to a beautiful yard. 2nd ed. Meredith Corp. Des Moines, I.A.; Turfgrass: science and culture. Prentice Hall. Englewood Cliffs, N.J.; Handbook of turfgrass management and physiology. CRC Press. Boca Raton, F.L.; Ortho's all about lawns. Meredith Books. Des Moines, Iowa

Slide 25: Backyard Conservation - Lawn Care Practices Conclusion

BACKYARD CONSERVATION LAWN CARE PRACTICES

- MOW HIGH
- RECYCLE CLIPPINGS & LEAVES
- CONSERVE WATER
- PROVIDE NUTRITION

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Simple lawn care practices of mowing high, returning clippings, mulching leaves, and conserving water can protect soil and water resources. Grass lawns help prevent erosion, reduce runoff, and filter water. Healthy lawns also improve soil quality over time by supplying organic matter, increasing pore space, and providing a place for organisms to live. By adopting sustainable lawn care practices, the soil, water, and grass interact as a community. This community works together to build a living ecosystem which benefits the homeowner, grass, and the environment.

Slide 26: Thank You

Thanks for helping improve soil and water quality through your lawn care practices.

WE NEED YOUR HELP!

Tell Your Family, Friends and Neighbors.

Scotts Miracle-Gro

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On behalf of The National Association of Conservation Districts and Scotts Miracle-Gro, thank you for doing your part to protect our shared natural resources.

Remember, conservation begins with you and your backyard.